

Washington International Law Journal

Volume 4
Number 1 *Competition and Trade Policy:
Europe, Japan and the United States*

3-1-1995

TRIPS: Adequate Protection, Inadequate Trade, Adequate Competition Policy

Hanns Ullrich

Follow this and additional works at: <https://digitalcommons.law.uw.edu/wilj>



Part of the [Antitrust and Trade Regulation Commons](#), and the [International Trade Law Commons](#)

Recommended Citation

Hanns Ullrich, *TRIPS: Adequate Protection, Inadequate Trade, Adequate Competition Policy*, 4 Pac. Rim L & Pol'y J. 153 (1995).

Available at: <https://digitalcommons.law.uw.edu/wilj/vol4/iss1/8>

This Article is brought to you for free and open access by the Law Reviews and Journals at UW Law Digital Commons. It has been accepted for inclusion in Washington International Law Journal by an authorized editor of UW Law Digital Commons. For more information, please contact cnyberg@uw.edu.

TRIPS: ADEQUATE PROTECTION, INADEQUATE TRADE, ADEQUATE COMPETITION POLICY

Hanns Ullrich†

Abstract: This article analyzes the relationship between trade and competition policy with respect to intellectual property, focusing particularly on the inclusion into the Uruguay Round of the Trade Related Aspects of Intellectual Property ("TRIPS"). The article sets forth the traditional framework of protection as established by the Paris Convention for the Protection of Industrial Property in 1883. The TRIPS agreement provides new rules and principles to manage emerging problems in the field of industrial property. The main focus of this article is to analyze the effect that TRIPS will have on harmonizing (but not unifying) the system of intellectual property protection.

CONTENTS

- I. INTRODUCTION
- II. FROM PARIS AND BERNE TO THE URUGUAY ROUND: SETTING THE STAGE
 - A. *The Traditional Framework of International Intellectual Property Protection*
 - 1. *The Principle of Territoriality*
 - 2. *The Classic Convention Principles*
 - 3. *Protecting Intellectual Property Internationally*
 - B. *Trade Related Harmonization of National Intellectual Property*
 - 1. *Adequate Protection*
 - 2. *Effective Protection*
- III. FULL AND EQUAL PROTECTION, TERRITORIAL RIGHTS AND GLOBAL TRADE: PLAYING THE GAME ON SPLIT-LEVELS
 - A. *TRIPS and Barriers to Trade*
 - 1. *TRIPS' Objectives*
 - 2. *TRIPS and Territoriality*
 - B. *TRIPS: Trade, Competition and Technology Policy*
 - 1. *Competition and Cooperation*
 - 2. *Technology Policy*
- IV. CONCLUSION

† Professor of Law, Universität der Bundeswehr München.

I. INTRODUCTION

The Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations ("MTN") was signed on December 15, 1993. The Parties to the new "Multilateral Trade Organization" ("MTO") entered into an "Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods."¹ This MTO has subsequently become the World Trade Organization ("WTO"). The so-called TRIPS-Agreement is an integral part of the WTO-overall agreement. It reaffirms basic principles of international intellectual property protection like that of national treatment or of most-favored-nation treatment (arts. 3 and 4). It also sets up "adequate standards and principles concerning the availability, scope, and use of trade-related intellectual property rights" (preamble; art. 9 et seq.). Moreover, it provides for "effective and appropriate means for the enforcement of trade-related intellectual property rights" (preamble, art. 41 et seq.), as well as for "reasonable procedures and formalities" for the acquisition and maintenance of intellectual property rights (art. 62).

For the first time, an international convention has been set up to harmonize the law of copyright, trademarks, geographical indications, industrial designs, patents, topographies of integrated circuits, and trade secrets in their entirety. This revolutionary effort "to reduce distortions and impediments to international trade" is made as an annex to the general WTO-Agreement: on the basis of a package deal of trade concessions. Though it had been strongly opposed in the beginning by developing countries,² it certainly does not

¹ See *General Agreement on Tariffs and Trade: Multilateral Trade Negotiations, Final Act Embodying the Results of the Uruguay Round of Trade Negotiations*, Apr. 15, 1994, reprinted in 33 I.L.M. 1125, 1197 (1994); official English and German texts in *Gesetz vom 30. August 1994 zu dem Übereinkommen vom 15. April 1994 zur Errichtung der Welthandelsorganisation*, BGBl II 1438, 1565, 1730 (1994). For an overview of the WTO, see Jansen, *Die neue Welthandelsorganisation (World Trade Organization - WTO)*, *Europäisches Zeitschrift für Wirtschaft* 193 (1994) [hereinafter *EuZW*]; for a first critical evaluation, see Oppermann & Beise, *Die neue Welthandelsorganisation - ein stabiles Regelwerk für den Welthandel?* *Europaarchiv* 195 (1994) [hereinafter *EuArch*].

² This opposition was framed in the form of an objection to the mandate of the Uruguay Round to deal with subjects other than trade in counterfeit goods, see Bail, *Elaboration of Trade Related Principles, Rules and Disciplines for Intellectual Property Rights*, in *A NEW GATT FOR THE NINETIES AND EUROPE* 92, 245, 247 (Oppermann & Molsberger eds., 1991); Assmann & Buck, *Trade Related Aspects of Intellectual Property Rights: Limitation of the Mandate or Point of Reference for the Further Development of the GATT*, in *A NEW GATT FOR THE NINETIES AND EUROPE*, *supra* at 261; Cottier, *The Prospects for Intellectual Property in GATT*, 28 *COMMON MARKET L. REV.* 383, 386; Stoll, *TECHNOLOGIETRANSFER - INTERNATIONALSISIERUNGS- UND NATIONALISIERUNGSTENDENZEN* 333 (1994). Subsequently, the attitudes became more moderate, see UNCTAD, *TRADE AND DEVELOPMENT REPORT* 1991 179 (1990); Braga, *The Economics of Intellectual Property Right and the GATT: A View from the*

constitute that part of the deal that could have put it into jeopardy during national ratification procedures.³ In fact, as the WTO gains importance, the TRIPS-Agreement is bound to govern international intellectual property protection on a global scale.

The TRIPS-Agreement is concerned with trade, not with competition. It aims at the reduction of distortions and impediments to trade, and in so doing, pays almost as little attention to competition as does the WTO in general. The TRIPS-Agreement allows for national measures to prevent the abuse of intellectual property rights or practices which unreasonably restrain trade (art. 8 para 2; art. 31 lit. k). It also alludes to licensing practices which may have adverse effects on trade or on competition and which, therefore, Member States may outlaw by national legislation (art. 40).⁴ Nothing in the Agreement seems to cast a shadow of doubt on the trade-enhancing, distortion-reducing effects of an internationally harmonized system of intellectual property protection. The prospect of harmony between intellectual property and trade kindles critical academic interest much more than the pernicious licensing practices. The Agreement does not deal with these practices which have been widely discussed,⁵ and may well be overcome with some effort.⁶

South. 22 VAND. J. TRANSNAT'L L. 243 (1989). For a general critique, see Ullrich, *GATT: Industrial Property Protection, Fair Trade and Development, in GATT OR WIPO? NEW WAYS IN THE INTERNATIONAL PROTECTION OF INTELLECTUAL PROPERTY* 127 (Beier & Schriker eds., 1989) [hereinafter *GATT OR WIPO?*]. This article is not concerned with the TRIPS issues relevant for developing countries, but with trade and competition in general, and trade and competition among industrialized or newly industrialized countries, i.e. actual competitors, in particular. Note that GATT art. 65 ¶¶ 2, 4 and arts. 66-67 provide for some transitional rules for developing and least developed countries, as well as for assistance by way of technical cooperation.

³ In general, TRIPS has been hailed as a major success of the Uruguay Round. See *GATT Negotiators Hail TRIPS Pact as Success*, 47 Pat. Trademark & Copyright J. (BNA) 222 (1994); *Uruguay Round of GATT Talks Are Concluded With IP Provisions*, 47 Pat. Trademark & Copyright J. (BNA) 170 (1993). For German reaction, see Bundesregierung, Entwurf eines Gesetzes zu dem Übereinkommen vom 15. April 1994 zur Errichtung einer Welthandelsorganisation, Deutscher Bundestag, Drucksache 12/7655 (neu) at 344 et seq.; see also Oppermann & Baumann, *Handelsbezogener Schutz geistigen Eigentums (TRIPS) im GATT*, EuArch 1994, at 121. Such basic approval does not prevent interested circles from desiring additional improvements. See *Bill would Amend Trade Act to Take Account of GATT-TRIPS Implementation*, 48 Pat. Trademark & Copyright J. (BNA) 169 (1994) (reporting on a post-Uruguay Round strategy of improving intellectual property protection abroad).

⁴ The language of art. 40, ¶¶ 1-2 is confusing, since ¶ 1 seems to imply that only restraints of competition affecting trade may be outlawed, while ¶ 2 refers to restrictive practices and covenants as such, but apparently condemns them "in particular cases" only. Even for the restrictions as grave as exclusive grant-backs, there are no challenge clauses and coercive package licensing. In fact, industrialized countries reportedly have opposed the introduction of any rules that would go beyond the Chicago School thinking prevalent at the time of negotiating TRIPS. See Cottier, *supra* note 2, at 409.

⁵ There is a whole body of U.S., E.E.C., and German antitrust law and scholarly discussion on its modes and scope of application. With regard to patents, see generally Wedekind, *DIE ANWENDUNG DER*

Therefore, rather than (re-)investigating into the intellectual property/antitrust-interface and its international dimensions, this article attempts to analyze the TRIPS-Agreement merely in its own terms as an instrument of trade liberalization. The concern here is only with the positive and negative effects of TRIPS on international trade. This attempt must remain limited in several respects. First, the focus will be on the trade-related aspects of those intellectual property rights that in one way or the other protect technology, such as patents, trade secrets, and software-copyright.⁷ Second, although this article's subjects are the trade-related aspects of technology protection, the analysis undertaken is a legal one, not one of international trade theory.⁸ Third, the TRIPS-Agreement clearly assumes that intellectual property rights are the coins with which to pay the entrance fee into free international trade. However, the trade-restrictive effects of intellectual property are outside the scope of this article.⁹ Rather, the focus is on whether international

KARTELLVORSCHRIFTEN DES EWG-VERTRAGES AUF PATENTLIZENZVERTRÄGE - EINE UNTERSUCHUNG DER PRAXIS DER ORGANE DER EUROPÄISCHEN GEMEINSCHAFTEN UNTER BERÜCKSICHTIGUNG DES AMERIKANISCHEN KARTELLRECHTS (1989); and *see generally* OECD, COMPETITION POLICY AND INTELLECTUAL PROPERTY RIGHTS (1989).

⁶ One post-modern construction has been proposed by the International Antitrust Code Working Group and appears to rely on the rather conservative "scope of the patent" approach. *See* DRAFT INTERNATIONAL ANTITRUST CODE, at 128 (1994).

⁷ Copyright in general is beyond my present interest, as are industrial designs, trademarks, or geographical indications. As regards copyrights, *see* Correa, *TRIPS Agreement: Copyright and Related Rights*, 25 INT'L REV. INDUS. PROP. & COPYRIGHT L. 543 (1994), and references, *infra* note 90.

⁸ I can do no better than point out the implications which the TRIPS Agreement may have for international trade as a matter of law; i.e., I shall attempt to show the legal opportunities which it offers for increasing or for controlling international trade. As for international trade theory and its relationship to technical change in general, there appears to be only limited literature dealing specifically with intellectual property and international trade. *See* Jussawalla, *THE ECONOMICS OF INTELLECTUAL PROPERTY IN A WORLD WITHOUT FRONTIERS - A STUDY ON COMPUTER SOFTWARE* 21, 33 (1992); Scherer, *Research on Patents and the Economy: The State of the Art*, in EPO/ IFO-INSTITUTE FOR ECONOMIC RESEARCH, *RESULTS AND METHODS OF ECONOMIC PATENT RESEARCH* 41, 47 (1993) [hereinafter *RESULTS AND METHODS*]; Frischtak, *Harmonization Versus Differentiation in Intellectual Property Right Regimes*, in NATIONAL RESEARCH COUNCIL, *GLOBAL DIMENSIONS OF INTELLECTUAL PROPERTY RIGHTS IN SCIENCE AND TECHNOLOGY* 89 (Wallerstein et al. eds., 1993) [hereinafter *GLOBAL DIMENSIONS*]; and Sherwood, *Why a Uniform Intellectual Property System Makes Sense for the World*, *supra* at 68, 79.

⁹ This reverse side is already much discussed as a matter of the economics of the patent system and needs no rehearsal here, since its arguments equally apply to national and international protection of intellectual property. *See* David, *Intellectual Property Institutions and Panda's Thumb: Patents, Copyrights, and Trade Secrets in Economic Theory and History*, in *GLOBAL DIMENSIONS*, *supra* note 8, at 19; Scherer, in *GLOBAL DIMENSIONS*, *supra* note 8; Merges & Nelson, *On the Complex Economics of the Patent Scope*, 90 COLUM. L. REV. 839, 868 (1990); Audretsch, *The Competitive and Technological Effects of Patents: A Critical Assessment of the Relevant Literature in Industrial Economics*, in *RESULTS AND METHODS*, *supra* note 8, at 173; Kaufer, *THE ECONOMICS OF THE PATENT SYSTEM passim* (1988); *PATENTWESEN, TECHNISCHER FORTSCHRITT UND WETTBEWERB*, (Oppenländer ed., 1984). It should be noted that the Continental understanding of copyright protection for works of literature and the arts does not share the economic rationale assumed by Anglo-American legal thinking (*compare* Gordon, *An Inquiry into the*

harmonization of national intellectual property produces effects which specifically concern international trade, either by virtue of the particular protection granted for a given intangible good, or by virtue of the way it is granted, namely on a territorial basis.

Obviously, such effects will depend on the way the goods covered by intellectual property rights are produced and traded internationally. These ways, in turn, are conditioned by the means and modes enterprises use to compete in the international marketplace. Therefore, it will not be possible to maintain the distinction between trade and competition-related aspects of international intellectual property protection. However, the analysis will stop where the trade aspects begin to take on aspects of competition. Therefore, this article will discuss only those features of TRIPS that form the background against which restrictions of technological competition should be assessed.

I shall first outline the system of international intellectual property protection as it worked in the past (and as it will continue to exist on a level below the WTO). Then I will explain the structure and the working of the TRIPS-Agreement. Finally, I will discuss some of its effects on international trade and technological competition.

II. FROM PARIS AND BERNE TO THE URUGUAY ROUND: SETTING THE STAGE

A. *The Traditional Framework of International Intellectual Property Protection*

The international protection of technological property has been governed by three interdependent principles: 1) territoriality of protection; 2) national treatment of foreign owners of national intellectual property; and 3) international minimum protection. The combined application of these three principles is a tribute to both national sovereignty and open national markets.

Merits of Copyright: The Challenges of Consistency, Consent and Encouragement Theory, 41 STAN. L. REV. 1343 (1989) and Reichman, *Goldstein on Copyright Law: A Realist's Approach to a Technological Age*, 43 STAN. L. REV. 943 (1991) with Schricker, *Urheberrecht zwischen Industrie- und Kulturpolitik, GEWERBLICHER RECHTSSCHUTZ UND URHERBERRECHT* 1992, 242 (1992) [hereinafter GRUR]. However, for the purposes of this article, these differences do not matter very much, since the article touches upon copyright only to the extent that computer software is concerned. For software, copyright protection certainly does not flow from traditional European *droit d'auteur* concepts.

1. *The Principle of Territoriality*

Determining whether and on what conditions a private individual may claim, exploit, and enforce an exclusivity for a piece of knowledge represents a formidable issue of public policy,¹⁰ because of its effects on the flow, availability of human learning, and technological competition of the marketplace.¹¹ Moreover, for patents and utility models, trademarks and designs,¹² such exclusive rights - though normally available as a matter of right¹³ - are awarded by a specific administrative grant.¹⁴

International protection generally is governed by the principle of territoriality. As a matter of public policy,¹⁵ the acquisition, existence, maintenance, validity, scope, and termination of the exclusive right are determined by the law of the state for the territory for which protection is

¹⁰ For patent theories, see MACHLUP, AN ECONOMIC REVIEW OF THE PATENT SYSTEM, STUDY NO. 15, U.S. SENATE, SUBCOMMITTEE ON PATENTS, TRADEMARKS AND COPYRIGHTS, 85th Cong., 2d Sess. 19 (1958); for the development of the concept of private property in inventions (rather than the grant of a state concession). In Germany, see Walz, DER SCHUTZINHALT DES PATENTRECHTS IM RECHT DER WETTBEWERBSBESCHRÄNKUNGEN 94, 120 (1973); Wadle, DER EINFLUSS FRANKREICHS AUF DIE ENTWICKLUNG GEWERBLICHER SCHUTZRECHTE IN DEUTSCHLAND, GEDÄCHTNISSCHRIFT CONSTANTINESCO 871, 890 (1988). The U.S. had a different, but not unrelated patent law development. See Lubar, *The Transformation of Antebellum Patent Law*, 32 TECH. & CULTURE 932 (1991).

¹¹ Cf. references, *supra* note 9.

¹² Trademark and designs, however, may also be acquired *ex lege* by use (common law trademark in the U.K. and the U.S., designs under art. 1, ¶ 2(a), 12, 20 of the proposed Regulation for a Community Design, Official Journal of the European Communities, C 29, 20 (1994)), and that their protection is akin to the protection against unfair competition (passing off). Therefore, general conflicts of law rules for torts and the principle of territoriality may need to be reconciled, generally in favor of the principle of territoriality. See Kreuzer in MÜNCHENER KOMMENTAR, art. 38, annot., 241 (2d ed. 1990); Ulmer, DIE IMMATERIALGÜTERRECHTE IM INTERNATIONALEN PRIVATRECHT 21 (1975); Schricker, in UWG GROBKOMMENTAR, Einleitung annot., F 168 (Jacobs et al. eds., 1994).

¹³ Cf. Bernhardt & Kraßer, LEHRBUCH DES PATENTRECHTS 19, 196 (4th ed. 1986). For the function of patent formalities, see Kraßer, *Erfindungsschutz zwischen Patentanmeldung und Patenterteilung*, GEWERBLICHER RECHTSSCHUTZ UND URHEBERRECHT INTERNATIONALER TEIL, 1990, at 732 [hereinafter GRUR INT'L].

¹⁴ Copyright protection generally arises from creation of the work. Registration, if provided for at all, only serves legal transparency. The incentive for registration results from improved enforcement (cf. 17 U.S.C §§ 401, 411, 501(b)). Nevertheless, with the exception of moral rights, copyright protection is subject to the principle of territoriality, see § 17 II, 120 UrhG; Katzenberger in KOMMENTAR ZUM URHEBERRECHT vor § 120 ff, annot., 69 (Schricker ed., 1987), [hereinafter KOMMENTAR]; Ulmer, *Gewerbliche Schutzrechte und Urheberrechte im internationalen Privatrecht*, 41 LABELSZ 479, 492 (1977). But the position of some countries is ambiguous; for France, see art. L 111-4 c. prop. int., COLOMBET, PROPRIÉTÉ LITTÉRAIRE ET ARTISTIQUE ET DROITS VOISINS, Sub. Nos. 445, 454 (6th ed. 1992).

¹⁵ See BGH of June 17, 1992, 24 INT'L REV. INDUS. PROP. & COPYRIGHT L. 539, 541 (1993) -"AIF"; Ullmann in PATENTGESETZ, GEBRAUCHSMUSTERGESETZ, § 15, annot., 134 (Benkard ed., 9th ed. 1993) [hereinafter PATENTGESETZ].

sought.¹⁶ Consequently, intellectual property, whether it is a patentable invention or a copyrightable work,¹⁷ is national by nature. Therefore, it must be acquired, maintained, and defended independently from one country to the other. In fact, the conditions governing the acquisition, existence, maintenance, validity, scope, and termination of intellectual property vary widely from one country to the other.¹⁸

The privilege granted to the owner of the intellectual property to exclusively exploit a right,¹⁹ extends to the entire territory of the state granting protection, but is also limited to this territory. Thus, it is the law of the territory where an act of exploitation has been committed which, in terms of conflicts of laws, determines whether such an act constitutes an infringement.²⁰ Additionally, the infringing acts (or the acts of exploitation reserved to the intellectual property owner) are limited in their territorial scope: It is only the domestic manufacture, use, sale,²¹ reproduction, distribution, performance, or display which is covered by a national patent or copyright.

This approach affords the owner of the monopoly of exploitation for the national market, and for this market only. It is assumed that the national

¹⁶ Ulmer, *DIE IMMATERIALGÜTERRECHTE IM INTERNATIONALEN PRIVATRECHT* 8, 12, *et passim* (1975).

¹⁷ For patents *see* Stauder, *PATENTVERLETZUNG IM GRENZÜBER-SCHREITENDEN WIRTSCHAFTSVERKEHR* 6, 13 (1975); Ullmann *in* *PATENTGESETZ*, *supra* note 15, at *Einleitung*, *Internationaler Teil*, annot., 1. For copyrights, *see supra* note 14. As for the specific problems of the international satellite transmission of copyrightable works, *see* Dietz, *Copyright and Satellite Broadcast*, 20 *INT'L REV. INDUS. PROP. & COPYRIGHT L.* 135 (1989); Rumphorst, *Broadcasting of Films via Satellite*, 41 (4) *EBU REV.* 34 (1990). For trade secrets, the situation is somewhat complicated as trade secrets are not protected by an exclusive right but by the law of torts or the law of unfair competition. Nevertheless, the law governing the acquisition of trade secret protection is that of the country where protection is claimed (principle of territoriality), while the acts of infringement, i.e., breach of confidence or theft, are determined in accordance with the conflict of law rule for unfair competition. In general, this, again, will be the law governing the market affected by the violation of the secret. *See* Ullrich *in* *DER INTERNATIONALE SOFTWAREVERTRAG*, Teil I, Kap. 1, § 4HIB2m (Ullrich & Körner eds., 1995) [hereinafter *SOFTWAREVERTRAG*].

¹⁸ *See infra* Part II.A.2.c of this article.

¹⁹ The privilege is of a different scope for patents (make, use, and sell) and copyrights (reproduce, adapt, distribute, perform and display). *Compare* 35 U.S.C. § 271 and 17 U.S.C. § 106 with § 9 PatG and § 15 UrhG.

²⁰ Since the damage done by an act of infringement is the market loss occurring as a result of an act of exploitation on the market, the places where the "tort" has been committed and the place where it has been completed are considered to be always identical with respect to the application of the *lex loci delicti*. *See* *Max-Planck-Institute für ausländisches und internationales Patent-, Urheber- und Wettbewerbsrecht, Stellungnahme zum Entwurf eines Gesetzes zur Ergänzung des internationalen Privatrechts (ausservertragliche Schuldverhältnisse und Sachen)*, GRUR INT'L. 1985, 104, 106 [hereinafter *MAX PLANCK INSTITUTE*]; Katzenberger *in* *KOMMENTAR*, *supra* note 14, at § 120 ff, annot., 81.

