

Private Involvement in Commercial Space Activities.

Legal Issues and Recent Trends.

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It was reported that in the course of an interview with journalists, the question was posed to Neil Armstrong: "*What passes through your mind in those last critical seconds as you sit strapped into your capsule waiting for lift off?*". He answered the following: "*Just that I am sitting on top of 20,000 subcontracts, all let at lowest cost*". Whether this anecdote is true or not, the important thing is that, although exploration of space and space science are fascinating, space is above all business, involving billions of dollars. From the beginning, private companies were involved in space business, indirectly, as manufacturers of space hardware, contracting with government agencies and international organisations. This was a natural situation involving rather classical legal issues. However, little by little, private ventures appeared in the area of exploitation of space, in view of a profit, directly, trying to undertake not only manufacturing activities, but also space activities proper (telecommunications, launching, material processing, remote-sensing...). There, the legal issues became more specific, especially since the rules of space law embodied in the space treaties were to be taken into account, but also because many of the laws applicable to commercial activities in general would gain specific features when applied to space activities.

This situation led in certain cases to the development of domestic legislation governing such activities, which is one of the interesting developments connected with the arrival of private enterprise on the space scene. But there are many other issues raised by the arrival of private enterprises on the space market. We will try in these brief developments to give you, like a patchwork, an overview of the past, current and forthcoming legal issues connected with private space activities.

Private enterprise and the space treaties.- Before we try to assess in which field of space activities private enterprises are active, we should examine the first legal issue concerning private involvement in space, which was basically the question of whether such companies could undertake these activities under the existing rules of space law, elaborated by States for their own space activities. The answer was not obvious, particularly when looking at the main principles of the Outer Space Treaty of 1967, and especially the principle according to which space activities should be conducted for the benefit of and in the interest of all mankind¹. This would, a priori, go against private direct involvement in outer space, certain authors defending that such principle would oblige enterprises to share their benefits with all countries². Very rapidly, however, such a theory was rejected by the doctrine and this principle was considered as a broad general principle applying to States when they conduct

¹ Article 1 Outer Space Treaty: "*The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind*".

² Marcoff, *Traité de Droit International Public de l'Espace* (Fribourg: Editions Universitaires, 1973), p.671.

space activities, but not imposing an obligation to share profits coming out of such activities³. In fact, the Outer Space Treaty itself provides for an opening to private enterprise mainly in its article 6⁴, but also in article 9⁵. This is not a mere clearance to such activities, but an authorisation subject to certain conditions. Article 6 was indeed the result of a compromise between two points of view, the first one stressing the need for a liberal approach of space activities, and the second seeking to limit space activities to States⁶. The compromise was in fact to open space activities not only to States, but also to non governmental entities and to counterbalance this by an obligation of the appropriate State to authorise and permanently supervise and control such activities. However, although it is now admitted that private companies can enter the space business⁷, the provisions of the Outer Space Treaty, together with those of the Liability Convention are not always clear enough to provide full legal certainty to such business and to the States entrusted with their supervision. Indeed, the definitions of "appropriate State" and "launching State" being rather

³ K.H.Böckstiegel, "Legal Implications of Space Activities", (1981) 24 *Colloquium*, 1, at 6.

⁴ Article 6 Outer Space Treaty: "*States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. (...)*"

⁵ Article 9 Outer Space Treaty: "*(...). If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. (...)*".

⁶ Centre for Research of Air and Space Law, *Space Activities and Emerging International Law*, McGill University, Montréal, 1984, 295.

⁷ S.Gorove, "Implications of International Space Law for Private Enterprise", (1982) 7 *Annals of Air and Space Law*, 319.

unclear⁸, many situations of potential conflicts of jurisdiction or of potential existence of numerous potential liable States may rise. This, in practice, means that private enterprise could find themselves under the jurisdiction of few States which may have different, or even conflicting national laws. A practical example of such a case could be found in the US Commercial Space Launch Act of 1984, as amended 1988⁹, where requirements for licensing of private launches have been made very wide, conducting in certain cases to the extraterritorial application of the US laws¹⁰. Such provisions have been included in the Act to ensure that the international obligations of the US are met in all possible cases, but this may also lead to application of US laws as well as the law of another country, with possible discrepancies between licensing requirements. This type of situation deprives private enterprises of the legal predictability necessary to the development of their activity. These examples also lead to think that some work still has to be done at the international level to come up with more precise definitions, especially insofar as liability issues are concerned, and possibly to a certain extent harmonisation of the rules concerning jurisdiction and choice of law¹¹. This would certainly make the position of private enterprise more predictable and

