Network Effects of the International Intellectual Property System

Alexander Peukert*

This Article provides a novel explanation for the global intellectual property (IP) paradox, i.e. the consistent growth of the multilateral IP system in spite of mounting evidence that its effects are at best neutral, if not disadvantageous, for low-income and most middle-income countries and thus the majority of contracting states. It demonstrates that the multilateral IP system is deliberately structured as a virtual network that exhibits network effects similar to a social media platform. The more members an IP treaty has, the more IP protection acceding states can secure for their nationals. Conversely, every accession enlarges the territory in which nationals of previous members can enjoy protection. Due to these increasing returns to adoption, signing up to and remaining part of the global IP network is attractive, irrespective of the immediate effects of a treaty.

After introducing the global IP paradox in Part I, Part II of the Article summarizes core concepts of the economic theory of network effects. Part III lays out the basic structure of the global IP network: its nodes, their complementarity, how the nodes are being connected, the open boundaries of the network, and its ownership. Part IV presents five legal measures that were taken to cultivate the multilateral IP system and its network effects. It describes how rights acquisition throughout the network was improved, how the path of the system was set towards ever higher levels of protection, how free-riders have been kept out, how the emergence of competing IP systems was prevented, and how the IP system was attached to other networks in times of crises, in order to benefit from their legitimacy and pull-effects. The conclusion, Part V, highlights that since the conclusion of the TRIPS Agreement, the world has been locked into the multilateral IP system. It finally addresses the question what, if anything, can be done to rein in the network effect of the system and possibly roll back today's acquis.

* © 2022 Alexander Peukert, Dr. iur., Professor of Civil and Commercial Law, Faculty of Law, Goethe University Frankfurt am Main, a.peukert@jur.uni-frankfurt.de.

I. INTRODUCTION: THE GLOBAL INTELLECTUAL PROPERTY PARADOX

After nearly 140 years of consistent growth, the international intellectual property (IP) "system"—understood here as the total sum of all multilateral treaties and international organizations (IOs) dealing with IP—has gained an impressive size.[1] Apart from hundreds of bilateral

1. *See* Paris Convention for the Protection of Industrial Property art. 14(1), Mar. 20, 1883, 21 U.S.T. 1583, 828 U.N.T.S. 305 [hereinafter Paris Convention]; Berne Convention for the Protection of Literary and Artistic Works art. 17(1), Sept. 9, 1886, 25 U.S.T. 1341, 828 U.N.T.S. 221 [hereinafter Berne Convention] ("système de l'Union"); SAM RICKETSON, THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY: A COMMENTARY 766 (1st ed. 2015) (overall scheme of protection offered by the Convention); *WIPO-Administered Treaties*, WORLD INTELL. PROP. ORG., http://www.wipo.int/treaties/en/ (last visited Oct. 18, 2021) ("the global protection system treaties … ensure[s] that one international registration or filing will have effect in any of the relevant signatory States"); 1-2 SAM RICKETSON & JANE C. GINSBURG, INTERNATIONAL COPYRIGHT AND NEIGHBOURING RIGHTS: THE BERNE CONVENTION AND BEYOND 1170-71 (2d ed. 2006) (indicating the Berne Convention established an "international system of protection"); JÖRG REINBOTHE & SILKE VON LEWINSKI, THE WIPO TREATIES ON COPYRIGHT: A COMMENTARY ON THE WCT, THE WPPT, AND THE BTAP 610 (2d ed. 2015) (all copyright treaties administered by WIPO "have evolved to form, together, a complementary system"); GRAEME B. DINWOODIE & ROCHELLE C. DREYFUSS, A NEOFEDERALIST VISION OF TRIPS: THE RESILIENCE OF THE INTERNATIONAL INTELLECTUAL PROPERTY REGIME 25 (2012) (indicating an IP "club"); *see also* Marrakesh Agreement Establishing the World Trade Organization, preamble, *opened for signature* Apr. 15, 1994, 1867 U.N.T.S 3 (entered into force Jan. 1, 1995) [hereinafter Marrakesh Agreement] ("multilateral trading system").

treaties with relevance for IP, the World Intellectual Property Organization (WIPO) administers twenty-six multilateral treaties concerning various "rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields."[2] With the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), the protection of copyrights and related rights, trademarks, geographical indications, industrial designs, patents, topographies of integrated circuits, and undisclosed information have been further integrated into world trade law.[3] These treaties are proof of "a broad historical trend toward harmonization, strengthening, and integration of the international intellectual property system at the multilateral level," which persisted throughout and beyond two World Wars, decolonization, and the Cold War.[4]

This system establishes a practically worldwide level playing field for IP producers and users in all major fields of innovation and branding.[5] A total of 193 WIPO members share the desire "to promote the protection of intellectual property throughout the world."[6] The three core treaties putting this aim into effect, namely the Paris Convention for the Protection of Industrial Property, the Berne Convention for the Protection of Literary and Artistic Works, and the TRIPS Agreement, have been ratified by 177, 179, and 164 states respectively, with twenty-three more states in the process of acceding to the WTO and thus TRIPS.[7] Most other multilateral

---

2. *See infra* Part III(D)(2)(a); *WIPO-Administered Treaties*, WORLD INTELL. PROP. ORG., http://www.wipo.int/treaties/en/ (last visited Oct. 18, 2021); Convention Establishing the World Intellectual Property Organization art. 2(viii), July 14, 1967, 21 U.S.T. 1749, 828 U.N.T.S. 3 [hereinafter WIPO Convention].

3. *See* Agreement on Trade-Related Aspects of Intellectual Property Rights art. 1(2), Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, http://www.wto.org/english/docs_e/legal_e/27-trips.pdf [hereinafter TRIPS Agreement].

4. FREDERICK M. ABBOTT ET AL., INTERNATIONAL INTELLECTUAL PROPERTY IN AN INTEGRATED WORLD ECONOMY 5-6 (3d ed. 2015); *see* RICKETSON, *supra* note 1, at 761-62; HENNING GROSSE RUSE-KHAN, THE PROTECTION OF INTELLECTUAL PROPERTY IN INTERNATIONAL LAW 492 (2016) ("from a niche area . . . to a global regime that encompasses almost all aspects of human life"); Hans Ullrich, *The Political Foundations of TRIPS Revisited*, *in* TRIPS PLUS 20: FROM TRADE RULES TO MARKET PRINCIPLES 85-129, 111 (Ullrich et al. eds., 2016) (indicating IP protection has expanded in all respects).

5. *See generally* Alexander Peukert, *Vereinheitlichung des Immaterialgüterrechts: Strukturen, Akteure, Zwecke*, 81 RABEL J. COMP. & INT'L PRIV. L. 158 (2017) (Ger.); SILKE VON LEWINSKI, INTERNATIONAL COPYRIGHT LAW AND POLICY 581 (2008) (regarding copyright).

6. WIPO Convention, *supra* note 2, preamble; *see also* Debora J. Halbert, *The World Intellectual Property Organization: Past, Present and Future*, 54 J. COPYRIGHT SOC'Y U.S.A. 253, 259 (2006) (explaining the name of WIPO was chosen *inter alia* because the term 'world' better reflects the goals of the organization than 'international' IPO).

7. *See WIPO-Administered Treaties* (indexing each WIPO administered treatise, and providing the respective number of contracting states therein) [hereinafter WIPO-Administered

IP treaties that complement, specify, and strengthen these global IP standards have also attracted a wide-ranging membership of between 50 and 153 contracting states.[8] Of the seven WIPO-administered treaties with less than fifty members, one is referenced in the TRIPS Agreement and is thus binding upon all WTO members, one is about to surpass the fifty-members threshold, one addresses problems that have been effectively taken care of by other treaty obligations, and three concern very specific sub-issues of low practical relevance.[9] The only true disappointment in

---

Treaties]; *WTO Members and Observers*, WORLD TRADE ORG., http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (last visited Oct. 18, 2021); *Summary Table of Ongoing Accessions*, WORLD TRADE ORG., http://www.wto.org/english/thewto_e/acc_e/status_e.htm (last visited Oct. 18, 2021); Jeremy De Beer et al., *Evolution of Africa's Intellectual Property Treaty Ratification Landscape*, 22 AFR. J. INFO. & COMMC'N 53, 76 (2018) ("By 2015, all African countries except for South Sudan were party to one or more treaties.").

8. *See* WIPO-Administered Treaties, *supra* note 7; Patent Cooperation Treaty, June 6, 1970, 1160 U.N.T.S. 231, [hereinafter PCT]); WIPO Copyright Treaty, Dec. 20, 1996, 2186 U.N.T.S. 121 [hereinafter WCT]; WIPO Performances and Phonograms Treaty, Dec. 20, 1996, 2186 U.N.T.S. 203 [hereinafter WPPT]; World Intell. Prop. Org. [WIPO], *Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks*, WIPO Publ'n No. 207E/20 (June 27, 1989), http://www.wipo.int/edocs/pubdocs/en/wipo_pub_207_2021_2.pdf [hereinafter Madrid Protocol]; Madrid Agreement Concerning the International Registration of Marks, as amended on Nov. 12, 2007, 828 U.N.T.S. 389 [hereinafter Madrid Agreement]; Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisations, Oct. 26, 1961, 496 U.N.T.S. 43 [hereinafter Rome Convention]; Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks, June 15, 1957, 23 U.S.T. 1336, 550 U.N.T.S. 45 [hereinafter Nice Agreement]; Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, as amended on Sep. 26, 1980, 32 U.S.T. 1241, 1861 U.N.T.S. 31699 [hereinafter Budapest Treaty]; Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms, Oct. 29, 1971, 25 U.S.T. 309, 866 U.N.T.S. 67 [hereinafter Phonograms Convention]; International Convention for the Protection of New Varieties of Plants, Dec. 2, 1961, 1861 U.N.T.S. 282 [hereinafter UPOV]; World Intell. Prop. Org. [WIPO], *Marrakesh Treaty to Facilitate Access to Published Works by Visually Impaired Persons and Persons with Print Disabilities*, DOC. VIP/DC/8 REV (July 31, 2013) [hereinafter VIPT]; Geneva Act of the Hague Agreement Concerning the International Registration of Industrial Designs, July 2, 1999, 2279 U.N.T.S. 3 [hereinafter Hague Agreement (1999)]; Strasbourg Agreement Concerning the International Patent Classification, Mar. 24, 1971, 26 U.S.T. 1793, 1160 U.N.T.S. 483, [hereinafter Strasbourg Agreement]; Locarno Agreement Establishing an International Classification for Industrial Designs, Oct. 8, 1968, 828 U.N.T.S. 435, [hereinafter Locarno Agreement]; Trademark Law Treaty, Oct. 27, 1994, 2037 U.N.T.S. 35, [hereinafter TLT]; Singapore Treaty on the Law of Trademarks, Mar. 27, 2006, S. TREATY DOC. NO. 110-2 (2007) [hereinafter Singapore TLT]; Nairobi Treaty on the Protection of the Olympic Symbol, adopted Sept. 26, 1981, 1863 U.N.T.S. 367, [hereinafter Nairobi Treaty].

9. *See* WIPO-Administered Treaties, *supra* note 7; World Intell. Prop. Org. [WIPO], Washington Treaty on Intellectual Property in Respect of Integrated Circuits, May 26, 1989, 28 I.L.M. 1477 (treaty not in force), http://www.wipo.int/edocs/pubdocs/en/wipo_pub_202.pdf; TRIPS Agreement, *supra* note 3, arts. 35-38; Beijing Treaty on Audiovisual Performances, June 24, 2012, 51 I.L.M. 1214 [hereinafter BTAP]; Madrid Agreement for the Repression of False or Deceptive Indications of Source on Goods, Apr. 14, 1891, 818 U.N.T.S. 163 [hereinafter Madrid Agreement;

terms of membership is the Lisbon System concerning an IP-style protection of geographical indications.[10] This exception aside, the view prevails that a robust global IP *acquis* encourages creative activity and contributes to the mutual advantage of producers and users of knowledge, and in a manner conducive to global social and economic welfare, to the progress of science and technology.[11]

The problem with that global success narrative, however, is that there is scant empirical evidence to back it up. First, economic studies have failed to isolate a significant contribution of IP rights (IPRs) to economic development.[12] Second, history suggests that causality does not flow from IPRs to innovation and economic development, but from innovative activities to the demand for IP protection.[13] Third, it is generally acknowledged that the multilateral IP system has different effects on IP haves and on IP have nots.[14]

Net IP export countries gain protection for their domestic IP industries in foreign markets and can expect revenues of private beneficiaries and their own total revenues to more than offset the royalties they have to send to foreign companies and countries to whom they accord

---

Patent Law Treaty, June 1, 2000, 2340 U.N.T.S. 3; *Brussels Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite*, May 21, 1974, T.I.A.S. No. 11078, 1144 U.N.T.S. 3 [hereinafter Brussels Convention]; Vienna Agreement Establishing an International Classification of the Figurative Elements of Marks, June 12, 1973, 1863 U.N.T.S. 317 [hereinafter Vienna Agreement].

10. *Cf.* TRIPS Agreement, *supra* note 3, arts. 22-24; Lisbon Agreement for the Protection of Appellations of Origin and their International Registration, Oct. 31, 1958, 923 U.N.T.S. 205, [hereinafter Lisbon Agreement]; World Intell. Prop. Org. [WIPO], *Geneva Act of the Lisbon Agreement on Appellations of Origin and Geographical Indications*, WIPO Publ'n No. 239(E) (May 20, 2015) [hereinafter Geneva Act of the Lisbon Agreement]. On these treaties *see also infra* Part III(*A*) (regarding aforementioned treaties).

11. *See* PCT, *supra* note 8, preamble; WIPO Convention, *supra* note 2, preamble; TRIPS Agreement, *supra* note 3, art. 7; Alexander Peukert, *Intellectual Property and Development—Narratives and Their Empirical Validity*, 20 WORLD INTELL. PROP. J. 2, 9-10 (2017) (overviewing the arguments of IP optimists).

12. Bronwyn H. Hall & Dietmar Harhoff, *Recent Research on the Economics of Patents*, 4 ANN. REV. ECON. 541, 548 (2012) (IPRs had no independent effect on growth above and beyond that contributed by investment and R&D); ABBOTT ET AL., *supra* note 4, at 156-57.

13. Hall & Harhoff, *supra* note 12, at 14; Peukert, *supra* note 11, at 15-16 with further references.

14. Alexander Peukert, *The Colonial Legacy of the International Copyright System*, *in* COPYRIGHT AFRICA: HOW INTELLECTUAL PROPERTY, MEDIA AND MARKETS TRANSFORM IMMATERIAL CULTURAL GOODS 37-68 (Mamadou Diawara & Ute Röschenthaler eds., 2015); Alexander Peukert, *Economic Nationalism in Intellectual Property Policy and Law*, (Goethe Univ. Frankfurt Res. Paper No. 6/2020, 2020), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=3702329.

national treatment.[15] Von Lewinski accordingly describes copyright provisions in trade agreements as "money-making machines for major exporters of copyright-protected products."[16] By strengthening patents, technologically sophisticated countries can also increase their economic complexity and export specialization in sectors with greater research and development ("R&D") intensities.[17] Finally, multinational firms have proven more responsive to treaty-induced increases in patent protection in developing countries than firms established there. Whereas foreign applications in developing countries grew significantly after their accession to the WTO, the number of domestic patents increased much less, if at all.[18]

For net IP import countries, in contrast, the primary effects of the global IP system are higher prices for IP-protected commodities, technologies, and follow-on innovation, which, in sum, impede their ability to catch-up economically.[19] Levelling-up IP protection has not been found to increase innovative activity in most low and middle-income countries, and it shifts patenting activities only marginally.[20] For example, the number of clinical trials for so-called neglected diseases prevalent in developing countries did not grow after TRIPS, in contrast to investments in global maladies prevalent in high-income countries.[21] Adopting high IP standards tends to hurt economic complexity in countries with low levels of human capital.[22] Finally, there is, at most, anecdotal evidence for IP-

15. ABBOTT ET AL., *supra* note 4, at 6-7; PAUL GOLDSTEIN & P. BERNT HUGENHOLTZ, INTERNATIONAL COPYRIGHT: PRINCIPLES, LAW, AND PRACTICE 104 (3d ed. 2013).

16. VON LEWINSKI, *supra* note 5, at 400.

17. Cassandra Mehlig Sweet & Dalibor Sacha Eterovic Maggio, *Do Stronger Intellectual Property Rights Increase Innovation?*, 66 WORLD DEV. 665, 670-74 (2015); Keith E. Maskus & Lei Yang, *Domestic Patent Rights, Access to Technology, and the Structure of Exports*, 51 CAN. J. ECON. 483 (2018).

18. *See generally* Keith E. Maskus, *Economic Development and Intellectual Property Rights: Key Analytical Results from Economics*, *in* 2 THE ECONOMICS OF INTELLECTUAL PROPERTY LAW (Peter Menell & David Schwartz eds., 2019); DANIEL BENOLIEL, PATENT INTENSITY AND ECONOMIC GROWTH 306 (2017) (demonstrating leaders create more internationalized patent clusters than developing countries with "almost no changes in these variables over time"); Juan I. Correa & Carlos M. Correa, *Impact of the Patent Cooperation Treaty in Latin America*, 69 GRUR INT'L 803 (2020); WORLD INTELL. PROP. ORG., WORLD INTELLECTUAL PROPERTY INDICATORS 13 (2019) ("At most of the offices of low- and middle-income countries, the bulk of applications are filed by non-resident applicants.").

19. Sweet & Maggio, *supra* note 17, at 670-74; Peukert, *supra* note 11, at 2-23.

20. Maskus, *supra* note 18, at 16; Bronwyn H. Hall, *Patents, Innovation, and Development* 23 (Max Planck Inst. for Innovation & Competition Res. Paper No. 20-07, 2020).

21. Margaret K. Kyle & Anita M. McGahan, *Investments in Pharmaceuticals Before and After TRIPS*, 94 REV. ECON. & STAT. 1157-72 (2012).

22. Sweet & Maggio, *supra* note 17, at 670-74.

induced technology transfer to and foreign direct investment in least developed and many other developing countries.[23]

This global IP divide is also observable in IPR statistics, particularly in the area of patents. Transnational patent activity has always been highly concentrated in high-income and few middle-income countries.[24] Currently, China, the United States, Western European countries, Japan, and the Republic of Korea top all rankings, whether they concern the origin of resident and foreign patent applications, the number of patent applications received by local patent offices, or the number of patents per million population or per unit of GDP.[25] The combined share in the total of world patent applications of the top five patent offices is on the rise and reached 85.3% in 2018.[26] The list of the top twenty patent origin countries per unit of GDP comprises of only high-income countries, plus China, the Russian Federation, and Ukraine.[27] Whereas tectonic shifts continue to occur within this top group, namely from Northern America and Europe to Japan, Korea, and lately China, all least developed and low-income developing countries play practically no role in global patenting activity.[28] Their accession to the global IP club has thus not reduced, but rather replicated and reinforced global productive inequality.[29]

However, if high IP standards come with significant costs and do not clearly improve the chances for economic catch-up, why did low-income developing countries sign up to the multilateral IP system in the first place, and why has no mass-exodus occurred? Or, from a general perspective, how could IP achieve universal recognition if most countries do not benefit from it?[30]

---

23. James Thuo Gathii, *Strength in Intellectual Property Protection and Foreign Direct Investment Flows in Least Developed Countries*, 43 GA. J. INT'L & COMP. L. 499, 544-45 (2016); Peukert, *supra* note 11, at 10.

24. Harald Degner & Jochen Streb, *Foreign Patenting in Germany, 1877-1932*, *in* ORGANIZING GLOBAL TECHNOLOGY FLOWS: INSTITUTIONS, ACTORS, AND PROCESSES 17-38, 19 (Pierre-Yves Donzé & Shigehiro Nishimura eds., 2013) ("the distribution of foreign patents in the late twentieth century existed one hundred years before and are, therefore, rather time-invariant"); CAROLYN DEERE BIRKBECK, THE WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO): A REFERENCE GUIDE 110 (Edward Elgar pub., 2016) (explaining from 1978-2011, the top 8 countries accounted for 80% of all PCT applications); BENOLIEL, *supra* note 18, at 89-90 (showing significant gap between the middle group of "followers" and the strong "leaders").

25. *See* WORLD INTELLECTUAL PROPERTY INDICATORS, *supra* note 18, at 12-16.

26 *Id.*

27. *Id.* at 14-16.