²¹ *Cf.* 35 U.S.C. § 271(a) ("within the United States"); § 9, No. 2, PatG; § 17 UrhG; *MAX-PLANCK-INSTITUTE*, *supra* note 20, at 106; Bruchhausen *in* *PATENTGESETZ*, *supra* note 15, at § 9, annot., 8, 10.

market will yield profits as a reward, which are tantamount to the merits of the invention or work as defined by the granting conditions. This is why, on the one hand, territorial protection is granted against imports and offers for importation,²² whether direct or parallel. Specifically, except in the case of trademarks,²³ importation of goods that have been lawfully put on markets outside the domestic territory, by the owner of the exclusive right himself or with his consent, generally constitutes an infringement. This would be an infringement even if the first sales abroad have been made on the basis of a parallel right of exclusivity (no extraterritorial exhaustion)²⁴ since such importation may affect the monopoly yield of the national market. On the other hand, the privilege granted by a national intellectual property law will not, in principle, extend to acts of exploitation made with respect to foreign markets.²⁵

Although this principle has never been followed entirely,²⁶ it remains a basic tenet of international intellectual property law. An extraterritorial protection of national intellectual property distorts competition on foreign markets having different intellectual property regimes. It may be less bene-

²² Cf. 35 U.S.C. § 271(g); 17 U.S.C. § 602; § 9, PatG; Katzenberger in KOMMENTAR, *supra* note 14, at § 120 ff, annot., 85.

²³ BGH of January 22, 1964, GRUR INT'L 1964, 202 - "Maja"; of February 2, 1973, 4 INT'L REV. INDUS. PROP. & COPYRIGHT L. 432 (1973) - "Cinzano"; Beier, *Territorialität des Markenrechts und internationaler Wirtschaftsverkehr*, GRUR INT'L 1968, at 8; Riehle, MARKENRECHT UND PARALLELIMPORT 209, 232 (1968); Beier & von Mühlendahl, *Der Grundsatz der internationalen Erschöpfung des Markenrechts in den Mitgliedstaaten der EG und ausgewählten Drittstaaten*, Mitt. Pat. Anw. 1980, at 101.

²⁴ For patents, see BGH of June 6, 1976, 8 INT'L REV. INDUS. PROP. & COPYRIGHT L. 64 (1977) - "Tylosin"; Bruchhausen in PATENTGESETZ, *supra* note 15, at § 9, annot., 15, 21; for copyrights, see Loewenheim in KOMMENTAR, *supra* note 14, at § 17, annot., 22, 24; the leading Community case is Court of Justice of February 9, 1982, case 270/80, Polydor/Harlequin Record, Rep. 1982, 329; 12 INT'L REV. INDUS. PROP. & COPYRIGHT L. 499 (1982). Non-exhaustion by acts done outside the Community has been confirmed by the EC-Legislature in art. 4, lit c, Computer program directive (OJEC 1991 L 122, 42); art. 76, Community Patent Convention (OJEC 1989, L 401, 10); art. 24, Draft Community Design (OJEC 1994 L 29, 20); even for trademarks, the E.C. has limited recourse to acts of sale made within the Community. See art. 7, Trademark Directive (OJEC 1989, L 40,1); art. 13, Community Trademark (OJEC 1994 L 11, 1). For a critique, see Beier, *Industrial Property and the Free Movement of Goods in the Internal European Market*, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L. 131, 156 (1990).

²⁵ Bruchhausen in PATENTGESETZ, *supra* note 15, at § 9, annot., 10 in fine, 12. For a comparative analysis, see Stauder, *supra* note 17, at 68, 77, 91, 107, 149; Katzenberger in KOMMENTAR, *supra* note 14, at § 120 ff, annot., 83, 86.

²⁶ Domestic manufacture for export and domestic sales to exporters have been considered acts of infringement. See Stauder, *supra* note 25; Bruchhausen in PATENTGESETZ, *supra* note 15, at § 9, annot., 11; Tetzner, *Verletzung deutscher Patente bei Auslandsgeschäften*, GRUR 1980, at 882; Katzenberger in KOMMENTAR, *supra* note 14, at § 120 ff, annot., 83, 86, 88. 35 U.S.C. § 271(f) clearly shows that such control over foreign markets depends on supplies made "in or from" the United States; i.e., control is limited to deciding which domestic enterprise is entitled to supply foreign markets.

ficial to the country of importation and the country of exportation. Moreover, it may result in either ineffective or unwarranted protection.²⁷

Nevertheless, intellectual property such as trademarks and design tend to protect the owner against acts of passing off. Thus, rules have recently been devised to make exportation a specific act of infringement. These rules undercut the principle of territoriality's basic virtue, which is to prevent national interference with other countries' intellectual property interests and policies. They may also lead to further development under TRIPS.

2. *The Classic Convention Principles*

The real effects of the principle of territoriality may be judged only by reference to the other principles governing international intellectual property protection. Indeed, its importance varies considerably with the choice of the rules governing ownership in an intellectual property right. In this respect, the basic rule is that of nationality, which means that national territorial protection is available only to nationals of the country granting protection.²⁸

²⁷ These effects depend on the circumstances. Obviously, distortion of competition and welfare losses to the foreign country will occur if domestic patentee A were able to prevent manufacturing and sales on the foreign market by domestic competitor B, where there is nonexistent, or less comprehensive or less effective protection in the foreign market. As both have to meet competition in that market, B, if subject to A's domestic patent, would be at a disadvantage and, due to B's disappearance from the market or A's being awarded damages for sales lost to B on the foreign market, the foreign country will see competition impaired against its will. However, since A cannot sell in the foreign country at "patent prices," A should not be entitled to obtain an injunction or damages at all; i.e., A either obtains unwarranted protection or windfall profits. Things get even worse where A and B supply the foreign market by imports made from their common domestic country. Patent protection against such acts of infringement by exportation will, of course, continue to harm the importing foreign country, unless B transfers the production to the importing country, which can be done only if the foreign market is large enough. Otherwise, the exporting country risks a welfare loss, since it is unlikely that A can take B's former export share, either totally or at least in substantial parts. The exporting country will benefit from its patent protection over the foreign market only if the foreign market is too small for B to move in, and if there is no domestic competition on that market. If there is domestic competition, there is no guarantee that A can take the full share of B's exports, since A has to meet non-patent competition. If A, with a patent in A's own country, and B, with a patent in B's own country, but not in the third foreign country, patent control over exports allows control even over patent-free territories (minimization of patent costs). If, due to international harmonization, patent protection were necessarily available on all foreign markets, then, by relying on the domestic patent, A would be able to enjoin domestic competitor B's domestic sales, exports, and any of B's "infringing" activities, since B will be unable to escape the patent by moving abroad. Thus, TRIPS works against domestic and foreign competitors. That is, TRIPS works against domestic subsidiaries of foreign enterprises serving the domestic and their home market, as well as fully domestic enterprises. It is an exercise in world market control from the home base.

²⁸ In addition, various non-nationals may be assimilated into nationals; e.g., expatriates (§ 122, UrhG), foreign refugees (§ 123, UrhG), enterprises having a domestic domicile (§§ 126 I, 127 I, 128 I, UrhG); foreigners having a domestic residence (art. L 111-5, L 614-1, ¶ III c. prop. int.).

Clearly, in this combination, the principle of territoriality might serve to close national markets against foreign competition. Generally, the operation of the principle of reciprocity²⁹ rests on the reservation of intellectual property to nationals. States may adhere to this principle of reciprocity for protectionist reasons. They may also use this principle to protect their nationals in other countries.

The principles of nationality and reciprocity have deeper roots in copyright law. Copyright law protects the author, whereas patent law protects the invention.³⁰ Thus, with some exceptions,³¹ patents are granted to whoever applies for them by submitting a new and useful invention. Copyright protection normally is reserved to nationals and granted to them irrespective of where the work has been created or published.³² The leverage power which the principle of nationality may give in reciprocity dealings will depend on the size of the markets each party offers to the other. For example, the United States imposed the Semiconductor Chip Protection Act on the rest of the world by reserving protection to nationals and offering it to foreigners on a reciprocity basis only.³³

The Semiconductor Chip Protection Act, however, was a singular act in international intellectual property relations, and certainly not one conceived to open up foreign markets to United States citizens.³⁴ It was placed outside

²⁹ See §§ 121 III, IV; 125 V; 126 III, 127 III, 128 II, UrhG; art. L 111-4; L 111-5, L 611-1, ¶ III c. prop. int.; 17 U.S.C. § 104(b), ¶ 5. By contrast and by virtue of their very nature, moral rights will normally be granted unconditionally to foreigners as well. See 17 U.S.C. § 104(a); art. L 111-4, ¶ 2 c. prop. int.

³⁰ Historically, patents have been used to attract foreign inventions (as a matter of a mercantilist policy!); for this outward-oriented character of the patent system, see David in GLOBAL DIMENSIONS, *supra* note 8, at 47; Cornish, INTELLECTUAL PROPERTY: PATENTS, COPYRIGHT, TRADEMARKS AND DESIGN RIGHTS, § 3-010 (2d ed. 1989).

³¹ See art. L 611-1, ¶ 3 c. prop. int.

³² Compare §§ 120 UrhG with arts. L 111-4, L 111-5 c. prop. int., and 17 U.S.C. § 104(b); but see 17 U.S.C. § 601.

³³ See Dreier, *National Treatment, Reciprocity and Retorsion - The Case of Computer Programs and Integrated Circuits*, in GATT OR WIPO?, *supra* note 2, at 63, 70; Lemberg, *Semiconductor Protection: Foreign Responses to a US Initiative*, 25 COLUM. J. TRANSNAT'L L. 345, 352 (1987); McManis, *International Protection for Semiconductor Chip Designs and the Standard of Judicial Review of Presidential Proclamations Issued Pursuant to the Semiconductor Chip Protection Act of 1984*, 22 GEO. WASH. J. INT'L L. & ECON. 331, 344 (1988); for the market forces behind chip development and chip protection, see Malerba, *Demand Structure and Technological Change: The Case of the European Semiconductor Industry*, 14 RES. POL'Y. 283 (1985); Chesser, *Semiconductor Chip Protection: Changing Roles for Copyright and Competition*, 71 VA. L. REV. 249, 253 (1985).

³⁴ Rather, it was to protect a dwindling U.S. dominance of international markets. See OECD, GLOBALISATION OF INDUSTRIAL ACTIVITIES - FOUR CASE STUDIES: AUTO PARTS, CHEMICALS, CONSTRUCTION AND SEMICONDUCTORS, 131, 137 (1992) [hereinafter GLOBALISATION]. In fact, applications for protection made outside the United States and Japan have been minimal; compare with the statistics in Correa, *Intellectual Property in the Field of Integrated Circuits: Implications for Developing*

the general rules of international intellectual property relations and as a matter of convention law, supersede the principle of nationality.

a. National Treatment

The rule of national treatment is indeed the cornerstone of the Paris Convention for the Protection of Industrial Property (art. 2), the Berne Convention for the Protection of Works of Literature and the Arts (art. 5), and the Universal Copyright Convention (art. II).³⁵ The rule simply obliges Member States to grant to the nationals of other Member States³⁶ exactly the same substantive protection on the same conditions. Because of the large membership to the Conventions³⁷ and their broad coverage, the principle of national treatment has gained international importance. The Paris Convention applies to all kinds of industrial property such as patents, utility models, industrial designs, trademarks, service marks, trade names and, as a matter of unfair competition, trade secrets³⁸ (art. 1). The Berne Convention extends to all works in the field of literature, science and the arts (art. 2).

Countries, 14 WORLD COMPETITION, December 1990, at 83; *Deutsches Patentamt, JAHRESBERICHT*, 1992, at 18. As between the United States and Japan, the duopolists in the market, existing problems concern the product markets rather than intellectual property protection. See *Japan - United States: Arrangement Concerning Trade in Semiconductor Products*, 31 I.L.M. 1074 (1992) and its predecessor, 25 I.L.M. 1408 (1986).

³⁵ See Beier, *One Hundred Years of International Cooperation - The Role of the Paris Convention in the Past, Present and Future*, 15 INT'L REV. INDUS. PROP. & COPYRIGHT L. 1, 9 (1984); Vaver, *The National Treatment Requirements of the Berne and Universal Copyright Conventions*, 17 INT'L REV. INDUS. PROP. & COPYRIGHT L. 577 (1986); Katzenberger, *General Principles of the Berne and the Universal Copyright Conventions, in GATT or WIPO? supra* note 2, at 43, 45; Bodenhausen, *GUIDE TO THE APPLICATION OF THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY* 27 (1968); Nordemann et al., *INTERNATIONAL COPYRIGHT*, art. 5, annot. 1 (1990).

³⁶ Assimilated nationals are residents (Berne Convention, art. 3, ¶ 2) and foreign subsidiaries firmly established in the host country. Paris Convention, art. 3; Berne Convention, art. 4(a). In addition, works of nationals of states, which are not members of the Berne Convention, may enjoy convention status if first published in a Member State. See Berne Convention, art. 3, ¶ 1, lit. b; art. 5, ¶¶ III, IV.

³⁷ Membership to the Paris and Berne Convention is listed in *INDUSTRIAL PROPERTY* 8 (1994), *COPYRIGHT* 7 (1994). At present, there are 117 Members of the Paris Convention and 105 Members of the Berne Convention. As these conventions have been revised several times, states may adhere to different versions of the Conventions. This article is concerned with only the most recent versions; i.e., the Paris Convention as revised at Stockholm 1967, and the Berne Convention as revised at Paris 1971.

³⁸ With respect to trade secrets, though, the situation is unclear. art. 10^{bis}, Paris Convention obliges Member States to afford protection against unfair competition, but its illustrating examples refer to misleading competition only. However large or small the scope of art. 10^{bis} may be, there is little doubt that once Member States protect trade secrets, they must do so on the basis of national treatment. See BGH of March 21, 1991, GRUR INT'L 1992, 832 - Betonsteinelemente, 23 INT'L REV. INDUS. PROP. & COPYRIGHT L. 698 (1992), applying art. 2, Paris Convention, to unfair acts of imitation, rather than the reciprocity principle of § 28, UWG; Bodenhausen, *GUIDE TO THE APPLICATION OF THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY*, art. 10^{bis}, annot. d (1968).

National treatment has to be granted to a foreign national whether protection is sought at home or abroad. It should also be granted even if the home State does not offer similar or equivalent protection to its own citizens or other nationals. Moreover, national treatment does not depend on whether the home State does offer protection at all.³⁹ In other words, national treatment substitutes a rule of non-discrimination to the principle of reciprocity.⁴⁰

b. *Minimum Protection*

The requirement of reciprocity has been outlawed by the Conventions on the basis of the minimum protection which they afford to the Member States' nationals as a matter of directly applicable public international law.⁴¹ The Paris Convention protects only the various subjects in a highly selective manner. It discusses the right of priority for patents, trademarks and designs, only to the extent of forfeiture or the grant of compulsory licenses, and to the acquisition of trademarks.⁴² The Berne Convention is not only more explicit than the Universal Copyright Convention,⁴³ but also contains a whole set of rules defining the rights of the author and the term of copyright protection.⁴⁴

³⁹ See Beier, *supra* note 35, at 10. This principle of non-equivalence is to be distinguished from those intellectual property rights acquired under the Paris Convention, which remain totally national in character and, therefore, are independent in their territorially separated existence, even if they are acquired on the basis of the Convention. See Paris Convention, art. 4^{bis}, art. 6; Berne Convention, art. 5, ¶¶ 1-2.

⁴⁰ Beier, *supra* note 35, at 9.

⁴¹ The extent to which the provisions of the Convention, once ratified by a Member State, are self-executing (individuals may rely on them before national courts) is largely a question of national constitutional law. Thus, answers vary from country to country and from provision to provision. See Bodenhausen, *supra* note 38, at 13; Ullmann in PATENTGESETZ, *supra* note 15, at Int'l Teil, annot. 10; Katzenberger in KOMMENTAR, *supra* note 14, at § 120 ff, annot. 63.

⁴² For trademarks, the next most important provisions are the *telle quelle* protection afforded by art. 6^{quinquies} and the protection granted for well-known marks (art. 6^{bis}, Paris Convention). Other rules relate to the inventor's right to be mentioned as such in the patent (art. 4^{ter}), to the extension of product protection by process patents to imported products (art. 5^{quater}); to the exemption from protection of inventions embodied in vessels, aircraft, or land vehicles (art. 5^{ter}); to the exclusion of official symbols from trademark protection (art. 6^{ter}).

⁴³ This Convention may have headed toward obsolescence since the United States joined the Berne Convention (see Additional Declaration in sub. (c) to art. XVII, Universal Copyright Convention) and since the latter has been incorporated into TRIPS (art. 9).

⁴⁴ It is virtually a master copy of a traditional copyright legislation providing for moral rights (art. 6^{bis}); the term of copyright protection for various kinds of works (art. 7); a detailed catalogue of the author's privileges of translation (art. 8); adaptation (art. 12, 14); reproduction (art. 9), including its exemptions (art. 9, ¶ II: fair use; art. 10: citation right); public performance and transmission (art. 11); the *droit de suite* (art. 14^{ter}). A main principle of the Berne Convention (as distinguished from art. III.

However, its focus is on the protection of traditional works of literature and the arts, and their forms of exploitation. Its focus is not on modern ways of exploitation,⁴⁵ technological works like computer programs,⁴⁶ or databases and software generated works.⁴⁷

The great Conventions do not generally approach the matters of remedies for infringement or enforcement.⁴⁸ The Paris Convention, though relating to subject matter that does obtain protection only upon a specific grant, does treat the granting procedure as a matter of purely national concern.⁴⁹ More importantly, although the Conventions do provide for some form of dispute settlement by arbitration,⁵⁰ compliance with convention rules largely is dependent on Member States' self-interest. The question of whether the subject matter qualifies for Convention status and triggers its international protection is an issue to be determined by the individual Member

Universal Copyright Convention) is that it expressly makes copyright protection independent from any formal requirements, registration, or copyright notice. See art. 5, ¶ (2); art. 15. This corresponds to the continental copyright tradition and constituted an obstacle (together with the protection of moral rights) to the United States' joining the Berne Convention until their own TRIPS Initiative indirectly forced them to change their mind. See Baumgartner & Meyer, *Die Bedeutung des Beitritts der USA zur Berner Übereinkunft*, GRUR INT'L, 1989, at 620; Dietz, *Die USA und das "Droit Moral": Idiosynkrasie oder Annäherung*, GRUR INT'L, 1989, at 627.

⁴⁵ Such as the so-called neighboring rights of performing artists, phonogram producers, or radio and television broadcasters, which are covered by a specific, but not generally adhered to, "Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisations" concluded in Rome on October 26, 1961.

⁴⁶ Whether computer programs constitute literary works and, therefore, are *eo ipso* covered by the Berne Convention, whether they enjoy its protection only once Member States protect them as literary works, or whether they cannot be brought under the Convention at all is a highly controversial matter. See Vaver, *supra* note 35, at 602; Dreier, *supra* note 33, in GATT OR WIPO?, *supra* note 2, at 67; Cornish, *Computer Program Copyright and the Berne Convention (1990)*, 4 EUR. INTELL. PROP. REV. 129; Soltysinski, *Protection of Computer Programs: Comparative and International Aspects*, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L. 1, 25 (1990).

⁴⁷ Cf. Reichman, *Electronic Information Tools - The Outer Edge of World Intellectual Property Law*, 24 INT'L REV. INDUS. PROP. & COPYRIGHT L. 447 (1993).

⁴⁸ Some provisions are made in Paris Convention, art. 9, 10^{ter}; Berne Convention, arts. 15-16.

⁴⁹ See Paris Convention, art. 2, ¶¶ 3, 6, 12.

⁵⁰ See Paris Convention, art. 28; Berne Convention, art. 33. Although the majority of Member States have accepted arbitration, this has not become practical due to the broad discretion Member States enjoy in implementing the Convention rules. More importantly, any sanction Member States may impose for violation of the Paris or the Berne Convention by another Member State (see Kunz-Hallstein, *The U.S.-Proposal for a GATT-Agreement on Intellectual Property and the Paris Convention for the Protection of Industrial Property*, in GATT OR WIPO?, 75, 87, reprinted in 22 VAND. J. TRANSNAT'L L. 265 (1989)), will be negative in its effect; e.g., reprisals or withdrawal from the Convention. What is needed is to bring the Member State back to meeting its obligation by means of some positive incentive.

States.⁵¹ Thus, Member States determine what private individuals may obtain as international protection though private litigation before national courts.

c. *Non-Interference*

The international extension of national intellectual property protection was based on a principle of mutual non-interference with matters of national intellectual property policy. It was based on the respect of intellectual property as a matter of national public policy.⁵² Member States felt free to grant protection to foreigners and could generally do so since, due to territoriality and minimum protection, they remained independent of the formulation of the exclusivity they granted. The basis of this form of a quid pro quo was that Member States conceived of their territories as national markets in the intellectual property regime. This conception fits the competitive standing and needs of their own industry, but not necessarily that of the foreigners they invited or accepted. As a result, the intellectual property systems developed in widely differing ways.⁵³

The concept of patentable invention varies as to subject matter, the criteria of patentability,⁵⁴ the term of the patent,⁵⁵ the scope of protection it

⁵¹ That is certainly true for the concept of what constitutes an invention under Paris Convention, art. 1, with Member States applying rather different definitions (excluding pharmaceuticals, computer software, etc.). See Bodenhausen, *supra* note 38, art. 1, ¶ (2), annot. c. Similarly, the notion of literary work used by Berne Convention, art. 2, leaves Member States with enough latitude to include or exclude computer programs. See *supra* note 46; Katzenberger, *General Principles of the Berne and the Universal Copyright Convention, in GATT OR WIPO?*, *supra* note 2, at 43, 46; Nordemann, *Das Prinzip der Inländerbehandlung und der Begriff der "Werke der Literatur und Kunst," GRUR INT'L*, 1989, 615.

⁵² See Beier, *supra* note 35, at 8; Dhanjee, *Boisson de Chazournes, Trade Related Aspects of Intellectual Property Rights (TRIPS): Objectives, Approaches and Basic Principles of the GATT and of Intellectual Property Conventions*, 24 J.WORLD TRADE, Oct. 1990, at 5, 7; Reichman, *Intellectual Property in International Trade: Opportunities and Risks of a GATT Connection*, 22 VAND. J. TRANSNAT'L L. 747, 844 (1989).

⁵³ For an overview, see *WIPO, Existence, Scope and Form of Generally Internationally Accepted and Applied Standards/Norms for the Protection of Intellectual Property, in GATT OR WIPO?*, *supra* note 2, at 213; Zaphiriou, *Transnational Technology Protection*, 40 AM. J. COMP. L. 879, 885 (1992); Stanberry, *Forging a New International Frontier in Intellectual Property*, 13 WORLD COMPETITION, March 1990, at 105, 113.

⁵⁴ Regarding the notion of a patentable invention, it was only in 1968, that Germany allowed patents for chemical compounds. Other countries followed even later (Italy, 1979; Spain, only when obliged to do so by the Treat of Accession to the E.E.C.). Computer software is non-patentable under European Patent Convention, art. 52, ¶ (2), lit. c, ¶ (3). For the various exclusions from patentability, see *WIPO, Internationally Accepted Standards, in GATT OR WIPO?*, *supra* note 2, at 299. Countries define the novelty criterion in accordance with their own needs; for example, they limit disclosure by prior use to use in the domestic territory (see 35 U.S.C. § 102(a) as compared with European Patent Convention, art. 54, ¶ (2)), or grant a grace period (see German Utility Model Law § 3, ¶¶ 1-2).

affords,⁵⁶ the exceptions to which it is subject,⁵⁷ and the issue of compulsory licenses.⁵⁸ Similarly, in some countries patents co-exist with utility models of various kinds,⁵⁹ while in other countries the patent system holds a legislative monopoly.⁶⁰ Patents may be granted upon examination only, upon mere registration, by some mixed granting procedure⁶¹ to the true and first inventor,⁶² or simply to the first applicant.

⁵⁵ Ranging from five to twenty years, generally, the term begins to run from the date the application is made, but in some countries only from the date the patent is granted, (e.g. 35 U.S.C. § 154). For an overview, see *WIPO, Internationally Accepted Standards, in GATT OR WIPO?*, *supra* note 2, at 309.

