

27: Integrated Circuits

Article 35 Relation to the IPICT Treaty

Members agree to provide protection to the layout-designs (topographies) of integrated circuits (referred to in this Agreement as "layout-designs") in accordance with Articles 2 through 7 (other than paragraph 3 of Article 6), Article 12 and paragraph 3 of Article 16 of the Treaty on Intellectual Property in Respect of Integrated Circuits and, in addition, to comply with the following provisions.

Article 36 Scope of the Protection

Subject to the provisions of paragraph 1 of Article 37, Members shall consider unlawful the following acts if performed without the authorization of the right holder:* importing, selling, or otherwise distributing for commercial purposes a protected layout-design, an integrated circuit in which a protected layout-design is incorporated, or an article incorporating such an integrated circuit only in so far as it continues to contain an unlawfully reproduced layout-design.

[Footnote]* The term "right holder" in this Section shall be understood as having the same meaning as the term "holder of the right" in the IPICT Treaty.

Article 37 Acts Not Requiring the Authorization of the Right Holder

1. Notwithstanding Article 36, no Member shall consider unlawful the performance of any of the acts referred to in that Article in respect of an integrated circuit incorporating an unlawfully reproduced layout-design or any article incorporating such an integrated circuit where the person performing or ordering such acts did not know and had no reasonable ground to know, when acquiring the integrated circuit or article incorporating such an integrated circuit, that it incorporated an unlawfully reproduced layout-design. Members shall provide that, after the time that such person has received sufficient notice that the layout-design was unlawfully reproduced, that person may perform any of the acts with respect to the stock on hand or ordered before such time, but shall be liable to pay to the right holder a sum equivalent to a reasonable royalty such as would be payable under a freely negotiated licence in respect of such a layout-design.

2. The conditions set out in subparagraphs (a) through (k) of Article 31 shall apply mutatis mutandis in the event of any non-voluntary licensing of a layout-design or of its use by or for the government without the authorization of the right holder.

Article 38 Term of Protection

1. In Members requiring registration as a condition of protection, the term of protection of layout-designs shall not end before the expiration of a period of 10 years counted from the date of filing an application for registration or from the first commercial exploitation wherever in the world it occurs.
2. In Members not requiring registration as a condition for protection, layout-designs shall be protected for a term of no less than 10 years from the date of the first commercial exploitation wherever in the world it occurs.
3. Notwithstanding paragraphs 1 and 2, a Member may provide that protection shall lapse 15 years after the creation of the layout-design.

1. Introduction: terminology, definition and scope

Integrated circuits (often called “chips”) are the core components of the information technology industry. They are essential components in any digital equipment, and have been incorporated into a great variety of other industrial articles, ranging from machine tools to all kinds of household and consumer devices.

Integrated circuits consist of an electronic circuitry developed on the basis of a tri-dimensional design,⁹⁸⁴ incorporated into a substrate, generally a solid sheet of semiconductor material,⁹⁸⁵ typically silicon, and less commonly germanium or gallium arsenide.⁹⁸⁶ Integrated circuits comprise a range of products (microprocessors, dynamic memories, programmable logic devices, etc.).

Both the design and, particularly, the production of such circuits require, because of the microscopic size of the transistors and other electronic components inserted into a chip, significant technical capabilities and heavy investments in plant facilities. The manufacturing technologies and production plants are under the control of a relatively small number of companies mainly from the USA and Japan. South Korea, Taiwan Province of China and Singapore have actively supported the development of a local semiconductor industry, while China, Ireland, Israel, Malaysia and, more recently, Costa Rica, have pursued investments of foreign semiconductor manufacturers.⁹⁸⁷

⁹⁸⁴ For this reason, European legislation, as indicated below, opted for the term “topography” rather than “design”.

⁹⁸⁵ Because of the properties of the materials used, integrated circuits are also called “semiconductors”. Materials other than semiconductors (such as sapphire) may also be used as a substrate.

⁹⁸⁶ See, e.g., Jay Dratler, *Intellectual Property Law: Commercial, Creative, and Industrial Property*, Intellectual Property Series, Law Journal Seminars-Papers, Vol. 2, New York 1997, pp. 8–6 [hereinafter Dratler].

⁹⁸⁷ See, e.g., Debora Sper, *Attracting high technology investment*. INTEL's Costa Rican Plant, FIAS/World Bank, Occasional Paper No. 11, Washington D.C. 1998.