28. Peukert, *supra* note 11, at 9; BENOLIEL, *supra* note 18, at 89-91 (showing significant gaps between leaders, followers, and marginalized decreasing slowly).

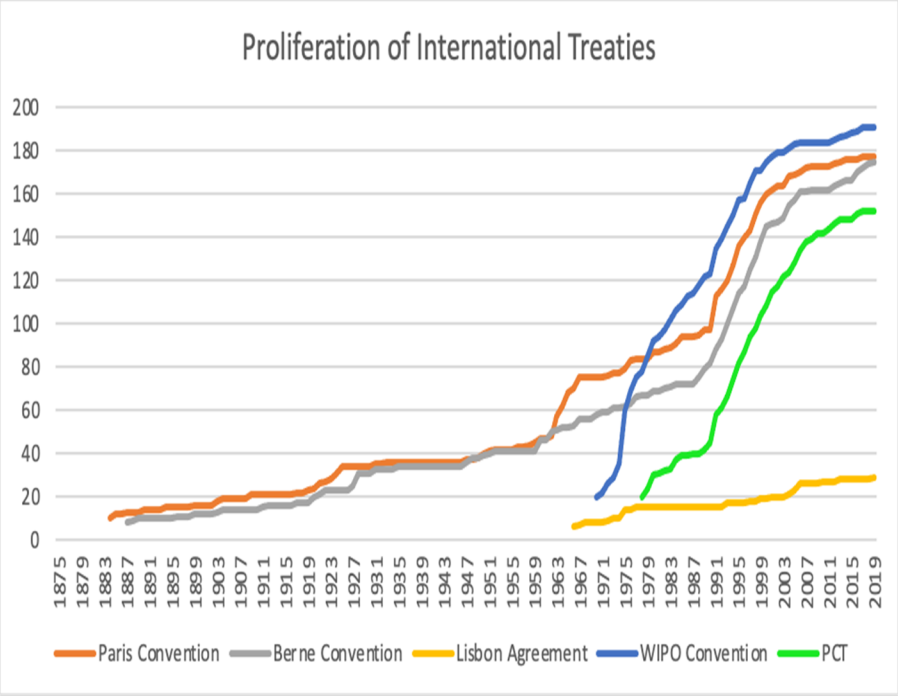
29. Sweet & Maggio, *supra* note 17, at 670-74.

30. PETER DRAHOS & JOHN BRAITHWAITE, INFORMATION FEUDALISM. WHO OWNS THE KNOWLEDGE ECONOMY? 11 (2002); GRAHAM DUTFIELD, INTELLECTUAL PROPERTY RIGHTS AND

Elsewhere, I have discussed several explanations for this global IP paradox, namely the commodification logic of the globalized market economy, power relations between the IP haves and the IP have nots, and the spread of ideologies supporting strong IP protection.[31] Other scholars have occasionally pointed to the importance of path-dependencies set in motion by historical decisions in favor of IP.[32] According to the general theory of path-dependency, early contingent events induce further movement in the same direction because of increasing returns of sticking to the pattern and simultaneously rising costs to switch to an alternative—if an alternative is available at all.[33] In the words of Douglas North: "Once a development path is set on a particular course, the network externalities, the learning process of organizations, and the historically derived subjective modeling of the issues reinforce the course" of institutional change.[34]

The weakness of the theory of institutional path-dependency is that it expounds little beyond the vague notion that "history matters" or that "the past influences the future."[35] The following graph, depicting the number of contracting states to the WIPO Convention and other WIPO-administered treaties over time, raises further questions:

Figure 1: Proliferation of International Treaties



How can it be explained that (1) the WIPO Convention appears to function as an overarching head agreement setting the path towards world coverage, (2) formally separate IP unions gain in membership in parallel to this trend, whereas (3) the Lisbon System regarding geographical indications has been adopted less quickly and widely? Moreover, what is the meaning of the notion 'international IP *system*'—a common parlance that already implies some form of unity whose components and internal structures remain, however, unclear?

To answer these questions and to elucidate the specifically law-based reasons for the global IP paradox, this Article applies a well-established economic theory to international IP law. This theory is the theory of network effects (NE theory), which makes plausible a similar market phenomenon, namely a demand and willingness to pay for certain products that exceeds their inherent ('autarky') value.[36]

In a nutshell, my claim in this Article is that the multilateral IP system resembles classical network products, such as social media platforms, by having been deliberately set up as a law-based, virtual network, which exhibits strong pull-effects. The nodes of this global IP network are the states that accede to multilateral IP treaties and then enact IP laws granting private IPRs for their territory. These formally independent IP jurisdictions complement each other in that each provides protection only for a segment of the world market. IP treaties interconnect IP jurisdictions via automatic national treatment, minimum rights, and further measures enabling transnational IPR acquisition and enforcement.[37] This structure results in a strong network effect. The value of becoming and remaining a member of the global IP club increases with the membership of that club. By acceding to a multilateral IP treaty, a country procures protection for its nationals in the territories of the other contracting states. The more members an IP union has, the more valuable accession. At the same time, if a new member joins, the nationals of other members gain a new IP target territory. The value of existing membership thus also increases with every additional contracting party. Because multilateral IP treaties display increasing returns to adoption, the willingness to accept the costs associated with new international IP obligations slopes upwards.[38] Even if

36. Bryan Druzin, *Buying Commercial Law: Choice of Law, Choice of Forum, and Network Externalities*, 18 TUL. J. INT'L & COMP. L. 131, 134-35 (2009); Andrea K. Bjorklund & Bryan H. Druzin, *Institutional Lock-in Within the Field of Investment Arbitration*, 39 U. PA. J. INT'L L. 707, (2018).

37. TRIPS Agreement, *supra* note 3, art. 4.

38. *See* Michael L. Katz & Carl Shapiro, *Technology Adoption in the Presence of Network Externalities*, 94 J. POL. ECON. 822, 822-23 (1986).

ratifying a particular IP treaty is of no value per se or even detrimental, the aggregate benefits of participating in the global IP network, and also world trade via TRIPS, still outweigh the costs of remaining an outsider. Not surprisingly, therefore, the multilateral IP system passed through the same cycle of events that can be observed in classical network markets, including communication technologies. After a phase of early instability and a certain, contingent tipping point, the system expanded quickly until it became a rigid standard ("lock-in").[39]

Whereas scholars have resorted to NE theory to explain the proliferation of certain standard contract terms, corporate and other laws, as well as the resilience of international organizations, international IP law has not been theorized through this lens yet.[40] In 1981, Hans Ballreich described the interdependency of international organizations by referring to the example of WIPO, but did not lay out a legal network theory *avant la lettre*.[41] Drahos and Braithwaite take up the bandwagon metaphor from economics to explain why many developing countries accepted TRIPS, but do not expound this phenomenon any further.[42] Paul Geller, finally, equates the Paris and Berne Conventions and the TRIPS Agreement with a patchwork of separate units rather than with a single network of interconnected nodes.[43]

The following Parts demonstrate that the opposite view is correct. The twenty-six WIPO treaties, the UPOV Convention and the TRIPS Agreement form one global IP network displaying strong network effects. Part II provides a brief summary of NE theory. Part III describes the basic

---

39. Clayton P. Gillette, *Lock-in Effects in Law and Norms*, 78 B.U. L. REV. 813, 817 (1998).

40. *Id.*; *see* Michael Klausner, *Corporations, Corporate Law, and Networks of Contracts*, 81 VA. L. REV. 757, 761-62 (1995); Larry E. Ribstein & Bruce H. Kobayashi, *Choice of Form and Network Externalities*, 43 WM. & MARY L. REV. 79, 108 (2001); C. Y. Cyrus Chu, *Precedent Externality, Network Effect, and the Possible Inefficiency of the Evolution of Laws*, 16 EUR. J. L. & ECON. 187 (2003) (concerning the efficiency of tort rules); Dan L. Burk, *Law as Network Standard*, 8 YALE J. L. & TECH. 63 (2005) (harmonization of Internet-related laws); Druzin, *supra* note 36, at 134-35; Bryan Druzin, *Using Network Effects to Strengthen International Institutions in a Time of Global Instability*, 11 (Eur. Soc'y Int'l L., Conference Paper No. 3/2018, 2018); Bjorklund & Druzin, *supra* note 36, at 707.

41. *See* Hans Ballreich, *Die Interdependenz internationaler Organisationen*, 19 ARCHIV DES VÖLKERRECHTS 121-68 (1981).

42. DRAHOS & BRAITHWAITE, *supra* note 30, at 194; Ikechi Mgbeoji, *A False Dawn? TRIPS and TRIPS-Plus Impacts in Africa*, *in* INTELLECTUAL PROPERTY, TRADE AND DEVELOPMENT 180, 206 (Daniel J. Gervais ed., 2d ed, 2014); Harvey Leibenstein, *Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand*, 64 Q. J. ECON. 183 (1950) (discussing locus classicus in economics).

43. Paul Edward Geller, *From Patchwork to Network: Strategies for International Intellectual Property in Flux*, 31 VAND. J. TRANSNAT'L L. 553, 554-55 (1998).

structure of the global IP network. It identifies IP jurisdictions as the nodes of the network, explains their complementary nature, and lays out how these nodes have been linked together to form a single global network with open boundaries. Finally, the question of who owns the network is addressed. Part IV presents five legal measures that were purposefully adopted in order to stabilize the network and strengthen its network effect. These measures aim at (1) improving the connectivity between IP jurisdictions, (2) interlinking the various IP treaties/unions, (3) protecting the boundaries of the network vis-à-vis free-riders, (4) preventing the emergence of competing networks, and (5) revitalizing the IP network in times of crisis by attaching to other, still larger networks, namely the UN and the WTO. Lastly, Part V concludes by addressing the implications of these network structures for the future development of international IP law, and what, if anything, can be done to effectively counter its expansionist trajectory.

II. THE THEORY OF NETWORK EFFECTS

For a long time, economists assumed "that the consumption behavior of any individual is independent of the consumption of others."[44] Under this condition, the shape of the demand curve is primarily affected by existing and expected supply, in particular, the price of a good. Situations in which demand-side coordination greatly influences the willingness to pay for the next unit only became a topic with the rise of communication technologies after World War II.[45] Due to the Internet and digitization, such network effects are now "rapidly diffusing across the economic landscape," from consumer and industrial products (Internet of Things) to energy (smartgrid, autonomous driving, renewable energy), bioinformatics, social media, advertising, content creation, and science (database development).[46]

According to Nicholas Economides, a network effect is present when the value to a buyer of an extra unit is higher when more units are sold, or, in other words, if the "value of good X increases as more of the

44. Leibenstein, *supra* note 42, at 184.

45. *See generally* Jeffrey Rohlfs, *A Theory of Interdependent Demand for a Communications Service*, 5 BELL J. ECON. & MGMT. SCI. 16 (1974); Michael L. Katz & Carl Shapiro, *Network Externalities, Competition, and Compatibility*, 75 AM. ECON. REV. 424 (1985); Oz Shy, *A Short Survey of Network Economics*, 38 REV. INDUS. ORG. 119 (2011).

46. Peter Menell, *Economic Analysis of Network Effects and Intellectual Property*, 34 BERKELEY TECH. L.J. 219, 229 (2019); Carl Shapiro & Hal R. Varian, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY (1999).

complementary good Y is sold, and vice versa."[47] Classic examples are telephone networks and nowadays online platforms like Facebook. The benefits of subscribing to such a network increases with the number of adopters, simply because everyone benefits from gaining a new potential communication partner.[48] Similarly, but more indirectly, the more consumers adopt a certain operating system (say Android versus Apple's iOS), the more applications will be produced for that system, resulting in increasing returns to adoption for all consumers and application developers.[49] Increasing returns then trigger positive feedback processes within the network and, on the other side of the coin, raise the cost of switching to an alternative network.[50]

Formally, such networks are composed of links that connect nodes.[51] The nodes in our examples are the telephone extensions, the Facebook accounts, and the software installations. To form a network, these nodes have to be linked together. In the case of communication networks, such connections are evidently present. But what about the software example? What kind of connection is there between computer programs on separate, unconnected hardware?

The key concept in answering this question is complementarity.[52] Goods and services are complementary network products if it is beneficial to use them together, if they form components of a whole, which is only complete and achieves its full value if the maximum number of nodes are connected.[53] The opposite of the component is the substitute; for example, a competing telephone network, a competing social media service, or

---

47. Nicholas Economides, *Competition Policy in Network Industries: An Introduction*, *in* THE NEW ECONOMY AND BEYOND: PAST, PRESENT AND FUTURE 96, 98 (Dennis W. Jansen ed., 2006); Nicholas Economides, *The Economics of Networks*, 14 INT'L J. INDUS. ORG. 673, 680 (1996); Stan J. Liebowitz & Stephen E. Margolis, *Network Externality: An Uncommon Tragedy*, 8 J. ECON. PERSPECTIVES 133, 135 (1994) (explaining the net value of an action, like consuming a good, subscribing to a telephone service, is affected by the number of agents taking equivalent actions); Jeffrey Church et al., *Indirect Network Effects and Adoption Externalities*, 7 REV. NETWORK ECON. 337, 337 (2008) ("network effect exists if consumption benefits depend positively on the total number of consumers who purchase compatible products").

48. Menell, *supra* note 46, at 157.

49. *See generally* Katz & Shapiro, *supra* note 45; W. Brian Arthur, *Competing Technologies, Increasing Returns, and Lock-In by Historical Events*, 99 ECON. J. 116 (1989).

50. Pierson, *supra* note 33, at 252.

51. Economides (1996), *supra* note 47, at 674; Economides (2006), *supra* note 47, at 98.

52. Economides (1996), *supra* note 47, at 679.

53. Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects,* 86 CAL. L. REV. 479, 483 n.8 (1998); Church et al., *supra* note 47, at 340 ("Consumer demand is for a group of complementary products that when combined or consumed together, provide value.").

alternative software.[54] Several extensions and accounts within one telephone network or social media platform, by contrast, mutually supply each other.[55] Indeed, without at least two extensions/accounts, such services are useless altogether. Their inherent, autarkic value is zero. Their entire use value consists in forming part of a communication network over which adopters are able to interact with other users. This synchronization value is the essence of network effects.[56]

But the complementarity of network products is not always so direct and strong. Instead, there is a continuum between various stages of complementarity and the strength of resulting network effects.[57] For many products, consumers' utility functions are completely or mainly independent. The use value of these products is inherent in the commodity. Menell gives the example of ice cream: "My enjoyment of a particular flavor . . . does not depend significantly on the utility that other consumers derive from the purchase and consumption of ice cream."[58] Scoops of ice cream do not compose a network because their use value is autarkic. In contrast, social media accounts derive their entire value from being connected to the network and thereby to other users.

Somewhere between communication services and foodstuffs rank the many goods and services that exhibit both autarkic and synchronization value.[59] The example on point here is the operating system of a computer. It is independently/inherently valuable because one can use it to manage one's hardware. But it also exhibits indirect or virtual network effects in that complementary products on a related market, such as software applications for smartphones, will be more readily available as the number of users of an operating system increases.[60] As a consequence, demand for the operating system depends significantly on the availability of complementary applications, and vice versa. Such

---

54. Ohio v. Am. Express Co., 138 S. Ct. 2274, 2290 (2018) (Breyer, J., dissenting); *infra* Part IV(D).

55. *See* Lemley & McGowan, *supra* note 53, at 488-89.

56. Katz & Shapiro, *supra* note 45, at 438; Economides (2006), *supra* note 47, at 100; Paul Klemperer, *Network Goods (Theory)*, *in* THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW (2d ed. 2008); Lemley & McGowan, *supra* note 53, at 488-89.

57. *Id.* at 591; *see generally Ohio*, 138 S.Ct. 2274 (comparing network effects between merchant-Visa and Visa-Credit-card-holder vs. reader-newspaper and newspaper-advertiser).

58. Menell, *supra* note 46, at 225.

59. *See generally* Druzin (2009), *supra* note 36; Klemperer, *supra* note 56; Katz & Shapiro, *supra* note 45; Lemley & McGowan, *supra* note 53, at 488-94.

60. Katz & Shapiro, *supra* note 45, at 424; Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93, 97-100 (1994); Economides (2006), *supra* note 47, at 100; Liebowitz & Margolis, *supra* note 47, at 141; Lemley & McGowan, *supra* note 53, at 491-94.

indirect network effects are not limited to the digital realm or the Internet of Things, though. Offline examples include the demand for certain cars and the availability of and demand for complementary repair and fueling or charging facilities.[61] In sum, the strength and effects of complementarities are strongest in the case of real physical communication networks. The strength and effects of complementarities attenuate the more indirect the complementarity/connection between the network products and the more important their autarky value.

Apart from these variations, network markets typically display the following features: if a new network product such as a new social media service is launched, a phase of instability follows, during which several suppliers might compete for the market with a contingent outcome.[62] At a certain tipping point, however, one of the competing networks expands very rapidly. Due to the positive feedback loop of ever more users adopting a network and thereby increasing the value of the next account, the pace of market penetration is much faster in network markets than in non-network markets.[63] Not only is growth quick but, at least for direct network products such as social media, the fundamental law of demand is violated because "for some portions of the demand curve, as sales expand, people are willing to pay more for the last unit."[64] The reason for this phenomenon is that joining the dominant network becomes ever more valuable if not unavoidable over time, even if a substitute with superior qualities is on offer for a lower price. If production costs are falling, constant, or nonexistent, this positive feedback loop tends to crowd out competing incompatible networks resulting in a natural monopoly.[65] But even in the case of positive production costs, network markets regularly result in winner take most distributions because a "firm with a large market share has more complementary goods and therefore its good is more valuable to consumers."[66]

---

61. Pierson, *supra* note 33, at 251, 254 (explaining increased use of a technology encourages investments in the linked infrastructure, which in turn attracts still more users to the technology).

62. Katz & Shapiro, *supra* note 45, at 102; Economides (2006), *supra* note 47, at 108 (describing competition for, not in the market); Klemperer, *supra* note 56; Mahoney, *supra* note 33, at 513 ("critical juncture"); Pierson, *supra* note 33, at 263.

63. Economides (2006), *supra* note 47, at 104; *see* Menell *supra* note 46.

64. Economides (2006), *supra* note 47, at 100.

65. Liebowitz & Margolis, *supra* note 47, at 143; Lemley & McGowan, *supra* note 53, at 484 (pointing out the differences between natural monopolies as supply-side effects and network effects as a demand-side phenomenon).

66. Economides (2006), *supra* note 47, at 104; Katz & Shapiro (1994), *supra* note 60, at 111 (describing strong winners and strong losers).

III. BASIC STRUCTURE OF THE GLOBAL IP NETWORK

These tenets of NE theory have achieved paradigmatic status in economics and have furthermore influenced other social sciences, often under the rubric of "path dependencies."[67] This Part applies NE theory concepts and insights to the multilateral IP system. It describes the basic network structure of that system and explains the root cause of its network effects.[68]

A. The Nodes of the Network

Networks displaying network effects are composed of complementary, interconnected nodes, e.g. accounts of a social media service. The nodes of the global IP network are formally independent IP jurisdictions that grant IP protection for the respective territory.[69]

1. Independent IP Jurisdictions

This decentralized, fragmented structure forms the background and point of reference of today's multilateral IP system. It is based on several universally accepted legal principles. Firstly, IPRs are not given by a universal law of property, but are creatures of statute.[70] It is thus up to each state to define whether and to what extent IP should be protected.[71] Second, IP laws are limited in their geographical scope to the territory of the jurisdiction enacting them, and legislators are moreover free to restrict the eligibility of persons to acquire local IPRs to the exclusion of foreigners (objective and subjective territoriality).[72] Third, IP laws and IPRs are independent of each other so that an invention, work, etc., may be protected in one country, but remain unprotected in another.[73] Thus,

---

67. *Supra* Part I.

68. *Cf.* Economides (1996), *supra* note 47, at 680, 685 ("micro analysis" of networks).

69. *Cf.* TRIPS Agreement, *supra* note 3, art. 22.

70. *Cf. id.*

71. *Cf. id.*, preamble, art. 8; Microsoft Corp. v. AT&T Corp., 550 U.S. 437, 455 (2007); Alexander Peukert, *The Fundamental Right to (Intellectual) Property and the Discretion of the Legislature*, *in* RESEARCH HANDBOOK ON HUMAN RIGHTS AND INTELLECTUAL PROPERTY 132, (Christophe Geiger ed., 2015).

