

UIC

REVIEW OF INTELLECTUAL PROPERTY LAW



CLOSING THE PATENT LOOPHOLE ACROSS BORDERS

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ABSTRACT

In the face of globalization and technological developments, the legal premise that patents are territorial rights is under strain. Historically, courts have admitted defeat to territorial restraints, and thus refused to find in favor of patent infringement when a portion of the infringing activities is occurring outside the relevant country of protection. This issue has persisted largely because of a formulaic assumption that all claim elements must be achieved and that all components of the infringing acts must occur within the country where the patent was allegedly infringed. But as inventions increasingly cross borders, it has become doubtful whether such rigid legal expectations conforming to territoriality are sustainable. There is a growing trend in many jurisdictions towards engaging in more far-reaching practices of localizing infringements, which serve to protect the patent holder from suffering as a result of substantive discrepancies between different countries. Most of these forms of extraterritorial application, however, have been inconsistent at best and unsubstantiated at worst. Courts have devised undefined tests, such as localizing patent infringement based on the “substance” or “core” of the invention, where commercial effects can be felt within the country of protection, or where the infringing activities manifest control and accrue benefits deriving from use of the invention. In the face of these legal irregularities ongoing in different jurisdictions, patent holders and users are combating against unpredictability and lack of uniformity while states are confronted with lack of control.

This article submits a new proposal to closing this patent loophole. It is argued that a closer emphasis on what is the proper substantive framework for each infringing conduct is called for, linking technical appropriation of the invention closer to a technical analysis while considering commercial appropriation under its rightful commercial lens. For what amounts to technical appropriation, courts would defer to what is the locus of the technical contribution of the invention as it is manifested in the infringing conduct, whereas for commercial appropriation, courts would instead turn to what is the locus of the commercial impact and control in the infringing activities. With that close link to proximity, traditional territorial norms are maintained without absolute cost to cross-border patent enforcement. What has been identified as the relevant nexus then forms the basis for a

comparative analysis, which is carefully curtailed and defined. It seeks to limit an extraterritorial application to where it is actually necessary in light of the competing sovereign, public and private interests at stake. A more finite comparative approach such as this fills an existing gap, where courts routinely localize infringements with little to no consideration as to how that impacts foreign conduct and states. This altogether strikes a proper and much needed balance between efficacious and predictable patent protection across borders, while still respecting fundamental concerns owed to sovereignty and uniformity.



Cite as Mattias Rättzén, *Closing the Patent Loophole Across Borders*, 20 UIC REV. INTELL. PROP. L. 358 (2021).

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I. INTRODUCTION

It is a legal maxim that patents are territorial rights. Patents are granted on a national basis and patent holders seeking protection in multiple countries are invited to procure multiple national rights. Yet the traditional notions of territoriality in patent law are under stress. It is acknowledged that there is an inherent struggle between the territorial nature of patent rights and the transnational realities of commerce and technology.¹ Territoriality of patent law is based on the assumption that the scope of the exclusive rights is limited to each national grant. But just as commerce is increasingly global, infringing activities coincide less neatly with national borders. Depending on the technical field, the subject matter is also becoming prone to disseminate across borders.

Territoriality is an inherently ambiguous concept.² With legislatures largely remaining passive, with some exceptions in the United States, and with little to no guidance at an international level, courts in different jurisdictions have long struggled with understanding its legal constraints and extensions. Historically, courts have been largely hostile towards enforcing patents outside their respective country of protection,³ and rightly so, but in the face of globalization that premise is becoming less convincing. While some courts in the United States have persisted, although inconsistently, in refusing to find for

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¹ There is an abundance of legal literature on the topic, *see generally* John R. Thomas, *Litigation Beyond the Technological Frontier: Comparative Approaches to Multinational Patent Enforcement*, 27 LAW & POLY INT'L BUS. 277 (1996); Timothy R. Holbrook, *Extraterritoriality in U.S. Patent Law*, 49 WM. & MARY L. REV. 2119 (2008); Timothy A. Cook, *Courts as Diplomats: Encouraging an International Patent Enforcement Treaty through Extraterritorial Constructions of the Patent Act*, 97 VA. L. REV. 1181 (2011); Rochelle C. Dreyfuss, *Resolving Patent Disputes in a Global Economy*, in PATENT LAW AND THEORY: A HANDBOOK OF CONTEMPORARY RESEARCH 610 (Toshiko Takenaka ed., 2008); Marketa Trimble, *GLOBAL PATENTS: LIMITS OF TRANSNATIONAL ENFORCEMENT* (2012); Nari Lee, *Fragmented Infringement of Computer Program Patents in the Global Economy*, 48 IDEA 345 (2007); Rainer Moufang, *The Extraterritorial Reach of Patent Law*, in PATENTS AND TECHNOLOGICAL PROGRESS IN A GLOBALIZED WORLD 601 (Josef Drexler et al. ed., 2009); Agnieszka Kupczok, *Enforcement of Patents on Geographically Divisible Inventions: An Inquiry into the Standard of Substantive Patent Law Infringement in Cross-Border Constellations* (Ph.D. dissertation, Ludwig Maximilian University, 2014).

² *See* Paul Edward Geller, *International Intellectual Property, Conflicts of Laws and Internet Remedies*, 22 E.I.P.R. 125, 134 (2000) (noting the uncertainties that exist in localizing infringing acts).

³ *See* *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 533 (1972) (no infringement where separate components were manufactured domestically and then assembled and sold abroad); *Akre-Vickery*, Norwegian Supreme Court, Rt. 1933, 529 (Nor.) (no infringement for products ordered and sold from Norway, but which were manufactured abroad and had never entered Norwegian territory).

infringement when infringing activities that fall under patent claims have been geographically divided,⁴ courts in other countries, such as Germany⁵ and the United Kingdom⁶, have considered more expansive readings of patent statutes and patent claims as a legal necessity.

To illustrate the questions that may arise in this context, assume that a patent covers a system for a machine learning model, which involves the use of computing devices configured to receive sourced data, process data, configure an algorithm and to complete a particular machine learning model. For each claimed configuration there is a set of routine operations to be completed, including receiving requests to perform the computational services and validating such requests. Further assume that a third party uses the same machine learning technique to create a mobile application that sources substantial amounts of user data and then reads and transforms that data into usable content in the application. If each operation is performed on servers in different countries, and if users whose data is sourced and users who use the mobile application reside in different countries, some where there is a patent and some where there is none, where does a prospective infringement take place? A number of possibilities could be thought of, ranging from where data is collected and where servers are located to where users are residing. Each point of contact could in theory be sufficient to render liability, but that seems to ignore that a full and complete infringement is not performed anywhere. The inclination to catch all infringing acts in one go clearly struggles with the fact that patent protection remains territorial. Furthermore, if patent protection has not been procured in all implicated countries, or if there are differences in patentability, there could be large legal gaps. This in turn raises the question whether cross-border conduct manifesting in those jurisdictions should remain to be treated with impunity in other jurisdictions where there is an enforceable patent. Inventions such as the one described are becoming increasingly commonplace, but despite that there is currently no universal solution in place to articulate clear and uniform criteria for balancing long-standing territorial legal norms with new technological and commercial realities.

From the perspective of right holders, disparate legal treatment of inventions in different jurisdictions is harmful to the spread of technology. Markets are at risk of becoming partitioned if an infringement can freely occur in one country, but not in another. Moreover, the development of technology that is susceptible to transnational use is at risk of being deterred if a lower level of protection afforded in one country is expanded extraterritorially, thus avoiding infringement anywhere for prospective infringers. From the perspective of users, the opposite situation in which a higher level of protection is expanded extraterritorially would be deemed an illegitimate and unfair commercial practice, threatening international trade and ultimately impeding public access. Sovereign interests are caught in the middle between these extremes. The grant of exclusive

⁴ *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1315–16 (Fed. Cir. 2005) (no infringement of a process claim, but infringement of a system claim, where not all steps were performed domestically).

⁵ *Prepaid-Karten II*, Court of Appeals of Düsseldorf, Dec. 10, 2009, 2 U 51/08, (Ger.) (infringement of a method claim where there was an intention to effect and enjoy a commercial advantage in the domestic market).

⁶ *Illumina, Inc. v. Premaitha Health Plc*, [2017] England and Wales High Court, EWHC 2930 (Pat) at 507–08 (U.K.) (infringement of a method claim where the substance of the invention was exercised domestically through collecting material subsequently used to perform the method abroad).

patent rights is a benefit afforded by the state to further national public policies. There is an assumption, originating from notions of territoriality, that such grants will not interfere with foreign activities, just as it is assumed that foreign activities will not themselves interfere with the exercise of patent rights. The different interests at stake are in competition with each other, and if left unrestrained, are at risk of exhausting one another.

With multiple jurisdictions implicated in the case of divided patent infringement, and with different substantive norms and interpretations, it is clear that finding common ground or achieving clarity is acute in avoiding a patent loophole. This article proposes a new approach to closing that loophole. Whereas previous theories have primarily focused on localizing infringements based on the “substance” or “core” of the invention,⁷ substantial effects,⁸ commercial effects,⁹ a dual infringement approach,¹⁰ or the degree of domestic control and accrued benefits,¹¹ this article argues that none of these approaches coherently and sufficiently grasp the differing circumstances that arise in patent infringement contexts. There is a tendency to treat all infringing scenarios under the same legal lens, even if there are clear substantive differences in their legal treatment. It is argued that this calls for a closer emphasis on what is the proper substantive framework for each infringing conduct, linking technical appropriation of the invention closer to a technical analysis while considering commercial appropriation under its rightful commercial lens. This substantive legal split provides uniformity and certainty where it is needed the most. What has been identified as the relevant nexus then forms the basis for a comparative analysis which seeks to limit an extraterritorial application to those situations where it is actually necessary in light of the competing sovereign, public, and private interests at stake.

II. THE MULTI-JURISDICTIONAL LANDSCAPE FOR PATENT INFRINGEMENT

The environment for exercising inventions is becoming increasingly multi-jurisdictional in nature. While there is nothing new with products and services incorporating inventions crossing borders, the extension of patent protection to intangible subject matter in particular has brought an overwhelming exchange of protected information. The use of an invention across borders raises a series of novel and complex questions in the case of patent infringement. These questions stem from the fact that cross-border conduct necessarily means that the activity subject to legal scrutiny is not occurring fully and completely within a single country of protection.

A. Divided Patent Claims

The patent claim defines the scope of the invention in technical terms. Patent claims customarily include a preamble, a transitional phrase, and a body. The preamble identifies the category of the invention, including but not limited to

⁷ *Menashe Bus. Mercantile Ltd. v. William Hill Org. Ltd.*, [2002] England and Wales Court of Appeal, EWCA Civ 1702 at 33 (U.K.); Iris Haupt, *Territorialitätsprinzip in Patent- und Gebrauchsmusterrecht bei grenzüberschreitenden Fallgestaltungen*, GRUR 187, 189 (2007).

⁸ Melissa F. Wasserman, *Divided Infringement: Expanding the Extraterritorial Scope of Patent Law*, 82 N.Y.U. L. REV. 281, 302–03 (2007).

⁹ *Prepaid-Karten II*, Court of Appeals of Düsseldorf, Dec. 10, 2009, 2 U 51/08 (Ger.).

¹⁰ *Holbrook*, *supra* note 1, at 2183–85.

¹¹ *Decca, Ltd. v. United States*, 544 F.2d 1070, 1083 (Ct. Cl. 1976).

a product, system or method, and in doing so may define the object of the invention.¹² The transitional phrase acts as a link between the preamble and the specific elements of the claim, as defined in the body.¹³ It is the body of the patent claim that must recite the elements, and thus also the limitations, of the invention.¹⁴ Divided patent claims are such claims that include elements capable of being divided between different countries.¹⁵ That is, even if the patent grant is national, the invention is such that it can be carried out across borders. This is dependent on the claim category and technology at issue. Product and system claims encompassing specific components or parts can sometimes be manufactured and distributed with ease separately, only to be assembled or consummated somewhere else. Method claims may include a series of steps that must be performed to achieve the intended technical effect. Patents extending to intangible subject matter such as software, artificial intelligence and telecommunications often rely on method or system claims to properly define the scope of the invention. Information technology necessarily implicates that information can be transferred from one location to another, making it no surprise that this, coupled with the pace of globalization, makes these types of inventions particularly prone to be exercised across borders. Finally, biotechnology inventions also pose unique challenges, as biological material is often reproduced and distributed through components and subsequently analyzed as transferrable information which can be distributed to other countries.¹⁶

A classic divided patent claim situation is thus where there is partitioning of the making or use of the invention between different countries. If the wording of the claim stipulates a series of components or steps, and some of those are located or performed outside the country of protection, then there is a serious question of where a patent infringement occurs, if at all. This makes the situation for cross-border patent infringement quite different from that of copyright and trademarks. A text or a piece of music cannot be divided between countries without rendering it useless, nor can the words of a logo be partly used in different countries. But for patents, the property is not always defined through single components or steps, and the intended technical effect behind an invention can sometimes be achieved despite the fact that everything does not exist or is performed at the same time and place.

B. Divided Infringing Acts

Not only the patent claim, but also the infringing activity can be subject to partitioning between countries.¹⁷ Even if an exclusive right is statutorily provided in singular terms, it can sometimes be fragmented into portions which in turn each

¹² Keith A. Zullo & Raivo A. Karmas, *Anatomy of an Issued Patent*, 53(4) CEREAL FOODS WORLD 236, 238–39 (2008).

¹³ *Id.*

¹⁴ *Id.*

¹⁵ Mark A. Lemley et al., *Divided Infringement Claims*, 33 AIPLA Q. J. 255, 256 (2005).

¹⁶ See Jennifer L. Schuster, *Combining the Components of Life: The Application of Patent Extraterritoriality Doctrine to Biotechnology*, 83 IND. L.J. 363, 386–92 (2008) (explaining the potential issues of extraterritoriality that could arise for biotechnology inventions).

¹⁷ A related partitioning of infringing conduct, which is not covered in this article, is when the conduct is divided between different actors. No single party performs all steps listed in a patent claim, but rather the infringing activities are performed collectively by two or more parties, whether domestically or across borders. See Nathaniel Grow, *Resolving the Divided Patent Infringement Dilemma*, 50 U. MICH. J.L. REFORM 1 (2016).

can be performed in different locations.¹⁸ One such situation is when the invention at issue is a divided patent claim. If the invention concerns a product comprising of multiple components or parts, and if those are made and assembled separately in different countries, the question arises where the act of making is considered to legally occur. If the invention instead concerns, for example, a software or business method encompassing multiple steps, the issue similarly turns to where use of that software or method is deemed to occur. Another and more common case for fragmented infringing activities exists, regardless if a divided patent claim is at issue, when the act itself presupposes multiple steps. This is the case for offering for sale and selling,¹⁹ which necessarily assumes that there is both an act of offering or selling and an intended recipient. The question then turns to where the act of offering or selling is deemed to legally occur, if the recipient is located in a different jurisdiction. That issue is also replicated for cases of indirect patent infringement.

III. TERRITORIALITY OF PATENT LAW

A. *The Traditional Territorial Approach*

Patents have been named as the most territorial form of intellectual property rights.²⁰ Whereas other intellectual property right statutes are often silent on territorial scope, patent statutes in such jurisdictions, such as the United States and the United Kingdom,²¹ expressly limit the exclusive rights to the given territory. Still, even in the absence of an express statutory territorial limitation, it has never been doubted that the exclusive rights afforded by national patents are limited to the respective country of protection. This fundamental assumption stems principally from sovereignty and the independence of patent rights.²²

The effective power of a state to legislate is inherently limited to the territorial reach of the state.²³ As phrased by Mr. Justice Story of the United States Supreme Court in 1824, “[t]he laws of no nation can justly extend beyond its own territories, except so far as regards its own citizens. They can have no force to control the sovereignty or rights of any other nation, within its own jurisdiction.”²⁴

¹⁸ Lee, *supra* note 1, at 365–66; Moufang, *supra* note 1, at 605–12.

¹⁹ Denise W. DeFranco & Adrienne N. Smith, *Technology and the Global Economy: Progress Challenges the Federal Circuit to Define the Extraterritorial Scope of U.S. Patent Law*, 34 *AIPLA Q. J.* 373, 378–83 (2006); Andrew S. Kerns, *Fight or Flight: Traversing the Extraterritorial Battlefield of Modern United States Patent Law*, 63 *BAYLOR L. REV.* 462, 469–73 (2011).

²⁰ Donald S. Chisum, *Normative and Empirical Territoriality in Intellectual Property: Lessons from Patent Law*, 37 *VA. J. INT’L L.* 603, 605 (1997).

²¹ 35 U.S.C. § 271(a) (2021) (“Whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.”); The Patents Act, 1977 § 60(1) (U.K.) (“a person infringes a patent for an invention if . . . he does any of the following things in the United Kingdom in relation to the invention without the consent of the proprietor of the patent.”).

²² Toshiyuki Kono & Paulius Jurčys, *General Report*, in *INTELLECTUAL PROPERTY AND PRIVATE INTERNATIONAL LAW: COMPARATIVE PERSPECTIVES* 15–16 (Toshiyuki Kono ed., 2012); Jürgen Basedow, *Foundations of Private International Law in Intellectual Property*, in *INTELLECTUAL PROPERTY IN THE GLOBAL ARENA JURISDICTION, APPLICABLE LAW, AND THE RECOGNITION OF JUDGMENTS IN EUROPE, JAPAN AND THE US* (Jürgen Basedow et al. ed., 2010).

²³ Frederick A. Mann, *The Doctrine of Jurisdiction in International Law*, 111 *RECUEIL DES COURS* 1, 26–30 (1964); Frederick A. Mann, *Doctrine of International Jurisdiction Revisited After Twenty Years*, 186 *RECUEIL DES COURS* 1, 20 (1984); Cedric Ryngaert, *Jurisdiction in International Law* 18–19, 39–41 (Ph.D. dissertation, Leuven University, 2007).

²⁴ The Appollon, 22 U.S. 362, 370 (1824).

But sovereignty signifies not only the boundaries of a state's own laws. The independence and equality of state sovereignty likewise denotes a duty to recognize the same territorial limits of other states.²⁵ This was most famously established in the *S.S. Lotus* case.²⁶ The question posed was whether Turkey had violated international law by assuming jurisdiction over a French ship which had docked within Turkish waters for alleged criminal offenses having occurred on the high seas.²⁷ The Permanent Court of International Justice held that international jurisdiction is inherently territorial, and that a state may not exercise its power within the territory of another state.²⁸ But notwithstanding that premise, the Court also concluded that a state is not prohibited from exercising prescriptive jurisdiction within its own territory, in respect of acts which have taken place abroad.²⁹ Rather, states have a substantial margin of appreciation in stipulating the conditions for the applicability of national law.³⁰ In this sense, the exercise of prescriptive jurisdiction is exclusive and concurrent at the same time. It is exclusive in the sense that no other states may interfere with the sovereignty of another, but concurrent in the sense that each state may exercise jurisdiction independently over the same act.

The notion of territorial jurisdiction that was articulated in *S.S. Lotus* is still the fundamental basis for asserting jurisdiction,³¹ and is now understood to encompass two distinct principles of jurisdiction: subjective and objective territoriality. Subjective territoriality refers to when states exercise jurisdiction over acts commenced within the state but consummated abroad, whereas objective territoriality is when states exercise jurisdiction over acts commenced abroad but consummated within the state.

The grant of a patent is an act of the state. It is an administrative decision, undergoing the most rigorous and burdensome examination procedure amongst all intellectual property rights. While international routes for simplifying patent application procedures in multiple jurisdictions exist, agencies of the state in each country remain the ultimate arbiters of whether or not to grant a national patent.³² International standards in patent law merely set a minimum level of harmonization, as articulated foremost in the Paris Convention³³ and the TRIPS

²⁵ *Island of Palmas (United States v. Netherlands)*, 2 R. INT'L ARB. AWARDS 829, 838–39 (1928). *See also* *Barcelona Traction, Light and Power Co., Ltd. (Belg. v. Spain)*, [1970] ICJ REP. 3, at 105 (separate opinion of Judge Fitzmaurice; holding that state jurisdiction is not unlimited in public international law, as it involves “for every State an obligation to exercise moderation and restraint as to the extent of the jurisdiction assumed by its courts in cases having a foreign element, and to avoid undue encroachment on a jurisdiction more properly appertaining to, or more appropriately exercisable by, another State.”).

²⁶ 1927 P.C.I.J. (ser. A) No. 10 (1927).

²⁷ *Id.* at 5.

²⁸ *Id.* at 18–19.

²⁹ *Id.* at 19.

³⁰ *Id.* at 18–19. *See also* *Barcelona Traction, Light and Power Co., Ltd. (Belg. v. Spain)*, [1970] ICJ REP. 3, at 105 (separate opinion of Judge Fitzmaurice; holding that “international law does not impose hard and fast rules on States delimiting spheres of national jurisdiction . . . but leaves to States a wide discretion in the matter.”).

³¹ Harold G. Maier, *Jurisdictional Rules in Customary International Law*, EXTRATERRITORIAL JURISDICTION IN THEORY AND PRACTICE 65–69, 83–84, 90 (Karl M. Meessen ed., 1996); Ryngaert, *supra* note 23, at 38.

³² *See* Article 4bis of the Paris Convention; Cameron Hutchison & Moin Yahya, *Transnational Telecommunications Patents and Legislative Jurisdiction*, 21 PAC. MCGEORGE GLOBAL BUS. & DEV. L.J. 45, 52–53 (2008).

³³ The Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, 21 U.S.T. 1583, U.N.T.S.305 [hereinafter Paris Convention].

