



**THE  
ORBIT  
OF  
SPACE  
LAW**

**DAMODAR WADEGAONKAR**

**STEVENS • TRIPATHI**

# **THE ORBIT OF SPACE LAW**

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## Foreword

In India, there is a singular dearth of standard books on International Law. International Space Law, which is a very nascent but rapidly evolving branch of International law, has so far not been the subject of any authoritative work by an Indian author. It is a matter of pride that this void is now being filled up by the publication of the book "The Orbit Of Space Law" by Dr. Damodar Wadegaonkar.

It is with some trepidation that I introduce this book to students of international law and to others who are interested in the subject of Outer Space. Indeed, one is awed by the infinite magnitude of benefits which Outer Space has to offer to Mankind and the new vistas of life that it will open up to the world community. It is a far cry from the days of October 1957 when the Soviet Union launched its first Sputnik into orbit. Today, when manned space flights have become commonplace, the Space Age has moved from the era of the spectacular to more down-to-earth problems, where economic and political issues pose the greatest impediments to progress in this field. Advances in space technology have raised previously undreamt of controversies between peoples and nations of the Earth. If Space offers great opportunities for improving the conditions of Man on Earth, it also presents hitherto unknown dangers to international peace and security.

As stated by Dr. Wadegaonkar in his erudite introduction to the Fundamental Principles of Space Law:

"Man's initial scepticism towards the Space adventure has nearly vanished, as tangible and intangible benefits of space technology, for the poorest of nations, become evident. Photographs taken from satellites indicate the possibility of detecting oil and other subterranean or submarine resources. Remote sensing of earth by satellites has relayed information on fish-concentrations to trawlers, enabled cartography to make great strides, made possible accurate predictions of the weather patterns for the whole globe, aided navigation of ships and supersonic aircrafts and revolutionized the techniques of soil and crop survey. Other areas of space application wherein benefits can be anticipated in future

are space transportation systems, space industrialisation, solar energy from space, making of metals with special properties, etc. Artificial satellites have made direct television broadcasting a reality and most nations have now access to communication satellites through INTELSAT and INTERSPUTNIK. Even less developed countries can now reap the benefits of relatively less expensive satellite systems of maritime communications like MARISAT and MAROTS."

India, though a developing nation, belongs to the exclusive Space Club. It was realised quite early in India that space science and technology held great potential in meeting various national needs such as rapid development of mass communication and education, and timely survey and management of the country's natural resources. The objective of the Indian Space Programme was "to initiate, develop and master space science and space technology to exploit their potentialities for the socio-economic development of the country". The high vantage point provided by satellites makes space systems very suitable for meeting the development needs of a large country like India since vast areas of the country can be covered with comparative ease. From the launching of sounding rockets from Thumba for upper atmospheric studies of the equatorial electrojet, Indian Space Science and Technology, have taken giant strides in recent times. The launching of the first Indian Satellite, Aryabhata, in April 1975, the first major space application programme, Satellite Instructional Television Experiment (SITE) conducted during August 1975, the launching of the various earth observation Satellites like "Bhaskara" and Satellite Launched Vehicles (SLV) like "Rohini", experimental geostationary communication satellites like "APPLE" as also the recently launched INSAT Spacecrafts, have formally established India as one of the leading nations in this field.

It is against this background that we must evaluate Dr. Wadegaonkar's work on the subject of Space Law. As stated earlier, the tremendous socio-political and eco-political benefits that space science and technology have to offer have led to several thorny disputes which have, at times, threatened to develop into serious threats to international peace and security. In short, space science and technology is a subject which is desperately crying for immediate legal regulation and the evolution of certain norms to govern the conduct of nation-States in this hitherto unexplored arena. I must candidly confess that I was as much taken aback by the spectacular

potentialities of Space Science as by the fascinatingly interesting manner and speed with which international space law has developed. Indeed, as the author puts it, "space lawyers can no longer be dismissed as the lunatic fringe of the legal community, dabbling in an esoteric but fashionable tripe." Serious differences amongst nations have been existing even on some peaceful uses of Outer Space like Direct Television Broadcasting, use of geostationary orbit, remote sensing of the resources of the Earth and navigation. Of course, the weaponization and military escalation in Outer Space is a matter of the utmost concern to every citizen of the world. In short, every discipline of space science has underscored the importance of space lawyers in helping to solve the political, economic and legal issues which prevent the emergence of an international consensus on various topics.