72. Alexander Peukert, *Territoriality and Extraterritoriality in Intellectual Property Law*, *in* BEYOND TERRITORIALITY: TRANSNATIONAL LEGAL AUTHORITY IN AN AGE OF GLOBALIZATION 189 (Günther Handl et al., eds., 2012); GOLDSTEIN & HUGENHOLTZ, *supra* note 15, at 156 ("Only rarely, and selectively, will a country extend copyright or neighbouring rights protection to a foreign work in the absence of some general or reciprocal treaty relationship with the work's country of origin.").

73. Berne Convention, *supra* note 1, arts. 5(1), (2), 7(8); Paris Convention, *supra* note 1, arts. 4bis, 6(3) (concerning patents and trademarks).

global trade and communication are still not governed by one world IPR, but by a mosaic of 190+ (supra-) national IP laws.

This universal background structure is again the result of contingent historical events. Had calls for uniform transnational IP protection during the original Paris and Berne Convention negotiations succeeded, the multilateral IP system of today would look very different. But after "pragmatic demands of greater national control" prevailed, the path was set towards a network of formally independent IP nodes.[74] The independence of IP jurisdictions participating in the multilateral IP system did not attenuate, but instead grew stronger over time. The only candidate for setting a global standard of protection, namely the law of the country of 'origin' of the work or other subject matter, gradually lost importance.[75] States disapprove of the application of a foreign *lex originis* on their IP territory to define the scope of protection, and right holders fear the global effects of a central attack on the validity of the right in the country of origin.[76]

Interestingly, one argument against adopting a truly universal IP code or globalizing the *lex originis* pertains to the attractiveness of the international system as a whole. In opposing French universalism during the original Berne Convention negotiations, the German delegation pointed out that a system that provides protection for any author of whatever nationality or residence might not create sufficient incentives for states to join the new union in the first place.[77] The mandatory application of the *lex originis* as regards the genericness of geographical indications is similarly criticized for discouraging states from acceding to the Lisbon Union, whose relatively small membership stands out indeed.[78] Arguments of this kind implicitly allude to the need to reserve the benefits of the multilateral IP system to members and to exclude outsiders.[79]

---

74. Graeme B. Dinwoodie, *The Architecture of the International Intellectual Property System*, 77 CHI.-KENT L. REV. 993, 995-96 (2002); VON LEWINSKI, *supra* note 5, at 32; GOLDSTEIN & HUGENHOLTZ, *supra* note 15, at 34; RICKETSON, *supra* note 1, at 44.

75. Daniel J. Gervais & Matthew Slider, *The Geneva Act of the Lisbon Agreement: Controversial Negotiations and Controversial Results*, 58 IUS GENTIUM 15, 27-28 (2017); TRIPS Agreement, *supra* note 3, art. 24(9).

76. *See* STEPHEN P. LADAS, THE INTERNATIONAL PROTECTION OF LITERARY AND ARTISTIC PROPERTY 635-53 (1938) (regarding the failed Convention of Montevideo on the Protection of Literary and Artistic Property of 1889 treaty); VON LEWINSKI, *supra* note 5, at 7-8; Geneva Act of the Lisbon Agreement, *supra* note 10, art. 12 (making the invalidation of geographical indications for genericness dependent on genericness in the country of origin of the appellation at stake); RICKETSON, *supra* note 1, at 760; ABBOTT ET AL., *supra* note 4, at 92.

77. *Cf.* RICKETSON & GINSBURG, *supra* note 1, at 246-48 (2d ed. 2006).

78. Gervais & Slider, *supra* note 75, at 27-28; TRIPS Agreement, *supra* note 3, art. 24(9).

79. Closure: The Exclusion of Non-Ressortissants, *infra* Part (III)(D)(1).

2. Micro IP Networks Within IP Jurisdictions

Before continuing with the analysis of the international network, it is worth taking a closer look at the internal structure of its nodes, specifically independent IP jurisdictions. From the perspective of international law, these nodes appear as uniform entities, namely as states (and intergovernmental organizations such as the EU) that become party to an IP treaty.[80] That accession is, however, only an intermediary step. The ultimate aim of the international IP system is to provide *private* parties protection by guaranteeing the availability of private, exclusive IPRs.[81] If one pierces the veil of the independent IP jurisdiction as the node of the international *macro* network, private *micro* networks come to the fore. Whereas the macro network consists of interconnected IP jurisdictions/laws, micro networks within the latter are composed of all IPRs in force in a particular state.[82]

I have demonstrated elsewhere with a view to the so-called "patent paradox"—the phenomenon that there is a strong and resilient propensity to patent, although the expected average value of most patents is low—that national patent systems can also be understood as virtual networks exhibiting network effects.[83, 84] The key claim is that the value of an existing patent increases as more patents are granted, and vice versa. Applying for a patent becomes more valuable the greater the number of patents that are in force. The strength of this effect depends upon the degree of complementarity between individual patents and the value that their owners derive from synchronizing their acquisition and use. A relatively weak but still significant network effect operates across product and technology markets. It arises out of the complementary function of all patents to serve as financial assets and signals of success. If, for example, GlaxoSmithKline attracts outside capital by advertising its rich patent portfolio, and avoids billions in taxes by paying intra-firm IP royalties to low-tax jurisdictions, Amazon and Starbucks have to adopt this strategy too in order to maximize revenues and please investors.[85] Moderate

80. Peukert, *supra* note 72.

81. WIPO Convention, *supra* note 2, preamble, art. 3; TRIPS Agreement, *supra* note 3, preamble.

82. *Cf.* Peukert (2020), *supra* note 14.

83. Sabrina Safrin, *Chain Reaction: How Property Begets Property*, 82 NOTRE DAME L. REV. 1917, 1941-42 (2007).

84. Alexander Peukert, *Virtual Patent Networks and Their Network Effects*, Goethe Univ. Frankfurt Res. Paper No. 7/2020, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=3702337, para 37 (Sept. 30, 2020).

85. *Id.* at para 47.

network effects are at work between competitors who simultaneously amass patents for offensive and defensive reasons. Network effects are most intense in complex technology areas, where patents are key to getting a seat at the negotiating table when standards are being set and to securing a share in the total revenue of a complex end product.[86] All these network effects interact and support each other. Consequently, patenting races are most acute in complex technology areas, but they also occur across the spectrum of patentable technologies. In sum, at a certain level of patent proliferation on a market (tipping-point), patents result in increasing returns to adoption for all market participants, which leads to an increase in demand for patents and further feedback and lock-in effects. The expected synchronization benefits from joining this patent network are additional revenues from exclusive exploitation or licensing or, at a minimum, of a guaranteed sphere of freedom to operate under conditions of mass patenting.[87]

This logic is also at work regarding other industrial property rights requiring registration, particularly design and plant variety rights. The more these IPRs are adopted, the more indispensable they become. In use-based trademark jurisdictions, such as the U.S. and Germany, in which trademark rights accrue using a sign in trade, the attractiveness of trademarks is a direct function of commercial practice.[88] If the majority of companies adopt trademarks, others will jump on the trademark bandwagon in order to enjoy the same competitive benefit. The registration of all these trademarks is then merely an indicator of market reality. The steep, consistent rise of trademark filings in many countries, including numerous middle-income countries after the mid-1980s, is proof of the commercial necessity to secure an exclusive sign under conditions of mass trademark filings.[89] After decades of high levels of trademarking, concerns have been raised in the EU and the U.S. that these trademark hot spots might even run out of distinctive signs suitable for branding.[90]

---

86. *Id.* at para 53.

87. *Id.* at para 30.

88. 15 U.S.C. § 1051; Act on the Protection of Trade Marks and other Signs, October 25, 1994, sec. 4 no. 2 (Ger.), http://www.gesetze-im-internet.de/englisch_markeng/englisch_markeng.html#p0034 [hereinafter German Trademark Act].

89. WORLD INTELLECTUAL PROPERTY INDICATORS, *supra* note 18, at 74-78.

90. *See generally* Roland Knaak et al., *Study on the Overall Functioning of the European Trade Mark System* (Max Planck Inst. for Intellectual Property & Competition Law Munich, Paper No. 12-13, 2011), 14-15; Georg von Graevenitz, *Trade Mark Cluttering–Evidence from EU Enlargement*, 65 OXFORD ECON. PAPERS 721 (2013); Barton Beebe & Jeanne C. Fromer, *Are We Running out of Trademarks: An Empirical Study of Trademark Depletion and Congestion*, 131 HARV. L. REV. 945 (2017).

Copyrights and related rights are omnipresent not because of network effects, but because they come into existence with the act of creating the work or producing other subject matter—for example, the first fixation of a phonogram. Any copyright subject matter fulfilling the requirements of protection is automatically allocated to the author or other original right holder.[91] Thus, cultural production operates on the basis of a seamless web of exclusive rights. This complete commodification is secured via the prohibition of formalities in the Berne Convention and other multilateral copyright treaties, which provide that the enjoyment and the exercise of copyrights and related rights shall not be subject to any formality.[92]

The prohibition of copyright formalities highlights the linkages between the international macro network as embodied in the Berne Convention and micro IPR networks within IP jurisdictions. Because the multilateral copyright *acquis* requires automatic rights accrual, cultural production throughout the contracting states is subject to copyright. The treaties concerning registered IPRs have the parallel purpose to facilitate "the protection of intellectual property throughout the world."[93] The easier these treaties make it to file patents, trademarks, design rights, etc. in foreign countries, the easier a micro network effect can spill over from an IPR hot spot to other IP jurisdictions and trigger patenting and other IPR races there.[94] Calls for higher international IP standards have in fact always come from IP hot spots with relatively dense micro IPR networks.[95] If IP demandeurs from these countries are successful, the existing micro networks can expand geographically and new players from third countries can enter and intensify application races—think about Chinese information and communication technology ("ICT") companies involved in the global smartphone wars.[96] In sum, the global IP network can be described as a network of networks—it interconnects IPR micro networks within IP jurisdictions and thereby transnationalizes their IPR propensity.

The protection of geographical indications (GIs), by contrast, does not lend itself to this kind of viral spread. The reason is that GIs are strictly

---

91. Berne Convention, *supra* note 1.

92. *Id.* art. 5 (1); WCT, *supra* note 8, art. 3; WPPT, *supra* note 8, art. 20; BTAP, *supra* note 9, art. 17.

93. WIPO Convention, *supra* note 2, preamble.

94. *See* PCT, *supra* note 8 (describing the propensity of multinational companies to patent abroad.)

95. *Cf.* Peukert (2020), *supra* note 14, at 23-32 with further references.

96. *See* Pedro Henrique D. Batista & Gustavo Cesar Mazutti, Comment, *Huawei Technologies (C-170/13): Standard Essential Patents and Competition Law–How Far Does the CJEU Decision Go?*, 47 IIC-INT'L R. INTELL. POP. & COMPETITION L. 244 (2016).

tied to a certain *terroir* to which a given quality, reputation or other characteristic of a good is attributable.[97] This link between a geographical area and a good is not easily established and, in any case, it cannot be created by "intellectual activity" alone.[98] Accordingly, the number of GI applicants and those who count on reciprocal benefits is rather limited.[99] Again by contrast, inventions, works and trademarks can, in principle, be brought about by anyone, anywhere, at any time, and used throughout the world. The interest in securing protection in these ubiquitous IP subject matters is accordingly much more widely spread.

B. Complementarity of the Nodes

Returning to the macro level of the multilateral IP system, the key claim of this Article is that the value of being a member of the IP club increases automatically if another country joins. Conversely, the more contracting parties there are that have ratified a multilateral IP treaty, the more valuable it is for outsiders to accede. According to NE theory, however, such a demand-side network effect presupposes that the nodes of the network are complementary to each other.[100]

As mentioned, the nodes of the global IP network are the 190+ IP jurisdictions with their local IP laws and micro IPR networks.[101] Whereas it is evident that IP protection in country A is not a *substitute* for IP protection in country B, or any other country, it is less clear whether these nodes can be conceived of as *components of a whole*, which is only complete and achieves its full value if the maximum number of nodes are

---

97. TRIPS Agreement, *supra* note 3, arts. 22(1); Geneva Act of the Lisbon Agreement, *supra* note 10, art. 2(1); Irene Calboli, *Of Markets, Culture, and Terroir: The Unique Economic and Culture-Related Benefits of Geographical Indications of Origin*, *in* INTERNATIONAL INTELLECTUAL PROPERTY: A HANDBOOK OF CONTEMPORARY RESEARCH 433 (Daniel J. Gervais ed., 2015); Gervais & Slider, *supra* note 75, at 15-16; DINWOODIE & DREYFUSS, *supra* note 1, at 40.

98. WIPO Convention, *supra* note 2, art. 2(viii) (defining intellectual property).

99. Panel Report, *European Communities—Protection of Trademarks and Geographical Indications for Agricultural Products and Foodstuffs—Complaint by the United States*, WT/DS174/R (adopted Mar. 15, 2005) [hereafter WTO Panel Report]; ABBOTT ET AL., *supra* note 4, at 74; Nairobi Treaty on the Protection of the Olympic Symbol, art. 1, 3, Sept. 26, 1981, 1863 U.N.T.S. 367 (explaining that the treaty is even more restricted in that it only benefits the International Olympic Committee (IOC) as regards the use of the Olympic symbol (Nairobi Treaty, art. 1), however, one way to make adoption of this treaty nevertheless attractive is the promise that the IOC will share revenues from the commercialization of the Olympic symbol with National Olympic Committees); RICKETSON, *supra* note 1, at 642.

100. *Supra* Part II.

101. *Supra* Part III(A)(1).

connected.[102] If it cannot be specified and demonstrated precisely how IP jurisdictions complement each other, the application of NE theory to the multilateral IP system would suffer from unsubstantiated concept stretching.[103]

From a strictly legal point of view, IP jurisdictions appear to be more akin to non-network commodities that are demanded and consumed separately from other such goods. The reason is that national IP laws and IPRs are independent in their existence and scope from IP laws/IPRs of other countries.[104] A national IP regime also possesses an inherent autarky value from both a public and a private perspective.[105] Legislators enjoy, in principle, full liberty to adopt an IP policy suitable to the particular socio-economic circumstances prevailing in the country, including the option to not grant IPRs at all. The autarky value national IPRs hold ready for private IPR owners consists in the possibility to charge super competitive prices and extract large private returns from the local market.[106]

Yet this strictly legal-territorial analysis misses the fact of globalization. No state and no company of more than mere local operations can afford to turn a blind eye to what is happening in foreign countries and markets.[107] States and businesses do not operate in isolation, but in relation to other actors on the global stage.[108] This is particularly obvious in the case of companies holding IP in their home country and striving to expand their exclusivity to foreign markets. The history of international IP is replete with such private IP applicants successfully lobbying their home governments to push for international treaties providing protection abroad.[109] They consider their home IP laws and IPRs

---

102. *Id.*; *cf.* TRIPS Agreement, *supra* note 3, art. 22.

103. This accusation has been directed towards the use of NE theory to explain the proliferation of certain standard contract forms and corporations. Druzin, *supra* note 36, at 30 (" . . . commercial law is more analogous to a telephone than a Ferrari"); critical Pierson, *supra* note 33, at 252; Ribstein & Kobayashi, *supra* note 40, at 109-16 (critically examining Klausner's assumption about network effects in contract and corporation law practice); Lemley & McGowan, *supra* note 53, at 483 ("Significant confusion remains as to what constitutes a 'network effect,' and how such effects should be used in the law."); Klausner, *supra* note 40, at 775 ("Unlike a telephone network, where units are physically connected, a contractual network (like a PC network) is linked together by commonly used complementary products.").

104. *Supra* Part III(A).

105. *See generally* Katz & Shapiro, *supra* note 45.

106. Hall & Harhoff, *supra* note 12, at 559.

107. Regulation (EU) 2017/1001 of the European Parliament and of the Council of June 14, 2017 on the European Union trademark (O.J. 2017 L 154, art. 8(4)).

108. *See* Carmen Gebhard, *One World, Many Actors: Levels of Analysis in International Relations*, E-INT'L REL. (Dec. 28, 2016), http://www.e-ir.info/2016/12/28/one-world-many-actors/.

109. *Infra* Part III(E).

as tiny pieces of a much larger puzzle, as just one component of a whole: the world market. Their home governments tend to support this global view because they hope to boost their balance of trade by collecting licensing fees from abroad.[110] Not surprisingly, therefore, IP jurisdictions hosting active micro IPR networks, such as the U.S. and the EU, are at the same time championing global IP protection.[111] This is precisely what the international IP system aims at today, which provides "protection of intellectual property throughout the world through cooperation among States" in a manner "as effective and uniform as possible."[112] Independent IP jurisdictions thus complement each other in that they together provide IP protection for the world market.

C. Connecting the Nodes: National Treatment Regarding Minimum Rights

The two basic principles to achieve this aim are national treatment and minimum rights, which guarantee that right holders from IP jurisdictions participating in the multilateral IP system have access to a certain minimum level of IP protection in all other member states.[113] From the perspective of NE theory, the principle of national treatment functions as the permanent interconnection between the nodes of the global IP network. By obliging each member state to accord to the *ressortissants* of other members treatment no less favorable than that it accords to its own nationals, it ensures that cross-border IPR acquisition runs smoothly and is not disturbed by provisions that discriminate against foreigners or require some specific form of reciprocity from the country of IP origin.[114] National treatment links the nodes of the global IP network together.

---

110. *Infra* Part III(D)(3).

111. Peukert (2020), *supra* note 14, 23-32 (concerning U.S. and EU foreign IP policies).

112. WIPO Convention, *supra* note 2, art. 3(i); *see also* Berne Convention, *supra* note 1, preamble; WCT, *supra* note 8, preamble; WPPT, *supra* note 8, preamble; BTAP, *supra* note 8, preamble; TRIPS Agreement, *supra* note 3, preamble ("need to promote effective and adequate protection" of IPRs); *see also* Halbert, *supra* note 6, at 253 ("The mission of the World Intellectual Property Organization (WIPO), generally speaking, is to spread the concept and benefits of a strong intellectual property system to the entire world.").

113. ABBOTT ET AL., *supra* note 4, at 63-65.

114. Appellate Body Report, *United States–Section 211 of the Omnibus Appropriations Act of 1998*, 69, WT/DS176/AB/R (Jan. 2, 2002) ("the significance of the national treatment obligation can hardly be overstated") [hereinafter USTR]; *see* Robert Brauneis, *National Treatment in Copyright and Related Rights: How Much Work Does it Do?*, GW LAW FACULTY PUBLICATIONS & OTHER WORKS, Paper 810 (2013) ("national treatment . . . crystallizes that spirit of internationalism"); Berne Convention, *supra* note 1, art. 5(1) (allowing for the reverse discrimination of nationals/residents in the country of origin. The political costs of treating one's

In and of itself, automatic national treatment can, however, be a hollow promise because a country may participate in the network, but nevertheless only provide a minimal level of IP protection for its territory.[115] As a consequence, the quality of the IP node to which access is guaranteed via national treatment can be insufficient—as if you would send someone an electronic message whose smartphone is broken. To avoid this type of network failure, the WIPO treaties, UPOV, and TRIPS complement national treatment with (1) minimum obligations regarding the content and scope of IPRs plus (2) maximum levels of formal protection requirements and substantive limitations of rights.[116, 117] This structure guarantees that the nodes connected to the global IP network comply with a certain common quality standard, which has consistently been improved over the history of the international IP system.[118] Furthermore, the combination of minimum rights and maximum prerequisites and limitations has an upward dynamic built into it.[119] IP laws in contracting states must never fall below the global minimum standard, but may go beyond with few, if any, ceilings in place.[120] Most multilateral

---

own authors worse than foreigner authors are, however, so high that the practical relevance of this provision is very small); *cf.* RICKETSON & GINSBURG, *supra* note 1, at 279-83.

115. VON LEWINSKI, *supra* note 5, at 101-05; RICKETSON, *supra* note 1, at 345.

116. *See generally* TRIPS Agreement, *supra* note 3, art. 1(1), ("Members may, but shall not be obliged to, implement in their law more extensive protection than is required by this Agreement, . . ."); Berne Convention, *supra* note 1, art. 19; Rome Convention, *supra* note 8, art. 21; Hague Agreement (1999), *supra* note 8, art. 1(1); *see also* Berne Convention, *supra* note 1, art. 7(6); TRIPS Agreement, *supra* note 3, art. 12; UPOV, *supra* note 9, art 19(2); BTAP, *supra* note 97, art. 14 (longer terms of protection); *see also* Patent Law Treaty, *supra* note 9, art. 2(1); Hague Agreement (1999), *supra* note 8, art. 2(1); PCT, *supra* note 15, arts. 19(3), 27(1),(4) (more favorable requirements for protection).

