

NEW INITIATIVES IN INTELLECTUAL PROPERTY LAW FOR SPACE ACTIVITIES

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¹ Introduction

The evolution of intellectual property law and its applicability to activities occurring in outer space has been continuing at a snail's pace over the last decades, while private investments now exceed public investments in the civilian sector, and market growth has been steadily tripling in volume (more than quadruple in value) each decade. The increasing commercialisation of space activities has thus, not surprisingly, led to a widening gap between the slowly evolving legal framework and the rapidly evolving legal problems arising from private enterprise and commercial exploitation.

As concerns Intellectual Property Rights (IPR) for outer space activities, the milestones are few and far between. We could cite the NASA act ² of 1981, which extends the exception of temporary presence ³ to space objects which enter the US territory only temporarily for the purposes of launch ; the 1988 Inter-Governmental Agreement (IGA) concerning the International Space Station (ISS), which provides an extension of territorial jurisdiction to ISS elements or modules carried on the UN registry of one of the signatory States ⁴ ; and the US

Space Bill ⁵ of 1991, which unilaterally extends the territorial jurisdiction of the US patent code to space objects "under control or jurisdiction" of the United States for patent infringements.

However, fuelled by industry concerns, the pace of change may be accelerating, as several new initiatives have been undertaken in various instances. The year 2001 may see the accomplishment of the work of the European Commission, which has issued a Proposal ⁶ for a Council Regulation on the Community Patent on 1 August 2000, in which the applicability of the Community Patent in Outer Space has been addressed ⁷. Furthermore, as a result of the recommendations of a technical workshop of the UNISPACE III conference held in July 1999 in Vienna, the World Intellectual Property Organisation (WIPO) now has a study in the definition phase of any problems which might arise from the use of IPR in outer space.

Finally, there is a recent proposition, at the initiative of France, for an item on IPR to be added to the agenda of the Legal subcommittee of the UNCOPUOS (United Nations Committee on the Peaceful Uses of Outer Space). The current form of the proposition, before its introduction to the Delegations, is for a four-year working plan to assess the current legal framework for the application of "terrestrial" intellectual property law to space activities, and the applicability of national legislation in outer space ;

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² 42 U.S.C. 2657 (K)

³ 35 U.S.C. 272 and article 5 ter of the Paris Convention of 1883

⁴ IGA art. 21, para.2 (1988)

⁵ 35 U.S.C. 105

⁶ COM(2000) 412 final, 2000/0177 (CNS)

⁷ *ibid*, art.3(2)

evaluation of the compatibility of the different elements of existing legal instruments among themselves, and with respect to the relevant provisions of the UN treaties ; assessment of the possible role of the COPUOS and the Legal Subcommittee concerning a regulation of the grant and subsequent use of IPR monopolies with extra-territorial effect in Outer Space by the Member States ; and the development of specific and concrete proposals to clearly establish the position of the Legal Subcommittee and the UNCOPUOS concerning the grant and use of IPR in outer space activities occurring outside of any national territory.

This paper shall give a progress report concerning these various initiatives, as well as a brief overview of future prospects. National initiatives in various countries shall also be briefly exposed.

Recent Evolution of Space Activities

Once reserved for the super-powers of the cold war space race, outer space has gradually become the theatre of massive private investments for civilian applications, in particular telecommunications, television broadcast, earth observation, and localisation and navigation aids. Entrepreneurial activities are in the planning stages for micro-gravity science and manufacturing, wideband internet access and interactive data delivery such as telemedicine or video on demand, outer space tourism, entertainment, and solar energy farms and lunar mining.

European civilian space investments totaled 5.32 Billion Euros for 1998 (last year for which figures are available), up only 3% over 1997 (roughly the rate of inflation).

US civilian space investments were approximately three times that figure. And in 1998, commercial funding outstripped government spending for the first time in history, a trend that is destined to

accentuate and accelerate in the coming years.

The primary result is increased commercial competition in a nearly flat market. The weapons in this competitive arena are price, politics, and technology, probably in that order of importance (although sometimes price may take a backseat to politics).

Intellectual Property Rights (IPR) are an increasingly important competitive weapon in the international marketplace, and their importance is rapidly increasing for space activities because of the trends mentioned above. However the existing legal framework for the protection, assertion and enforcement of IPR in outer space activities is woefully inadequate.