Agreement³⁴. In the absence of a global patent, each state has the onus of crafting its own laws and policies to best further the incentive to innovate and balance it against the interests of the public. The international patent system is therefore based on the prosecution of independent national rights, sharing some, but not exhaustive, substantive commonalities to obtain a wider scope of protection.³⁵

The translation of the principle of territoriality, as underpinned in the international patent system, has been less than obvious. Historically, courts, most notably in the United States, opted for a more narrow and strict understanding. Going as far back as 1856, the United States Supreme Court held in *Brown v. Duchesne* that, “these acts of Congress do not, and were not intended to, operate beyond the limits of the United States; and as the patentee’s right of property and exclusive use is derived from them, they cannot extend beyond the limits to which the law itself is confined.”³⁶ That same notion later echoed in *Dowagiac Mfg. Co. v. Minn. Moline Plow Co.*, reaffirming that “[t]he right conferred by a patent under our law is confined to the United States and its territories and infringement of this right cannot be predicated of acts wholly done in a foreign country.”³⁷ At the time, these restrictive statements in the United States were in line with what was understood as a presumption against extraterritoriality, not exclusive to patent law but applicable to all federal statutes.³⁸ The presumption against extraterritoriality functions as a canon of statutory interpretation mandating that legislation in the absence of a contrary, clear, and affirmative intent only operates within the territorial jurisdiction of the state.³⁹ If congressional intent can be found in the statute supporting that it can be applied extraterritorially, the question turns to whether the “focus” of the statute involved conduct that occurred abroad. If that is the case, then the application of the statute to such foreign conduct is deemed an impermissible extraterritorial application, even if some other conduct occurred within the United States.⁴⁰

Somewhat more recently, that presumption was reaffirmed in the context of patent law in *Deepsouth Packing Co. v. Laitram Corp.*,⁴¹ where the United States Supreme Court was confronted with whether manufacturing of separate components to be assembled and sold abroad was an infringement within the United States. The Court held it was not, stressing that the language of the statute makes it clear that it is not an infringement to make or use a patented product outside of the United States.⁴² The patent at issue protected the combination of components, so the manufacturing of separate components could not amount to an infringement, even if later assembled abroad, in the absence of congressional mandate.⁴³ That express mandate later arrived in 35 U.S.C. § 271(f), which prohibits the supply of unassembled components of a patented invention to or from the United States if their combination is induced abroad. But notwithstanding that

³⁴ The Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 [hereinafter TRIPS Agreement].

³⁵ See Article 4bis of the Paris Convention.

³⁶ 60 U.S. 183, 195 (1856) (no infringement in the United States to use an invention on a foreign vessel docking at national ports).

³⁷ 235 U.S. 641, 650 (1915) (denying damages for infringing products sold abroad not attributable to an infringement in the United States).

³⁸ *Am. Banana Co. v. United Fruit Co.*, 213 U.S. 347, 357 (1909).

³⁹ *Morrison v. Nat’l Australia Bank Ltd.*, 561 U.S. 247, 255, 261 (2010).

⁴⁰ *Id.* at 249, 266–67; *RJR Nabisco, Inc. v. European Cmty.*, 136 S. Ct. 2090, 2101 (2016).

⁴¹ 406 U.S. 518 (1972).

⁴² *Id.* at 527.

⁴³ *Id.* at 528.

subsequent legislative intervention, the decision in *Deepsouth* does reflect a reluctance from courts to expand the application of national patent statutes to conduct occurring abroad. That same traditional sentiment was even more recently adhered to in *Microsoft Corp. v. AT&T Corp.*⁴⁴ This case turned on the interpretation of 35 U.S.C. § 271(f), specifically whether it was an infringement in the United States by sending master discs containing infringing software from the United States, when that software was later installed on foreign computers.⁴⁵ The United States Supreme Court answered this in the negative, excluding software in abstract as opposed to tangible form from constituting a component under the statute.⁴⁶ The Court also considered that no infringing copies were supplied from the United States, since the copies of the software did not actually exist until installation was made on the foreign computers abroad.⁴⁷ The presumption against extraterritoriality was used as a vehicle to support the narrow reading of 35 U.S.C. § 271(f), explaining that “[t]he presumption that United States law governs domestically but does not rule the world applies with particular force in patent law.”⁴⁸ The Court was not blind to the very real risk that its decision could create a legal loophole for software patents, but deferred that potential problem to Congress, should it wish to close it.⁴⁹

The well-known case *NTP, Inc. v. Research in Motion, Ltd. (NTP II)* reveals a similar restrictive approach to cases of divided infringement of method patents. Here, the Federal Circuit held that a process, but not a system,⁵⁰ cannot be deemed to be used within the United States, as required under 35 U.S.C. § 271(a), if any single step of the method is performed abroad.⁵¹ The method claim in the patent at issue in that case, involving a remote e-mailing system, was therefore not infringed when one of the steps was performed outside the United States.⁵² The outcome in *NTP (II)* is akin to the approach taken in *Deepsouth*, in that it presupposes that all constituent parts of the invention must be localized to the relevant country of protection. The argument originates from what is commonly known as the “all elements rule,” which makes it clear that for there to be direct patent infringement, the product or service must include every claim element.⁵³ But when that rule is enforced rigorously through a territorial lens in cross-border contexts, what is otherwise so basic and fundamental makes little sense. It ignores that infringing parties can circumvent the exclusive patent rights by organizing the infringing activities, whether that is intentional or following the flow of modern business patterns, so that parts of them are completed in different countries.

⁴⁴ 550 U.S. 437 (2007).

⁴⁵ *Id.* at 448–49.

⁴⁶ *Id.* at 449–50.

⁴⁷ *Id.* at 452–54.

⁴⁸ *Id.* at 454–55.

⁴⁹ *Microsoft Corp.*, 550 U.S. at 456.

⁵⁰ *NTP, Inc.*, 418 F.3d at 1317.

⁵¹ *Id.* at 1318.

⁵² *Id.* at 1322–23.

⁵³ See *Warner-Jenkinson v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29 (1997) (all individual elements in a claim are deemed material, both for direct infringement and infringement under the doctrine of the equivalents); *Eli Lilly v. Actavis U.K. Ltd. & Ors*, [2017] United Kingdom Supreme Court, UKSC 48, per Neuberger at 65–66 (U.K.) (an immaterial variant achieving substantially the same result as the invention, as defined in the claim, in substantially the same way can still infringe). For a more detailed comparative view, also encompassing Germany and Japan, see William T. Ralston, *Foreign Equivalents of the U.S. Doctrine of Equivalents: We’re Playing in the Same Key But It’s Not Quite Harmony*, 6 CHI.-KENT J. INTELL. PROP. 177, 185–87 (2007).

B. The Utopia of Substantive Harmonization

Since patents are territorial rights granted on a national basis and regulated by national laws, substantive differences in patent law and practice between different jurisdictions is a natural phenomenon. While some of these differences are trivial, others are much more comprehensive. Perhaps most important, however, are the exclusive rights conferred to the patent holder. Although the TRIPS Agreement in Article 28(1) does list the exclusive rights to make, use, offer for sale, sell, and import patented products and products obtained by patented processes, the meaning of these rights, and hence their scope, is subject to national interpretation. This becomes all the more important, and all the more obvious, in cross-border infringement cases, as will be discussed further below.

Not surprisingly, harmonization of patent law has sometimes been phrased as the retort to territoriality. If patent law would be harmonized across the world, then it would not matter which law is applied, and to what extraterritorial extent, in a given case.⁵⁴ But that is an oversimplification. As the above-mentioned experiences from the United States confirm, territoriality is a concept that commands the legal treatment of both the infringing act and the infringed claim. Even if there would be no conflict of patent laws, there would be a conflict of patent rights. An all elements rule, if strictly enforced everywhere, would still mean that there would be no patent infringement anywhere. The real problem, therefore, stems from distinct patent rights.

The only remaining solution to achieve full harmonization would then be a single, unitary patent right.⁵⁵ The benefits of unitary intellectual property rights are many, and are well, although certainly not universally,⁵⁶ recognized. Conflicts of both laws and rights are avoided, thus improving predictability and certainty, and there is great promise in substantive and procedural efficiencies. In Europe, unitary intellectual property rights have already existed for decades, but never to the exclusion of national intellectual property rights. Rather, they have been used to supplement existing, and already harmonized to a substantial degree, intellectual property systems in the different Member States. The unitary patent is one such example, which even though it has yet entered into force it is seen as a promising and much-needed move towards greater uniformity and efficiency in the European patent system.

But it is one thing to achieve a more limited political consensus at a regional level. It is another thing entirely to do so at a global level. If history has taught us anything, it is that international negotiations in intellectual property law, including patent law,⁵⁷ are exceptionally difficult and slow-moving. With

⁵⁴ Dreyfuss, *supra* note 1, at 633–34; Dongwook Chun, *Patent Law Harmonization in the Age of Globalization: The Necessity and Strategy for a Pragmatic Outcome*, 93 J. PAT. & TRADEMARK OFF. SOC'Y 127, 137–38 (2011).

⁵⁵ See Rochelle Dreyfuss, *Enforcing Intellectual Property Claims Globally When Rights are Defined Territorially*, in *THE INTERNET AND THE EMERGING IMPORTANCE OF NEW FORMS OF INTELLECTUAL PROPERTY* (Daniel J. Gervais & Susy Frankel eds., 2016).

⁵⁶ See Trimble, *supra* note 1, at 16–18; Anthony D. Sabatelli, *Impediments to Global Patent Law Harmonization*, 22 N. KY. L. REV. 579, 582–92 (1995); Randy L. Campbell, *Global Patent Law Harmonization: Benefits and Implementation*, 13 IND. INT'L & COMP. L. REV. 605, 620–27 (2003).

⁵⁷ See Philippe Baechtold et al., *International Patent Law: Principles, Major Instruments and Institutional Aspects*, in *INTERNATIONAL INTELLECTUAL PROPERTY: A HANDBOOK OF CONTEMPORARY RESEARCH* 38–39, 70–71 (Daniel J. Gervais ed., 2015).

optimal levels of protection likely to be diverging, in particular between developing and developed countries, unification would require significant political and economic compromises while not necessarily bringer greater social welfare.⁵⁸ But even if we assume that harmonization would be a favorable step forward, it would still be insufficient on its own. Substantive norms and rights, even if identical, would be liable to be subject to different interpretations. A multinational court system, similar to what is also proposed in the context of the unitary patent in Europe and which is dedicated to resolving patent disputes, would therefore be needed.⁵⁹

C. Procedural Consolidation through Adjudication of Foreign Patents

While it is now commonplace to procure rights in multiple jurisdictions, enforcement is still predominantly limited to suing on a country-by-country basis. If infringement is occurring in multiple jurisdictions where there is patent protection, then to the extent that the patent holder believes this to be warranted, a suit may be brought in each of those jurisdictions. The most invoked and traditional basis for such a national enforcement routine has been territoriality.⁶⁰ The Federal Circuit held as late as 2007 in *Voda v. Cordis Corp.* that “a patent right to exclude only arises from the legal right granted and recognized by the sovereign within whose territory the right is located. It would be incongruent to allow the sovereign power of one to be infringed or limited by another sovereign’s extension of its jurisdiction.”⁶¹ But it would be misleading to characterize this statement as a universal and current norm. While it is true that there has historically been a trend against adjudicating foreign patents, including other intellectual property rights,⁶² in many jurisdictions, the tide has been turning for the last decades towards permitting that form of procedural consolidation. For instance, the position in the United Kingdom is now deemed to have reversed after the Supreme Court ruled, contrary to previous theories and beliefs, that the respect for foreign sovereignty does not bar adjudicating foreign intellectual property

⁵⁸ Dreyfuss, *supra* note 1, at 634–35; TRIMBLE, *supra* note 1, at 16–17; John F. Duffy, *Harmony and Diversity in Global Patent Law*, 17 BERKELEY TECH. L.J. 685, 703–06 (2002); Christopher Heath, *Harmonisation of International Patent Law? – A Reply to Straus and Klunker*, 39 IIC 210, 214 (2008).

⁵⁹ Trimble, *supra* note 1, at 17.

⁶⁰ Thomas, *supra* note 1, at 278.

⁶¹ 476 F.3d 887, 902. (Fed. Cir. 2007).

⁶² For decisions refusing to adjudicate foreign patents, *see* Lampen, Imperial Court of Justice, 1890, 19, 32–33 JW 280, 107/90 I (Ger.); *Yema v. Jenny e.a.*, High Court of Paris, [1974] 63 Rev. crit. DIP 110, 111 (Fr.). For decisions refusing to adjudicate foreign copyright, *see* Tyburn Productions Ltd. v. Conan Doyle, [1991] England and Wales High Court, Ch. 75 (U.K.); *Duhan v. Radius Television Prod. Ltd.*, [2007] Irish High Court, IEHC 292 (Ir.); *Atkinson Footwear Ltd. v. Hodgskin Int’l Servs. Ltd.*, [1994] NZHC31 IPR 186, 190 (N.Z.); *Gallo Africa Ltd. and Others v. Sting Music (Pty) Ltd.*, [2010] Supreme Court of Appeal 40/2010 ZASCA 96 (S. Afr.).

rights.⁶³ Similarly, courts in Germany⁶⁴ and Japan⁶⁵ have now held that territoriality in itself does not impede assuming adjudicative jurisdiction in intellectual property cases.

Adjudicating multiple patents before a single, national court is an attractive option for several reasons. It can significantly reduce enforcement costs and time expenditures and promote a more uniform application of the facts, hence avoiding disparate national judgments.⁶⁶ But however attractive that may be, consolidating infringement claims of national patents has its limitations. It is frequently recognized that questions of registration and validity of patents, which are routinely counterclaimed in infringement cases, are subject to exclusive jurisdiction, both adjudicative and prescriptive, to each country where a patent has been granted.⁶⁷ Furthermore, while a single court will arguably be in a better position than diverse and isolated courts to recognize potential conflicting contacts and interests between jurisdictions,⁶⁸ patent rights continue to remain divided as a matter of law.

D. Procedural Harmonization Through a Choice of Law Approach

Another potential recourse that has been considered in an effort to resolve substantive discrepancies between the application of separate, national intellectual property statutes is a choice of law approach. The idea has been that, instead of having to apply multiple and potentially conflicting statutes, substantive gaps would in practice become harmonized through applying only a single law, as determined by the connecting factors associated with the choice of law rule. This new approach has gained the most popularity amongst academic reforms. Most notable are the Principles on Conflict of Laws in Intellectual Property (“CLIP Principles”)⁶⁹ and the American Law Institute Principles (“ALI Principles”).⁷⁰ Both of these bodies of rules stipulate that for ubiquitous infringements, such as infringements occurring on the internet, courts may apply a single law.⁷¹ Both the CLIP Principles and the ALI Principles propose that if the infringement takes place in every state in which the signals can be received, then the court may apply the

⁶³ *Lucasfilm Ltd. and Others v. Ainsworth and another*, [2011] United Kingdom Supreme Court, UKSC 39, [2012] 1 A.C. 208, 237, 243 (U.K.). However, more recently the Supreme Court appears to have withdrawn from this stance in *Unwired Planet* when it said that “[i]f the judgments of the English courts had purported to rule on the validity or infringement of a foreign patent, that would indeed be beyond their jurisdiction.” (emphasis added). See *Unwired Planet International Ltd. and another v. Huawei Technologies (U.K.) Co. Ltd. and another*, [2020] United Kingdom Supreme Court, UKSC 37, para. 63 (U.K.).

⁶⁴ *Flava/Erdgold*, German Federal Court of Justice, 1957, I ZR 9/54 GRUR 215, 218 (Ger.).

⁶⁵ *Fujimoto v. Neuron Co. Ltd.* (“Card Reader”), [S.Ct. of Japan], 2002, Minshu Vol. 56, No. 7, 1551 (Japan); *Coral Sand*, [Tokyo D. C.], 2003 1847 Hanrei Jihō (Japan).

⁶⁶ See Kendra Robins, *Extraterritorial Patent Enforcement and Multinational Patent Litigation: Proposed Guidelines for U.S. Courts*, 93 VA. L. REV. 1259, 1296–97 (2007).

⁶⁷ See Article 24(4) of the Recast Brussels I Regulation 1215/2012/EU and Case C-4/03, *Gesellschaft für Antriebstechnik mbH & Co. KG v. Lamellen und Kupplungsbau Beteiligungs KG*, EU:C:2006:457, paras. 22–24; *Voda v. Cordis Corp.*, 476 F.3d 887, 899, 904 (Fed. Cir. 2007).

⁶⁸ Dreyfuss, *supra* note 1, at 620.

⁶⁹ Max Planck Institute Principles for Conflict of Laws in Intellectual Property, 2011 [hereinafter CLIP Principles].

⁷⁰ American Law Institute Intellectual Property Principles Governing Jurisdiction, Choice of Law, and Judgments in Transnational Disputes, 2008 [hereinafter ALI Principles].

⁷¹ Other known proposals for reform are the Transparency Proposal on Jurisdiction, Choice of Law, Recognition and Enforcement of Foreign Judgments in Intellectual Property, 2009, and the Waseda Principles of Private International Law on Intellectual Property Rights, 2010.

law of the state having the closest connection.⁷² To determine which state has the closest connection with the infringement, the CLIP Principles state that all relevant factors shall be taken into account, including the infringer's habitual residence and place of business, the place where substantial activities in furtherance of the infringement were carried out, and the place where the harm is substantial in relation to the infringement.⁷³ On rare occasions, lower courts have referred to these academic reforms in decisions,⁷⁴ but in general courts have persisted in adhering to traditional rules of choice of law in intellectual property cases. The most practiced tradition is *lex loci protectionis*, which mandates an application of the law of the country where it is claimed that an infringement is occurring.⁷⁵ But even if we would in theory accept that only a single law applies, it must still be considered whether an infringement substantively occurs in each country. If the infringement spans multiple jurisdictions, and if we adhere to the restrictive covenant of territoriality as recognized above, the result would be that there is no infringement, and so the loophole would still roam openly.

E. The Devolution of Territoriality and Evolution of Extraterritoriality in Patent Law

1. Localization as the Real Problem Behind Territoriality

It has never been doubted that an infringement of an intellectual property right can only occur in the country of protection. Since that right only exists in each country, as a legal construction dictated by national law, it cannot by definition afford protection anywhere else. This is the real and very logical consequence of the territorial limitation of intellectual property rights.⁷⁶ However, unlike what the strict territorial approach suggests, it is commonly recognized that the principle of territoriality does not in itself bar taking facts into account which have occurred abroad, but which have legal significance.⁷⁷ A cross-border infringement is

⁷² CLIP Principles, Article 3:603(1); ALI Principles, Article 321(1).

⁷³ CLIP Principles, at Art. 3:603(2).

⁷⁴ See *Fairchild Semiconductor Corp. v. Third Dimension (3D) Semiconductor, Inc.*, 589 F. Supp. 2d 84, 90 (D. Me. 2008); *City of New York v. A-1 Jewelry & Pawn, Inc.*, 247 F.R.D. 296, 337–38 (E.D.N.Y. 2007); *Rundquist v. Vapiano SE*, 798 F. Supp. 2d 102, 132 (D.D.C. 2011).

⁷⁵ See Recital (26) and Article 8(1) of the Rome II Regulation 864/2007/EC; Lydia Lundstedt, TERRITORIALITY IN INTELLECTUAL PROPERTY LAW 297–304, 326–28 (Ph.D. dissertation, Stockholm University, 2016); Rita Matulionytė, *Law Applicable to Copyright: A Comparison of the ALI and CLIP Proposals*, 28–43 (2011); Sophie Neumann, *Ubiquitous and Multistate Cases*, in RESEARCH HANDBOOK ON CROSS-BORDER ENFORCEMENT OF INTELLECTUAL PROPERTY 506 (Paul Torremans ed., 2014) (with further references).

⁷⁶ Alexander Peukert, *Territoriality and Extra-territoriality in Intellectual Property Law*, in BEYOND TERRITORIALITY: TRANSNATIONAL LEGAL AUTHORITY IN AN AGE OF GLOBALIZATION 189 (Handl et al. ed., 2012); Eugen Ulmer, *General Questions—the International Conventions*, in INTERNATIONAL ENCYCLOPAEDIA OF COMPARATIVE LAW, Volume XIV, Copyright 5 (Eugen Ulmer & Gerhard Schrickler ed., 2007); Basedow, *supra* note 22, at 8; Marketa Trimble, *Advancing National Intellectual Property Policies in a Transnational Context*, 74 MD. L. REV. 203, 231 (2015).

⁷⁷ Peukert, *supra* note 76, at 198–202; Alexander von Mühlendahl & Dieter Stauder, *Territorial Intellectual Property Rights in a Global Economy—Transit and Other “Free Zones,”* in PATENTS AND TECHNOLOGICAL PROGRESS IN A GLOBALIZED WORLD: LIBER AMICORUM JOSEPH STRAUS 654 (Prinz zu Waldeck und Pyrmont et al. ed., 2009); Roberto Romandini & Alexander Klicznik, *The Territoriality Principle and Transnational Use of Patented Inventions—The Wider Reach of a Unitary Patent and the Role of the CJEU*, 44 IIC 524, 530 (2013); Peter Mankowski, *Article 5*, BRUSSELS I REGULATION, EUROPEAN COMMENTARIES ON PRIVATE INTERNATIONAL LAW, Volume I 201 (Ulrich Magnus & Peter Mankowski ed., 2007).

precisely a distribution of such facts spanning over multiple jurisdictions. Then, the question is whether those activities are sufficient to conclude that an infringement has occurred in a particular country of protection, also known as localization.

Localizing infringing activities in cross-border situations is not an optional recourse. It is through localizing the infringement that we understand which laws it shall surrender to, and in turn which national patent is implicated. Indeed, the current and most practiced choice of law rule in intellectual property law, *lex loci protectionis*, makes the localization of the infringement a necessary ingredient to the choice of law analysis. Even if it is recognized that *lex loci protectionis* on its face mandates an application of the law of the country where a claimed infringement is alleged to occur,⁷⁸ it of course becomes essential in practice to analyze where the infringement is occurring as a matter of fact and law. If protection is claimed in one country but infringement occurs in another, no infringement will occur in the country in which laws are subject to application, thus resulting in the subsequent dismissal of the case on the merits. The country where infringement is asserted to occur and the country which laws are applicable must therefore coincide, if we are adhering to *lex loci protectionis* as the choice of law rule.

