Chapter VIII

Suggestions and Recommendations

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There is immense activity going on in both air and space. The huge vacuum of space is now becoming crowded, and the present laws, both in the field of air and space, are found to be inadequate to deal with the present situations to secure the safety of the passengers and aircraft. Many conventions have been held in this regard and they have been successful to some extent but with the changing times, changes in the mindset of the people and new technology emerging almost everyday, the provisions of these conventions are proving to be inadequate. The attack on the World Trade Centre on 11th September, 2001 brought the ugly face of modern terrorism before the world and also showed how the present laws are helpless and inadequate to deal with the suicidal terrorist activities. It is certainly not wise to make provisions for the safety and security of passengers and to deal with the situation after an untoward incident occurs; adequate legal provisions have to be there which can tackle any situation before it happens, which may be arising for the first time. 'Prevention is better than cure'. This is not just a saying on paper; it needs to be practically implemented.

Looking at the conventions in relation to air law, there are several of them dealing with various aspects like carriage of persons and luggage, dealing with aviation terrorism, etc.

8.1 The Warsaw Convention

The Warsaw Convention applies to all international carriage of persons, luggage or goods performed by aircraft for reward. It also applies to gratuitous carriage by aircraft, but only if it is performed by an air transport undertaking. There needs to be a specific provision for corporation-owned aircraft. When the chairman or managing director or any other high ranking official of a company travels by company-owned aircraft, he does not need to pay for the travel but if any mishap occurs, the provisions of the convention are inadequate to deal with the situation. The provisions of the convention are required to be applicable to all experimental flights also. For instance if the manufacturer of Airbus or Boeing invites media persons for a promotional flight, it is not covered by this convention since the flight is not by an air transport undertaking but by an aircraft manufacturer.

Under the Warsaw Convention only a person who is carried by aircraft by virtue of a contract of carriage is a passenger. There is nothing in the convention on obligations with regard to persons who have no contract of carriage with the carrier. To avoid any ambiguity, the definition of passenger must include all persons on board, be they employees or otherwise. With the introduction of air commandos in plain clothes, particularly after the incident of 9/11, the definition of passenger is required to be changed as these commandos are neither passengers nor employees of the aircraft carrier.

Ticket booking through the internet is another issue that is capable of raising several legal problems and needs to be given consideration on a priority basis. One of them is the determination of the place where the

transportation contract is concluded. This is important because it has a bearing on the question of jurisdiction of courts in the case of legal matters that arise in relation to air transport. Regarding the place of conclusion of the contract, is it the location where the keyboard of the passenger's computer is situated, or is it the location of that of the electronic ticket agent, or the location where the computer of the internet provider of either party stands? The provisions of the Warsaw convention are not adequate to deal with these issues. A uniform code that would be applicable worldwide is the need of the hour.

8.2 International Convention against the Taking of Hostages

The reason why hijacking is so difficult to combat lies in the fact that aircraft are so vulnerable. The hazards involved in such criminal acts are manifold and unpredictable.

i) a fight between the crew and the hijackers may cause a complete loss of control of the aircraft

ii) essential damage may be caused if weapons are used in the cockpit

iii) collisions may result from an aircraft being unable to observe traffic regulations

iv) fuel shortage may occur

v) the crew may be unfamiliar with a particular airport and its approach procedures

Besides the above reasons, many acts of political terrorism are considered as acts of bravery by some countries, while others consider them to be acts of violence. A hijacker may be given asylum in some particular country on grounds of sympathy, while other countries may look for an opportunity to punish him. The state of terror is justified by a friendly country and is condemned by an unfriendly country. Hence it is not possible to have a uniform policy on terrorism that would be acceptable to all countries.

However, certain measures can still be taken to reduce the occurrence of terrorist attacks; moreover there are some amendments that can be brought about in the existing conventions for dealing efficiently with such acts once they occur. The Convention against the Taking of Hostages should have the provision of allowing other nation's security personnel or agencies, whose aircraft is hijacked, to land at the airport where the hijacked plane is grounded without any visa or other formalities, if an official request is made by the Government of that country. It should be mandatory for the Government of that country within which jurisdiction the hijacked aircraft is grounded or stationed to give permission to the security personnel of the country of the airline of the hijacked aircraft. The relationship between these two countries cannot be a ground for either granting or refusing such permission. The convention should have the mandatory provision of extradition of hijackers to the Government of the country of the airline of hijacked aircraft.

