

INTERNATIONAL SPACE LAW REGIME AND PROTECTION OF ENVIRONMENT: EMERGING ISSUES

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With the accelerating activities in Space by the different Nations, there is an urgent need to strengthen the contours of the International Environment Law.

This Paper argues for the urgent need for an enforceable space law for the protection of global environment. The paper cites the doctrine of 'Common Heritage of Mankind' for advocating an International Legal Regimes for regulating the Environment of both Inner and Outer Space. It is argued that the present five Legal Treaties under the auspices of U.N. should be the framework to chalk out further Legal Regimes that can cope up with the burgeoning onslaught on the environment of Outer Space.

Introduction

Outer Space is the space upwards from the Air Space surrounding the earth. It is impossible to physically determine where the atmosphere ends and outer space begins. As yet this is an unresolved legal issue, The current 'Environmental Law' applicable to 'inner space' should logically be extended to 'outer space' with the proviso of substantial modifications based on the 'doctrine of 'Common Heritage of Mankind'. It is envisaged that the 'emerging Issues' would be resolved by the Global Community harmoniously through Negotiated Treaties, Protocols and multi-lateral understandings in view of the progressively evolving nature of 'Environmental Space Law'.

The Three Eras of the International law of Outer Space

The history of the International Law of Outer Space can best be understood in terms of three eras:

1. The Classical period (1957 – 1979)
2. The Transitional Period (1980 – 1991)
3. The Modern Period (1992 – continuing)

The Classical period was the time for creating the Basic Structure and main principles of Space Law. It was also the time of the 'cold war' and domination of the military and foreign affairs. Consequently, U.N. Space Law at the time reflects a 'prostate anti-free enterprise' ideology. Starting in the 1980s, the number of States involved in Space activities began to increase rapidly. The variety of new practical interests in the Space Sector made it impossible to find

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agreement such as that which enabled adoption of the U.N. Space Treaties in the previous decades by consensus. Particularly relevant was the emergence of commercial space applications. With International Space Law having come to a standstill, other areas of legal regulation had to step in. Hence, the 'Transitional Period' was marked by the development of trans-national contracts among states and corporations and domestic legislation. The UNCOPUOS, unable to produce new Space Treaties, concentrated on the development of non-binding norms and guidelines, instead. That is, the Principles Declarations of 1980s and 1990s

With continuing development in technology and markets, Space Commerce has further expanded, often taking the form of Trans-national Corporations and International joint ventures. Although national and military considerations remained relevant, the increasing cooperation at various levels has diluted many of the ideological and nationalistic underpinnings in the space sector. The 'modern period' of space law has also witnessed the demise of the Soviet Union (and the end of the 'cold war'). Consequently, Space law has focussed increasingly on the commercial development of space. Today, there seems to be a new activity even in International Space Law, albeit only in the form of declarative statements and non-binding standards so far.

It remains to be seen whether and how the International Community manages to produce new norms of a more binding character for the regulation of the evolving Space sector. This is the fundamental question in this Paper, From an Environmental perspective in particular, U.N. Space Law continues to provide very little. Fortunately, more recent and more plausible efforts to alleviate environmental problems related to space activities by common norms have taken place. For instance, recommendations to promote environmentally more benign practices in the use of outer space, especially as concerns the problem of space debris, have been issued by many organs. This Paper examines in more detail the work of such organs as the Inter-Agency Space Debris Coordination Committee (IADC), the International Law Association (ILA), and the UNCOPUOS, all of which have been trying to mitigate the hazard of Space debris. Also, the International Academy of Astronautics issued a position Paper on 'Orbit Debris'¹ in 2001 A sub-committee of the International Organization for Standardization (ISO) has started working on standards based on space debris-mitigation guidelines developed by the IADC.² Also, the Committee on Space Research (COSPAR) has long been working on issues related to planetary protection³ and has discussed other environmental aspects of space activities.⁴ Also, there is an increasing number of national efforts that deserve attention

International Legal Regime in Space Law and Environmental Law

Outer space is the space upwards from the 'Air Space' (atmosphere) surrounding the earth. As the composition of atmosphere does not change dramatically at a certain height, it is impossible to physically determine exactly where the atmosphere ends and outer space begins, consequently, the problem of limitation is more of a political and legal issue than a technical one.