The above contrasts with the presumption in the United States that patent statutes should not operate extraterritoriality absent clear and affirmative evidence. The enduring legitimacy of that presumption must be scrutinized and defined. There are several justifications that have been raised in favor of the presumption against extraterritoriality. These include, amongst others, a respect for foreign sovereignty and a desire to avoid policies liable to result in controversies of the application of international law.⁷⁹ To be sure, these concerns are not unique to the United States, but echo in public international law. As recognized by the Permanent Court of Arbitration in *Island of Palmas*, and as mentioned above, the legal fact that states are independent and sovereign implies a duty to recognize those territorial limits of other states.⁸⁰ But as was also pronounced in *S.S. Lotus*, this duty of respect must be distinguished from when there actually is a basis for jurisdiction.⁸¹ Such basis is again foremost found in the territorial connection between the facts and the state. While the presumption against extraterritoriality serves the same overall purpose in delimiting jurisdictional scope, it is overly broad and formulaic in its application by inhibiting courts from exercising prescriptive jurisdiction when Congress has failed to act.⁸²

⁷⁸ See Matulionytė, *supra* note 75, at 59–61; Katharina de la Durantaye, *Article 8 Infringement of Intellectual Property Rights*, in *ROME REGULATIONS: COMMENTARY ON THE EUROPEAN RULES OF THE CONFLICT OF LAWS* 634 (Graf-Peter Calliess ed., 2015); Jürgen Basedow, *Article 3:102: Lex Protectionis*, EUROPEAN MAX PLANCK GROUP ON CONFLICT OF LAWS IN INTELLECTUAL PROPERTY, *CONFLICT OF LAWS IN INTELLECTUAL PROPERTY: THE CLIP PRINCIPLES AND COMMENTARY* 232 (2013); Martin Illmer, *Article 8: Infringement of Intellectual Property Rights*, in *ROME II REGULATION: POCKET COMMENTARY* 241–42 (Peter Huber ed., 2011); Lundstedt, *supra* note 75, at 326–27.

⁷⁹ *The Schooner Exch. v. McFaddon*, 11 U.S. 116, 137 (1812); *Equal Emp't Opportunity Comm'n v. Arabian Am. Oil Co.*, 499 U.S. 244, 255 (1991); Curtis A. Bradley, *Territorial Intellectual Property Rights in an Age of Globalism*, 37 VA. J. INT'L L. 505, 514–15 (1997); Zachary D. Clopton, *Extraterritoriality and Extranationality: A Comparative Study*, 23 DUKE J. COMP. & INT'L L. 217, 232–33 (2013).

⁸⁰ 2 R. INT'L ARB. AWARDS 829, 838–39 (1928).

⁸¹ 1927 P.C.I.J. (ser. A) No. 10, 18–19.

⁸² For criticism of the presumption, see Zachary D. Clopton, *Replacing the Presumption Against Extraterritoriality*, 94 B.U. L. REV. 1, 11, 16–20 (2014); Larry Kramer, *Vestiges of Beale:*

Regardless of its blunt design, it continues to be unclear how the presumption against extraterritoriality should be applied to patent infringement.⁸³ An act of infringement and an effect resulting from that act are both necessary ingredients for the same conduct. Similarly, all elements in a patent claim are necessary to be fulfilled. The question is whether the presence of either is sufficient to be considered relevant to the statute's "focus" and thus constitutes an infringement within the United States, even if one or the other occurred elsewhere. But the previous United States Supreme Court decisions do not even make it far. They merely comment on whether or not a congressional intent can be inferred from the square language of the Patent Act,⁸⁴ and already there the test fails. There is seemingly no appreciation that infringing activities are increasingly spilling over multiple jurisdictions rather than being fully confined to a specific country. But most importantly, it disregards that the territorial limitation of patent rights does not as such prohibit taking into account facts with a foreign locus when concluding whether there is an infringement or not. Whether this is to be labeled as a form of extraterritorial application or as merely "regular" localization is, or at least should be, irrelevant.

It stands to reason that if we would set aside all situations where a part of the infringing activities has occurred in another country, then right holders would be seriously deprived of effective and uniform protection. Meanwhile, potential infringers would benefit from offshoring their actions, placing them at a competitive advantage over domestic actors who rely on licensing, and of course the right holder having to recoup investments. This would arguably create a legal rift between national markets and disincentivize right holders from seeking protection for subject matter which can easily be exported abroad. It thus seems very natural, or even absolutely necessary, to consider foreign facts in assessing infringements.

2. *Extraterritoriality as an Instrument of Protectionism Against Globalization*

Territoriality in patent law is in decline. Even if patents remain territorial rights, it is becoming increasingly recognized that an absolute and strict territorial approach is unfeasible in the face of globalization.⁸⁵ The act of localizing infringements provides courts with the legal tools to discreetly revise that. Whether or not prescriptive jurisdiction can be assumed essentially boils down to a semantic question of how much conduct, or what type of conduct, is enough to consider that an infringement can be localized to a particular jurisdiction. There is

Extraterritorial Application of American Law, 1991 SUP. CT. REV. 179, 217–19 (1991); John H. Knox, *A Presumption Against Extrajurisdictionality*, 104 AM. J. INT'L L. 351, 380 (2010).

⁸³ See Timothy R. Holbrook, *What Counts As Extraterritorial in Patent Law?*, 25 B.U. J. SCI. & TECH. L. 291, 318–19 (2019).

⁸⁴ That can in part be explained for the decisions preceding *Equal Emp't Opportunity Comm'n*, 499 U.S. 244, which was the first decision to discuss the "focus" test.

⁸⁵ See Holbrook, *supra* note 1, at 2162–63; Wasserman, *supra* note 8, at 292–94; John W. Osborne, *A Rational Analytical Boundary for Determination of Infringement by Extraterritorially-Distributed Systems*, 46 IDEA 587, 588 (2006); Cameron Hutchison & Moin A. Yahya, *Infringement & the International Reach of U.S. Patent Law*, 17 FED. CIR. B.J. 241, 241–43 (2008); Igor Gliha, *Negotiations on the Accession to the EU and the Harmonization of Intellectual Property with the *acquis communautaire* in Light of Globalization*, PATENTS AND TECHNOLOGICAL PROGRESS IN A GLOBALIZED WORLD 601 (Josef Drexler et al. ed., 2009); Peukert, *supra* note 76, at 200–03; Graeme B. Dinwoodie, *Developing a Private International Intellectual Property Law: The Demise of Territoriality?*, 51 WM. & MARY L. REV. 711, 768–71 (2009); Chisum, *supra* note 20, at 616; Trimble, *supra* note 1, at 13–17.

a growing trend in many jurisdictions towards engaging in what are more far-reaching practices of localization, which serve to protect the patent holder from suffering as a result of substantive discrepancies between different countries implicated in cross-border contexts. This is a self-fulfilling prophecy in the sense that, if it is indeed deemed that an infringement can be localized to a particular country of protection, then there is no legal threat, based on the description provided above, to territoriality.⁸⁶ If considered from that perspective, the decline of territoriality that is being witnessed is indeed responsible for its own demise.

The process of localizing infringements can essentially be grouped into inbound and outbound regulation. Inbound regulation concerns when right holders are protected from spillover effects resulting from conduct that originates from abroad. Outbound regulation, on the other hand, concerns when right holders are protected against conduct occurring in whole or in part in other countries. While this is not a formal legal distinction, it helps categorize different types of extraterritorial applications,⁸⁷ which can be either more or less susceptible to interfere with foreign interests.

Patent infringement can be subject to inbound regulation when goods or services incorporating the invention are offered for sale, sold, or imported in the country of protection, even if the foreign act that is subject to such conduct occurs in a country where there is no infringement. This is foremost a matter of statutory construction, particularly what connecting factors should be deemed relevant and sufficient and what interests should be considered in that regard. Courts in Germany,⁸⁸ the Netherlands,⁸⁹ and France⁹⁰ have found that there is patent infringement through putting on the market and offering for sale when the infringing goods are made available to actual customers in the forum through arranged transportation, even if the act of offering takes place elsewhere. Similarly, the Federal Circuit has held that an offer made abroad to sell goods incorporating the invention within the United States will amount to patent infringement.⁹¹ The localization of the act of offering in this regard is not dependent on that there is an agreement made within the forum under a contract law analysis.⁹² Rather, it is the offer or sale to actual customers in the destined forum, hence expressing the intent of consummating the sale there, that is deemed a sufficient territorial connection.⁹³

The situation is different where the act of offering is not limited to actual customers, but instead where the allegedly infringing goods are made available on

⁸⁶ Moufang, *supra* note 1, at 604; Peukert, *supra* note 76, at 200–03.

⁸⁷ For a discussion of this distinction, see Peukert, *supra* note 76, at 203, 210; AMIRAM BENYAMINI, PATENT INFRINGEMENT IN THE EUROPEAN COMMUNITY 240 (1993).

⁸⁸ Funkuhr, German Federal Court of Justice, 2003, IIC 2003, 34(4), 432, X ZR 36/01 (Ger.).

⁸⁹ Probel v. Parke Davis, Supreme Court of the Netherlands, [1964] NJ 1372, No. 494 (Neth.).

⁹⁰ Water Corp. v. Agilent Techs. Deutschland, Paris Court of Appeal, [October 5, 2011] 09/02423 (Fr.).

⁹¹ Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc., 617 F.3d 1296, 1308–09 (Fed. Cir. 2010).

⁹² This is not the case in all countries. For instance, in the United Kingdom there can be no patent infringement through disposition of goods unless title is passed to the buyer while within the forum. See Kalman v. PCL Packaging (U.K.) Ltd., [1982] England and Wales High Court, F.S.R. 406 (U.K.).

⁹³ Similarly, but outside patent law, the European Court of Justice has ruled that a copyright and trademark holder is afforded protection under the customs regulation for online sales at the time when those goods enter the territory of a Member State by virtue of acquisition of those goods. It is not necessary in this regard to inquire whether those goods were subject to an offer for sale targeting that Member State. See Case C-98/13, Martin Blomqvist v. Rolex SA, EU:C:2014:55, paras. 30–35.

the internet for anyone to purchase. In these cases, there are an unlimited number of recipients residing in different jurisdictions. If accessibility would be a sufficient connecting factor, then there would potentially be a significant number of competing infringement or non-infringement claims to a single act. This calls for a need to limit what jurisdictions that an act of infringement should be subject to. Although there have been attempts to resolve this issue of concurrent jurisdiction through choice of law rules, as has been mentioned above, the most common approach adopted by courts has instead been to opt for more narrow connecting factors. In particular, outside the patent context, the European Court of Justice has considered that the mere accessibility of infringing content online is insufficient to amount to infringement⁹⁴ but sufficient to establish adjudicative jurisdiction,⁹⁵ and that the substantive test should rather be whether the infringing activities online are targeted to customers within a particular country of protection. Relevant factors to determine whether customers are targeted have varied from the language, appearance and content of the website, the nature and size of the business, the characteristics of the goods or services at issue, the content and distribution channels of advertising materials, the number of domestic visitors to the website, and partnerships with shipping companies.⁹⁶ To that end, the European Court of Justice held in *L'Oréal v. eBay* that there “must” be trademark infringement when trademark-protected goods are offered for sale from a third state to consumers but targeted at consumers in the country of protection, as otherwise the effectiveness of such laws would be impaired.⁹⁷ In the United States, the situation is in part the reverse, where mere accessibility is not enough to establish personal jurisdiction,⁹⁸ and where inconsistent results have been reached on how to measure when internet use is sufficient to amount to an infringement.⁹⁹

⁹⁴ Case C-324/09, *L'Oréal v. eBay*, EU:C:2011:474, paras. 61–67 (the mere fact that a website is accessible from the country of protection is not a sufficient basis for concluding that offers for sale displayed there are targeted at consumers in that territory); Case C-173/11, *Football Dataco v. Sportradar*, EU:C:2012:642, paras. 27–47 (accessibility of website is insufficient for performing an act of re-utilization under the *sui generis* right in Member States). See also Case C-5/11, *Donner*, EU:C:2012:370, paras. 26–30; Case C-516/13, *Dimensione Direct Sales*, EU:C:2015:315, paras. 28–35.

⁹⁵ Case C-170/12, *Peter Pinckney v. KDG Mediatech*, EU:C:2013:635, paras. 42–47 (courts in Member States from which a website containing copyright infringing material is accessible possess adjudicative jurisdiction on the basis that damage resulting from the alleged infringement may occur there). See also Case C-441/13, *Pez Hejduk v. EnergieAgentur.NRW*, EU:C:2015:28, paras. 29–38.

⁹⁶ See Case C-5/11, *Donner*, EU:C:2012:370, para. 29; *Merck KGaA v. Merck Sharp & Dohme Corp.*, [2017] England and Wales Court of Appeal, EWCA Civ 1834 at 170 (U.K.) (also distinguishing between objective or subjective intentions and considering that both can be relevant in assessing jurisdictional targeting).

⁹⁷ Case C-324/09, *L'Oréal v. eBay*, EU:C:2011:474, paras. 61–62.

⁹⁸ See *ALS Scan, Inc. v. Digital Serv. Consultants*, 293 F.3d 707, 715–16 (4th Cir. 2002) (mere accessibility of website alleged to contain copyright infringing material is insufficient for personal jurisdiction); *Toys R Us, Inc. v. Step Two*, 318 F.3d 446, 454 (3rd Cir. 2003) (denying personal jurisdiction in a trademark infringement case over a website in Spanish).

⁹⁹ See *Perfect 10, Inc. v. Yandex N.V.*, 962 F. Supp. 2d 1146, 1153–54 (N.D. Cal. 2013) (finding no copyright infringement where it was argued that images hosted on Russian servers could still be downloaded in the United States); *Los Angeles News Serv. v. Conus Communications Co. Ltd. P'ship*, 969 F. Supp. 579, 583 (C.D. Cal. 1997) (finding copyright infringement where broadcasts were received and viewed within the United States, even if the reception was unintended); *Twentieth Century Fox Film Corp. v. iCraveTV*, No. CIV. A. 00-120, 2000 WL 255989, at *7–9 (W.D. Pa. Feb. 8, 2000) (finding copyright infringement where protected works were made accessible on a streaming website from Canada, even if only Canadian viewers were the intended recipients); *Vanity Fair Mills, Inc. v. T. Eaton Co.*, 234 F.2d 633, 641–43 (2d Cir. 1956) (use of a

Although these principles have largely received little attention in patent cases, the underlying concerns remain the essentially same. There is a need to single out contacts having sufficient effects within the forum that compete with the interests of the right holder. Infringement should not be avoided simply by relocating some of the contested activities, while still gaining the benefits of competition in the domestic market.

The still unresolved problem, however, is that conduct on the internet is more often than not geographically neutral, making content available to anyone and with little guidance as to who is the intended recipient. Moreover, the precise scope of the targeting doctrine is far from clear. There are no established criteria for what constitutes targeting,¹⁰⁰ and even the most common factors such as language and advertising are becoming increasingly inadequate proxies for whether a particular audience in a specific country is intended or not. This is particularly the case for languages turning into lingua franca and for advertisements that are outsourced and automatically generated depending on personal data. There is a risk that, when no countries are targeted specifically, all countries will be in a position to assume prescriptive jurisdiction.¹⁰¹

Another form of inbound regulation becomes relevant when only some parts of the invention are used in the country of protection. Because what constitutes “use” of an invention is inseparable from what is the scope of the invention, as will later be explored in more detail,¹⁰² this form of extraterritorial application resolves both around a statutory construction and construction of the patent claim. Where the Federal Circuit failed in *NTP (II)* to find infringement when a method was performed across borders, other courts have reached opposite results. In *Menashe Business Mercantile Ltd v. William Hill Org. Ltd*, the English and Wales Court of Appeal was tasked with answering whether a claimed gaming system was “used” and “put into effect” within the United Kingdom where the host computer was located elsewhere.¹⁰³ The Court found that it did not matter for the purpose of indirect infringement where the computer was located, even if it was part of the disputed claim, as its location was deemed “not important to the user of the invention nor to the claimed gaming system.”¹⁰⁴ The Court refused to consider it pertinent to consider for the purpose of localization whether there was an effect within the United Kingdom, which was considered to have no legal basis.¹⁰⁵ Instead, what was considered relevant was who used the gaming system and where. The Court then opted for locating the infringing use where the user was located, which was in the United Kingdom.¹⁰⁶ The host computer located abroad was, from that perspective, deemed to be used, and then also put into effect, within the United Kingdom.¹⁰⁷

mark requires a substantial effect on commerce within the United States to amount to trademark infringement).

¹⁰⁰ In the copyright context, see Rita Matulionytė, *Enforcing Copyright Infringements Online: In Search of Balanced Private International Law Rules*, 6 JIPITEC 132, 136 (2015). For more generally, see Thomas Schultz, *Carving up the Internet: Jurisdiction, Legal Orders and the Private/Public International Law Interface*, 19 E.J.I.L. 799, 818 (2008).

¹⁰¹ See Matulionytė, *supra* note 100, at 136–37.

¹⁰² See *infra* Section V(B)(1)(a).

¹⁰³ *Menashe Bus. Mercantile Ltd. v. William Hill Org. Ltd.*, [2002] England and Wales Court of Appeal, EWCA Civ 1702.

¹⁰⁴ *Id.* at 32.

¹⁰⁵ *Id.* at 28.

¹⁰⁶ *Id.* at 33.

¹⁰⁷ *Id.* See also *Research in Motion U.K. Ltd. v. Motorola Inc.*, [2010] England and Wales High Court, EWHC 118 (Pat) at 156 (a method patent of operating a messaging gateway system not

In the German case *Prepaid-Karten II*, the Court of Appeals of Düsseldorf also found that there was direct infringement of a method claim in cross-border circumstances.¹⁰⁸ The claim extended to the processing of telephone calls, where all steps but one – the offering of prepaid telephone cards – were performed outside Germany. However, since all commands generated by the server were subsequently transferred to Germany, it was deemed that the actions were purposefully intended to have an effect, in the economic sense, in Germany.¹⁰⁹ There was then an intended commercial advantage from the defendant that was targeted at the forum, which was sufficient to justify a finding of infringing use.¹¹⁰ Although using a different rationale, the German Federal Court of Justice has also considered in *Rohrschweissverfahren* that there was direct patent infringement in Germany if the final steps claimed in a method patent were finalized there, even if other steps were performed elsewhere.¹¹¹ The patent concerned the making of a data carrier with welding data and then using the data on the data carrier in a manufacturing process.¹¹² The Court held that, in such a case where there are multiple process steps, the user of the data carrier was also deemed to use the process, and take advantage of all the features, if the welding process was carried out using the stored welding data.¹¹³

Some courts in the United States have likewise found, even if inconsistently, that there can be patent infringement even though not all claim elements have been performed within the United States. In *Decca, Ltd. v. United States*, the United States Court of Claims found that a system claim involving a radio navigation system was infringed even if one of the transmitting stations, as part of the claim, was located outside the United States.¹¹⁴ Since the equipment abroad was still owned and “controlled” by the defendant, and since the “actual beneficial use” of the system was domestic, it was held that there was direct patent infringement.¹¹⁵ The United States Court of Claims also raised the relevance of where the substance of the invention was carried, which has later been phrased as the “patently distinctive” test.¹¹⁶ Several decades later, and as already mentioned, the Federal Circuit followed this same approach in *NTP (II)* when localizing a remote e-mailing system to where the users were located in the United States. The Court held that the users were in the actual control of transmitting information and also benefitted from the exchange of information.¹¹⁷ Even if a necessary component in the system was located elsewhere, it was thus deemed that the use of the communication system as a whole occurred in the United States.¹¹⁸ But as also mentioned earlier, the Court refused to depart from a territorial requirement

deemed infringed, assuming that claim was construed so as to refer to the use of a server, and the location of that server was abroad).

¹⁰⁸ *Prepaid-Karten II*, Court of Appeals of Düsseldorf, Dec. 10, 2009, 2 U 51/08 (Ger.).

¹⁰⁹ *Id.*

¹¹⁰ *Id.* A similar focus on the deprivation of economic rights have been proposed by some commentators in the United States. See Hutchison & Yahya, *supra* note 32, at 54–56; Rex W. Miller, *Construing “Offers to Sell” Patent Infringement: Why Economic Interests Rather than Territoriality Should Guide the Construction*, 70 OHIO ST. L.J. 403, 442–50 (2009).

¹¹¹ *Rohrschweissverfahren*, German Federal Court of Justice, Feb. 24, 2007, X ZR 113/04 (Ger.).

¹¹² *Id.*

¹¹³ *Id.*

¹¹⁴ *Decca, Ltd. v. United States*, 544 F.2d 1070, 1075 (Ct. Cl. 1976).

¹¹⁵ *Id.* at 1083.

¹¹⁶ *Cf. Osborne, supra* note 85, at 593.

¹¹⁷ *NTP, Inc.*, 418 F.3d at 1317.

¹¹⁸ *Id.*

linked to the all elements rule of an equivalent method claim in the same patent, and hence considered that the claim was not infringed.¹¹⁹

Whereas inbound regulation is more concerned with protecting right holders from conduct originating from abroad, and which more concretely has an effect within the forum, outbound regulation is rather focused on protecting right holders abroad. Unsurprisingly, there are far fewer cases concerning outbound regulation as regulating states are less impacted as opposed to other states. One form of outbound regulation is when goods or services incorporating the invention originate from the country of protection and are subsequently offered for sale, sold, or exported abroad. In most jurisdictions, exportation is not an exclusive right that expressly belongs to the patent holder,¹²⁰ but this does not suggest that exportation can never infringe. Instead of infringing under an exportation right, the essentially same form of conduct can be caught as an offer for sale, if unconsummated, or a sale. There are some cases supporting that an offer for sale or sale can be localized both at the place of where the intended recipient is and at the place of offer or transmission. Localizing an offer for sale or sale at the latter place means that liability is incurred in a similar fashion for commercial conduct consummated abroad, even if there would be no infringement in that country. To exemplify, German¹²¹ and Swedish¹²² courts have found for infringement where an offer is made domestically, notwithstanding that the infringing goods were never present within the territory and that the intended sale was targeted elsewhere.¹²³

Outbound regulation also extends to the situation considered in *Deepsouth*, where individually unpatented components are made within the forum to be shipped and compiled abroad. In several jurisdictions, such as Germany¹²⁴ and the United Kingdom,¹²⁵ this will result in indirect patent infringement only if the completed product is subsequently intended to be used in the forum. There is in that sense a double territorial requirement.¹²⁶ German courts have also refused to extend direct patent infringement liability in cases where only individual components are manufactured domestically, as all claim elements are not fulfilled in that case.¹²⁷

A similar situation arises where results from a patented process are offered or sold within the country of protection, but where the actual process is performed elsewhere. This was more recently in the spotlight in the case of non-invasive

¹¹⁹ *Id.* at 1317–18.

¹²⁰ Lundstedt, *supra* note 75, at 508–09.