8.3 Recommendations for Outer Space

The period between the World Wars is often referred to within the flying community as the Golden Age of Aviation. During that period,

aviation changed from a largely experimental activity to a widely accepted means of transportation. Public attitudes toward flying also changed dramatically. The foundations of the present air traffic control system also were created during that period. In short, aviation began to be a commercially sustainable industry.

Human space flight marked its 40th anniversary in 2001. Yuri Gagarin of the USSR orbited the Earth on 4th April, 1961, and Alan Shepard, USA, succeeded in a suborbital flight on 5th May of that year. It is clear that space flight in general and human space flight in particular have not yet achieved the same large-scale commercial advances in their first forty years as were seen in aviation.

Besides, the legal system of many countries is not yet adapted to the use of cyberspace, nor is it able to cope with the many new features of it that are invented daily all over the world. The interaction between internet developments and legal systems is an issue that needs to be given serious consideration on a priority basis.

It is noteworthy that beginning with the 'Moon Agreement', which was opened for signature on 18th December, 1979 and entered into force on 11th July, 1984, progress in development of space law has been slow. First, the Moon agreement received very limited response from the international community with just 13 ratifications and 4 signatures[1]. Major space faring nations such as the USA and Russia did not sign this agreement. The principle of 'Common Heritage of Mankind', which was basically derived from the Law of Sea, is the bone of contention, which thwarted wider acceptance of Moon agreement. It is to be noted that major space treaties were made in the then prevailing

[1] *United Nations document ST/SPACE/11/rev.1/Add.1/rev.1 – Status on International Agreements relating to activities in outer space dt. 1st January, 2007*

atmosphere of Cold War confrontation between the USA and the erstwhile Soviet Union. The context of actors in space activities has changed considerably in the subsequent periods, with more countries actively engaging themselves in developments and applications related to space technology and also providing greater opportunities for participation of the private sector in these activities. The sluggish progress in further development of the international legal framework left many questions unresolved, even as space technology and its applications advanced rapidly. Prominent issues such as the definition of outer space and the demarcation of boundary between outer space and airspace, which are governed by different legal regimes, could not be agreed upon.

The definition of the term 'peaceful uses of outer space' itself is subject to varied interpretations. While some argue for totally pacific applications of space, other consider that there is scope for military uses of space including testing or using weapons in space, other than placement or use of nuclear weapons or weapons of mass destruction. Notwithstanding the fundamental nature of unresolved issues, they did not impede the progress of space activities. However, if space activities rapidly expand further, many issues for law are to be resolved with greater speed. For example, one of the issues of concern is that of space debris. Although debris in space is growing with increasing potential for collisions, there is no agreement for evolving legal measures and the UN Committee on Peaceful Uses of Outer Space could adopt a set of voluntary guidelines after considerable debate. The situation today is that space agencies have been adopting certain voluntary measures. The other issue is that of ensuring rational and equitable access and use of the Geostationary Orbit (GSO), which is commonly used by communication satellites. Over the years, GSO has become crowded with satellites and new entrants find

it difficult to get access to orbit/ spectrum resources. There is a high level of private sector activity in this domain and issues relevant to prevention of market dominance, technology transfer, public service objectives and effective enforcement mechanism need further regulatory provisions.

The third issue is relating to private sector participation in the commercial exploitation of extraterrestrial resources. In the past, private industries were actively involved in activities such as satellite telecommunications, remote sensing and provision of launching equipment and services. Now, there is an interest, although limited, by private industry to participate in activities such as space tourism, mining of asteroids and even waste disposal in outer space. However, given the emphasis accorded in the international space law to the state responsibilities for all activities in outer space, the private sector finds that the current legal framework is inadequate for expanding their activities and role. There are also demands for establishing effective mechanisms for the settlement of disputes, arising in relation to space commercialization.