Dr. Wadegaonkar is eminently suited for the monumental task he has attempted to undertake on this subject. Both as a student and teacher of international law over a period of more than twenty-five years, he has been actively associated with various forums of international law. Having had the advantage of the guidance of stalwarts like Professor Georg Schwarzenberger and Professor Bin Cheng, he has an enviable grasp of the principles and methods of his subject. On the practical side, he has been participating in several international conferences and seminars on international law. He has always stressed the importance of an interdisciplinary approach to the subject of Space science and Space law. I am personally aware of the manner in which he has painstakingly undertaken research in matters which are scientific and technical but which have a material bearing on the subject of Space Law. It is this commendable approach of not viewing his subject from an isolated cocoon but from a multi-dimensional perspective that lent a novel insight to this entire work.

Today, Outer Space is the world's last common heritage from which Mankind will gain the greatest benefits if it is placed securely under global control. Nevertheless, nation States are eating away at this common heritage. The accord on the definition or delimitation of Outer Space is a topic of paramount importance. In this connection, the theory suggested by the author, way back in 1969, for delimitation and definition of Outer Space has proved almost prophetic. The scarce natural resource of geostationary orbit and the assertion by Equatorial States to sovereign rights in connection with it, has created a piquant international-stress-situation. Dr. Wadegaonkar's

analysis and the manner in which this precious natural resource can be equitably shared on a global basis underscore his very novel approach. At one point, the issue of sovereignty was a major obstacle in achieving agreement on the use of the geostationary orbit. However, as a result of growing confidence that they will not be denied access to it, the Equatorial States, have toned down their claims of sovereignty and the major remaining issue is the physical crowding of the orbit when too many radio signals whose frequencies are close together share too little space which results in interference. Dr. Wadegaonkar's suggestions will go a long way in yielding a satisfactory compromise between a "first come, first served" approach and rationally assigned allocations of the orbit to individual nations.

The potential benefits to be gained by using data covered through remote sensing are enormous but the problems blocking realisation of their potential are equally large. This data is capable of being used in diverse fields such as agriculture, forestry, geography, geology, hydrology, meteorology and oceanography amongst others. Chapter IV of this book highlights the fact that the problems of remote sensing are technical, organisational, political and in many cases, inextricably interrelated. Should the sensing nations make both primary and processed data available to the sensed States? What about the Third World Nations? Who is to decide how much and what data they should receive? These are all thorny issues which have resulted from this technology, which has been appropriately dubbed by the author, as an "Eye In The Sky".

The final Chapter of the book gives a striking exposition of the futuristic view of Space Law. The value of the work has been enhanced by inclusion of the various basic treaties, conventions and draft principles on the subject by way of appendices to the book. The copious footnotes will whet the appetite of the student and inspire him to undertake further research.

Space is infinite and eternal and so are the problems which Space Law will be called upon to tackle in the future. Dr. Wadegaonkar has formally established himself as one of the leading authorities on the subject by this singularly original contribution.

**Y. V. CHANDRACHUD**  
Chief Justice of India

## **Acknowledgement**

The author is indebted to the Hon'ble Chief Justice of India, Mr. Justice Y. V. Chandrachud, who so willingly spared time in spite of his extremely busy schedule and onerous responsibilities, for introducing this work.

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Finally, a word of thanks is due to the publishers of this book, Tripathis of Bombay, as well as their associates in England, Sweet & Maxwell Ltd., for the despatch with which this well produced work was brought out.