Prices for some satellite constellations currently in the news are about \$5 Billion for Motorola's Iridium, \$4.7 Billion for ICO (up from \$3.5 B), \$4.5 Billion for SkyBridge (up from \$3 B with 80 satellites instead of 60), and a whopping \$9-\$10 Billion for Teledesic's 288 satellite constellation (expert analysts contend that this figure is optimistically low).

As a rule of thumb, the accompanying ground segment (earth stations, satellite control, and user terminals in the newest systems) represents investment totalling between 1 to 3 times that of the space segment. And operator service revenues should amortise those investments in less than 3-5 years, particularly for the LEO and MEO satellites which have much shorter lifetimes than GEO satellites (3-5 years vs. 15 years).

An immediate result of such important investments, business plans, and the pots of gold at the end of the rainbow is that economic forces are inevitably dictating the law of the marketplace. When such sums are at play, politicians may be swayed, and in particular, some international diplomatic commitments may yield to economics.

At the same time, as in almost all sectors of activity involving high technology, high risk, high stakes and high

potential gains, there is a significant increase of aggressive behaviour on the part of IPR owners in the field of space activities, which may take the form of increased litigation or aggressive licensing campaigns. This of course makes it difficult for any newcomer to enter the marketplace unless he is prepared to pay a substantial initial entry ticket to acquit the costs of acquiring licenses of third party rights.

A particular difficulty is that of assessing the potential applicability of third party intellectual property rights, and via that assessment, to make a financial evaluation of potential risk of exposure to third party claims.

Current Legal Framework for IPR

Outer Space lies outside of all national territories, thus outside of the natural territorial jurisdiction of classical municipal patent law. Only the US has legislated to extend the applicability of its domestic patent law to space objects under jurisdiction or control of the US, wherever they may be found in outer space, via the US Space Bill ⁸ which effectively extends US jurisdiction for patent matters onto orbit under certain conditions.

This gives US patent holders, as well as US owners of space objects, a distinct and sometimes decisive competitive (and financial) advantage

⁸ 35 U.S.C. 105 reads in part : " Any invention made, used or sold in outer space on a space object or component thereof under the jurisdiction or control of the United States shall be considered to be made, used or sold within the United States for the purposes of this title, except with respect to any space object or component thereof that is specifically identified and otherwise provided for by an international agreement to which the United States is a party, or ... carried on the registry of a foreign state in accordance with the Convention of Registration of Objects Launched into Outer Space."...

because their patent is enforceable in a US court for activities occurring in outer space.

The code 35 USC 105 includes two exceptions for the exercise of patent rights. The first exception concerns items identified and otherwise provided for by an international agreement to which the US is a party ; this is the case for example of the International Space Station, whose intellectual property rights jurisdictions are governed by the Inter-Governmental Agreement ⁹.

The other exception is directed to a space object which is carried on the Registry of a foreign (non-US) state in accordance with the 1975 United Nations Convention of Registration of Objects Launched into Outer Space.

The author should like to point out the hypothesis that the UN Registry was neither conceived nor intended to serve as a criteria for regulating jurisdictional matters in domestic law, and as a result, is rather ill-suited to do so, as it neglects issues such as nationality of ownership, transfer of ownership after launch, or multiple launching states.

US patent law and IGA make explicit reference to the State of Registry to determine the applicable law. However, for space activities undertaken by entities in the private sector there remains the

⁹ IGA art. 21, para. 2 (1988), which reads in part : "... for purposes of intellectual property law, an activity occurring in or on a Space Station flight element shall be deemed to have occurred only in the territory of the Partner State of that element's registry, except that for ESA-registered elements any European Partner State may deem that the activity to have occurred within its territory.

For avoidance of doubt, participation by a Partner State, its Cooperating Agency, or its related entities in an activity occurring in or on any other Partner's Space Station flight element shall not in and of itself alter or affect the jurisdiction over such activity provided for in the previous sentence."

possibility of a wilful choice of the State of Registry.

U.N. Registry : In Which Country ?

Several legal consequences may govern the choice of a registry state for space objects : Ownership, liability, jurisdiction and control, hence applicable law.

The 1975 U.N. Registry Convention¹⁰ provides that the "Launching State" will register each object launched in a national register, and inform the U.N. Secretary General. However the "Launching State" has multiple definitions in art. 1 of the 1975 treaty :

- the State that launches
- the State that procures the launching
- the State from whose territory an object is launched ; or
- the State from whose facility an object is launched .

In a practical commercial launch, the States fulfilling these four conditions may not be identical, on the one hand, and could be chosen for convenience ("Forum Shopping"), on the other. However the Registration Convention provides that ¹¹ in the case of two or more launching States, they shall jointly determine which one shall register.

