

**TOWARDS A CODE OF CONDUCT
FOR THE EXERCISE OF
INTELLECTUAL PROPERTY RIGHTS (IPR)
IN SPACE ACTIVITIES --
MODERATION OF THE MONOPOLY ?**

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¹Abstract

Intellectual Property Rights (IPR) are regarded as an insurance for high-risk industrial investments in technology. However existing patent law affords no firm basis for territorial extension to extra-terrestrial activities on orbit and beyond.

In order to attract substantial private investments for commercial space activities, legal certainty is a prerequisite, in particular in order to accurately assess potential infringement liability. The existing legal framework is a patchwork of unilateral territorial extensions (cf. US Space Bill), doctrine based on maritime law, a smattering of US case law, and the one shot InterGovernmental Agreement (IGA) for the international space station Alpha. This explosive mixture is likely to raise more legal problems than it solves.

It must not be forgotten that IPR is a competitive weapon, whose principal goal is to secure and enforce a temporary monopoly for the owner. As such, in its known forms, IPR is fundamentally

antithetical to the "common benefit" tenants of the Outer Space Treaty (OST). This contradiction will be illustrated with a few real-life examples (HAC, TRW). These examples reinforce the conclusion that national patent laws and the provisions of the OST may readily lead to conflict. But how may such conflicts be resolved ?

Legal certainty may be best obtained by establishing a universal legal framework by treaty among nations having an interest in space activities. Further, the drafting of such a treaty should include provisions for the sharing of progress in space technologies for the benefit of all mankind, in conformity with the spirit of the OST.

The author proposes that the traditional IPR monopoly be diluted by a "code of conduct" consisting of treaty provisions for the use of IPR in space applications. Inspiration may be found in other fields with a similar broad interest for mankind, for example human genomes, medicinal plants, telecommunications standardisation, etc. Compulsory cross licensing could be proposed among signatory nations under fair and reasonable terms and conditions, perhaps with a predefined royalty scheme based on a percentage of profits (rather than a percentage of revenues).

Such a clearly defined sharing policy is necessary to allow would-be spacefaring nations now in the starting blocks to catch up to those whose space supremacy has

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been acquired by decades of defense-related, taxpayer funding during the cold-war space race. Continuing to apply traditional IPR monopoly thinking to space activities will only perpetuate competition and conflict in place of cooperation and sharing of benefits of space activities for the common benefit of mankind.

Basic Principles

In order to examine conflicts which may arise between application of existing Intellectual Property (IP) law and the basic tenants of the Outer Space Treaty (OST), we shall first recall the principles as expressed in the various legal instruments, as well as some specific US IP-related legislation and the IP clauses of the InterGovernmental Agreement (IGA) for the international space station Alpha.

OST Article 1, Paragraph 1 states, in what has been called the "Space Benefits" clause :

"The exploration and use of outer space ... 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."

Outer space... shall be free for exploration and use by all states without discrimination of any kind, on a basis of equality and in accordance with international law, ..."

There shall be freedom of scientific investigation in outer space ... and States shall facilitate and encourage international co-operation in such investigation."

Article II continues :

"Outer space ... is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."

On the other hand, the basic principles underlying national IP law may be illustrated by one of the most venerable texts on the matter, the United States Constitution (1787). Article 1, section 8, paragraph 8 states :

"Congress shall have power ...to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries"
(emphasis added)

President Bush, when commenting on his signature of the US Space Bill, ² explained how this bill would promote progress of science and useful arts by securing a temporary monopoly for US commercial entities which would apply also to space in the same manner that they would receive if their activities were conducted on earth (i.e. in the US).

The motivation for the US Space Bill as expressed by President Bush, was to obtain legal certainty that US patent law protection would be extended to Outer Space for US entities under certain broad conditions. The US Space Bill adds an article ³ to US patent law, which 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, ³ 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

² S459, Nov. 16, 1990, publ. in BNA vol. 41, pp. 90-93 (11/22/90).

³ 35 U.S.C. 105

Objects Launched into Outer Space."...