⁵⁶ Thus, the determination and interpretation of the patent claims have been controversial issues among the Member States of the European Patent Convention. See Bruchhausen, *Determining Patent Subject-matter in Grant, Infringement and Revocation Proceedings*, 20 INT'L REV. INDUS. PROP. & COPYRIGHT L. 341 (1989), and the companion articles by Falconer, 20 INT'L REV. INDUS. PROP. & COPYRIGHT L. 348 (1989) and Le Tallec, 20 INT'L REV. INDUS. PROP. & COPYRIGHT L. 355 (1989); Brinkhof, *Some Thoughts on Equivalents*, 22 INT'L REV. INDUS. PROP. & COPYRIGHT L. 908 (1991)). It is also controversial at the international level. See Bardehle, *Einbeziehung der Äquivalenzlehre in den WIPO-Patentharmonisierungsvertrag*, Mitt. Pat. Anw., 1992, 133. Although the issue appears to be one of legal niceties, it is a fundamental one in economic terms. See Merges & Nelson, *supra* note 9.

⁵⁷ For example, what constitutes permissible experimental use may be appraised differently under German Patent Act § 11 and under 35 U.S.C. § 271. For a comparative analysis, see Chroczel, *DIE BENUTZUNG PATENTIERTER ERFINDUNGEN ZU VERSUCHS- UND FORSCHUNGSZWECKEN* 10, 148 (1986); Bruzzone, *The Research Exemption: A Proposal*, 21 AM. INTELL. PROP. L. ASS'N. Q. J. 53 (1993).

⁵⁸ For a survey, see Pfanner, *Compulsory Licensing of Patents: Survey and Recent Trends*, NIR 1985, at 1, reprinted in GRUR INT'L, 1985, 357; *WIPO, Internationally Accepted Standards, in GATT OR WIPO?*, *supra* note 2, at 224.

⁵⁹ For Germany or Japan, see Häusser, *Utility Models: The Experience of the Federal Republic of Germany*, INDUS. PROP., 1987, at 314; Steup, *Unorthodoxe Gedanken zum Gebrauchsmusterrecht*, GRUR, 1990, at 800. Approximately fifteen States provide for one form of utility model protection or another. This form of protection depends on the accessibility of patent protection. Mere registration and low cost patents leave little room for utility models.

⁶⁰ However, the positions are about to change. For the United Kingdom, see Lees, *A Light in the Twilight Zone? Proposed Protection for "Sub-Patentable" Inventions*, PAT. WORLD, Nov. 30, 1993; *contra* Hodkinson, *Quest, Further Reform of the Patent Laws? The Case Against Petty Patents*, 4 EUR. INTELL. PROP. REV. 108 (1985).

⁶¹ For general information on the various systems, see *WIPO, Internationally Accepted Standards, in GATT OR WIPO?*, *supra* note 2, at 219; *HANDBUCH GEWERBLICHE SCHUTZRECHTE - ÜBERSICHTEN UND STRATEGIEN* 46, 133 (1993).

⁶² The only major industrial country following the first-to-invent rather than the first-to-file system for the grant of patents is the United States. Compare 35 U.S.C. §§ 101, 115, 135 with § 7, PatG. Original expectations that the system would be changed following WIPO negotiations over harmonization of the world patent system have dwindled away during these WIPO negotiations. See Schäfers & Schennen, *Der erste Teil der Diplomatischen Konferenz zum Abschluss eines Vertrages zur Harmonisierung des Patentrechts*, GRUR INT'L, 1991, at 849; Fiorito, *The WIPO "Basic Proposal" For Harmonization of Patent Laws Viewed From the US Practitioners' Point of View*, 19 AM. INTELL. PROP. L. ASSOC. J. 24, 35 (1991); Pagenberg, *Diplomatic Conference in the Hague on Harmonization of Patent Law*, 22 INT'L REV. INDUS. PROP. & COPYRIGHT L. 682 (1991). Once the MTO-Agreement had been reached, President Clinton was quick to announce that the first-to-invent system will be maintained, including one of its major drawbacks, which is non-disclosure of the invention before the grant (35 U.S.C. § 122). See *U.S. Says Not Now on First-to-File and Agrees with Japan on Patent Term*, 47 Pat. Trademark & Copyright J. (BNA) 285 (1994). However, TRIPS, art. 27, ¶ (1), does oblige the United

The fortunate patentee may have to face patenting and maintenance costs which are different from country to country as to the amount and the mode of calculation.⁶³ The satisfaction the patentee will obtain in case of infringement will likewise vary largely even among industrialized countries.⁶⁴ In some countries, the patentee may obtain an injunction, possibly even in summary proceedings, while in others not.⁶⁵ These differences are important for the patentee's competitor. The competitor may or may not be allowed by national law to raise an invalidity defense in infringement procedures,⁶⁶ or rely on a right of prior use.⁶⁷ The competitor may be held to a no challenge clause⁶⁸ or may object on grounds of patent or of copyright misuse. These differences are well known in the United States,⁶⁹ but are little known elsewhere.

States to recognize the priority of inventions made abroad (contrary to 35 U.S.C. § 102(g)). See Fiorito, *id.* at 37.

⁶³ The most important distinction is that between lump sum fees and progressive maintenance fees. For a general discussion on fees, see Rebel, *supra* note 61, at 39; for a comparison of U.S. and European patent costs, see Armitage, *Updating the European Patent Convention*, 22 INT'L REV. INDUS. PROP. & COPYRIGHT L. 1, 2 (1991).

⁶⁴ For copyright, see Graffenried, VERMÖGENSRECHTLICHE ANSPRÜCHE BEI URHEBERRECHTSVERLETZUNGEN - EINE RECHTVERGLEICHENDE DARSTELLUNG NACH DEUTSCHEM, ÖSTERREICHISCHEM, FRANZÖSISCHEM, AMERIKANISCHEM UND SCHWEIZERISCHEM RECHT (1993). For a comparison of the U.S. and German law of intellectual property, see Pagenberg, *Die Amerikanische Schadensersatzpraxis im Gewerblichen Rechtsschutz und Urheberrecht*, GRUR INT'L, 1980, 286.

⁶⁵ See WIPO, *Internationally Accepted Standards*, in GATT OR WIPO?, *supra* note 2, at 226; Stauder, *The Practical Significance of Infringement and Revocation Proceedings in the Federal Republic of Germany, France, Italy and the United Kingdom - Results of a Statistical and Empirical Study*, 14 INT'L REV. INDUS. PROP. & COPYRIGHT L. 793 (1983). In recent years, however, national legislatures have generally tended to reinforce protection by providing for injunctive relief against infringement.

⁶⁶ Compare Mangini, *The Legal Framework for Infringement and Revocation Proceedings in Patent Matters in the Contracting States of the European Patent Convention*, 14 INT'L REV. INDUS. PROP. & COPYRIGHT L. 776 (1983) with Stauder, *supra* note 17, at 797. For the Community Patent, see Foglia, *Procedural Aspects of Litigation Relating to Community Patents*, 22 INT'L REV. INDUS. PROP. & COPYRIGHT L. 970 (1991).

⁶⁷ See § 12, PatG; WIPO, *Generally Accepted Standards*, in GATT OR WIPO?, *supra* note 2, at 303. The prior use issue is substantial enough to withstand compromise within the EC. See Neukom, *A Prior Use Right for the Community Patent Convention*, 5 EUR. INTELL. PROP. REV. 165 (1990).

⁶⁸ *Lear v. Adkins*, 395 U.S. 653 (1969); Dreyfuss, *Dethroning Lear: Licensing Estoppel and the Incentive to Innovate*, 72 VAND. L. REV. 677 (1986); for analysis of European and German laws, see v. Maltzahn, *ZUR RECHTLICHEN BEURTEILUNG VON NICHTANGRIFFSABREDEN ÜBER TECHNISCHE SCHUTZRECHTE* 597 (1990).

⁶⁹ For a comparative analysis, see Mangini, *Erfahrungen mit dem Begriff des Patentmissbrauchs in Nordamerika und Europa*, GRUR INT'L, 1985, 787; for the United States, see Takenaka, *Extending the New Patent Misuse Limitation to Copyright: Lasercomb America Inc. v. Reynolds*, 5 SOFTWARE L. J. 739 (1992).

3. *Protecting Intellectual Property Internationally*

As a result of the development of Classic Convention Principles, international enterprises had to develop individual intellectual property policies and strategies. These policies and strategies were not a mere alternative to patenting or secrecy.⁷⁰ They also took into account the purely territorial effect of protection, the strength which a patent that has been examined thoroughly in one country will have in other countries operating merely a registration system, the scope of protection a patent will enjoy in a given country,⁷¹ and the effectiveness and cost of infringement litigation.⁷² Selection of any particular strategy would depend on the costs of patent protection, the necessity to protect an entire technology by several patents rather than a product by a single patent,⁷³ the different interests the enterprise has in its major or minor markets, and the differing mobility of competitors. Selective strategies of filing, maintaining, and enforcing national patents generally aim to defeat the competing would-be infringer either directly in his home market⁷⁴ or in some of his major supply markets. Such intellectual

⁷⁰ For this classic alternative, see Grefermann, RÖHLINGSHÖFER, PATENTWESEN UND TECHNISCHER FORTSCHRITT TEIL II: PATENT- UND LIZENZPOLITIK DER UNTERNEHMEN 32 (1974); Oppenländer, *Patent Policies and Technical Progress in the Federal Republic of Germany*, 8 INT'L REV. INDUS. PROP. & COPYRIGHT L. 97, 106 (1977); EUROPEAN INDUSTRIAL RESEARCH MANAGEMENT ASSOCIATION, IMPLICATIONS FOR R AND D OF CURRENT TRENDS IN INDUSTRIAL PROPERTY PROTECTION 10 (1988) [hereinafter EIRMA].

⁷¹ See *supra* note 56. This is an issue that economists approach quite differently than lawyers, who tend to grant broad protection for important and pioneering inventions. See Ullmann in PATENTGESETZ, *supra* note 15, at § 14, annot. 8; Welte, DER SCHUTZ VON PIONIERERFINDUNGEN 128 (1991) (with comparative law aspects). For an economic analysis, see David in GLOBAL DIMENSIONS, *supra* note 8, at 37; Merges & Nelson, *supra* note 9, *passim*; Scotchmer, *Standing on the Shoulder of Giants: Cumulative Research and the Patent Law*, 5 J. ECON. PERSP. 29 (1991).

⁷² See Rebel, *supra* note 61, at 31; Shapiro, *Responding to the Changing Patent System*, RES. TECH. MGMT., Sept.-Oct. 1990, at 38; Berkovitz, *Getting the Most from Your Patent*, RES. TECH. MGMT., Mar.-Apr. 1993, at 26; Sinnot, *Pharmaceutical IP Portfolios*, MANAGING INTELL. PROP., Jan.-Feb. 1994, at 20; Krukkiel, *Foreign Patenting Strategies of International Corporations*, 13 INTELL. PROP. ASIA PAC. 17 (1986); EIRMA, *supra* note 70, at 9; Bertin, *Patent and Licensing Strategies of the Various Technology Types of Corporations*, in RESULTS AND METHODS, *supra* note 8, at 83; Bertin & Wyatt, MULTINATIONALES ET PROPRIÉTÉ INDUSTRIELLE - LE CONTRÔLE DE LA TECHNOLOGIE MONDIALE 67 (1986).

⁷³ In general only pharmaceuticals will present examples of the one product-one patent situation. This contributes to the industry's high propensity to patent, as evidenced by patent statistics. See EUROPEAN PATENT OFFICE, ANNUAL REPORT, 1993, 38, 77; OECD, *supra* note 34, at 61, 77.

⁷⁴ For the U.S.-Japan patent dispute, see Wineberg, *The Japanese Patent System: A Non-Tariff Barrier to Foreign Business?* 22 J. WORLD TRADE L., February 1988, at 11; Note: *Patent Protection in Japan*, 15 EAST ASIAN EXECUTIVE REP. 6 (Nov. 1993) and 9 (Dec. 1993); for a Japanese view, see the statements by Uchida, Oiwa, Rahn, Nakayama in AIPPJ Journal, (Dec. 1988); for the settlement of the dispute by a bilateral understanding on patent filing procedure and the U.S. patent term, see *U.S. Says "Not Now" on First-to-File and Agrees with Japan on Patent Term*, 47 Pat. Trademark & Copyright J.

property policies cannot be the same for patents, trademarks,⁷⁵ or copyright. While the policies for patents and trademarks are heavily influenced by considerations of cost⁷⁶ and granting procedures, policies for the protection of copyright, which arise automatically with the creation of the work and at no cost, have to account for the imperfections inherent in such protection.⁷⁷

All such policies are formulated in terms of the respective interests and strengths of the owner of the right and of competitors. They may be combined optimally to protect a mix of patents, trademarks, trade secrets, and copyright.⁷⁸ Moreover, the availability of international protection has been increasingly facilitated by the establishment of organizations for the central grant of patents and trademarks on the global and regional levels. These include the Patent Cooperation Treaty,⁷⁹ the European and African Patent or

(BNA) 285 (1994); *U.S.-Japan Conclude Agreement on Reexamination and Publication*, 48 Pat. Trademark & Copyright J. (BNA) 412 (1994)

⁷⁵ International trademark protection must take cultural differences (language, symbol understanding) into account. It may not coexist with the loopholes, such as the risk of trademark appropriation by others. At the same time, risks of conflicts with prior rights (marks names, designs etc.) are enormous with respect to the latter problem, and with a comparative law-analysis made in view of the Community Trademark. See v. Mühlendahl, *Unitary Character and Problems of Coexistence in the Future European Trademark System*, 7 INT'L REV. INDUS. PROP. & COPYRIGHT L. 173 (1976).

⁷⁶ See Rebel, *supra* note 61, at 39; Armitage, *supra* note 63; Hodkinson, *The Management of Intellectual Property Rights*, in TECHNOLOGY AND MANAGEMENT 41, 47 (Wild. ed., 1990).

⁷⁷ The main problems are non-protection of ideas (which actually constitute the value of a computer program and frequently also of databases) and uncertainty of the actual scope of protection (non-existence of examined claims; establishment of privately run registration systems). As a result, copyright protection is effective only when combined with secrecy (distribution of computer program in object code only, use of program locks etc.). See, e.g., Lahore, *Intellectual Property Rights and Unfair Copying: Old concepts, New Ideas*, 12 EUR. INTELL PROP. REV. 428, 480 (1992); Pollack, *The Gordian Algorithm: An Attempt to Untangle the International Dilemma Over the Protection of Computer Software*, 22 LAW & POL'Y INT'L BUS. 815 (1991); see also *infra* note 141.

⁷⁸ Combination of patent protection for inventions and trade secret protection for accompanying know-how is well known. See Blecke & Rahl, *The Value of Territorial and Field-of-Use Restrictions in the International Licensing of Unpatented Know how: An Empirical Study*, 1 NW. J. INT'L L. & BUS. 450, 455 (1979). Also well known are the reinforcement and factual prolongation of protection for new (patented) articles by trademarks. For copyright and trade secret-combination, see *supra* note 77. The admissibility of cumulative protection is controversial as a matter of intellectual property principles and of the preemption doctrine in the U.S. See *Trandes Corp. v. Guy F. Atkinson*, 996 F.2d 655 (4th Cir. 1993), 27 U.S.P.Q. 2d (BNA) 1014, 1016; *Computer Associates Int'l v. Altai, Inc.*, 982 F.2d 693 (2nd Cir. 1992), 23 U.S.P.Q. 2d (BNA) 1241, 1260. For comparative analysis, see Ullrich, in *SOFTWAREVERTRAG*, *supra* note 17, at Teil I, Kap. 1, § 41B.

⁷⁹ For a good introduction, see *WIPO, The Patent Cooperation Treaty (PCT) and Its Importance to Developing Countries*, 3 INTELL. PROP. ASIA PAC. 45 (1993); Rebel, *supra* note 61, at 149. Basically, the PCT centralizes the application procedure (not the granting procedure) for international patent applications by giving national applications to Member States, which comply with the formal requirements for the status of an international application that qualifies as a national application in all the other Member States, and by providing for a centralized novelty search by certain authorized patent offices or institutions. The PCT also allows for a preliminary examination of the patent application (which is important for countries that do not have these facilities). A more important aspect is that it

Intellectual Property Organizations,⁸⁰ and the Madrid Agreement Concerning the International Registration of Trademarks and its Protocol of 1989.⁸¹ However, these arrangements, though paving the way for a deliberate strategy of international protection at least for larger enterprises able to handle all the procedures, have not eased the major constraint put on these strategies, such as the differences of national intellectual protection or non-protection. They oblige enterprises to adapt their strategies to the public policies governing intellectual property in the respective host countries. The importance of this constraint is obvious. National intellectual property policies reflect a state's attitude vis-à-vis the interrelationship of competition and innovation in marking the dividing line between innovation and imitation,⁸² and in promoting innovation by intellectual property incentives, rather than by direct intervention into the market.⁸³ However, different national intellectual property regimes mean different competition policies. As a result, in formulating their intellectual property strategies, international enterprises may not follow competitive necessities as they see them. Rather, they must compromise with a different and competing national competition/intellectual property policies.

B. Trade Related Harmonization of National Intellectual Property

Both the Paris and the Berne Conventions invite Member States to hold revision conferences, "with a view to the introduction of amendments designed to improve the system of the Union" (art. 18 Paris Convention, art. 27 Berne Convention). Several such conferences have been held in the first

practically permits the examination (not disclosure) to be postponed for twenty months following the priority date. This results from the fact that the applicant has twenty months to file what is now an international application with the patent offices of the designated countries, and that during this period a designated office may not take any action. Thus, the applicant enjoys an additional period of time for evaluating the patentability (and the commercial value) of the invention in those countries that do not allow for deferred examination (e.g. EPO as compared to DPA).

⁸⁰ For an overview, see Zaphiriou, *supra* note 53, at 887.

⁸¹ See Samuels, *The U.S.-Perspective on the Madrid Protocol*, 11 EUR. INTELL. PROP. R. 418 (1993), (with text of the Protocol annexed); Cornish, *The Madrid Agreement for the International Registration of Trade Marks: A United Kingdom Perspective*, 22 INT'L REV. INDUS. PROP. & COPYRIGHT L. 779 (1991); Beier & Kur, *Deutschland und das Madrider Markenabkommen*, GRUR INT'L, 1991 at 67.

⁸² See David in GLOBAL DIMENSIONS, *supra* note 8, at 24; Ullrich, *Die wettbewerbsspolitische Behandlung gewerblicher Schutzrechte in der EWG*, GRUR INT'L, 1984, 89.

⁸³ See Stedman, *Invention and Public Policy*, 12 LAW & CONTEMPOR. PROBS. 649, 669 (1947); Baxter, *Legal Restrictions on Exploitation of the Patent Monopoly: An Economic Analysis*, 76 YALE L.J. 267, 269, 273 (1966); see also Ullrich, PRIVATRECHTSFRAGEN DER FORSCHUNGFÖRDERUNG IN DER BUNDESREPUBLIK DEUTSCHLAND 22 (1984) [hereinafter PRIVATRECHTSFRAGEN]; Ullrich, EUROPEAN STANDARDS OF PATENTABILITY 108 (1977).

half of this century. All have resulted in a strengthening of international intellectual property protection, however modest.⁸⁴ However, with the emergence of developing countries, revision conferences took a turn toward granting these countries specific concessions in the form of exceptions from the minimum rights they had to guarantee. As such, minimum reciprocity was replaced by a preferential status.⁸⁵ Additionally, the revision conferences liberalized the conditions governing the admissibility of limitations that Member States may place on the exercise of an exclusive right. In particular, they strengthened developing countries' power to grant compulsory licenses on foreign-held intellectual property.⁸⁶

National differences in international intellectual property protection were bound to widen. However, economic development trends of the 1960s and 1970s were replaced by those of the 1980s. This movement toward preferred treatment was superseded by a renewed interest in reinforced international intellectual property protection. The aim was broad and strong protection. This was to be achieved by moving from non-reciprocity based on minimum protection to full reciprocity disguised as harmonization on an adequate level of effective protection.⁸⁷ It was also achieved by moving from the legal experts arena of WIPO to the GATT-forum where it is traded, for better or for worse,⁸⁸ as an economic concession for access to and control over markets. Consequently, bargains are made binding not by the cast of votes,⁸⁹ but by the exercise of leverage power.

⁸⁴ With respect to the Paris Convention, see Beier, *supra* note 35, at 3, 14; with respect to the Berne Convention, see Nordemann, *supra* note 51, at Introduction, annots. 1, 41.

⁸⁵ Compare this with the Berne Convention annex, "Developing Countries," made in Paris in 1971; see Ulmer, *The Revisions of the Copyright Conventions*, 2 INT'L REV. INDUS. PROP. & COPYRIGHT L. 345 (1971); Ulmer, *The Revision of the Copyright Conventions in the Light of the Washington Recommendation*, 2 INT'L REV. INDUS. PROP. & COPYRIGHT L. 235 (1970).

⁸⁶ Kunz-Hallstein, *Die Genfer Konferenz zur Revision der Pariser Verbandsübereinkunft zum Schutz des gewerblichen Eigentums*, GRUR INT'L, 1981, 137; Kunz-Hallstein, *Verschärfter Ausübungszwang für Patente? Überlegungen zur geplanten Revision des art. 5 A PVÜ*, GRUR INT'L, 1981, 347; Kunz-Hallstein, *Die Ergebnisse der Konferenz von Nairobi zur Revision der Pariser Verbandsübereinkunft - Entwurf einer Neufassung des art. 5 A PVÜ*, GRUR INT'L, 1982, 45; note: *Vierte Sitzung der Diplomatischen Konferenz zur Revision der PVÜ*, GRUR INT'L, 1984, 317; Stoll, *supra* note 2, at 235, 255.

⁸⁷ For the "effective and adequate Protection" formula, see *The "Ministerial Declaration on The Uruguay Round of Multilateral Trade Negotiations" of September 20, 1986*, reprinted in 25 INT'L LEG. MAT. 1623, 1626 (1986), and the Preamble of the TRIPS Agreement. As to the more basic reasons for this reversal of tide, see TRIPS Agreement, arts. III A, IV.

⁸⁸ See Ullrich in GATT OR WIPO?, *supra* note 2, at 135.

⁸⁹ The rules of unanimity and one country-one vote, which govern international diplomatic agreements, were a major reason behind the attempts to revise the Paris Convention. Under these rules, every Member State had a sort of a veto right to block all progress, while the majority rule would favor decisions by the number rather than by the importance of countries. The risk was the poor majority expropriated

1. Adequate Protection

With respect to technological property,⁹⁰ the TRIPS-Agreement obliges Member States to harmonize their patent, trade secret, and software copyright law on a level of adequate protection by 1) incorporating the relevant provisions of the Paris Convention (art. 2)⁹¹ into TRIPS and, 2) by setting forth a number of principles for the grant and the scope of technological property which, if combined with the incorporated rules of the Paris Convention, establish a full and comprehensive system of protection. Thus, Member States shall grant patent protection "for any inventions, whether products or processes, in all fields of technology" with the exception of inventions running afoul of public order or morality.⁹² This definition leaves

the rich minority. See Ballreich & Kunz-Hallstein, *Revision of the Paris Convention: The Principle of Unanimity*, 9 INT'L REV. INDUS. PROP. & COPYRIGHT L. 21 (1978).

⁹⁰ For a survey of the TRIPS rules relating to copyright, see Correa, *supra* note 34, at 543; Uchtenhagen, *DIE GATT-VERHANDLUNGEN ÜBER URHEBER- UND LEISTUNGSSCHUTZ*, 433 (1990); Reinbothe, *Der Schutz des Urheberrechts und der Leistungsschutzrechte im Abkommensentwurf GATT/TRIPS*, GRUR INT'L, 1992, at 707; Reichman, *The TRIPS Component of the GATT's Uruguay Round—Competitive Prospects for Intellectual Property Owners in an Integrated World Market*, 4 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 171, 216 (1993).