The consequences of this choice under international public law are found in the other international instruments, the

¹⁰ A/AC.105/572/Rev.1, 1023 UNTS 15

¹¹ *idem* art. II(2) : "Where there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object ... bearing in mind the provisions of article VIII of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies [1967 OST] , and without prejudice to appropriate agreements concluded or to be concluded among the launching States on jurisdiction and control over the space object and over any personnel thereof."

Liability Convention ¹² [1972] and the Outer Space Treaty ¹³ [1967]. They may be summarised as absolute liability for any damages caused by the object, obligation to exercise jurisdiction and control over the object, and the fact that ownership is not affected by the presence of the object in outer space.

However the consequences in domestic US law are that the space object registered on the US registry is to be considered as a part of the US territory for the application of US patent law.

Temporary Presence Exemption

There is a further exception for the applicability of US patent law which is not provided for in the US Space Bill, but rather in the NASA act of 1981 ¹⁴, conjugated with the applicable provisions of standard US patent law for terrestrial activities ¹⁵. The provision of US patent law is in fact the corresponding national legislation which incorporates the treaty obligations of the Paris Convention ¹⁶ of 1883 for the Protection of Intellectual Property, last revised in 1979.

The Paris Convention foresees that a Signatory State shall not consider as infringing domestic patent law : boats, planes, or terrestrial vehicles which penetrate temporarily or accidentally on their territory. This has been translated

¹² 961 UNTS 187, art II : " A launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface to the earth or to aircraft flight."

¹³ 610 UNTS 205, art VIII : "A State party to the Treaty on whose registry an object launched into outer space shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, ... is not affected by their presence in outer space or on a celestial body or by their return to the Earth."

¹⁴ *Cf. supra* note 2 : 42 USC 2657 (K)

¹⁵ *Cf. supra* note 3 : 35 USC 272

¹⁶ *Cf. supra* note 3 : art. 5 ter, Paris Convention of 1883.

into domestic US law as a bilateral relation which depends on a reciprocity condition with the country of origin of the vehicle¹⁷, as further explained below.

The NASA act¹⁸ assimilates a space object to a vehicle for the application of 35 USC 272. The articulation of these two articles is conceived to afford the privilege of temporary presence exemption to space objects, which enter the US temporarily for example for launch from a US launch facility, or for space objects which enter the US territory accidentally. However it is important to insist on the letter of the law : this exemption is afforded to space objects or vehicles of **any country which affords similar privileges** to space objects or vehicles of the United States.

While all of the Signatory States of the Paris Convention (well over a hundred States) afford similar privileges to land, air and sea vehicles of the United States, this is not necessarily the case for space objects. For the moment, no other nation has adopted a similar legislative disposition concerning space objects which penetrate temporarily for launching purposes, or accidentally on their territory.

¹⁷ 35 USC 272 : "The use of any invention in any vessel, aircraft or vehicle **of any country which affords similar privileges** to vessels, aircraft or vehicles of the United States, entering the United States temporarily or accidentally, shall not constitute infringement of any patent, if the invention is used exclusively for the needs of the vessel, aircraft or vehicle and is not offered for sale or sold in or used for the manufacture of anything to be sold in or exported from the United States." (emphasis added).

¹⁸ NASA Act of 1981 [45 U.S.C. 2657 (k)] : " Any object intended for launch, launched, or assembled in outer space shall be considered a vehicle for the purpose of section 272 of title 35, United States Code."

Analysis of the Legal Situation

One could be justified in demanding to what extent the absence of a formal legislation similar to the US NASA act could be penalising to foreign (non-US) entities who are involved in the manufacture, procurement, or operation of satellites.

First it should be recalled that the holder of a US patent is entitled to forbid third parties to manufacture, sell or offer for sale, import, and/or use the patented invention within the US territory, or to authorise and require royalty payment for any of the above acts. Secondly we recall that the US territory is extended to space objects under control or jurisdiction of the US (or its natural or legal subjects), with the notable exception of space objects carried on a foreign registry.

Foreign manufacturing thus escapes from being considered infringing a US patent by territory.

Actual sale occurs in the territory specified by the sales contract, thus can be conveniently arranged outside the US as necessary. However, since a space object under US jurisdiction or control, not carried on a foreign registry, is considered within the US territory for the purposes of the US patent code, the sale or transfer of title of such an object may be considered as a potentially infringing act, even if this act occurs on orbit (IOD or In Orbit Delivery).