¹²¹ Kreuzbodenventilsäcke, German Federal Court of Justice, 1960 GRUR 423, I ZR 109/58 (Ger.).

¹²² Case T 1253/89, Dec. 12, 1990, Svea Court of Appeals (Swed.).

¹²³ A more restrictive approach has been taken in the United Kingdom and in the United States by requiring that the final sale must occur within its territory to amount to infringement, see *Kalman v. PCL Packaging (U.K.) Ltd.*, [1982] England and Wales High Court, F.S.R. 406 (U.K.); *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc.*, 617 F.3d 1296, 1309 (Fed. Cir. 2010).

¹²⁴ *Funkuhr II*, German Federal Court of Justice, IIC 2007, 38(5), 607, X ZR 53/04 (Ger.). The same Court has, however, subsequently found that there is contributory patent infringement even if the components are supplied from abroad, see *Audiosignalcodierung*, German Federal Court of Justice, 2015 GRUR 467, X ZR 69/13 (Ger.).

¹²⁵ *Virgin Atlantic Airways Ltd. v. Delta Airways, Inc.*, [2010] England and Wales High Court, EWHC 3094 (Pat) at 89 (U.K.).

¹²⁶ 35 U.S.C. § 271(f) (2021) stipulates a different test in cases of supplying components in or from the United States which are used for the purpose of the invention. There is no double territorial requirement, but instead a hypothetical exercise of whether the combination of the components *would* infringe the patent if such combination occurred in the United States.

¹²⁷ *Flügelradzahler*, German Federal Court of Justice, 2004 GRUR 758, X ZR 48/03 (Ger.).

prenatal test methods in *Illumina, Inc v. Premaitha Health Plc*. After the England and Wales High Court had found for direct infringement when the diagnostic test was performed within the United Kingdom, the defendants sought a declaration of non-infringement for a different scenario.¹²⁸ In this envisioned scenario, blood samples would be sourced from the forum and subsequently shipped to countries where no protection existed for testing purposes, after which test results would be provided to customers in the forum.¹²⁹ Since the method itself was not carried out in the country of protection, the question of infringement largely turned on whether it was still deemed to be offered for use there. The Court answered affirmatively, even if the statutory language limited both use and offers of processes to the United Kingdom.¹³⁰ In finding hypothetically for direct infringement, the Court reasoned that the “substance” of the method was still performed within the country as the blood used for testing was taken there and since preparatory technical steps were made there for what was already a pre-determined method performed abroad.¹³¹ The Court explicitly held, while referring to *Menashe*, that “any other result would make it far too easy to avoid infringement of patents of this nature, given the ease of digital transmission and the ability to off-shore computer processing.”¹³²

The above suggests that, on the one hand, the localization of cross-border conduct is a necessary element of any patent infringement analysis. It serves to avoid legal loopholes, whether through inbound or outbound regulation, and thus seeks to preserve the efficacy of patent protection in cross-border situations. But on the other hand, it is far from clear what factors should be taken into account in this context. Territoriality is a relative and not a fixed term, and a colorable argument can often be made on either side of the spectrum.¹³³ Different courts apply different criteria, with some focusing on statutory or claim language, and others focusing on establishing connecting factors on the basis of the infringing acts themselves, their effects, or the patented subject matter. The interests of the right holder are taken into account as a related factor, or sometimes as the sole factor. There is in this context a glaring absence of considering other competing objectives, in particular those afforded to the public in other jurisdictions and foreign states themselves. While the referred cases demonstrate that courts are recognizing that a strict territorial approach is no longer sustainable, the recent surge of extraterritoriality is still worrisome in that there is a risk that protectionism goes too far.

¹²⁸ *Illumina, Inc. v. Premaitha Health Plc*, [2017] England and Wales High Court, EWHC 2930 (Pat) at 507–08 (U.K.).

¹²⁹ *Id.* at 503–04.

¹³⁰ *Id.* at 507–08.

¹³¹ *Id.* at 507.

¹³² *Id.* at 508. This contrasts to the *Bayer* case in the United States, where the alleged infringer had practiced screening methods abroad but subsequently imported information obtained from those methods into the United States for use in developing drugs. The Federal Circuit was there tasked with whether 35 U.S.C. § 271(g), which covers infringement by use of products made by a patented process, extended to that situation. The Court answered negatively and based its reasoning largely on a formulaic reading of the statute, see *Bayer AG v. Housey Pharm., Inc.*, 340 F.3d 1367, 1368 (Fed. Cir. 2003).

¹³³ See Marketa Trimble, *Territorial Discrepancy Between Intellectual Property Rights Infringement Claims and Remedies*, 23 LEWIS & CLARK L. REV. 501, 511 (2018); Neumann, *supra* note 75, at 521–22; Paul Edward Geller, *Conflict of Laws in Copyright Cases: Infringement and Ownership Issues*, 51 J. COPYRIGHT SOC'Y U.S.A. 315, 335–36 (2004) (suggesting how the localization analysis can easily be framed to capture a particular infringing conduct depending on the context).

IV. DEFINING THE CRITERIA FOR EXTRATERRITORIAL ENFORCEMENT OF PATENT INFRINGEMENT

The above-mentioned lack of consistency in patent enforcement in cross-border cases is problematic as it fuels ambivalence and uncertainty. Parties are frustrated in calculating legal risks as courts jump from one proposition to another in different legal and factual settings, with no apparent coherent line of reasoning or authority. Underlying these disparate results are competing theories for how issues of territoriality and extraterritoriality should be approached. On the one hand, there is a concern about safeguarding the efficacy of patent protection in cross-border cases. On the other hand, always maintaining that can come at the cost of predictability and uniformity while imposing a risk of implicating foreign sovereignty. So far, courts have tended to treat this as a black and white issue, approaching it from a single or too rigid angle. But in order to settle the matter, there is a need to approach the issue holistically and understand how these struggling interests interact with one another. The task ahead, therefore, lies in defining and distinguishing what are the overarching theories that underpin extraterritorial enforcement of patent infringement, and in doing so establish the basis for what is the criteria for its resolution.

A. Sovereignty

The most fundamental interest manifested in cross-border situations is sovereignty. Even if there is sufficient nexus that constitutes a jurisdictional basis, the exercise of that jurisdiction must not interfere in the exercise of law within another state.¹³⁴ Sovereignty is not a one-sided concept, and as Professor Dinwoodie has phrased it “the purest act of sovereignty is to forswear from acting in circumstances in which it is descriptively and prescriptively possible to do so.”¹³⁵ Hence, even supposing there is a sufficient basis for localizing an infringement to the country of protection, there is a need to consider how that has the potential of implicating foreign sovereignty.

If we start with the first and most far-reaching starting point, it becomes relevant to directly investigate and consider the illegality of the adjudicated conduct under the laws of those countries that are implicated by that same conduct.¹³⁶ That is to say if cross-border conduct has sufficient nexus to countries A, B, and C, and is subject to suit for infringement in A and B but not C, we should consider what consequences adjudication of infringement in countries A and B has for each other and for C. This would then become a three-step exercise. First, we identify what are the territorial connections to which countries and conclude whether those countries have prescriptive jurisdiction under national law. Second, we compare the substantive results under each national law to see if there are appreciable differences for whether there is infringement or not. There is a high degree of variability of what differences could arise, though the most common

¹³⁴ *Island of Palmas (United States v. Netherlands)*, 2 R. INT’L ARB. AWARDS 829, 838–39 (1928); Ryngaert, *supra* note 23, at 40; Mann (1964), *supra* note 23, at 30.

¹³⁵ Dinwoodie, *supra* note 85, at 773.

¹³⁶ Similar approaches have been proposed by commentators, *see* Holbrook, *supra* note 1, at 2163–66 (proposing a dual patent infringement approach similar to the dual criminality principle); Graeme B. Dinwoodie, *A New Copyright Order: Why National Courts Should Create Global Norms*, 149 U. PA. L. REV. 469, 561–69 (2000) (proposing a substantive law approach in copyright cases, which takes into account foreign interests while allowing for compromises in remedies).

differences to be expected concern patentability criteria, infringement standards, exceptions and limitations, and of course that foreign courts have already reached a different substantive result of the same dispute. The fact that no patent has been procured abroad by the plaintiff should not be considered a sovereign interest but can impose private concerns.¹³⁷ Third, we evaluate how conduct in implicated countries would be affected from adjudicating the alleged infringement as a result of those identified substantive differences.

The suggested method above assumes that legal conflicts should be the focus of the comparative exercise. This is, however, arguably a simplistic assumption as foreign interests can be affected even if the legal situation is identical. In particular, there may be adverse offshore private or public effects resulting from adjudicating the infringement. An example would be if the product or service in dispute is digital and therefore accessible everywhere, in which case an injunction in country A would be at risk of implicating countries B and C as well. If it is not possible to segregate markets when following the injunction, then this could compel the losing party to discontinue or amend its products or services everywhere. The successful adjudication in country A would then clearly impact market conditions or reasons related to public policy prevailing in other countries.¹³⁸ Other countries might in turn react to that, for instance by publicly denouncing such extraterritorial actions or refusing to enforce such foreign judgments.¹³⁹

Either of these approaches just provides the structure for the initial analysis. A greater debate still surrounds how these discrepancies should impact adjudication. Perhaps the most far-reaching consideration is to treat this additional factor as cumulative in the sense that it would be placed on the same level as a territorial requirement. Thus, if there is no infringement abroad where the conduct is also deemed to occur or if conflicting private or public effects are felt abroad, then it should neither be an infringement in the relevant country of protection.¹⁴⁰ What is extremist and controversial with this approach is that it is a form of forced harmonization to the bottom.¹⁴¹ A middle ground would be to, instead

¹³⁷ See *infra* Section IV(E).

¹³⁸ Cf. Dreyfuss, *supra* note 55, at 17–18 (commenting on problems associated with facing inconsistent national judgments for ubiquitous products or services).

¹³⁹ An example of foreign intervention in domestic patent litigation is the amicus brief submitted by Canada in *NTP (II)*, which argued that the decision raised “the risk that Section 271(a) may be accorded inappropriate extraterritorial application, contrary to basic principles of comity affecting Canada and the United States.” See Brief Amicus Curiae of the Government of Canada in Support of the Request for Rehearing En Banc Made in the Combined Petition by Research in Motion, Ltd. for Panel Rehearing and Rehearing En Banc, *NTP, Inc. v. Research in Motion, Ltd.*, 392 F.3d 1336 (Fed. Cir. 2005) (No. 03-1615). Refusals to recognize foreign judgments are familiar outside the patent context. A well-known example is the *Yahoo!* litigation, where *Yahoo!* was sued in France to take down web pages posting the sale of Nazi memorabilia which were illegal in France. This resulted in an injunction, even if that post was accessible and available everywhere. See *La Ligue Contre le Racisme et l’Antisémitisme and l’Union des Etudiants Juifs de France v. Yahoo Inc! and Yahoo France*, [May 22, 2000] High Court of Paris, (Fr.). The United States District Court of California subsequently refused to enforce the decision on the ground that it violated the First Amendment, see *Yahoo!, Inc. v. La Ligue Contre Le Racisme et L’Antisemitisme*, 169 F. Supp. 2d 1181, 1192 (N.D. Cal. 2001). See also *Sarl Louis Feraud Int’l v. Viewfinder Inc.*, 406 F. Supp. 2d 274, 281–85 (S.D.N.Y. 2005) (refusing to enforce a French decision to award damages and injunctive relief for foreign copyright infringement on the basis of the First Amendment).

¹⁴⁰ Holbrook, *supra* note 1, 2184–85.

¹⁴¹ Courts have even rejected this restrictive notion of respect for their own sovereignty in the context of enforcement of foreign judgments. See *Sarl Louis Feraud Int’l v. Viewfinder Inc.*, 406 F. Supp. 2d 274, 281 (S.D.N.Y. 2005) (holding that even if a foreign judgment on copyright

of treating this as a bare infringement question, treat it as a question of enforcement where carefully drafted remedies can seek to avoid extraterritorial effects resulting from the adjudication while still securing effective protection.¹⁴² An even less extreme, but more flexible approach is to merely let this be one of several factors to consider in a broader interest analysis. Weighing competing interests, both foreign and domestic, are commonplace in choice of law contexts, in particular in the United States where federal courts apply the law having the greatest interest in the litigation.¹⁴³ Such a broader interest analysis has also been the selected approach in several academic reforms, such as the CLIP Principles and ALI Principles referred to above.¹⁴⁴

The above suggests that sovereignty as a concept can be considered through several different lenses, with each approach having its own advantages and disadvantages. The comparative law method promotes comity and thus avoids conflicts between laws if possible. It places foreign laws and conditions at an equal footing with national equivalents and in doing so furthers cooperation, dialogue, and ultimately the development of international norms.¹⁴⁵ But this exercise can be complex to perform, as it would involve delving into details of foreign material. If a significant number of countries are implicated in the dispute, then this could become overwhelming to administer and unduly costly to litigate. Forced harmonization is also problematic. Unconditional surrender to foreign laws is obviously too far-reaching, as that would at the same time be a surrender of national sovereignty, but even weighing substantive discrepancies raises concerns. As other commentators have phrased it in other contexts, we are losing legal diversity in technological development, which in turn has consequences for fields such as education, health, and communication.¹⁴⁶ Another major concern that has been raised is if courts are at all suitable in making these decisions, which involve weighing sovereign interests.¹⁴⁷ Indeed, that the United States Supreme Court has deferred rulings to Congress in cross-border patent cases can be considered as a testament to that.¹⁴⁸

infringement would be irreconcilable with United States law, for instance because of differences in copyrightability, that “does not mean that a foreign judgment based on a contrary policy decision is somehow ‘repugnant to the public policies underlying the Copyright Act and trademark law.’”).

¹⁴² Dinwoodie, *supra* note 136, at 564–65.

¹⁴³ See *In re Koreag, Controle et Revision S.A.*, 961 F.2d 341, 350 (2d Cir. 1992). The Ninth Circuit has also turned to an interest-balancing approach when assuming an extraterritorial application in antitrust and trademark law. See *Timberlane Lumber Co. v. Bank of Am. Nat'l Trust & Sav. Ass'n*, 549 F.2d 597, 614 (9th Cir. 1976) (using a series of factors to ascertain whether interests and links are sufficient to justify an extraterritorial application, such as the degree of conflict with foreign law or policy, nationality and domicile of the parties, the necessity of foreign enforcement, the relative significance of foreign and domestic effects and the charged violations, intention to harm domestic commerce, and foreseeability); *Reebok Int'l Ltd. v. Marnatech Enters., Inc.*, 970 F.2d 552, 555 (9th Cir. 1992) (citing the *Timberlane* factors, *id.*).

¹⁴⁴ See *supra* Section III(D).

¹⁴⁵ Holbrook, *supra* note 1, at 2185–87.

¹⁴⁶ Graeme W. Austin, *Importing Kazaa Exporting Grokster*, 22 SANTA CLARA. COMPUTER & HIGH TECH. L.J. 577, 595, 610–11 (2006).

¹⁴⁷ Holbrook, *supra* note 1, at 2188–89; Jack I. Garvey, *Judicial Foreign Policy-Making in International Civil Litigation: Ending the Charade of Separation of Powers*, 24 LAW & POL'Y INT'L BUS. 461, 462 (1993).

¹⁴⁸ See *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 528 (1972); *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437, 456 (2007).

B. Proximity

Sovereignty is a concept imposing both rights and obligations. The discussion above surrounds how the respect for foreign sovereignty should be evaluated in assessing infringement. Proximity, on the other hand, is related to the nexus to the state which is the legal basis for the state's right to exercise its own sovereignty.¹⁴⁹ That necessary nexus arises out of the conduct that is subject to litigation, that is the alleged infringement. As has been described throughout this article, different courts have applied different criteria to assess what connecting factors are sufficient to localize an infringement and thus exercise prescriptive jurisdiction within state borders. When localizing infringing acts falling under the exclusive rights, courts have either looked at the locus of the act itself or the locus of its harm or effect, hence mirroring principles of subjective and objective territoriality. When localizing conduct falling under patent claims, courts have instead turned to where the "substance" of the invention is used or "controlled" or where the commercial benefits arising from the use of the invention materialize. These latter approaches expose similarities to indirect infringement and the doctrine of equivalents, but with some important exceptions. Localizing the control or benefits arising from the use of the invention acts as a substitute for the lack of traditional connecting factors. Indeed, in *Illumina*, as referred to above, the England and Wales High Court found direct infringement of a method claim even if the method was proposed to be performed abroad because the substance of the invention was related to the material itself that was domestically sourced.¹⁵⁰

A question still unresolved in this regard is if the strength, or even type, of the connecting factor, should counteract competing foreign sovereign interests, which may or may not be supported by similar or stronger connecting factors. For instance, if we return to the above-mentioned example where the product or service in dispute is digital and thus accessible everywhere, all countries to which there is sufficient nexus enjoy an equal sovereign share in the infringing conduct.¹⁵¹ This could either mean a "free for all" approach, where no country owes any expectation to respect the interests of others,¹⁵² or instead that the universal nature of the infringement calls for a more cautious approach. The argument submitted in this article is closer to the latter. Proximity is the starting point of the analysis, but it is not the end, and other interests such as sovereignty can and should limit its legal force.¹⁵³

¹⁴⁹ Dariush Keyhani, *U.S. Patent Law and Extraterritorial Reach*, 7 TUL. J. TECH. & INTELL. PROP. 51, 65 (2005).

¹⁵⁰ *Illumina, Inc. v. Premaitha Health Plc*, [2017] England and Wales High Court, EWHC 2930 (Pat) at 507–08 (U.K.).

¹⁵¹ *Cf.* Anne-Marie Slaughter, *Judicial Globalization*, 40 VA. J. INT'L L. 1103, 1112–13 (2000) (phrasing national courts as co-equals in contexts of global litigation).

¹⁵² The above-mentioned *Yahoo!* litigation is one such example, where the French court issued an injunction to take down the online sale postings on the basis of French law, even if that was fiercely objected as there was no legitimate reason for French law to take precedence over other national laws, which were also implicated. *See also* Dinwoodie, *supra* note 85, at 778.

¹⁵³ *Cf.* Holbrook, *supra* note 1, at 2126, 2164; Holbrook, *supra* note 83, at 317–18 (cautioning against an extraterritorial application which interferes with foreign sovereignty); Wasserman, *supra* note 8, at 306 (proposing that comity concerns should restrict an extraterritorial application in cross-border patent cases, even if there are sufficient connecting factors to otherwise mandate prescriptive jurisdiction). *See also infra* references made in note 259.

C. Efficacy

A reoccurring theme is maintaining the efficacy of national patent laws in cross-border contexts. On the one hand, the interest in maintaining strong patent protection invites greater focus to assert control over foreign conduct which can adversely impact those interests. There is then an appealing argument to link efficacy to proximity, stretching connecting factors further out to reach more offshore activities. On the other hand, efficacy is also invoked as an argument to drag factors that do not conform to objective or subjective territoriality into the discussion of extraterritoriality. When there is simply a lack of connecting factors related to the applicable rule, safeguarding that patent protection is efficacious has so far been invoked to fill in the gaps.

But how do we define efficacy? Courts having ruled on infringements occurring in their own forums suggest that efficacy is intrinsically linked to the applicability of their national intellectual property statutes and that the foreign conduct exerts an effect on that market. They care about efficacy when there is a risk that the legal monopoly afforded to the patent holder is becoming diluted; when the patent holder has to compete with cross-border conduct in its own territory. The targeting doctrine, as explained in the above-mentioned decisions from the European Court of Justice,¹⁵⁴ and the extraterritorial expansion of method patents in the *Illumina* case highlights this almost perfectly. These legal devices have been justified precisely because they would otherwise, as the England and Wales High Court phrased it in *Illumina*, “make it far too easy to avoid infringement.”¹⁵⁵

A problem with efficacy is that it is manipulative. There are, again, no defined metrics for what territorial connections are sufficient to localize an infringement, which makes it a hotbed for protectionist interpretations. What conduct has adverse effects on the exercise of the patent monopoly is similarly dubious, as courts attempt to interpret vague and open-ended national patent policies or rely on input from the patent holder. But perhaps the greatest problem with efficacy is that it is self-centered. It disregards that differences between national intellectual property laws are a natural phenomenon, as an inherent consequence of national sovereignty, and so is cross-border conduct in a globalized world. This raises a number of questions. If the national level of protection that is subject to enforcement is higher than where the infringing party is alleging it is acting, we are left with the theoretical challenge as to why a supposedly higher level of protection should be considered more desirable, and more importantly to whom. The mere fact that the level of protection is “higher” does not necessarily mean that it is more legitimate. A way of avoiding this question altogether is to redefine the problem so that it is not about comparing substantive differences of national laws, but about merely securing the effective application of national law. Efficacy then becomes linked to sovereignty and inherits, as a result, its issues in defining clear criteria and norms as stated above.

¹⁵⁴ See Case C-324/09, *L'Oréal v. eBay*, EU:C:2011:474, para. 62; Case C-173/11, *Football Dataco v. Sportradar*, EU:C:2012:642, para. 45 (holding that if national law is not applied in targeting situations, the effectiveness of the protection afforded under national law would be impaired).

¹⁵⁵ *Illumina, Inc. v. Premaitha Health Plc*, [2017] England and Wales High Court, EWHC 2930 (Pat) at 508 (U.K.).

D. Bad Faith

One potential means of resolving the dilemma of distinguishing legitimate cross-border practices from what could count as misuse of the international patent system is to search for an adverse intention that can be attributed to the alleged infringer. This is not a novel concept in patent enforcement as it has long been a necessary element in indirect infringement standards. Just like divided infringement, indirect infringement copes with an incomplete situation of infringing acts, where no single party performs all constituent elements. National patent rules on indirect infringement often recognize that someone offering or supplying components that are essential for carrying out the invention and who has the knowledge of that such means are suitable and intended for that purpose, becomes indirectly liable for infringement.¹⁵⁶ Indirect infringement illustrates how intent can be used to distinguish legitimate use of what are separate, non-infringing parts from acts that purport to utilize the invention. That theory could, in principle, also be extended to divided patent infringement.¹⁵⁷

In practice, a theory of bad faith would target cases where the alleged infringer is taking steps to partition its conduct in multiple jurisdictions for the main purpose of avoiding liability.¹⁵⁸ The focus is on the intention of exploiting substantive differences between national laws to gain the advantage of competing against the patent holder in the country of protection. But what appears to be a straightforward analysis is in reality much more complex. Again, both differences between national laws and cross-border conduct are a natural phenomenon. The reasons for where parties locate parts of their operations can be based on diverse considerations such as financial, historical, technical, or logistical.¹⁵⁹ Legal considerations can of course also play an important role, but to uncover that could require substantial discovery, if at all discoverable. With these circumstances in mind, it becomes much less simple to separate cases of supposed bad faith from those where there are legitimate cross-border practices.