**DAMODAR WADEGAONKAR**

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## CHAPTER I

# The Fundamental Principles of Space Law

### 1. Introduction

On 4th October 1957, the Soviet Union launched the first Sputnik into orbit. Even now, a quarter century later, Man is unable to comprehend the profound impact of Space Science on every human life on the planet Earth. The long and arduous Space adventure—from Sputniks, space-walks, space-link-ups to the historic landing on the Moon; from orbital space-stations, solar-power laboratories to space-shuttles in a futuristic framework—all continue unabated. Man's initial scepticism towards the Space adventure has nearly vanished, as tangible and intangible benefits of space technology, for the poorest of nations, become evident. Photographs taken from satellites indicate the possibility of detecting oil and other subterranean or submarine resources. Remote sensing of Earth by satellites has relayed information on fish-concentrations to trawlers, enabled cartography to make great strides, make possible accurate predictions of the weather pattern for the whole globe, aided navigation of ships and supersonic aircraft and revolutionized the techniques of soil and crop survey.<sup>1</sup> Other areas of space application wherein benefits can be anticipated in future are space transportation systems, space industrialization, solar energy from space, making of metals with special properties, etc. Artificial satellites have made direct television broadcasting a reality and most nations have now access to communication satellites through INTELSAT and INTERSPUTNIK. Even less developed countries can now reap the benefits of relatively less expensive satellite systems of maritime communications like MARISAT and MAROTS.<sup>2</sup> Thousands of satellites continually orbit the Earth. Truly, Man has embarked on making his own stars, which are "populating" space.<sup>3</sup>

It is obvious that the entire system rests on the principles of international co-operation. But can these prevail over the divisive elements

of international society? Can the legal regime of Outer Space be regulated on a just and equitable basis or would it break down on the hard-rock of national sovereignty? Would the ideal of freedom of information have to be circumscribed by fears of "national security" and cultural invasion"? These and other related questions are the substance of Space Law. No attempt at formulating such a legal regime could be ignored, for the technological, economic and military stakes are unbelievably high. As nations interact in the Annual Sessions of the United Nations Legal Sub-Committee on Outer Space and in other international forums, as high-level diplomacy shapes the rules of law on the subject, Space lawyers have to glean the evolving principles and educate decision-makers and governments. They could no longer be dismissed as the lunatic fringe of the legal community, dabbling in an esoteric but fashionable tripe. On the contrary, every discipline of Space recognizes the importance of arriving at a consensus with the aid of international space lawyers.

Before venturing to embark upon this daunting task within a narrow space of seven Chapters, I have endeavoured to outline them. We begin with the ambit or rather the orbit of Space Law, its varied sources along with the methods adopted to extract them, the myriad theories regarding the *basis* of the subject and the bilateral and multilateral law-making processes in Space Law. The first chapter ends with a brief analysis of some Conventions and Treaties of prime importance, with a view to gaining an insight into the "grundnorms" of Space Law.

The second Chapter attempts to dissect the Agreement concerning the status of the Moon and other celestial bodies, arrived at in 1979. The third deals with the question of definition and delimitation of Outer Space and the related question of the scarce natural resource called "geo-stationary orbit," a highly controversial topic. The fascinating contours, both legal and scientific, of the latest in Remote Sensing occupies the fourth Chapter. The penultimate one focusses on the problem of Direct Television Broadcasting by Satellites and the sharp international schisms on this thorny issue. The sixth Chapter deals with the problems of military escalation in Outer Space and the use of nuclear-powered sources. Finally, we conclude with certain legal problems of the future in Space such as "Space Colonies" and "Space Domicile," legal status of international space crews, etc.

## 2. Sources of Space Law

Any traditional enumeration of the sources of international law will prove inadequate to explain the rapid development of international space law. The international law of space is currently undergoing a process of codification which is without parallel in legal history. Beginning with the Space Treaty of 1967, "The Magna Carta of Space Law", the process has been a continual one. The Space Treaty came into force on October 10, 1967 and almost every major State is a party to it. With the completion of this monumental treaty, to which we shall soon revert, the first phase of development has ended. The second phase spells out the details in the general framework provided by the first phase. This second phase witnessed the humanitarian Agreement on Rescue and Return of Astronauts and also the 1972 Convention on Liability for Damage Caused by Space Objects. On May 21, 1974, States signed the Convention relating to the Distribution of Programme—Carrying Signals Transmitted by Satellite and followed it up with the Registration of Space Objects Convention on January 14, 1975. The third phase characterizes feverish law-making, both multilateral and bilateral, regarding the substance and institutional framework of international space law, to which we shall refer in greater detail.

