

Destruction, Proportionality, and Sustainability: A Law-and-Economics Analysis

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Abstract

This Paper undertakes a law-and-economics analysis of the remedy of destruction (and, subsidiarily, the related remedies of recall and removal) of products that infringe intellectual property (IP) rights. We begin with a brief survey of international, regional, and domestic law and practice, observing that (1) courts generally are believed to be more likely to order the destruction of copyright- and trademark-infringing goods than of patent-infringing goods, and (2) the frequency with which courts order the destruction of patent-infringing goods varies from one country to another. Our observations lead us to present two principal theses.

The first is that a comparative reluctance to order the destruction of patent-infringing goods, as opposed to copyright- or trademark-infringing goods, would be consistent with economic considerations. From an economic standpoint, destruction can be viewed both as a complement to injunctive relief and as a substitute (albeit an imperfect one) for ongoing monitoring of an infringer's compliance with the terms of an injunction. The social benefits arising from substituting destruction for monitoring, however, are likely to be lower—on average, and perhaps subject to regional variation—for patent-infringing goods than for products that infringe other IP rights. In addition, although observers have long noted that the private and social costs of destruction provide a rationale for withholding that remedy when it would cause disproportionate harm to the defendant or third parties, these costs may be unusually high in patent cases—particularly that subset of cases in which the risk of patent holdup is substantial. In view of these factors, the social costs of ordering the destruction of patent-infringing goods are likely to outweigh the social benefits in a comparatively broader swath of cases.

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Our second thesis can be best understood if we first pose a question: given that courts generally have authority to consider proportionality when deciding whether to order the destruction of infringing goods, why are legislatures and courts (other than in the United States and, to some degree, other common-law countries) so unwilling to consider proportionality when deciding whether to grant injunctive relief? One obvious reason is that a stay or denial of injunctive relief imposes greater costs on the judiciary, insofar as a court that stays or denies an injunction must be prepared to set the terms of an interim or ongoing royalty; in addition, a stay or denial may introduce additional error costs to the extent courts impose over- or under-compensatory royalties. We propose, nonetheless, that the factors that sometimes persuade courts to deny requests for destruction should render them at least marginally more receptive than they currently are to staying or denying injunctions, particularly when there is a substantial risk of holdup. In addition, environmental costs may be reduced if, in appropriate cases, courts were more willing to stay injunctions pending the sell-off or design-around of infringing products rather than requiring their destruction or long-term storage.

Table of Contents

I. Introduction.....	112
II. Recall, Removal, and Destruction	115
III. Destruction’s Economic Function.....	123
IV. Destruction, Injunctions, and Proportionality	129
V. Summary and Conclusion	134

I. Introduction

A recent case from Taiwan involved the alleged infringement of two utility model patents relating to screw tip processing.¹ The owner of the utility models incorporated this technology into high-speed chamfering machines, which it sold through an exclusive distributor.² After the owner terminated the distributorship, the distributor contracted with another entity to make and sell chamfering machines incorporating the patented technology, thus prompting the owner to file suit.³ Taiwan’s Intellectual Property and Commercial Court of first instance found in favor

¹ The decision, on file with the authors, is Zhi Hui Cai Chan Ji Shang Ye Fa Yuan (Taiwan IP & Commercial Court) 109 Nian Du Min Zhuan Shang Zi Di 45 Hao Min Shi Pan Jue (No. 45 Civil Decision of Year 109, Second Instance) [hereinafter Case No. 45]. The utility models in suit were No. M559767 (hereinafter, the ‘767 Patent) for a screw processing machine using blowing air for unloading and No. M555761 (hereinafter, the ‘761 Patent) for an impediment device for screw tip processing. Regarding the jurisdiction of the Taiwan IP & Commercial Court, the official introduction is available at <https://ipc.judicial.gov.tw/en/cp-8641-369796-d5702-092.html> (last visited May 24, 2023).

² Case No. 45, *supra* note 1, at 2.