Various alternatives have been suggested over the years as the most suitable criterion for making this distinction. There are two predominant approaches, the spatial and the functional⁵ the latter requires a definition of 'space activities', where as the former allows a far more straight forward definition of outer space: one based on distance, one example of the difficulties related to the functional approach is the United States (U.S) space shuttle. which is launched like a rocket into the earth orbit but uses aerodynamic lift like an airplane when returning to the earth's surface. Functionally, the shuttle might thus be classified both as a space craft and an air craft and should be governed by space law and air law, depending on the phase of the mission.⁶ In accordance with the spatial approach, it has been proposed, for instance, that arealistic limit for the beginning of outer space might be the altitude of approximately 80 Km, given the composition of the atmosphere and the history of aeronautical and astronautical activities.⁷

Some kind of a fixed limit would be welcome because the air space partly falls under national sovereignty,⁸ where as outer space never does. Nevertheless, no legal boundary between the contiguous areas of the air space and outer space – and hence, between the ares of application of air law and space law, respectively – has yet been agreed upon,⁹ the Legal Subcommittee of the U.N. Committee on the Peaceful Uses of Outer Space (UNCOPUOS) has discussed the definition and the delimitation of outer space as an agenda item since 1967. Some nations have voiced the opinion that due to 'scientific and technological progress, the commercialization of outer space, emerging lalgal questions and the increasing use of outer space in general', there is a need for a definition of outer space that would delineate it from air space.¹⁰ Some others, however, consider that the current legal framework functions well enough and hence no such definition is needed, at least as yet, it has even been argued that 'an attempt to define 'outer space' would currently be only 'a theoretical exercise' and, moreover, even counterproductive as it' could lead to complicating existing activities and might not be able to anticipate continuing technological developments'.¹¹ The issue remains unresolved.

Despite the fact that the International Community has not agreed on a set limit between the air space and outer space, this has not (at least thus far) created notable problems in the utilization of either area.¹² During the past half a century, human kind has managed to extend its active environment from the earth and its atmosphere into outer space. Satellites are a major achievement of the human technology that has enabled this development, providing us with tools that facilitate the daily lives of millions of people worldwide. For instance, satellite navigation systems are used for positioning purposes in all fields of transportation today.¹³ Another important user of outer space is the remote sensing industry. To name but a few of the purposes it serves, it provides us with data for meteorological services (including weather forecasts), land and agriculture management, environmental planning and mapping, as well as national reconnaissance. A last but by no means the least, branch of space

activities is telecommunications satellites which enable us to receive radio signals, intercontinental telephone calls, T.V programs and any transmission of data, video, audio or graphics. In addition to satellite activities, there are also other unmanned and manned space missions which operate in earth orbits (such as the manned International Space Station) or beyond (unmanned planetary missions).

While the technological progress of space activities is quite impressive, it is unfortunate that we not properly learnt the lessons of terrestrial history regarding the utmost importance of environmental protection. The world space community has long known that space activities contribute to pollution and contamination of the environment.¹⁴ A very disturbing factor about the space environment is its lack of resiliency, as many parts of outer space cannot regenerate after disturbances in the way that earth's environment is inherently capable of.. However, at the initial stages of the space era, all human space activities were so challenging that any method seemed acceptable for placing objects in outer space.¹⁵ This has progressively lead to substantial environmental threats that constitute increasing hazards to the environment of outer space and even to the extent of jeopardising life on earth.

Environmental Space Law

The field of International Legal Regulation most obviously applicable to space activities is the International Law of Outer Space. The body of International Space Law consists of five U.N. Treaties:

1. 1967 treaty on Principles governing the activities of states in the exploration and use of outer space, including the moon and other celestial bodies (herein after 'the outer space treaty or OST')
2. 1968 agreement on the rescue of Astronauts, the return of Astronauts and the return of objects launched into outer space (herein after ' the Rescue Agreement')
3. 1972 convention on International Liability for damage caused by space objects (herein after 'the Liability Convention')
4. 1975 Convention on Registration of Objects launched into Outer Space (herein after 'the Registration Convention')
5. 1979 Agreement governing the activities of States on the moon and other celestial bodies (herein after 'the Moon Treaty').