Turning to another dimension of the International Space Law, in particular the Outer space Treaty, one can observe at the very outset, a statement under Article-1 that the exploration and use of outer space including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic and scientific development, and shall be province of all mankind. Even after four decades of existence of the treaty, the capacities and level of access to Outer space by different countries vary widely across the globe. Flow of technologies relating to space systems and even some of their applications are considerably restricted and regulated based on national legislations or multilateral

export control regimes. This situation partly is triggered by the concerns on the dual use nature of space technology.

Achievement of equitable access to space by all countries is still an unfulfilled need, which the current international legal system is unable to redress. A further lacuna is the absence of a common agreement on ethics and an enforcement mechanism. Notwithstanding the above limitations or slower pace of progress in recent times, it is highly noteworthy that the international space law as it evolved, set a unique trend and standard in establishing the freedom of access and preventing national appropriation of space and enabled a great many contributions, which are considered vital for connecting the global community. In addition, space provided unique tools for assessing and monitoring the state of Planet Earth's health itself.

Although the regime relating to space exploration has been developing for several decades, there is still no clearly articulated system of legal rights relating to exploration and economic exploitation of outer space. The notable exception to this trend is communication satellites, where organizations such as INTELSAT and INMARSAT have successfully created a reliable legal framework. But no clear comprehensively binding legal regime governs matters as basic as the mining of material from other celestial bodies. The Outer Space Treaty of 1967 states basic principles concerning exploration but fails to clearly delineate a set of property or contract law principles. However, the treaty explicitly prohibits future space exploration and economic exploitation. The Moon Treaty also offers such a prohibition, but is far more limited than the Outer Space Treaty due to the limited number of nations that signed it. Given the lack of a coherent framework, wealthy nations with the resources to explore space and make use of its resources have few legal principles to prevent them from doing so

and little obligation to share any discovered resources with the rest of the world.

Commercialization of space activities requires a legal framework for private investors and entrepreneurs in order to promote and develop this sector of industry into a fully-fledged commercial enterprise. Existing national and international laws provide a rudimentary framework for commercial activities and settlement in outer space and on celestial bodies. Although we have limited experience with activities outside of space vehicles or enclosed facilities, it is possible to analyze how existing laws will be applied to activities such as mining, manufacturing, and construction. One can also conclude that private settlement in outer space or on celestial bodies is legal under existing law. Nonetheless, the paucity or outright absence of law regarding certain key subjects such as property rights, mining, salvage, liability, and dispute resolution is a disincentive to private space activities. Individuals, companies, and investors are unsure of their rights and have no assurance that their efforts and investments will be legally protected. National governments can do much to encourage private space activities through new international agreements and national legislation.

The costs of going into space are exorbitantly high. It is also true that the private sector has proven again and again that it can bring the costs of goods and service down and the quality of products up. Therefore an obvious way to reduce the costs of access to and enterprise in space is to involve the private sector as much as possible.

About forty years into the space age, we are still struggling with the optimal legal regime for the high frontier. Some observers decry the lack of a true space government, and others complain that space is

a winner-take-all game mirroring the conquest mentality of the 16th and 17th centuries. Some have gone so far as to take the law into their own hands and make claims of property ownership in space based on their own chosen legal paradigms.

8.4 The Existing Regime in Outer Space

Several significant questions present themselves in regard to private activities in outer space and require serious consideration:

⇒ What laws govern the activities in outer space and who has the jurisdiction to regulate them?

⇒ What authority do entities have with respect to personnel in their facilities, around their facilities, and in areas of frequent activity?

⇒ What is the physical extent of the authority of private entities?

⇒ Are activities protected from outside interference?

⇒ What laws govern the liability for personal injury and property damage?

⇒ What are the procedures for dispute resolution and enforcement of criminal law?

To answer these questions, we have to first look at the existing international treaties and space laws and then to the implementation of national statutes.

But private entrepreneurs in space, as on Earth, face many government-imposed barriers. Taxes especially tend to discourage new start-up companies. Therefore, one way to make investments in space-oriented enterprises more attractive would be to remove that tax burden. HR-2504, the "Zero Gravity, Zero Tax Act," is meant to do just this.