2. History of the provision

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TRIPS provides for the protection of the layout designs (or topographies) utilized in integrated circuits. Such protection extends to the integrated circuits that contain such designs or topographies, as well as, under certain conditions, to the industrial products that incorporate the integrated circuits. The Agreement heavily relies in this matter on the standards of protection provided for under the Washington Treaty on Intellectual Property in respect of Integrated Circuits (the “Washington Treaty”), despite the fact that this Treaty, adopted in 1989, never entered into force. The Agreement obliges Members to protect the layout-designs (topographies) of integrated circuits according to Articles 2 through 7 (except Article 6.3), Article 12 and Article 16.3 of the Washington Treaty, plus a number of additional obligations specified by the Agreement.

2. History of the provision

2.1 Situation pre-TRIPS

The protection of layout designs of integrated circuits as a specific subject matter was initiated in the United States in 1984, with the approval of the Semiconductor Chip Protection Act (“SCPA”). The decline of United States competitive advantages in chip production and trade during the 1980’s prompted the U.S. Congress to adopt a *sui generis* protection. Industry was particularly concerned with the increasing strength of Japanese competitors and their ability to eventually copy American designs.

Though the U.S. Congress considered the possibility of protecting integrated circuits designs under copyright, the SCPA established a *sui generis* regime that provided for ten years’ protection; registration was made compulsory within two years of the first “commercial exploitation” of a “mask work”⁹⁸⁸. A special provision allowing for “reverse engineering” was included, following the practices prevailing in the semiconductor industry. The SCPA, in addition, included a strict material reciprocity clause under which layout designs originating in other countries would be protectable in the United States only if those countries granted similar protection to U.S. designs.

This reciprocity clause forced Japan to rapidly adopt similar legislation,⁹⁸⁹ followed by the European Communities⁹⁹⁰ and other developed countries.

WIPO, shortly after the enactment of the SCPA, initiated studies and consultations in order to establish an international treaty on the matter. It convened a Diplomatic Conference which adopted the Washington Treaty based on the *sui generis* approach first introduced by U.S. law without excluding, however, the application of other forms of protection.

⁹⁸⁸ This terminology corresponds to the technology used at the time of adoption of the SCPA, which was based on the utilization of “masks” for the reproduction of layouts. A mask was a template whose configuration controlled the deposition, doping, or etching of specific areas on each succeeding layer of a wafer. Where the mask had holes, new material was deposited or existing material was doped or etched. The manufacturer used a series of masks of different configurations in the proper order to build upon the wafer the collection of transistors and other components required for the electronic design (Dratler, pp. 8–7).

⁹⁸⁹ “Act concerning the circuit lay-out of a semiconductor integrated circuit” (law No. 43).

⁹⁹⁰ Council Directive on the Legal Protection of Topographies of Semiconductor Products, 87/54/EEC.

2.2 Negotiating history

The Washington Treaty was negotiated in parallel with TRIPS. Though adopted in 1989, the USA and Japan did not sign the Treaty, due to their dissatisfaction with some of its provisions, particularly those relating to compulsory licenses and acquisition of products containing infringing semiconductors.⁹⁹¹ These were precisely the main areas dealt with during the TRIPS Agreement negotiations.

The negotiations on this subject in the Uruguay Round were less difficult and controversial than in other areas, with the exception of the issue relating to the extension of protection to industrial goods and the imposition of payment obligations on *bona fide* acquirers (now under Article 37 of TRIPS). Developing countries were reluctant to accept these obligations, as they were during the Diplomatic Conference that drafted the Washington Treaty in 1989. The Anell Draft indicated the outstanding differences.

2.2.1 The Anell Draft

“SECTION 6: LAYOUT-DESIGNS (TOPOGRAPHIES) OF INTEGRATED CIRCUITS

1. Relation to Washington Treaty

1. PARTIES agree to provide protection to the layout-designs (topographies) of integrated circuits in accordance with the [substantive] provisions of the Treaty on Intellectual Property in Respect of Integrated Circuits as open for signature on 26 May 1989 [, subject to the following provisions].

2. Legal Form of Protection

2A The protection accorded under this agreement shall not prevent protection under other laws.

3. Scope of the Protection

3A Any PARTY shall consider unlawful the following acts if performed without the authorisation of the holder of the right:

3A.1 incorporating the layout-design (topography) in an integrated circuit;

3A.2 importing, selling, or otherwise distributing for commercial purposes a protected layout-design (topography), an integrated circuit in which a protected layout-design (topography) is incorporated or a product incorporating such an integrated circuit.

4. Acts not Requiring the Authorization of the Holder of the Right

4A.1 PARTIES may exempt from liability under their law the reproduction of a layout-design (topography) for purposes of teaching, analysis, or evaluation in the course of preparation of a layout-design (topography) that is itself original. This provision shall replace Articles (2)(a) and (b) of the Washington Treaty.