Whilst international jurists are agreed that resolutions of international inter-governmental organisations do not have a binding legal effect and are only persuasive in nature, it is nevertheless conceded that a unanimous or near unanimous resolution of such an organisation coupled with State practice may be turned into binding law by the process of "sedimentation".<sup>4</sup> Be that as it may, it remains a fact that the United Nations Committee on Peaceful Uses of Outer Space (COPUOS) with its twin sub-committees — Legal and Scientific/-Technical, is the *focal nerve-centre* of law-making in international space law. The Annual Sessions of these Sub-Committees have provided a forum for interaction of views of States and the development of a consensus on thorny issues. The drafts prepared by these Sub-Committees and its Working Groups have led to the emergence of various legal principles on diverse points.

Although treaties are an immediate and concrete expression of the consensual will of nation-States, they do not bind third parties. However, certain binding customs of international law may apply even to States which have not themselves followed the practice, so long as a broad-based majority of States have adopted it and the

remaining have not opposed it. The said principles have been applied to a great extent in international space law. For instance, the Space Powers have put into orbit, thousands of satellites, but no State has ever requested, and no State has never protested against such rights of overflight. On this basis, it has been assumed that nation-States, as a whole, have acquiesced by tacit consent that Space Powers may overfly their territories.

Several authors have characterised the crystallization of these principles over a dramatically compressed time schedule as development of principles of "instant" customary international law. However, some jurists have contended that the State practice in this field is relatively new and the time, traditionally required for the emergence of customary international law, has not yet elapsed.<sup>5</sup> It is submitted however, that spontaneous or quasi-spontaneous creation of international customary law may sound like a contradiction in terms, nevertheless the deficiency in the time element, if counter-balanced by a strong *opinio juris*, expressed in uniform State practice, positively leads to the creation of rules of law which the international community consciously regards as binding and mandatory. Thus the short period of time should not be an objection to the evolution of the rules of international customary space law.

The function of Space Law is to define limits of the exploration and use of Space, to establish orderly rules for the conduct of such activities on the basis of various treaties and customary principles. The following matters, in particular, have been subjected to legal regulation, the prohibition of appropriation of space, the demilitarization of space, international co-operation in scientific technical and economic fields for carrying out space activities, the question of international liability and the registration of space objects. The legal regulation on the above subject has led to the emergence of what can be termed as general principles of international law. The prohibition of national appropriation of space and celestial bodies is a classic example of such general principles.

As it will be evident from the rest of this work, the writings and opinions of jurists and international space lawyers invariably constitute another important source of international space law.

The development of these sources, the methods used to glean them and the reactions and counter-reactions of the international community have all been dealt with in relation to specific legal principles in the remaining Chapters.

### **3. Bilateral and Multilateral Law-making Processes in Space Law**

Looking at the body of law which existed in the early 1970s, one finds that it was not free from imprecision and required much improvisation. Some rules of law merely constituted a bare scaffolding for the law of tomorrow. They were mere inklings or indications of the trends to be followed. Nevertheless, the continuous space activities of the first decade and the practice of the States in this area made some of its primary rules of law very important. Of course, it was evident that the law-making process could not be left merely to State practice. Thus the stage was set for taking important decisions by international organisations and the appearance of numerous bilateral and multilateral agreements between the States on specific subjects of international co-operation in Space Law.

We shall now briefly review the bilateral and multilateral law-making processes and discuss the major types of agreements in detail and examine some of their key provisions in the light of their relevance as sources of international space law.

The essence of a treaty, is, that it is the specific source of an application of international law, voluntarily undertaken by one international person towards another or others, giving rise to reciprocal rights in that other or those others.<sup>6</sup> The treaty-making powers of international organisations and States have been clearly recognised by customary rules of international law. By custom, the term 'Treaty' has been reserved for agreements concluded between States only. The fact that international organisations could also enter into treaties sounded extraordinary to the ears of many international lawyers. However, in the present day most of the international jurists are agreed that international organisations possess treaty-making powers based on factors such as their international legal personality, functional effectiveness and its general recognition in international law and practice.