The US Space Bill thus follows the "flagship principle"⁴ as applied to vessels on the high seas, or aircraft flying over international waters. This "flagship principle" is pursued to its logical limits in the provisions governing applicable law (including, but not limited to IPR law) in the IGA for the international space station Alpha, which states⁵:

"... 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."

Industry Expectations from IPR

In practice, industry has certain needs and expectations which motivate the investments required to obtain and use Intellectual Property Rights (IPR). Thinking habits of space industry players come from the historical roots of the terrestrial practices of earth-bound industry. In the present environment, space players are still surrounded on all sides by terrestrial practice. And most space IPR practitioners have started their own trade with terrestrial practice.

⁴ cf. Senate Report on S 459, publ. in BNA vol. 41, p. 91 (11/22/90): "Extraterritorial application of the patent laws".

⁵ IGA art, 21, para. 2 (1988).

In addition to identified past and present contributions to industry expectations, I think it is safe to say that there are many expectations which come from simply unfounded hopes, or plain old "wishful thinking".

So what about the content of industry expectations? A partial list must include at least the following main expectations; whether justified or not.

Industry and practitioners alike cite the alleged "protection" of R&D investment. This may mean simply the recovery of the R&D investment, or, on the other hand, may be extended to include the future fruits of such an investment. Visionaries and optimists may go so far as to speak of ensuring not only the autonomy, but also the very survival of the enterprise as something which can and should be protected by acquisition of IPR.

A more justified expectation is that IPR should confer a competitive advantage, either to win contracts or to otherwise exclude competitors from using a cost-saving innovation or an improved technical solution.

Further commercial and marketing advantages are also often cited by industrial firms and the inventors themselves. For example, the overall image of the firm is enhanced by IPR generated within the firm. Or that granted patents and even pending patents constitute a proof of competence in the "field" which upon closer examination, may be revealed to be only casually related to the filed patent or to the invention itself.

Perhaps the most realistic expectation one could have is the usefulness of IPR in a defensive mode---against third party attacks on the basis of third party rights. Having a well-garnished patent portfolio can be useful in coming to a friendly agreement when approached by a hostile third party, if it can be argued that the third party is also a potential infringer, or that he could benefit from accepting a cross-license instead of continuing with litigation.

Finally, as reflected in President Bush's statement concerning the US Space Bill, it is hoped that IPR may also be used to

attract private investment for commercial space endeavors by minimising risks and maximising opportunities for obtaining economic returns.

Possible Conflicts

Is there conflict between 1) IPR use ; 2) OST ; 3) principles of IPR ? Between industry expectations and the existing legal framework for exercise of IPR in space endeavors ?

There would seem to be a fundamental conflict between a temporary monopoly granted to the owner of IPR, and the broad general terms of the OST Space Benefits clause. In some cases, IPR may also conflict with the non-appropriation clause of OST (Art. 2). We will illustrate such possible conflict by reference to a couple of real cases in the following paragraphs, which may also lead us to ask if there may be a contradiction between the use of IPR in space, and the basic underlying principle of IPR itself, i.e. to promote the progress of science and the useful arts.

Our first example concerns a US patent granted to TRW in July 1995 ⁶. The main claim of this patent may be interpreted as reserving an orbital "shell" surrounding the earth between the altitudes of 5600 and 10,000 nautical miles, for virtually all conceivable practical applications in the field of satellite-based communications to mobile handsets.

As soon as the patent was granted, a foreign (non-US) competitor, ICO Global Communications Ltd., was warned that its planned satellite system was considered to be a potential infringement of that patent. The warning was followed by a lawsuit to enforce the monopoly, and to exclude that foreign competitor from implementing a global mobile satellite communications system having satellites in the forbidden (appropriated) altitude range mentioned in the main claim.

This action based on legitimately obtained US IPR seems to be in direct

⁶ US-A-5,433,726 to Horstein et al.

conflict with both the non-appropriation (Art.II) and the Space Benefits (Art. I) provisions of the OST.