This Act contains three basic provisions. The first would grant an income investment credit to spur new enterprise. In other words, taxes levied on the total income of any entity that invests in space would be decreased by the amount invested in a space-related business. For example, if a company's tax liability is $5 million in 2002 but the company invested $1 million in a space-related company during that year, that business would subtract the space-related investment from the total tax. The company would pay only $4 million in taxes instead of $5 million. That provision gives companies that are already established an incentive to invest in space-related activities. After the year 2012 the benefit would be phased out. This provision would give companies an incentive to invest sooner rather than later.

A second provision of the Act would be capital gains exclusion for sale or exchange of stock to help both established aerospace firms and start-up enterprises. There would be no capital gains taxes on space-related investments for ten years.

A third provision would be a ten-year tax exclusion on gross income for companies that manufacture goods or provide services (including launches) in space, proportional to the total amount invested.

Apart from the already existing international public legal framework of space law, rules should be created to provide a level playing field for all interested parties. These rules should point to transparency of risks and liabilities and liberalization of the various space market segments. Another legal instrument will be that of dispute resolution among participants in the arena of space activities. The question of who is responsible for the action of non-governmental entities needs to be thoroughly threshed out, as also the notion of freedom of enterprise. The likely future trends in the privatization and regulation of space activities also need to be assessed. For the more distant future the Moon Agreement should be reassessed in the light of resources exploration, management and exploitation against the background of private enterprise involvement.

The current National and International agreements, memorandums, treaties and resolutions are based on the policy of cooperative space research and exploration. At present, the goal of space exploration is not a race to claim resources, but to further the exploration and scientific research. A major goal is to maximize the total capacity of global space programs.

The present agreements suggest that satellites and objects placed into orbit are subject to the jurisdiction of the party which launched them, and any international problems are to be resolved by international law and the jurisdiction of the United Nations. The role of the UN is to promote peaceful exploration and cooperation.

As of today, there are no recognized property rights to any real property, natural resources or other benefits derived from space development. However, there are many interesting proposals for

developing equitable property rights on the moon, asteroids and other celestial bodies.

Although military satellites are permitted for many purposes, there are a variety of treaties specifically banning the placement of any weapons of mass destruction into space. Apart from the specific weapons of mass destruction, the weaponization of space by other means is a topic of concern for many countries around the world.

Traditionally, international legal rules have been established through the adoption of treaties by states, and the five space treaties adopted in the 1960s and 1970s are no exception. Accordingly, any proposal for overcoming problems related to the management of space activities has to envision the conclusion of new treaties, even a general convention, on space law. However, the process of setting norms through international treaties has certain severe weaknesses, which affect space law as much as other fields if not more. These include the deplorably common time lag between drafting, adoption, and entry into force of international standards. Even if states manage to agree on certain provisions, by the time accords are implemented, the problems in question may have reached entirely new and different proportions. Consequently, strategies that made sense when first proposed then represent 'too little, too late'. Hence the chances of making norms of international space law operative faster, and the possibility of creating instruments whose provisions can readily accommodate changing conditions, needs to be contemplated.

There are no specific laws or treaties regarding interstellar law at present. These may develop only when technology improves somewhat and interstellar travel is closer to reality. So far as space is concerned, there is an immediate need for protection of Indian space above 30

km. altitude. There is also an urgent need to enact a law to protect under water. We already have laws for defending air, land and water. Hence the constitution needs to be amended for the defence of Indian space.

India is taking giant strides on the path of industrial and technological advancement. Our laws have to be developed in such a way as to be able to provide adequate protection in this national endeavour. Since we have adopted the policy of techno-economic liberalisation, several multi-national corporations and foreign companies are making their foray into India.

Hence it becomes imperative to make suitable laws to ensure that the trade enterprises venturing into India do not establish their market dominance at the cost of our technology and industry. "History should not repeat through so called technology carriers, which may well be technology Trojan horses"[2].

Today the situation is such that the national laws and legislation of the powerful nations of the world dictate the international norms and behaviour in almost all fields. The present Comprehensive Test Ban Treaty (CTBT) is a glaring example of how five nuclear weapon countries can steam-roll the agenda of an international treaty of far reaching consequences.