117. Berne Convention, *supra* note 1, art. 9(2) (three-step test limiting IPR limitations and exceptions); TRIPS, *supra* note 3, arts. 13, 17, 26(2), 30, 31; WCT, *supra* note 8, art. 10; WPPT, *supra* note 8, art. 16; UPOV, *supra* note 8, arts. 5(2), 14(2), 15(1), 21(2), 22(2) (mandatory exceptions from plant variety protection); Singapore TLT, *supra* note 8, arts. 3(4), 4(5), 5(4), 8(6), 10(4) (no additional requirements for applications); Patent Law Treaty, *supra* note 9, art. 6(1). *But see* TRIPS, *supra* note 3, art. 62(4) (invalidity proceedings standards); Berne Convention, *supra* note 1, art. 10(1) (mandatory right of quotation); VIPT, *supra* note 8, art. 4 (mandatory limitation for visually impaired people).

118. ABBOTT ET AL., *supra* note 4, at 5-6; RICKETSON, *supra* note 1, at 761-62; GROSSE RUSE-KHAN, *supra* note 4, at 492 ("from a niche area . . . to a global regime that encompasses almost all aspects of human life"); Ullrich, *supra* note 4 (IP protection has expanded in all respects).

119. *See generally* Jeanette Hoffman, *Narratives of Copyright Enforcement: The Upward Ratchet and the Sleeping Giant*, 134 REVUE FRANCAISE D'ETUDES AMERICAINES 66-68 (2012).

120. *See* Grosse Ruse-Khan, *Time for a Paradigm Shift? Exploring Maximum Standards in Intellectual Property Protection*, 1 TRADE L. & DEV. 56 (2009); Annette Kur & Henning Grosse Ruse-Khan, *Enough is Enough—The Notion of Binding Ceilings in International Intellectual Property Protection*, *in* INTELLECTUAL PROPERTY RIGHTS IN A FAIR WORLD TRADE SYSTEM: PROPOSALS FOR REFORM OF TRIPS 359, (Annette Kur & Marianne Levin eds., 2011); Annette Kur,

IP treaties, including the Paris and Berne Conventions, UPOV, and TRIPS, automatically extend these additional local levels of IP protection to the *ressortissants* of other contracting states.[121]

Together, the principles of national treatment and minimum rights are the root cause of the network effects displayed by the multilateral IP system. They make certain that joining such a treaty automatically secures that country's nationals/residents effective IP protection in all other contracting states.[122] The larger the membership of such an IP club, the greater the combined IP territory, the potential gains from private exclusivity, and thus the value of ratifying a treaty for IP industries and their home states.[123] Conversely, each accession expands the possible geographical coverage of the IPR portfolio of rights holders from earlier members. The system thus produces increasing returns to scale for all private actors holding IP.[124]

D. Open Boundaries of the Network

From the perspective of these private stakeholders, universal protection of IP irrespective of its origin appears to be the optimal solution. Yet, universalism has never prevailed in the area of IP because the majority of nation states wanted to retain sovereign control over their local IP

From Minimum Standards to Maximum Rules, *in* TRIPS PLUS 20: FROM TRADE RULES TO MARKET PRINCIPLES 133, 134-37 (H. Ullrich et al. eds., 2016); *see* TRIPS Agreement, *supra* note 3, art. 65(5); Council for the Trade-Related Aspects of Intellectual Property Rights, *Extension of the Transition Period Under Article 66.1 for Least-Developed Country Members*, WTO Doc. IP/C/64 (June 12, 2013) ("least developed country Members express their determination to preserve and continue the progress towards implementation of the TRIPS Agreement").

121. *Cf.* Paris Convention, *supra* note 1, art. 2(1) ("the advantages that their respective laws now grant, or may hereafter grant"), *with* Berne Convention, *supra* note 1, art. 5(1) ("the rights which their respective laws do now or may hereafter grant to their nationals, as well as the rights specially granted by this Convention"); WCT, *supra* note 8, art. 3; UPOV, *supra* note 8, art. 4(1); TRIPS Agreement, *supra* note 3, art. 3(1) (treatment no less favorable than that it accords to its own nationals with regard to "the protection of intellectual property"); WTO Panel Report, *supra* note 99, at 43 ("National treatment is required with regard to the protection of intellectual property, even where measures provide a higher level of protection"); *see* VON LEWINSKI, *supra* note 5, at 111-15 (comparison of terms of protection according to Berne Convention, art. 7(8)); ABBOTT ET AL., *supra* note 4, at 68-69 (in contrast, the national treatment provisions regarding the rights related to copyright are limited to the rights "specifically granted" in the treaties). In contrast, the national treatment provisions regarding the rights related to copyright are limited to the rights "specifically granted" in the treaties; *see* TRIPS Agreement, *supra* note 3, art. 3(1); Rome Convention, *supra* note 8, art. 2(2); WPPT, *supra* note 8, art. 4; BTAP, *supra* note 9, art. 4(1).

122. Michael L. Doane, *TRIPS and International Intellectual Property Protection in an Age of Advancing Technology*, 9 AM. U. INT'L L. REV. 465, 467 (1994).

123. *See generally* Druzin (2018), *supra* note 40, at 13-14 (regarding international law).

124. Walter G. Park & Juan Carlos Ginarte, *Intellectual Property Rights and Economic Growth*, 15 CONTEMP. ECON. POL'Y 51, 60 (1997).

policy.[125] The compromise solution was, as explained, the establishment of a virtual network of independent, but interconnected IP jurisdictions sharing a certain minimum standard of protection.[126] But even this network is not meant to benefit every IP producer, whatever her nationality or residence. Instead, its proponents pursued outbound economic *nationalist* policies to further the interests of *their local* IP industries in foreign markets.[127] If authors, inventors or investors from non-participating countries automatically benefitted from the system, member states would surrender sovereignty and access to IP protection in their territory without securing a new IPR territory for their constituency abroad.[128]

It follows that the global IP network ought to have boundaries. Its benefits have to be reserved to members and withheld from third countries and their IP industries. At the same time, acceding to the network has to be easy. In other words, a clear yet permeable boundary between the inside and the outside of the virtual network has to be drawn. This structure is also present in real networks. For example, WhatsApp or WeChat offer messaging and other services, but only to their subscribers who agree to the Terms of Service. Only under such conditions of open boundaries can network effects arise. If there are no outsiders and every demand is automatically fulfilled, there is no need to attract interested actors. This, however, is neither the reality of network markets, nor of the multilateral IP system.

1. Closure: The Exclusion of Non-*Ressortissants*

Firstly, IP treaties are only applicable for/in the territories of the contracting states.[129] Secondly, only *ressortissants* of member states are

125. *See supra* Part III(A)(1).

126. *See supra* Part III(C).

127. GRAHAM DUTFIELD & UMA SUTHERSANEN, DUTFIELD AND SUTHERSANEN ON GLOBAL INTELLECTUAL PROPERTY LAW 3 (2d ed. 2020); Peukert (2020), *supra* note 14, at 17-33.

128. *Cf.* European Community, *Guidelines and Objectives Proposed by the European Community for the Negotiations on Trade Related Aspects of Substantive Standards of Intellectual Property Rights*, *in* FROM GATT TO TRIPS: THE AGREEMENT ON TRADE-RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS 323, 331 (Friedrich-Karl Beier & Gerhard Schricker eds., 1996) (advantages of TRIPS should be limited to nationals or residents of signatories); CJEU Case C-265/19, Recorded Artists Actors Performers Ltd. v. Phonographic Performance (Ireland) Ltd., ECLI:EU:C:2020:677, 10 (EU and its Member States not required to grant, "without limitation, the right to a single equitable remuneration to nationals of a third State which is not a contracting party to the WPPT").

129. RICKETSON & GINSBURG, *supra* note 1, at 252-54 (territory of the Union); ABBOTT ET AL., *supra* note 4, at 479 (regarding the Madrid system for trademarks).

eligible for the benefits of the system.[130] This group of natural and legal persons includes the nationals of contracting states and persons who have their domicile, habitual residence, or real and effective industrial or commercial establishment in a member territory.[131] Copyright treaties also apply to third country authors whose works were first published in one of the contracting states.[132] This additional access route to the global copyright network attracts publications and individual rights holders who may subsequently lobby their home governments to become a full member of the club.[133] Non-*ressortissants* who do not fulfill any of these requirements cannot rely on the international *acquis* and may therefore eventually fail to secure protection in member states of the IP system.[134]

The global IP network is thus closed to vis-à-vis outsider IP holders and third country territories.[135] Only if a state formally accedes and thereby accepts the obligations under the *acquis* can its nationals/residents rely upon the respective guarantees.[136] The German Federal Constitutional Court followed this logic when it justified the denial of protection to a performance by Bob Dylan within Germany, resulting in an incentive for the U.S. to join the Rome Convention and thereby grant reciprocal

---

130. Christopher Wadlow, *The Beneficiaries of TRIPs: Some Questions of Rights, Ressortissants and International Locus Standi*, 25 EU. J. INT'L L. 59, 66 (2014).

131. Paris Convention, *supra* note 1, arts. 2-3; Berne Convention, *supra* note 1, art. 3; UPOV, *supra* note 116, art. 4; TRIPS Agreement, *supra* note 3, art. 1(3); BTAP, *supra* note 9, art. 3; Phonograms Convention, *supra* note 8, art. 2; Rome Convention, *supra* note 8, art. 2(1); PCT, *supra* note 8, art. 9; Hague Agreement (1999), *supra* note 8, art. 3; LADAS, *supra* note 76, at 200-03; STEPHEN PERICLES LADAS, PATENTS, TRADEMARKS, AND RELATED RIGHTS: NATIONAL AND INTERNATIONAL PROTECTION 265 (1975).

132. *Cf.* Berne Convention, *supra* note 1, arts. 3(1)(b), 4(b) (works of architecture erected in a country of the union), *with* Rome Convention, *supra* note 8, arts. 4(a) (performance), 5(1)(b) (first fixation of a phonogram), (c) (first publication of a phonogram), 6(1)(b) (broadcast transmitted from a contracting state).

133. Mechanisms to counter misuses of this exceptional access route by outsider nations are in place. *Cf.* Berne Convention, *supra* note 1, art. 6, *and* VON LEWINSKI, *supra* note 5, at 86-87; RICKETSON & GINSBURG, *supra* note 1, at 254-55 (describing the early twentieth century conflict between the U.S. on the one hand and the UK and Canada on the other).

134. *See*, *e.g.*, Urheberrechtsgesetz, ACT ON COPYRIGHT AND RELATED RIGHTS, §§ 120-23 (Ger.), http://www.gesetze-im-internet.de/englisch_urhg/ [hereinafter German Copyright Act] (reserving copyright protection in Germany to Germans and EEA/EU nationals and making protection of other foreigners dependent on first publication in Germany, material reciprocity or the applicability of "state treaties"). Exclusion also concerns the protection of well-known marks under the Paris Convention. *See* Paris Convention, *supra* note 1, art. 6(1) (applying only to "a person entitled to the benefits of this Convention").

135. GOLDSTEIN & HUGENHOLTZ, *supra* note 15, at 155-84; RICKETSON & GINSBURG, *supra* note 1, 240; *cf.* Silke von Lewinski, *Intellectual Property, Nationality, and Non-Discrimination*, *in* WIPO, INTELLECTUAL PROPERTY AND HUMAN RIGHTS 190-91 (1999) (national treatment universalizes IP protection).

136. TRIPS Agreement, *supra* note 3, arts. 1, 3.

protection to German performers.[137] This decision illustrates that exclusion and pull-effects are two sides of the same coin.[138]

2. Accessibility: Multilateral IP Unions

At the same time, joining the exclusive club of pro-IP nations must be made as easy as possible. This desideratum is where the distinction between bilateral and multilateral IP treaties is brought to bear.

a. Bilateral and Multilateral IP Treaties

IP-related bilateral treaties have doubtlessly played an important role in the history of international IP. Bilateralism dominated before the conclusion of the Paris and Berne Conventions, and it took center stage again after the TRIPS Agreement, when higher levels of protection could not be agreed on within either the WTO or WIPO.[139] As of this writing, the WIPO database records an impressive number of 536 active bilateral treaties with relevance for IP.[140] On the one hand, these treaties complement and support the multilateral IP system, in particular by establishing new gold standards of IP protection beyond the multilateral *acquis* and/or by obliging outsiders to join the club.[141]

On the other hand, bilateral IP treaties are formally separate from the multilateral system. A state does not acquire membership in an IP union, WIPO, or the WTO by signing a bilateral treaty, nor do multilateral IP treaties refer to obligations set out in bilaterals.[142] Bilateral agreements are moreover a priori inept to display the pull effect inherent in multilateral IP treaties because they only bind the parties involved and are not open for accession by third countries.[143] The numerous bilateral IP treaties concluded before the Paris and Berne Conventions therefore could not, and in fact did not, result in a network effect that attracted outsiders.[144] IP

137. *See* BVerfGE, Jan. 23, 1990, 1 BvR 306/86, 208 (Ger.).

138. *Cf.* RICKETSON & GINSBURG, *supra* note 1, at 240, 535-36; VON LEWINSKI, *supra* note 5, at 103-04; GROSSE RUSE-KHAN, *supra* note 4, at 169-70.

139. On the pre Paris/Berne bilaterals *see* LADAS, *supra* note 76, at 43-46. On the post TRIPS treaties *see* EU BILATERAL TRADE AGREEMENTS AND INTELLECTUAL PROPERTY: FOR BETTER OR WORSE? (Drexl et al. eds., 2014).

140. *IP-Relevant Bilateral Treaties*, WORLD INTELL. PROP. ORG., http://wipolex.wipo.int/en/treaties/bilateral (last visited Oct. 18, 2021).

141. *See* VON LEWINSKI, *supra* note 5, at 350-83; *infra* Part IV(E).

142. *See, e.g.*, Senate Select Committee, Free Trade Agreement between Australia and the United States of America, Final Report 2 (2004) (Austl.), http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Former_Committees/freetrade/report/final/index.

143. *See id.*; *see also infra* Part III(D)(2)(c), (3).

144. *See* RICKETSON & GINSBURG, *supra* note 1, at 346-47.

bilateralism in the past and today leads to complex webs of static, dipolar obligations rather than a dynamic network in which all nodes are interconnected.[145] Accordingly, bilateral IP treaties do not form part of the global IP network analyzed in this Article.

In order to establish such a system, states had to move from bilateral to multilateral treaties that are, in principle, open for other states to accede.[146,147] The core treaties of today's multilateral IP system are indeed open for accession by *any* state without further conditions.[148] In addition, developing countries that might have reservations to connect to the network because of the direct and indirect costs associated with membership are offered a variety of special preferential treatment benefits.[149]

b. IP Unions

Although multilateral treaties are thus, in principle, sufficient to establish open yet clearly defined boundaries, the states that gathered in Paris and Berne in the 1880s already went several steps further than that. They not only moved from bilateralism to multilateralism, but established unions—international entities with legal personality, permanent organs, a union territory and a specific purpose, namely to protect the IP of union right holders ideally throughout the world in an effective and uniform

145. *See* David Vivas Eugui, *Regional and Bilateral Agreements and a TRIPS-Plus World: The Free Trade Area of the Americas (FTAA)* (Geoff Tansey ed., 2003), http://www.wto.org/english/tratop_e/region_e/sem_nov03_e/vivas_eugui_paper_e.pdf.

146. *See supra* note 1.

147. *Cf.* GROSSE RUSE-KHAN, *supra* note 4, at 69-70 n.1 (defining multilateral treaties).

148. *See* Universal Copyright Convention, July 24, 1971, 25 U.S.T. 1341, 943 U.N.T.S. 178 [hereinafter UCC]; Paris Convention, *supra* note 1, art. 21(1), Berne Convention, *supra* note 1, art. 29(1); WIPO Convention, *supra* note 2, art. 5(1); UPOV, *supra* note 8, art. 34(1)(a); Marrakesh Agreement, *supra* note 1, art. XII(1). Some treaties at the margin of the multilateral system, which are not built upon the basic treaties, require prior membership in the UN; *see* Phonograms Convention, *supra* note 8, art. 9(1); Brussels Convention, *supra* note 9, art. 9(1); Nairobi Treaty, *supra* note 99, art. 5(2).

149. *See* Berne Convention, *supra* note 1, art. 21 (regarding "Provisions Dealing with Developing Countries"); PCT, *supra* note 8, arts. 50(5)(a) (PCT information services to developing countries furnished below cost), 51 (technical assistance); Marrakesh Agreement, *supra* note 1, art. XI(2); TRIPS Agreement, *supra* note 3, arts. 65-67 (transition periods, transfer of technology). On fee reductions for PCT applications from developing countries *see* DEERE-BIRKBECK, *supra* note 24, at 109. On the reimbursement of travel costs to diplomatic conferences *see* MIHÁLY FICSOR, THE LAW OF COPYRIGHT AND THE INTERNET: THE 1996 WIPO TREATIES, THEIR INTERPRETATION AND IMPLEMENTATION para 1.52 (2002).

manner.[150] The importance of this organizational decision for the path of international IP law can hardly be overstated. Together with the defeat of universalism *strictu sensu*, the establishment of the Paris and Berne Unions is the critical, contingent juncture which set the global IP system on the hardly reversible path towards expansion.[151] According to Árpád Bogsch, who was a key figure in the formation of the global IP network during the second half of the twentieth century, "[t]he constitution of 'union' means that a permanent link among countries is being created."[152] It is precisely this stable interconnection of nodes that characterizes a network displaying direct network effects.[153]

Firstly, IP unions establish a permanent, but at the same time, flexible body of international law. An IP union treaty remains in full force and effect between members, even if individual states denounce it, and it can be updated by revision acts aiming for a higher level of harmonized protection.[154] The concept of an IP union even allows to assume a connection between union members that have not ratified the same revision act and thus formally lack a contractual relationship. The Paris and Berne Conventions accordingly provide that countries outside the two unions that become party to the most recent 1979 Acts of the unions shall apply that version with respect to any country of the union not party to that Act.[155] States ratifying the 1989 Madrid Protocol in the area of trademarks or the 2015 Geneva Act of the Lisbon Agreement regarding geographical

---

150. Paris Convention, *supra* note 1, art. 1; Berne Convention, *supra* note 1, art. 1; *see also* RICKETSON AND GINSBURG, *supra* note 1, 219-32; RICKETSON, *supra* note 1, 55-59, 168-76 (regarding unions as quasi legal persons); LADAS, *supra* note 131, at 96.

151. RICKETSON, *supra* note 1, at 760 ("radical development at the time"); GROSSE RUSE-KHAN, *supra* note 4, at 145 ("revolutionary changes in the late nineteenth century where the first multilateral treaties superseded the pre-existing bilateral or regional agreements . . . in most of the twentieth century, we have seen a much more evolutionary change"); GOLDSTEIN & HUGENHOLTZ, *supra* note 15, at 35 ("Permanence and universality separate the Berne Text from the bilateral agreements that preceded it."); *see* Mahoney, *supra* note 33, at 513; Pierson, *supra* note 33, at 263.

152. Árpád Bogsch, *The Berne Convention for the Protection of Literary and Artistic Works from 1886 to 1986*, WIPO Publ'n No. 877(E), 35 (1986), http://www.wipo.int/edocs/pubdocs/en/copyright/877/wipo_pub_877.pdf.

153. *See also* Druzin (2018), *supra* note 40 art. 3.

154. *See* Paris Convention, *supra* note 1, art. 26(2); UPOV, *supra* note 8, art. 39(2); DINWOODIE & DREYFUSS, *supra* note 1, at 25; RICKETSON & GINSBURG, *supra* note 1, at 62; Hilty, *supra* note 30, at 188 (one-way system); *infra* Part III(B) (system of building blocks).

155. Paris Convention, *supra* note 1, art. 27(3); Berne Convention, *supra* note 1, art. 32(3); GEORG HENDRIK CHRISTIAAN BODENHAUSEN, GUIDE TO THE APPLICATION OF THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY 204 (1969) ("This is because the States party to the Convention have constituted *a Union* . . . , as a consequence of which a State can only enter (and leave) *the Union as a whole* and must always be *bound*—albeit possibly by different Acts of the Convention—*to all other member States*."); RICKETSON & GINSBURG, *supra* note 1, at 1143-47; GROSSE RUSE-KHAN, *supra* note 4, at 71-76.

indications automatically acquire membership in the pre-existing Madrid and Lisbon Unions established by separate treaties in 1891/1979 and 1958/1979 respectively, even if they never signed those older treaties.[156] IP unions thus transcend the conventional, contractual logic of international law.