Unfortunately, the U.N. Space treaties have relatively little to say about environmental issues. At the time of their conclusion, such considerations were not among the highest ranking items on the agendas of space faring nations, and it has later proven very challenging for the actors in that arena to agree to new legally binding international rules. Even the most recent U.N. Space Treaty, the Moon Treaty, dates back to 1979. Moreover, it did not gain the five ratifications required for its entry into force until 1984 and has to date attracted no more than

twelve ratifications, all by States that do not conduct independent launch activities. In practice, this renders the treaty void. In contrast, the first and most fundamental of the U.N. Conventions, the 1967 Outer Space Treaty has received virtually universal acceptance and has been ratified by about half of the Nations including all States active in Space utilization

Another important regulator of space activities is the U.N. sponsored – International Telecommunication Union (ITU). The ITU strives to guarantee undisturbed telecommunication activities, including those that are space based. It also produces legally binding International Instruments, but their focus in the space sector is somewhat different from that of the U.N. Space Treaties, as will be discussed below. Nevertheless, the Instruments of the I.T.U. have relevance from an environmental point of view.

U.N. Principles applicable to the Use of Outer Space

Further more, the U.N. General Assembly has adopted five sets of principles applicable to the use of outer space:

1. The 1963 declaration of Legal Principles governing the activities of States in the exploration and use of Outer Space
2. The 1982 Principles governing the use by States of Artificial Earth Satellites for International Direct Television Broad casting
3. The 1986 Principles relating to remote sensing of the Earth from Space
4. The 1992 Principles relevant to the Use of Nuclear Power Sources in Outer Space (herein after ‘the NPS Principles’)
5. The 1996 Declaration on International Cooperation in the Exploration and use of Outer Space for the benefit and in the interests of all States, taking into particular account the needs of Developing Countries (herein after ‘the Space Benefits Declaration’).

These rules are, however, not legally binding. It is unfortunate, because whatever is not legally binding, can only be enforced with the voluntary consent of the different States.

Doctrine of ‘Common Heritage of Mankind’

Territorial sovereignty has in large part defined both international relations and international law since the 1648 Treaty of Westphalia. The primary exception to this principle is the international commons. In these areas, which include the deep international seabed, the Arctic, Antarctica, and outer space, concerns over free passage outweighed the great Western powers’ territorial ambitions and Grotius’s *mare liberum* triumphed. As a result, these regions were gradually regulated to a greater or lesser extent by the Common Heritage of Mankind (CHM) principle, in which theoretically all of humanity became the sovereign over the international commons. Yet there remains no commonly agreed-to

definition of the CHM amongst legal scholars or policymakers. Developing and developed nations disagree over the extent of international regulation required to equitably manage commons resources. These disagreements have played out in the diverse legal regimes of the Antarctic, deep seabed, Arctic, and outer space, each with its own version of the CHM principle. Although no universal definition exists, most conceptions of the CHM share five primary points. First, there can be no private or public appropriation of the commons. Second, representatives from all nations must manage resources since a commons area is considered to belong to everyone. Third, all nations must actively share in the benefits acquired from exploitation of the resources from the common heritage region. Fourth, there can be no weaponry or military installations established in commons areas. Fifth, the commons should be preserved for the benefit of future generations. But now even these basic preconditions are in flux, with states claiming large tracts of the Arctic; the United States, Russia, and China pursuing space weaponry; and oil companies drilling further out into the deep seabed. As resource competition intensifies at the extremes of human civilization, "special sovereignty areas" (SSAs) and in particular the communal property principle of the CHM are under pressure with the need for greater private economic development. With resources becoming increasingly scarce and technology advancing to meet surging demand, longstanding principles of communal property in the international commons will either be reinterpreted or rewritten outright.