In such a manner, it is conceivable that a space object manufactured and launched in one or more countries where no valid third party patent exists, and thus there is no terrestrial infringement possible, may become infringing of a US patent by the transfer of title on orbit to a US entity, if such object is under jurisdiction or control of the US or its natural or legal persons (this could include the case of control signals being sent to the satellite from US territories, for example the Virgin Islands).

Furthermore, the importation and/or use may cause problems for a foreign entity who chooses a US launcher.

In the absence of (foreign) national legislation which affords similar privileges to US space objects, the temporary presence exemption may not apply to importation for a US launch. This has not been tested in the courts, however in the famous Hughes case,¹⁹ lawyers for the plaintiff argued against the use of the temporary presence doctrine to exonerate foreign defendants, on the basis that reciprocity could not be demonstrated. The foreign defendants finally settled out of court for an undisclosed amount, so we have no case law. But the question has clearly been raised in court.

For example, a foreign entity who owns and/or operates a satellite which has been launched from the US may have an unexpected exposure to third party intellectual property rights arising from the use of an invention patented in the US. As noted above, it is not the nationality of the satellite **owner** which determines whether the space object is not to be considered as part of the US territory for the purposes of title 35 USC (patent code), but rather the state of registry, in other words the launching state. Even in the case where a US launch is procured by a foreign (non-US) entity, the obligation of absolute liability in case of damages would often lead to the solution that the US would be agreed upon as the launching state, leading to the application of US patent law even for use of an invention which only occurs on orbit.

Current Legislative Efforts

Of all of the national space legislation or regional legislation currently in preparation, to the author's knowledge,

¹⁹ For discussions of the Hughes case, cf. BNA vol. 52, pp. 250-252, idem vol. 46, pp. 428-430, idem vol. 36, pp. 555-556, idem vol. 26, pp. 491-492.

only one has actually incorporated a space-specific IPR provision to date, albeit in the phase of a proposition. This is the Proposal²⁰ for a Council Regulation on the Community Patent, released on 1 August 2000 by the Commission of the European Communities. It is now in the hands of the national Delegations of the Member States, where it is expected to cause heated debates on other issues such as language, procedure, and jurisdiction, thus it is likely that the regulation will not have the force of law in the very near future.

Although this proposition for a Community Patent would extend the territory of applicability to space objects, as does the US Space Bill, the provision for temporary presence²¹ is not worded exactly as that of the NASA act. Indeed, the explanation of this paragraph art.9(e) supplied by the Commission in the Proposal states that this point "(e) provides a clarification, in that it covers not only objects used in the construction or operation of aircraft or land vehicles, but also those used in other means of transport....spacecraft for example."

Although the Commission has expressed its intention, in separate comments, that temporary presence would apply to "other means of transport", including "spacecraft for example", this precision is not drafted explicitly into the proposed Regulation. It could thus be

²⁰ Cf. *supra* note 6, COM(2000) 412 final, article 3(2) : "This regulation shall apply to inventions created or used in outer space, including on celestial bodies or on spacecraft, which are under the jurisdiction and control of one or more Member States in accordance with international law."

²¹ Cf. *supra* note 6, COM(2000) 412 final, article 9(e) : "The rights conferred by the Community Patent shall not extend to : ... the use of the patented invention in the construction or operation of aircraft or land vehicles **or other means of transport** of non-member States, or of accessories to such aircraft or land vehicles, when these temporarily or accidentally enter the territory of Member States ; ..." (emphasis added)

argued that this legal instrument, at least formally, does not afford similar privileges to space objects, which are not mentioned explicitly in the texts. The legal question to be judged would then be: should a satellite be considered as a means of transport? The answer is not so clear.

To the author's knowledge, no other existing national or regional space law contains IPR provisions, and no other existing national or regional Intellectual Property law contains provisions which artificially extend the territory to space objects on orbit.

In any case, the British law (Outer Space Act of 1986), the Swedish law (Act on Space Activities (1982 : 963), the Australian law (Space Activities Act of 1998), the Russian Law on Space Activity of 1993, are all silent on IPR, territorial extensions, and temporary presence.

Further national legislation is currently being drafted in France, Italy, Brazil, India, Netherlands and Germany according to national sources close to these efforts.

Among these countries, France seems to be the one that is most sensitive to the issues of IPR, territoriality, and temporary presence. This is consistent with its status as a world-class space power, with a major domestic manufacturing of space objects, a large commercial space launch activity, a respectable space budget, and as foremost contributor to, and host to the headquarters of the European Space Agency.