4A.2 The act of importing, selling, or otherwise distributing for commercial purposes [an unlawfully reproduced layout-design (topography),] [an integrated circuit incorporating an unlawfully reproduced layout-design (topography) or] a product incorporating an unlawfully reproduced layout-design (topography) [shall] [may] not

⁹⁹¹ See Carlos Correa, *Intellectual Property in the Field of Integrated Circuits: Implications for Developing Countries*, World Competition, vol.14, No.2, Geneva 1990.

2. History of the provision

itself be considered an infringement if, at the time of performance of the act in question, the person performing the act [establishes that he] did not know and had [no reasonable grounds to believe] that the layout-design (topography) was unlawfully reproduced. However, PARTIES [shall] [may] provide that, after the time [of receipt of notice] [that the person comes to know or has reasonable grounds to believe] that the layout-design (topography) was unlawfully reproduced, he may perform any of the acts with respect to the stock on hand or ordered before such time, but shall be liable to pay [a reasonable royalty] [an equitable remuneration] to the right holder.

4A.3a Non-voluntary licences shall not be granted for purposes or on terms which could result in a distortion of international trade.

4A.3b The conditions set out at point 5 of Section 5 above shall apply mutatis mutandis to the grant of any non-voluntary licences for layout-designs (topographies).

4A.3c Non-voluntary licences shall not be granted for layout-designs (topographies).

5. Term of Protection

5A (i) In PARTIES requiring registration as a condition of protection, layout-designs (topographies) shall be protected for a term of no less than 10 years from the date of [filing an application for registration] [registration] or of the first commercial exploitation wherever in the world it occurs, whichever is the earlier [, except that if neither of the above events occurs within 15 years of the first fixation or encoding there shall no longer be any obligation to provide protection].

(ii) In PARTIES not requiring registration as a condition for protection, layout-designs (topographies) shall be protected for a term of no less than 10 years from the date of the first commercial exploitation wherever in the world it occurs [, except that if a layout-design (topography) is not so exploited within a period of 15 years of the first fixation or encoding, there shall no longer be any obligation to provide protection].

[(iii) If registration is required by law, and no application is filed, the protection of the layout-design (topography) shall lapse after two years from the date of the first commercial exploitation wherever in the world it occurs.

(iv) Notwithstanding (i), (ii) and (iii) above, protection shall lapse 15 years after the creation of the layout-design (topography).]⁹⁹²

2.2.2 The Brussels Draft

The Brussels draft provisions contained language very similar to the current version of Articles 35–38 of TRIPS. It provided:⁹⁹³

“PARTIES agree to provide protection to the layout-designs (topographies) of integrated circuits (hereinafter referred to as “layout-designs”) in accordance with the substantive provisions of the Treaty on Intellectual Property in Respect of Integrated Circuits as opened for signature on May 26, 1989 and, in addition, to comply with the following provisions.

⁹⁹² Chairman's report to the Group of Negotiation on Goods, document MTN.GNG/NG11/W/76, of 23 July 1990.

⁹⁹³ Draft Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Revision, Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, MTN.TNC/W/35/Rev. 1, 3 Dec. 1990.

Subject to the provisions of Article [37](1) below, PARTIES shall consider unlawful the following acts if performed without the authorization of the holder of the right: importing, selling, or otherwise distributing for commercial purposes a protected layout-design, an integrated circuit in which a protected layout-design is incorporated [, or an article incorporating such an integrated circuit. Rights extend to an article incorporating an integrated circuit only insofar as it continues to contain an unlawfully reproduced layout-design.]

Notwithstanding Article [36] above, no PARTY shall be obliged to consider unlawful the performance of any of the acts referred to in that paragraph in respect of an integrated circuit incorporating an unlawfully reproduced layout-design [or any article incorporating such an integrated circuit] where the person performing or ordering such acts did not know and had no reasonable ground to know, when acquiring the integrated circuit [or article incorporating such an integrated circuit], that it incorporated an unlawfully reproduced layout-design. [PARTIES shall provide that, after the time that such person has received sufficient notice that the layout-design was unlawfully reproduced, he may perform any of the acts with respect to the stock on hand or ordered before such time, but shall be liable to pay to the holder of the right a sum equivalent to a reasonable royalty in a freely negotiated licence in respect of the layout-design.]

The conditions set out in subparagraphs (a)–(l) and (o) of Article [31] above shall apply *mutatis mutandis* in the event of any non-voluntary licensing of a layout-design or of its use by or for the government without the authorization of the right holder.

[The final draft provision was essentially identical to Article 38, TRIPS Agreement].”