¹⁵⁶ See 35 U.S.C. § 271(c) (2021) (“offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent”); The Patents Act, 1977 § 60(2) (U.K.) (“supplies or offers to supply in the United Kingdom a person other than a licensee or other person entitled to work the invention with any of the means, relating to an essential element of the invention, for putting the invention into effect when he knows, or it is obvious to a reasonable person in the circumstances, that those means are suitable for putting, and are intended to put, the invention into effect in the United Kingdom.”); Patentgesetz [German Patent Act] 1980, § 10 (“supplying or offering to supply, within the territorial scope of this Act, persons other than those entitled to exploit the patented invention with means relating to an essential element of the invention for use within the territorial scope of this Act if the third party knows or if it is obvious from the circumstances that those means are suitable and intended for using that invention.”); 特許法 Tokkyohō [Japanese Patent Act] 1959, Article 101(i)(iv) (“Where a patent has been granted for an invention of a product [or process], acts of producing, assigning, etc., importing or offering for assignment, etc. any product to be used exclusively for the producing of the said product [or process] as a business.”).

¹⁵⁷ Cf. Lee, *supra* note 1, at 367 (describing how indirect infringement could provide some protection in cases of cross-border partial uses of inventions).

¹⁵⁸ Cf. Holbrook, *supra* note 1, at 2183; Wasserman, *supra* note 8, at 306.

¹⁵⁹ Marketa Trimble, *The Multiplicity of Copyright Laws on the Internet*, 25 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 339, 360 (2015).

E. Contributory Fault

In some cases, there is no infringement in a specific country not because of substantive differences between national laws, but simply because the patent holder has no patent there. The comparative law approach, as has been suggested above, would mandate precisely a comparison between different national laws to see whether there is infringement or not abroad before adjudicating the same substantive question in the forum at issue. The focus from that perspective is to avoid potential encroachments upon foreign sovereignty. But when we are faced with non-infringement because of the failure to hold a patent abroad, that issue instead turns on a question of contributory fault. It is essentially asking, analogous to tort law, if part of the blame should be attributed to the patent holder. This is a complex question as reasons for not having a patent in a specific jurisdiction can be diverse.

Patent holders tend to selectively apply for patent protection in those countries where there is a substantial, viable market, leaving the rest open for competition. It would seem unrealistic, as other commentators have said,¹⁶⁰ to require patent protection in all the countries of interest before allowing an extraterritorial application. Another common situation is where the patent holder has been unsuccessful in procuring patent protection or where the patent has been invalidated. In this case, it is more arguable that an extraterritorial application would unduly encroach upon foreign sovereignty, as foreign policy reasons for rejecting protection should be respected and not be circumvented through extraterritoriality.¹⁶¹ A more rare but still possible scenario is where someone else has procured a patent, causing a conflict in ownership, which also suggests a more cautious approach to avoid cases of potentially double liability.¹⁶²

F. Predictability

Lack of predictability in patent law can adversely impact international trade, business strategies, and technological development. If it is known that regulation of divided infringement is subject to loopholes, then patent holders might be more inclined to apply for patent protection in a larger number of countries, even if the intention is only limited to block out competitors from offshoring their operations. This would obstruct not just international trade to the potential detriment of the patent holder, but would also preclude third parties from utilizing technology in what would otherwise be a free, but now frozen, market. More than two decades ago, Professor Chisum expressed concerns over that “the increasing interdependence of the global economy and the growing concern over the cost of multinational intellectual property rights procurement and enforcement . . . will make territorialism an unacceptable obstacle to international trade.”¹⁶³ If extraterritoriality is weakened or is uncertain, and if there is, in turn, increased reliance on conventional, territorial enforcement mechanisms on a country-by-country basis, those costs and obstacles will rise even further to

¹⁶⁰ Holbrook, *supra* note 1, at 2176.

¹⁶¹ *Id.* at 2177. See also Robins, *supra* note 66, at 1312.

¹⁶² Holbrook, *supra* note 1, at 2177.

¹⁶³ Chisum, *supra* note 20, at 616.

unacceptable levels.¹⁶⁴ This may in practice threaten to exclude participants with lesser financial capabilities.¹⁶⁵

As another adverse response to a decline in predictability, patent holders might attempt to narrow their conduct and draft claims that are less capable of being practiced at divided stages, which poses a risk for partitioning markets. Such partitioning can of course also occur from the user side. If there is instead a looming threat of extraterritoriality in a specific technical field, users have a clear incentive to relocate business operations where the risk of cross-border enforcement is the least.¹⁶⁶ There is a further and important link between predictability and fairness. An essential element of fairness in law is to give due notice in what rights and obligations exist. The *ex-post* finding of infringement on the basis of a far-reaching extraterritorial application could arguably be considered unfair, as the implicated parties would not have had a chance to preemptively act upon a given warning and prevent the purported harm.¹⁶⁷

Perhaps the most noticeable and direct consequence of less predictability is a surge in domestic patent litigation. Patent holders are highly reluctant to gamble outcomes and significant legal costs in individual cases if it is uncertain whether there is legal recourse to combat cross-border infringements. Instead, they tend to prefer run-of-the-mill litigation in national courts, limited to domestic infringement claims. In return, higher total legal costs and lengthier proceedings become the norm. This makes patent litigation even more reserved to those parties with the highest financial capabilities, and sometimes a mere stage for what is expected to end as expensive settlements. Quite ironically, therefore, the current shortage of clear boundaries for extraterritoriality in patent law might indeed fuel territorialism, which in turn can severely disadvantage innovators and enterprises in participating in the global marketplace. Another familiar and related downside is the risk of potentially conflicting national judgments.¹⁶⁸ The latter in particular is perilous to international trade. The losing party may be forced to segregate or abandon markets, relocate operations, or distribute different product versions in different countries.

G. Uniformity

A concern closely tied and related to predictability is uniformity. This concern again stems from an overemphasis on efficacy. Efficacy is inherently biased. If efficacy is favored such that a particular rule of localization is applied whenever it safeguards a higher level of protection and then applying another rule of localization when there are no substantive differences between national laws, alleged infringing parties are thrown into legal disorder. As a familiar example, in *Illumina*, the England and Wales High Court refused to attribute the location of computers abroad, on which the patented process was performed, any relevance in localizing the infringement.¹⁶⁹ Instead, the Court focused on the material gathered

¹⁶⁴ *Id.* at 617.

¹⁶⁵ *Id.*

¹⁶⁶ *Cf.* Robins, *supra* note 66, at 1275 (recognizing the risk of companies relocating their businesses where legal liability is minimal).

¹⁶⁷ Hutchison & Yahya, *supra* note 85, at 255; Jacob A. Schroeder, *So Long As You Live Under My Roof, You'll Live by . . . Whose Rules?: Ending the Extraterritorial Application of Patent Law*, 18 TEX. INTELL. PROP. L.J. 55, 92–93 (2009).

¹⁶⁸ Dreyfuss, *supra* note 55, at 17–18.

¹⁶⁹ *Illumina, Inc. v. Premaitha Health Plc*, [2017] England and Wales High Court, EWHC 2930 (Pat) at 507–08 (U.K.).

within the forum and subsequently shipped abroad for the purpose of localization. This sets it apart from the default rule of localizing infringing use of method claims, which is where the method is performed,¹⁷⁰ with safeguarding efficacy as a major explanation for such a departure. While it is true that different factors may need to be taken into account to provide a fair outcome in different circumstances, a complete change of the rules for localizing infringements is at the same time adverse to uniformity and predictability.

V. A NEW APPROACH TO CLOSING THE PATENT LOOPHOLE

Globalization has meant tremendous opportunities for economic, technological, and social development worldwide, but has too put overwhelming pressure on the maintenance of traditional, territorial norms. The transnational spread of regulated subject matter means that there is an inability to constrain the effects of adjudication within each implicated country. Parties are, as a result, forced to navigate through diverging legal standards on a country-by-country basis, while courts are stuck with interpreting rules drafted from a different era. It is becoming more and more recognized that this dichotomy between global markets and national intellectual property rights is an unsustainable posture and that there is a need for reform.

A. A Reappraisal of Existing Proposals

Because divided patent infringement is not a unique, national problem, there is a demand to adopt a solution that is uniform and transferrable across multiple jurisdictions. But as this seems like an impossible task to expect from national courts, several commentators have attempted to fill in the gaps in an effort to resolve the dilemma.

Professor Lemley et al. focus on the issue of dividing infringing activities between different actors and in different countries. They suggest that careful drafting of patent claims can resolve most cases of divided infringement.¹⁷¹ Claim drafting puts the responsibility on the patent applicant, thus forcing the applicant to consider *ex ante* the possibilities of third parties to divide their infringing activities. This is no doubt a difficult and time-consuming task and becomes almost impossible if applicants are to consider these future possibilities for the entire term of the patent. It is also questionable if what is essentially a legislative gap should mechanically be attributed to the patent holder. In addition, the proposition assumes that all inventions can be drafted unitarily.¹⁷² Unitary claims are broader and include fewer elements that can be divided geographically, but not all inventions can be framed that way. Another problem is that multiple and broader patent claims tend to be easier to render invalid as each claim includes fewer elements.¹⁷³ The advantages of claim drafting as a solution are, however, that it

¹⁷⁰ Timothy R. Holbrook, *Method Patent Exceptionalism*, 102 IOWA L. REV. 1001, 1048 (2017). See also *Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 576 F.3d 1348, 1364 (Fed. Cir. 2009) (holding that a patented method is concerned with the process, rather than the material or apparatus used in that process).

¹⁷¹ Lemley et al., *supra* note 15, at 271–76.

¹⁷² The England and Wales Court of Appeal rejected in *Menashe* that claim drafting could entirely resolve the issue of divided infringement, and chose not to place any legal emphasis on it when localizing the infringement. See *Menashe Bus. Mercantile Ltd. v. William Hill Org. Ltd.*, [2002] England and Wales Court of Appeal, EWCA Civ 1702 at 30 (U.K.).

¹⁷³ Wasserman, *supra* note 8, at 300–01.

works within the existing legal framework and that it provides a greater degree of predictability *ex ante* to all parties concerned.¹⁷⁴

Professor Wasserman instead places greater emphasis on the role of courts in adopting a “substantial effects” test.¹⁷⁵ The suggestion is that parties should be deemed to engage in infringing activities if there is a substantial effect on the domestic market.¹⁷⁶ This mirrors how extraterritoriality has been dealt with in antitrust and trademark law in the United States.¹⁷⁷ To avoid an unduly broad application that disregards foreign sovereignty, Professor Wasserman suggests that courts should consider comity factors, such as the degree of conflict with foreign policy or law, nationality and residence of the parties, the extent to which foreign jurisdictions can provide a remedy, the relative impact of divided infringement domestically as compared to elsewhere, intent to harm or affect domestic commerce, and foreseeability of effects on the domestic market.¹⁷⁸ What constitutes substantive effects is, it is argued, commercial harm,¹⁷⁹ but as other commentators have noted, this can vary in different contexts.¹⁸⁰ How much economic impact is enough can be difficult to ascertain without defined metrics, let alone compare relative to other countries. This is also, as argued below, inappropriate to assume as a blanket test for all types of infringing conduct in the patent context.¹⁸¹ Professor Wasserman suggests comity as a constraint, in particular, the relative impact of divided infringement domestically as compared to elsewhere, but it is not sufficiently clarified how this balancing test should be applied.¹⁸² Finally, and perhaps most importantly, the proposal does not describe the interaction between the localization of infringing conduct falling under patent claims and exclusive rights.

Professor Holbrook likewise recognizes the importance of balancing the interests of the forum with foreign sovereignty. Professor Holbrook proposes, as a first step, that there must be at least some nexus to the country of the protection, and as a second step, that there must be an infringement in both that country and the foreign country implicated by the same conduct.¹⁸³ The wide range of contacts that can suffice lacks in predictability, and provides no screening mechanism to filter out contacts for which there is insufficient sovereign interest in adjudicating. Without that legal threshold, patent holders would be incentivized to sue on the basis of weaker and thus less foreseeable contacts. While the dual infringement prong raises a high legal bar, it is predominantly tailored to respect foreign sovereignty and gives little assurances to the alleged infringer being sued. The consideration given to other implicated countries is also arguably too much, as it

¹⁷⁴ Cf. Jason R. Dinges, *Extraterritorial Patent Infringement Liability after NTP, Inc. v. Research in Motion, Ltd.*, 32 J. CORP. L. 217, 235 (2006).

¹⁷⁵ Wasserman, *supra* note 8, at 302–03.

¹⁷⁶ Other similar approaches, but without the addition of comity, has been to assess whether there is an economic harm to the patent holder in the relevant country of protection, *see* Hutchison & Yahya, *supra* note 32, at 54; Elizabeth M. N. Morris, *Territorial Impact Factors: An Argument for Determining Patent Infringement Based upon Impact on the U.S. Market*, 22 SANTA CLARA HIGH TECH. L.J. 351, 365–68 (2006).

¹⁷⁷ Wasserman, *supra* note 8, at 302–03 (citing, *inter alia*, Hartford Fire Ins. Co. v. California, 509 U.S. 764, 796 (1993); Steele v. Bulova Watch Co., 344 U.S. 280, 281 (1952)).

¹⁷⁸ *Id.* at 304–06.

¹⁷⁹ *Id.* at 302–03.

¹⁸⁰ Holbrook, *supra* note 1, at 2157–58.

¹⁸¹ *See infra* Section V(B)(1)(a).

¹⁸² Wasserman, *supra* note 8, at 305.

¹⁸³ Holbrook, *supra* note 1, at 2165–69.

essentially gives absolute deference to foreign law even in the absence of deep harmonization.¹⁸⁴

Robins has taken a more nuanced approach. Robins suggests that if the patent holder holds parallel patents in the other implicated jurisdictions, then multi-jurisdictional litigation should be the first and preferred option.¹⁸⁵ If, however, no such patents exist, it is proposed that it should be examined whether the disputed subject matter is capable of patent protection abroad and if a foreign patent could not have been drafted to cover the infringing activity. Only if the answer is affirmative to both of these questions, then should courts engage in an extraterritorial application.¹⁸⁶ This gives less deference to foreign sovereignty than Professor Holbrook's proposal, but like Professor Lemley et al., it is problematic in that it places too much accountability on the patent holder for what are really legislative gaps. Furthermore, it assumes that an extraterritorial application is an exceptional recourse in cross-border contexts when at least to some degree it is always a necessary ingredient in the course of localizing infringements.¹⁸⁷ Robins also suggests that the control and beneficial use test from *Decca* is suitable to resolve the issue of divided infringement if an extraterritorial application is engaged.¹⁸⁸ But even if decades have passed since *Decca* it still remains largely unclear what control and benefits are sufficient to drag foreign activities into the scope of infringement.¹⁸⁹

Professor Trimble has argued, in contrast to Professor Holbrook and Robins, that there may be no need to ascertain patentability or the illegality of the infringing conduct under foreign laws.¹⁹⁰ If the alleged infringer is not domiciled or has no assets in the forum, then the refusal of foreign courts to recognize such a judgment would create, it is argued, natural boundaries to the extraterritorial application of patent laws.¹⁹¹ While this certainly has truth to it, as courts refuse to recognize foreign judgments on this ground on a regular basis,¹⁹² it is lacking in that it puts sovereign control in the hands of the parties. It is also true, as has been mentioned earlier,¹⁹³ that even if there is a legal basis to prescribe over cross-border infringing conduct, that adjudication can still have foreign private or public effects, for instance in the case of injunctions. If adjudication is successfully enforced in the forum, other states sharing an interest in the conduct would suffer yet. Furthermore, placing all emphasis on the stage of enforcement imposes no concrete legal restrictions that are ascertainable *ex ante*, which undermines certainty and predictability.

¹⁸⁴ See *supra* Section IV(A).

¹⁸⁵ Robins, *supra* note 66, at 1295–96.

¹⁸⁶ *Id.* at 1311–13.

¹⁸⁷ See *supra* Section III(E)(1).

¹⁸⁸ Robins, *supra* note 66, at 1313.

¹⁸⁹ Several commentators have noted the ambiguities of test in *Decca*, see Yar Chaikovskiy & Adrian Percer, *Globalization, Technology without Boundaries & (and) the Scope of U.S. Patent Law*, 9 INTELL. PROP. L. BULL. 95, 101–02 (2005); Hutchison & Yahya, *supra* note 85, at 247–48; Hutchison & Yahya, *supra* note 32, at 50; Dinges, *supra* note 174, at 234; Osborne, *supra* note 85, at 592–93; Bridget A. O'Leary Smith, *NTP, Inc. v. Research in Motion, Ltd.: Losing Control and Finding the Locus of Infringing Use*, 46 JURIMETRICS 437, 445, 452–57 (2006); Holbrook, *supra* note 1, at 2158–59.

¹⁹⁰ Trimble, *supra* note 1, at 124–25.

¹⁹¹ *Id.* at 124–25.

¹⁹² See cases referred to in *supra* note 139.

¹⁹³ See *supra* Section IV(A).

In another proposal, Haupt instead emphasizes the localization of the invention, similarly to what has already been considered by some courts.¹⁹⁴ The argument is that in cases of divided infringement, the infringing conduct should be localized to where the “core” of the invention is utilized.¹⁹⁵ This departs from an all elements rule and substitutes it with a test which mirrors much of what is used in assessing inventive step in European jurisdictions, which Haupt also notes.¹⁹⁶ A claim-based approach has similarly been identified by Romandini and Klicznik, which largely draws on the approach from the United Kingdom in *Menasche* and *Motorola*.¹⁹⁷ In these cases, the results from the claim construction on what was the “substance” of the invention were used to localize the infringement. Still, several commentators have pointed out the difficulties of pinpointing what is essential in an invention in cross-border situations, and how this could pose serious problems for combination inventions.¹⁹⁸

Finally, although some courts and commentators have turned to indirect liability in cross-border cases,¹⁹⁹ it is insufficient in the sense that it assumes that all inventions capable of divided infringement are divided because of a separation into physical parts. Another problem that has been mentioned is that some jurisdictions assume a double territorial requirement,²⁰⁰ meaning that both the act of offering or supplying components of the invention and the subsequent infringing use has to be localized to the same country of protection. This rules out indirect infringement as recourse for most divided infringement scenarios, and to become effective this requirement has to be deleted or revised. Moreover, indirect liability is derivative of the commitment of a primary wrongful act.²⁰¹ This means that if no primary infringement has been committed then, generally, any indirect liability will be excluded as well.²⁰² This in turn renders difficulties in private international law. The prevailing view from national courts and scholars is that the secondary infringing act in a cross-border situation shall follow the law applicable to the primary infringing act.²⁰³ While that at first seems straightforward and logical, it can impose significant problems to potential infringers acting as intermediaries, as

¹⁹⁴ See *Decca, Ltd. v. United States*, 544 F.2d 1070, 1083 (Ct. Cl. 1976); *Illumina, Inc v. Premaitha Health Plc*, [2017] EWHC 2930 (Pat) at 507 (U.K.).

¹⁹⁵ Haupt, *supra* note 7, at 189, 191. Similar arguments have been raised by other commentators on the basis of the “patently distinctive” test from *Decca*, *see, e.g.*, Osborne, *supra* note 85, at 611–12 (arguing that locating the patently distinctive part of the invention is, or at least, should be a possible recourse to avoid loopholes).

¹⁹⁶ Haupt, *supra* note 7, at 190.

¹⁹⁷ See Romandini & Klicznik, *supra* note 77, at 532–33.

¹⁹⁸ *Id.* at 533. See also Kupzok, *supra* note 1, at 331; Holbrook, *supra* note 1, at 2160.

¹⁹⁹ *Menashe Bus. Mercantile Ltd. v. William Hill Org. Ltd.*, [2002] England and Wales Court of Appeal, EWCA Civ 1702 at 32 (U.K.); Lee, *supra* note 1, at 367; Benyamini, *supra* note 87, at 240–41.

²⁰⁰ See *supra* Section III(E)(2), with references to Germany and the United Kingdom as examples.

²⁰¹ See *OBG Ltd. v. Allan*, [2008] 1 AC 1, 27 (U.K.); *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 435 (1984) (for some examples of exceptions, *see* Paul S. Davies, *Accessory Liability*, 223–25 (1st ed. 2015)); Graeme B. Dinwoodie, *A Comparative Analysis of the Secondary Liability of Online Service Providers*, SECONDARY LIABILITY OF INTERNET SERVICE PROVIDERS 10 (Graeme B. Dinwoodie ed., 2017).

²⁰² See *Limelight Networks, Inc. v. Akamai Techs., Inc.*, 572 U.S. 915, 922 (2014) (“where there has been no direct infringement, there can be no inducement of infringement under § 271(b).”).

²⁰³ *Subafilms, Ltd. v. MGM-Pathe Communications Co.*, 24 F.3d 1088 (9th Cir. 1994) (United States); *Abkco Music & Records Inc. v. Music Collection Int’l Ltd.*, [1995] RPC 657 (U.K.); *Folgerecht bei Auslandsbezug*, 1994 GRUR 798, I ZR 24/92 (Ger.); Bradley, *supra* note 79, at 573–75; Matulionytė, *supra* note 75, at 50–58 (with further references).

it impairs the possibilities to ascertain *ex ante* what law must be followed.²⁰⁴ For indirect infringement to actually resolve the problem of divided infringement, it is clear that significant substantive revision is needed. Most statutes on indirect liability were drafted in an age when digital inventions did not exist or were not commonplace, and so the language often turns on physical components. This does not mean, however, that lessons cannot still be drawn from indirect liability standards.