The problem of all international organisations as well as international forums, is, to evolve modes of taking important decisions which will command general respect, be effective in practice and carry necessary weight. For achieving this end the principles of unanimity, weighted voting, veto, are fast losing their effectiveness in an international society where even the smallest mini-State vociferously demands a price for its sovereignty. In the search for a new compromise between severely conflicting national interests, the

principle of consensus has emerged as an effective means of international agreement. It is interesting to note that this principle of consensus runs throughout the law-making processes of Space Law, which is demonstrated by the fact that, Outer Space Law has been shaped by the international community as a whole even though, in practice, Outer Space is being explored and utilised by only a very small number of States. Hence, the rules which have been formulated have to serve objectives much wider than the immediate interests of the Space Powers, as a result of which consensus has become an extremely important principle in Space Law.

“Consensus” consists of a collective act adopted, besides the usual voting procedures and without the need of a differently expressed acceptance.<sup>7</sup> The absence of opposition to the proposal of adopting an act by means of consensus is evidence of implicit acceptance, allowing for any later reservations on individual points. States as well as international organisations have realised that, majoritarianism serves the world badly when it puts a premium upon the unacceptable proposal which can be voted over minority opposition and find that it is better to accept that bargaining proposal which can be tailored to procure the agreement of the minority.<sup>8</sup> A wider acceptance of the principle of consensus in the field of international space law represents the only realistic approach, the only valid test of its effectiveness. There is a growing disposition to prefer negotiated agreement to unilateral pronouncements, with mature majority reflected in mellower reasonableness. In an international society, where several factors militate against absolutely binding rules of international law, consensus has proved to be the most useful device in this field.

The climate of international opinion which developed in connection with the progress of space activities, has helped to form the basis for co-operation, in the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) and particularly its Legal Subcommittee which is continually charged with drafting treaties, to guide States in the conduct of their space activities. I have already emphasised that, the texts of the various space treaties to which reference would be made shortly, have been attained more by consensus rather than by majority voting and this unanimity of agreement has established a solid foundation for the developing regime of International Space Law.

The law-making process in space law has acquired many different forms such as exchange of correspondence, practical adhoc arrangements, scientific and technical conferences, creation of international



organisations, initiating treaties under the auspices of the COPUOS and of course, bilateral as well as multilateral agreements. It is the last two which are most important.

Bilateral agreements in space law have served many useful purposes and through them communication networks have been established, satellites launched, remote sensing data received and disseminated, astronauts representing different nations and political ideologies have been united in Outer Space. In short, bilateral agreements have proved to be the most fruitful source of International Space Law.

It would be instructive to briefly review the bilateral agreements entered into by U.S.A. U.S.S.R., the major Space Powers, and then by a developing country-turned-space-nation, India.

The modalities adopted by the United States of America in this field are treaties, executive agreements, memoranda of understanding and "letter agreements." Very few bilateral agreements have been concluded in the form of treaties, though executive agreements and memoranda of understanding continue to multiply. During the years 1959 to 1965 executive agreements were entered into for the establishment, maintenance and operation of the worldwide NASA tracking, command and data acquisition systems.<sup>9</sup> One such memorandum of understanding between the Department of Energy, Government of India, and NASA entered into on 18th September 1969 for the launching of experimental satellites in the early 1970's, makes very interesting reading. The said Memorandum outlined in detail the various activities to be carried out by both the parties in space as well as on ground, the distribution of engineering and experimental data, the manner in which the entire operations have to be co-ordinated, the financing of the project. This was all done having regard to the fact that Outer Space must be explored and used solely for the benefit of Mankind and in the interests of all States, whatever their degree of economic or scientific development.

United States entered into bilateral co-operation agreements for experiments, demonstrating the feasibility of communication systems, with Brazil, Canada, France, Federal Republic of Germany, India, Italy, Japan, Spain and United Kingdom.<sup>10</sup> These agreements required each country to provide the ground stations to obtain necessary radio frequencies and to facilitate demonstration tests. The growth of commercial tele-communication service has given rise to new bilateral agreements for launching services between U.S.A.,