At the time of the Brussels Draft, delegations were still divided over the question whether to extend the coverage of the provision to articles incorporating integrated circuits which in turn incorporate unlawfully reproduced layout-designs. Under the final version of TRIPS, this extension was then agreed upon. Under TRIPS, the possibility of a *bona fide* acquisition exists therefore not only with respect to integrated circuits, but even as to products containing integrated circuits.

The reference in the Brussels Draft to Article 31(a)–(l) and (o) is slightly different from the current version in Article 37, TRIPS Agreement; the reason for this is that at the time of the Brussels Draft, the draft provision on compulsory licenses showed a slightly different structure than today.⁹⁹⁴ As under the current version of TRIPS, the provision on dependent patents (i.e. paragraph (m) of the Brussels Draft provision on compulsory licenses) was excluded from non-voluntary licensing of layout-designs. The other exclusion referred to in the Brussels Draft above concerned the grant of compulsory licenses in case of non-working or insufficient working (i.e. paragraph (n) of the draft provision on compulsory licenses). This exclusion was not reproduced in the TRIPS text of Article 37.2, because the final version of Article 31 of TRIPS contains no reference to non-working.

⁹⁹⁴ For details, see Chapter 25.

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3.1 Definitions of products covered by the IPIC Treaty

An integrated circuit is, according to the Washington Treaty, “a product, in its final form or an intermediate form, in which the elements, at least one of which is an active element, and some or all of the interconnections are integrally formed in and/or on a piece of material and which is intended to perform an electronic function” (Article 2(i)).

This definition includes both products in their final and in intermediate forms. It covers “gate arrays” and other integrated circuits (e.g., programmable logic devices-PLDs), which cannot be considered “finished” products. In order to be protectable, integrated circuits should contain “at least” one active element. This means that “discrete” microelectronics components are not covered.

A “layout-design (topography)” is defined by the Treaty as “the three-dimensional disposition, however expressed, of the elements, at least one of which is an active element, and of some or all of the interconnections of an integrated circuit, or such a three-dimensional disposition prepared for an integrated circuit intended for manufacture” (Article 2(ii)).

Article 2(ii) of the Washington Treaty makes clear that protection refers to a three-dimensional layout-design. It covers both a design/topography incorporated in an integrated circuit as well as a layout-design/topography to be incorporated in an integrated circuit, that is, even before the actual manufacture took place. This means that the Washington Treaty does not require the *fixation* of the design/topography as a condition for protection (a requirement that existed, for instance, under the U.S. and Japanese laws at the time the Treaty was adopted).

The Treaty does not specify the type of material into which the layout-design/topography may be incorporated. Any country may, however, limit protection to *semiconductor* integrated circuits (Article 3.1.c), i.e. to integrated circuits built into silicon and other semiconductor materials. In fact, many laws (United States, Japan, European Union, Denmark, etc.) specifically refer to “semiconductor products”.

3.2 Requirement for protection

Protection is conferred to “original” layout-designs/topographies, understanding “original in the sense that they are the result of their creators’ own intellectual effort” (Article 3.2(a) of the Washington Treaty).

The Treaty combines the concepts of “originality” and of “intellectual effort” employed in the U.S. and in EC regulations, respectively. These concepts are qualified, as expressly provided for, for instance, in the U.S. and UK laws on the matter, by the condition that the layout/topography should not be “commonplace among creators of layout-designs (topographies) and manufacturers of integrated circuits at the time of their creation”. Further, a layout-design that consists of a combination of elements and interconnections that are commonplace shall be protected only if the combination, taken as a whole, fulfils the condition of originality.

3.3 Form of protection

The Washington Treaty, as mentioned, followed the *sui generis* approach first developed by the U.S. law on the matter. However, neither the Treaty nor TRIPS precludes the application of one of the traditional forms of protection (e.g. copyright, patents) to the extent that the minimum standards set forth in the Treaty and in the Agreement are respected.

For instance, if copyright protection were applied, the minimum duration would be much longer than under a *sui generis* regime (e.g., 50 years *post mortem auctoris* or 50 years counted in accordance with Article 12 of TRIPS). If patent protection were applied, the designs/topographies would have to meet the requirements of novelty and inventive step, standards that layout-designs/topographies are unlikely to comply with in most cases.