⁹¹ GATT TRIPS, art. 2 incorporates arts. 1-12 and art. 19 of the Paris Convention: art. 1, definition of industrial property; art. 2, national treatment; art. 4, priority right; art. 4^{bis}, independence of national rights; art. 4^{ter}, right of the inventor to be named as such; art. 4^{quater}, no refusal of patent grant on the ground that the distribution of patented articles may be restricted by law; art. 5A, forfeiture and compulsory licences; art. 5^{bis}, a grace period for the payment of fees; art. 5^{ter}, patented devices forming part of vessels, aircraft, or land vehicles; art. 5^{quater}, protection in the importing countries of products resulting from a patented process; art. 10^{bis}, trade secret protection by the law of unfair competition (but see *supra* n. 38); art. 11, temporary protection at certain international exhibitions; art. 12, duty of Member States to establish a special industrial property service with a central office; art. 19, freedom of contracting parties to enter into special, more favorable agreements. Many of these Paris Convention rules are superseded by TRIPS rules, the most obvious examples of which are the Paris Convention, art. 2, ¶ I, by GATT TRIPS, art. 3 (national treatment); Paris Convention, art. 2, ¶ III, by the GATT TRIPS rules on enforcement; Paris Convention, art. 5A, by GATT TRIPS, art. 31 (compulsory licenses); Paris Convention, art. 10^{bis}, by GATT TRIPS, art. 39 (trade secrets); Paris Convention, art. 19, by GATT TRIPS, art. 4 (most favored nation treatment), whose principle is co-existence and complementary application for enhanced intellectual property protection.

⁹² Included in the exemptions Contracting Parties may make are measures to protect human, animal, plant life or health, or to avoid serious harm to the environment, provided that such exclusion from patentability is not made merely because the exploitation is prohibited by domestic law. It should be noted that industrialized countries generally have construed such exemptions narrowly so that only inventions, which do not serve any purpose and are contrary to the public order are excluded from patentability. See Straus, *Ethische, rechtliche und wirtschaftliche Probleme des Patent- und Sortenschutzes für die biotechnologische Tierzucht und Tierproduktion*, GRUR INT'L, 1990, at 913, 917; Moufang, *Patentability of Genetic Inventions in Animals*, 20 INT'L REV. INDUS. PROP. & COPYRIGHT L. 823, 843 (1989); Moufang, *GENETISCHE ERFINDUNGEN IM GEWERBLICHEN RECHTSSCHUTZ*, 219 (1988). Typically, ethical considerations have remained conspicuously absent from patentability discussions even

room for an interpretation of what constitutes an invention, notably whether computer programs may be considered inventions.⁹³ However, this definition of patentable subject matter gives a maximalist answer to some important patent policy questions, such as whether chemical compounds in certain pharmaceuticals⁹⁴ should be protected, or whether states may exempt certain politically sensitive areas of technology from patent monopolies like agriculture and foodstuffs. The only exception TRIPS allows is for diagnostic, therapeutic, and surgical methods,⁹⁵ and for plants,⁹⁶ animals, and essentially biological processes.⁹⁷ Therefore, the scope of available patent protection is as broad as in the most advanced industrialized countries. Genetic engineering inventions are the only issues left open, as industrialized

in biotechnology up until the patent application for the oncogene-mouse began to raise political resistance. See Jaenichen & Schrell, *The "Harvard Onco-mouse" in the Opposition Proceedings before the European Patent Office*, 9 EUR. INTELL. PROP. REV. 345 (1993); Moufang, *Patentierung menschlicher Gene, Zellen und Körperteile - Zur ethischen Dimension des Patentrechts*, GRUR INT'L, 1993, at 439.

⁹³ Under U.S. patent law, patentability of computer programs has always hinged on the question whether the programs represent merely mental steps or mathematical formula, rather than useful technical teachings. Continental patent laws generally provide for an express exclusion of computer programs as such. See art. 52, ¶ II, lit. c, EPC. The issue is whether the exclusion is of general character or is only a result of that program; algorithms are only mental steps or mathematical formula. For an international comparison, see Ullrich in *SOFTWAREVERTRAG*, *supra* note 17, at Teil 1, Kap. 1, § 2.

⁹⁴ See Challu, *The Consequences of Pharmaceutical Product Patenting*, 15 WORLD COMPETITION, December 1991, at 65; Rozek, *The Consequences of Pharmaceutical Product Patenting: A Critique*, 16 WORLD COMPETITION, March 1993, at 91; Nogués, *Patents and Pharmaceutical Drugs: Understanding the Pressures on Developing Countries*, 24 J. WORLD TRADE, December 1990, at 81. Non-patentability of pharmaceuticals in Brazil and Mexico was the reason for retaliatory action by the United States and for including intellectual property provisions in the NAFTA Agreement. For Brazil, see Ullrich in *GATT OR WIPO?*, *supra* note 2, at 150; for Mexico, see NAFTA, art. 1709, ¶¶ (1), (4), reprinted in 32 INT'L LEG. MAT. 605, 673 (1993); Bale Jr., *A Positive View of NAFTA*, LES NOUVELLES 21 (1993); Gonzales, *An Analysis of the Legal Implications of the Intellectual Property Provisions of the North American Free Trade Agreements*, 34 HARV. INT'L L.J. 305 (1993). Similarly, countries joining the EC must subscribe to an obligation to patent pharmaceuticals as a matter of joining the European Patent Convention. For Spain, see *Treaty of Accession: Protocol No. 8*, OJEC 1985, I, 424; Gomez & Segade, *Grundzüge und Einzelheiten des Spanischen Patentgesetzes*, GRUR INT'L, 1988, 99. For the diversity existing in patent protection for pharmaceuticals, see *Pharmaceutical IP Portfolios*, MANAGING INTELL. PROP., Jan.-Feb. 1994, at 20.

⁹⁵ Normally, this exclusion is read narrowly, however. For diagnostic methods, see BGH of January 19, 1984, GRUR 1985, 278; for therapeutic methods, see BGH of January 20, 1977, 9 INT'L REV. INDUS. PROP. & COPYRIGHT L. 42 (1978) - Benzene sulfonyl urea; BPatG of December 12, 1983, GRUR 1985, 276 - Schichtkerato-plastiktransplantat.

⁹⁶ However, according to GATT TRIPS, art. 28, ¶ III, lit b, Member States must provide for plant variety protection by patents (as do the United States: 35 U.S.C. § 161), by "an effective *sui generis* system" (as do European Countries), or by any combination thereof. For an overview, see Moufang, *Protection of Plant Breeding and Plant Varieties—A Frontier of Patent Law*, 23 INT'L REV. INDUS. PROP. & COPYRIGHT L. 328 (1992); Straus, *Die Diplomatische Konferenz zur Revision des Internationalen Übereinkommens zum Schutz von Pflanzenzüchtungen*, GRUR INT'L, 1991, 507.

⁹⁷ According to GATT TRIPS, art. 27, ¶ III, lit. b, and to international practice, however, patent protection must be available for microorganisms and microbiological processes.

countries themselves have not yet fully decided on the proper policy.⁹⁸ Similarly, by requiring inventions to be new and to involve an inventive step, the level of patentability has been raised to the standards which all industrialized countries have adopted over the last decades,⁹⁹ just as the disclosure requirement has been phrased in their terms.¹⁰⁰

The breadth of available protection is matched by the scope of the exclusivity a patent must afford its owner. Making, using, offering for sale, or importing patented products or products directly resulting from a patented process, may not be used by third parties in the first place (art. 28). The real importance of this definition of the rights conferred by a patent¹⁰¹ is that the Member States may place strict limitations on these rights. This is true for the general exception in favor of such privileged use as it is for private or experimental use (art. 39). It is particularly true for the specific exceptions which Member States may provide for compulsory licenses. This Achilles' heel of patent protection, which developing countries had attacked under the Paris Convention, has now been protected by no less than eight prerequisites limiting the grant as a matter of substantive law,¹⁰² and two procedural prerequisites (art. 31). Thus, such licenses may not be granted by simple operation of the law as statutory licenses, but only by specific decisions taken

⁹⁸ For the problem of essentially biological processes (other than microbiological processes) and of genetic engineering, see Moufang, *supra* note 96, at 823; Straus, *supra* note 96, at 213; Correa, *The Pharmaceutical Industry and Biotechnology—Opportunities and Constraints for Developing Countries*, 15 *WORLD COMPETITION* 43 (No.2, 1992); Fuller, *Intellectual Property Rights Associated With Biotechnology—An International Trade Perspective*, *INT'L. TRADE. Q.J.* 529 (1988-89); Yusing Ko, *An Economic Analysis of Biotechnology Patent Protection*, 102 *YALE L.J.* 777 (1992); Acharya, *Patenting of Biotechnology—GATT and the Erosion of the World's Biodiversity*, 25 *J. WORLD. TRADE L.*, December 1991, at 71.

⁹⁹ Up to the late sixties and early seventies, countries like France were satisfied with inventions showing some qualified novelty. It was only when the EPC and the Strasbourg Convention on the Unification of Certain Points of Substantive Law on Patents for Inventions of November 27, 1963 were successively ratified by the Contracting Parties that non-obviousness/ inventive step became a common standard of patentability. See Haertel, *The Harmonizing Effects of European Patent Law on National Patent Laws*, 14 *INT'L REV. INDUS. PROP. & COPYRIGHT L.* 719 (1983).

¹⁰⁰ Compare 35 USC § 112 with EPC, art. 83.

¹⁰¹ Only two aspects have not been considered by TRIPS: 1) determining the scope of protection by interpretation of the claims, descriptions, the drawings made in the patent applications, and in letters patent (see EPC, art. 69; compare *supra* note 56); 2) the problem of contributory infringement (see 35 USC § 271(c) and § 10, PatG). The latter issue may lose its importance once TRIPS is in force, since the issue of contributory infringement has always been the supply of non-infringing parts for infringement purposes from abroad. See 35 USC § 271(f) and *supra* notes 25 and 26.

¹⁰² For dependent patents and improvement patents, in particular, three additional conditions have to be satisfied (art. 31, ¶ (1)): 1) the improvement must involve an important technical advance; 2) the patentee of the improvement must grant a cross-license to the patentee of the basic invention; and 3) the compulsory license granted on the basic patent may not separately be assigned to third parties.

on the merits of the individual case and only if it fails to obtain a voluntary license on reasonable terms.

The compulsory license must be limited in its scope and duration, and directed to the supply of the domestic market. It must be non-exclusive, non-assignable, and subject to a reasonable remuneration. Its grant must be subject to both administrative review of its continued opportunity, and judicial review of its justification, and the reasonableness of the remuneration. Although the grounds for the grant of compulsory licenses have been specified only by reference to exemplary cases (anticompetitive conduct, emergencies, dependency of inventions), its primary focus is on domestic manufacturing and supply requirements.¹⁰³ The containment of such requirements has become rigid as Member States have not been left with any real alternative to compulsory licensing.¹⁰⁴ Modulation of patent protection according to technological fields, to the term of the patent, or both¹⁰⁵ has been rendered impossible by the broad definition of patentable subject matter and the strict determination of the term of the patent by a minimum of twenty years.¹⁰⁶

Consequently, the guarantees afforded by patent protection are at least as adequate as those granted in industrialized countries, like France or the United Kingdom, which knowingly grant compulsory licenses. No less adequate is the protection in the areas surrounding patentable inventions. On the one hand, trade secret protection is provided for on broad terms for determining both what constitutes¹⁰⁷ and what violates¹⁰⁸ a trade secret. On

¹⁰³ Similarly, art. 27, ¶ (1), enjoins Member States from making the grant of patents dependent upon local production of the patented goods.

¹⁰⁴ In particular, forfeiture for non-use is strictly limited by art. 5 A, ¶¶ (3) and (4). The Paris Convention is applicable by virtue of GATT TRIPS, art. 2. See *supra* note 91.

¹⁰⁵ This approach is used by a number of countries. See *WIPO, Internationally Accepted Standards, in GATT OR WIPO?*, *supra* note 2, at 299, 309.

¹⁰⁶ Art. 33 states a minimum of 20 years ("shall not end before"), but does not indicate on which date the terms begin to run (date of application under most first-to-file systems. See EPC, art. 63; for date of grant, see 35 USC § 154). Surprisingly enough, the problem of patent term extension for pharmaceuticals and other subject matters, the marketing of which is generally subject to time-consuming admission procedures, has not been dealt with by TRIPS. *cf.* 35 USC §§ 155, 155A; EPC, art. 63, ¶ II, as amended by the Act Revising Article 63 of the Convention on the Grant of European Patents (European Patent Convention) of October 5, 1973, O.J. EPO 1992, 1; Pagenberg, *Diplomatic Conference on the Revision of Article 63, EPC*, 23 INT'L REV. INDUS. PROP. & COPYRIGHT L. 248 (1992); for an international comparison (including the USA and Japan), see Schennen, *DIE VERLÄGERUNG DER PATENTLAUFZEIT FÜR ARZNEIMITTEL IM GEMEINSAMEN MARKT 1993*, *passim*.

¹⁰⁷ Compare GATT TRIPS, art. 39, ¶ (2), with Uniform Trade Secrets Act § 1, ¶ (4), 14 ULA 537, 542; or art. 1, ¶ (7), Commission Reg. No. 556/89 (EEC) of November 30, 1989 on the application of art. 85, ¶ (3), of the Treaty for certain categories of know-how licensing agreements (OJEC L 61, 1). For a comparative view, see Ullrich in *SOFTWAREVERTRAG*, *supra* note 17, at Teil 1, Kap. 1, § 3IIB. The TRIPS

the other hand, computer programs definitely have been elevated to the status of copyrightable literary works (art. 10). The introduction of these matters and their form of protection, which in the case of software tend to reinforce each other,¹⁰⁹ is quite remarkable. The status of trade secrets as intellectual property has been contested with a view to leaving it as unprotected under TRIPS as it was under the national laws of some Member States.¹¹⁰ There have also been suggestions to protect software by less embracing means.¹¹¹ Doubts about the full application of the Berne Convention with its rather elaborate system of protection have been buried. The term of protection (fifty years) has been clarified,¹¹² and rental rights, which are important in the software business, have been secured. The scope of software protection has not been defined more precisely than by a general exclusion of the protection of "ideas, procedures, methods of operation and mathematical concepts as such" (art. 9 para II). It was left open to a somewhat vague exemption in favor of fair use and similar privileges because industrialized countries were unable to produce more legal certainty through their own domestic legislation.¹¹³

definition appears to be rather broad. See Ullrich, *Nationale Geschäftsgeheimnisse und Gemeinsamer Markt*, RIW BEILAGE 23 (1990) 13.

¹⁰⁸ According to footnote 10 to art. 39, a manner contrary to honest commercial practices that amounts to a trade secret violation shall mean "at least practices such as breach of contract, breach of confidence and inducement to breach, and includes the acquisition of undisclosed information by third parties who knew or were grossly negligent in failing to know, that such practices were involved in the acquisition" (emphasis added). Apart from its tendency to afford absolute exclusivity to the trade secret, this is a risky definition, since it sets no limit on what contracts may provide with regard to clauses of confidence and subject-matter. On the other hand, art. 39 does not explicitly address the problem of trade secret violations outside of breach of contractual confidence, though it certainly permits qualification of practices of industrial espionage that is contrary to honest commercial conduct. However, there is no reason to deplore this as a "trade secret gap," as Reichman does (see Reichman, *supra* note 90, at 235, 239), since the delimitation between lawful reverse engineering and dishonest conduct in competition is not a settled matter in industrialized countries, and since the legitimacy of secrecy is limited in itself. See Ullrich in *SOFTWAREVERTRAG*, *supra* note 17, at Teil 1, Kap. 1, § 3IIB.

¹⁰⁹ See Ullrich in *SOFTWAREVERTRAG*, *supra* note 17, at Teil 1, Kap. 1, § 4IB.

¹¹⁰ See Faupel, *GATT und geistiges Eigentum—Ein Zwischenbericht zu Beginn der entscheidenden Verhandlungsrunde*, GRUR INT'L, 1990, 255, 263; UNCTAD - TRADE AND DEVELOPMENT REPORT 188 (1991). Countries like Japan have introduced know-how protection under the pressure of TRIPS only.

¹¹¹ See Reinbothe, *supra* note 90, at 709; Cottier, *The Prospects for Intellectual Property in GATT*, 28 CM L. R. 383, 402 (1991); UNCTAD, TRADE AND DEVELOPMENT REPORT 187 (1991); Correa, *The Legal Protection of Software - Implications for Latecomer Strategies in Newly Industrializing Countries (NICs) and Middle-income Countries (MICs)*, 16 INFORMATICA E DIRITTO 131 (1990).

¹¹² See GATT TRIPS art. 12, which will mainly apply to software, which frequently is developed by enterprises rather than by individual authors.

¹¹³ See Ullrich in *SOFTWAREVERTRAG*, *supra* note 17, at § 2IIB5; INT'L REV. INDUS. PROP. & COPYRIGHT L. 3.

2. *Effective Protection*

The TRIPS-Agreement seeks to achieve its aim of guaranteeing adequate international intellectual property protection on both the national and the international levels.

a. *On the National Level*

On the national level, TRIPS simply but daringly extends harmonization of national intellectual property law to granting procedures, sanctions for infringement, and infringement procedures. The effectiveness of the granting procedure would appear to be of a primary interest to TRIPS, as it represents a matter of permanent concern in U.S.-Japanese relations.¹¹⁴ However, the Agreement deals with it in a summary manner, since pressing this point would have resulted in a confession of mutual weaknesses and filing tactics.¹¹⁵ Thus, the Agreement does not go beyond a general obligation to reasonably fashion the procedure for acquisition and maintenance of intellectual property rights for its running conditions and formalities. This way an obligation remains within reasonable periods of time so that the term of protection is not unduly prolonged. There would also be room for applying the general principles of equity and fairness (hearing of parties or reasoned opinion etc. art. 62, 41). The same obligations exist with respect to revocation or cancellation procedures which, like invalidity claims, seem not to have interested the Contracting Parties very much since they are referred to only very marginally in art. 62 para. IV.¹¹⁶

¹¹⁴ See *supra* note 74 and *U.S. Firms' Patent Problems in Japan Confirmed by Survey*, 46 Pat. Trademark & Copyright J. (BNA) 224 (1993); *Bill would Amend "Special 301" to Address Japanese Patent Law Inadequacies*, 44 Pat. Trademark & Copyright J. (BNA) 392, 408 (1992).

¹¹⁵ Apart from the first-to-file, first-to-invent controversy (see *supra* note 62), it must be noted that establishing a patent office is a highly expensive exercise, the success of which depends on a variety of factors (administrative skills and traditions, existence of a patent bar, size of the country, and of the number of patents to be expected, etc.). See WIPO, *GUIDE FOR DEVELOPING COUNTRIES ON THE EXAMINATION OF PATENT APPLICATIONS* (1982). Even the patent offices of highly developed countries are permanently struggling with their workload, granting procedures that easily take two to four years. For a summary analysis, see Zaphiriou, *supra* note 53, at 889; Rebel, *supra* note 61, at 46; *WIPO, Internationally Accepted Standards, in GATT OR WIPO?, supra* note 2, at 220.

¹¹⁶ For instance, by referring only to art. 41, ¶¶ (2) (3), paragraph (4) of art. 62 remains rather vague as regards the parties' right in administrative procedures (as compared to art. 42). Moreover, there is no obligation by Member States to establish effective procedures for cancellation and invalidation procedures that would form a counterpart to the obligation to provide for effective enforcement procedures. The very idea, that there might be unwarranted patents, which would unduly burden competition, seems to be outside TRIPS and must be introduced on the uncertain basis of the right to prevent abuses (see *GATT TRIPS*, art. 8, ¶ 2).

In contrast, sanctions for infringement and infringement procedures are dealt with in considerable detail. Thus, TRIPS introduces rules shifting the burden of proof to the defendant who claims the infringement of process patents.¹¹⁷ It further requires the defendant to produce evidence in possession which supports the plaintiff's claim (art. 43). TRIPS also obliges Member States to sanction infringement by injunctions (art. 44), by the award of damages and litigation costs (art. 45), and by decisions ordering that infringing goods or instruments that have served infringement be disposed of outside the channels of commerce or, possibly, destroyed (art. 46).¹¹⁸ Enforcement procedures must be tailored, "so as to permit effective action against any act of infringement ... including expeditious remedies to prevent infringements and remedies which constitute a deterrent to further infringements" (art. 41 para I). The Agreement implements this principle and the principles of procedural fairness and equity, availability of remedies, and of specific rules on the right to be heard (art. 42), on indemnification of defendants that have been pursued abusively, and by a full-fledged regulation on provisional measures (art. 56).¹¹⁹

b. On the International Level

However precise and detailed, to be put into effective operation the rules on substantive intellectual property law have been broken down into immediately applicable concepts and distinctions.¹²⁰ TRIPS is not intended to set up an intellectual property organization directly granting exclusive

¹¹⁷ Compare GATT TRIPS, art. 34 with 35 U.S.C. § 295 and § 139 III, PatG. Many countries do not accept this shift, however. See *Pharmaceutical IP Portfolios*, MANAGING INTELL. PROP. Jan-Feb. 1994, at 22.

¹¹⁸ Compare § 140 a, PatG with art. L 615-7 c. prop. int. GATT TRIPS, art. 47, enables Member States to introduce in their legislation a right of information of the patentee regarding third-party infringement.

¹¹⁹ Similar care has been taken for measures to control the import of infringing products (art. 51). However, these measures are outside the scope of this article, since they relate to trademark counterfeiting and copyright piracy only. See Harvey, *Efforts Under GATT, WIPO and other Multinational Organisations Against Trade Mark Counterfeiting*, 12 EUR. INTELL. PROP. REV. 446 (1993).

¹²⁰ For instance, the concept of novelty needs to be defined (absolute or relative novelty, inclusion of non-disclosed patent applications, admission of a period of grace). See EPC arts. 54-55; 35 USC § 102; § 3 I 2, GebrMG. Contributory infringement (see *supra* note 101), presumption of validity of patents (35 USC § 282) also need to be solved. Moreover, the exemptions (art. 30), which are indispensable corollaries to protection, must be implemented.

rights to the nationals of Member States.¹²¹ Rather TRIPS relies on national law, and consequently, on the principle of national treatment (art. 3).

However, within the framework of TRIPS, the operation of the principle of national treatment is fundamentally different from its operation within the framework of the Paris or the Berne Conventions. This difference has been unnecessarily clouded by TRIPS referring expressly to these Conventions and their national treatment principles. Indeed, national treatment has a different quality when it is supposed to work on the basis of largely harmonized national intellectual property law. It works within the context of substantive reciprocity rather than in the context of minimum protection, which leaves the formulation of intellectual property policies to the sovereign judgment of Member States. Under such circumstances, Member States no longer grant privileges to foreigners, regardless of their own domestic interest, but rather comply with the obligations of a *quid pro quo* deal. The Member States have entered into the deal presumably as legally and economically equal partners seeking to secure comparable advantages to their own nationals abroad.