⁸ For various interpretations of these notions see: **K.H.Böckstiegel**, "Legal Implications of Commercial Space Activities", (1981) 24 *Colloquium*, 1.; **A.Ritholz**, "International and Domestic Regulation of Private Launching Ventures", (1985) *Stanford Journal of International Law*, 135.; **A.D.Webber**, "Launching the Rocket Industry in the United States: Domestic Regulation of Private Expandable Launch Vehicles", (1984) *Journal of Air Law and Commerce*, 1.; **H.Bittlinger**, "Private Space Activities: Questions of International Responsibility", (1987), *Colloquium*, 191.

⁹ Commercial Space Launch Act, 49 *USC* 2601 &ff. Implementing regulations in 14 *CFR* 400.

¹⁰ Commercial Space Launch Act Section 4.11 (definition of US citizen) combined with Section 6 (licensing requirements). See: **E.J.Stepto**, "Regulation of Private Commercial Space Transportation by the United States Department of Transportation", (1985) 28 *Colloquium*, 240, at 242.; **M.Howald**, "Private Space Activities and National Legislations", (1989) 32 *Colloquium*, 344, at 345.

¹¹ **P.Dann**, "The Future Role of Municipal Law in Regulating Space Related Activities", *Space Law, Views of the Future*, Ed.Tanja L.Zwaan (Kluwer, Deventer, 1988)

manageable, and avoid multiple jurisdictions, or even absence of jurisdiction. This is particularly important in the field of space launches.

Brief assessment of the development of private space activities¹². Private involvement in space activities has developed mainly in the field of space applications. Indeed exploration of space involves heavy investment and no real profit return. Therefore, it is not really the place for private involvement. Private companies have first developed in the field of telecommunications. The first private company established in the field was Comsat, the US representative in Intelsat, incorporated in 1962¹³. Private involvement in the field of telecommunications has increased very much since then, in all countries. State monopolies are still very strong in telecommunications services but the market has been more and more open to private companies. The difficulty here is to ensure that no overcapacity is created and that all routes can be served, not only the routes with high profit return. In certain countries, in particular in Latin America, privatization of telecommunications services was undertaken with the safeguard of the concession system on traffic considered public utility¹⁴. In Europe, the movement of privatization of telecommunications services has started in the United Kingdom, in Belgium and in Germany. It is also developing in other parts of the world¹⁵. A second field in which private involvement appeared is that of remote sensing

¹² T. Logsdon, *Space Inc*, (Crown Publishers, New York: 1988)

¹³ J.B.Gantt, "The Commercialisation of Space - Twenty Years of Experience: Some Lessons Learned", (1985) 12 - 2 *Journal of Space Law*, 109.

¹⁴ W.B.Berenson, "Developing the Regulatory Footprint for Newly Privatized Telecommunications Providers in Latin America", (1991) 38-7 *Federal Bar News & Journal*, 400.

¹⁵ on latest developments: telecommunications privatised in Kuwait: Telecommunications Enters the Private Sector, *International Herald Tribune*, 25 February 1994.

where companies were established in Europe (Spot-Image, Eurimage), in the United States (Eosat) and in Canada (Radarsat International will commercialise the data of the satellite Radarsat to be launched in 1996). Finally, private involvement appeared in the 80's in the field of launch services with the establishment of Arianespace in France, with the privatisation of launch services in the United States (Martin Marietta, McDonnell Douglas, General Dynamics) and the entry on the market of new private launch companies (Space Services Incorporated of America, Orbital Science Corporation). It was expected also that private enterprise would progressively conduct microgravity activities, for instance in the field of pharmaceuticals, but this application has so far not developed as much as foreseen, such experiments not being yet considered as susceptible of industrial application¹⁶.

The development of domestic laws. - As we already mentioned earlier, the entry of private enterprises on the space arena has also led to the development of a body of specific domestic laws. Authors have discussed the nature of the obligation for States to implement the Outer Space Treaty and whether there is an obligation for them to enact legislation to that end. Opinions have remained divided¹⁷ and the steps taken by States went different ways. In certain States, in particular in France, such activities have developed without the need for

¹⁶ J.von der Lippe, "Made in Space, A Lost Illusion?", *The Implementation of the ESA Convention, Lessons from the Past*, Proceedings of the ESA/EUI International Colloquium, Florence, 25 and 26 October 1993, (Martinus Nijhoff Publishers, Dordrecht: March 1994).