Under Article 12 of the Treaty, a situation of cumulative protection may take place. The Treaty “shall not affect the obligations that any Contracting Party may have under the Paris Convention for the Protection of Industrial Property or the Berne Convention for the Protection of Literary and Artistic Works”. According to the Director General of WIPO, the effect of this article is that

“if a Contracting Party chose to implement its obligations under the Treaty through a law made, totally or partly, on the basis that layout-designs are works under the copyright law or are a subject matter of industrial property law, and that Contracting Party is a party not only to the proposed Treaty but also to the Berne Convention or the Paris Convention, the said law must be compatible not only with the proposed Treaty but also with that of those Conventions. For example, if a Contracting Party considered layout-designs to be works under its copyright law and was a party to both the proposed Treaty and the Berne Convention, layout-designs would have to be protected without formalities (even though the proposed Treaty admits formalities) and for 50 years after the death of the author (even though the proposed Treaty admits a shorter period of protection). Or, if the Contracting Party is party to both the proposed Treaty and the Paris Convention and protects layout-designs by patents for inventions or utility models, layout-designs would require the grant of a patent or other official certificate (even though the proposed Treaty admits protection without any procedure before a government authority).”⁹⁹⁵

3.4 National treatment

The application of the national treatment principle is subject, according to Article 5 of the Washington Treaty, to certain conditions and exceptions that were confirmed by TRIPS.⁹⁹⁶

The obligation to apply national treatment is limited to persons who have a “real and effective establishment”⁹⁹⁷ for the “creation” of layout designs or for the

⁹⁹⁵ See WIPO, Diplomatic Conference for the Conclusion of a Treaty on the Protection of Intellectual Property in Respect of Integrated Circuits, *Draft Treaty prepared under Rule 1(1) of the Draft Rules of Procedure*, by the Director General of WIPO, Washington D.C., 31 Jan. 1989, IPIC/DC/3, p. 66 [hereinafter WIPO].

⁹⁹⁶ According to Article 3.1 of the TRIPS Agreement, the application of the national treatment principle is “subject to the exceptions” provided for, *inter alia*, by the Washington Treaty. See Chapter 4.

⁹⁹⁷ This kind of requirement is not present in the Paris and Berne Conventions.

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“production” of integrated circuits. A mere “commercial” establishment (e.g., for the distribution of integrated circuits designed and manufactured elsewhere) does not entail the right to claim national treatment.

A Party can elect, according to Article 5(2) of the Washington Treaty, not to apply national treatment as far as any obligations to appoint an agent or to designate an address for service, or as far as the special rules applicable to foreigners in court proceedings are concerned.

3.5 Exclusive rights

Article 36 Scope of the Protection

Subject to the provisions of paragraph 1 of Article 37, Members shall consider unlawful the following acts if performed without the authorization of the right holder:^[footnote 9] importing, selling, or otherwise distributing for commercial purposes a protected layout-design, an integrated circuit in which a protected layout-design is incorporated, or an article incorporating such an integrated circuit only in so far as it continues to contain an unlawfully reproduced layout-design.

[Footnote 9]: The term “right holder” in this Section shall be understood as having the same meaning as the term “holder of the right” in the IPIC Treaty.

Article 6.1 of the Treaty enumerates the acts that require the titleholder’s authorization. They include:

- total or partial reproduction by incorporation in an integrated circuit or otherwise (e.g., on a mask, on a computer tape, on paper, or by any other means including the manufacture of a microchip).⁹⁹⁸
- importing, selling or otherwise distributing for commercial purposes a protected layout-design/topography or an integrated circuit in which a protected layout-design/topography is incorporated.

Article 36, TRIPS, adds to the exclusive rights provided for under the Treaty, the right to import, sell or otherwise distribute an *article* incorporating such an integrated circuit. This obligation, however, only applies in so far as the article continues to contain an *unlawfully* reproduced layout-design.

3.6 Extension of protection to industrial products

Article 37 Acts Not Requiring the Authorization of the Right Holder

1. Notwithstanding Article 36, no Member shall consider unlawful the performance of any of the acts referred to in that Article in respect of an integrated circuit incorporating an unlawfully reproduced layout-design or any article incorporating such an integrated circuit where the person performing or ordering

⁹⁹⁸ See WIPO, p. 30.

such acts did not know and had no reasonable ground to know, when acquiring the integrated circuit or article incorporating such an integrated circuit, that it incorporated an unlawfully reproduced layout-design. Members shall provide that, after the time that such person has received sufficient notice that the layout-design was unlawfully reproduced, that person may perform any of the acts with respect to the stock on hand or ordered before such time, but shall be liable to pay to the right holder a sum equivalent to a reasonable royalty such as would be payable under a freely negotiated licence in respect of such a layout-design.