Secondly, IP unions bring about a permanent real-world infrastructure of brick and mortar bureaus, offices, and secretariats where state representatives can assemble and various councils and committees of experts meet and literally network to further the system.[157] WIPO's three standing committees of experts on the laws of patents, copyrights, and trademarks are, for example, always in "the search for new topics" to "promote" IP throughout the world.[158] The dynamic but also coherence of these activities is further supported by the fact that WIPO and the WTO are both located in Geneva.[159]

Thirdly, the basic Paris and Berne Unions set a standard model that has since been adopted for numerous other special purpose IP unions, labelled either according to their European places of origin (Budapest, Hague, Madrid, Nice, Locarno, Strasbourg, Vienna) or according to their subject matter (Patent Cooperation Union and International Union for the Protection of New Varieties of Plants (UPOV)).[160] The WIPO Convention extends the concept of the union even to "any other international agreement designed to promote the protection of intellectual property whose administration is assumed by" WIPO, that is to multilateral treaties

156. Madrid Protocol, *supra* note 8, art. 1; Geneva Act of the Lisbon Agreement, *supra* note 10, art. 21.

157. *Cf.* Paris Convention, *supra* note 1, arts. 13-15; Berne Convention, *supra* note 1, arts. 22-24; Locarno Agreement Establishing an International Classification for Industrial Designs, at arts. 3, 5-6, Oct. 8, 1964, 828 U.N.T.S. 435; Nice Agreement *supra* note 8, arts. 3, 5-6; Strasbourg Agreement Concerning the International Patent Classification, arts. 5, 7-8, Mar. 24, 1971, 26 U.S.T. 1793; Vienna Agreement *supra* note 9, arts. 5, 7-8; Hague Agreement 1999, *supra* note 8, arts. 21-22; Lisbon Agreement, *supra* note 10, arts. 9-10; Madrid Protocol, *supra* note 8, arts. 10-11; Budapest Treaty *supra* note 8, art. 1; UPOV, *supra* note 116, art. 25; Marrakesh Agreement, *supra* note 1, arts. IV and VI.

158. *See Policy*, WORLD INTELL. PROP. ORG., http://www.wipo.int/policy/en/index.html #bodies (last visited Oct. 20, 2021); VON LEWINSKI, *supra* note 5, at 551-52.

159. *See* WIPO Convention, *supra* note 3, art. 3; Marrakesh Agreement, *supra* note 1, art. III; *infra* Parts III(E), IV (B); *see also* Halbert, *supra* note 6, at 258 (BIRPI, the predecessor of WIPO, moved from Berne to Geneva in order to bring it closer to other UN agencies).

160. RICKETSON, *supra* note 1, at 249-50; Hague Agreement (1999), *supra* note 8, art. 20; PCT, *supra* note 11, art. 1(1); Madrid Agreement, *supra* note 9, art. 1; Madrid Protocol, *supra* note 9, art. 1; Lisbon Agreement, *supra* note 10, art. 1(1); Budapest Treaty, *supra* note 8, art. 1; Locarno Agreement, *supra* note 8, art. 1; Nice Agreement, *supra* note 8, art. 1; Strasbourg Agreement, *supra* note 8, art. 1; Vienna Agreement, *supra* note 8, art. 1; UPOV, *supra* note 8, art. 1(x).

that do not, in fact, establish a union.[161] WIPO itself, as an international organization with legal personality, also takes "a position in certain respects in detachment from its members."[162] The same is true for the WTO, which provides "the common institutional framework for the conduct of trade relations among its Members" in their desire to preserve and further the "multilateral trading *system*," of which the TRIPS Agreement forms an integral part.[163]

c. Models: The International Telecommunications and Universal Postal Unions

The sophisticated concept of a Union of states was not an invention of the IP community. Instead, the Paris and Berne Unions were part of a general regulatory trend towards globalization in the late nineteenth century and modelled on two earlier examples, namely the predecessor organizations of what today are the International Telecommunication Union (ITU) and the Universal Postal Union (UPU).[164] The fact that these two prototypes concern the regulation and administration of real communication networks (telegraphs and mail) that exhibit direct network effects provides further support for the analogous interpretation of the multilateral IP system as a virtual global network.

As explained, communication services like telegraphs, telephones, and postal mail are classic examples of network products. The benefits of being part of such a network increase with the number of adopters because everyone benefits from gaining a new potential communication partner.[165] Until late into the nineteenth century, technical and regulatory standards for telegraphs, telegrams, and other postal services on the national level differed so widely that communicating across borders was costly and slow, or even impossible. In order "to facilitate communication between the inhabitants of the world," uniform standards were developed and codified

161. WIPO Convention, *supra* note 2, art. 2(vii); RICKETSON & GINSBURG, *supra* note 1, at 1050 (concerning the WCT Union).

162. *Reparation for Injuries Suffered in the Service of the United Nations*, Advisory Opinion, 1949 I.C.J. 174, 179 (Apr. 11) (regarding the UN).

163. *See* Marrakesh Agreement, *supra* note 1, preamble, arts. II(1), VIII (emphasis added).

164. ÁRPÁD BOGSCH, BRIEF HISTORY OF THE FIRST 25 YEARS OF THE WORLD INTELLECTUAL PROPERTY ORGANIZATION 9 (1992); LADAS, *supra* note 76, at 61; VON LEWINSKI, *supra* note 5, at 27; RICKETSON & GINSBURG, *supra* note 1, at 50-52; RICKETSON, *supra* note 1, at 41-42; Guy Fiti Sinclair, *State Formation, Liberal Reform and the Growth of International Organizations*, 26 EUR. J. INT'L L. 445, 461-62 (2015) (the establishment of "legal-rational bureaucratic entities . . . reflected the new liberal ideology").

165. *Supra* Part II.

in international treaties.[166] Just as in the IP context, treaty-making started on the bilateral level before it moved to multilateral regional agreements (in particular among German-speaking states) and eventually to conventions/unions with global ("universal") aspiration, agreed upon in 1865 and 1874 for the telegraph and postal sector respectively.[167] Those treaties defined uniform technical and regulatory standards for telecommunication and mail, and they established a permanent institutional framework with IOs having legal personality and various organs, in particular an International Bureau/secretariat.[168] Membership in the ITU and UPU increased very rapidly, and has for a long time encompassed the whole world.[169]

By adopting the ITU/UPU structures, which in turn mirror the network characteristics of the communication technologies governed by these unions, the multilateral IP system took on the form of a virtual, law-based network displaying network effects.[170] Whereas the parallels between the purpose, structure, and success of the communication and IP unions are striking, they nevertheless pertain to very different subject matter. ITU and UPU are concerned with communication networks that exist as brute facts in the real world.[171] Their purpose is to *regulate* and facilitate telecommunications of all kinds and the reciprocal exchange of

166. Constitution of the Universal Postal Union, preamble, July 10, 1964, 16 U.S.T. 1291, 861 U.N.T.S. 234 [hereinafter UPU Constitution]; Constitution and Convention of the International Telecommunication Union, Dec. 22, 1992, 1825-26 U.N.T.S. 330 [hereinafter ITU Constitution].

167. L'UNION TÉLÉGRAPHIQUE INTERNATIONALE (1915); Heinrich von Stephan, Geschichte der Preußischen Post von ihren Ursprüngen bis auf die Gegenwart 541 (1859) (regarding the German-Austrian Post-Union); U. Meyer, Die deutsche Post im Weltpostverein und im Wechselverkehr. Erläuterungen Zum Weltposthandbuch Und Zum Handbuch Für Den Wechselverkehr, 309-322 (2d ed. 1908); F. H. Williamson, *The International Postal Service and the Universal Postal Union*, 9 J. Royal Inst. Int'l Aff. 68, 69-70 (1930).

168. *See* UPU Constitution, *supra* note 166; ITU Constitution, *supra* note 166, arts. 1-11.

169. *Member States*, INT'L TELECOMM. UNION, http://www.itu.int/en/myitu/Membership/ITU-Members/Member-States (last visited Oct. 20, 2021) (193 members); *Member Countries*, UNIVERSAL POSTAL SERV., http://www.upu.int/en/Universal-Postal-Union/About-UPU/Member-Countries (last visited Oct. 20, 2021) (192 members); Benjamin Akzin, *Membership in the Universal Postal Union*, 27 AM. J. INT'L L. 651, 672-73 (1933) (global coverage of the UPU).

170. *Cf.* Peter Menell, *Economic Analysis of Network Effects and Intellectual Property*, 34 BERKLEY TECH. L.J. 219, 229 (2019); *see, e.g.*, FARAH ABDALLAH & MATTHIAS FINGER, *Saudi Post Innovative Address System: Integrating Electronic and Physical Platforms*, *in* ICTS, NEW SERVICES AND TRANSFORMATION OF THE POST 116 (2010).

171. ITU Constitution, *supra* note 166, preamble (concerning "international cooperation among peoples and economic and social development by means of efficient telecommunications services"); UPU Constitution, *supra* note 166, preamble (concerning "developing communications between peoples by the efficient operation of the postal services").

postal items.[172] Multilateral IP treaties/unions, in contrast, *constitute* a virtual, entirely law-based network, which brings about IP protection throughout the world.[173]

3. The Global Network of Networks

Every multilateral IP treaty/union produces this effect regarding its particular subject matter, with increasing returns to scale. The more states that ratify a certain treaty, the larger the IP territory a new member can secure for its nationals/residents. Conversely, with each new accession, prior members gain a new potential IP territory for their nationals/residents. The current multilateral IP *acquis* comprises twenty-eight such virtual networks, each displaying a separate network effect, namely the twenty-six WIPO treaties, the UPOV Convention and the TRIPS Agreement.[174]

The claim of this Article, according to its title, extends, however, beyond the finding that there are as many networks and network effects as there are multilateral IP treaties. It suggests instead that there exists *one single* multilateral IP 'system'/network that consists of a multiplicity of multilateral IP treaties/organizations that, again as a whole, produces network effects. To validate this claim, one would have to show that the twenty-eight multilateral IP treaties are interconnected to form a single network of networks in which the enlargement of one network increases the value of all other networks. Because of numerous substantive law and administrative linkages between all treaties, this is indeed the case.

The 1883 Paris Convention already had important integrative effects across several IP areas in that it was not limited to one industrial property right, but covered patents, design, and trademark rights.[175] A state interested in one of these areas, say trademarks, had to accept the other two types of rights, too. In addition, the Paris Convention has served as a basic building block for numerous treaties that have improved the functioning of the Paris system by providing for international patent, trademark and design applications (WIPO's "Global Protection System")

172. ITU Constitution, *supra* note 166, art. 1(1)(a); UPU Constitution, *supra* note 166, art. 1(1).

173. *See* JOHN R. SEARLE, MAKING THE SOCIAL WORLD: THE STRUCTURE OF HUMAN CIVILIZATION 17 (2010) (regarding the ontological difference between brute and institutional facts); ALEXANDER PEUKERT, A CRITIQUE OF THE ONTOLOGY OF INTELLECTUAL PROPERTY (2021) (applying Searle's distinction to IP).

174. WIPO-Administered Treaties, http://www.wipo.int/treaties/en/ (last visited Oct. 21, 2021); UPOV, *supra* note 8, art. 1; TRIPS Agreement, *supra* note 3, art. 1(3).

175. *Cf.* Paris Convention, *supra* note 1, art. 2.

and by harmonizing formal procedures and the classification of filings. All of these Paris-plus unions require either formal accession to the Paris Union or substantive compliance with the Paris Convention.[176]

The Berne and UPOV Conventions similarly function as basic modules to which further treaties on higher levels of copyright and plant variety protection can be added.[177] Initially, however, Berne and UPOV were separate from the Paris system. After the Paris and Berne Unions had been linked together in 1892 by combining the two Paris and Berne *Bureaux*, and diplomatically at the parallel revision conferences in Stockholm in 1967, the full integration of all multilateral IP treaties of relevance today was only achieved with the formation of WIPO in 1967 and the TRIPS Agreement in 1994.[178, 179] Today, the WIPO Convention and the TRIPS Agreement function as two head agreements that embrace all other IP unions and thereby establish the global IP network of networks.

WIPO operates as the organizational backbone of the network. On the basis of the WIPO Convention, it administers twenty-five substantive IP treaties, "ensure[s] [the] administrative cooperation" between the various IP unions, and serves as the forum for further multilateral efforts designed "to promote the protection of intellectual property."[180] WIPO's activities are funded to more than 95% by fees it incurs for handling international patent, trademark, and design applications/registrations.[181] The more income this Global Protection System generates, the more WIPO can invest in the administration of other IP treaties and the achievement of its overall objective, i.e. "the protection of intellectual property throughout the world."[182] The growth of the patent, trademark, and design networks has, thus, indirect positive effects on other IP subject matter networks. This is not only true for the copyright realm, but also for UPOV and the protection of plant varieties. Although the UPOV Convention is not among the twenty-five WIPO-administered treaties, UPOV is nevertheless tightly bound to WIPO. The United International Bureaux for the Protection of Intellectual Property ("BIRPI"), and later WIPO, were deeply involved in the negotiation of the original 1961 UPOV Convention and its revisions in the 1970s; in particular through

176. *See infra* Part IV(B).

177. *Id.*

178. RICKETSON, *supra* note 1, at 225-27.

179. *Id.* at 91-94; RICKETSON & GINSBURG, supra note 1, at 120-21.

180. WIPO Convention, *supra* note 2, arts. 3, 4.

181. *Results, Budget and Performance*, WORLD INTELL. PROP. ORG., http://www.wipo.int/about-wipo/en/budget/ (last visited Feb. 15, 2022).

182. WIPO Convention, *supra* note 2, art. 3(i).

Georg Bodenhausen, representative of the Dutch UPOV group in the early 1950s and later Director of BIRPI/WIPO and UPOV from 1969 to 1973.[183] Moreover, based upon an agreement between WIPO and UPOV, WIPO has for decades taken care of all practical dealings of UPOV, for which services UPOV indemnifies WIPO.[184] Last but not least, the highest executive of UPOV, its Secretary-General, is always identical with the person acting as Director General of WIPO.[185]

The WTO, by contrast, operates independently of WIPO. There is an agreement between the two IOs, but its purpose is not to subsume the TRIPS Agreement and the TRIPS Council under the auspices of WIPO, but to avoid unnecessary duplication of daily work and to prevent competition between the two actors.[186] As Annex 1C of the Marrakesh Agreement Establishing the WTO, TRIPS instead forms an integral part of world trade law and its organizational framework.[187] At the same time, TRIPS references and thereby includes into its minimum obligations all building blocks of the WIPO-administered system. WTO members shall comply with most of the substantive provisions of the Paris and Berne Conventions, and they have to provide for the protection of plant varieties either by patents or by an effective *sui generis* system (i.e. UPOV) or by any combination thereof.[188] Through such a reference, the TRIPS Agreement even revived a dead letter WIPO treaty, which never entered into force, namely the 1989 Washington Treaty on Intellectual Property in Respect of Integrated Circuits.[189] By declaring this broad *acquis* mandatory for all WTO members, and by adding further minimum rights, the TRIPS Agreement functions as the overall integrator of substantive IP

183. André Heinz, *The History of Plant Variety Protection*, *in* THE FIRST TWENTY-FIVE YEARS OF THE INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS 53, 79 (UPOV ed., 1987).

184. *See* WIPO Convention, *supra* note 2, art. 13; *Agreement Between the World Intellectual Property Organization and the International Union for the Protection of New Varieties of Plants*, arts. 1-2, Nov. 26, 1982, UPOV/INF/8, http://www.upov.int/edocs/infdocs/en/upov_inf_8.pdf [hereinafter WIPO/UPOV Agreement].

185. WIPO/UPOV Agreement, *supra* note 184, art. 4.

186. *See infra* Part IV(D).

187. *See infra* Part IV(E) (regarding the function and effect of this fact).

188. *Cf.* TRIPS Agreement, *supra* note 3, arts. 2(1), 9(1), 27(3)(b); GROSSE RUSE-KHAN, *supra* note 4, at 89-97; DANIEL GERVAIS, THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS 187-88 (4th ed. 2012); NUNO PIRES DE CARVALHO, THE TRIPS REGIME OF PATENTS AND TEST DATA 308 (5th ed. 2018); Adrian Otten, *Plant Biotechnology Developments in the International Framework*, Sept. 10, 2014, UPOV/PUB/792(E), 150, http://www.upov.int/edocs/pubdocs/en/upov_pub_792.pdf (all WTO members except for two provide sui generis protection, which in turn conforms to the UPOV standard).

189. TRIPS Agreement, *supra* note 3, art. 35; RICKETSON, *supra* note 1, at 109-10.

standards. It encompasses and thereby interconnects the Paris, Berne, and UPOV systems. Whereas WIPO is the administrative backbone of the global IP network, TRIPS is the core treaty regarding all major substantive minima of protection.[190]

The seemingly innocent restatement of long-established Paris, Berne, and UPOV standards had very significant effects on the stability and further expansion of the global IP network. It is true that TRIPS does not formally require WTO members to accede to the Paris, Berne, and UPOV Unions.[191] If WTO member X, however, complies with its TRIPS obligations and, thus, grants nationals of other WTO members protection in line with the Paris, Berne, and UPOV minima, the network effect of these treaties suggests to take the formal step and acquire full membership in those IP unions because only then will state X be able to reap the benefit of securing its nationals corresponding protection in all Paris, Berne, and UPOV member states, including those that have not yet joined the WTO. This pull effect can, in fact, be observed in the membership of the Paris, Berne, and UPOV Unions, which grew quickly after TRIPS had entered into force.[192] The traditional IP system thus profited greatly from the lure of participating in world trade under WTO rules.[193]

E. Ownership of the Network

So far, this Part has identified the basic elements and structure of the global IP network: its nodes, their complementarity, the connection of the nodes via the principles of national treatment and minimum rights, and the open boundaries of the one global network vis-à-vis non-*ressortissants*. The remaining question is whether such a virtual, law-based network can be owned and, if in the affirmative, by whom.

Classical network products like telco services are owned by a single company—for example, AT&T. The boundaries and ownership of virtual networks are typically much less clear. What, to take another real life example, delimits a network "of Chevrolet owners, whose relationship to each other is that they draw on common repair expertise," and who owns it?[194] According to Liebowitz and Margolis, such "metaphorical networks

190. WIPO Convention, *supra* note 2, art. 3; TRIPS Agreement, *supra* note 3, art. 1(3).

191. RICKETSON & GINSBURG, *supra* note 1, at 158; GERVAIS, *supra* note 188, at 187-88.

192. DE CARVALHO, *supra* note 188, at 307 n. 701 (UPOV had only 27 members in 1994); VON LEWINSKI, *supra* note 5, at 319.

193. *See infra* IV(E).

194. Liebowitz & Margolis, *supra* note 47, at 136.

are less likely to be owned, and in some instances may not be ownable."[195] The analogous question in our context is: who owns or, in more general terms, who controls the virtual global IP network?

As with the case of Chevrolet drivers benefitting from common repair expertise, no single actor owns an IP treaty or an IP union, let alone the multilateral IP system as a whole. Instead, control of the global IP network is shared between three main groups of actors, namely: states, international organizations (WIPO/WTO), and private parties.

From the perspective of international law, contracting states are the masters of treaties, and ultimately own the multilateral IP system as a whole. Without their formal approval, a treaty will not enter into effect, and they have the right to denounce a treaty at any time.[196] WIPO and WTO member states moreover control the activities of these IOs by decisions taken in the WIPO General Assembly and the WTO Ministerial Conferences, in which only they have a right to vote.[197] In so far as WIPO and the WTO rely on member states' financial contributions, states can use budgetary decisions to wield influence over the IOs.[198] A recent example concerns U.S. criticism against cross-financing the Lisbon Union for the protection of geographical indications with revenues from the Patent Cooperation Treaty (PCT).[199] Last but not least, nation states and their supranational successors (EU et al.) have to enact and enforce IP laws in order to provide protection on the ground. Ultimately, IP protection hinges on their willingness to act.