The only question is whether this redrafting will occur proactively with the international community laying out a multilateral legal regime to oversee these areas, or retroactively, formalizing a sub-optimal status quo. A historical examination of sovereignty coupled with case studies of new territorial claims on the deep Arctic seabed and the re-conception of space law to favor private property rights will demonstrate this process. By exploring the development and interconnected nature of these branches of international law, we can understand how the regulatory frame works and theoretical justifications for these areas are evolving and in turn impacting the commons. Existing comparative case studies on commons territories focus on the similarities and differences of commons regimes while neglecting the co-evolution and converging fate of the CHM regions, specifically that all components of the international commons are either now being challenged or already shrinking. The international commons must thus evolve to survive. A fervent appeal is now made that the principle of 'survival of the environment' must be inseparable from any future evolution of the CHM doctrine.

Established Norms Of International Environmental Law

Some established norms of International Environmental Law are now presented with the suggestion that these norms be extended to the Spatial Environment as well, with appropriate modifications where necessary. Norms are general legal principles that are widely accepted. This acceptance is

evidenced in a number of ways, such as international agreements, national legislation, domestic and international judicial decisions, and scholarly writings. The leading norms in the field of international environmental law are addressed below:

- (1) Foremost among these norms is Principle 21 of the 1972 Stockholm Declaration on the Human Environment. Principle 21 maintains that 'States have, in accordance with the Charter of the United Nations and the principles of international law, the *sovereign right to exploit their own resources* pursuant to their own environmental policies, and the *responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction*'.
- (2) Another widely shared norm is the *duty of a state to notify and consult* with other states when it undertakes an operation that is likely to harm neighbouring countries' environments, such as the construction of a power plant, which may impair air or water quality in downwind or downstream states.
- (3) Over and above the duty to notify and consult, a relatively new norm has emerged whereby states are expected to *monitor and assess* specific environmental conditions domestically, and disclose these conditions in a *report* to an international agency or international executive body created by an international agreement, and authorised by the parties to the agreement to collect and publicize such information.
- (4) Another emerging norm is the guarantee in the domestic constitutions, laws or executive pronouncements of several states, including India, Malaysia, Thailand, Indonesia, Singapore and the Philippines, that all *citizens have a right to a decent and healthful environment*. In the United States, this fundamental right has been guaranteed by a handful of states but not by the federal government.
- (5) Most industrialized countries subscribe to the *polluter pays principle*. This means polluters should internalise the costs of their pollution, control it at its source, and pay for its effects, including remedial or cleanup costs, rather than forcing other states or future generations to bear such costs. This principle has been recognized by the Indian Supreme Court as a 'universal' rule to be applied to domestic polluters as well. Moreover, it has been accepted as a fundamental objective of government policy to abate pollution.
- (6) Another new norm of international environment law is the *precautionary principle*. This is basically a duty to foresee and assess environmental risks, to warn potential victims of such risks and to behave in ways that prevent or mitigate such risks. In the context of municipal law, Justice Kuldeep Singh of the Supreme Court has

explained the meaning of this principle in the *Vellore Citizens' Welfare Forum Case*, which is excerpted later in this section.

- (7) *Environmental impact assessment* is another widely accepted norm of international environmental law. Typically, such an assessment balances economic benefits with environmental costs. The logic of such an assessment dictates that before a project is undertaken, its economic benefits must substantially exceed its environmental costs. India has adopted this norm for select projects which are covered under the Environmental Impact Assessment (EIA) regulations introduced in January, 1994.
- (8) Another recent norm is *to invite the input of non-governmental organizations (NGOs)*, especially those representing community-based grassroots environmental activists. This NGOs participation ensures that the people who are likely to be most directly affected by environmental accords will have a major role in monitoring and otherwise implementing the accord. This principle is mirrored in the Indian government's domestic pollution control policy and the national conservation policy, and is given statutory recognition in the EIA regulations of 1994. The Supreme Court has urged the government to draw upon the resources of NGOs to prevent environmental degradation.
- (9) In October 1982, the United Nations General Assembly adopted the World Charter for Nature and Principles of *Sustainable Development*. The agreement expressly recognised the principle of sustainable development, defined as using living resources in a manner that 'does not exceed their natural capacity for regeneration' and using 'natural resources in a manner which ensures the preservation of the species and ecosystems for the benefit of future generations.' The principle of sustainable development was also acknowledged in the 1987 report *Our Common Future*, published by the United Nations World Commission on Environment and Development. This report defined sustainable development as 'humanity's ability... to ensure that [development] meets the need of the present generation without compromising the ability of future generations to meet their needs.' The Supreme Court as well as the Indian government have recognised the principle of sustainable development as a basis for balancing ecological imperatives with developmental goals.
- (10) *Intergenerational equity* is among the newest norms of international environmental law. It can best be understood not so much as a principle, but rather as an argument in favour of sustainable economic development and natural resource use. If present generations continue to consume and deplete resources at unsustainable rates, future generations will suffer the environmental (and economic)