International Space Law has begun to lose its relevance as a consequence of the newer developments in space. India occupies a prominent place among the space faring nations of the world. Its activities have grown significantly with emerging space based services.

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[2] *Dr. A.P.J. Abdul Kalam, Lecture on 'Law and Dimensions of Technology', golden jubilee celebrations of the Supreme Court Bar Association*

Therefore the country needs to build and develop a strong legal group to take up space science in a forceful manner.

There are several other aspects to be considered now with the expansion of the field of space activities. International Space Law had earlier led to an orderly development in space activities but the advancement of technology has opened up new possibilities. The International legal fraternity and space scientists will have to work together to face new challenges like space debris, security of space assets, weaponisation of space and dual use applications.

The United Nations has formulated several treaties for the purpose of keeping outer space clean. India has played a crucial role in all the organs of the UN related to space and has helped to draw up space debris mitigation guidelines and to set up SPIDER, an organisation to work on disaster management. It has also signed and ratified all the five international treaties that have been formulated by the United Nations. But these treaties need to be replaced by a comprehensive law for all activities related to space.

8.5 National Space Legislation – Need and Scope

It is borne out by experience that national legislation in the areas of growing importance to economic and social sectors of the nation can lead to an orderly development that enhances benefits. Several countries such as USA, Russia, Australia, Canada, UK, Sweden and Israel have enacted national space legislations to regulate and guide their space activities. The development of national space legislation needs to be given serious consideration in India also. ISRO initiated a study of this subject through reputed academic institutions, like

National Law School of India University, Bangalore, a few years ago. Subsequently, at the Space Law Conference organized in June 2005 at Bangalore by International Institute of Space Law, a session was devoted to this important topic[3]. The need for national space legislation has been examined from the viewpoint of harmonizing the domestic legal environment with the specific obligations arising from international treaties related to space, to which India is a party. But more particularly, the national space legislation should address the specific interests and needs of the Indian society. Such legislation should also be broadly in harmony with the laws applicable to other related fields such as trade, IPRs, internal and international security and public safety. The government's supervisory role as obligated through the principle of state responsibility in International Space Law is to be addressed through regulatory/licensing requirements of certain industrial and commercial activities related to space. The legislation should thus address the provisions for ownership by the private sector of remote sensing or communication satellites under Indian registry. Further, the domestic law needs to consider the government's support and incentives for private sector to grow their activities in this high risk and investment intensive field. The extent of liability to be borne by the private sector, obligatory requirements for insurance, the principles for liability to be borne by the state for damage caused to third parties, all need to be stipulated. Above all, the legislation should create an enabling environment to further the goals of national space programme and its commercial space ventures, rather than create a restrictive legal regime. Changing international environment in the field of space and also the expansion of activities in the domestic sector with the participation of both, government and non-government entities, require serious consideration for establishing

[3] *Ranjana Kaul, National Space Legislation – A Blueprint for India, Proceedings of ISRO-IISL Space Law Conference, 2006, pp. 2–3 to 2–43*

national space legislation soon. With its vast experience and also ambitious forays into initiatives such as planetary exploration, India should play an important role in creating a conducive legal environment in the field of space, for balancing both public and private interests and for responding to evolving international environment.

8.6 Conclusion

India has proved her supremacy in the field of Information Technology and is poised to be a super power. Einstein had once said that he does not know how the Third World War would be fought but he surely knows that the Fourth World War will be fought with stones and sticks. Though it was not possible at that time to predict as to how the Third World War would be fought, now there is no doubt that the Third World War will be Knowledge and Information War, and this war will be mainly fought in the battlefield of space. There will not be an attack on the industrial or military base of enemies, but the attack will be on enemy satellites moving in orbit.

If India really wants to be a super power, it will have to prove its supremacy over space. The Chandrayaan mission was a step forward in that direction. Though the Chandrayaan mission ended due to various technical reasons the possibility of the presence of water on the moon has excited many scientists and citizens equally. What the then super power USA with its Apollo mission could not find even after landing on the moon, (the landing itself is a controversy now), was discovered by Chandrayaan launched by the super power-in-waiting, i.e. India. This has veritably put India in a prominent position on the map of space technology.