Whereas all of this is true from a formalistic legal point of view, a more realist, diachronic approach points towards another primary actor controlling the path of the multilateral IP system. This actor is the global IP community, whose composition can be precisely defined. It consists of two groups, namely private parties seeking or holding IPRs (users of the multilateral IP system) and IP experts who provide IP services. The latter group includes the staff of the International Bureau of WIPO, the staff of

195. *Id.*

196. Paris Convention, *supra* note 1, art. 26; Berne Convention, *supra* note 1, art. 35; UPOV, *supra* note 8, art. 39; Marrakesh Agreement, *supra* note 1, art. XV.

197. WIPO Convention, *supra* note 2, art. 6; Marrakesh Agreement, *supra* note 1, art. IV.

198. See UPOV, *supra* note 8, art. 29; Marrakesh Agreement, *supra* note 1, art. VII; *see* DEERE BIRKBECK, *supra* note 24, at 69-73 (important role of WIPO's Program and Budget Committee).

199. DEERE BIRKBECK, *supra* note 24, at 154-56; Gervais & Slider, *supra* note 75, at 23-24.

national IP offices (IPOs), patent attorneys and other lawyers specializing in IP.[200]

The user group is powerful because it is large and diverse in terms of geographical origin and branches of industry, yet it still shares a clearly defined and strong vested interest in maximizing IP protection throughout the world. The decisive influence of this user group throughout the history of the international IP system is well known and documented.[201] Suffice it to mention the successful lobbying of U.S. and German tech corporations leading to the Paris Convention;[202] the decisive role of the *Association Littéraire et Artistique Internationale* (ALAI) in the formation of the Berne Union and the development of international copyright law ever since;[203] the parallel influence of the International Association for the Protection of Intellectual Property (AIPPI) and the International Association of Plant Breeders for the Protection of Plant Varieties (ASSINSEL) on the establishment of UPOV;[204] and the "Basic Framework of GATT Provisions on Intellectual Property," a blueprint for the TRIPS Agreement, published by U.S., European, and Japanese business communities in June 1988.[205] The majority of observer NGOs within WIPO also represent private interests of IP users.[206]

---

200. *See, e.g.*, *Participating Offices*, WORLD INTELL. PROP. ORG., http://www.wipo.int/das/en/participating_offices/details.jsp?id=10589 (last visited Oct. 21. 2021); *Directory of Intellectual Property Offices*, WORLD INTELL. PROP. ORG., http://www.wipo.int/directory/en/urls.jsp (last visited Oct. 21, 2021).

201. ABBOTT ET AL., *supra* note 4, at 7 ("Major multinational corporations are the primary driver for stronger intellectual property rights protection around the world .... National governments tend to promote the interests of enterprises owned and controlled by their own nationals."); GOLDSTEIN & HUGENHOLTZ, *supra* note 15, at 8 ("Global communities of economic interest among copyright owners have been far more potent than ideology—or, for that matter, than the preoccupations of individual nation states—in forming copyright legislation."); Rochelle Cooper Dreyfuss, *Harmonization: Top Down, Bottom Up—and Now Sideways?*, *in* MEGAREGULATION CONTESTED: GLOBAL ECONOMIC ORDERING AFTER TPP 345, 350-51 (Benedict Kingsbury et al. eds., 2019) ("All of the principal agreements were developed in response to the interests of right holders.").

202. LADAS, *supra* note 76, at 61-67; PETER KURZ, WELTGESCHICHTE DES ERFINDUNGSSCHUTZES 363-68 (2000).

203. RICKETSON & GINSBURG, *supra* note 1, at 50-52; VON LEWINSKI, *supra* note 5, at 28-29 (complete Berne draft text proposed by the General Secretary of the German Book Traders' Association).

204. Heinz, *supra* note 183, at 77-88.

205. INTELLECTUAL PROPERTY COMMITTEE ET AL., BASIC FRAMEWORK OF GATT PROVISIONS ON INTELLECTUAL PROPERTY: STATEMENT OF VIEWS OF THE EUROPEAN, JAPANESE, AND UNITED STATES BUSINESS COMMUNITIES (June 1988) [hereinafter Basic Framework Proposal]; *see also* FICSOR, *supra* note 149, at 25-29 (U.S., EC, and Japanese policy papers pushing for WIPO's "digital agenda").

206. *Observers*, WORLD INTELL. PROP. ORG., http://www.wipo.int/export/sites/www/members/en/docs/observers.pdf (last visited Oct. 21, 2021); DEERE BIRKBECK, *supra* note 24, at 187.

At first sight, the experts group appears to occupy a more neutral position, one that only draws upon their special knowledge as IP professionals. The truth is, though, that representatives of IPOs, patent attorneys and other IP lawyers by and large support the users group simply because these are the customers of IP professionals. The more IPRs users file and enforce, the more IPR services they demand, and the more benefits IP experts can realize, be it in the form of more IPR applications (IPOs) or profits from attorney's fees. If the system shrinks, IP experts suffer directly. Correspondingly strong is their interest in cultivating the system, hand in hand with IP users.[207] An example on point is the long-term co-operation between the five largest IPOs in the world ("IP5"), which account for about 80% of the world's patent applications, and which collectively strive to "promote an efficient, cost-effective and user-friendly international patent landscape."[208]

WIPO's role is also to be seen in this context. It has shaped the contours of the debates among its members and "shepherded the international intellectual property regime through major political and institutional changes."[209] The idea for the PCT, for example, was conceived in the International Bureau of WIPO by Árpád Bogsch, then Director General of WIPO, in collaboration with external patent experts, *inter alia* from the U.S. Patent and Trademark Office.[210] This particular move had not only the purpose of facilitating multistate patent acquisition to the benefit of applicants, it also provided WIPO with a rich source of income completely independent from state contributions in the form of

---

207. Drahos & Braithwaite, *supra* note 30, at 43-48 ("patent locksmiths"); ABBOTT ET AL., *supra* note 4, at 6-7; Dutfield, *supra* note 30, at 9; Dinwoodie & Dreyfuss, *supra* note 1, at 354 (strong epistemic community).

208. *About IP5 Co-operation*, FIVE IP OFFICES, http://www.fiveipoffices.org/about (last visited Feb. 22, 2022); *see also* Comprehensive and Progressive Agreement for Trans-Pacific Partnership, Mar. 8, 2018, art. 18.14(2), http://www.mfat.govt.nz/assets/Tradeagreements/TPP/Text-ENGLISH/18.-Intellectual-Property-Chapter.pdf ("Parties shall endeavour to cooperate among their respective patent offices to facilitate the sharing and use of search and examination work of other Parties.").

209. Rochelle Dreyfuss & Jerome Reichman, *WIPO's Role in Procedural and Substantive Patent Law Harmonization*, 1 (Duke L. Sch. Pub. L. & Legal Theory Series, Research Paper No. 2020-32, 2020); Ruth L. Okediji, *WIPO-WTO Relations and the Future of Global Intellectual Property Norms*, 11-12, 26 (Univ. Minn. L. Sch. Legal Stud. Paper Series, Research Paper No. 09-07, 2009); *see also* BOGSCH, *supra* note 164, at 22 (WIPO accomplished to bring "developing countries into the mainstream of international relations in the field of intellectual property . . . during the nineteen-seventies and eighties"); RICKETSON, *supra* note 1, 175-75, 188-89.

210. BOGSCH, *supra* note 164, at 24; LADAS, *supra* note 76, at 563; Dreyfuss & Reichman, *supra* note 209, at 3 (international patent law largely developed by patent experts); *see also* RICKETSON, *supra* note 1, 622-23 (informal committee of heads of national industrial property offices to develop the Madrid Union).

"charges due for services performed by the International Bureau."[211] Throughout the history of BIRPI, and later WIPO, the financial control concerning the IP unions/organizations has shifted from contracting states to users and WIPO itself. Until 1967, member states contributions were expressly fixed in the various treaties, which repeatedly brought BIRPI into precarious financial situations.[212] The 1967 Stockholm revisions of the Paris and Berne Conventions introduced flexible biennial budgets to be approved by the Assemblies of states.[213] Payment morals nevertheless remained low. As of 2014, 27% of all WIPO members were in arrears in their payment.[214]

Yet, that lack of support on the part of governments has been more than offset by fee-based income incurred via international patent, trademark and design applications processed by WIPO. Because of PCT fees, contributions paid by member states had decreased to 26% of WIPO's total income in 1991—in spite of the fact that the volume of WIPO's budget had increased twenty-fold since 1967.[215] The share of state contributions shrunk to 4% in the 2018/2019 budget, whereas fee income from the PCT, Madrid and Hague registration systems made up 94.8% of total WIPO income, with the PCT representing 76.4% alone.[216] This financial reality nicely corresponds to the budgetary rules in the *acquis*. The WIPO Global Protection treaties base the financing of the respective unions on service fees first and on state contributions, if at all, only if needed.[217] They furthermore provide that the number of application fees is so fixed that the revenues of the Global Protection unions are "at least sufficient" to cover their own expenses and that their budgets take "due regard to the requirements of coordination with the budgets of the other

211. *See infra* Part IV(A); *see also* WIPO Convention, *supra* note 2, art. 11(2)(b)(ii); PCT, *supra* note 8, art. 3(4)(iv); Hague Agreement (1999), *supra* note 8, art. 23(3)(i); Madrid Protocol, *supra* note 8, art. 8(2); RICKETSON, *supra* note 1, at 106-08 (PCT plays a "critical role in the international patent system").

212. RICKETSON & GINSBURG, *supra* note 1, at 1039-40; RICKETSON, *supra* note 1, at 188-91, 237-38.

213. RICKETSON, *supra* note 1, at 239-47.

214. DEERE-BIRKBECK, *supra* note 24, at 128-29.

215. BOGSCH, *supra* note 164, at 93.

216. *Program and Budget for the 2018/19 Biennium*, http://www.wipo.int/export/sites/www/about-wipo/en/budget/pdf/budget_2018_2019.pdf (last visited Feb. 8, 2022, 10:10 AM).

217. *See* Madrid Agreement, *supra* note 8, art. 12(3)(i); *accord* Madrid Protocol, *supra* note 8, art. 12; Hague Agreement (1999), *supra* note 8, art. 23(3)(i); PCT, *supra* note 8, arts. 57(3)(i), (57)(5)(a); Paris Convention, *supra* note 1, art. 16(3)(ii); Berne Convention, *supra* note 1, art. 25(3)(ii).

unions administered by" WIPO.[218] The Madrid Protocol dealing with international trademark applications even sets out detailed rules regarding the distribution of a remaining surplus from registration receipts among contracting parties.[219] Thus, the multilateral IP system has turned from an area in need of public financing to a money making machine, even for participating states. Since he who pays the piper calls the tune, power within the network has shifted from states to the global IP community. That governments are aware of this loss of power and want to retain some residual control over WIPO is documented by the fact that they rejected a proposal of the late Árpád Bogsch to completely terminate their financial obligations.[220] Nevertheless, WIPO's staff perceives fee-paying applicants as the organization's "key clients."[221]

Together with patent attorneys and other IP experts from member states, this global IP community owns the global IP network by controlling the supply of and demand for IPRs, which, due to micro network effects, tend to slope upwards.[222] Users and experts of the system also form an epistemic community of insiders that separates itself from other state and non-state actors to reduce exogenous interferences to a minimum.[223] The more hermetic the closure of the community, the more efficient the transactions within the group and thus the utility for all stakeholders. As a result, network effects, not politics steer the system.[224]

IV. MEASURES TO CULTIVATE THE MULTILATERAL IP SYSTEM AND STRENGTHEN ITS NETWORK EFFECTS

The previous Part demonstrated that the multilateral IP system is structured as a virtual network with strong network effects. Thanks to increasing returns to scale, the trajectory of the global IP network is set towards expansion. The theory of network effects further teaches that the magnitude of such an effect is not fixed, but dependent upon several variables, such as the interdependency of consumer utility functions, the

---

218. Hague Agreement (1999), *supra* note 8, arts. 23(2), 4(b); PCT, *supra* note 8, art 57(2), (4); Madrid Agreement, *supra* note 8, art. 12(2)(4)(b); *see also* WIPO Convention, *supra* note 2, art. 9(5) (WIPO Director General shall prepare the draft budgets and transmit them to the Governments of interested States).

219. Madrid Protocol, *supra* note 8, art. 8(4)-(7).

220. DEERE-BIRKBECK, *supra* note 24, at 123.

221. *Id.* at 184.

222. *Supra* Part III(A)(2).

223. INGRID SCHNEIDER, DAS EUROPÄISCHE PATENTSYSTEM 188-218 (2010).

224. *Cf. Annual Report 2007*, EUR. PAT. OFF., SCENARIOS FOR THE FUTURE http://documents.epo.org/projects/babylon/eponet.nsf/0/c28c40c897908eebc12574670053fed0/$FILE/epo_annual_report_2007.pdf ("market rules" scenario).

range of complementary products, the availability of alternative platforms, and switching costs.[225] The provider of a network product can take steps to thicken the benefits that adopters enjoy and to dissuade them from leaving. This Part applies this business perspective to the multilateral IP system.[226] It presents five legal measures that were taken with the specific, albeit often not outspoken aim to cultivate the multilateral IP system and thereby strengthen its network effects.

A. Improving the Connectivity Between the Nodes

The purpose of the first set of measures is to improve the connectivity between the nodes of the network—independent IP jurisdictions—so that the acquisition of IPRs "throughout the world" is as simple and cost-efficient as possible. As explained above, multilateral IP treaties link jurisdictions together through the principles of national treatment and minimum rights.[227] Eligible right holders are thereby guaranteed a certain minimum level of protection in all contracting states.[228] That basic guarantee does not, however, discharge persons seeking IP protection abroad from complying with formal requirements generally applicable in a target country (e.g. the need to apply for a patent with the competent authority according to local patent regulations). If fulfilling such formalities is too burdensome, the promises of national treatment and minimum rights will not be realized in practice. The network is established, but its use is too expensive.

Several measures have been adopted to tackle this problem and reduce the costs of rights acquisition across the global IP network. The original 1883 Paris Convention already introduced the concept of priority rights, which gives applicants several months to file for rights in an invention, design, or trademark in other countries "of the [u]nion" without risking to be denied protection in these target countries because of earlier filings, publications, or exploitations of the subject matter.[229] Multistate rights acquisition is further supported by treaties harmonizing application and registration procedures and the classification of subject matter.[230] Finally, and in order to "simplify and render more economical the

225. Menell, *supra* note 46, at 7; *see, e.g.*, Katz & Shapiro, *supra* note 38.
226. Druzin (2018), *supra* note 40, at 11-13.
227. *Supra* Part III.
228. *Supra* Part III(C).
229. Paris Convention, *supra* note 1, arts. 4(A), (B); UPOV, *supra* note 8, art. 11.
230. Patent Law Treaty, *supra* note 9; Singapore TLT, *supra* note 8; WIPO Classification Treaties, http://www.wipo.int/treaties/en/.

obtaining of protection for [inventions, designs, and trademarks] where protection is sought in several countries," six WIPO 'Global Protection System' treaties provide eligible *ressortissants* of a contracting state with the possibility to file international patent, design, and trademark applications and registrations with WIPO and to deposit a microorganism for the purpose of multistate patenting only once.[231] These treaties not only allowed WIPO to become financially independent from its member states, but also created a number of important exchange points in the network.[232] Aside from WIPO itself, some well-functioning patent offices have been appointed as "International Authorities" for patent searches, preliminary examinations, and deposits of microorganisms.[233] The vision is not so much a single World Patent Office but a network of a handful of cooperating IP offices whose authoritative decisions will be automatically recognized by all other offices.[234] Although this stage has not yet been reached, the existing system functions well enough to allow multinational corporations to patent their inventions in multiple countries. Indeed, such parallel patenting is considered to be the main driver of the global surge of patent filings—not increased research productivity.[235]

In the area of copyrights and related rights, the costs of rights acquisition abroad have been reduced to zero even. Since the 1908 Berlin Act of the Berne Convention, the rule has been that the "enjoyment and the exercise of . . . rights shall not be subject to any formality."[236] Consequently, authors, performers, and other eligible right holders attain protection throughout the world automatically with the act of creation,

---

231. PCT, *supra* note 8, preamble; http://www.wipo.int/treaties/en/, ("Global Protection System")

232. *Supra* Part III(E).

233. PCT, *supra* note 8, arts. 16, 32; Budapest Treaty, *supra* note 8, art. 6; *Summary of the Patent Cooperation Treaty (PCT) (1970)*, WORLD INTELL. PROP. ORG., http://www.wipo.int/treaties/en/registration/pct/summary_pct.html (last visited Feb. 8, 2022); *Summary of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purpose of Patent Procedure (1977)*, WORLD INTELL. PROP. ORG., http://www.wipo.int/treaties/en/registration/budapest/summary_budapest.html (last visited Jan. 20, 2022).

234. PCT, *supra* note 8, art. 16(2) ("pending the establishment of a single International Searching Authority . . . "); Budapest Treaty, *supra* note 8, art. 3(1)(a) (automatic recognition of a deposit of microorganisms with an International Depositary Authority); UPOV, *supra* note 8, art. 20(6) (duty to share information concerning variety denominations among national authorities). On the "IP5" network *see supra* Part III(E).

235. J. Danguy et al., *On the Origins of the Worldwide Surge in Patenting: An Industry Perspective on the R&D-Patent Relationship* (2013), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2250887; *see* MASAAKI KOTABE, THE IMPACT OF FOREIGN PATENTS ON NATIONAL ECONOMY: A CASE OF THE UNITED STATES, JAPAN, GERMANY AND BRITAIN 1335-43 (1992).

236. Berne Convention, *supra* note 1, art. 5(2); WCT, *supra* note 8, art. 3; WPPT, *supra* note 8, art. 20; BTAP, *supra* note 9, art. 17.

performance, etc. Copyrights and related rights travel through the global IP network without any interruption.

B. Setting the Path Towards Higher Levels of Protection

In market settings, the primary way to attract additional adopters of a network product and to strengthen respective network effects is to improve the product's quality. This business strategy cannot, however, simply be applied to the multilateral IP system because no single entity controls this virtual network. No actor has the power to dictate measures to reduce transaction costs or to expand minimum rights.[237] Under this condition, it is all the more important to have structural measures in place that set the path of the multilateral system towards higher levels of protection. It must be made sure that future decisions of individual states and of the community of members do not reduce, but improve the level of IP protection and thus the quality of the system. The multilateral *acquis* contains several rules that pursue this aim.

To begin with, accession to IP conventions that have been revised in the past is open only to the most recent, progressive act.[238] Reservations have been reduced to a minimum or are not permitted at all.[239] The most current act replaces all earlier and more limited acts as between the states to which it applies.[240] It is also impossible to return to prior, lower levels of protection by denouncing the most recent act of the Paris, Berne, or UPOV Conventions because such a declaration automatically constitutes denunciation of all earlier revision acts.[241] There is, in other words, no cherry-picking—take it or leave it.

Moreover, newcomers are required to adopt basic network standards in the form of the Paris, Berne, or WIPO Convention first, before acceding to more advanced levels of the system. The Paris Convention serves as the basic building block of all WIPO treaties concerning industrial property

---

237. *Supra* Part III(5).

238. Paris Convention, *supra* note 1, art. 23; Berne Convention, *supra* note 1, art. 34(1); Rome Convention, *supra* note 8, art. 29(3)(a); UPOV *supra* note 8, art. 37(3).

239. Berne Convention, *supra* note 1, art. 30; Rome Convention, *supra* note 8, art. 18; TRIPS Agreement, *supra* note 3, art. 72; WCT, *supra* note 8, art. 22; WPPT, *supra* note 8, art. 21; Geneva Act Lisbon Agreement, *supra* note 10, art. 30; Madrid Protocol, *supra* note 8, art. 9(b).

240. Paris Convention, *supra* note 1, art. 27(1); Berne Convention, *supra* note 1, art. 32(c); UPOV, *supra* note 8, art. 31(1); Madrid Protocol, *supra* note 8, art. 9(1)(a); Hague Agreement (1999), *supra* note 8, art. 31(1); Geneva Act Lisbon Agreement, *supra* note 10, art. 31(1); Singapore TLT, *supra* note 8, art. 27(1); Madrid Agreement (Indications of Source), *supra* note 8, art. 6(3).