Member States no longer define their national intellectual property policies with a view to the domestic market only. Rather, they define them with a view to the interests they have abroad to maintain their intellectual property interests there.¹²² What is more, this national treatment/substantive reciprocity principle will not be binding merely as a matter of intellectual property obligations to which the Contracting Parties have subscribed in TRIPS. Rather, by virtue of the incorporation of TRIPS into the World Trade Organization, it must be executed as part of the overall balance of rights and duties, obligations, and concessions agreed upon in the Negotiations. Indeed, since article 64 of TRIPS refers to art. XXII and XXIII of the GATT 1994,

¹²¹ Whether some TRIPS rules may nevertheless be self-executing is a problem which needs careful consideration because of the implementation problem (*see supra* note 120), the dispute settlement/retaliatory action mechanism of TRIPS/GATT 94 (*see infra* note 125), and the reciprocity inherent in the TRIPS system. Certainly, the self-executory character of TRIPS is not as self-evident as the German government assumes (*see Bundesregierung, supra* note 3, at 337, 344), nor does it necessarily follow from Community law in the EC; *cf. Drexl, Nach "GATT und WIPO": Das TRIPS-Abkommen und seine Anwendung in der Europäischen Gemeinschaft*, GRUR INT'L, 1994, 777. Drexl affirms the self-executing character of TRIPS on the ground that it lacks "political character," but he has a rather naive view of what the political character of an international trade agreement is, and he entirely fails to grasp the complexity of TRIPS implementation (*supra* note 120). Moreover, Drexl's position is considerably weakened by the European Court's advisory opinion of November 15, 1994, (the competence of the Community to conclude international agreements for services and the protection of intellectual property) and its judgement of July 14, 1994, case C-91/92, *Faccini Dori/Recreb*, GRUR INT'L 1994, 954.

¹²² This difference explains the resistance which the weaker developing countries have shown vis à vis TRIPS. *See Dhanjee, supra* note 52, at 5.

the dispute settlement procedure of the TRIPS agreement is the same as that listed in the GATT in general. That dispute settlement procedure ultimately allows a Contracting Party to sanction TRIPS violations by the suspension of concession or obligations under other WTO Agreements.¹²³ The dispute settlement procedure has become much more formalized and efficient,¹²⁴ and there is hardly any alternative to sanctioning TRIPS violations by suspension of trade concessions.¹²⁵ Thus, it represents a serious risk, certainly serious enough to make Member States hesitate before trying to test the outer limits of the reciprocity resulting from TRIPS intellectual property harmonization. Legislative discretion of Member States appears to be even more limited.

As a matter of fact, the very *raison d'être* of TRIPS is the sanction against noncompliance with adequate levels of protection by the withdrawal of trade concessions made in other areas.¹²⁶ This threat has been proven to

¹²³ See UNDERSTANDING RULES AND PROCEDURES GOVERNING THE SETTLEMENT OF DISPUTES (MTN/FA II - A 2), art. 22, ¶ (3), lit. c.

¹²⁴ See Pescatore, *The GATT Dispute Settlement Mechanism - Its Present Situation and Its Prospects*, 27 J. WORLD TRADE, Number 1, at 5; Petersmann, *Improvements to the Functioning of the GATT-System Including Dispute Settlement, in A NEW GATT FOR THE NINETIES AND EUROPE* 92, 109, 113 (Oppermann & Molsberger eds., 1991); Hilf, *Settlement of Disputes in International Economic Organisations: Comparative Analysis and Proposals for Strengthening the GATT Dispute Settlement Procedures, in THE NEW GATT ROUND OF MULTILATERAL TRADE NEGOTIATIONS - LEGAL AND ECONOMIC PROBLEMS* 285, 310 (Petersmann & Hilf eds., 2d ed. 1991); Kohona, *Dispute Resolution under the World Trade Organisation - An Overview*, 28 J. WORLD TRADE L. April 1994, at 23.

¹²⁵ Several reasons account for the inadequacy of sanctioning Member States which fail to sufficiently protect intellectual property by a withdrawal of domestic protection. First, such withdrawal will hurt individuals rather than a branch of industry in that Member State. Moreover, it has only long-term effects, since the rights acquired by foreign nationals at the time of the retaliatory action cannot simply be expropriated. In other words, withdrawal of intellectual property protection is an inefficient measure. Second, in many instances, sanctions will be counterproductive, since withdrawal of patent protection will result in increased secrecy, withdrawal of trademark protection or protection of indications of origin will lead to consumer deception. Third, it is already difficult to determine market losses due to insufficient intellectual property protection other than by very rough estimates, and it is virtually impossible to estimate just how much intellectual property protection has to be withdrawn to make up for these losses. Fourth, the very reasons that led to the TRIPS-Initiative prove that intellectual property protection is a central concern for (some) industrialized countries only, but not for the rest of the world, so that withdrawing protection will not hurt these other countries. Fifth, it is not clear how withdrawal of intellectual property protection will hurt another Member State. Withdrawal does not mean that the imports of the goods which are no longer protected become illegal as such. It will be difficult, even if it were possible and lawful at all, to sort out illegal imports and impose a tariff. Of course, imports that are illegal as a matter of infringing intellectual property may be prevented. But the issue is not one of preventing counterfeiting imports, but one of obtaining protection in the exporting country with respect to that or other countries' markets. Therefore, it is imports in other areas that must be excluded as a matter of retaliatory action.

¹²⁶ See Office of the U.S. Trade Representative, Executive Office of the President: Administration Statement on the Protection of U.S. Intellectual Property Rights Abroad (April 7, 1986), reprinted in 31 Pat. Trademark & Copyright J. (BNA) 506 (1986); The Intellectual Property Committee (USA), Keidanren (Japan), Union Internationale des Confédérations des Industries et Employeurs Européens (UNICE), Basic Framework of GATT Provisions on Intellectual Property - Statement of Views of the

be rather efficient when exercised by Member States with large domestic markets.¹²⁷ The deterrent effect it may produce is the more formidable as it may, and possibly must be, used not only when intellectual property protection is withheld by a Member State as a matter of principle, but also when it is granted on overly strict or overly lenient¹²⁸ conditions, or if exemptions are too broadly or too narrowly defined.¹²⁹ Otherwise, protection fails entirely and markets are lost completely. WIPO apparently has understood this risk and has proposed to channel it into intellectual property harmonization agreements that would implement TRIPS by extending the harmonization into those technical details of the intellectual property system that TRIPS would not, and probably could not reach.¹³⁰ It came as a surprise only when these

European, Japanese and United States Business Communities, June 1988, *reprinted in GATT OR WIPO?*, at 353, 366, 380; Faupel, *supra* note 110, at 255.

¹²⁷ This is true for the United States in the case of semiconductor protection. *See supra* note 33, 34 and other cases; *see* Antons, *Intellectual Property Law in ASEAN countries: A Survey*, 3 EUR. INTELL. PROP. REV. 78 (1991); O'Neill, *Intellectual Property Protection in Thailand: Asia's Young Tiger and America's "Growing" Concern*, 11 U. PA. J. INT'L. BUS. L. 603, 612 (1990). For software, *see* Dreier, *supra* note 33, in *GATT OR WIPO?*, *supra* note 2, at 68. The United States has entered into more than 40 bilateral agreements in IP-protection. *See* Simon, *GATT and NAFTA Provisions on Intellectual Property*, 4 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 267, 272. Similarly, the EC has repeatedly used bilateral action to insure that its intellectual property interests are protected by other States. *See* Govaere, *Intellectual Property Protection and Commercial Property*, in *THE EUROPEAN COMMUNITY'S COMMERCIAL POLICY AFTER 1992: THE LEGAL DIMENSION*, Dordrecht 1993, 197, 203 (Maresceau ed., 1993). In addition, both the United States and the EC attempt to impose their intellectual property policies within their zones of influence. Moreover, the EC incorporates into its free trade association agreements with East European countries (so-called Europe Agreements) Community standards of intellectual property protection. *See e.g.* Europe Agreement with Hungary, art. 65 and Annex XIII, *reprinted in OJEC* 1993, L 347, 1; Europe Agreement with Poland, art. 66 and Annex XIII, *reprinted in OJEC* 1993, L 348, 1. The European Economic Area Agreement (OJEC 1994, L 1,1) simply obliges Member States to fully adopt the IP-harmonization measures taken within the EC (*see* art. 65, ¶ (2), Protocol, and Annex XVII). Similarly, the North American Free Trade Association Agreement of Dec. 8 and 17, 1992, contains a detailed catalogue of intellectual property obligations of Member States. *See* art. 1701, *reprinted in* 32 I.L.Mat. 289, 670. *Cf.* Bale Jr., *supra* note 94, at 21; Gonzales, *supra* note 94, at 307; Schmidt, *Computer Software and the North American Free Trade Agreement: Will Mexican Law Represent a Trade Barrier?* 34 IDEA 33 (1993).

¹²⁸ Compare the reaction of the United States to the German Federal Supreme Court's formerly strict requirements of originality for software copyright (de Vries, *Commission of the EC, Answer to Written Question No. 823/92*, OJEC, 1993, C 51/6 and BGH of May 9, 1985, 17 INT'L REV. INDUS. PROP. & COPYRIGHT L. 681 (1986) - "Collection Program," and BGH of July 14, 1993, GRUR, 1993, 39 - "Buchhaltungsprogramm") with Ullrich, in *GATT OR WIPO?*, *see supra* note 2, at 139.

¹²⁹ For instance, fair use-exemptions for reverse engineering, *see supra* notes 108 and 113.

¹³⁰ For patents, *see* WIPO, Diplomatic Conference for the Conclusion of a Treaty Supplementing the Paris Convention, June 3 to 28, 1991 - The "Basic Proposal" for the Treaty and the Regulations, Doc. PLT/DC/3 of December 21, 1990; Fiorito, *supra* note 37, at 24; Pagenberg, *The WIPO Patent Harmonization Treaty*, 19 AM. INTELL. PROP. L. ASS'N Q.J. 1 (1991); Thompson, *Reforming the Patent System For the 21st Century*, 21 AM. INTELL. PROP. L. ASS'N Q.J. 171, 175 (1993). For similar (and similarly unsuccessful) efforts to globally harmonize software protection within the framework of a

WIPO efforts failed upon resistance of the main promoter of TRIPS.¹³¹ The United States has used the carrot-and-stick approach of bilateral trade agreements by imposing its intellectual property standards on trade partners. As a result, other nations and organizations might forego the opportunities offered by TRIPS.¹³²

In the future the United States and other Member States will be bound by the rules and the dispute settlement procedure of TRIPS. Moreover, bilateral agreements will become less attractive because of the most favored nation principle introduced into TRIPS.¹³³ Any advantages thus obtained must be passed on to all other Contracting Parties. The rigidity of a last detail harmonization of intellectual property by an international convention may not be adapted to technical progress by other means than by an international revision conference. TRIPS, with its adequate protection objective and its all-encompassing but flexible rules, is much better suited for Member States

revision of the Berne Convention, see Ullrich in *SOFTWAREVERTRAG*, *supra* note 17, at Teil 1, Kap. 1, § 4 II C 2.

¹³¹ See Schäfers & Schnennen, *Der erste Teil der Diplomatischen Konferenz zum Abschluss eines Vertrages zur Harmonisierung des Patentrechts*, GRUR INT'L, 1991, 849; Pagenberg, *supra* note 62, at 682; *U.S. Says "Not Now" on First-to-File and Agrees with Japan on Patent Term*, 47 Pat. Trademark & Copyright J. (BNA) 285 (1994)

¹³² See *supra* notes 74, 114, 127.

¹³³ The meaning most-favored-nation treatment may have in the context of intellectual property is all but clear. See *Bail in A NEW GATT FOR THE NINETIES AND EUROPE 250* (Oppermann & Molsberger eds., 1991); Cottier, *supra* note 111, at 397. In its simplest form, it is just a complement to national treatment, in that it would oblige Member States to facilitate access to their system of intellectual property protection for all Member States' nationals as for the nationals of Contracting Parties of a bilateral IP agreement. With this meaning, it may in fact help to dispel fears of smaller countries to be left out of international standards of protection by bilateral agreements between major countries. See Reinbothe & Howard, *The State of Play in the Negotiations on TRIPS (GATT/Uruguay Round)*, 5 EUR. INTELL. PROP. REV. 157, 159 (1991). Although that fear may be surprising in view of the level of protection attained and in view of most countries' original resistance to adhere to TRIPS at all, the U.S.-Japan Intellectual Property Agreement (*supra* note 114) may present an example (although non-discrimination, as originally required by the EC, would do as well). GATT TRIPS art. 4 undercuts Paris Convention art. 19 and Berne Convention art. 20, both of which expressly allow Member States to conclude more favorable bilateral agreements. They create new problems, however. The bilateral U.S.-Japan agreements provide that foreign nationals may file a patent application in English language, if followed by a Japanese translation within 2 months. Why only English language applications? In addition, the most-favored nation principle has major drawbacks, which are well known. It prevents parties from making trade concessions in bilateral negotiations in the first place, and, therefore, results in the necessity to set up multilateral negotiations. These, in turn, are extremely slow and difficult, as shown by the seven years of the Uruguay Round. See also Mestmäcker, *Free Trade in Services: Regional and Global Perspectives*, in *RULES FOR FREE INTERNATIONAL TRADE IN SERVICES* 9, 16 (Friedmann & Mestmäcker eds., 1990). Whether this kind of reluctance is typical for trade concessions only or whether it will occur in intellectual property negotiations as well remains to be seen.

that have the leverage to claim and impose those standards of protection that actually satisfy their changing needs.¹³⁴

III. FULL AND EQUAL PROTECTION, TERRITORIAL RIGHTS, AND GLOBAL TRADE: PLAYING THE GAME ON SPLIT-LEVELS

A. *TRIPS and Barriers to Trade*

1. *TRIPS' Objectives*

The purpose of the preceding sections was to show to what extent TRIPS will change international intellectual property protection. The change is more revolutionary as the geographical coverage of TRIPS in terms of the number of countries ratifying the WTO Agreement will be worldwide from the beginning.¹³⁵ Member States and the Council for Trade Related Aspects of Intellectual Property, which TRIPS creates to monitor its operation (art. 68), are likely to ensure that TRIPS is actually complied with. The level of protection achieved by TRIPS, at least for technological property, clearly meets the industrialized countries' objective to internationally establish a modern system of protection of the kind they themselves operate domestically.¹³⁶ Compare TRIPS with what is left of international harmonization by WIPO, with the state of harmonization in the European

¹³⁴ Cf. Reidenberg, *Trade, TRIPS and NAFTA*, 4 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 283, 285 (1993).

¹³⁵ On the basis of the number of signatories to the WTO, the estimated number of Member States is about 120, all of which, due to the "Single Package" approach, must accept TRIPS. In this respect, the many bilateral agreements concluded by the U.S. and the EC with third countries (*see supra* note 127) did facilitate acceptance, since they either fully reflect further TRIPS or even go beyond it. Together with the free trade agreements (*supra* note 127), they create regional areas of IP influence, the poles of which are the United States with NAFTA, and South-East Asia on the one side, and the EC with the European Economic Area and the East Europe free trade associations on the other side (where the USA has also been active bilaterally). This regionalization is completed by the Latin American countries associated within the Andean Group (*see* Andean Group, Commission Decision 313 of February 6, 1992 - Common Code on Intellectual Property, *reprinted in* 32 I.L.M. 180 (1993)) and by the ARIPO and the OAPI in Africa (*see supra* note 80). While the latter three groups still have to conform to TRIPS-requirements in one or the other respect, the former may even enter into conflict with others on the level of implementation of TRIPS; for example, by implementing the exemptions to protection in different ways.

¹³⁶ *See* Sherwood, *Why a Uniform Intellectual Property System Makes Sense for the World*, in GLOBAL DIMENSIONS, *supra* note 8, at 68; Armstrong, *Trends in Global Science and Technology and What They Mean for Intellectual Property Systems*, in GLOBAL DIMENSIONS, *supra* note 8, at 192, 204; Simon, *Remarks made at the Symposium: Trade Related Aspects of Intellectual Property*, 22 VAND. J. TRANSNAT'L L. 367, 368 (1989); *Basic Framework*, in GATT OR WIPO?, *supra* note 2, at 362.

Community, the recently established free trade areas,¹³⁷ or with the industrialized countries' legislation implementing TRIPS.¹³⁸ TRIPS has in fact laid down a worldwide system for equal and adequate protection of intellectual property. This corresponds perfectly to the basic assumption upon which TRIPS negotiations have been started by industrialized countries. It was assumed that trade had been hampered by the insufficient or lack of protection available in many countries, as these would necessarily constitute a barrier to increased trade with improved and technologically advanced products, and a distortion of trade in favor of counterfeit and pirated products.¹³⁹

Clearly, if TRIPS is to overcome such barriers to and distortion of trade without instituting new ones, it must rest on additional assumptions. First, protection of intellectual property must similarly benefit all Members. Second, the intellectual property available under the GATT is either self-sufficient or amenable to improvement by joint decisions of all Members. The former goes directly to the heart of the conflict between industrialized and developing countries. The latter assumes, rightly or wrongly, that enhanced protection will hurt the development of intellectual property.¹⁴⁰

As mentioned in the beginning, this article is not intended to deal with either this conflict or with the second assumption, since it underlies all intellectual property, and is in part purely speculative.¹⁴¹ Instead, I shall try

¹³⁷ For WIPO harmonization, see *supra* note 130; for a general account of intellectual property harmonization in the EC, see Ullrich, *Die gemeinschafts-rechtliche Gestaltung des Wettbewerbsrechts und des Rechts des geistigen Eigentums - Eine Skizze*, in *GEMEINSAMES PRIVATRECHT IN DER EUROPÄISCHEN GEMEINSCHAFT* 325, 346 (Müller-Graff ed., 1993); for the free trade areas, see *supra* note 127.

¹³⁸ For the US-GATT implementation legislation, see HR 1156, S. 2467. For text of bill and floor debate, see *GATT Bill Clears House with Major Intellectual Property Law Reforms*, 49 Pat. Trademark & Copyright J. (BNA) 95 (1994). The "major change" in patent law is that the patent term is brought from 17 years to 20 years beginning with the application (instead of with the grant, so the overall term virtually remain unchanged). Similarly, the Working Party on Harmonization of the EPO (16th meeting, Munich, July 14, 1994) had only minor amendments to propose for the European Patent Convention (Doc. CA/H 2/94); the same is true for German Law. See *BUNDESREGIERUNG*, *supra* note 3, at 337.

¹³⁹ Compare the Ministerial Declaration, *supra* note 87; *Basic Framework in GATT OR WIPO*, *supra* note 8 at 361; *USA, Suggestion for achieving the negotiation objective (GATT-Doc. MTN, GNG/NG 11/W/14) in GATT OR WIPO*, *supra* note 8, at 181 with the position held by developing countries (see Trade Negotiations Committee Meeting at Ministerial Level, Montreal, December 1988, GATT-Doc MTN. TNC/7 (Min) of December 9, 1988, reprinted in 1 *WORLD TRADE. MAT.* 5, 21 (1989); Mid-Term-Review, MTN.TNC/11 of April 21, 1989, 1 *WORLD TRADE. MAT.* 5, 21 (1989-4)); see also Faupel, *supra* note 110, at 255.

¹⁴⁰ See references *supra* notes 2, 94; for a disinterested argument that stronger protection may serve developing countries better see David in *GLOBAL DIMENSIONS* *supra* note 8, at 55; Frischtag in *GLOBAL DIMENSIONS*, *supra* note 8, at 89.

¹⁴¹ It may be noted, however, that TRIPS has a built-in development blocker because whenever a country enhances its intellectual property law it creates a distortion of trade making other Members appear

to assess TRIPS on the basis of its own rationale, which is that internationally harmonized national intellectual property protection will enhance international trade. It will do so by dismantling barriers to trade and by avoiding distortion of competition. My proposition is that TRIPS may very well enhance trade, but not as much as is desirable, since TRIPS has not been conceived to abolish barriers to trade. Whether it helps to prevent distortions of trade will depend on whether it is supported by national or international competition policy. That proposition rests on the distinction between harmonization and unification of international intellectual property with technology and product markets.

2. *TRIPS and Territoriality*

When TRIPS was introduced to international trade negotiations, one main objection to the introduction of TRIPS into the GATT was that TRIPS itself represented trade barriers that ought to be abolished rather than stepped up to the level of adequate protection.¹⁴² This objection was bound to fail not only because nobody seriously considered abolishment of import restrictions justified by intellectual property, but also because it did not take into account the twin rationales of intellectual property: 1) protect technological information against imitation to allow recovery of its costs and a profit on the market place; and 2) constitute it as a merchandisable good.¹⁴³ Consequently, industrialized countries were quick to rebut the objection by

as pirates by providing inadequate protection. Consequently, it has to submit its improvement proposal to TRIPS which actually provides for a review of both implementation and amendments (art. 71), and even obliges Member States to jointly undertake a review in specific cases (art. 27 ¶ III (b)). But will Member States ever be able to agree on such highly controversial issues like whether copyright has proved to afford only inadequate protection for software and should be replaced by patent protection or some sui generis form of protection? See generally *supra* note 134 and for a discussion of the software-issue, see Barton, *Adapting the Intellectual Property System to New Technologies*, in GLOBAL DIMENSIONS, *supra* note 8, at 256, 262; Samuelson, *A Case Study on Computer Programs*, in GLOBAL DIMENSIONS, *supra* note 8, at 284; Ullrich in SOFTWAREVERTRAG, *supra* note 17, at Teil 1, Kap. 1, § 1 and § 2.

¹⁴² That view is based on GATT TRIPS art. XX lit (d) allowing Contracting Parties to adopt - supposedly trade-restrictive - "measures necessary to secure compliance with laws or regulations relating ... to the protection of patents, trademarks and copyrights, and the prevention of deceptive practices". For a discussion of this issue see Reichman, *supra* note 52, at 828. GATT TRIPS art. XX (a) may be compared to EEC art. 36 which has been construed by the European Court of Justice as implying a distinction between intellectual property-based obstacles to trade and the legitimate protection of intellectual property the scope of which is autonomously determined by Member States and subject only to harmonization (EEC art. 100), see Ullrich in GEMEINSAMES PRIVATRECHT IN DER EUROPÄISCHEN GEMEINSCHAFT 339 (Müller-Graff ed., 1993).

¹⁴³ See David in GLOBAL DIMENSIONS, *supra* note 8, at 25; Ullrich, PRIVATRECHTSFRAGEN, *supra* note 83, at 11, 22.

pointing out the merits of enhanced intellectual property as an instrument to support technology transfer.¹⁴⁴ In fact, the argument carries much beyond the learning rationale of vertical transfer of technology from industrialized to developing countries. To the extent that technology is bought from outside the firm and from abroad rather than produced inside the firm and domestically, it is traded as such among industrialized or industrializing countries in the world market.¹⁴⁵ This may occur in non-embodied form through contract research or licensing by third parties or affiliated companies.¹⁴⁶ It may also happen in embodied and in non-embodied form within the framework of outsourcing strategies. Such strategies depend on the subcontracts which assure the control over the flow of technology, a major factor of which is their appropriability by exclusivity rather than by mere reliance on contractual privity.¹⁴⁷ In the case of computer programs, appropriability becomes even more important, though for slightly different reasons,

¹⁴⁴ The Intellectual Property Committee in GATT or WIPO, *supra* note 2, at 363; Kastenmeier & Beier, *International Trade and Intellectual Property: Promise, Risks, and Reality*, 22 VAND. J. TRANSNAT'L L. 285, 301 (1989); Mansfield, *Unauthorized Use of Intellectual Property: Effects on Investment, Technology Transfer, and Innovation*, in GLOBAL DIMENSIONS, *supra* note 8, at 107, 109; but see Mowery et al., "Global Intellectual Property Rights Issues in Perspective," in GLOBAL DIMENSIONS, *supra* note 8, at 368.