B. A Substantive Balancing Test

A fundamental flaw in previous proposals is that the issue of localizing infringing conduct is disengaged from what patent law is about. A “substantial effects” or “economic” test assumes that commercial harm is a prerequisite for patent infringement, which indirectly shifts the focus to objective territoriality. While patents serve important commercial interests, patent law imposes no additional requirement, such as proving commercial harm, in order to exercise exclusive rights. Patent infringement is a strict liability tort,²⁰⁵ and the mere fact that conduct is cross-border should not change that. The “control” and “beneficial use” test which has lingered in the United States also has no plausible legal basis in patent law. Even if it could be refined to minimize existing uncertainties, there is, and never has been, a statutory requirement that a patent holder must prove that third parties have controlled the invention and accrued benefits in order to invoke granted remedies.²⁰⁶ Each of these tests, if pursued, imposes a risk that the localization of patent infringement becomes disconnected from what is the actual subject of the infringement, that is the exploitation of the invention. There is also a need to recognize that patents are unique from other intellectual property rights. While all intellectual property rights suffer more or less from tensions between territoriality and cross-border use, patents bring an added tier of complexity with the need to satisfy patent claims in order to infringe, which essentially turns on a technical analysis.

The line of cases and proposals that instead target the use of the invention as a proxy for the question of localization similarly suffer shortcomings. The scope and limits of the “patently distinctive” test in *Decca* and the “substance” of the invention test in *Menashe* were never defined, and remained largely unclear. The problems associated with cases where no essential part of the invention can be attributed to a particular claim element, as is the case for combination inventions, were also never explained.²⁰⁷ Furthermore, no considerations were proposed to identify possible foreign effects as a result of the adjudication, and thus essentially ignored potential adverse impacts on sovereignty and foreign public and private interests.

²⁰⁴ For criticism in the copyright and trademark context related to this problem, see Graeme B. Dinwoodie et al., *The Law Applicable to Secondary Liability in Intellectual Property Cases*, 42 N.Y.U. J. INT'L L. & POL. 201, 207–09 (2009).

²⁰⁵ See *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1527 (Fed. Cir. 1995); *In re Seagate Tech., L.L.C.*, 497 F.3d 1360, 1368 (Fed. Cir. 2007) (both characterizing patent infringement as strict liability). For a more nuanced discussion on strict liability in patent law, see generally Roger D. Blair & Thomas F. Cotter, *Strict Liability and Its Alternatives in Patent Law*, 17 BERKELEY TECH. L.J. 799 (2002).

²⁰⁶ O'Leary Smith, *supra* note 189, at 455.

²⁰⁷ See *Holbrook*, *supra* note 1, at 2160 (criticizing that “[t]here need not be a singular, defining feature of an invention that is key to its patentability, which renders this test difficult, if not impossible, to apply.”).

There is then a logical and legal gap between how the invention as defined in the claims is being utilized in cross-border situations, and how that should guide weighing sovereign, public, and private interests. But, of course, this does not have to be a one-sided analysis. What constitutes sufficient nexus to the country of protection is a flexible enough concept to consider both contacts and interests,²⁰⁸ and the fact that sovereignty is a shared duty suggests that such calling is indeed warranted.²⁰⁹ This is not an easy exercise. A test has to be carefully defined and limited to avoid turning it into an all-inclusive balancing test or respecting foreign sovereignty at the absolute expense of national sovereignty.

This article presents a new proposal for closing the patent loophole, which has remained wide open for far too long. The first premise is that the analysis must be separated into what constitutes a technical and commercial appropriation of the invention, depending on what is the alleged infringing conduct. The basic objective is to align the jurisdictional analysis, starting with what constitutes sufficient nexus, with what is relevant for each form of infringing conduct.

Whether there is a technical appropriation of an invention in cross-border contexts, as is the case of making or use, is in essence a technical test from the perspective of a skilled person in the art. That examination should further extend to where the invention is exploited in cross-border contexts. The task is not to tie the achievement of the technical contribution to a specific claim element. Instead, the effort is concentrated on relating that contribution to what is a tangible result, which manifests itself in the alleged infringing conduct. Unlike other proposals, the all elements rule is still respected, but instead of localizing each claim element, we are tying them to what has been defined as the locus of the technical contribution. The issue of divided infringement is avoided by letting that location become the proxy for what law is applicable to the infringing conduct falling under the entire claim.

There is no issue of divided patent claims for what counts as a commercial appropriation of the invention. This simplifies and streamlines the analysis for alleged infringing conduct such as offers or sales of infringing products or processes. Instead of being concerned with a technical analysis of the invention and its manifested locus, there is then a focus on what is the commercial impact and control, and where. This acts on the assumption that both subjective and objective territorial factors can be relevant for what can constitute sufficient nexus.

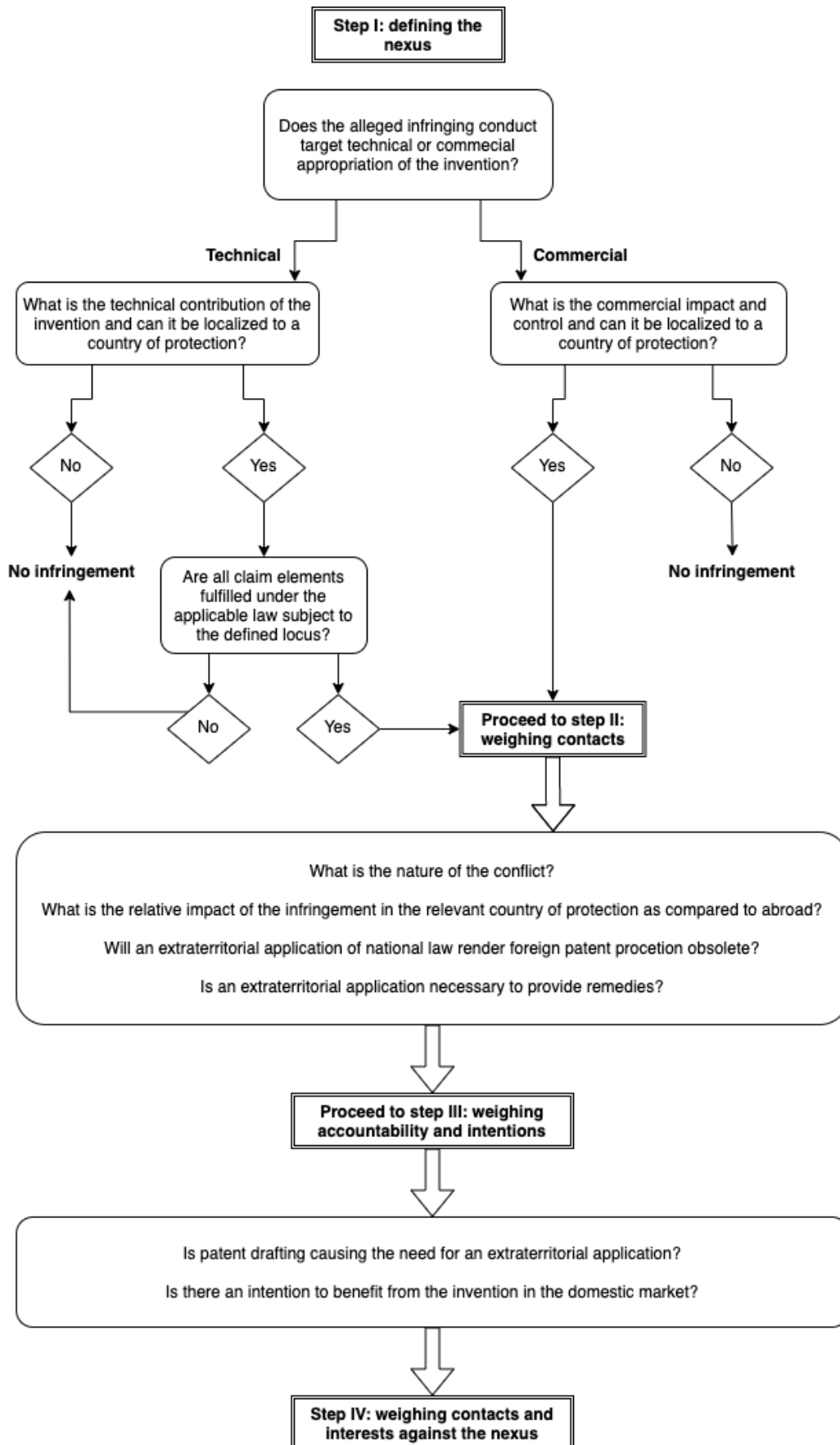
This split analysis will form the basis for identifying a nexus which is closely linked to what is most relevant for the alleged infringing conduct. The emphasis on proximity minimizes, but does not eliminate, appreciable impacts in other countries. Since we are ultimately delving into what is the interpretation of national patent law, it is conceivable that different courts in different jurisdictions will adopt their own variations of what constitutes a sufficient nexus. There is an

²⁰⁸ Weighing both contacts and interests into the question of prescriptive jurisdiction has long been advocated in both the United States and Europe as a means of adding a necessary level of flexibility in considering sovereignty and avoid unqualified and rigid exercise of prescriptive jurisdiction. See Andreas F. Lowenfeld, *International Litigation and the Quest for Reasonableness*, 245 RECUEIL DES COURS 9, 45 (1994); David J. Gerber, *The Extraterritorial Application of German Antitrust Law*, 77 AM. J. INT'L L. 756, 779–83 (1983); Ryngaert, *supra* note 23, at 800–01; Larry Kramer, *Vestiges of Beale: Extraterritorial Application of American Law*, SUP. CT. REV. 179, 220–21 (1991). See also RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW § 403 (1986) (listing both private and state interests as factors to consider in assessing whether prescriptive jurisdiction is unreasonable).

²⁰⁹ See *Island of Palmas (United States v. Netherlands)*, 2 R. INT'L ARB. AWARDS 829, 839 (1928).

inherent and required degree of flexibility to account for varying circumstances. Technical respectively commercial proximity is, therefore, the starting point for narrowing down the nexus, but is not the end of the analysis. To counter potential spillover effects on foreign markets, it is also proposed that alternative contacts which have been identified are weighed against each other. This fills a much-needed gap where courts routinely localize infringements with little to no consideration as to how that impacts foreign conduct and states. Finally, due weight is still given to any reasonable accountability that can be traced to the patent holder and ensures that an extraterritorial application is not withdrawn when there is a clear intention from the alleged infringer to benefit from the invention in the domestic market.

The proposed guidelines provide a structured methodology to follow when considering whether or not to assert prescriptive jurisdiction in a cross-border setting. The objective is to aid courts in determining whether it is appropriate to apply national patent law, and to what extent. The figure below shows a flowchart of the different steps in the analysis.



1. Step I: Defining the Nexus

The starting point of the jurisdictional analysis lies in defining the nexus to the relevant country of protection. With concurrent, prescriptive jurisdiction as the current legal framework, courts are becoming more liberal in what constitutes sufficient nexus based on objective or subjective territorial factors. This in theory opens up for a flexible and all-inclusive approach, where a variety of factors can be taken into account in pinpointing the nexus.²¹⁰ But this arguably comes at the cost of predictability and uniformity, inviting more suits on a weaker basis, and more so against the interests of foreign states. Instead of enforcing restraint merely at a later stage in the analysis,²¹¹ it is here argued that a fair substantive outcome is better served by framing the connecting factor in its appropriate light from the start. The guiding criteria in this context should be how the connecting factor actually relates to the conduct which is alleged to be infringing under national patent law. In other words, the conduct must be related to what jurisdiction it is being subject to, and sufficient enough to interfere with the patent holder's own exercise of the exclusive rights.

This can further be compared and contrasted to the "focus" test as part of the presumption against extraterritoriality, which is also framed to hook prescriptive jurisdiction over connections directly related to the exclusive rights but from a statutory construction.²¹² The unfortunate outcome of the "focus" test, as has been explained above,²¹³ is that there is an overemphasis on vague and open-ended statutory language. Too often this ends with a prohibitive conclusion as to whether cross-border conduct can amount to infringement or not.²¹⁴ In contrast to the presumption against extraterritoriality, it is here recognized that there is a critical need to distinguish localization from a presumptively prohibited extraterritorial application. The act of localizing patent infringement in a cross-border situation is an absolute necessity, both as a legal and practical matter if adhering to *lex loci protectionis* as the standard choice of law rule. It is precisely the results from the localization that forms the basis for assuming prescriptive jurisdiction,²¹⁵ which is not incompliant with public international law.

a. Does the Alleged Infringing Conduct Target Technical or Commercial Appropriation?

It is clear that there is confusion amongst both courts and commentators as to what should be the appropriate theoretical framework in localizing patent infringement. The Court of Appeals of Düsseldorf adopted in *Prepaid-Karten II* an approach that focused on the commercial intent to exercise the invention in

²¹⁰ See in this regard Holbrook, *supra* note 1, at 2170–71.

²¹¹ This could be compared with, as an example, RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW § 403 (1986), which acts as a limiting threshold for what is a wide range of connecting factors in § 402 that could be sufficient to assert prescriptive jurisdiction.

²¹² See *RJR Nabisco, Inc. v. European Cmty.*, 136 S. Ct. 2090, 2101 (2016). See also Timothy R. Holbrook, *Boundaries, Extraterritoriality, and Patent Infringement Damages*, 92 NOTRE DAME L. REV. 1745, 1779–80 (2017) (suggesting that the "focus" test delineates what is sufficient nexus and which is analyzed from the prescriptive of the scope of the exclusive rights).

²¹³ See *supra* Section III(E)(1).

²¹⁴ See *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 528 (1972); *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437, 456 (2007).

²¹⁵ See Trimble, *supra* note 1, at 117; Neumann, *supra* note 75, at 520–22.

Germany, even if the alleged infringing conduct was use of a process.²¹⁶ Professor Chisum has similarly argued that “a patent’s scope should match, in function, though not necessarily in physical terms, the ‘market’ of the territory of the country issuing the patent.”²¹⁷ Other commentators have followed in that same line and held that commercial effects or economic harm in the country of protection should be a prerequisite to asserting prescriptive jurisdiction in cross-border cases.²¹⁸ That approach has not been restricted to merely offers or sales and has instead been proposed across the board, for all types of infringing conduct. Other courts and commentators have, in contrast, and as mentioned above,²¹⁹ used a predominantly technical approach in examining cross-border patent infringement as it relates to an infringing use, but without remarking what should be the appropriate legal standard for other types of infringing conduct. There is an important distinction between, on the one hand, that there is a commercial interest to the patent holder in exercising all exclusive rights, and on the other hand, that the substantive breadth of those rights should be determined by predominantly commercial factors. This article argues that, while there is indeed a wide commercial interest overshadowing all exclusive rights, how these rights are interpreted substantively differ as a result of differences from what is the form of appropriation.

Adopting a framework that ties the relevant connecting factors to the relevant exercise of the exclusive rights makes sense because it structures the analysis towards what is the real legal basis and scope of prescriptive jurisdiction. Although there are contrasting and much more detailed approaches as to what constitutes infringement in different jurisdictions, these forms of infringing conduct can effectively be grouped into what is either technical or commercial appropriation of the invention. This characterization is important in the context of localization, and in particular, as a first step in this analysis because what the appropriation of the invention is will impact what connecting factors should be given legal weight. It will also be decisive for whether it is necessary to delve into localization of the infringing conduct falling under the patent claims or the exclusive rights, or both.

The *making* of a product concerns when all claim elements are embodied in a product, thus resulting in a tangible replication of the invention.²²⁰ The *use* of a product or process instead occurs when that product or process is put into effect

²¹⁶ See *supra* Section III(E)(2), referring to Prepaid-Karten II, Court of Appeals of Düsseldorf, Dec. 10, 2009, 2 U 51/08 (Ger.).

²¹⁷ Chisum, *supra* note 20, at 608.

²¹⁸ See *supra* Section V(A), referring to Wasserman, *supra* note 8, at 302–03; Hutchison & Yahya, *supra* note 32, at 54; Morris, *supra* note 176, at 365–68.

²¹⁹ See *supra* Sections III(E)(3) and V(A), referring to, *inter alia*, Decca, Ltd. v. United States, 544 F.2d 1070, 1083 (Ct. Cl. 1976); Menashe Bus. Mercantile Ltd. v. William Hill Org. Ltd., [2002] England and Wales Court of Appeal, EWCA Civ 1702 at 33 (U.K.); Research in Motion U.K. Ltd. v. Motorola Inc., [2010] England and Wales High Court, EWHC 118 (Pat) at 156 (U.K.); Haupt, *supra* note 7, at 189, 191; Osborne, *supra* note 85, at 611–12.

²²⁰ Benyamini, *supra* note 87, at 102; Hutchison & Yahya, *supra* note 85, at 264. See also *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 527–28 (1972) (a product is not “made” unless all constituent parts of a product are assembled); *Virgin Atlantic Airways Ltd. v. Delta Airways, Inc.*, [2010] England and Wales High Court, EWHC 3094 (Pat) at 131–35 (U.K.) (considering that there is no direct infringement through making, use, offers for disposal or disposal of a kit of unassembled parts, but instead indirect infringement). But note that other jurisdictions have upheld laxer legal standards, by considering it sufficient that if all essential parts, notwithstanding excluded non-essential parts, are assembled. See Benyamini, *supra* note 87, at 102 (citing UNO City I [Supreme Court of Austria] 1987, 18 IIC 525, 528 (Austria); UNO City II [Supreme Court of Austria] 1989, 19 IIC 383, 386 (Austria)).

so as to achieve the envisaged technical result of the invention.²²¹ What these activities have in common is that there is a technical form of appropriation, as it has been defined in the patent claims. When that transpires in a cross-border context, it will therefore also become necessary to ascertain where that appropriation occurs. This means that whether the patent claim is satisfied or not is also directly informing where the exclusive right is exercised, and it is therefore in this setting that the issue of divided patent claims arises and should properly be analyzed.

In contrast, the act of *offering* and *selling* addresses the commercialization of products or processes, or products derived from processes, which embody the invention. Acts such as advertising, displaying or soliciting orders, and ultimately dispensing the products or services into the stream of commerce are all commercial acts.²²² While all elements of the patent claim must still be satisfied, there is simply no need in these cases to consider if previous use or making was infringing, and as a result neither a need to consider where the making occurred. This also means that the content of the patent claims no longer becomes an issue for the purpose of localization, which instead becomes limited to localizing the points of contacts attributed to those activities only. The issue of divided infringing acts, but not divided patent claims, thus exists in this regard.

Indirect infringement, through *offering or supplying essential components* for carrying out the invention with the requisite knowledge, lies in the middle of these two forms of infringing appropriations. The initial acts of offering or supplying are too commercial acts but are specifically directed at the distribution of means for putting the invention into effect. Different courts have understood that or similar requirements differently,²²³ but it is nonetheless clear that the means provided must be relevant to the technical appropriation of the invention. This too means that the issue of both divided patent claims and infringing acts arises in cases of indirect infringement. In this intermediate category also lies infringing conduct such as *offering, selling, or using products derived from a patented process*, which is an exclusive right belonging to the patent holder in many

²²¹ Benyamini, *supra* note 87, at 122, 133; Hutchison & Yahya, *supra* note 85, at 265; Dan L. Burk, *Patents in Cyberspace: Territoriality and Infringement on Global Computer Networks*, 68 TUL. L. REV. 1, 39–41 (1993). *See also* *NTP, Inc.*, 418 F.3d at 1316–17 (turning to the ordinary meaning of “use” as “put into action or service”); *Bauer & Cie v. O’Donnell*, 229 U.S. 1, 10–11 (1913) (stating that the right to “use” is a comprehensive term which embraces “the right to put into service any given invention.”).

²²² Benyamini, *supra* note 87, at 114–21, 137–39; Hutchison & Yahya, *supra* note 85, at 265–66; *3D Sys., Inc. v. Aarotech Labs., Inc.*, 160 F.3d 1373, 1379 (Fed. Cir. 1998) (emphasizing that offers to sale generate an interest in a potential infringing product to the commercial detriment of the patent holder). In some jurisdictions such as the United Kingdom, however, disposition is examined through a contractual rather than a commercial lens, as has been mentioned elsewhere, *see supra* note 92.

²²³ *See* *Nestec SA v. Dualit Ltd.*, [2013] English and Wales High Court, EWHC 923 (Pat) at 168–76 (U.K.) (summarizing the various approaches taken in Europe, on the one hand, whether means must contribute to implementing the technical teaching of the invention, *citing* *Flügelradzahler*, German Federal Court of Justice, 2004 GRUR 758, X ZR 48/03 (Ger.), and on the other hand, whether the means must be such that distinguish the invention from prior art, *citing* *Sara Lee v. Integro*, Dutch Supreme Court, Case C02/227HR (Neth.)); *Golden Blount, Inc. v. Robert H. Peterson Co.*, 365 F.3d 1054, 1061 (Fed. Cir. 2004) (stating that the defendant must have known “that the combination for which its components were especially made was both patented and infringing” and that defendant’s components have “no substantial non-infringing uses.”); *Dawson Chem. Co. v. Rohm & Haas Co.*, 448 U.S. 176, 213 (1980) (explaining that patent holders are merely authorized to control non-staple goods that are capable of only of infringing use in a patented invention, and that are essential to the invention’s advance over prior art). *See also* Benyamini, *supra* note 87, at 197–203.

jurisdictions.²²⁴ In most jurisdictions the exclusive rights afforded to the patent holder are mirrored for the resulting products, even if it is the process that is subject to patent protection. The rationale behind this is that it is deemed that the economic value of the invention really lies in the product.²²⁵ Depending on what is the envisaged infringing conduct, there can then be either technical or commercial appropriation of the product obtained by the process.

In sum, whether the alleged infringing conduct targets a technical or commercial appropriation of the invention or both, is an essential first step in understanding which direction the jurisdictional analysis should take and how the infringing conduct should be localized.

b. What is the Technical Contribution of the Invention and Where is it Achieved?

If the alleged infringing conduct is concerned with what is a technical appropriation of the invention, it must be defined what the appropriate nexus should be. It is here proposed that a two-step analysis should be adopted: first, identifying what is the technical contribution of the claimed invention, and second, ascertaining where that technical contribution is achieved in the context of the alleged infringing conduct. The logic is that whether conduct falls under a patent claim or not is a technical test. This fundamental criteria for assessing patent infringement should not be abandoned merely because conduct is now cross-border. Just as we examine *when* there is infringement from a technical standpoint, so should we evaluate *where* an infringement occurs from that same lens.