consequences. It is our children and grandchildren who will be left without forests (and their carbon retention capacities), without vital and productive agricultural land and without water suitable for drinking or sustaining cultivation or aquatic life. Therefore, we must all undertake to pass on to future generations an environment as intact as the one we inherited from the previous generation.

In *State of Himachal Pradesh v. Ganesh Wood Products* the Supreme Court recognized the significance of inter-generational equity and held a government department's approval to establish forest-based industry to be invalid because 'it is contrary to public interest involved in preserving forest wealth, maintenance of environment and ecology and considerations of sustainable growth and inter-generational equity. After all, the present generation has no right to deplete all the existing forests and leave nothing for the next and future generations.

- (11) At the 1982 United Nations Conference on the Law of the Sea (UNCLOS) developing countries, led by India, articulated the norm that certain resources, such as the deep seabed, are part of the *common heritage of mankind* and must be shared by all nations.
- (12) The 1992 Rio de Janeiro Earth Summit articulated the norm of *common but different responsibilities*. With regard to global environmental concerns such as global climate change or stratospheric ozone layer depletion, all nations have a shared responsibility, but richer nations are better able than poorer nations to take the financial and technological measures necessary to shoulder the responsibility.

JUS COGENS, HEALTHFUL ENVIRONMENT, SUSTAINABLE DEVELOPMENT

As mentioned, norms of customary international law evolve through custom and usage. Not all norms are of equal importance however, some being accorded the status of *fundamental norms*. The category of fundamental norms comes under the doctrine of *jus cogens*, or the doctrine of *peremptory norms*. The 1969 Vienna Convention on the Law of Treaties serves to clarify the concept in Article 53 as follows:

A treaty is void if, at the time of its conclusion, it conflicts with a peremptory norm of general international law. For the purposes of the present Convention, a peremptory norm of general international law is a norm accepted and recognised by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character.

Many scholars also believe that the norm expressed in Principle 21 of the Stockholm Convention has risen to *jus cogens status*. Principle 21 is based on the Roman maxim, *sic utero tuo et alienum non laedas*, which roughly means 'do not behave in a way that hurts your neighbour.'

Conclusions

This Paper concludes with a recommendation for strong affirmative action by the Global Comity of Nations to protect the Environment of Space, Two recent catastrophes have caused immeasurable damage to the Spatial environment; the 'volcanic eruption in Iceland' immobilized Air Travel for more than a week in North America and Europe causing immense damage both to the Airlines and passengers. Also, the recent 'Oil Spill' in the Gulf of Mexico through a B.P. drilling platform, devastated the flora and fauna of the region for the foreseeable future. Both incidents unequivocally support the arguments advocated in this paper for perpetually perseverant efforts by all the Nations (more so, by the advanced States) to put in place concomitant Legal Regimes that can cope up with measures to protect, preserve and defend the environment of Space.