¹⁷ M.Bourély, "Quelques réflexions au sujet des législations spatiales nationales", (1991) *XVI Annals of Air and Space Law*, 245.; K.H.Böckstiegel, "Space Law Past and Future, The Challenges of the XXIst Century", (1992) *XVII-I Annals of Air and Space Law*, 16, at 23; V.Kayser, "Commercial Exploitation of Space: Developing Domestic Regulation", (1992) *XVII-I Annals of Air and Space Law*, 187.

specific domestic legislation¹⁸. Private enterprises are active in remote-sensing (Spot Image) and launching (Arianespace). But control over these companies' activities has been ensured through institutional links and mechanisms. Of course this does not mean that these companies are operating outside of any laws, since ordinary legislation applies to them, but no specific body of rules was elaborated for the purpose of controlling their activities. Other States¹⁹, which did not really have private companies undertaking space activities, nevertheless considered that their ratification of the space treaties implied the need to enact specific legislation: this is the case in Sweden²⁰ and in the United Kingdom²¹. Finally, the United States have developed the most elaborated and most complete body of domestic rules governing space activities by private enterprise in three fields: telecommunications (Communications Satellite Act of 1962²²), remote-sensing (Land Remote Sensing Commercialisation Act 1984, amended in 1992²³) and launching (Commercial Space Launch Act 1984, as amended 1988). These examples show that with the arrival of private enterprise in the space arena, domestic legislation also developed, linking these activities to the

¹⁸ M.Bourély, "La production du lanceur Ariane, (1981) VI *Annals of Air and Space Law*, 279; J.Chappez, "Arianespace: première société commerciale de transport spatial" (1983) 110 *Journal du Droit International*, 702.; V.Kayser, "Les services commerciaux de lancement de satellites, Aspects Juridiques", *La Lettre du Cerdi* (Special Issue), January 1993.

¹⁹ M.Bourély, "National Space Legislation in Europe", (1987) *Colloquium*, 197.

²⁰ 1982 Swedish Space Activities Act, 1982: 963; Decree Supplementing the Act, 1982:1069.

²¹ 1986 Outer Space Bill; A.J.Young, "Outer Space Act 1986 With Respect to Compliance of United Kingdom's Space Activities With Its International Obligations", (1986) XI *Annals of Air and Space Law*, 412.

²² Communications Satellite Act of 1962, 76 Stat.419 (codified as amended at 47 USC § 701 &ff.

²³ See further developments on the evolutions toward the return to a control of the State over certain activities.

international obligations of States under the space treaties. Needless to say, of course that other fields of national legislation do apply to space activities²⁴.

An important legal issue arising out of private involvement in space business: liability.-

I will be rather brief on this issue, since it will be developed in more details in another presentation, but it is to be mentioned here because it is one of the most important legal issues facing private enterprises. Space activities are hazardous activities in nature, especially as far as launching of spacecraft is concerned, and the amounts to be paid as damages can be tremendous. The question of liability has a different weight according to the operator of such activities. When States were the only space actors, they would bear the responsibility and liability for their own space activities, they would in principle self insure and would have the financial capacity to compensate potential victims. When we turn to private enterprise, the situation is quite different. Actually, in the field of space activities, particularly in launch services, we witnessed the development of liability schemes which try to avoid catastrophic consequences for private enterprise of a failed mission causing damage to third parties or to the government (usually owner of the facilities used). Such schemes involve in particular two elements:

- a cap placed on the liability of the private company, above which government indemnification will be provided;
- a complex system of cross waivers of liability among all participants in the operations from top to bottom of the contract chain²⁵.

²⁴ See P.Dann above footnote 11.

²⁵ K.G.Yelton, "Evolution, Organisation and Implementation of the Commercial Space Launch Act and Amendments of 1988", (1989) *Journal of Law and Technology*, 117; M.Straubel, "The Commercial Space Launch Act: The Regulation of Private Space Transportation", (1987) *Journal of Air Law and Commerce*, 941; V.Kayser, *La Lettre du Cerdi*, above footnote 17.