The transitional period for India to evolve from the status of developing country to a developed country would require mastery of technologies mainly in the field of space technology by a wide range of groups, institutions and people. The leadership qualities required for new situations, particularly related to space activities and especially in the transitional period, would demand a great degree of faith in the future of India, concern for all the people, pragmatic approach to specific focussed actions and attention to details instead of generalised statements or clichés, ability to take risks, tolerance towards different approaches, openness towards space ventures especially by private enterprises and a special concern to remove the hassles for the youth and "new entrants". There has to be a conscious effort not to be complacent and to be ready to update skills and knowledge on a perpetual basis. The large population of the country that otherwise is a cause for concern, can prove to be a positive factor in development with hard work if it is channelised in the right direction. Indians have contributed significantly to the creation of knowledge related to space in the ancient times. In the future too, they have the potential to be front runners not only in space activities but in all other fields, leading to development and progress not only for India but for the world, whether they are on the earth, or living in space colonies on other planets.

The peaceful use of outer space and the use of space applications are playing an increasingly important role in our society. If these are used at the right time and in the right manner, they can be of great benefit to all humankind. The security of space and earth are inextricably linked and our economies and global development are increasingly dependant on space. The benefits of space technology and its applications should contribute to a growth of space activities

favourable to sustained economic growth and sustainable development.

The information revolution that has been unleashed by the advances in Space communications, microelectronics, optics and computer technologies provides unparalleled opportunities for access to knowledge and for rapid connectivity across the globe. However, the use of these developments should be done while keeping in view the goal of switching over to greater social equity and cultural enrichment, while simultaneously pursuing the objectives of economic progress. In short, space should become a strong instrument to meet the challenge of the next millennium, which is to find sustainable paths of development. No other technology has brought such immense awareness of the interdependence of various countries of the world on a global scale, as space technology. Indeed, few other technologies are as potent as space to preserve that integrity and to assist humanity in overcoming the divisions through human connectivity at a global level and through enhancement of awareness of 'the global sustainability' by continuously mirroring 'the state of health' of this planet. Therefore, the fundamental need for the global community at this juncture is to reiterate the value of space as a common heritage of humankind and to reinforce its use for the benefit of all countries, particularly the developing countries. Humankind can face the challenge of the next millennium only through the spread of education, for which space technology serves as a powerful tool. The engine of the economy can be accelerated through commercialisation, but it has to be guided by the consciousness for bridging inequalities and ensuring a certain basic minimum level of quality of life to the deprived sections of the human society.

A concerted and cooperative approach to capacity building through education in the developing countries, a sound base for monitoring and protection of environment through cooperative space systems and a policy environment that would strike a balance between commercialism and the means to meet societal priorities are important issues which affect large sections of humanity. In addition, international cooperation could be strengthened to address broader humanitarian needs such as disaster management where space technology can play an important role. The widespread development of peaceful uses of outer space by all countries will be possible only with unhindered access to technology and knowledge on a global basis. Global cooperation in this regard should be further strengthened to remove impediments to the access of technology, equipment, materials and knowledge for use in peaceful and developmental activities.

Space science and technology can contribute to achieving the Millennium Development Goals such as eradicating extreme poverty, improving health care and ensuring environmentally sustainable development. They can also contribute to achieving the goals of the World Summit on Sustainable Development, as for example through Earth Observation and telecommunication.

As space technology evolves in pace with several other associated technologies, space is bound to play a major role in human kind's transition to deal with future cognitive technical systems. As a backbone for information infrastructure, as an environment for new scientific pursuits, as a means for conveying the health of individuals and environment on a daily basis, as a medium for energy transfer, as a challenging frontier for new technology developments and as an

arena for future habitation and industrialization, space is going to significantly influence the destiny of humanity.

Space is a unique environment as unlike land and sea it is not subject to claims of national sovereignty. Space is the only global commons that borders every community. The right of all states to explore outer space and make the most of the opportunities for scientific, economic, developmental, environmental and communication benefits is universally accepted. It is the responsibility of all states to ensure that these rights are realised in the interest of maintaining international peace and security. We need to work together to ensure peaceful, secure, equitable and sustainable use of space.