241. Paris Convention, *supra* note 1, art. 26(2); Berne Convention, *supra* note 1, art. 35(2); UPOV, *supra* note 8, art. 39(2).

law. In order to join the WIPO Global Protection System treaties, the treaties harmonizing registration procedures or the classification treaties, countries either have to be a contracting party to the Paris Convention or they have to comply with its provisions.[242] International copyright law is structured in a less rigid but still modular form. In this area, the WIPO and the Berne Conventions provide the basic standards to which one has to adhere first before advancing to higher levels.[243] Last but not least, the TRIPS Agreement obliges all WTO members to comply with core provisions of the Paris and Berne Conventions, and implicitly refers to UPOV as one option to protect plant varieties. It thus functions as a kind of head agreement encompassing all basic standards of protection, and it links this multilateral IP system to a more general network: world trade law.[244]

The preceding paragraph outlined measures that aim at individual states that consider joining or leaving the global IP club. Further rules protecting the integrity of the network are concerned with collective decisions of states regarding amendments of existing treaties or the conclusion of new treaties. In principle and theory, states are the ultimate masters of the multilateral IP system. If they find the global IP network to be overbroad, they are in a position to cut back on minimum rights or any other of its elements. Yet even if this was the unanimous position of all WIPO/WTO/UPOV members (which it obviously isn't), an alternative IP system would have to be established from scratch because WIPO is programmed to "promote the protection of intellectual property throughout the world," and the existing *acquis* explicitly rules out any kind of collective roll-back.[245] Revisions of Paris and Berne have to "improve the system" of the two unions.[246] If no consensus on this improvement can be reached, a majority of WIPO members may adopt "special" multilateral

242. PCT, *supra* note 8, art. 62(1); Hague Agreement (1999), *supra* note 8, art. 2(2); Madrid Protocol, *supra* note 8, art. 14(1)(a); Locarno Agreement, *supra* note 8, art. 9; Nice Agreement, *supra* note 8, art. 9; Strasbourg Agreement, *supra* note 8, art. 12(1); Vienna Agreement, *supra* note 9, art. 12(1); Madrid Agreement, *supra* note 8, at arts. 14, 5(1); Geneva Act Lisbon Agreement, *supra* note 10, art. 28; Patent Law Treaty, *supra* note 9, art. 15; TLT, *supra* note 8, art. 15, Singapore TLT, *supra* note 8, art. 15.

243. Rome Convention, *supra* note 8, art. 24(2); WCT, *supra* note 8, art. 1(4); WPPT, *supra* note 8, art. 26; BTAP, *supra* note 9, art. 23; VIPT, *supra* note 8, art. 15; FICSOR, *supra* note 149, at 57-58 ("Berne in TRIPS in WCT/WPPT").

244. TRIPS Agreement, *supra* note 3, arts. 2(1), 9(1), 27(3)(b); WIPO Convention, *supra* note 2, art. 4(iii); *see infra* Parts IV(D), IV(E).

245. WIPO Convention, *supra* note 2, art. 3(i).

246. Paris Convention, *supra* note 1, art. 18(1); Berne Convention, *supra* note 1, art. 27(1); RICKETSON & GINSBURG, *supra* note 1, at 996-97.

agreements concerning the protection of IP, provided that such agreements "do not contravene the provisions" of Paris, Berne, and UPOV or they grant authors and holders of rights related to copyright "more extensive rights."[247] Modules added to the network on this basis—including the TRIPS Agreement—at the same time leave the operation of existing treaties (sub-networks) intact.[248] In sum, the global IP network is systematically protected from erosion and configured towards expansion.[249]

C. Keeping Out Free-Riders

The benefits of acceding to the global IP network must nevertheless be strictly reserved for members only. If outsider states were able to secure their nationals' protection in the countries participating in the multilateral system, while at the same time refusing reciprocal protection to *ressortissants* of these members, the aim to provide the latter with IP protection throughout the world could not be achieved. Non-*ressortissants* must not enjoy the benefits of the global IP network.[250]

From this perspective, the very general national treatment obligation of Art. 3(1) s. 1 TRIPS and, even more so, the most-favored-nation (MFN) clause of Art. 4(1) TRIPS, which is a cornerstone of WTO law but unique in the multilateral IP system, pose potential risks to the integrity of the network.[251] The provisions oblige WTO members to treat the nationals of other WTO Members no less favorably than its own nationals (national treatment) and the nationals of "any other country" "with regard to the protection of intellectual property."[252] If these rules were interpreted

---

247. *See* Paris Convention *supra* note 1, art. 19; Berne Convention, *supra* note 1, art. 20; UPOV, *supra* note 8, art. 32; Rome Convention, *supra* note 8, art. 22; WCT, *supra* note 8, art. 1(1); TRIPS Agreement, *supra* note 3, art. 71(2) (amendments "merely serving the purpose of adjusting to higher levels of protection" may be adopted on the basis of a consensus proposal from the Council for TRIPS); WIPO Convention, *supra* note 2, art. 6(3)(e); REINBOTHE & VON LEWINSKI, *supra* note 1, at 17-18; FICSOR, *supra* note 149, at 48; DEERE-BIRKBECK, *supra* note 24, at 88-89.

248. TRIPS Agreement, *supra* note 3, art. 2(2); PCT, *supra* note 8, art. 1(2); Rome Convention, *supra* note 8, art. 1; WCT, *supra* note 8, art. 1(2); WPPT *supra* note 8, art. 1; BTAP, *supra* note 9, art. 1; VIPT, *supra* note 8, art. 1; FICSOR, *supra* note 149, at 50 ("safeguard provisions which exclude the very possibility of any conflict").

249. VON LEWINSKI, *supra* note 5, at 185; GROSSE RUSE-KHAN, *supra* note 4, at 489-90.

250. *Supra* Part III(D)(1).

251. USTR, *supra* note 114, at 85; Christopher Heath, *The Most-Favoured Nation Treatment and Intellectual Property Rights*, *in* INTELLECTUAL PROPERTY AND FREE TRADE AGREEMENTS, 128-154, 139 (Christopher Heath & Anselm Kamperman Sanders eds., 2007); VON LEWINSKI *supra* note 5, at 19-22.

252. On the differences between national treatment and MFN *see* WTO Panel Report, *supra* note 99, at 152 ("MFN treatment under the TRIPS Agreement generally only has an independent

broadly so as to apply to any strengthening of existing IPRs and any new type of IPR, all promises of enhanced IP protection to which a WTO member commits in new bilateral or multilateral treaties would automatically spill over to the nationals of all other WTO members. On the one hand, this result secures equal conditions of competition on all IP markets among all WTO members.[253] An extensive understanding of Arts. 3, 4 TRIPS would also mean that every new TRIPS-plus standard contained in a bilateral or multilateral treaty ratified by a WTO member spreads throughout WTO membership and thus contributes to the upward spiral built into the multilateral system.[254] On the other hand, a broad spill-over effect could undermine the incentive of WTO members to actively participate in future efforts to promote the multilateral IP system outside the WTO because their nationals would automatically enjoy respective improvements in participating WTO member states.[255]

To address this free-rider problem and to prevent distortions of the functioning of the global IP network with its modular improvements and network effects, Arts. 3-5 TRIPS significantly reduce the scope of application of national and MFN treatment principles. Firstly, Art. 5 TRIPS sets out that the non-discrimination rules of Arts. 3 and 4 TRIPS do not apply "to procedures provided in multilateral agreements concluded under the auspices of WIPO relating to the acquisition or maintenance of intellectual property rights."[256] Thus, WIPO's Global Protection System, WIPO's cash cow, and arguably also the treaties harmonizing registration procedures and subject matter classifications continue to solely benefit the nationals/residents of the respective

---

application where a Member grants to the nationals of any other country a level of protection that is higher than it grants to its own nationals and higher than the minimum standards laid down in the TRIPS Agreement"); ABBOTT ET AL., *supra* note 4, at 76 ("As all foreign national IPRs holders are entitled to equal treatment with nationals, discrimination among foreign IPRs holders was unlikely to arise.").

253. Thomas Cottier, *Sovereign Equality and Graduation in International Economic Law*, *in* REFLECTIONS ON THE CONSTITUTIONALISATION OF INTERNATIONAL ECONOMIC LAW: LIBER AMICORUM FOR ERNST-ULRICH PETERSMANN 219 (Marise Cremona et al. eds., 2013).

254. JUSTIN MALBON ET AL., THE WTO AGREEMENT ON TRADE-RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS: A COMMENTARY 148 (2014); DINWOODIE & DREYFUSS, *supra* note 1, at 103-04; ROSS P. BUCKLEY, CHALLENGES TO MULTILATERAL TRADE: THE IMPACT OF BILATERAL, PREFERENTIAL AND REGIONAL AGREEMENTS 187 (2008).

255. Reinbothe et al., *The State of Play in the Negotiations on Trips (GATT/Uruguay Round)*, 5 EU. INTELL. PROP. RTS., 157, 159 (1991); VON LEWINSKI, *supra* note 5, at 282 (nothing the "unwanted free-rider effect"); GOLDSTEIN & HUGENHOLTZ, *supra* note 15, at 109; JOSEF VON DREXL, ENTWICKLUNGSMÖGLICHKEITEN DES URHEBERRECHTS IM RAHMEN DES GATT 346, 356, 359 (1990) (introduction of MFN to international copyright law is not advisable).

256. TRIPS Agreement, *supra* note 3, art. 5.

contracting parties to the exclusion of all outsiders.[257] Secondly, the national treatment obligation of Art. 3 TRIPS is subject to exceptions already provided in the Paris, Berne, and other WIPO conventions referenced in TRIPS, and additionally limited regarding performers, producers of phonograms and broadcasting organizations to the rights provided in TRIPS—a typical caveat in the multilateral *acquis* of rights related to copyright.[258] Thirdly, the definition in footnote 3 to the TRIPS Agreement of what constitutes "protection" of IP for the purposes of Arts. 3 and 4 TRIPS—namely "matters affecting the availability, acquisition, scope, maintenance and enforcement of intellectual property rights as well as those matters affecting the use of intellectual property rights specifically addressed in this Agreement"—suggests that entirely new types of IPRs, such as the sui generis right of database makers and the related right of press publishers under EU law, and possibly also additional exclusive rights in already protected subject matter are beyond the reach of the national treatment and MFN provisions of TRIPS.[259] Finally, Art. 4 s. 2 TRIPS exempts precisely those constellations from the MFN principle that are most likely to produce the free-rider problem explained above—in particular the granting of TRIPS-plus rights for performers, producers of phonograms, and broadcasting organizations.[260]

The TRIPS Agreement is thus carefully drafted to leave intact the boundaries of the rest of the multilateral IP system and to prevent an undesirable overspill of its benefits to outsiders. TRIPS therefore reinforces the principle that, to enjoy IP protection throughout the world, one has to subscribe to the global IP network.

D. Preventing Network Competition

Next to free-riding, competition poses another risk to the integrity and the pull-effects of the multilateral IP system. NE theory teaches that

---

257. DE CARVALHO, *supra* note 188, at 139-42; RICKETSON, *supra* note 1, at 359-60; GERVAIS, *supra* note 188, at 219; Heath, *supra* note 251, at 140.

258. *Cf.* Rome Convention, *supra* note 8, art. 2(2); Phonograms Convention, *supra* note 8, art. 2; WPPT, *supra* note 8, art. 4(1); BTAP, *supra* note 9, art. 4(1).

259. WTO Panel Report, *supra* note 99, at 43, 152 (concerning geographical indications); THE PRINCIPLE OF NATIONAL TREATMENT IN INTERNATIONAL ECONOMIC LAW: TRADE INVESTMENT AND INTELLECTUAL PROPERTY 288 (Anselm Kamperman Sanders ed., 2014); DE CARVALHO, *supra* note 188, at 125; GERVAIS, *supra* note 188, at 198-99 (broad interpretation); *cf.* CARLOS M. CORREA, TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS: A COMMENTARY ON THE TRIPS AGREEMENT 66-67 (2d ed. 2007); MALBON, *supra* note 254, at 148. On the interpretation of footnote 3 of TRIPS *see* USTR, *supra* note 114, at 68, 90 (trademark protection).

260. VON LEWINSKI, *supra* note 5, at 283-99 (minimal effect of TRIPS MFN on the international copyright system); MALBON, *supra* note 254, at 154-56, 158.

when two or more providers of increasing-return products compete for a market of potential adopters—think, again, of substitutive social media platforms—even insignificant events can give one of them an advantage, which may evolve, due to network effects, into a dominant market position, with the other products/technologies becoming locked out.[261] Initially, however, "if two networks compete, then adopting one network means not adopting the other, which dilutes or reverses" any network effect.[262] Prohibiting users from simultaneously signing up to the competing network can help to lock in some adopters.[263] The fact remains, however, that these users may switch to the alternative network if they consider it more valuable.

In the history of the multilateral IP system, the risk of IP network competition was acute twice. On both occasions, the global IP community, supported in particular by the U.S., the hegemon among market economies after World War II, managed to avoid a competition scenario in which the trend towards IP protection throughout the world could well have slowed down or even reversed into a race to the bottom.[264]

The first story of this kind is particularly instructive. It concerns the relationship between the Berne Union on the one hand and the Universal Copyright Convention (UCC) on the other, which evolved over several decades in the context of the Cold War and decolonization. In the late nineteenth century though, two multilateral copyright systems had already emerged, namely a set of treaties among American states (the "New World"), and the Berne Convention, which included the colonial empires (the "Old World") and their dependent territories, but most notably not the U.S.[265] When the United Nations Educational, Scientific, and Cultural Organization (UNESCO) started to work on a truly "universal copyright

261. Arthur, *supra* note 49, at 116.

262. Klemperer, *supra* note 56.

263. Druzin (2018), *supra* note 40, at 17.

264. Bogsch, *supra* note 152, at 35; BOGSCH, *supra* note 164, at 10, 13; ÁRPÁD BOGSCH, SZELLEM ÉS JOG (Mind and Law) (2004). A key figure in all these events was, again, Árpád Bogsch, whose fascinating biography exemplifies like no other the consolidation and globalization of the multilateral IP system. Bogsch was born in 1919 in Hungary; moved to Paris in 1948 to become a legal officer at the UNESCO Copyright Division; took up a post as legal counsellor at the U.S Copyright Office in 1954; became an American citizen in 1959 and attended several diplomatic conferences as a member of the U.S. delegation between 1959 and 1963; joined BIRPI 1963 as its Deputy Director; acted as the Secretary General of the 1967 Stockholm Conference; was the first Deputy Director General of WIPO from 1970 to 1973 and from 1973 to 1997 the second Director General of WIPO and Secretary General of UPOV. I thank Peter Meszei for helpful comments on the biography of Árpád Bogsch.

265. RICKETSON & GINSBURG, *supra* note 1, at 1175-1184; VON LEWINSKI, *supra* note 5, at 80-87.

system," the Berne community immediately sensed its dominant position was in danger.[266] Shortly after the Director-General of UNESCO and the Director of BIRPI had exchanged letters to establish a "close working relationship," the permanent Berne Convention Committee adopted a resolution in October 1950, according to which "any competition between the future universal system and that of Berne ought to be prevented ab ovo."[267, 268] Instead, the Berne Convention should take precedence over the future Universal Convention in cases of double membership, and countries denouncing Berne should automatically also lose the benefits of the UCC.[269] All of these demands were fulfilled when the UCC was adopted in 1952. Its preamble proclaims that the new convention is "additional to, and without impairing international systems already in force."[270] Moreover, the notorious Berne safeguard clause put the requested "prohibitive price" on switching from Berne to the "low staircase" UCC.[271] A country denouncing Berne, but remaining in or acceding to the UCC, would lose for its nationals any copyright protection in other countries of Berne, including all former European metropoles.[272]

Despite these safeguards, membership in the less protectionist UCC grew quickly, and in 1967 nearly reached that of the Berne Union.[273] The risk of a collective switch of developing countries was increasingly real. The 1967 Stockholm revision act of the Berne Convention strived to prove that the Berne system was more responsive to developmental needs of the newly independent states, but the former metropoles eventually rejected

266. UCC, *supra* note 148, preamble.

267. *Agreement Between the United Nations Educational, Scientific and Cultural Organization and the World Intellectual Property Organization*, preamble, art. 8, http://www.wipo.int/edocs/pubdocs/en/copyright/120/wipo_pub_120_1974_03.pdf.

268. BUREAU DE L'UNION DE BERNE, LA DEUXIÈME SESSION DU COMITÉ PERMANENT DE L'UNION LITTÉRAIRE ET ARTISTIQUE, DROIT D'AUTEUR 129, 131 (1950).

269. *Id.*; ÁRPÁD BOGSCH, THE LAW OF COPYRIGHT UNDER THE UNIVERSAL COPYRIGHT CONVENTION 116 (3d ed. 1968); Halbert, *supra* note 6, at 250; Okediji, *supra* note 209, at 76; DINWOODIE & DREYFUSS, *supra* note 1, at 27; VON LEWINSKI, *supra* note 5, at 583 (avoiding a potential split).

270. UCC, *supra* note 148.

271. Bogsch, *supra* note 152, at 116, 119-24; UCC, *supra* note 148, art. XVII & appendix declaration; Eugene M. Braderman, *International Copyright–A World View*, 17 BULL. COPYRIGHT SOC'Y U.S.A. 147, 151 (1970); VON LEWINSKI, *supra* note 5, at 84-85; RICKETSON & GINSBURG, *supra* note 1, at 1184, 1189-200.

272. Braderman, *supra* note 271, at 153-54; Eugen Ulmer, *The Revision of the Copyright Conventions in the Light of the Washington Recommendation*, 2 INT. REV. INTELL. PROP. & COMPETITION L. 235, 236 (1970).

273. RICKETSON & GINSBURG, *supra* note 1, at 887, 1201-02.

the compromise achieved.[274] Developing countries, in turn, threatened to repeal the Berne safeguard clause in the UCC with their majority.[275] The first crisis in international IP law was only solved with a package deal, promoted in particular by the U.S., with which the two conventions were simultaneously revised so as to provide essentially the same preferential treatment rules for developing countries.[276] As Ricketson and Ginsburg rightly point out, "the linkage of the two revisions played an important role, because the UCC no longer remained a potential low-level refuge for the developing countries."[277] Indeed, although the Berne safeguard clause was lifted for developing countries, none of them left Berne for the UCC.[278, 279] A 1974 agreement between UNESCO and WIPO, in which the two UN agencies express their will for "full cooperation and coordinat[ion of] their activities in order to avoid all unnecessary duplication," marks the end of the story.[280] Today, the UCC is practically irrelevant.

The second instance of two potentially competing multilateral IP systems/organizations occurred when IP became a topic of the GATT Uruguay round negotiations, in which WIPO was not formally involved.[281] Again, the traditional, WIPO-affiliated IP community was concerned that integrating IP into world trade law might disturb the coherence of the multilateral IP system and that a future world trade organization might contest WIPO's role as the only global IP organization.[282] These worries proved unfounded, however. The proponents of the forum shift, from WIPO to the GATT, had never intended to establish an alternative system. Instead, TRIPS was always supposed to *complement* WIPO's activities, which had failed—in the view

274. Ulmer, *supra* note 272, at 235 (crisis of international copyright law); Braderman, *supra* note 271, at 151 (new problem).

275. Ulmer, *supra* note 272, at 236.

276. *Cf.* Berne Convention, *supra* note 1, art. 21; UCC, *supra* note 148, arts. Vbis to Vquater; Braderman, *supra* note 271, at 155-156; Ulmer, *supra* note 272, at 244; RICKETSON & GINSBURG, *supra* note 1, at 919-25.

277. RICKETSON & GINSBURG, *supra* note 1, at 956.

278. UCC, *supra* note 148.

279. BOGSCH, *supra* note 164, at 22.

280. COPYRIGHT, *supra* note 267, art. 1 (If two competing, private network providers concluded such an agreement, they would be considered members of an illegal cartel.).

281. *Cf.* FRIEDRICH-KARL BEIER & GERHARD SCHRICKER, GATT OR WIPO? NEW WAYS IN THE INTERNATIONAL PROTECTION OF INTELLECTUAL PROPERTY (1989).