However Brazil, India, and Sweden have expressed interest in adding intellectual property and temporary presence clauses to their space bills, and German and Italian representatives have been alerted to the problem.

International Initiatives

Other initiatives are beginning on the international scale. Following the Workshop on Intellectual Property (IP) and Space Activities held at the Unispace III convention in Vienna in July, 1999 under the auspices of the UN, WIPO officials have expressed their willingness to introduce a study of possible actions in the time frame 2000-2001, and the Director General has approved this study in principle for 2001.

A further recommendation of the above-mentioned Workshop on Intellectual Property (IP) and Space Activities of Unispace III, is that the question of IPR be considered for addition to the agenda of the Legal Subcommittee.

At the initiative of the French Delegation, a proposal for a four year working plan is currently circulated among Member States of the European Space Agency and could constitute the first joint proposition for a UNCOPUOS Legal Subcommittee agenda item coming from Europe as an entity.

A similar proposition has been put forth by the Delegation of South Africa in the last session²² of the Legal Subcommittee, but has yet not been followed up.

Future Prospects

As already put forth by this author in previous publications²³, the predictable result of a plurality of national legislations which extend their patent jurisdiction to outer space should be a certain variability in the different dispositions which are adopted, even if there is a certain effort towards harmonisation at the outset.

²² Thirty-ninth session, 27 March – 7 April 2000.

²³ Cf. for example IISL-99-IISL3.09, Smith B.L., "Recent Developments in Patents for Outer Space", in Proc. 42nd Colloquium on the Law of Outer Space, International Institute of Space Law, AIAA, Reston, VA, USA, 2000.

This will result in a patchwork of territorial considerations in order to determine which is the applicable law in a given case. To further complicate matters, the applicable law may change while the space object is on orbit, as a result of transfer of title, or transfer of control of the satellite. These acts are occurring more and more frequently, as satellites are being salvaged after partial failure, unsuccessful orbital insertion, or even bankruptcy of the initial owners. Forum shopping is likely to become a favourite pastime under such a piecemeal regime.

Possible Corrective Actions : Globalisation

As previously proposed²⁴ by this author, a preferable solution would be "Globalisation" of the jurisdiction in outer space activities, i.e. a single, world-wide IP legislation for space activities. This could be imagined as a treaty under the auspices of the UNCOPUOS. We could recommend to **establish space and its accesses (launch sites, vehicles) as a single territory with a single, uniform law.**

A "Space Patent" could be imagined as a new "Country" designation on a PCT (Patent Co-operation Treaty) application, to be examined and granted under the auspices of the WIPO (World Intellectual Property Organisation).

Such a space patent, once granted, should be administered and interpreted by **a single, universal enforcement body** such as an international court of law or an international arbitration authority. Perhaps such an arbitration authority could be created under the auspices of the World Trade Organisation (WTO), aided by the World Intellectual Property Organisation (WIPO) for the IPR aspects. WIPO has already established a board of arbitration for Intellectual Property matters, and it should not be difficult for them to acquire

the necessary competence to act on space matters.

This board could be empowered to arbitrate on matters such as space patent validity and compatibility with international law, alleged infringement, conditions of licensing to third parties, etc.

We urge the necessity of a globalisation of applicable law, which could be obtained through the efforts of an international treaty organisation such as UNCOPUOS, as recommended by the Workshop on Intellectual Property (IP) and Space Activities held at Unispace III in Vienna in July, 1999 under the auspices of the UN.

Conclusions

As we analyse the situation described in the preceding pages, we see that the economic environment of space activities is evolving extremely rapidly, and that the enormous investments involved are leading to a more and more aggressive behaviour on the basis of Intellectual Property Rights granted by national jurisdictions. Finally, this is accompanied by an increasing awareness of the national legislators, prompted by their national space industrials, of the necessity of appropriate provisions to protect intellectual property incorporated into space objects. Launching states should take particular care to ensure that they are able to fulfil the reciprocity condition in order to enjoy temporary presence exemption for their space objects which may be launched from the US.

Although to date, only one national jurisdiction, the US, has attempted to accompany this evolution by modifying its legislation, the idea seems to be dawning on other jurisdictions as well. Others may follow, but we see that there is still tremendous inertia on the part of legislators, who are for the most part unaware of the problems which arise between IPR law and space activities.

²⁴ *Ibid.*