According to Article 3.1(b) of the Washington Treaty, “the right of the holder of the right in respect of an integrated circuit applies whether or not the integrated circuit is incorporated in an article”. This means that the rights relating to a layout-design/topography can be exercised even if it has been fixed in a chip which, in turn, has been incorporated into an industrial article. However, the right of the right holder is not extended to the *products* incorporating the integrated circuit.⁹⁹⁹ This provision was included in the Washington Treaty as an alternative to the proposal by the United States and Japan to expressly extend the rights of title-holders to the industrial articles containing protected integrated circuits. This proposal was rejected by European and developing countries, particularly due to the difficulties that *bona fide* purchasers of electronic goods and of other goods containing semiconductors could face to establish whether such goods incorporated or not infringing semiconductors. The Washington Treaty includes a provision on “Sale and distribution of infringing integrated circuits acquired innocently” (Article 6(4)), which only provides that “no Contracting Party shall be obliged to consider unlawful” the acts of importing, selling or otherwise distributing for commercial purposes a protected layout-design/topography or an integrated circuit incorporating such protected layout-design/topography, if such acts were performed *bona fide*.

Article 37.1 of TRIPS differs from Article 6(4) of the Washington Treaty at least in two important aspects. First, instead of prescribing what the Members may do, as the Treaty does,¹⁰⁰⁰ Article 37.1 provides that Members “*shall not* consider unlawful” (emphasis added) acts relating to unlawfully reproduced layout-designs/topographies, thus indicating that TRIPS *obliges* WTO Members to consider lawful the acts mentioned in Article 36. Second, the Agreement prescribes royalty payments by the innocent infringer to the title-holder, an obligation that was not incorporated into the Treaty. Article 37.1, in effect, obliges the acquirer to pay a reasonable royalty with regard to goods on stock or ordered before the infringement notice by the title-holder. The criterion to determine what a “reasonable royalty” would be is to be based on what a voluntary license would have prescribed.¹⁰⁰¹

⁹⁹⁹ In this respect, Article 36 of the TRIPS Agreement provides for an important extension of the exclusive rights of right holders in layout-designs.

¹⁰⁰⁰ By providing that “no Contracting Party shall be obliged to consider unlawful” the acts of importing, etc., the Treaty leaves parties the freedom to consider such acts unlawful.

¹⁰⁰¹ The application of this criterion may pose considerable difficulties, particularly when the acquirer is just a commercial agent who trades with industrial articles that incorporate chips, but

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Finally, the acts covered by Article 37.1 also relate to any *articles* incorporating unlawfully reproduced layout-designs, whereas Article 6(4) of the Washington Treaty is limited to acts in respect of integrated circuits and layout-designs. This difference is the logical consequence of the different scope of protection with respect to *articles incorporating* unlawfully made layout-designs.

3.7 Exceptions

Article 6(2) of the Washington Treaty allows for exceptions in relation to certain acts of *reproduction* of a layout design/topography of an integrated circuit performed by a third party. This article addresses, in particular, the issue of reverse engineering, that is, the evaluation of an existing integrated circuit in order to independently develop a competitive product, which may be similar or identical to the original one. Reverse engineering is common practice in the semiconductor industry.

Article 6.2(a) provides that no Contracting Party shall consider unlawful acts made, without the authorization of the title-holder, for “private purposes” or for the “sole purpose of evaluation, analysis, research or teaching”. Article 6.2(b) further clarifies the extent of the reverse engineering exception. It states that as long as there is an independent effort involved (which is necessary to comply with the originality requirement) the rights of the title-holder of the reverse engineered design can not be exercised against the creator of the second design, even if identical. This means that the rights, as provided for by the Treaty and TRIPS confer exclusivity neither on the functionalities of the layout-design/topography nor on a specific expression thereof. They only protect, in essence, against slavish copying. Finally, Article 6.2(c) establishes that the reverse engineering exception applies even in cases where the second-layout design/topography is “identical” to a protected design, provided that the former was “independently created”.

3.8 Compulsory licenses

Article 37.2 Acts not requiring the authorization of the right-holder

The conditions set out in subparagraphs (a) through (k) of Article 31 shall apply *mutatis mutandis* in the event of any non-voluntary licensing of a layout-design or of its use by or for the government without the authorization of the right holder.

The Washington Treaty, after intense negotiations, allowed the granting of a non-voluntary license only in two cases: (1) “to safeguard a national purpose deemed to be vital” by the national authority; and (2) “to secure free competition and to prevent abuses by the holder of the right”. In addition, these licenses were available only for the domestic market (Article 6.3). Despite these limitations the provision on compulsory license was deemed too broad by the United States, and was one

not with chips as such. Chips producers do not normally grant voluntary licenses to commercial agents, but to other chips producers, or eventually, manufacturers of industrial goods that incorporate chips.

of the major reasons for the U.S. refusal to sign the Treaty. As indicated above, TRIPS declared the non-applicability of Article 6.3 of the Washington Treaty.