Endnotes

1. Many of the experts working with Environmental questions related to Space activities seem to share the opinion that an International-level set of Rules is what is now needed. See, for example, 'Space Debris Mitigation' – the case for a code of conduct, 2005.
2. As the UNESCO's Working Group on the 'Ethics of Outer Space' put it: "Ethics must precede and guide the Law and not *vice versa*". Refer 'The Ethics of Space Policy', 2000, p. 25.
3. The most prominent example of such a development so far is the Sea Launch Company which launches Sattelites from a sea platform in International Equatorial Waters. It was created in 1995 and has completed some twenty launches todate.
4. All the more so, as Space Objects, once launched, are even more difficult to control than maritime vessels, which physically remain on Earth and have to visit harbours.
5. Report of the Legal Subcommittee, 44th session 2005, Annex 1, para 8 a.
6. Harris – Harris 2006, p.6. These authors are in favour of a fixed, spatial demarcation line, yet one 'sensitive to technological advances'.
7. An authoritative example of the spatial approach is the Australian Space Activities Act of 1998 (as amended in 2002), which now uses the limit of 100 kilometers as the altitude where Outer Space begins. For example, prescribing that to 'launch' a space object means to 'launch the object into an area beyond the distance of 100 Km above msl, (or to attempt to do so, Sec. 8). Although such a limit applies only as regards domestic purposes, it is surely the first regulatory attempt to define where space begins and hence has a much wider relevance. In the latter part of this paper, it is urged that India should take a lead in enacting a similar Act as per the conscious emerging by that time in Internationally as also among the sovereign Space Nations.

8. Air Space comes under national jurisdiction and sovereignty where it lies over national territory and territorial waters. Otherwise, it is not subject to national sovereignty, for example, over the high seas. Refer Convention on International Civil Aviation, Arts 1 and 2. U.N. Convention on the Law of the Sea, Arts 2, 58, 78, 87. Air Space over a States exclusive Economic Zone and the Continental Shelf is comparable in status to Air Space over High Seas.
9. Application of the Law of Outer Space is indeterminate not only as concerns the height from the earth where it begins but also from the extent. It does not necessarily appear feasible (or justifiable) for humans to extend their Legal Regulation into the Infinity of Space. At the moment only one of the U.N. Space Treaties (the Moon Treaty) explicitly limits its application to the Moon and other celestial bodies within our Solar system only. The other Space-Treaties only refer to a somewhat abstract manner to 'Outer Space'. Presently, the ability of Human kind to conduct activities in Space remains very limited. However, the important questions of the extent of our authority to regulate Space Activities and of the Legal Status of Outer Space are fundamental.
10. Report of the Legal Subcommittee in its 45th session 2006, para 90: "Some delegations expressed the view that the lack of a definition or delimitation of Outer Space brought about legal uncertainty concerning the applicability of Space Law and Air Law and matters concerning the State Sovereignty and the boundary between Air and Outer Space needed to be clarified in order to reduce the possibility of disputes among States", *ibid.*, para 91.
11. *Ibid.*, para 92. For a summary of the discussion concerning the question over the years, see the UNCOPUOS document "Historical Summary on the Consideration of the Question on the Definition and Delimitation of Outer Space" prepared in 2002.
12. It has been suggested that as Space Exploration affects the 'totality of the environment', such physical separation of Air Space and Outer Space would not even be necessary.
13. The primary system used throughout the world for Satellite navigation is the U.S. Government 'Global Positioning System (GPS)'. Russia has a corresponding military network, the Global Navigation Satellite System (GLONASS). The European Space Agency (ESA) and the European Union (EU) are now creating Europe's own exclusively civilian navigation system (called GALILEO), which is scheduled to be fully operational by 2012 or 2013. The U.S. and ESA/EU were long at odds over frequency allocation and inter-operability between the GPS and GALILEO; but they finally reached an agreement on the issue in February 2004.

14. The potential damage from experiments in Space was recognised by the Scientific Community as early as in the 1950s, and the International Council of Scientific Unions (ICSU) formed a Committee on Contamination by Extra-terrestrial Exploration (CETEX) to study the issue. The task was assigned to the Committee on Space Research (COSPAR) when CETEX was disbanded in 1959. COSPAR then established a consultative group on the potentially Consultative Group on the Potentially Harmful Effects of Space Experiments (with a broad mandate to make recommendations regarding Space Activities) and a Panel on Potentially Environmentally Detrimental Activities in Space to consider the various problems related to the Space Environment. Today there are numerous organisations and bodies concerned with the issue (to a greater or lesser extent and for different reasons).
15. Over half of the early attempts to put a satellite in orbit failed (23 out of 40). At the time of the first manned Space Flight, the over all failure-percentage of space missions was still around 50.