The TRW-ICO conflict was recently settled, according to press reports, by the conclusion of a "non-aggression" pact between the currently identified major players proposing global mobile communications satellite systems : Odyssey (TRW), Iridium (Motorola), ICO (Inmarsat), Globalstar (Space Systems Loral et al.), Teledesic (Bill Gates et al.), ... But will such a non-aggression pact also be graciously extended to any and all newcomer competing systems ? For the moment, the answer depends primarily on the goodwill of the patent owners, and not on the terms of the OST which apparently do not prevent them from exercising their enforcement rights before a US Federal Court.

Our second example concerns the famous Hughes Aircraft Company (HAC) Williams patent ⁷, concerning a method for obtaining and maintaining satellite attitude on orbit. Proper attitude is necessary in order to allow the satellite to properly aim its directional antennas in order to fulfill communications missions, and in some platform architectures, to orient the solar energy collectors to supply electrical energy to the payload.

Once again, shortly after this patent was granted in 1973, HAC attacked the US Government for infringement in the same year, followed by multiple attacks on foreign entities. In this case, litigation dragged on for years, practically during the whole term of the patent, and by the time the first judgement was handed down in 1983, there were 108 allegedly infringing craft, although when the litigation started there were only 14 satellites incriminated.⁸ HAC had not sought an injunction or a temporary restraining order to prevent the launches of the additional satellites, and was rewarded

⁷ US-A-3,758,051, 1973.

⁸ 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.

financially by the substantial (multibillion dollar) damages awarded.

However, it would have theoretically been possible, especially concerning foreign entities, to request the court to halt the alleged infringing activities pending final judgement of the case. If this had happened, in view of the necessity of a method for maintaining the satellite attitude in order to fulfill communications missions, this patent could be seen to hinder, rather than to promote, the progress of science and the useful arts, at least during its term of enforcement.

These two examples serve to illustrate that in practical situations in the use of IPR, conflicts may arise with the basic tenants of the OST, and even with the fundamental underlying principles of IPR itself.

Existing attempts to obtain legal certainty for IPR in space activities through extension of territorial sovereignty via the flagship principle (e.g. US Space Bill, IGA) present only ad-hoc, piecemenal solutions concerning the forum for IPR enforcement. However these efforts do not attempt to address the fundamental underlying conflicts illustrated above.

Analogous Conflicts in Other Fields

Space endeavors are not the only field in which conflicts arise in the application of IPR to activities having an interest for all mankind. Perhaps we can learn from these analogous situations and the methods attempted to resolve the ethical problems arising.

In a first example, US patents have recently been granted concerning therapeutic uses of certain medicinal plants imported from India, and their pharmaceutical derivatives. The Indian medical profession, according to press reports, is stunned with disbelief, as these plants and their medicinal properties have been known and used indigenously for centuries. Indian doctors are now working to find prior published accounts in order to invalidate the patents, but they are

encountering some difficulty as the use of such plants is in fact a folk tradition handed down through generations. As such, these traditional uses are more likely to be referred to in allegories and in novels than in medical treatises.

The reader will probably be aware of the highly mediatised attempts by the US National Institutes of Health (NIH) to patent thousands of human gene fragments as they were identified, without even a hint as to their function or usefulness. In fact, the corresponding patent applications were computer-generated directly from experimental results, practically without human intervention.

The filing of these patents caused great emotions in the international community for ethical reasons, and led to diplomatic intervention from foreign governments (France in particular). The applications were withdrawn, so that the issue of their patentability was never finally decided by the USPTO (although rejected in the first Office Action).

In a technical field a bit closer to space endeavors, namely that of telecommunications standardisation, conflicts have arisen from the standardisation of patented methods and technology. The owners of such patents then find themselves in a position of absolute domination, as such standards render the use of the patented method or technology mandatory.

This problem has been addressed by a number of standards bodies, of which the most recent example is that of ETSI (the European Telecoms Standardisation Institution). In long, hard-fought negotiations between the various industry players and telecoms operators which make up ETSI, a compromise was eventually found. Dominant industry players, in particular some of the US firms, did not want to see any dilution of their IPR strength and resulting market domination. At one point, they were nearly ejected from ETSI for this predatory attitude and their unwavering stance.