¹⁴⁵ See Radnor, *Technology Acquisition Strategies and Processes: A Reconsideration of the "Make or Buy" Decision*, in ON THE INCREASING ROLE OF TECHNOLOGY IN CORPORATE POLICY, SPECIAL ISSUE, INT'L J. TECH. MGMT. 113 (Gold ed. 1991); Teece, *Capturing Value from Technological Innovation: Integration, Strategic Partnering, and Licensing Decisions*, in TECHNOLOGY AND GLOBAL INDUSTRY 65 (Guile & Brooks eds., 1987) [hereinafter TECHNOLOGY AND GLOBAL INDUSTRY]; Granstrand et al., *External Technology Acquisition in Large Multi-Technology Corporations*, 22 RES. & DEV. MGMT., Number 2, at 111 (1992); Chatterij et al., *Benefitting From External Sources of Technology*, RES. TECH. MGMT., Nov.-Dec. 1993, at 21.

¹⁴⁶ This is due to the fact that R & D still is a centralized activity of multinational firms, see Patel & Pavitt, *Large Firms in the Production of the World's Technology: An Important Case of "Non-Globalisation"*, 1991 J. INT'L BUS. STUD. 1; Doz, *International Industries: Fragmentation Versus Globalization*, in TECHNOLOGY AND GLOBAL INDUSTRY 96, 104 (Guile & Brooks eds., 1987) (R & D is central, technology global); *contra* Armstrong, in GLOBAL DIMENSIONS, *supra* note 8, at 197; see also Mansfield, in GLOBAL DIMENSIONS, *supra* note 8, at 116. The proliferation of R & D laboratories that are established abroad does not belie centralization, as their functions are generally subservient to central strategies, and as the phenomenon is limited to some countries and technologies, see Serapio & Dalton, *Foreign RandD Facilities in the United States*, RES. TECH. MGMT., Nov.-Dec. 1993, at 33; Papanastassiou & Pearce, *The Internationalisation of Research and Development by Japanese Enterprises*, 24 RES. & DEV. MGMT. 155 (1994).

¹⁴⁷ See generally Hagedorn, *Global Strategies in Innovation: networks in research and production*, in ON THE INCREASING ROLE OF TECHNOLOGY IN CORPORATE POLICY, SPECIAL ISSUE, INT'L J. TECH. MGMT. 81, 84 (Gold ed. 1991); COMMISSION OF THE EC, PRACTICAL GUIDE TO LEGAL ASPECTS OF INDUSTRIAL SUB-CONTRACTING WITHIN THE EUROPEAN COMMUNITY, VOL. I - SUB-CONTRACTS - BRUSSELS at 51 (1989); Schütz, *EG-Kartellrechtliche Betrachtung der Zulieferverträge in der Automobilindustrie*, WUW 1989, 111, 113; OECD, *supra* note 34, at 29, 42.

since they are not generally traded as a technology but as an intangible good.¹⁴⁸

Generally, industry develops technology for the innovative manufacture of products or for the manufacture of innovative products. Consequently, if it seeks the exclusivity of intellectual property, it does so in order to protect the products which embody its technology and which, through their sale, will make consumers pay for this "embodied" technology. Thus, innovative technologies have value only to the extent that the products are sought after in the market. It is the protection of the products which protects the value of a technology. Such protection is not always perfect, in that patents do not necessarily cover an entire technology, cover it sufficiently, or cover it at all.¹⁴⁹ Trade secrets or copyright may only be poor substitutes.¹⁵⁰

However, TRIPS removes the principal obstacle to internationally protecting processes and products, namely the non-availability or non-enforceability of intellectual property in many countries.¹⁵¹ This is important because industry strategies for protecting intellectual property are not directed at protecting processes or products, but at protecting the geographical markets where the protected products are sold or to which the products resulting from a protected process are supplied.¹⁵² To this end, enterprises may directly seek protection with respect to the geographical market supplied. They may also seek to protect these markets by acquiring an

¹⁴⁸ Computer programs may embody technology in the form of both programming techniques and teachings of processes of manufacturing, controlling, testing etc. Frequently, and simultaneously, they are intangible tools for carrying out such processes or methods like bookkeeping. In this form they are products like other technical devices; they may be sold in intangible or tangible form, and they may be more or less appropriable in either form depending on whether they are transferred in source code or in object code. Therefore, they cut across traditional distinctions, and it is excessive to generally treat them as intangible, hardly appropriable goods, *cf.* Jussavallah, *THE ECONOMICS OF INTELLECTUAL PROPERTY IN A WORLD WITHOUT FRONTIERS - A STUDY ON COMPUTER SOFTWARE* (1992), *supra* note 8. However, as important as these aspects of intellectual property may be and whatever increased potential they will develop in the future, they have not been the main driving forces behind TRIPS.

¹⁴⁹ The spectrum reaches from product patents (pharmaceutical compounds) to complex technologies involving a number of patents and know how and to complementary technologies or to the results of basic science (discoveries are not patentable!); *see* Teece, *in* *TECHNOLOGY AND GLOBAL INDUSTRY* 67 (Guile & Brooks eds., 1987); Franke, *Die Bedeutung des Patentwesens im Innovationsprozeß - Probleme und Verbesserungsmöglichkeiten*, Ifo-Studien 1993, (3-4) 307, 309 et seq.. Much of the weakness, however, may not become relevant due to compensating factors (learning costs, headstart-advantages, market structures etc.).

¹⁵⁰ Unlike a patent, a copyright does not protect the idea or the technical teaching, but only its presentation (expression), and it does so only against imitation (copying), not against independent "parallel" creation, both characteristics making copyright an ambivalent instrument for protecting software, *see* references *supra* note 141.

¹⁵¹ *See supra* Part II A 3 of this Article.

¹⁵² *See* references *supra* note 72.

exclusivity in the country or in the countries where the competing supplier(s) are located. Where they actually seek protection depends on many factors, such as costs, reliability and ease of enforcement of protection, and mobility of supply and demand. It also depends on whether enterprises only want to protect their domestic market or foreign markets as well. Additionally, it will depend on whether they want to exclude a competitor in third country markets by protecting this market, or by attacking the competitor directly through a patent exclusivity,¹⁵³ or through competition in the domestic product market.

The crucial question in choosing an international intellectual property strategy is how to minimize the costs of acquisition, maintenance, and enforcement of protection while maximizing both the control over competitors and the gains from the market. The basis upon which to rest a decision will always be the principle of territoriality. This is so because there is neither a central granting authority for intellectual property operating on a global scale, nor a central administration or a court system having worldwide jurisdiction over matters of validity or enforcement.¹⁵⁴ As it is impossible to unify international intellectual property, TRIPS did not consider harmonizing national laws. It also did not modify the traditional structure of exclusive rights which derive their legitimation from the sovereign grant by the nation state.

Although centralization of the administration and the enforcement of international intellectual property might have its advantages, it is not likely to materialize in the near future because, politically and economically, the world is far from being ready for such a revolutionary and expensive step.¹⁵⁵ Besides, some facilitation of access to international protection already

¹⁵³ See for the latter strategy Doz, in *TECHNOLOGY AND GLOBAL INDUSTRY* 101 (Guile & Brooks eds., 1987).

¹⁵⁴ It should be noted that, on the one hand, such difficulties exist for software copyright as well because its ease of acquisition is compensated for by enforcement risks (no examined title, no claims fixing the scope of protection, uncertainty whether allegedly infringing software is an imitation or an independent creation). On the other hand, international conventions for the recognition and execution of judgements exist, but cannot help avoid the need of multiple litigation against multiple acts of infringement.

¹⁵⁵ A deterring example, of course, is the ill-fated Community Patent, the Convention Establishing a Patent for the Common Market (OJEC 1989 L 401) having little prospect to ever be ratified by its Member States, see *Europäische Gemeinschaften - Lissaboner Gemeinschaftspatentkonferenz gescheitert*, GRUR INT'L, 1992, at 560, and for the difficulties, see Neukom, *What Price the Community Patent?* 4 EUR. INT. PROP. 111 (1992); Hilti, *The Future European Community Patent System and its Effects on Non-EEC-Member-States*, 18 AM. INTELL. PROP. L. ASS'N. Q.J. 289 (1990).

exists.¹⁵⁶ Moreover, territoriality has its own specific advantages. It allows for focus on patenting strategies in the markets of interest and on the site of likely competitors. While territoriality may increase the costs and risks of controlling infringers through enforcement, it also spreads the risk of attacks made by competitors on the scope or on the validity of protection over several territories.¹⁵⁷ In addition, a global intellectual property system would benefit primarily globally operating enterprises,¹⁵⁸ which are best able to handle internationally harmonized national systems while largely benefiting from territoriality.

Territoriality is, indeed, not just a means to protect a niche for enterprises operating on a geographically limited scale. It also provides enterprises supplying international markets with both the opportunity to benefit from locally prevailing demand inelasticities by charging different prices in different territories, and to negate comparative advantages of competitors having their home base in territories with lower factor costs.¹⁵⁹ It is the very purpose of technology property, such as patents or software copyright,¹⁶⁰ to allow its owner to maximize profits by manufacturing and selling the protected products under an exclusivity that is supposed to operate as a reward collecting device and as an incentive.¹⁶¹ However, it is questionable that a competitor should be allowed to do so on the basis of the territorial independence of national intellectual property which has been internationally harmonized to undo distortions of trade. It would appear that the market-dividing effects of the principle of territoriality cannot draw upon any other justification than on the historical principle, which is rooted in the concept of

¹⁵⁶ See *supra* notes 79-81. Patent acquisition strategies will not only use these possibilities, but also benefit from the indirect advantage that patents that have been examined by one reputed examination authority will enjoy a factual presumption of validity in other countries as well.

¹⁵⁷ This may in part explain industry's satisfaction with the European Patent Convention resulting in the grant of a bundle of national rights as distinguished from the Community Patent that would be unitary for the entire Common Market, and, consequently, could and would be attacked and invalidated centrally, see Ullrich, *Patentschutz im Europäischen Binnenmarkt*, GRUR INT'L 1991, 1, 10.

¹⁵⁸ See Bertin, in *RESULTS AND METHODS*, *supra* note 8, at 96; Greif, *State and Development of Economic Patent Research in the Federal Republic of Germany*, in *RESULTS AND METHODS* *supra* note 8, at 113, 128; Shapiro, *supra* note 72, at 40. Uehara, *Intellectual Property Rights and Competitive Strategy - A Multinational Electronic Firm*, in *GLOBAL DIMENSIONS*, *supra* note 8, at 228 (absolute patent numbers probably are exaggerated due to Japanese claiming methods); Täger & Bockenfeld, 1992: *THE STIMULUS FOR CHANGE IN BRITISH AND GERMAN INDUSTRY - ENTWICKLUNG DER PATENTAKTIVITÄTEN VON IN- UND AUSLÄNDISCHEN UNTERNEHMEN IN DEUTSCHLAND UND GROßBRITANNIEN* Ch. 6 (1993).

¹⁵⁹ See Ullrich in *GATT OR WIPO*, *supra* note 2, at 131 with references.

¹⁶⁰ See EC-Directive on the legal protection of computer programs of May 14, 1991, preamble, considerations 2, 3 (OJEC 1989 L 122, 42); generally, however, the incentive rationale is not accepted for copyright protection as understood by continental copyright law, see *supra* note 9.

¹⁶¹ See references *supra* note 9.

identity of the territorial reach of a state's sovereign control and the extension of the market for which this state grants a privilege.¹⁶²

The conditions for the grant of the privilege are supposed to be tailored to allow its owner to reap the reward and incentive from the market for which the exclusivity is granted. This should also be the rationale of TRIPS, which is based on the premise that the globalization of markets must be matched by an adequate level of intellectual property protection. However, instead of taking this globalization into account in determining the territorial scope of protection, TRIPS divides protection into a bundle of national rights. It also determines the reward of the intellectual property owner by a multitude of aggregated national markets.

Surprisingly enough, this basic contradiction within the TRIPS philosophy has not encountered much opposition. Rather, it has been implicitly incorporated into art. 6 by way of an express exclusion of the principle of international exhaustion of intellectual property rights subsequent to the first authorized sale of a protected product.¹⁶³ Article 6, in its abstruse form, does not contain an outright rule excluding international exhaustion. Instead, it leaves this as a matter of individual concern for Member States, which may provide for the principle of exhaustion through domestic legislation. However, article 6 expressly disclaims the exhaustion principle as a TRIPS issue. Thus, it makes it clear that Member States are in no way held to admit exhaustion.¹⁶⁴

Abstaining from ruling on "the" trade-related aspect of intellectual property was apparently not enough. It has been suggested that a Member State's admission to international exhaustion may constitute inadequate

¹⁶² Cf. Joos, DIE ERSCHÖPFUNGSLEHRE IM URHEBERRECHT - EINE UNTERSUCHUNG ZU RECHTSINHALT UND AUFSPLATBARKEIT DES URHEBERRECHTS MIT VERGLEICHENDEN HINWEISEN AUF WARENZEICHENRECHT, PATENTRECHT UND SORTENSCHUTZRECHT 131 (1991) with references; with respect to trademark law, see Riehle, MARKENRECHT UND PARALLELIMPORT - EIN BEITRAG ZU GRUNDLAGEN UND ZU TERRITORIALITÄT DES WARENZEICHENRECHTS, 81 (1968).

¹⁶³ For the principles and the rationale underlying the German, European and U.S.-American exhaustion doctrine see Joos, *supra* note 162 *passim*; Riehle, *supra* note 162 *passim*; Stern, *Vertical Restraints in the United States of America: Exhaustion of Rights by an Authorized Sale, After the GTE Sylvania Case*, INDUS. PROP. 1985, 278; Stern, *The Unobserved Demise of the Exhaustion Doctrine in US Patent Law*, 12 EUR. INTEL. PROP. REV. 460 (1993) (criticizing strongly, but probably wrongly, *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F. 2d 700 (Fed. Cir. 1992)).

¹⁶⁴ However, if they admit international exhaustion, than they must do so on a most-favored-nation-basis, i.e. without discrimination as to where parallel imports come from and as to whom the intellectual property affected belongs to. This appears to be the meaning of the introductory sentence of art. 6. Still, it is an awkward approach since in this case most-favored-nation treatment operates in the classic sense of lowering import restrictions while in the context of TRIPS it appeared to be intended to extend intellectual property protection granted with respect to nationals of one Member State to those of all other Member States.

protection for intellectual property held in that state by nationals of other Member States.¹⁶⁵ At any rate, since industrialized countries are reluctant to admit international exhaustion except in the area of trademark law,¹⁶⁶ and since the European Community insists on giving a deterring demonstration of refusal of international exhaustion,¹⁶⁷ there is little hope that the exhaustion principle will ever generally be recognized as a means to reduce those price differentiating strategies that are imposed all the way down to retail trade.¹⁶⁸ The result is not only that national consumers may be deprived by national law of the benefits of cheaper import supplies, but also that they are held as the domestic hostages of pricing policies aimed at supplying foreign markets at lower prices. This is a classical dumping situation, which is based not on the legitimacy of intellectual property but on the principle of territoriality, which segregates the export from the import markets in the manner normally required for dumping to be effective.

International harmonization of intellectual property aims at fairness in international trade by ensuring exclusive rewards corresponding to what

¹⁶⁵ See Cottier, *supra* note 111, at 399.

¹⁶⁶ See e.g. for patents BGH of June 3, 1976, GRUR 1976, 579 - "Tylosin" reprinted in 8 INT'L REV. INDUS. PROP. & COPYRIGHT L. 64 (1977) and Joos, *supra* note 162, at 134 with references; for copyright see § 17 II UrhG, and BGH of February 27, 1981, GRUR Int. 1981, 562 - "Schallplattenimport" reprinted in 13 INT'L REV. INDUS. PROP. & COPYRIGHT L. 93 (1982); BGH of October 28, 1987, GRUR 1988, 373, 374 - "Schallplattenimport III"; Joos, *supra* note 162, at 138 with references; Loewenheim, in KOMMENTAR, *supra* note 14, at § 17 annot. 15 with references; for trademarks the survey of national laws, see Beier & von Mühlendahl, *Der Grundsatz der internationalen Erschöpfung des Markenrechts in den Mitgliedstaaten der EG und ausgewählten Drittstaaten*, MITT. PAT. ANW. 1980, 101; Heath, *From "Parker" to "BBS" - The Treatment of Parallel Imports in Japan*, 24 INT'L REV. INDUS. PROP. & COPYRIGHT L. 179 (1993); for a comparative analysis see also *infra* note 168.

¹⁶⁷ See CJEC of June 15, 1976, case 151/75, EMI-Records, CBS Schallplatten, Rep. 811 at 847, and with respect even to parallel imports from free trade associations to the EC CJEC of February 9, 1982, case 270/80, Polydor/Harlequin Record, Rep. 1982, 329, 346; cf. Trademark Directive art. 7 (OJEC 1989 L 40, 1); Community Trademark Regulation art. 13 (OJEC 1994 L 11, 1); Commission, Reply of April 26, 1994 to the Written Questions No. E 3482/93, 3483/93 and 3484/93 (OJEC 1994 C 340, 37); but see Beier, *Industrial Property and the Free Movement of Goods in the Internal European Market*, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L. 131, 159 (1990); Ebenroth, GEWERBLICHER RECHTSSCHUTZ UND EUROPÄISCHE WARENVERKEHRSFREIHEIT 27, art. 4 (c) (1992); art. 15 Draft Design Directive (OJEC 1993 C 345, 14); art. 24 Draft Community Design Regulation, (OJEC 1994 C 29, 20); with respect to the European Economic Area see Prändl, *Exhaustion of IP Rights in the EEA Applies (Does Not Apply) to Third-country Goods Placed on the EEA Market*, 6 EUR. INTELL. PROP. R. 231 (1992); cf. Abbey, 2 EUR. INTELL. PROP. REV. 43 (1993). Inside the Common Market, Community-wide exhaustion is strictly applied, see Ullrich in GEMEINSAMES PRIVATRECHT IN DER EUROPÄISCHEN GEMEINSCHAFT 339 (Müller-Graff ed., 1993); Ullrich, *Patents and Know How, Free Trade, Inter-enterprise Cooperation and Competition Within the Internal Market*, 23 INT'L REV. INDUS. PROP. & COPYRIGHT L. 587 (1992).

¹⁶⁸ For a recent rekindling of the issue see Yusuf & Moncayo von Hase, *Intellectual Property Protection and International Trade - Exhaustion of Rights Revisited*, 16 WORLD COMPETITION, September, 1992, at 115; Lansing & Gabriella, *Clarifying Gray Market Areas*, 31 AM. BUS. L.J. 313 (1993). It should be noted, that territorial protection against direct imports remains intact.

markets yield under conditions of global competition. Are we then not entitled to expect such territoriality-based dumping practices to be outlawed?

Similarly, because article 6 makes the principle of territoriality a sanctuary for TRIPS, there is little hope for finding support for alleviating TRIPS-territoriality in the areas of export control. It would be tempting, to deny domestic infringement of intellectual property rights in cases where the alleged infringer manufactures or sells the protected products for export only.¹⁶⁹ In such cases, national intellectual property is used exclusively to control competition in foreign markets. As TRIPS guarantees equivalent protection on the foreign market, the principle of territoriality as a conflict of laws rule ought to be replaced by a competition-oriented conflicts rule resulting in the application of the law of the market affected by the export or import.¹⁷⁰ This would avoid interference with national sovereignty over the import market, which is the inherent goal the principle of territoriality. However, the European Community insists on making export as such an act of infringement.¹⁷¹ Which country would dare to be more liberal than this fortress built on liberalism?

B. TRIPS: Trade, Competition, and Technology Policy

I. Competition and Cooperation

Although the principle of territoriality applies to intellectual property whether traded as such or in an embodied form, it has the greatest impact on the product market. It tends to interrupt the free flow of goods across borders. Thus, it segregates the markets into groups of products and technology that enjoy similar global protection and, consequently, may be easily transferred worldwide. It is not clear whether this split-level of trade with its specific

¹⁶⁹ See *supra* text accompanying note 25.

¹⁷⁰ That rule, which brings into play more or less strict intellectual property protection (e.g. as regards scope of claims, exemptions, damages) is that applied to acts of unfair competition (which TRIPS is intended to prevent), see Kreuzer in 7 MÜNCHENER KOMMENTAR art. 38, annot. 231, 241 (2d ed. 1990); Schricker in UWG-GROÄKOMMENTAR Einl. F. 183 (Jacobs et al. eds., 1994). For the traditional rule see references *supra* note 26 and Joos, *supra* note 162, at 50.

¹⁷¹ See Trademark Directive art. 5 ¶ 3(c); Community Trademark art. 9 ¶ 2(c); Community Trademark art. 12 ¶ I; Draft Community Design arts. 20-21. The Community Patent, however, and the Computer-Program-Protection Directive do not indulge in such excesses. See Community Patent Convention art. 25 (OJEC.1989, L 401.1). The blame should not be put only on the EC: The United States has obliged trading partners to install a control over exports of infringing domestic products, see with respect to Taiwan, Trainer, *Intellectual Property Protection Along Foreign Borders*, 21 AM. INTELL. PROP. L. ASS'N Q. J. 313, 319 (1993).

profit maximization potential is really necessary to achieve the ultimate objective of TRIPS: Enhance trade in innovative goods at the expense of imitative products.

TRIPS should not be blamed for attempting to go at least halfway to a harmonized system of international intellectual property protection, since going all the way to a genuine world intellectual property system is politically impossible. Nonetheless, the goal of establishing and maintaining a global system of dynamic competition should not be abandoned. Technology property is granted as a stimulus to invention and innovation within a system of competition that otherwise would run into a stalemate caused by free-riding imitation.¹⁷²

The basic idea underlying TRIPS is that inadequate protection of intellectual property will result in a barrier to trade. This idea rests on the premise that trade is no longer for goods as such but for innovative products and processes which, in the absence of protection, would not be brought into the market for fear of competing imitation. In other words, TRIPS is not aimed at trade as such, but at trade based on a certain form of competition, namely, competition for innovation. Therefore, the frame of reference of TRIPS is the same as that of intellectual property protection under national law.¹⁷³

The optimal operation of intellectual property exclusivities granted nationally depends on the proper functioning of domestic markets. Similarly, the benefits expected from the international harmonization of intellectual property accrue only under conditions of workable competition. In both cases, care must be taken so that it is the market which invites competition for exclusivities. Once obtained, the exclusivity must be exercised under the threat of competing exclusivities and, ultimately, under the threat of imitation. It is only then that intellectual property will produce the innovations demanded by the market, and that it will yield market rewards based on exclusive rights, rather than non-market rewards based on monopoly rights.¹⁷⁴

¹⁷² See references *supra* note 9.

¹⁷³ Cf. the analysis made with respect to national as well as international microchip protection, Chesser, Semiconductor Chip Protection: Changing Roles for Copyright and Competition, 71 VA. L. REV. 249 (1985).

¹⁷⁴ See references *supra* note 83. It is only on the basis of this competition-rationale of intellectual property protection that courts faced with claims of an abusive exploitation of intellectual property may and do distinguish between the exclusivity and the monopoly. see Court of Justice of the EC of June 15, 1976, case 51/75, EMI Records/CBS United Kingdom, Rep. 1976, 811, 851 *reprinted in* 7 INT'L REV. INDUS. PROP. & COPYRIGHT L. 275 (1976); of May 23, 1978, Case 102/77, Hoffmann La Roche/Centrafarm, Rep. 1978, 1139, 1168 *reprinted in* 9 INT'L REV. INDUS. PROP. & COPYRIGHT L. 580 (1978); of October 5, 1988, Case 53/87, CICRA/Renault, Rep. 1988, 6039, 6072 *reprinted in* 20 INT'L

As the preamble to TRIPS warns, care must be exercised so that "measures and procedures to enforce intellectual property rights do not themselves become barriers to legitimate trade."

a. *Dynamic competition and fairness of trade*

Dynamic competition for innovation is not the only rationale underlying the protection of intellectual property. Guarantee of fair trade is actually the central purpose. Therefore, TRIPS may not be understood simply as an extension of that national technology policy approach--the promotion of innovation-- underlying any system of intellectual property protection. Nor may it be assessed only in terms of whether the intellectual property approach taken was well chosen.¹⁷⁵ Though certainly important, this would answer only one half of the question. Competition has always been the thriving force behind free international trade. If TRIPS introduces true intellectual property into international trade to change the nature of the goods traded, then it must also accept and even foster competition to promote the necessary competition for innovation.