³ *Id.* at 7.

of the owner; awarded damages and permanently enjoined the distributor, along with the party with whom the distributor had outsourced the manufacture, from making and selling infringing machines; and ordered that the existing machines, which had passed into the hands of the defendants' third-party customers, be recalled and destroyed.⁴ On appeal, Taiwan's IP & Commercial Court of second instance affirmed the grant of the permanent injunction but reversed the destruction order, concluding instead that only the infringing components (which were removable) should be removed and destroyed.⁵ In reaching this conclusion, the court stated that, although destruction is, in general, subsumed within a grant of permanent injunctive relief under Article 96 of Taiwan's Patent Act,⁶ the exercise of patent rights is also subject to general legal principles, including the good-faith principle, the abuse-prohibition principle, and the proportionality principle.⁷ Given that (1) the destruction of the infringing products would have caused devastating harm to the third-party purchasers, (2) the technology made only a limited contribution to the machines, and (3) the machines' infringing components could be removed and replaced with noninfringing alternatives, an appropriate balancing of interests would be achieved by requiring only the removal and destruction of those components.⁸

Although the above decision was not the first in which a Taiwanese court had rejected a request for the destruction of patent-infringing end products, to our knowledge it is uncommon for Taiwanese courts to do so,⁹ and the IP Court's reasoning in this case, grounded in principles of good faith, abuse of rights, and proportionality, is more detailed than in previous decisions reaching a similar result.¹⁰

⁴ *Id.* at 1.

⁵ *Id.* at 3, 19, 21. The court also lowered the damages award, originally TWD\$7,922,250, to TWD\$190,371 based upon its conclusion that the utility models in suit contributed 5.7%—rather than one-third, as the court of first instance had held—of the value of the infringing products.

⁶ *Id.* at 21; see LAWS & REGULATIONS DATABASE OF THE REPUBLIC OF CHINA (TAIWAN), TAIWAN PATENT ACT art. 96, ¶ 1, 3 (2022), <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=J0070007> (stating that “[a] patentee of an invention patent may demand a person who infringes or is likely to infringe the patent right to stop or prevent such infringement” and that “[w]hen making a demand pursuant to Paragraph 1, the patentee may request for destruction of the infringing articles or the materials or implements used in the infringing act, or request for other necessary disposal”). The English-language translations of Taiwanese law that we use throughout can be found on the Ministry of Justice's website at <https://law.moj.gov.tw/ENG/Index.aspx>.

⁷ Case No. 45, *supra* note 1, at 20.

⁸ *Id.* at 21.

⁹ By way of comparison, consider *Zhi Hui Cai Chan Ji Shang Ye Fa Yuan* (Taiwan IP & Commercial Court) 109 Nian Du Min Zhuan Shang Zi Di 8 Hao Min Shi Pan Jue (No. 8 Civil Decision of the Year 109, second instance), in which the court rejected the defendant's request to narrow down the destruction of the entire infringing product (an electric bicycle) to that of the specific components which the patent in suit incorporated. In addition, according to our survey of the cases of patent infringement decided from January 1, 2021 through March 31, 2023, we found that there were ten cases at first instance and five cases at second instance supporting the request of the destruction of patent-infringing goods.

¹⁰ Two others are *Zhi Hui Cai Chan Ji Shang Ye Fa Yuan* (Taiwan IP & Commercial Court) 101 Nian

Moreover, while the outcome of this case may be unusual for Taiwan, as discussed below, it is not uncommon for courts in other parts of the world to take proportionality considerations into account in deciding whether to order the recall, removal, and destruction of patent- and other IP-infringing goods—though the frequency with which courts order the destruction of patent-infringing goods in particular ranges from relatively rare (e.g., in the United States), to relatively common (e.g., in Canada), to nearly universal (e.g., in Taiwan and Japan). On the other hand, even in countries where courts rarely order the destruction of patent-infringing goods, such as the United States, the courts may not be similarly hesitant to order the destruction of copyright- and trademark-infringing merchandise, at least where the goods are still in the possession of the defendant; indeed, for this type of subject matter, destruction is sometimes a commonplace remedy.

This Paper posits an economic explanation for these perceived variations and for other features of (primarily) the destruction remedy. We present two principal theses. The first is that a comparative reluctance to order the destruction of patent-infringing goods could be explained, at least in part, by economic considerations. From an economic standpoint, destruction can be viewed both as a complement to injunctive relief and as a substitute for the ongoing monitoring of an infringer's compliance with the terms of an injunction. The social benefits arising from substituting destruction for monitoring, however, are likely to be lower—on average, and perhaps subject to regional variation—for patent-infringing goods than for products that infringe other IP rights. In addition, although observers have long noted that the private and social costs of destruction provide a rationale for withholding that remedy when it would cause disproportionate harm to the defendant or third parties, these costs may be unusually high in patent cases—particularly the subset of cases in which the risk of patent holdup is substantial.¹¹ In view of these factors, the social costs of ordering the destruction of patent-infringing goods are likely to outweigh the social benefits in a comparatively broader swath of cases.