Finally, a compromise was reached, including declaration of relevant IPR during the standardiation process, and a committment from holders of standard-relevant IPR to make licenses available under fair and reasonable terms and conditions. If such committments are not given, then the patented technology or method is barred from standardiation.

Possible Resolutions of IPR in Space

In order to resolve apparent or potential conflicts with fundamental principles which may arise from the use of IPR in space activities, we propose that a code of conduct be elaborated for such use.

This code of conduct should reflect the basic principles and rely on them for its terms. We are committed to promoting the progress of science and the useful arts, while rewarding inventors for their efforts, and procuring Space Benefits for all mankind. Any appropriation of any region of space for any use should be formally precluded. Patentability incompatible with the basic principles should be excluded. Such exclusion would be most effective if operated in the patent examination phase.

A first step is reflected in the UN Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interests of All States, Taking into Particular Account the Needs of Developing Countries,⁹ which states in particular :

in Para. 2 : " States are free to determine all aspects of their participation in international cooperation ... on an equitable and mutually acceptable basis. Contractual terms in such cooperative ventures shold be fair and reasonable and they should be in full compliance with the legitimate rights and interests of the parties concerned, as, for example, with intellectual property rights. "

And in Para. 5, last alineas :
"International cooperation, while

taking into particular account the needs of developing countries, should aim, *inter alia*, at the following goals ...

... Facilitating the exchange of expertise and technology among States on a mutually acceptable basis. "

We urge the necessity of a harmonisation, a uniformisation of applicable law, which could be obtained through the efforts of an international treaty organisation such as UNCOPUOS.

Modest Recommendations

Whereas the space industry is a truly global endeavor at present, the playing field is not level for all of the global players. This is related to several problems above, plus favouritism of governments and contracting organisations towards their own national champions.

The best we could hope for in a free market economy of space-related endeavors would be to reap the (until now) illusory expectations of industry and private investors as exposed above. This would surely be limited in practice, but industry would like to be able to use IPR to protect its R&D investments, to gain competitive advantages such as marketing and commercial advantages, and to be able to continue industrial pursuits without fear of third party aggressions on IPR issues. These expectations must remain compatible with the basic principles of promoting the progress of science and the useful arts, while ensuring appropriate rewards for inventors, and allowing all states to reap Space Benefits regardless of their respective levels of scientific or economic development.

As exposed above, a major and necessary step towards achieving such a situation is to **establish legal certainty** for IPR issues in space-related activities. Obtention and enforcement of IPR must be clarified in view of disparate territorial principles.

⁹ A/AC.105/L.211, 11 June 1996.

The obvious question to be resolved is that of the universality vs territoriality or nationality question. However in view of the general interest of space-related activities to mankind as a whole, as reflected in the terms of the Outer Space Treaty, we should perhaps consider at length the possibility of developing a fair scheme which strikes a balance between the private interests which generate innovation at the expense of financial and human resources, and which hope to capitalize on those investments ; and the wider interests of the planet, perhaps through some sort of compulsory licensing scheme under fair and reasonable terms and conditions.

The best solution may well be to **establish space and its accesses (launch sites, vehicles) as a single territory with a single, uniform law**. This could be an international treaty elaborated for example by COPUOS, and 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.

To further facilitate the application of IPR law in Outer Space, it may be considered expedient to create a "Space Patent" , which could be for example a designation on an international patent application under the Patent Cooperation Treaty. Such designation would indicate that the resulting patent would be interpreted and enforced by the above arbitration authority according to the above single uniform law, concerning space objects and space activities, instead of being judged according to national law in a national court.

The UNCOPUOS Declaration is a first step to show the way to proceed. The field of IPR and space activities is only beginning to take on its economic and ethical importance. The time is ripe for efforts from the Legal Subcommittee to balance the needs and rewards of the various actors in space activities and to work out a legal framework which can take them into the 21st century with minimum conflict and maximum progress and cooperation.