A competition policy for TRIPS must reflect the new dimension of intellectual property protection when applying traditional antitrust concepts. Thus, competition analysis should account for the adequate levels of protection achieved internationally. Relevant markets, market power, and the potential for competition must be assessed with due regard to the increased possibilities to control markets and imitative competition, so that intellectual property protection is available and enforceable in similar terms throughout global markets. Hence, intellectual property strategies followed by firms must be given more attention.¹⁷⁶ On the other hand, in evaluating contractual

REV. INDUS. PROP. & COPYRIGHT L. 186 (1989); the risk of confusion becomes clear in EC 1st Inst. of July 10, 1991, Case T-76/89, ITP/Commission, Case T-69/89, RTE/Commission, and Case T-70/89, BBC/Commission, Rep. 1991-II-485, 535, 575; for a critique of the latter decision, which is on appeal, see Thompson, *Mandatory Licensing Under art. 86*, 3 EUROPÄISCHES WIRTSCHAFTS- UND STEURRECHT 178 (1992).

¹⁷⁵ For a detailed analysis, see Reichman, *The TRIPS Component of the GATT's Uruguay Round: Competitive Prospects for Intellectual Property Owners in an Integrated World Market*, 4 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 171 (1993). Reichman also points to the necessity of competition policy as a counterpart to TRIPS, though in a somewhat non-committal way, see *id.* at 265.

¹⁷⁶ See *supra* note 72. It should be noted that analyzing the technology position and strategy of competitors on the basis of patent statistics has become a serious approach which big enterprises already use, and which will become more reliable as, due to harmonization, national patents are made more comparable, see Faust, *Patentmeldungen als Indikator von technologischen Entwicklungen - Ergebnisse und Erfahrungen mit der Ifo-Patentstatistik*, [hereinafter Faust], in RESULTS AND METHODS, *supra* note 8, at 155; Ashton & Sen, *Using Patent Information in Technology Business Planning - I*, II.

arrangements like sub-contracting, out-sourcing and licensing, competition policy must re-assess the trade restrictions inherent in intellectual property protection.¹⁷⁷ It must also distinguish their legitimate procompetitive effects from those that do not share the rationale of protection but are extraneous to it.

In this respect, territoriality must be viewed critically, since in the context of internationally harmonized intellectual property protection and global competition across national markets, it is no more than a remnant of times when intellectual property policy could be defined nationally. As GATT-TRIPS forecloses such national policies in the interest of international innovation and trade in technology, territoriality may no longer be allowed to legally separate licences according to national territories where, economically, the licenses are intended to be coherent parts of an international licensing strategy covering a global market. This would protect against parallel imports through implicit cooperation, where the much criticized and misinterpreted case law of the European Court of Justice might be successfully applied.¹⁷⁸ This would also be the case for the admissibility of territorially limited licenses in general. Whatever the appropriate standards may be when territorial licenses are not assessed against the background of a unitary national or a Common Market,¹⁷⁹ antitrust is by no means bound to take intellectual property-based territorial divisions as sacrosanct. Rather, it would tend to disregard the artificial territoriality of international intellectual property that has been harmonized for the global extension of markets.

RES. TECH. MGMT., Nov.-Dec. 1988, at 42; Jan.-Feb. 1989, at 36; Moge, *Using Patent Data for Technology Analysis and Planning*, RES. TECH. MGMT., July-Aug. 1991, at 43; Narin & Noma, *Patents as Indicators of Corporate Technological Strength*, 16 RES. POL'Y. 143 (1987); There is no reason that competition policy should not equally use this analytic tool; with respect to the determination of technology markets, see Schwab, *DIE GRUNDLAGEN DER ABGRENZUNG DES RELEVANTEN TECHNOLOGIEMARKTES* 133, 187 (1994).

¹⁷⁷ For various national approaches, see Schmid, *GEBIETSBSCHRÄNKUNGEN IN PATENTLIZENZ- UND KNOW-HOW-VERTRÄGEN IM WETTBEWERBSRECHT DER USA UND DER EG*, 81, 279 (1987); Wedekind, *DIE ANWENDUNG DER KARTELLVORSCHRIFTEN DES EWG-VERTRAGES AUF PATENTLIZENZVERTRÄGE*, 24, 33, 152 (1989); Bleeke & Rahl, *supra* note 78, at 450 (1979).

¹⁷⁸ CJEC of July 13, 1966, case 56 and 58/64, Grundig, Consten/Commission, Rep. 1966, 321, 393; of February 11, 1971, case 40/70, Sirena/Eda, Rep. 1971, 69, 81; of June 15, 1976, case 51/75, EMI Records/CBS United Kingdom, Rep. 1976, 811, 850; but see Ebenroth & Hübschle, *GEWERBLICHE SCHUTZRECHTE UND MARKTAUFTEILUNG IM BINNENMARKT DER EUROPÄISCHEN UNION* 70, 142 (1994); Kunze, *Waiting for Sirena II - Trademark Assignment in the Case Law of the European Court of Justice*, 22 INT'L REV. PROP. & COPYRIGHT L. 319 (1991).

¹⁷⁹ See *supra* note 177.

b. *R&D cooperation*

The new dimension which international intellectual property will take on under TRIPS has implications for formulating competition policy for both product and technology markets. Formerly, some contract research or the transfer of existing technology through licensing had been relatively small and was more or less closely linked to product markets.¹⁸⁰ It has expanded considerably during the last one and a half decade because of the spread of R&D cooperation between firms on the national and the international level.¹⁸¹ Through long-range strategic alliances,¹⁸² firms hoped to gain access to new, mostly complementary technology and exchange of information, coupled with a more competitive position and reduced cost or risk.¹⁸³ Thus, the need for such technology access may be explained by the increasingly interdisciplinary character of advanced industrial technologies as well as by their linkages to basic research.¹⁸⁴

However, the large share of R&D cooperation held by information technologies, biotechnology, and new materials¹⁸⁵ points to additional rea-

¹⁸⁰ For an empirical analysis of licensing practice see Greipl & Täger, WETTBEWERBSWIRKUNGEN DER UNTERNEHMERISCHEN PATENT- UND LIZENZPOLITIK 71 (1982); Vickerey, *A Survey of International Technology Licensing*, 4 STI-REV.1988 (4) 7.

¹⁸¹ See OECD, TECHNOLOGY AND THE ECONOMY - THE KEY RELATIONSHIPS, (1992) at 72; Hagedoorn, *Global Strategies in Innovation: Networks in Research and Production*, in ON THE INCREASING ROLE OF TECHNOLOGY IN CORPORATE POLICY, SPECIAL ISSUE, INT'L J. TECH. MGMT. 81 (Gold ed. 1991); Brainard, *Internationalizing R and D*, 174 OECD-OBSERVER 7 (Mar.-Apr. 1992); Chatterij et al., *Benefitting From External Sources of Technology*, RES. TECH. MGMT., Nov.-Dec. 1993, at 24; Grandstrand et al. 22 (2) RES. & DEV. MGMT. 116 (1992); Chesnais, *Technical Cooperation Agreements Between Firms*, STI-REV. 1988 (4) 51.

¹⁸² See OECD, TECHNOLOGY AND THE ECONOMY - THE KEY RELATIONSHIPS (1992) at 226; Basedow, STRATEGISCHE ALLIANZEN - DIE VERNETZUNG DER WELTWIRTSCHAFT DURCH PROJEKTBEZOGENE KOOPERATION IM DEUTSCHEN UND EUROPÄISCHEN WETTBEWERBSRECHT 6, 65 (1993); Mytelka, *Crisis, Technological Change and the Strategic Alliance*, in STRATEGIC PARTNERSHIPS - STATES, FIRMS AND INTERNATIONAL COMPETITION 7 (Mytelka ed., 1991); Compton, *Cooperation, Collaboration, and Coalition: A Perspective on the Types and Purposes of Technology Joint Ventures*, 61 ANTITRUST L.J. 861 (1993).

¹⁸³ See Peterson, *Assessing the performance of European Collaborative R & D Policy: The Case of Eureka*, 22 RES. POL'Y. 243, 256 (1993); OECD, TECHNOLOGY AND THE ECONOMY - THE KEY RELATIONSHIPS (1992) at 74; Häusler et al., *Contingencies of Innovative Networks: A Case Study of Successful Interfirm R & D Collaboration*, 23 RES. POL'Y. 47, 48 (1994); Ciborra, *Alliances as Learning Experiments: Cooperation, Competition and Change in Hightech Industries*, in STRATEGIC PARTNERSHIPS - STATES, FIRMS AND INTERNATIONAL COMPETITION 51, 61 (Mytelka ed., 1991).

¹⁸⁴ Häusler et al., *supra* note 183; Basedow, *supra* note 182, at 7; Mytelka in STRATEGIC PARTNERSHIPS - STATES, FIRMS AND INTERNATIONAL COMPETITION 7 (Mytelka ed., 1991).

¹⁸⁵ See Brainard, *supra* note 181, at 9; Hagedoorn, in ON THE INCREASING ROLE OF TECHNOLOGY IN CORPORATE POLICY, SPECIAL ISSUE, INT'L J. TECH. MGMT. 88 (Gold ed. 1991); OECD, TECHNOLOGY AND THE ECONOMY - THE KEY RELATIONSHIPS (1992) at 73, 227.

sons. Indeed, all these technologies are not only developing very rapidly and cut across industries as key technologies, but they are also know-how intensive. They are kept secret largely for lack of patentability¹⁸⁶ or as a matter of business strategy. The international system of intellectual property, as codified in TRIPS, contributes to the maintenance of such secrecy. Copyright protection for software covers the trade secret with a cloak of exclusivity through the program written and sold in object-code.¹⁸⁷ TRIPS harmonizes and perpetuates this kind of copyright protection. It also reinforces international trade secret protection for software, new materials, and other subject matters by the law of unfair competition.¹⁸⁸

However imperfect, the disclosure requirement of patent protection which has been refused to computer programs on the ground, *inter alia*, that it would ask for the establishment of a searchable prior art register,¹⁸⁹ could guarantee a minimum transparency of technological development. Its absence created the need to enter into R&D cooperations for learning purposes¹⁹⁰ in the first place. Instead, TRIPS even stabilizes R&D cooperations and contributes to their possibly anticompetitive effects. Indeed, R&D cooperations are based on an equal, but limited, exchange of technology. Moreover, they must provide for the redistribution of the jointly acquired knowledge. Thus, intellectual property will be used to identify and to distinguish the knowledge retained through the combination of the knowledge contributed to it (background) or acquired under it, as well as to determine ownership for such new knowledge (or for knowledge acquired after the termination of the cooperation).¹⁹¹ The corresponding contractual

¹⁸⁶ For software, *see* references *supra* note 141; for biotechnology, *see supra* note 98.

¹⁸⁷ *See* Ullrich, in *SOFTWAREVERTRAG*, *supra* note 17, at Teil 1, Kap. 1, § 3 II B; § 4 I B 2.

¹⁸⁸ *See supra* note 107, 108 and accompanying text.

¹⁸⁹ *See* Strobos, *Stalking the Elusive Patentable Software: Are There Still Diehr Or Was It Just a Flook?* 6 HARV. J.L. & TECH. 363, 418 (1993); Strobos correctly makes the point that this argument has been used for over 30 years making it ever more powerful as a self-fulfilling prophecy, but making it ever more insidious as well.

¹⁹⁰ *See* Basedow, *supra* note 182, at 11. But the learning capabilities required for cooperation (*see* Häusler et al., *supra* note 183 at 50) should suffice to also learn from patent disclosures, since these must enable any person skilled in the art to make and use the invention, 35 U.S.C. § 112; GATT TRIPS art. 29 ¶ 1.

¹⁹¹ *See* Gordon, *Key Issues in Contracting for the Development of Joint and Derived Products*, 11 COMP. L.J. 1 (1991); Ordovery, *A Patent System for Both Diffusion and Exclusion*, 5 J. ECON. PERSP. 43, 55 (1991); UNCTAD, R & D COLLABORATION AGREEMENTS AMONG ENTERPRISES: A LEGAL AND CONTRACTUAL ANALYSIS, UNCTAD/ITD/TEC/2, Nov. 30, 1992, No. 48, 90, 102; Ullrich, *Auslegung und Ergänzung der Schutzrechtsregeln gemeinsamer Forschung und Entwicklung*, GRUR 1993, 338; WIPO, JOINT INVENTIVE ACTIVITY GUIDE 11 (1984).

arrangements are central to independent competition, the successful cooperation and its termination, or to re-enter new or other cooperations.¹⁹²

However, these arrangements can work only if they are based on a mechanism for exclusive appropriation, as is the case with intellectual property protection. Moreover, they will work better for international R&D cooperation if the parties can expect such intellectual property to work equally well everywhere. Thus, TRIPS not only contributes to the need for joint R&D, but also facilitates contracting for it.

By the same token, the very fact that jointly developed technologies benefit from intellectual property protection of the kind made internationally available and effective by TRIPS sheds fresh doubt on the legitimacy of R&D cooperations. This is so because their possibly anticompetitive effects do not depend solely on the foreclosure of R&D competition between the partners or on the distribution of markets for the exploitation of the joint R&D results between the participants. The latter may or may not be accomplished and perfected through the allocation of intellectual property protection and user rights, which have received some attention of antitrust authorities.¹⁹³ Rather, anticompetitive effects will also result from the impact on competitors who join R&D forces.¹⁹⁴

In this respect, copyright- and unfair competition-enhanced trade secret protection will contribute to deter competitors from individually competing against the group. Rather, competitors will resign because of the opacity of technological development created by the insider network, or attempt to join this or another group, thus strengthening the propensity to network-dependency of strategic partnering.¹⁹⁵ Either result is more than likely, since

¹⁹² See OECD, *TECHNOLOGY AND THE ECONOMY - THE KEY RELATIONSHIPS* (1992) at 76; Bidault & Cummings, *Innovating Through Alliances: Expectations and Limitations*, 24 (1) RES. & DEV. MGMT. 33, 39; Hakanson, *Managing Cooperative Research and Development: Partner Selection and Contract Design* 23 R & D MGMT Number 3, at 273, 281 (1993); Peterson, *supra* note 183, at 258.

¹⁹³ See EC-Commission, Reg. 418/85 (EEC) of December 19, 1985, on the application of art. 85 (3) of the Treaty to categories of research and development agreements (OJEC. 1985 L 53, 5), art. 3, 4; and for a comparative analysis of U.S., European and German antitrust law regarding joint R & D, see Fuchs, *KARTELLRECHTLICHE GRENZEN DER FORSCHUNGSKOOPERATION* 85 (1989) *et passim*; Ullrich, *KOOPERATIVE FORSCHUNG UND KARTELLRECHT* 50 (1988) *et passim*, [hereinafter *KOOPERATIVE FORSCHUNG*].

¹⁹⁴ For an empirical and economic analysis, see MONOPOLKOMMISSION, *WETTBEWERBSPOLITIK VOR NEUEN HERAUSFORDERUNGEN, HAUPTGUTACHTEN 1988/1989* 337 (1990); Täger, *TECHNOLOGIE- UND WETTBEWERBSPOLITISCHE WIRKUNGEN VON FORSCHUNGS- UND ENTWICKLUNGS(FUE)KOOPERATION* (1988).

¹⁹⁵ See Basedow, *supra* note 182, at 22, 106; and for the intensification and cluster-building of strategic alliances, see OECD, *TECHNOLOGY AND THE ECONOMY - THE KEY RELATIONSHIPS* (1992), at 227; Hagedoorn, in *ON THE INCREASING ROLE OF TECHNOLOGY IN CORPORATE POLICY, SPECIAL ISSUE*,

the competitor has to face a group which, thanks to TRIPS, enjoys equal and effective intellectual property protection in any market.¹⁹⁶

From this perspective, TRIPS should be considered an invitation of European and U.S. antitrust authorities to review their permissive attitude vis-à-vis R&D cooperation agreements. Once it is recognized that joint R&D is entered into as a way to follow the rapid development of technology, its allegedly pro-competitive nature is no more than a verbal camouflage of unreflected antitrust abstention.¹⁹⁷

What remain from the arguments in favor of R&D cooperation are costs and risks of individual research and development, and rationalizing effects of cooperation. The latter must be judged on their merits,¹⁹⁸ but the former will have to survive close examination. It is the very purpose of intellectual property protection to cover the risks of R&D projects with a sufficiently broad demand on the market. TRIPS provides such protection in a harmonized and effective form for the world market. Thus, if the well-protected world market cannot reward a R&D project, why should it be allowed to go on at all? Does cooperation make it a better project, or just simply a better insured project? Competition is no exercise in risk insurance. It is an exercise in risk-taking. Cooperation that spreads precisely those costs and risks over a number of partners undermines the market-oriented selection process, which is what intellectual property-based competition is all about. It also tends to over-reward R&D by alleviating its risks while increasing its rewards.¹⁹⁹

INT'L J. TECH. MGMT. 88 (Gold ed. 1991); Hagedoorn & Schakenrad, *Leading Companies and Networks of Strategic Alliances in Information Technologies*, 21 RES. POL'Y. 163 (1992).

¹⁹⁶ Therefore, the fear both small and developing countries show in view of the geographical concentration of strategic alliances in the trade areas appears plainly justified, see OECD, TECHNOLOGY AND THE ECONOMY - THE KEY RELATIONSHIPS (1992) at 232; Hagedoorn, in ON THE INCREASING ROLE OF TECHNOLOGY IN CORPORATE POLICY, SPECIAL ISSUE, INT'L J. TECH. MGMT. 87 (Gold ed. 1991); UNCTAD, R & D COLLABORATION AGREEMENTS AMONG ENTERPRISES: A LEGAL AND CONTRACTUAL ANALYSIS, UNCTAD/ITD/TEC/2, Nov. 30, 1992, sub No. 193; Delapierre, *Les accords inter-entreprises, partage ou partenariat?* REV. CIND. 1991, 135, 150.

¹⁹⁷ See Basedow, *supra* note 182, at 68; but see *id.* at 76; Fuchs, *supra* note 193, at 57; for the obvious relationship between R & D and corporate strategy see Ransley & Rogers, *A Consensus on Best R & D Practices*, RES. TECH. MGMT., Mar.-Apr. 1994, at 19.

¹⁹⁸ MONOPOLKOMMISSION, WETTBEWERBSPOLITIK VOR NEUEN HERAUSFORDERUNGEN, HAUPTGUTACHTEN 1988/1989 at 355 (1990); Immenga, in GWB-KOMMENTAR § 1 annot. 464 (Immenga & Mestmäcker eds., 1993); Ullrich, *supra* note 193, at 170.

¹⁹⁹ See in more detail Ullrich, KOOPERATIVE FORSCHUNG, *supra* note 193, at 163, 167. It is true, of course, that intellectual property does not allow equally broad appropriation of R&D results for all industries (*supra* note 149). But such differences rarely have been made the distinctive criterion in antitrust analysis of R&D cooperation, and if so, it cannot be used to indiscriminately admit cooperation where appropriability is imperfect. Such imperfections are inherent in intellectual property protection as

2. Technology Policy

Similarly, the relationship between national technology policy and internationally harmonized intellectual property protection needs more critical attention. Roughly speaking, technology policy represents that part of industrial policy which attempts to link science policy to competition policy by subjecting both to common objectives of general economic welfare; particularly, increased international competitiveness of national industry. In formulating the nation or Community wide R&D programs which specify the means to achieve the policy goals,²⁰⁰ technology policy will seek the advice of science and industry. It will attract various scientific institutions to participate in R&D programs by financing appropriate scientific projects.²⁰¹ Technology policy also invites science to consider economic and social needs when defining its own projects, and it will support any efforts of science to transfer its economically useful results to industry for exploitation.²⁰²

its limitations are supported by its pro-competition rationale (*see references supra* notes 9, 71). Therefore, imperfect appropriability as such is no reason justifying per se cooperation, and it certainly is no reason to allow cooperation as a compensation for the absence of national industrial policy, contra: Jorde & Teece, *Innovation, Cooperation, and Antitrust*, in ANTITRUST, INNOVATION AND COMPETITIVENESS 47, 50, 52, 61 (Jorde & Teece eds., 1992); *Rule of Reason Analysis of Horizontal Arrangements: Agreements Designed to Advance Innovation and Commercialize Technology*, 61 ANTITRUST L.J. 579, 591, 594, 617 (1993).

²⁰⁰ See for the European Community its third "Framework Programme for Research and Technological Development of April 23, 1990" (O.J.E.C 1990 L 117, 28) which is based on. 130q EEC-Treaty (as amended by the Unitary European Act), and its 4th Framework Program 1994-1998 O.J.E.C 1994 L 126, 1; for a recent account of the R&D Policy see Sharp & Pavitt, *Technology Policy in the 1990s: Old Trends and New Realities*, 32 J.C.M. STUD. 129 (1993); Eilon, *R&D Policy in the European Community*, INT'L J. TECH. MGMT. 1992, 113; for Germany, BUNDESMINISTERIUM FÜR FORSCHUNG UND TECHNOLOGIE, BUNDESBERICHT FORSCHUNG 1993 [hereinafter BUNDESBERICHT FORSCHUNG 1993], BT-Drucks. 12/5550, 8, 137; Ullrich, *PRIVATRECHTSFRAGEN*, *supra* note 83, at 159; and for a comprehensive comparative analysis Ergas, *Does Technology Policy Matter?* in TECHNOLOGY AND GLOBAL INDUSTRY 191 (Guile & Brooks eds., 1987); NELSON (ed.), NATIONAL INNOVATION SYSTEMS: A COMPARATIVE ANALYSIS, 3 (1993) [hereinafter NELSON].

²⁰¹ See for the EC, STARBATTY & VETTERLEIN, DIE TECHNOLOGIEPOLITIK DER EUROPÄISCHEN GEMEINSCHAFT, 50 (1990) [hereinafter STARBATTY & VETTERLEIN]; with respect to ESPRIT specifically (which was a model, but is no rule) Ledeboer, *The ESPRIT of a European R&D Network*, INT'L J. TECH. MGMT., 493 (1992); Mytelka, *States, Strategic Alliances and International Oligopolies: The European ESPRIT Programme*, STRATEGIC PARTNERSHIPS - STATES, FIRMS AND INTERNATIONAL COMPETITION 182 (Mytelka ed., 1991); Peterson, *Technology Policy in Europe: Explaining the Framework Programme and Eureka in Theory and Practice*, 29 J. C. M. STUD. 269 (1991); for Germany see Ullrich, *PRIVATRECHTSFRAGEN*, *supra* note 83, at 160.