One of the exceptional features of liability in the space-related activities is that there is very few litigation cases. In fact, to date there have been very little litigation on the subject, and only in the United States²⁶. In the majority of these cases the general approach of the courts was to strictly stick to the language of the contracts, enforcing the cross waivers of liability but only to the extent provided by the contract, leaving on the companies the consequences of a possible poor drafting and the consequential liabilities. The courts also left the door open to possible liability for gross negligence, which may actually lead to heavy damages. It should also be mentioned here that litigation related to environmental damage caused by space activities is another potentially developing field. There has been one case so far, against the US Government, where the latter won the case against a group of environmentalists²⁷. But the circumstances of the case were particular, especially since the launch was governmental, and possibilities remain of such suits brought against private companies with maybe different approach by the courts and, above all, delays in launching

²⁶ *Martin Marietta Corp v. INTELSAT*, 763 F.Supp 1327 (D.Md.1991), revised in part and remanded in part, 978 F.2d 140 (4th Cir.1992); *American Satellite Co v. United States*, N° 525-89C (Cl Ct 1992); *Hughes Communications Galaxy, Inc v. United States*, 26 Cl Ct 123 (1992); *Appalachian Insurance Co v. McDonnell Dougl's Corp*, 214 Cal app. 3d, 1, 262 Cal Rptr 716 (1989); *Lexington Insurance co v. McDonnell Douglas Corp et al*, n° 481713 (Cal Supe.Ct, Orange Cty, May 23, 1990); *Martin Marietta Corp v. United Eng'rs & Constructors, Inc*, n° 89-B-1947 (D.C.Colo, Order of Dismissal September 20, 1991); *Alpha Lyracom Space Communications Inc v. Communications Satellite Corp*, 946 F 2d (2d Cir. 1991); *Avtec Systems, Inc v. Pfeiffer*, 805 F.Supp 1312 (E.D.Va.1992); *Transpace Carriers Inc v. The United States*, 1992 U.S.Cl Ct. LEXIS 541, 60 (December 7, 1992); *Lloyds of London v. McDonnell Douglas Corp*, n° 90-CV-543 (D.Fla, Order of Dismissal December 31, 1991); *Alpha Lyracom Space Communications Inc v. Communications Satellite Corp* (S.D.N.Y 1993 U.S. dist. LEXIS 3825; 1993-1 Trad Cas). For developments on US Case law see: **R.B.Trinder**, "Legal Aspects of Commercial Space Activities, US Space Law: Developments in Case Law", *Presentation at the International Conference on Air Transport and Space Applications in a New World, The Use of Airspace and Outer Space for all Mankind in the 21st Century*, Tokyo June 1993, to be published.; **Tanja L.Masson Zwaan**, "The Martin Marietta Case, Or How to Safeguard Private Commercial Space Activities", (1993) XVIII 1 *Air and Space Law*.

²⁷ *Florida Coalition For Peace and Justice et al v. George Herbert Walker Bush et al*, n°89-2682 (D.D.C. filed Sept 28, 1989). See: **R.B.Trinder**, above footnote 25.

or operation which could be caused by such suits and the consequential harm to the company. Finally, it is worth mentioning here the specific situation created by the developing turn-key satellite contracts, where liability is placed mainly on one company which will be the designer, manufacturer and operator of the satellite until its delivery into orbit to the customer, and which will also have to buy the launch of this satellite. Liability in such contracts is not spread as in usual operations, and the risk is mostly concentrated on one entity²⁸.

One of the main concerns with respect to liability of private enterprise for space activities is insurance. Although at present the market of insurance is relatively stable, nobody can predict what can happen in the coming months. Scenarios such as those encountered in 1986 for instance could certainly occur again. In such scenarios, the situation of private companies could be very critical, especially should any accident take place over an inhabited area. If we take as an example the launch services, and in particular the situation of US companies²⁹, liability of private companies to third parties is virtually unlimited. Indeed, launch companies have to compensate victims up to 500 million dollars. Above this, the US Government pays up to 1.5 billion dollars. Above this, the private company has unlimited liability³⁰. Although most incidents do not lead to such amounts of damages, the occurrence of one single major accident would certainly cause the bankruptcy of the company, especially

²⁸ J.Chappez, "Le contrat de livraison en orbite", *L'exploitation commerciale de l'Espace, Droit positif, Droit prospectif*, Université de Bourgogne, CNRS, (LITEC, Paris: 1992), 183.

²⁹ In the case of Arianespace, the maximum damages that Arianespace will have to pay are 400 million French Francs. Above this amount, the French government will indemnify victims.

³⁰ V.Kayser, "An Achievement of Domestic Space Law: US Regulation of Private Commercial Launch Services" (1991) *XVI Annals of Air and Space Law*, 341.

in cases where the insurance market would not have provided sufficient insurance³¹.