282. VON LEWINSKI, *supra* note 5, at 584; Antony Taubman, *Thematic Review: Negotiating "Trade-Related Aspects" of Intellectual Property Rights*, *in* THE MAKING OF THE TRIPS AGREEMENT: PERSONAL INSIGHTS FROM THE URUGUAY ROUND NEGOTIATIONS 32 (Jayashree Watal & Antony Taubman eds., 2015).

of IP applicants—to produce tangible outcomes for too long.[283] Accordingly, the negotiation of TRIPS took place in close coordination with WIPO.[284] The TRIPS Agreement, as adopted, fills gaps of the 1994 WIPO/UPOV *acquis* and embraces all major building blocks of the pre-existing IP system to establish one single global IP network.[285] Thus, TRIPS did not compromise the attractiveness of the rest of the multilateral IP system but strengthened it significantly. The desire set out in the preamble of TRIPS "to establish a mutually supportive relationship" between the WTO and WIPO was put into practice by a cooperation agreement between the two IOs, concluded in 1995, which is still in force today.[286]

E. Attaching to Other Networks

Although the emergence of a competing IP system was successfully prevented, the everlasting conflict between industrialized, high-income IP haves and low-income developing countries, primarily interested in access to knowledge, has plunged the multilateral IP system into crisis again and again. Two periods stand out as particularly critical, namely the phase of decolonization after World War II and the long logjam of WIPO's efforts to improve IP protection during the 1970s and 1980s, which eventually prompted the TRIPS Agreement. In both situations, the multilateral IP system was stabilized and again set on track towards further expansion by attaching to other international law networks and organizations from whose legitimacy and membership value the IP system could benefit.

In 1962, the head of the copyright division of BIRPI, Claude Masouyé, wondered "whether politically, economically, socially, it is good or evil" that one "must record the contemporary phenomenon of the

283. *Cf.* European Community, *supra* note 128, at 323 (symbiosis of effort).

284. Drahos & Braithwaite, *supra* note 30, at 141 (exchange between the chairman of the TRIPS negotiating group and WIPO); *contra* BOGSCH, *supra* note 164, at 21, 124 (complaining about the fact that WIPO was invited only to formal GATT meetings, not the informal working sessions regarding TRIPS).

285. *Supra* Part III(D)(3); Okediji, *supra* note 209, at 116; REINBOTHE & VON LEWINSKI, *supra* note 1, at 610 ("cross-fertilization"); VON LEWINSKI, *supra* note 5, at 575-76; *cf.* FICSOR, *supra* note 149, at 53.

286. *Agreement Between the World Intellectual Property Organization and the World Trade Organization*, WTO (Dec. 22, 1995), http://www.wto.org/english/tratop_e/TRIPse/wtowip_e.htm; Okediji, *supra* note 209, at 95-100; DE CARVALHO *supra* note 188, at 46 (the mutually supportive relationship has been "extremely successful, particularly in promoting the implementation of international obligations by Members of both organizations").

decolonization."[287] From the perspective of BIRPI, the self-described "guardian" of the Berne and Paris Unions, the independence movement was primarily perceived as creating the risk of "a constant and big geographical shrinking [of the union's territories], to the prejudice of the interests of authors."[288] One of several strategic measures that BIRPI and the global IP community adopted to prevent a mass exodus of newly independent developing countries was to transform BIRPI into a new IP organization with a decidedly global reach and aspiration, and—again following the examples of the International Telecommunications Union and the Universal Postal Union—with a status as a specialized UN agency.[289] BIRPI members saw three major advantages in connecting WIPO with the UN. Firstly, "WIPO would receive worldwide recognition."[290] Secondly, "WIPO would have more or less the same members as the United Nations, and in particular, many developing countries would join WIPO (only very few of them belonged to BIRPI)."[291] Thirdly, the salaries and pensions of WIPO's staff would automatically follow UN standards.[292] The 1974 agreement between the UN and WIPO realized the first and the third wish, and thereby also helped to achieve the second.[293]

The integration of IP protection into world trade law via the TRIPS Agreement had a similar effect on the stability and further growth of the global IP network. This particular move was driven by companies from IP hot spots with the aim to overcome long-term opposition of developing countries in WIPO against raising certain substantive and enforcement minima, in particular with regard to copyrights in computer programs and patents in pharmaceutical inventions.[294] The idea behind shifting the negotiation forum from WIPO to the GATT was to use trade preferences as a bargaining chip for higher levels of IP protection. Developing

---

287. Claude Masouyé, *Decolonization, Independence and Copyright: The New States and the Berne Union*, 36 REVUE INT. DU DROIT D'AUTEUR 84, 144 (1962).

288. *Id.* at 86; Peukert (2015) *supra* note 14, at 49.

289. BOGSCH, *supra* note 164, at 13; VON LEWINSKI, *supra* note 5, at 412; Peukert (2015), *supra* note 14.

290. BOGSCH, *supra* note 164, at 18.

291. *Id.*

292. *Id.* at 18-19; Halbert, *supra* note 6, at 260-61; VON LEWINSKI, *supra* note 5, at 413; Okediji, *supra* note 209, at 78.

293. Agreement Between the United Nations and the World Intellectual Property Organization, Dec. 17, 1974, http://wipolex.wipo.int/en/text/305623 [hereinafter UN-WIPO Agreement].

294. *Supra* Part I; Reinbothe, *supra* note 255, at 157 ("sterile North-South confrontation"); ABBOTT ET AL., *supra* note 4, at 4; GERVAIS, *supra* note 188, at 9-12; Drahos & Braithwaite, *supra* note 30, at 110-114, 124 ("WIPO talkshop").

countries were offered yet another package deal: if you protect our IP and sign up to the global IP network, we will grant you access to our commodity markets.[295] This bargain not only made the TRIPS obligations acceptable for IP have nots, it significantly increased the value and network effect of the IP-only treaties referenced in TRIPS. A state wanting to participate in free world trade according to WTO rules now has to comply with Paris, Berne, and UPOV standards.[296] An accession to the WTO thus regularly triggers parallel accessions to the Paris, Berne, and UPOV conventions, whose territories and value for remaining outsiders grow respectively. The pull-effects of the WTO market access rules reinforce the network effects of IP-only treaties. The consequences of tying WIPO and the WTO together become particularly apparent in the hypothetical case that a state violates Paris, Berne, or UPOV standards included in TRIPS. Even if this state had formally denounced these non-WTO treaties, it would still run afoul of WTO law and might therefore face WTO dispute settlement proceedings and ultimately trade sanctions imposed by other WTO members.[297] Because of TRIPS, disconnecting from the global IP network results in exclusion from the multilateral world trade system. Only a few observers at the time of conclusion of TRIPS took note of and criticized these lock-in effects.[298]

The price of attaching the global IP network to the UN and the WTO was "an invasion of politics in the field of intellectual property."[299] Until the early 1960s, international IP law had largely been a topic for a small circle of 'experts,' mostly from Western Europe and North America. By signing the agreement with the UN, however, WIPO *inter alia* assumed the responsibility to facilitate technology transfer to developing countries "in order to accelerate economic, social and cultural development."[300] With the adoption of the WIPO Development Agenda in 2007, developmental considerations became an official part of WIPO's work.[301] The integration of IP into world trade law has similarly drawn attention to

---

295. Basic Framework Proposal, *supra* note 205; JOSEF DREXL, TRIPS PLUS 20: FROM TRADE RULES TO MARKET PRINCIPLES 61 (H. Ullrich et al., eds., 2016); Reinbothe and Howard, *supra* note 255, at 157 ("global negotiating package").

296. *Supra* Part III(D)(3).

297. TRIPS Agreement, *supra* note 3, art. 64.

298. *See* Dutfield, *supra* note 30, at 198; GERVAIS *supra* note 188, at 20-22.

299. LADAS, *supra* note 76, at 151 (regarding the status as an UN agency).

300. UN-WIPO Agreement, *supra* note 293, art. 1.

301. *See generally* THE DEVELOPMENT AGENDA: GLOBAL INTELLECTUAL PROPERTY AND DEVELOPING COUNTRIES (Neil W. Netanel ed., 2009); *The Impact of Innovation: WIPO and the Sustainable Development Goals*, WORLD INTELL. PROP. ORG., http://www.wipo.int/sdgs/en/story.html (last visited Dec. 21, 2020).

the public policy dimension of IP, in particular, its relationship to public health.[302] Not by accident, the only formal amendment of WTO law pertains to this very issue.[303]

The politization of international IP law did not, however, prevent the global IP network from thriving. Whereas the grand WTO-TRIPS bargain appears to be cast in stone, WIPO has successfully promoted the conclusion of several multilateral treaties since 1995, including two major internet-related copyright treaties with quickly growing membership.[304] These successes were enabled by the modular structure of the global IP network, which allows adding patches as soon as the global IP community secures sufficient support among governments for a new multilateral treaty.[305]

V. CONCLUSION

This Article has demonstrated that the impressive and consistent growth of the number of private IPRs, of multilateral IP treaties and of contracting parties to these treaties since the late nineteenth century can, in no small part, be attributed to several network effects. Within IP jurisdictions, patents and other types of IPRs form micro networks whose value increases with the number of IPRs applied for, granted and enforced. The more IPRs exist in a given country, the more valuable it is for other private actors to also adopt an aggressive IP management strategy.[306] Internationally active companies from such IP hot spots tend to take their home IP policy with them to foreign markets.

The purpose of the multilateral IP *acquis* is to guarantee these users of the IP system an effective and adequate level of protection in other states. The respective treaties achieve this aim by forming a law-based, virtual macro network, which connects formally independent IP jurisdictions through the guarantee of national treatment and further measures facilitating the acquisition of mandatory minimum rights throughout the contracting states.[307] This structure also produces a network effect. The more members an IP union/organization has, the more IP

302. TRIPS Agreement, *supra* note 3, arts. 7, 8; GROSSE RUSE-KHAN, *supra* note 4, at 146-48.

303. TRIPS Agreement, *supra* note 3, art. 31bis.

304. Graeme B. Dinwoodie & Rochelle C. Dreyfuss, *Designing a Global Intellectual Property System Responsive to Change: The WTO, WIPO, and Beyond*, 46 HOUS. L. REV. 1187, 1194 (2009).

305. *Supra* Parts III(E), IV(A)(B).

306. *Supra* Part III(A)(2).

307. *Supra* Parts III(A)-(D).

protection acceding states can secure for their nationals abroad, and vice versa. The pull effects of micro and macro IP networks mutually reinforce each other. The more micro IP hot spots there are, the more companies lobby for international IP treaties. The more efficient transnational IPR acquisition and enforcement is thanks to those treaties,[308] the more IPRs spill over from IP hot spots to other states, leading to increased IP demand there, and so on.

Via the WIPO Convention and the TRIPS Agreement, which function as administrative and substantive head agreements of the multilateral IP system, these micro and macro network effects have been integrated into a single global network, which comprises all WIPO treaties, the UPOV Convention and TRIPS.[309] Due to the combined increasing returns these treaties display, signing up to and remaining a member of the multilateral IP system is of high value and thus perfectly reasonable, even for developing countries, irrespective of the immediate effects of a specific IP obligation. Accordingly, membership and pending accessions to the core treaties of the system—the WIPO, Paris, and Berne Conventions, and the TRIPS Agreement—account for close to 100% of existing states and world trade.[310]

Political arrangements are generally more change-resistant than network markets.[311] Since IP has been tied to the legitimacy of the UN, and has become a condition of active participation in world trade under WTO rules, disconnecting from the global IP network is no longer a sensible option.[312] There is also no alternative IP system in place to which a country could switch.[313] The emergence of such a competing network among countries preferring lower or more flexible levels of protection is precluded by the penalties WTO law provides for non-compliance with TRIPS and the WIPO/UPOV standards referenced therein. If necessary, IP hot spot host countries could exert additional political pressure on dissenters.[314] NE theory furthermore suggests that membership in

308. *Supra* Parts IV(A)(B).

309. *Supra* Part III(D).

310. *Supra* notes 8, 8. By 2007, only 13 member states of the United Nations had not applied to accede to the WTO, together accounting for 0.05% of total world trade, 0.03% of world GDP and 0.70% of world population; *see Accession in Perspective*, WORLD TRADE ORG., http://www.wto.org/english/thewto_e/acc_e/cbt_course_e/c1s1p1_e.htm (last visited Jan. 20, 2022).

311. David, *supra* note 33, at 218; Pierson, *supra* note 33, at 262-63; Gillette, *supra* note 39, at 813 (comparing lock-in-effects of common law, statutory law and social norms).

312. *See supra* Part IV(E); Hilty, *supra* note 30, at 193 (regarding the option to quit membership in the WTO).

313. *Supra* Part IV(D).

314. *Supra* Part I.

multilateral IP treaties will continue to rise until all relevant demand for protection is satisfied, and that new modules will be added to the network if the global IP community detects a relevant gap.[315] This expansion is further supported by free trade bilaterals that do not form part of the global IP network but—via the exogenous promise of trade preferences—push outsiders to sign up to the *acquis*.[316] In sum, the world community is locked into the multilateral IP system.

Whereas NE theory is a powerful tool to describe, explain and even predict the operation of network markets, it does not provide criteria to measure the efficiency or other normative adequacy of the outcome.[317] Whether the best or an inferior network product prevails depends on the circumstances and ultimately on the evaluation criteria.[318] For example, prominent NE theorists have taken great pains to argue, but still disagree on, whether the DVORAK or the eventually adopted QWERTY typewriter keyboard is the superior network product.[319] It is consequently unclear and hotly debated whether network markets raise specific regulatory concerns and which, if any, intervention is called for.[320]

Regarding the adequacy of the multilateral IP system, there are nevertheless serious reasons to doubt whether ever higher levels of IP protection throughout the world can be considered optimal. Firstly, anti-commons situations, in which too many IPRs strangle emerging technologies and industries,[321] spread across the globe. Secondly, one IP size does not fit all. Economic catch-up requires cheap and full access to existing knowledge in order to acquire the capacity to absorb technology

---

315. DINWOODIE & DREYFUSS, *supra* note 1, at 175 ("The ferment in norm formation . . . is unlikely to abate."); REINBOTHE & VON LEWINSKI, *supra* note 1, at 611; FICSOR, *supra* note 149, 665 ("continuation of the 'unfinished work'").

316. *Supra* Part III(D)(2)(a).

317. Liebowitz & Margolis, *supra* note 47, at 142; *see* Gillette, *supra* note 39, at 821.

318. *See* Joseph Farrell & Garth Saloner, *Standardization, Compatibility, and Innovation*, 16 RAND J. ECON. 70, 81 (1985) (there can be inefficient inertia, or inefficient innovation, and these problems cannot be entirely resolved by communication among firms); Menell, *supra* note 46, at 6 ("Take, for example, a social network like Facebook. A new entrant to this market, say Google+, might offer enhanced functionality. But if most of my social network is already on Facebook and I cannot easily bridge the two networks, then I am far less likely to switch."). *Cf.* Liebowitz and Margolis, *The Fable of the Keys*, 33 J. L. & ECON. 4, (1990), ("Observable instances in which a dramatically inferior standard prevails are likely to be short-lived, imposed by authority, or fictional."); Katz & Shapiro, *supra* note 38, at 93, 108 ("there is no general theoretical result implying excess inertia in market equilibria").

319. *Cf.* Klemperer, *supra* note 56.

320. Tim Weitzel et al., *Reconsidering Network Effect Theory*, EUR. CONF. INFO. SYS. (2000), http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1083&context=ecis2000.

321. MICHAEL A. HELLER, THE GRIDLOCK ECONOMY: HOW TOO MUCH OWNERSHIP WRECKS MARKETS, STOPS INNOVATION, AND COSTS LIVES 31 (2008).

and climb the innovation ladder.[322] Thirdly, it appears unjust to lock low income developing countries into their position at the bottom of the global innovation hierarchy, which has always featured few IP haves at the top. Precisely this global productive inequality is, however, replicated and reinforced by the multilateral IP system.[323]

For those who believe that these concerns call for change beyond calibrating the system at the remaining margins, NE theory provides further insights as to the efficacy of different regulatory approaches.[324] Politicizing IP debates in WIPO and the WTO has certainly slowed-down the expansion of the network by diverting power from the global IP community, but it has not compromised the basic structures that drive its expansion, in particular the modular configuration of the network and its financial self-dependency.[325] In that regard, the proper question, according to Douglas North, is "how does one reverse the increasing returns characteristics of a particular institutional matrix," in other words, rein in the network effect of the multilateral IP system?[326]

One suggestion is to introduce or strengthen binding maxima ("ceilings") of protection, in particular via a multilateral treaty in which members of the copyright system agree to make currently optional limitations and exceptions mandatory. As a consequence, the respective uses would have to be permitted in all participating states.[327] On the one hand, this solution has the beauty of being in compliance with the international IP *acquis* so that it could be immediately implemented in a bottom-up process of likeminded states.[328] On the other hand, the impact of such a move would remain small. It would ideally prevent the closure of flexibilities enshrined in TRIPS and other multilateral treaties via bilateral free trade agreements, but it would not roll back the solid

322. *See* Peukert, *supra* note 11.

323. *Supra* Part I.

324. *See* Daniel J Gervais, *IP Calibration*, *in* INTELLECTUAL PROPERTY, TRADE AND DEVELOPMENT 86-114 (Daniel J Gervais ed., 2014); VON LEWINSKI, *supra* note 5, at 593.

325. *Supra* Parts III(E), IV(B); *see* DE CARVALHO, *supra* note 188, at paras P.53-4.

326. NORTH, *supra* note 34, at 137-38.

327. *Cf.* Kur, *supra* note 120, at 158-60; Reto M. Hilty et al., *International Instrument on Permitted Uses in Copyright Law*, 52 INTL. REV. INTELL. PROP. & COMPETITION L. 62 (2021).

328. Even if one assumed that such a treaty does not "improve the system" of the Berne Union and thus is not permitted by the Berne Convention, no WTO Dispute Settlement could follow because art. 27(1) Berne Convention is not referenced in TRIPS; *see* TRIPS Agreement, *supra* note 3, art. 9(1).

minimum *acquis* of exclusive rights or introduce new limitations and exceptions.[329]

A much more ambitious, but at the same time much less realistic, option would be to create an alternative IP regime from scratch, which would coexist and compete with the multilateral system in place today. Such a move would take its starting point in one or several IP jurisdictions, where new types of IPRs would be codified. Examples might include a "commercialization patent," granted in exchange for the commitment to make and sell a substantially novel product;[330] an "inclusive patent" that reduces the exclusivity from a property to a liability rule;[331] or a completely new, self-tailored system of patents and other IPRs, where innovators would receive a basic level of protection and could then add more rights and legal remedies in exchange for a fee.[332] These optional, less exclusivity-prone regimes could reduce demand for conventional IPRs and, after a certain tipping point, ultimately even replace these networks of full exclusivity.[333] Users of the alternative system would then push for its recognition on the international level, where a competing multilateral system would emerge, which countries could adopt next to the existing system.

The aforementioned scenario would, at best, take decades to become reality. Similarly unrealistic is a consensus of 190+ states in favor of a fundamental reset of the multilateral IP system. As long as one state resists measures to contain the expansive network effect of the system—for example, by deleting Arts. 2(1) and 9(1) TRIPS and thus by decoupling TRIPS from Paris and Berne, by introducing fixed levels of exclusivity instead of minimum rights or by a cap of the fee-based income of WIPO in relation to its total budget (say 50%)—little to nothing will change. Because of the strong vested interest of the global IP community, such stasis presents the most realistic scenario.

From the perspective of national economic policy, the only sensible conclusion from all this is that international IP policy can hardly make a

---

329. On the pending but not very dynamic debates in the WIPO Standing Committee for Copyright and Related Rights on exceptions and limitations; *see Limitations and Exceptions*, WORLD INTELL. PROP. ORG., http://www.wipo.int/copyright/en/limitations/ (last visited Jan. 20, 2022).

330. Ted Sichelman, *Commercializing Patents*, 62 STAN. L. REV. 341 (2010).

331. 1 GEERTRUI VAN OVERWALLE, KRITIKA, ESSAYS ON INTELLECTUAL PROPERTY 206-77 (P. Drahos, G. Ghidini & H. Ullrich eds., 2015).

332. Abraham Bell & Gideon Parchomovsky, *Reinventing Copyright and Patent*, 113 MICH. L. REV. 231 (2014).

333. *See supra* Part II.

unique contribution to local innovation and growth because it is a global legal standard that all countries have adopted. Instead of putting heavy emphasis on this topic, it makes sense to sign up to the basic building blocks of the multilateral IP system and potentially to some additional modules according to local demand for protection, and otherwise focus on non-IP mechanisms such as prizes, grants, tax credits, or in-house government research to foster local innovation.[334] These policy areas appear to be more targeted, and also promising, than fine-tuning IP protection. Ultimately, the global triumph of IP goes hand in hand with its demise as a meaningful regulatory tool.

334. Daniel J. Hemel & Lisa Larrimore Ouellette, *Knowledge Goods and Nation-States*, 101 MINN. L. REV. 167, 171-72 (2016); Daniel J. Hemel & Lisa Larrimore Ouellette, *Innovation Policy Pluralism*, 128 YALE L.J. 544, 549, 588-89 (2019).