²⁰² The EC has set up two specific programmes intended to promote a technology transfer infrastructure (the Strategic Programme for Innovation and Technology Transfer - SPRINT - of April 17, 1989, O.J.E.C. 1989 L 112, 12, as prolonged by Council Decision of December 20, 1993, O.J.E.C. 1994 L 6) and to support the transfer and exploitation of Community-sponsored R&D results (Valorisation et utilisation pour l'Europe) of April 29, 1992, O.J.E.C. 1992 L 141, 1), *see* Goodman, *Exploitation of R&D*

Industry, in turn, will not only benefit from this technological orientation of scientific infrastructure,²⁰³ but will also obtain direct support for its own R&D efforts to the extent that it is willing to adapt them to government's technology programs.²⁰⁴ As these programs must attain objectives which, by definition, will not be achieved by operation of competition alone, and as they must be accepted by industry which is supposed to execute the corresponding R&D projects, they must strike a balance between the public interest and industry needs as the government perceives it. They generally do so on the basis of subsidies paid to industry for following the government's R&D programs. Consequently, technology policy is an exercise in both influencing industry's competitive conduct (and, to a certain degree its competitive structure²⁰⁵) and controlling the government's interference with market development. The latter aspect is dealt with by competition policy under the heading of antitrust control over concentration and cooperation, and Community or GATT-control over state aids (subsidies).²⁰⁶ The purpose of this paper is not to discuss either of these forms of control,²⁰⁷ but only to

Results in Community, LES NOUVELLES 33 (Mar. 1993). Both programs are bound to be merged under the 4th Framework Programme. In Germany, technology transfer infrastructure has been developed systematically since the 1970s (see Ullrich, *PRIVATRECHTSFRAGEN*, *supra* note 83, at 251) as has been done in other European countries, see Ullrich, *Staatliche Forschungsförderung und Patentschutz im Vergleich* in Ullrich et al., *STAATLICHE FORSCHUNGSFÖRDERUNG UND PATENTSCHUTZ IM INTERNATIONALEN VERGLEICH: WESTEUROPA* 331 (1985); ; Kuhlmann, *THE UNIVERSITY-INDUSTRY AND RESEARCH-INDUSTRY INTERFACES IN EUROPE* (1991).

²⁰³ In Germany, technology policy traditionally is multi-focused, the basic aim being to provide for a broad science base and a multi-faceted institutional infrastructure that will result in the setting of "innovation - and competition - minded" framework conditions for industry, see *BUNDESBERICHT FORSCHUNG* 1993, *supra* note 200, at 14, 34.

²⁰⁴ See generally for the EC, STARBATTY & VETTERLEIN 64; Ullrich, *Forschungs- und Technologiepolitik*, in Dausies (ed.), *HANDBUCH DES EUROPÄISCHEN WIRTSCHAFTSRECHTS* 1993 (looseleaf) sub. note 12; Elizalde, *Legal Aspects of Community Policy on Research and Technological Development (RTD)*, 29 *COMMON MKT. L. REV.* 309, 327 (1992) [hereinafter Elizalde]; for Germany, Ullrich, *PRIVATRECHTSFRAGEN*, *supra* note 83, at 214; and for a comparative analysis the country reports and the conclusion, in NELSON *supra* note 200, at 3, 506.

²⁰⁵ See as regards assembler - subcontractor relations ("disintegrations"), Commission of the EC, *Growth, Competitiveness, Employment - Present Challenges and Paths into the 21st Century*, Whitebook, Bull EC 6/1993, sub. 2.3 (p. 71), 4.3 (p. 97, German Version); as regards participation of large and small enterprises, see Rechnungshof der EG, *Sonderbericht Nr. 6/93 über die Europäischen Forschungs- und Entwicklungsprogramme auf dem Gebiet der Informationstechnologien (ESPRIT-Programme)*, ABIEG 1994 C 45, 1 sub. 2.13; *STRATEGIC PARTNERSHIPS - STATES, FIRMS AND INTERNATIONAL COMPETITION* 197 (Mytelka ed., 1991); 4th Framework Program, Annex III (O.J.E.C. 1994, L 126, 1. 6).

²⁰⁶ For Community control over Member States R&D policy see art. 92, *EC-Treaty and Commission of the EC, Community Framework for State aids for research and development*, O.J.E.C. 1986, C 83, 2; KLODT, *FORSCHUNGSPOLITIK UNTER EG-KONTROLLE*, 35 (1988); with respect to the GATT/WTO - control over subsidies see *infra* text, at note 217.

²⁰⁷ See Ullrich in Dausies, *HANDBUCH DES EUROPÄISCHEN WIRTSCHAFTSRECHTS*, sub. No. N 21 with references; German writers have tended to analyse the EC-F&T Policy under the perspective of

point out the relevance which international intellectual property protection may have in both respects.

An illustrative example is presented by the situation where science and industry meet to serve goals of technology policy, namely joint science and industry R&D projects. They constitute a hallmark of national technology policy in England and Germany, and they represent a basic variety of the European Community's Research and Technology Policy, which focuses on promoting cross-border R&D cooperation between national enterprises and, possibly, national research institutions.²⁰⁸ Assistance for such joint projects generally is given by way of a contract or a grant covering fifty percent of the eligible project costs, and enterprises calculating on the basis of actual costs while public research institution mostly receive a hundred percent refund of the additional costs caused by the project to eliminate overhead. The funding arrangement either is made by the project partners separately with the government or jointly by all members of the group.²⁰⁹ In any case, the joint R&D project has to be executed on the basis of a cooperation agreement which implements the conditions to which the grant of the subsidy is subject and which, therefore, is largely governed by the rules the government has defined or accepted for the cooperation. Obligations of the project partners, include duties to cooperate and to regularly report on the project's progress. A central point of these obligations is the exchange of proprietary information and of intellectual property, and the determination of ownership and user rights relating to the project's R&D results. The national and European approaches to solving these issues vary.²¹⁰

"Ordnungspolitik", see STARBATTY & VETTERLEIN 121; Oberender, *Möglichkeiten und Grenzen einer europäischen Forschungs- und Technologiepolitik: eine ordnungstheoretische Analyse*, Ifo-Studien 1993, 327.

²⁰⁸ For England see, Ward, *COLLABORATIVE RESEARCH IN THE UK: THE LINK PROGRAMME*, 2 (2) *INTELL. PROP. BUS.* 6 (1990); Department of Trade and Industry/LINK-Secretariat, *First Report of the LINK Steering Group*, London 1992; for Germany, *BUNDESBERICHT FORSCHUNG* 100 (1993); for the EC see art. 130 f ¶ 2, 130 g, ¶ 2, EC-Treaty; Ullrich in Dausen, *supra* note 204, at N 13 with references.

²⁰⁹ The former is true for Germany, where the partners receive grants by separate and unilateral decision of the government, while the latter is true for the EC, see Commission of the EC, Directorate General XII, *Model Contract for Research and Development of October 1, 1988* [hereinafter *Model Contract*]; for a general review of contract conditions of the EC see Elizalde *supra* note 204, at 333; Ullrich in Dausen, *HANDBUCH DES EUROPÄISCHEN WIRTSCHAFTSRECHTS*, sub. N 15; for England, see SEGAL & QUINCE, *INDEPENDENT REVIEW OF LINK* 24 (1991); for Germany, see Ullrich, *PRIVATRECHTSFRAGEN*, *supra* note 83, at 174; for a summary account of all the three models Ullrich, *Rules on Ownership and Allocation of Intellectual Property in Joint R&D Projects of Science and Industry: Some Principles and Comparisons*, in *MITTEILUNGEN DER MAX-PLANCK-GESELLSCHAFT* 1994 (forthcoming) [hereinafter *Rules on Ownership*].

²¹⁰ See Ullrich, *Rules on Ownership*, *supra* note 209. An international comparison including in part Japan and the United States has been made by UNCTAD. In the United States, the allocation of

The British model requires industry partners to freely exchange non-exclusive intellectual property licenses for the project R&D and to license background and foreground intellectual property to each other on a non-exclusive basis so that each project partner will be able to fully exploit his own results. Academic partners are requested to leave exploitation to industry partners for a reasonable compensation.²¹¹ The government claims no rights to the results, but requires industry partners to actually exploit them within three years or else grant a license to third enterprises willing to exploit the results.

The German model has a different starting point. An academic or industrial grantee must give a non-exclusive license to any third party at a discounted royalty rate.²¹² However, as industry partners request a preferential status in view of their contribution to the cooperation, they actually enjoy a privileged position for access to proprietary information (notably software) and to background rights for a consideration which is limited to bearing patenting costs and the remuneration of academic employee inventors. Consequently, there is little interest in third party access to academic results and to industry's R&D results for the simple reason that competing against the privileged group on the small basis of some bare and non-exclusive rights is hardly attractive.

The EC-model is hardly more competition-minded.²¹³ The very elaborate rules on ownership, exploitation, and dissemination of results are based on the equivalence of the contribution partners make to the project. They, therefore, provide for a full exchange of proprietary information and intellectual property on foreground and background knowledge for research purposes as well as for purposes of exploitation on the basis of non-exclusive licences. However, the conditions vary according to whether the licences relate to foreground or background knowledge and according to the license purpose. The position of academic institutions as a partner basically does not differ from that of industry partners. They may, however, ask for an equitable

intellectual property resulting from joint government-industry R&D also remains an issue. See 35 U.S.C. § 200; Bill to Amend the Stevenson - Wylder Technology Innovation Act (S. 1537), 46 BNA-PTJC 507, 522 (1993).

²¹¹ The attribution of ownership and the distribution of user rights has become controversial in England, both in the context of LINK. See generally SEGAL & QUINCE, *supra* note 209, at 26, 48.

²¹² For this basic approach and its implications see Ullrich, PRIVATRECHTSFRAGEN, *supra* note 83, at 329, 361; see also Ullrich, *Rules on Ownership*, *supra* note 209.

²¹³ See Model Contract, *supra* note 209, at annex II, pt. B, art. 14; Tomlin, R&D: A PRACTICAL GUIDE TO THE EC "MODEL" CONTRACT, 1 INTELL. PROP. BUS., Number 5, at 2 (1989); Ullrich in Dausen, HANDBUCH DES EUROPÄISCHEN WIRTSCHAFTSRECHTS, sub. N 17.

compensation where they are structurally unable to commercially exploit the R&D result. In addition, the rules contain a set of licensing obligations vis-à-vis third parties which vary according to the purpose of the license and the status of the would-be-licensee within the same R&D program, a related program, outside a R&D program, but inside the EC. For practical matters, third party access appears to be limited, and the more so as, again, a third party's interest to compete against the privileged members of the group hardly will be very keen. Consequently, the only burden the partners have to bear is that they must exploit the R&D results within a reasonable period of time to be agreed upon in the contract, and even this obligation does not appear to be very strict.

These three models for resolving intellectual property issues of publicly supported R&D cooperations may, of course, raise questions of equity as between the parties, and of opportunity for the technology policy goals pursued by public assistance.²¹⁴ They have been outlined here as a demonstration of the purely instrumental function assigned to intellectual property in the context of a technology policy that directly does what was done by the specific, though less immediately enforceable purpose of intellectual property protection, namely to promote technological progress. One may question whether public R&D subsidies should be granted on top of both intellectual property protection and the reduction of R&D risks resulting from cooperation.²¹⁵ This question would appear to be the more justified as mandatory third party licensing never has been an adequate compensation for the distortion resulting from public assistance. In the context of a discussion of international intellectual property protection, however, the form of the argument might be different. The fact that national intellectual property will be harmonized due to TRIPS modifies the weight of the argument just mentioned. The reward which the group may expect from its R&D efforts must be calculated in terms of the internationally protected markets at which the R&D efforts are aimed. As their size grows, the need to grant public assistance should diminish. In fact, what happens is the contrary; public assistance for R&D is granted in the interest of enhanced international competitiveness.²¹⁶ Consequently, the more a project is directed at world

²¹⁴ See Ullrich, *Rules on Ownership*, *supra* note 209.

²¹⁵ See Ullrich, *KOOPERATIVE FORSCHUNG*, *supra* note 193, at 166; GUTBERLET, *ALTERNATIVE STRATEGIEN DER FORSCHUNGSFÖRDERUNG* 27 (1984).

²¹⁶ See art. 130f EEC-Treaty (as amended by the Unitary European Act), and its 4th Framework Program 1994-1998 O.J.E.C 1994 L 126, 1, preamble and the outline in annex III on the various fields of actions (specific programme areas); *BUNDESBERICHT FORSCHUNG* 1993, *supra* note 200, at 8, 43, 90.

markets, the easier it becomes for it to get public support. What is more, as the support is granted for the sake of international competitiveness of the domestic industry, and as it is paid out of the domestic taxpayer's money, harmonized international intellectual property serves to protect these domestic interests in global markets. Put differently, international intellectual property legally protects the extraterritorial effects which national or European technological policy produces on global markets, and ironically, it may do so on the basis of territoriality with all its side-effects as described above.

If technological property is to be taken as seriously as TRIPS takes it, and if its fundamental function as an incentive to invest in R&D is recognized, then account must be taken of the fact that it is itself an expression of a technology policy, the effects of which may not be neglected when assessing the compatibility of an interventionist, subsidy-based technology policy with trade and competition. Unfortunately, GATT fails entirely in this respect. Article 8 of the Agreement on Subsidies and Countervailing Measures makes R&D subsidies non-actionable when they relate to "industrial research" or "pre-competitive development" and do not exceed seventy-five percent or fifty percent of eligible costs respectively.²¹⁷ Whatever the significance of these notions may be in terms of dynamic competition for innovation,²¹⁸ they clearly embrace results which are patentable or copyrightable. In fact, patenting activities usually precede product commercialization by years,²¹⁹ and copyright comes into being with any design of new software.²²⁰ Both protect their subject matter, or more precisely, the potential markets for the

²¹⁷ Footnotes 27-28 of the Agreement contain the following definitions:

27) The term "industrial research" means planned search or critical investigation aimed at discovery of new knowledge, with the objective that such knowledge may be useful in developing new products, processes or services, or in bringing about a significant improvement to existing products, processes or services.

28) The term "pre-competitive development activity" means the translation of industrial research findings into a plan, blueprint or design for new, modified or improved products, processes or services whether intended for sale or use, including the creation of a first prototype which would not be capable of commercial use. It may further include the conceptual formulation and design of products, processes or services alternatives and initial demonstration or pilot projects, provided that these same projects cannot be converted or used for industrial application or commercial exploitation. It does not include routine or periodic alterations to existing products, production lines, manufacturing processes, services, and other on-going operations even though those alterations may represent improvements.

²¹⁸ See *supra* note 197.

²¹⁹ See Faust, *supra* note 176, at 155, 161; Häusser, *Schutzrechte und technische Information als Überlebensstrategie für das einzelne Unternehmen und die Volkswirtschaft*, Mitt.Pat.Anw. 1984, 121, 124; see also references *supra* note 176.

²²⁰ In fact it is the design phase of software development where copyright protection is the most easily obtained, see BGH of May 9, 1985, 17 INT'L REV. INDUS. PROP. & COPYRIGHT L. 681 (1986).

subject matter for twenty and fifty years respectively. Their very purpose is to establish a close, protective link between "pre-competitive" R&D and product commercialization. GATT may not be ready fully to cover R&D subsidies, as these may not be easily separated from science policy. Possibly, it may have been wrong to cover them at all while not covering other forms of interventionist technology policies.²²¹ But to grant them a whole-sale exemption irrespective of the effect they will produce when combined with internationally harmonized intellectual property protection is really an unsatisfactory approach, and the more so when the totally unequal knowledge base of countries is taken into consideration.²²²

IV. CONCLUSION

The GATT-WTO Agreement on Trade Related Aspects of Intellectual Property has its origin in fear and aggression. Widening competition in world markets, broad confrontation of innovation and imitation as a result of the development of new technologies,²²³ the true or presumed decline of American competitiveness,²²⁴ and the rise of customer countries to the status not only of low cost competitors, but also of technological rivals²²⁵ all have contributed to the imposition of TRIPS on the GATT agenda by the major industrialized countries, especially the USA. As a consequence, the TRIPS-

²²¹ Like innovation pioneering government procurement or the establishment of public enterprises or agencies charged with the introduction of new technologies (Nuclear energy, spacecraft etc.).

²²² See *Die Forschung ist heute ein Monopol reicher Länder*, BddW, Feb. 15, 1994, at 8 (quoting the First UN-Science Report, UNESCO STATISTICAL YEARBOOK 1993, sub. 5).

²²³ See US International Trade Commission, *Economic Effects of Intellectual Property Right Infringement*, 22 J.WORLD TRADE no. 4, at 101 (1988); OECD, GLOBALISATION, *supra* note 34, at 89.

²²⁴ See Nelson & Wright, *The Rise and Fall of American Technological Leadership: The Postwar Era in Historical Perspective*, 30 J. ECON. LITERATURE 1931 (1992); Nelson, *U.S. Technological leadership: Where Did It Come From and Where Did It Go?*, 19 RES. POL'Y. 117 (1990); Vernon, *Coping with Technological Change - US Problems and Prospects*, in TECHNOLOGY AND GLOBAL INDUSTRY 160 (Guile & Brooks eds.); Ullrich in Beier, Schricker, GATT or WIPO, loc. cit. at 131 et seq. with references.

²²⁵ See Park, *Trading Blocks and U.S.-Japan Relations in Pacific Trade and Co-operation*, 15 WORLD COMPETITION no. 3, at 39, 53 (1991). The patenting strength of Japan is well known. See Pavitt & Patel, *The International Distribution and Determinants of Technological Activities*, 4 OXFORD REV. ECON. POL'Y no. 4, at 35, 42 (1988); Häusser, *Schutzrechte und technische Information als Überlebensstrategie für das einzelne Unternehmen und die Volkswirtschaft*, Mitt.Pat.Anw. 1984, 124. Japan's general technology policy and recent stress on basic research is also well known. See Dunn, *Wettbewerbsfähigkeit und Technologiepolitik - Die japanischen Erfahrungen*, 212 Jhb. Natök Stat. 292 (1993); Hirano, *Public and Private Support of Basic Research in Japan*, 258 SCIENCE 582 (1992). But other countries have made comparable efforts to become genuine technology competitors. See Kim & Dahlmann, *Technology Policy for industrialization: An Integrative Framework and Korea's Experience*, 21 RES. POL'Y 437 (1992).

Agreement is essentially of a defensive character as evidenced by the refusal to adopt a rule of international exhaustion, by the weight implicitly given to the principle of territoriality, by the little attention given to the public interest in avoiding or invalidating unwarranted protection, and by the abstention from balancing intellectual property harmonization through harmonized rules on the anticompetitive use of intellectual property. The very causes leading to the TRIPS-Agreement, however, and the rationale underlying its operation, indicate that TRIPS is as much a matter of international trade as of international competition policy. These are all reasons, therefore, to implement and apply TRIPS in conformity with the principles governing dynamic competition. This is also a lesson to be learned from regional economic integration. The trade-enhancing effects of free trade areas or of customs unions entirely depend on the existence and maintenance of interstate competition and its market-integrating virtues. As territorially distinct and differently defined national intellectual property protection may both serve and impede market integration, it generally will not be subject to harmonization efforts aimed at preventing distortions of competition resulting from the different national intellectual property definitions. Rather, it will be accompanied, if not preceded by, the enactment of common antitrust principles for the maintenance of effective competition,²²⁶ or even by the enforcement of specific rules on free trade that do overcome the principle of territoriality.²²⁷ In addition, attempts may be made to unify intellectual property protection.²²⁸ The common reason for all these rules is that trade liberalization and the establishment of fair conditions of competition by adequate or equivalent levels of intellectual property protection will result in the expected benefits for the public interest only if the private actors entrusted with the enjoyment of these liberties really are held to actually play the game.²²⁹

TRIPS, if put into operation, may of course be read defensively or pro-competitively. If read pro-competitively, two basic lines of thinking emerge. One is that, in view of the substitution of national intellectual property policies by their international harmonization, the principle of territoriality

²²⁶ See art. 1501 et seq. NAFTA-Agreement; art. 53 et seq., Protocol 21, and annex XIV EEA-Agreement; art. 63 Europe Agreement with Poland; art. 62 Europe Agreement with Hungary. All these cites can be found *supra* note 127.

²²⁷ Art. 30. EC Treaty; see references *supra* note 167.

²²⁸ See, e.g., Community Trademark by Regulation 40/94 (EC) by the Council of December 20, 1993, O.J.E.C. 1994 L 11, 1; Proposed Community Patent (O.J.E.C. 1989 L 401, 1) and Community Design (O.J.E.C. 1994 C 29, 20).

²²⁹ Compare Ullrich, 23 INT'L. REV. INDUS. PROP. & COPYRIGHT L. 586 (1992).

must give way to its being understood as a conflict of law rule for globally open markets. The other is that internationally adequate levels of intellectual property protection as corroborated by regional and bilateral harmonization²³⁰ constitute a new frame of reference for the determination of the intellectual property/competition-interface that ought to be fully taken into account in the very interest of achieving the ultimate objectives of TRIPS.

To be sure, whether TRIPS will actually reach its adequate levels of protection still is uncertain.²³¹ Conversely, there will always be a genuine or alleged need for better protection.²³² In fact, as the recently expanding economic analysis of intellectual property protection promises more and broader insights into its operation as a stimulus to innovation,²³³ and as international trade theory is just about to adjust itself to the effects technical change may have on trade,²³⁴ one may wonder whether our understanding of the interaction between intellectual property and trade really is deep enough to warrant such a sweeping international harmonization as will be brought about by TRIPS. It probably would have been wiser to have institutional competition decide how intellectual property systems should develop internationally in the face of the changing natures of technologies and of a persistent diversity of national economic settings.²³⁵ All that TRIPS offers in this respect is an option to nationally extend protection (art. 1 para. 1(1)). Its survey mechanism leaves little if any room for individual experiments by members as regards, e.g., alternative systems of software protection,²³⁶ and the less so as its dominance by the intellectual property conceptions of one or a few members with high technology interests hardly holds promise for much liberalism. However, just as the international extension of intellectual property protection must be taken into consideration when assessing the

²³⁰ Compare *supra* note 127.

²³¹ The risks of a 'selective exit' of dissatisfied members are well described with respect to NAFTA's intellectual property rules by Gonzales, 34 HARV. INT'L. L. J. 308 (1993).

²³² With respect to the elusive nature of new technologies compare Simon, 4 FORDHAM INTELL. PROP., MEDIA & ENT. L. REV. 273 (1993).

²³³ See references *supra* note 9, at 71; Audretsch, *Intellectual Property Rights: New Research Directions*, paper presented at the Conference on 'Intellectual Property Rights and Global Competition', Wissenschaftszentrum Berlin für Sozialforschung, Apr. 21-22, 1994.

²³⁴ See Ruigrok, *Paradigm Crisis in International Trade Theory*, 25 J. WORLD TRADE 77 (1991); DOSI, PAVITT & SOETE, *THE ECONOMICS OF TECHNICAL CHANGE AND INTERNATIONAL TRADE*, 1990, *passim*, in particular 44, 237.

²³⁵ See Foray, *Production and Distribution of Knowledge in the Innovative System: A New Role for Intellectual Property Rights*, paper presented at the Conference on 'Intellectual Property Rights and Global Competition', Wissenschaftszentrum Berlin für Sozialforschung, Apr. 21-22, 1994.

²³⁶ Compare *supra* notes 111, 113, 130, 141, 189. However, there is a window in TRIPS for the most obvious "new" Technology, i.e. for biotechnology, in art. 27(3).

compatibility of inter-firm cooperation or of R&D subsidies with competition policy, so must the possible weakness or inadequacy of TRIPS not be taken as an invitation to compensation by R&D cooperation or technology policy measures aimed at increasing the incentive to innovation by financial assistance or the artificial enlargement of the capacity to internalize R&D results.²³⁷ Like national intellectual property protection, TRIPS offers a balanced system of non-interventionist incentives to innovate that is based on competition and that excels by its competitive neutrality.²³⁸ As we know much more about the negative effects concerted practices may have on innovative competition than we know about optimizing innovation by cooperation or by intervention, any interference with the competition rationale of TRIPS risks undermining the attainment of its objective: fair trade with quality goods.

²³⁷ Compare with Jorde & Teece, *supra* note 199; and with UNCTAD, *supra* note 196. R&D collaboration favors "countervailing cooperation." See Jorde & Teece, *supra* note 199, at 57.

²³⁸ See *supra* note 83.