Recent trends: private enterprise and principles of international law.- With the entry of private enterprises in the field of space activities, the foundations of international space law have been shaken in some instances. This is particularly true in the field of telecommunications, illustrated by the now famous Tongasat story. The fact that Tonga has applied for 31, and then was granted 6 orbital slots, not to use them fully for its national needs, but to rent them and get the profits of the operation to the private company³² in charge of renting those slots, is a new step in the very dramatic changes of the regime of the geostationary orbit. Already with WARC 88³³, new principles had been adopted as to the access of States to the geostationary orbit³⁴. But the situation after the Tongasat affair is

³¹ On insurance issues see: **D.E.Reibel**, "Space Insurance and the Legal Aspects of Allocating Risk and Liability among State and Private Entities", (1993) *Colloquium* to be published.; **D.E.Cassidy**, "Allocation of Liabilities Between Government and Private Sector and Implications on Insurance for Space Commercialisation", (1990) *Colloquium* 23.; **P.D.Nesgos**, "The Future of Commercial and Industrial Activities in Space. Insurance and Implications", published in *4th International Conference, Assicurazioni Generali*, Rome March 1987; **P.D.Nesgos**, "Launch Liability Insurance and Contractual Risk Allocation", *Houston Space and Telecom Symposium*, June 1987; **J.S.Greenberg**, "Third Party Liability Insurance and Space Launches", *Space Policy*, August 1988, 211; **P.D.Nesgos**, "Satellite Launch Liability Risks", *Business Insurance*, October 29, 1990, 25; **M.Dahbi**, "Considerations on Satellite Liability Insurance", *Space Commerce, Proceedings of the Second International Conference on Commercial and Industrial Utilisations of Space*, Montreux, February 1988, Gordon & Breach Science Publishers, New York, 1989, 422.; **P.D.Nesgos**, "Recent Developments in Risk Allocation of Concern to the US Commercial Launch Industry and the Insurance Community", *5th International Conference Assicurazioni Generali*, Rome, March 1989.

³² The company is named Tongasat (Tonga Satellite Company) and is owned by the King and Princess of Tonga, along with Dr Mats Nilson, American businessman.

³³ **M.Smith**, "A New Era for the International Regulation of Satellite Communications", (1989) *XIV Annals of Air and Space Law*, 449.

³⁴ Intelsat, Tonga Dispute About Orbital Positions Continues, *Space News*, June 21-27, 1993, 8; Firms Request Tongasat Sanctions, *Space News*, Sept 6-12, 1993, 3

even more difficult and will certainly lead to creative thinking, and possibly institutional changes involving more powers of ITU³⁵. Such a case also poses questions as to the principle of non-appropriation of outer space and the fact that current regulations of the geostationary orbit may lead to appropriation of such orbit by States, but in the case of Tonga, also by private enterprise. Another issue connected with private telecommunications activities is the future projects of Low Earth Orbit satellites, in particular the future constellations of satellites which will provide communication links between mobiles³⁶. The entry of a number of private companies in the market poses new questions as to which regime should apply to such constellations of satellites and how regulations will develop at national and international level in the field³⁷.

Recent trends: privatisation and existing international organisations. - The influence of private enterprise and the trend to privatisation has come to a peak recently with proposals that certain international telecommunications organisations be privatised³⁸. Such a proposal has found some echo in the case of INMARSAT³⁹, where moves have been made towards introducing some sort of private features in the organisation. Similar proposals have been

³⁵ D.Riddick, "Why Does Tonga Own Outer Space?", (1994) XIX *Air and Space Law*, 15.; Officials Call ITU to Beef Up Regulations, *Space News*, January 24-30, 1994, 3; Make ITU a Stronger Referee, *Space News*, Commentary, January 24-30, 1994, 20.; L.Manuta, "Orbital Contention!", *Satellite Communications*, January 1994.

³⁶ Motorola Satellite Communications (Chandler, Ariz); Space Systems Loral (Palo Alto, Calif); TRW Space & Communications Group (Redondo Beach, Calif).

³⁷ Frequency Distribution Compromise Proposed, *Space News*, January 24-30, 1994, 1; Mobile Satellite Companies Face Frequency Shortage, *Space News*, January 31-Feb 6, 1994, 8.

³⁸ B.L.Crockett, Privatize Inmarsat and Intelsat, *Space News*, March 7-13, 1994, 19.

³⁹ Inmarsat Takes Steps Toward Privatization, *Space News*, October 18-24, 1

made in the case of EUTELSAT, where the response seems to be less positive⁴⁰, certainly because of the still heavy State monopoly on telecommunications services in Europe. Those steps are particularly important. It may not lead to involvement of private companies themselves but to the introduction of some private element in these organisations. It is for this reason that we found it interesting to be mentioned here.