The first prong of this test, defining the technical contribution of the claimed invention, would necessarily draw upon existing experiences from national patent law. Even if the concept of technical contribution is perhaps most familiar in Europe to distinguish between technical and non-technical claim elements for the purpose of examining novelty and inventive step,²²⁶ similar approaches have also been taken for assessing infringement. A purposive construction that involves delving into the objective behind the invention, as it is expressed in the claims, has long been the default method for construing patents in the United Kingdom,²²⁷

²²⁴ See 35 U.S.C. § 271(g) (2021) (“[w]hoever without authority imports into the United States or offers to sell, sells, or uses within the United States a product which is made by a process patented in the United States shall be liable as an infringer”); The Patents Act, 1977 § 60(1)(c) (U.K.) (“where the invention is a process, he disposes of, offers to dispose of, uses or imports any product obtained directly by means of that process or keeps any such product whether for disposal or otherwise”); 特許法 Tokkyohō [Japanese Patent Act] 1959, Article 101(vi) (“where a patent has been granted for an invention of a process of producing a product, acts of possessing the product produced by the said process for the purpose of assigning, etc. or exporting it as a business”).

²²⁵ See Benyamini, *supra* note 87, at 157–58.

²²⁶ See EPO Board of Appeals T 154/04 (*Estimating sales activity/DUNS LICENSING ASSOCIATES*); EPO Board of Appeals T 258/03 (*Auction method/HITACHI*).

²²⁷ *Catnic Components Ltd. v. Hill & Smith Ltd.*, [1982] RPC 183 at 244 (U.K.) (emphasizing a purposive and construction of patent claims to discern what is the “pith and marrow” of the claim when assessing infringement).

France,²²⁸ Germany,²²⁹ Canada,²³⁰ and Sweden²³¹. In these jurisdictions, and as well as in the United States,²³² a claim construction focused on giving a technical purpose behind claim elements is also assumed under the doctrine of equivalents. The trend is to treat the person skilled in the art as the legal departure for examining whether the alleged infringing product or performance fulfills the elements of the claim, literally or under the doctrine of equivalents.

The second prong of this test localizes the technical contribution, as it has been defined in the claimed invention and as it is manifested in the alleged infringing activities. This rule is workable for the same reason that abstract ideas or concepts are not patentable. Inventions must be able to be carried out to be patentable. The contribution that is expected to be achieved must be capable of being manifested and replicated. The premise is therefore that this manifestation has a locus, which in turn can be attributed to the infringing conduct. To be clear, we are not concerned with a technical contribution that distinguishes the invention from prior art, which is an analysis typically reserved for invalidity. Instead, we are concerned with the locus attributed to achieving the technical contribution, as it is apparent in the form of a manifested technical effect in the infringing conduct.

The task here is not to isolate what is the “heart” or “essential” use of the invention in the infringing conduct. Some methods have no individual essential steps,²³³ and systems or products have no individual essential components. The technical effect can be collective, as a result of the performance or presence of several steps or parts. It will not be possible in these cases to attribute the achievement of the technical contribution to a particular claim element.²³⁴ The same is true for combination inventions, where the invention really lies in the act of combining separate parts, and selection and problem inventions, where the technical contribution is not tied to an individual component in the claim or even anything in the claim at all. The technical contribution is then instead converted to what is ultimately a tangible result.²³⁵ While this at first sight can seem

²²⁸ *Dolle v. Emsens* [Court of Appeal of Paris] 1990, Ann. Propr. Ind., 235 (Fr.) (claims should be construed purposively to define the substance of the invention when assessing infringement).

²²⁹ *Drehzahlmittlung*, German Federal Court of Justice, 2004, GRUR 844, X ZR 82/03 (Ger.) (stressing the importance for claim construction of establishing the technical meaning of claim elements and what their contribution is to the intended result); *Spannschraube*, German Federal Court of Justice, IIC 1999, 30, 932 X ZR 85/96 (Ger.) (patent terms are to be given a meaning such that the technical function is properly reflected).

²³⁰ *Whirlpool Corp. v. Camco Inc.*, Canadian Supreme Court, [2000] 2 S.C.R. 1067 (Can.) (claims should be given a purposive construction to determine what are the essential elements of the invention).

²³¹ Case PMT 6900-16, Jul. 10, 2017, Svea Court of Appeals (Swe.); NJA 2000 § 497, Swedish Supreme Court (Swed.) (emphasizing that the scope of patent protection is determined against the inventive concept as described in the patent).

²³² *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609–10 (1950) (establishing the doctrine of equivalence and stressing the consideration given to the purpose behind claim elements, as understood from a person skilled in the art).

²³³ *Cf. NTP, Inc.*, 418 F.3d at 1318 (holding that a method or process consists of one or more operative steps, and, accordingly, “[i]t is well established that a patent for a method or process is not infringed unless all steps or stages of the claimed process are utilized.” (*citing* *Roberts Dairy Co. v. United States*, 530 F.2d 1342, 1354 (Ct. Cl. 1976))).

²³⁴ *See* *Kupzok*, *supra* note 1, at 331; *Holbrook*, *supra* note 1, at 2160.

²³⁵ The Federal Circuit rejected in *Bayer* an argument that 35 U.S.C. § 271(g) extended to the production of information. *See* *Bayer AG v. Housey Pharmaceutical, Inc.*, 340 F.3d 1367, 1370, 1377 (Fed. Cir. 2003). The Federal Circuit also rejected a similar argument in *NTP (II)*, where it considered that the patent which covered the transmission of information through e-mail messages did not entail the manufacturing of a physical product. *See NTP, Inc.*, 418 F.3d at 1323–24. But unlike those cases, it is here not argued that the tangible result of method claims should

incompatible with the two steps detailed above, the fundamental question which is decisive for localizing the infringing conduct remains the same. We are still identifying what is the technical contribution to the invention as a first step, then as a second step localizing the tangible result that exercises that contribution, as it has been manifested in the alleged infringing conduct. When the achievement of the technical contribution is merged with the tangible result of the claim, so will therefore the infringing conduct also become tied to that result.²³⁶ This approach can be distinguished from the “patently distinctive” test in *Decca* and the “substance” of the invention test in *Menashe*, where both courts engaged in pinpointing what was deemed essential in the invention. While it is true that technical contribution can sometimes be related to what is the “core” of the invention, there is here no proposed claim dissection. The focus is instead on the tangible results.

This analysis should not change depending on claim type. The proposition from the Federal Circuit in *NTP (II)*, that system claims should be treated differently as these involve the collective rather than individual use of components,²³⁷ is overly formulaic and should not be followed.²³⁸ Claim types are directed at different kinds of infringing activities. While claim type can of course impact what form of conduct is considered infringing, all patent claims remain equally territorially limited, regardless of format.

To exemplify how the analysis above would work in practice, let us assume that an invention is related to artificial intelligence, covering a neural networking method for translating words comprised of four components: storing training data from word dictionaries, selecting data samples from the training data, generating negative samples used for prediction analysis, and training a language model using these samples. It would be simple enough to divide these elements into different jurisdictions for a presumptive infringer. The training data could be gathered in country A and stored on a cloud storage system on servers situated in country B. That data could then be accessed in country C to select and generate negative samples, and subsequently accessed in country D to perform the training analysis. Let us further assume that the patent is construed such that the technical contribution lies in the interaction of the different steps, in particular in how training data is categorized and used for prediction analysis and how the language model is trained. It would run contrary to that claim construction to attribute the technical contribution to each specific country where a step is being performed, if that contribution instead really lies in an interaction of steps. Any attempt to localize the infringing conduct to each such country would then be liable to result in excessive jurisdiction and legal discrepancies. Instead, it is much closer at hand to assume that the technical contribution has become merged with use of the method as a whole. It is then the tangible result of that method that is focused on for the purpose of localization, which would be after all steps are combined to form the language model. Of course, it is possible that a prospective infringer has

be treated as a product in interpreting patent statutes. The tangible result is simply invoked to pinpoint and localize what is otherwise an intangible part of the invention.

²³⁶ A similar proposition has been made by *Hutchison & Yahya*, holding that use of a patented end product technology occurs where the end use of the technology is located. *See Hutchison & Yahya, supra* note 85, at 265 (*citing* David Vaver, *INTELLECTUAL PROPERTY LAW: COPYRIGHT, PATENTS, TRADE-MARKS* 151–52 (1st. ed. 1997)).

²³⁷ *NTP, Inc.*, 418 F.3d at 1317–18.

²³⁸ This artificial legal division in the context of extraterritoriality has unsurprisingly been subject to significant criticism, *see Holbrook, supra* note 1, at 2152–53; *Wasserman, supra* note 8, at 291.

arranged its business operations, such that the tangible result is achieved where there is no directly infringing use. It then becomes essential to seek out legal relief based on other exclusive rights, as just the exclusive right to use the invention can obviously never be enough to capture all forms of infringing conduct. We must then instead look to other exclusive rights, such as offering to sell or sell products obtained directly from the process. We will then be localizing those offers or sales.

What has been described above is not an unprecedented approach. In *Decca*, even if the instructions or programs used as part of the system were a set of equations, the Court found that “the means for receiving the signals and processing them and the means for performing those instructions and achieving the end result quite clearly have a tangible, physical existence which meets the terms of the claim.”²³⁹ It was the control and beneficial use of that equipment within the United States that subsequently formed the basis for concluding that there was infringement.²⁴⁰ This shows how embodiments that are the result of the use of the invention can be invoked for the purpose of localizing the infringing conduct. This also becomes similar to the approach taken in Germany in localizing direct patent infringement to where all steps are finalized. Depending on the nature of the invention, as was the logic in that case, it will be in that final destination where the advantages of the entire process are realized.²⁴¹

The technical contribution which is manifested in the infringing conduct does not have to be subject to a single locus. The tangible result can sometimes be replicated across different jurisdictions. Depending on the nature of the invention and how it is construed, there can be several loci, in which case each becomes a connecting factor for localizing the infringement. That there can multiple loci to where the technical contribution is achieved is not just called for as a matter of technical sense and logic, but is also reasonable in ensuring effective patent enforcement. If for example the alleged infringer has no assets in countries where some of the infringing activities are deemed to take place, or is domiciled in a jurisdiction unsusceptible to enforcing foreign judgments, then it becomes essential to be able to sue for infringement in other countries where are relevant contacts for the purpose of exercising the invention.

A drawback of the proposed test is that what is the technical contribution is a question that depends on what law is applicable. Different jurisdictions assume different tests, and some jurisdictions may even have to develop new tests. This comes at a cost of predictability for foreign actors, but no more than what is already expected for multi-jurisdictional and cross-border conduct, which will always have to face discrepant infringement and validity standards as a result of a lack of deep harmonization. That loss of predictability should also be deemed acceptable as it conforms the issue of localization to what is really deemed most essential behind the alleged infringing use of the invention, but without engaging in a “dissecting” approach which sometimes has been pursued by courts and commentators. This frames the jurisdictional question in a more natural light and links it closer to proximity. Furthermore, using a technical test for the purpose of localizing infringing conduct is arguably more predictable for the parties concerned than concentrating on control or derived benefits. These criteria inherently result in less predictability *ex ante* and have no robust basis in patent law.

²³⁹ *Decca, Ltd. v. United States*, 544 F.2d 1070, 1080 (Ct. Cl. 1976).

²⁴⁰ *Id.* at 1083.

²⁴¹ *See Rohrschweissverfahren*, German Federal Court of Justice, Feb. 24, 2007, X ZR 113/04 (Ger.).

c. All Claim Elements Should be Subject to the Locus of the Technical Contribution

The above does not suggest that other claim elements which are not attributable to the same locus of the technical contribution should be ignored in cross-border cases. All claim elements must still be fulfilled; otherwise we would effectively be redrafting the invention. This important premise comes at a tactful balancing task, however. On the one hand, it would largely render patent protection and enforcement obsolete for divided patent claims if we persist in requiring that all elements are fulfilled in one specific country of protection. On the other hand, it would similarly be counterproductive to adjudicate these elements under the law of their natural locus. Such a disruptive analysis would be liable to result in legal discrepancies. This suggests that neither an overly restrictive nor expansive approach is workable and that there is a need to find a more balanced solution.

Patent claims merely function as limitations of national exclusive rights granted by the legislature. In that light and as has been concluded earlier,²⁴² it is true that all claim elements must be subject to the application of the same law under which they were generated, that is *lex loci protectionis*. The application of a single national law, however, is not to be confused with a territorial requirement. There is an important difference between ascertaining whether all claim elements are satisfied under the application of a single national law and whether all claim elements are satisfied in one specific country of protection. A solution that avoids both the limitations of a strict territorial approach and disparate legal conditions resulting from a looser application is to tie all claim elements to the locus of the technical contribution, whether essential or non-essential, and ask under that same applicable law whether there is an infringement.²⁴³ This would satisfy the need for uniformity, predictability, and efficacy. A single national law is invoked to evaluate the entire infringing conduct, and since that is in turn tied to where the technical contribution is achieved, it is closely related to what is the core of the invention and thus most liable to interfere with the exclusive rights. This would not offend foreign sovereignty as there is no justifiable interest in exclusively adjudicating the conduct, and as there is no prohibition in public international law against taking into account foreign facts in adjudicating cross-border conduct which have sufficient domestic nexus.²⁴⁴

d. What is Commercial Impact and Control and Where is it Cognizable?

If the alleged infringing conduct is instead concerned with what is a commercial appropriation of the invention, the focus of the nexus shifts to that

²⁴² See *supra* Section III(E)(1).

²⁴³ This then becomes akin to the legal treatment of indirect liability in cross-border contexts, as mentioned above, where the secondary infringing act follows the law applicable to the primary infringing act. See *supra* Section V(A). A similar proposal has also been raised by Professor Holbrook, with references to 35 U.S.C. § 271(g)(f) by analogy. Professor Holbrook suggests that so long that is some domestic nexus, then national courts should assess whether the patent is infringed notwithstanding territorial boundaries. See Holbrook, *supra* note 1, at 2171–72. The differences between that approach and the present is that it is here instead proposed that we limit that nexus to constitute what is the technical contribution of the invention. Furthermore, instead of ignoring territorial lines, we are here attributing all claim elements to what is a strong connecting factor, rather than merely “some” nexus as Professor Holbrook proposes.

²⁴⁴ See *supra* Section III(E)(1).

same lens. The legal concepts of calculating commercial detriment, through measurements of actual or potential loss of sales or price erosion, are well familiar in patent law. Those concepts still remain applicable when the infringement is geographically divided, with the added element of attributing such effects to a domestic market.²⁴⁵ Courts have commonly localized offers and sales to the country of protection where the actual customer is residing, and thus where the act is deemed consummated.²⁴⁶ The more problematic cases have been where offers are made on the internet without a clear and defined recipient. An increasing number of courts have resorted to the targeting doctrine in this regard, even if with some inconsistent results.²⁴⁷ To be clear, it is not the intention as such which is in focus in cases of targeting, but the potential that there is a manifested commercial impact in the relevant country of protection. The intention is a mere proxy for that purpose for acts that have yet been consummated. A substantial effect test, which has been proposed in the context of divided patent claims as opposed to divided infringing acts,²⁴⁸ could be a workable criterion for this purpose, save for the need to define what effect is substantial enough.²⁴⁹ Another feasible alternative is to admit that almost any commercial impact is sufficient to count as nexus. So long as the infringement is not *de minimis*, and thus arguably within the scope of the exclusive rights, so should the patent holder be able to enforce its right even in a cross-border environment. Whether that commercial impact is of such magnitude that it outweighs foreign implicated interests could then instead be more properly considered in the second step of the analysis below when weighing contacts.²⁵⁰

It is clear that a full-fledged commercial impact test faces difficulties in capturing all relevant infringing conduct. Because this test only focuses on actual or potential effects, it is imperfect in the sense that it neglects the infringing acts themselves. But serious doubt has been raised as to whether offers or sales consummated abroad can constitute patent infringement, with some commentators maintaining that “prohibiting mere offers in the United States made solely to effectuate lawful transactions outside the United States is, in effect, an indirect regulation of that foreign activity.”²⁵¹ The problem with that argument, however, is that it neglects that not just objective but also subjective territoriality has an important place in regulating infringing conduct. With patent infringement being a strict liability tort,²⁵² and therefore having no prerequisite to establish inflicted harm resulting from infringing conduct, it is not so much actual or potential commercial harm that is suspect. Rather, it is that the patent holder is losing market control. A blanket rejection of subjective territoriality in the context of offers and sales is not compatible with that premise. Furthermore, in a cross-border environment, where there are by definition multiple points of contact, it is

²⁴⁵ See Wasserman, *supra* note 8, at 303; Morris, *supra* note 176, at 365–68; Hutchison & Yahya, *supra* note 85, at 54.

²⁴⁶ See *supra* notes 88–90 for cases holding that offers or sales directed at customers in a particular country are considered to infringe in those markets.

²⁴⁷ See *supra* notes 94–97. See also *Boegli-Gravures SA v. Darsail-Asp Ltd.*, [2009] England and Wales High Court, EWHC 2690 (Pat) at 100–01 (U.K.) (holding that website to supply the world at large was not sufficiently targeted at the forum); *Omnibill (PTY) Ltd. v. Egpsxxx Ltd.* (In Liquidation), [2014] Intellectual Property Enterprise Court, EWHC 3762 (IPEC) at 12–41 (U.K.) (holding that a website in English language could be deemed to target multiple countries).

²⁴⁸ See Wasserman, *supra* note 8, at 302–03.

²⁴⁹ Holbrook, *supra* note 1, at 2157–58.

²⁵⁰ See *infra* Section V(B)(2)(b).

²⁵¹ Edwin D. Garlepp, *An Analysis of the Patentee's New Exclusive Right to “Offer to Sell”*, 81 J. PAT. & TRADEMARK OFF. SOC'Y 315, 326 (1999). See also Miller, *supra* note 110, at 432–33.

²⁵² See *supra* note 205.

increasingly becoming recognized that each and every territorial contact is capable of forming a jurisdictional basis. Outside the patent context, the Canadian Supreme Court has held that: “[i]n terms of the Internet, relevant connecting factors would include the *situs* of the content provider, the host server, the intermediaries and the end user . . . that Canada could exercise copyright jurisdiction in respect [to] both of transmissions originating here, and transmissions originating abroad but received here, is not only consistent with our general law but with both national and international copyright practice.”²⁵³ Similar arguments have also been raised by courts in the United States and in Europe, attaching significance to each connecting factor relevant for the infringing conduct.²⁵⁴

The domestic adjudication of offers or sales directed at foreign markets can, as other commentators have mentioned,²⁵⁵ aid in establishing more efficient enforcement mechanisms by consolidating what would otherwise be individual, offshore infringements. In that same line, if the defendant has no assets in the countries where recipients are located, and is domiciled in a jurisdiction unsusceptible to enforcing foreign judgments, then the patent holder will essentially be left without legal recourse to stop the ongoing deprivation of foreign markets unless subjective territoriality is acknowledged as a basis for prescriptive jurisdiction. It would seem highly prejudicial to harbor such tortious conduct. A formulaic rejection of such a basis of jurisdiction also poses a risk of being counterproductive to its own proposed objective. Even if actual or potential customers are foreign, there can still be a local commercial impact as a result of the cross-border conduct. The rise of foreign infringing markets can detract focus and value from domestic markets, and price erosion is a real and cognizable harm.²⁵⁶ Even if that harm would be less as compared to a purely domestic offer or sale, we should be careful in adopting a blanket rule as to what economic threshold is sufficient or insufficient. Admittedly, there are noticeable dangers with inviting this form of infringing conduct, in particular the risk of conflicting judgments,²⁵⁷ but this is no different from other forms of extraterritorial applications and is a risk that can be plausibly managed in the subsequent proposed steps in the jurisdictional analysis. This same logic could also extend to cases where individual components are shipped to foreign markets for combination into the patented

²⁵³ *Society of Composers, Authors and Music Publishers of Canada v. Canadian Assn. of Internet Providers* [2004] Canadian Supreme Court, 2 S.C.R. 427, SCC 45 at 61, 76 (Can.).

²⁵⁴ See *Nat'l Football League v. PrimeTime 24 Joint Venture*, 211 F.3d 10, 13 (2d Cir. 2000) (holding that a public performance or display includes “each step in the process by which a protected work wends its way to its audience.” *citing* *David v. Showtime/The Movie Channel, Inc.*, 697 F. Supp. 752, 759 (S.D.N.Y. 1988)); *Case C-5/11, Titus Alexander Jochen Donner*, EU:C:2012:370, paras. 26–27 (holding that the distribution right in copyright is characterised by a series of acts going “at the very least” from the conclusion of a contract of sale to the performance thereof by delivery to a member of the public, and that acts giving rise to a distribution to the public may therefore take place in a number of member states); *Case C-173/11, Football Dataco Ltd. et al. v. Sportradar GmbH et al.*, EU:C:2012:642, paras. 34, 47 (holding that an act of re-utilization under the *sue generis* right is characterised by a series of successive operations, ranging “at least” from the placing online of the data concerned on that website for it to be consulted by the public to the transmission of that data to the interested members of the public, while rejecting that re-utilization must be located exclusively to the territory of the member state where the web server is located from which the data in question is sent).

²⁵⁵ Timothy R. Holbrook, *Territoriality United States to Sell an Invention Waning-Patent Infringement for Offering in the Abroad*, 37 U.C. DAVIS L. REV. 701, 746–47 (2004).

²⁵⁶ See Miller, *supra* note 110, at 445–49.

²⁵⁷ See Peukert, *supra* note 76, at 211–12.

product, which indeed the addition of 35 U.S.C. § 271(f) in the United States is a testament to.

In sum, to achieve a fair balance of what nexus can be deemed relevant for what amounts to commercial appropriation of the invention, the guiding question should therefore be whether the infringing conduct results in or poses a risk of resulting in commercial impact or depriving commercial control in the relevant country of protection.