As stated by Article 37.2, the conditions laid down by TRIPS for the granting of compulsory licenses for patents (Article 31(a) to (k)), are applicable *mutatis mutandis* to the layout-designs of integrated circuits. Paragraph (l) of Article 31 (compulsory licenses in cases of dependency of patents) does not apply. The reason for this probably is that, in the case of integrated circuits, reverse engineering is explicitly permitted.¹⁰⁰²

In addition, according to Article 31(c) of the Agreement, “semiconductor technology” may only be subjected to compulsory licenses for grounds relating to anticompetitive practices and for use by the governments for non-commercial purposes.¹⁰⁰³ Though this provision applies to compulsory licenses on patented inventions, the cross reference contained in Article 37.2 of the Agreement would seem to indicate that compulsory licenses of integrated circuits would only be admissible in those two cases.¹⁰⁰⁴

3.9 Exhaustion of rights

Article 6.5 of the Washington Treaty explicitly introduced the exception of “exhaustion of rights”, as an optional provision for Contracting States: after the titleholder or a third party with the title-holder’s consent has put the products on the market, further acts on such products are no longer subject to the title-holder’s authorization.

Article 6.5 of the Washington Treaty alludes to putting an integrated circuit “on the market”, without limiting its effects to commercialization in the domestic market. Hence, according to this provision¹⁰⁰⁵ and to Article 6 of TRIPS, Members may provide for national, regional or international exhaustion of rights.¹⁰⁰⁶

3.10 Term of protection

Article 38 Term of Protection

1. In Members requiring registration as a condition of protection, the term of protection of layout-designs shall not end before the expiration of a period of 10 years counted from the date of filing an application for registration or from the first commercial exploitation wherever in the world it occurs.
2. In Members not requiring registration as a condition for protection, layout-designs shall be protected for a term of no less than 10 years from the date of the first commercial exploitation wherever in the world it occurs.

¹⁰⁰² See, e.g., Gervais, p. 179.

¹⁰⁰³ For any other technology, patents may be made subject to compulsory licenses based on the grounds determined by national legislation. See Article 31 of the Agreement and the referenced Doha Declaration on the TRIPS Agreement and Public Health (WT/MIN(01)/DEC/W/2, 14 November 2001).

¹⁰⁰⁴ See, e.g., Gervais, p. 179.

¹⁰⁰⁵ See WIPO, p. 6.

¹⁰⁰⁶ See also the Doha Ministerial Declaration on TRIPS and Public Health, para. 5(d) (WT/MIN(01)/DEC/W/2 of 14 November 2001).

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3. Notwithstanding paragraphs 1 and 2, a Member may provide that protection shall lapse 15 years after the creation of the layout-design.

The Washington Treaty provides for a minimum term of protection of eight years. It is silent about the date from which the term was to be counted. That term was extended by TRIPS to a minimum of ten years.¹⁰⁰⁷ In addition, Article 38 specifies the dates from which such term is to be counted. In any case, Members may limit the duration of protection to 15 years after the creation of the layout-design.

3.11 Conditions for granting protection

The Washington Treaty sets out in Article 7.1 some conditions on which protection may be made conditional. It leaves freedom to grant protection from the creation of the design, or subject to “commercial exploitation” or registration.

Article 7.1 of the Treaty refers to “ordinarily” commercially exploited layout designs. It excludes cases in which a layout-design may be commercialized under confidential terms, without being apparent to the consumer public or to competitors.

Members may adopt any of the above-mentioned conditions for protection. They could even opt to require, for instance, commercialization plus registration within certain period of the latter, like in United States and Japan. However, Article 7.2(b) of the Treaty contains a limitation for those cases in which commercial exploitation and registration are cumulative requirements. Registration cannot be required before two years counted from the date of first commercialization anywhere in the world.

Finally, the applicant may be required to disclose the “electronic function that the integrated circuit is intended to perform”, but is not obliged to submit information relating to the “manner of manufacture” of the integrated circuit, provided that the information supplied is sufficient for the identification of the layout-design (Article 7.2(a)).

4. WTO jurisprudence

There have been no cases decided on this subject matter.

5. Relationship with other international instruments

5.1 WTO Agreements

There are no other WTO agreements directly relevant to this subject matter.

5.2 Other international instruments

As discussed throughout in the text, TRIPS draws substantially on the Treaty on Intellectual Property in Respect of Integrated Circuits of 1989, the Washington Treaty.

¹⁰⁰⁷ In practice, ten years was the standard term set out by the SCPA and adopted by the regulations enacted in other developed countries at the time of the negotiation of the Washington Treaty.