Recent trends: taking into account the weaknesses of the private space activities. - During the past years, the tendency was the important development of private involvement in space activities. Recently, conclusions have been drawn of the drawbacks of too much privatisation. This is true in the field of remote sensing for instance. Indeed, the United States having opened the remote sensing market to private enterprise, decided in 1992 to have these activities back in the hands of the administration (the NASA)⁴¹. Private enterprises are not anymore the major actors in the field⁴². Another move should be mentioned in the field of launch services. Here, the idea is not to have the administration in charge of such commercialisation. The idea of Senator Hefley is to create a company, much like Comsat, which would commercialise American launchers. This proposal reflects the difficulty of these companies, individually, to face the conditions of the market and the competition with other launchers, as well as the liability risks⁴³. Those two examples show that although private involvement in space activities was seen as a must a few years ago, it certainly carries a number of drawbacks and it should not be used systematically. In particular, the business

⁴⁰ EUTELSAT DG Blasts INMARSAT, *Space News*, November 15-28, 1993, 1.

⁴¹ P.Salin, "L'évolution du régime juridique de la télédétection aux Etats-Unis", (1993) XVIII-I *Annals of Air and Space Law*, 241.

⁴² Landsat Plan Limits Sales Role of Eosat, *Space News*, May 31-June 6, 1993, 3.

⁴³ Press Release from Congressman Joel Hefley, January 4, 1993.

dimension in space activities is of importance, but one should remember that certain missions or services are to be carried out for the general interest. Pushing privatisation too far could bring to adverse results and one may wonder for instance what will happen to public utility routes, where the traffic is not very heavy, when international telecommunications organisations will be privatised? These issues are being discussed by authors lately, either praising the application of rules similar as those of air law to space transportation⁴⁴ or calling the attention to the dangers of deregulation and the lessons to be learned from airline deregulation⁴⁵.

To conclude with this patchwork of ideas, I would like to leave the reality for a few minutes and turn to prospective thinking. Certainly, at present, private space activities are to be found in the fields of telecommunications, remote-sensing, launching and microgravity experiments. But, what will these activities be in the future and which consequences will that have in terms of legal regime. First example: aerospace planes. Probably in the future, private carriers will operate these aerospace planes which take off and land as a plane but go through outer space. Which legal regime will be applied to these planes, as well as to their passengers and luggage⁴⁶. Which regime will apply to the exchange of traffic rights and what competition will take place between aerospace carriers and air carriers. Other example: there are projects, which will certainly succeed one day, to build stations on the Moon. Should private enterprise undertake activities in these stations which legal regime will be applied to them

⁴⁴ H.A.Wassenbergh, "The Law Governing International Private Commercial Activities of Space Transportation", (1993) 21 *Journal of Space Law*, 97.

⁴⁵ D.G.Monk, "The Lessons of Airline Regulation and Deregulation: Will We Make the Same Mistakes in Space", (1992) 57 *Journal of Air Law and Commerce*, 715.

⁴⁶ T.L.Masson Zwaan, "Legal Aspects of Aerospace Planes", *ECSL Summer Course Basic Materials* (Martinus Nijhoff Publishers, Dordrecht: 1993).

in performing their business? In particular what about the right of inspection⁴⁷ of other colonies in the station? Such a right may be incompatible with the trade secrets protection needed for the business of the company. Last example: should private enterprises send their personnel aboard a space station or a Moon station, and should they meet a capsule of astronauts from a space agency being in difficulty in space, certainly they would have to rescue them. But this means that they would have to stop their work and maybe cause a great loss of profit to their company, expecting the results of their experiments to put a product on the market⁴⁸. Which rules will apply to such situations? Of course, all of this still sounds like science fiction. But we should not forget that in 1956, launching a satellite into orbit also sounded like science fiction. Since the launch of Sputnik in 1957, 37 years have passed and they have passed fast. Space law has always been ahead of technology and we should make sure it remains so.

⁴⁷ Moon Treaty Article XV: *"Each State Party may assure itself that the activities of other States Parties in the exploration and use of the Moon are compatible with the provisions of this Agreement. To this end, all space vehicles, equipment, facilities, stations and installations on the Moon shall be open to other States Parties. (...)"*.

⁴⁸ S.H.Freeman, E.A.Idanomi, "Who's the Captain Kirk of this Enterprise? Regulating Outer Space Industry Through Corporate Structures", (1985) *University of California Davis*, 795, at 806.