2. Step II: Weighing Contacts

So far, this analysis has been largely one-sided, limiting it to contacts linked to the relevant country of protection, which is typically the forum. For most courts, the inquiry stopped here without further considering what contacts can be attributed to other jurisdictions. But sovereignty involves both rights and obligations. As it was phrased in *Island of Palmas*, “[territorial sovereignty] has as corollary a duty: the obligation to protect within the territory the rights of other States, in particular their right to integrity and inviolability in peace and in war, together with the rights which each State may claim for its nationals in foreign territory.”²⁵⁸ After defining the contacts to the relevant country of protection, it should therefore be deemed necessary to weigh these contacts with those in other countries.²⁵⁹ It cannot be assured that what constitutes sufficient domestic nexus is overly broad without a comparative approach. Even if the achievement of the technical contribution is localized to the forum, that is under the application of national law. Because of that, there can be multiple loci sharing the same technical appropriation. If undertaking both a subjective and objective territorial approach in assessing what is actual or potential commercial harm or control, then courts are similarly faced with a multitude of connecting factors in different jurisdictions. Previous proposals that consider foreign sovereignty have either deferred entirely to those interests or provided insufficient guidance for how to weigh the different factors. The proposition in this article combines different elements from these proposals and fills in gaps in the analysis, forging a new approach that is more predictable and uniform, while still securing the interests of the patent holder in access to efficacious patent protection.

a. What is the Nature of the Conflict?

Not all conflicts impose the same strain on foreign sovereignty. As has been explained previously,²⁶⁰ there are, in principle, two forms of contacts to look for: conflicts of laws and conflicts of private or public effects. These can be either independent from each other or related in the sense that effects arise out of those identified conflicts of laws. It cannot be guaranteed that there is always a conflict between laws to render appreciable foreign effects. For instance, as has been

²⁵⁸ *Island of Palmas (United States v. Netherlands)*, 2 R. INT’L ARB. AWARDS 829, 839 (1928).

²⁵⁹ On the importance of weighing foreign interests in cases of jurisdictional conflict, with examples from antitrust law, see Karl M. Meessen, *Antitrust Jurisdiction under Customary International Law*, 78 AM. J. INT’L L. 783, 784, 803–05 (1984); Hannah L. Buxbaum, *Territory, Territoriality, and the Resolution of Jurisdictional Conflict*, 57 AM. J. COMP. L. 631, 656, 659 (2009); Gerber, *supra* note 208, at 779–83. In the context of intellectual property law, this has in particular been emphasized by Professor Dinwoodie, see Dinwoodie, *supra* note 85, at 779–87 (proposing, *inter alia*, foreign interests as a theoretical restraint on asserting prescriptive jurisdiction in cross-border infringement cases).

²⁶⁰ See *supra* Section IV(A).

mentioned,²⁶¹ if courts in one country rule on an extraterritorial injunction that compels the defendant to discontinue ubiquitous activities on the internet, that will have an impact abroad, even if those countries also allow such injunctions. Sometimes a conflict can also come from something as simple as different factual evaluations, and thus different outcomes, under substantively identical or similar laws. A comparative approach that focuses merely on conflicts of laws can therefore be misleading.

Conflicts of laws can turn on what are more fundamental questions of patentability and exceptions and limitations.²⁶² Other issues of greater concern are differences in criteria for enabling prescriptive jurisdiction. Even if flexibility is afforded to states in that latter regard, it is still clear that substantially different approaches in choosing connecting factors pose a disruptive risk. Parties engaged in global commerce must be able to calculate their legal risks with consistency and predictability. If some countries have greater jurisdictional reach than others, that is liable to upset global marketplaces as parties would have to relocate business operations or adjust products or services to satisfy a different legal threshold.

b. What is the Relative Impact of the Infringement in the Relevant Country of Protection as Compared to Abroad?

Understanding what is the nature of the conflict in turn helps us better understand what is the relative impact of the infringement in both the relevant country of protection and abroad.²⁶³ While the proposed framework aims to endorse connecting factors having actual substantive relevance, there is no guarantee that the selected forum will also enjoy the strongest interest in prescribing the infringement. Again, different courts could interpret the connecting factors differently. If there are significant adverse impacts abroad resulting from the adjudication, and if the value in an extraterritorial application is relatively small compared to that, then this should be a crucial factor to weigh in.

A relative impact analysis could be approached from a quantitative or qualitative perspective, or both. A quantitative analysis ascertains whether the

²⁶¹ *Id.*

²⁶² The character of the regulatory conflict has also been considered in the RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW § 403(2)(c), (g), (h) (1986) (explaining that the unreasonableness of exercising prescriptive jurisdiction is considered by, *inter alia*, “the character of the activity to be regulated, the importance of regulation to the regulating state . . . the extent to which another state may have an interest in regulating the activity, [and] the likelihood of conflict with regulation by another state.”). This is also similar to one of the considered *Timberlane* factors, specifically the degree of conflict with foreign law or policy. See *supra* note 143; Wasserman, *supra* note 8, at 304–05.

²⁶³ A relative impact analysis is part of the *Timberlane* factors considered in antitrust and trademark law. See *Reebok Int’l Ltd. v. Marnatech Enters., Inc.*, 970 F.2d 552, 555 (9th Cir. 1992); *Timberlane Lumber Co. v. Bank of Am. Nat’l Trust & Sav. Ass’n*, 549 F.2d 597, 614 (9th Cir. 1976) (explaining that the “relative significance of effects on the United States as compared with those elsewhere” and the “and the relative importance to the violations charged of conduct within the United States as compared with conduct abroad” are factors to consider). Professor Wasserman has elaborated on this in the patent context and suggested that a focus should be placed on differences in market sizes. See Wasserman, *supra* note 8, at 305. This focus is, however, theoretically flawed in the sense that it assumes that sovereignty is linked to how large or small the market is. Instead, sovereignty at its core is equal for all states, regardless of differences in size. See Robert L. Muse, *A Public International Law Critique of the Extraterritorial Jurisdiction of the Helms-Burton Act (Cuban Liberty and Democratic Solidarity (Libertad) Act of 1996)*, 30 GEO. WASH. J. INT’L L. & ECON. 207, 241–42 (1996); Ryngaert, *supra* note 23, at 40–41; Buxbaum, *supra* note 259, at 659.

forum where extraterritorial application is sought is an exception from the masses where there are other competing contacts.²⁶⁴ If it is, then this suggests that greater deference is warranted. The objective in this regard is to identify cases where the proposed analysis in localizing the infringement is unduly broad, or where the measured private or public effects are largely spread out. Although it is conceivable that legal conflicts could be considered quantitatively, it seems inappropriate in the absence of deep harmonization.²⁶⁵ A qualitative analysis instead looks for the comparative effect from the conflict.²⁶⁶ A conflict that turns on fundamental substantive differences, such as patentability or exceptions and limitations, which causes the adjudication to have an impact extending beyond the parties to the dispute, warrants deference as this amplifies the consequences felt abroad.²⁶⁷ But the qualitative analysis goes both ways. If the alleged infringing conduct extracts benefits from the use of the invention which are associated with the domestic market, and in doing so competes with the patent holder, there is a risk that the value of the patent rights is hollowed. There is then a strong interest in prescribing even in the face of an adverse extraterritorial effect.

The intention is not to achieve a mathematical, legal equilibrium from the analysis above. Such an exercise is doomed to fail and may result in absolute deference to foreign standards, or a form of forced harmonization. The attention is instead aimed outwards at identifying what would be colliding effects if proceeding with the adjudication, and then weighing these relatively inwards.²⁶⁸ There is far from an international consensus on how to more precisely balance these competing contacts and, in turn, the interests they represent.²⁶⁹ But regardless of which theoretical framework is pursued, the history of cases does suggest that the interests of efficacious domestic patent protection often win the contest,²⁷⁰ and when that is not the case, that efficacy is forsaken in the name of territoriality. In both cases, there is an absence of considering and weighing foreign impacts and

²⁶⁴ Similar factors are included in the RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW § 403(2)(c) (1986) (considering when exercising prescriptive jurisdiction “the extent to which other states regulate such activities, and the degree to which the desirability of such regulation is generally accepted.”).

²⁶⁵ For a similar view, see Wasserman, *supra* note 8, at 304.

²⁶⁶ *Cf.* Dinwoodie, *supra* note 85, at 776–84 (suggesting a qualitative framework in the context of trademark law to act as a restraint on extraterritoriality).

²⁶⁷ Holbrook, *supra* note 1, at 2177–78.

²⁶⁸ *Cf.* Buxbaum, *supra* note 259, at 659 (comparing an “inward” and “outward” perspective to prescriptive jurisdiction and emphasizing the importance of the latter).

²⁶⁹ See Gerber, *supra* note 208, at 756 (stating that the international community has failed to develop jurisdictional principles accommodating both the needs of regulating states while avoiding impinging on the legitimate interests of other states); Kevin R. Roberts, *Extraterritorial Application of United States Antitrust Laws: Minimizing the Conflicts*, 1 U. MIAMI INT’L & COMP. L. REV. 325, 348 (2015) (stating that international rules on balancing sovereign interests are not fully developed). Professor Meeseen has proposed, although in the context of antitrust law and drawing from German experiences, that “a state is prohibited from taking measures of antitrust law if the regulatory interests it is pursuing are outweighed by the interests of one or more foreign states likely to be seriously injured by those measures.” See Meessen, *supra* note 259, at 804. Professors Grossfeld and Rogers have instead argued that deference to foreign mandatory law may be appropriate if that law “expresses values shared in common and which the receiving country is itself willing to protect.” See Bernhard Grossfeld & C. Paul Rogers, *A Shared Values Approach to Jurisdictional Conflicts in International Economic Law*, 32 INT’L & COMP. L.Q. 931, 939 (1983).

²⁷⁰ See *supra* Section III(E)(2). A familiar example is the *Illumina* case, where the Court emphasized the adverse effects on efficacy of domestic patent protection without considering the risk for substantive conflicts. See *Illumina, Inc. v. Premaitha Health Plc*, [2017] England and Wales High Court, EWHC 2930 (Pat) at 508 (U.K.).

related interests.²⁷¹ A relative impact analysis instead suggests a middle-ground between these two extremes, and that prescriptive jurisdiction should at least take into account the actual or potential conflicting effects, quantitatively or qualitatively. Whether that should then result in deference or defiance cannot be given a blanket statement.

c. Will an Extraterritorial Application of National Law Render Foreign Patent Protection Obsolete?

A question which has been raised earlier is to what extent the failure to obtain a foreign patent should implicate the question of localization. It has been suggested that it would be unrealistic to require patent protection in all the countries of interest before engaging in an extraterritorial application,²⁷² which is particularly true if the infringing conduct is ubiquitous in nature. Furthermore, even if we would engage in a hypothetical exercise, as has been proposed by Professor Holbrook,²⁷³ of whether patent protection *could* have been procured abroad, this could easily be circumvented. A prospective infringer could preemptively do that same exercise and simply start their operations in a country where a patent *could not* have been obtained, which suggests that the failure to procure patent protection abroad is not a workable enough criterion.

A better approach would be to ask whether an extraterritorial application would render patent protection, regardless of whether or not that has been procured, obsolete in all other countries implicated by the same infringing act. The objective is to look for a broader foreign impact, which would essentially make it unnecessary to seek out national remedies in other countries. If approached correctly, this should reveal whether the prescriptive assertion goes too far such that it avoids the need for foreign patent protection, without at the same time penalizing the patent holder for not having procured or enforced such protection. In practice, this situation would become most relevant in cases of outbound regulation, where the primary effect is felt abroad and where the main interest in adjudication is located.

d. Is an Extraterritorial Application Necessary to Provide Remedies?

While it has been said that cross-border conduct makes it an absolute necessity to localize infringements,²⁷⁴ this should not be confused with that an extraterritorial application is always necessary to provide adequate remedies. In some cases, the foreign impact can be avoided altogether while still providing efficient legal recourse. If we return to the above-mentioned example of an injunction that targets digital content, which is accessible everywhere, it is obvious that a take-down order of that content from courts in country A would prevent access in all other countries.²⁷⁵ An order to instead impose geo-blocking measures, which restricts merely access to the website within country A, would be a simple

²⁷¹ Holbrook, *supra* note 1, at 2163.

²⁷² See *supra* Section IV(E).

²⁷³ Holbrook, *supra* note 1, at 2178–81.

²⁷⁴ See *supra* Section III(E)(1).

²⁷⁵ See *supra* Section IV(A), with reference in particular to *La Ligue Contre le Racisme et l'Antisémitisme and l'Union des Etudiants Juifs de France v. Yahoo Inc! and Yahoo France* [May 22, 2000] High Court of Paris (Fr.).

but practical solution that goes a long way in providing the needed remedy, without engaging in an extraterritorial application on the level of enforcement.²⁷⁶

In other situations, it may well be that the alleged infringing conduct is misplaced. If we take the *Illumina* case as an example, the plaintiffs asserted patent infringement on the basis that the patented method was used or offered for use in the United Kingdom, since the material used for that purpose was collected there. The Court agreed hypothetically, and never proceeded to examine whether infringement occurred because the products obtained from the patented process were offered for disposal in the United Kingdom.²⁷⁷ There would have been no real need to frustrate the statutory language if the focus had been on other exclusive rights. This simply reaffirms a previous point that has been made: it is critical that patent holders invoke their exclusive rights in the proper context.

3. Step III: Weighing Accountability and Intentions

The analysis above has already covered public, private, and sovereign interests to the extent these are related to established contacts. But there are variations of these interests which are not attributable to contacts, and which must be independently examined in a third step of the analysis. These outstanding interests can essentially be grouped into accountability of the patent holder and intentions of the alleged infringer to gain benefits from domestic markets while avoiding liability.

a. *Is Patent Drafting Causing the Need for an Extraterritorial Application?*

Part of what makes divided patent infringement unique is that the language of the patent is within the control of the patent applicant and, subsequently, the beneficiary as a right holder. While it has been submitted above that it is unfair to penalize the patent holder for failure to procure patent protection in foreign countries implicated by an extraterritorial application, the question still remains whether the patent holder should assume accountability towards the patent drafting. Previous proposals have largely focused on concrete claim drafting options. Professor Lemley et al. have suggested that unitary claims should be drafted and that independent product claims are included to the extent possible.²⁷⁸ While several drawbacks have been noted above with drafting unitary claims,²⁷⁹ there is no doubt that the inclusion of multiple independent claims in different formats can dramatically alter infringement scenarios, and more so in cross-border contexts. If it becomes clear that more careful and exhaustive claim drafting could have avoided the need to turn to an extraterritorial application, then this turns into another factor that speaks in favor of denying such extraordinary legal recourse.

b. *Is There an Intention to Benefit from the Invention in the Domestic Market?*

Some commentators have resorted to subjective criteria for avoiding infringement as a means of resolving the divided infringement dilemma, either in

²⁷⁶ See Trimble, *supra* note 133, at 532–33.

²⁷⁷ *Illumina, Inc. v. Premaitha Health Plc*, [2017] England and Wales High Court, EWHC 2930 (Pat) at 507–08 (U.K.).

²⁷⁸ See Lemley et al., *supra* note 15, at 271–76.

²⁷⁹ See *supra* Section V(A).

whole or in part.²⁸⁰ This can certainly be useful in filling gaps or unclarities as to where conduct should be subject to prescriptive jurisdiction. But as has been explained earlier,²⁸¹ it can also be problematic as it does not itself aid in distinguishing cases where there are legitimate cross-border practices from those where there is an intention to avoid liability. The mere fact that an actor is engaged in cross-border practices, even if originating from a country where there is no infringement, is clearly insufficient to attribute an adverse intention.

Instead of fixating on whether there is an intention to avoid liability by partitioning the conduct across borders, the focus should be whether there is an intention to benefit from the invention in the domestic market. This is similar, in part, to how intention as a concept was invoked in *Prepaid-Karten II*. Because it was found that the infringing actions demonstrated an intention to extract a commercial advantage from using the invention in the country of protection, it was deemed that an infringement occurred there.²⁸² The important difference to the present proposal is that it is emphasized that this intention does not have to be commercial, but can instead be technical, depending on what is the assumed appropriation of the invention.²⁸³ Furthermore, intention is an optional, and not a required, factor linked to the infringing conduct. This is significant as patent infringement again is a strict liability tort. How intention is invoked here is only something that can benefit rather than encumber the patent holder in dubious cases of cross-border infringement. This additional factor to consider would be exceptionally relevant in cases where there are multiple possible loci, and a serious question is raised if one is sufficient enough to mandate jurisdiction without at the same time overtaxing the other.

4. Step IV: Weighing Contacts and Interests Against the Nexus

Each of the preceding steps has established criteria that serve to guide when prescriptive jurisdiction can be asserted uniformly and predictably in cross-border contexts, granting the patent holder necessary remedies while avoiding expansive and adverse interference into other jurisdictions having competing contacts or interests. It has here been proposed that we should adopt a technical test that ascertains where the technical contribution is achieved. By attributing all claim elements to that same locus, the issue of divided infringement dilemma is resolved but for necessary controls to avoid overly broad interpretations. This neatly fits within existing legal frameworks and preserves consistency in the infringement analysis while providing a reasonable degree of

²⁸⁰ Wasserman, *supra* note 8, at 306 (proposing intent or harm on domestic commerce as a relevant factor to consider in asserting prescriptive jurisdiction). One of the *Timberlane* factors, as relied on by the Ninth Circuit in antitrust and trademark law, also included “the extent to which there is explicit purpose to harm or affect American commerce.” See *Timberlane Lumber Co. v. Bank of Am. Nat’l Trust & Sav. Ass’n*, 549 F.2d 597, 614 (9th Cir. 1976).

²⁸¹ See *supra* Section IV(D).

²⁸² See *Prepaid-Karten II*, Court of Appeals of Düsseldorf, Dec. 10, 2009, 2 U 51/08 (Ger.).

²⁸³ This would also differ from the targeting doctrine in that the intention is here linked to the nexus underlying the infringing conduct. The targeting doctrine, on the other hand, is primarily used for discerning commercial intent to target a particular territory in ubiquitous environments, rather than the subject matter itself. See Case C-173/11, *Football Dataco v. Sportradar*, EU:C:2012:642, paras. 39–41 (stating intention on part of the performer as the criteria to discern targeting to a particular territory, and attract the interest of that public); *Merck KGaA v. Merck Sharp & Dohme Corp.*, [2017] England and Wales Court of Appeal, EWCA Civ 1834 at 170 (U.K.) (listing expressions of an intent to solicit domestic customers as a relevant factor).

certainty when localizing the infringement. Since the issue of divided patent claims does not exist for cases of commercial appropriation, the focus here instead lies in ascertaining commercial impact and control to single out contacts where there is a legitimate interest in prescribing jurisdiction, as it is related to the alleged infringing conduct. This is best achieved, it is argued, by allowing both subjective and objective territorial factors.

In the case of either technical or commercial appropriations, we are often concerned with multiple contacts and competing interests that need to be weighed. The objective here is to minimize encroachments upon foreign sovereignty to the extent that it is possible. It therefore makes sense to constrain an extraterritorial application so long it is still possible for the patent holder to receive adequate remedies. But sovereignty cannot be viewed in isolation. Since we are here concerned with actions from private parties, there must be some accountability towards both the patent holder and the alleged infringing party. As an additional filter to discern when an extraterritorial application is really necessary, repairing what is plainly careless patent drafting should therefore be avoided at the cost of others. Moreover, if it still remains doubtful whether an extraterritorial application is appropriate, attributing legal relevance to a manifested intention to take advantage of the invention in the domestic market should be considered.

Each of these steps has to be looked at holistically, as there is an inherent relationship between them. If the appropriation is technical, then how the technical contribution is defined and localized will necessarily impact what the relative impact is in the relevant country of protection as compared to abroad. Whether there is an intention to benefit from the invention in the domestic market will influence what is the nature of the conflict. Whether improper patent drafting is causing the need for extraterritorial measures is likewise impacting whether that remedy is really necessary. Similarly, if the appropriation is commercial, then localizing the commercial impact and control as part of the infringing conduct will again guide the analysis of the what is the nature of the conflict, what is the relative impact, and whether an extraterritorial application is necessary or not.

VI. CONCLUSION

In an age of globalization, where we are faced with an unprecedented movement of products, services, and information across borders, it is clear that the law has failed to keep up with these economic and technological developments. It is a truism that patents are territorial rights and that this will continue to remain the legal foundation in patent law in the foreseeable future. Courts in different jurisdictions have long struggled, and still do, with construing those legal implications in cross-border contexts. Divided patent infringement across borders has persisted as a problem largely because of a formulaic assumption that all claim elements and components of the infringing acts must occur within the relevant country of protection. This assumption is, as has been explained throughout this article, fundamentally misplaced. There is a difference between, on the one hand, localizing all claim elements and components of infringing acts to a particular country of protection and, on the other hand, localizing the infringement itself to that country. Where an infringement can be localized is a legal conclusion. The legal fact that patents remain territorial does not itself bar taking into account facts that have transpired abroad, but which have legal significance to that end.

Courts in a growing number of jurisdictions have begun to acknowledge these legal realities. What started out as strict adherence to territoriality has

gradually shifted towards extraterritoriality, where foreign conduct is regulated in an effort to protect the patent holder either from spillover effects resulting from conduct abroad, or from conduct originating within the forum. This up-and-coming legal evolution has, however, been inconsistent at best, and unsubstantiated at worst. In the face of these legal irregularities in multiple jurisdictions, patent holders and users are combating against unpredictability and lack of uniformity while states are confronted with a lack of control.

This article presents a substantive balancing test as a new approach to closing the patent loophole. A split technical respectively commercial analysis is proposed depending on what the alleged infringing conduct is, which frames it in its proper substantive light. If the appropriation is technical, a technical test is proposed that narrows down what the nexus to the country of protection is, based on the technical contribution of the invention. The locus of where the technical contribution is achieved in turn becomes the proxy to apply a single national law to the entire infringing conduct. If the appropriation is commercial, however, then this analysis shifts to localizing the infringing conduct using more traditional subjective or objective territorial factors. It is on the basis of this defined nexus that we then turn to weigh other identified contacts that can be attributed to the same infringing conduct. This ensures that the jurisdictional analysis is not made in isolation to competing foreign contacts and interests, but rather acts as a filtering mechanism to avoid overly broad or unnecessary extraterritorial applications, while further considering what due accountability should be attributed to the patent holder and possible adverse intentions from the alleged infringer. These different steps are not mechanically or independently ticked, but are necessarily interrelated and thus weighed against each other. The overwhelming purpose is to safeguard the efficacy of patent protection in cross-border cases when localizing the infringing conduct while providing a reasonable degree of predictability and ensuring that sovereign, public, and private interests are duly taken into account. This demonstrates that the patent loophole indeed can be closed across borders, without engaging in comprehensive and unfeasible harmonization and without sacrificing fundamental objectives in the process.