6. New developments

6.1 National laws

The USA and Japan adopted, as mentioned, *sui generis* legislation on integrated circuits. Other developed and developing countries (e.g., Australia, Sweden, Austria, Poland, South Korea, Taiwan Province of China, Trinidad and Tobago and Mexico) also followed this approach. Many developing countries have not yet implemented any form of protection on this matter.

6.2 International instruments

6.3 Regional and bilateral contexts

6.3.1 Regional

The EC adopted, in December 1986, Council Directive 87/54/EEC on the Legal Protection of Topographies of Semiconductor Products, which establishes a *sui generis* regime on the matter, without prejudice to the application of other forms of protection.

The protection of integrated circuits is also provided for under NAFTA. Article 1710(1) to (8) of NAFTA parallels Articles 35 through 38 of TRIPS. The NAFTA provisions are virtually identical to those in the Agreement,¹⁰⁰⁸ with a significant exception: Article 1710(5) of NAFTA¹⁰⁰⁹ prohibits the granting of compulsory licenses on layout-designs of integrated circuits.

Articles 86 to 112 of Decision 486 of the Andean Group countries (2000) provide for a *sui generis* protection for integrated circuits.

6.4 Proposals for review

There have been no proposals for review on this matter.

7. Comments, including economic and social implications

The semiconductor industry is highly concentrated in industrialized countries. A few firms possess the technologies necessary for state-of-the-art semiconductor design and manufacture.

Though the *sui generis* regime on integrated circuit design allows for reverse engineering, the high investments required for semiconductor design and production, in an extremely competitive market, constitute formidable barriers for potential new entrants, particularly from developing countries. Hence, the impact of TRIPS Agreement rules are likely to be mainly felt in those countries with respect to the importation of semiconductors or, in most cases, of industrial products containing semiconductors.

It is unclear to which extent the *sui generis* regime promotes innovation in the semiconductor industry in developing countries. Technological advance in this sector is an interactive, cumulative process, where improvements are directly

¹⁰⁰⁸ See, e.g., Richard Neff and Fran Smallson, *NAFTA. Protecting and Enforcing Intellectual Property Rights in North America*, Shepard's/McGraw Hill, Colorado Springs 1994, p. 96.

¹⁰⁰⁹ Article 1710(5): "No Party may permit the compulsory licensing of layout-designs of integrated circuits".

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based on the pre-existing stock of knowledge. Studies on the role of IPRs in promoting innovation in this industry have shown that gaining lead time and exploiting learning curve advantages, rather than IPRs, are the primary methods for appropriating the returns of investments in research and development.¹⁰¹⁰

The very little litigation that has taken place in connection with the protection of integrated circuits¹⁰¹¹ seems to indicate that unlawful copying of layout-designs/topographies is not at all significant.¹⁰¹²

It should be recalled, finally, that TRIPS leaves freedom to determine the form of protection of integrated circuits, either under a *sui generis* regime or other existing modalities of intellectual property rights. In general, there will be few advantages in protecting integrated circuits via copyright or patent law. The flexibility apparently given on the form of protection is *de facto* limited by the need to comply with the Washington Treaty plus the TRIPS Agreement standards. The best option for a country implementing the Agreement probably is to establish a *sui generis* regime to deal with the specific features of integrated circuits as protectable subject matter.

¹⁰¹⁰ See Richard Levin; Alvin Kloverick; Richard Nelson and Sidney Winter, *Appropriating the returns from industrial research and development*, Brooking Papers on Economic Activity, No 3, 1987, p. 788.

¹⁰¹¹ The legal controversies relating to semiconductors do not seem to relate to the layout-designs as protected by the Washington Treaty and the TRIPS Agreement, but to patents covering certain aspects of semiconductor technology. Patent protection in the field of the manufacture of integrated circuits is important. Literally thousands of patents have been granted in this field, and in general it is not possible to undertake semiconductor production by licensing technology from a single firm. Moreover, a few large firms control substantial blocks of patents and hence exercise considerable power over the terms on which technology is available.

¹⁰¹² See Daniel Siegel and Ronald Laurie, *Beyond microcode: Alloy v. Ultratek. The first attempt to extend copyright protection to computer hardware*, The Computer Lawyer, vol. 6, No. 4, April 1989, p.14, who described the SCPA as "a solution in search of a problem". In the USA only one case – *Brooktree Corp. v. Advanced Micro Devices Inc* (977 F2d. 1555, Fed. Circ. 1992) – is reported as litigated under the SCPA (see Mark Lemley; Peter Menell; Robert Merges and Pamela Samuelson, *Software and Internet Law*, Aspen Law & Business, New York 2000, p. 410).