Our second thesis can be best understood if we first pose a question: given that international, regional, and domestic laws generally grant courts authority to consider proportionality when deciding whether to order the destruction of infringing goods, why are legislatures and courts (other than in the United States) so unwilling to consider proportionality when deciding whether to grant *injunctive relief*? One obvious reason is that a stay or denial of injunctive relief imposes greater costs on the

Du Min Zhuan Su Zi Di 77 Hao Min Shi Pan Jue (No. 77 Civil Decision of Year 101, first instance), and Zhi Hui Cai Chan Ji Shang Ye Fa Yuan (Taiwan IP & Commercial Court) 101 Nian Du Min Zhuan Su Zi Di 148 Hao Min Shi Pan Jue (No. 148 Civil Decision of Year 101, first instance). In the first of these, the patent-in-suit was directed to a “building ceiling and shaped steel bar structure thereof” that was implemented by the infringer in the construction of the building roof. The court observed that if the request for the destruction was granted, the building would lose its original function and shape after the roof was removed. In the second, the patent-in-suit was directed to dishwashers, and the infringing products had been sold to students and staff of Taiwan's Air Force Academy. In view of the customers' possession in good faith, the court concluded that destruction would dissuade the public interest.

¹¹ For our definition and analysis of holdup, see *infra* notes 61–64 and accompanying text.

judiciary insofar as a court that stays or denies an injunction must be prepared to set the terms of an interim or ongoing royalty; in addition, a stay or denial may introduce additional error costs to the extent courts impose over- or under-compensatory royalties. We propose, nonetheless, that the factors that sometimes persuade courts to deny requests for destruction should render them at least marginally more receptive than they currently are to staying or denying injunctions, particularly when there is a substantial risk of holdup. In addition, environmental costs would be reduced if, in appropriate cases, courts were more willing to stay injunctions pending the sell-off or design-around of infringing products rather than requiring their destruction or long-term storage.

Part II provides a brief overview of international, regional, and domestic law and practice as it relates to the remedies of recall, removal, and destruction. Part III lays out our economic analysis of the costs and benefits of these remedies (focusing primarily on destruction) and develops our hypothesis that these costs and benefits provide an explanation for the variation in the frequency with which courts order destruction. Part IV further discusses the relationship between destruction and injunctions and argues that, if proportionality is a permissible consideration with respect to the former, courts should be more receptive than they typically are to considering proportionality before granting injunctive relief. Part V concludes.

II. Recall, Removal, and Destruction

Although the remedies of recall, removal, and destruction were available in many countries long before the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs)¹² entered into force in 1995, the agreement established a set of baseline requirements, relevant to this remedy, that all members of the World Trade Organization (WTO) are obligated to follow.¹³ Tucked within TRIPs Part III (“Enforcement of Intellectual Property Rights”), Section 2 (“Civil and Administrative Procedures and Remedies”), is Article 46, titled “Other Remedies,” which reads as follows:

In order to create an effective deterrent to infringement, the judicial authorities shall have the authority to order that goods that they have found to be infringing be, without compensation of any sort, disposed of outside the channels of commerce in such a manner as to avoid any harm caused to the right holder, or, unless this would be contrary to existing constitutional requirements, destroyed. The judicial authorities shall also have the authority to order that materials and implements the predominant use of which has been in the creation of the infringing goods be, without compensation of any sort, disposed of outside the channels of commerce in such a manner as to minimize the risks of further infringements.

¹² TRIPs: 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 (1994) [hereinafter TRIPs].

¹³ As of 2023, there are 164 members of the WTO, comprising more than 80% of the world’s nations. *Members and Observers*, WORLD TRADE ORG., https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (last visited Jan. 9, 2024).

In considering such requests, the need for proportionality between the seriousness of the infringement and the remedies ordered as well as the interests of third parties shall be taken into account. In regard to counterfeit trademark goods, the simple removal of the trademark unlawfully affixed shall not be sufficient, other than in exceptional cases, to permit release of the goods into the channels of commerce.¹⁴

The Article's reference to disposal and destruction as "an effective deterrent to infringement" reflects, in large part, the concern that, in the absence of remedies such as these, counterfeiters and pirates might be able to evade sanction.¹⁵ The text nevertheless does not limit the judiciary's authority to order disposal and destruction only to cases involving counterfeit or pirated goods; nor does it exclude from its scope any form of intellectual property regulated by the treaty.¹⁶ Members may not order destruction, however, if doing so would be contrary to "existing constitutional requirements";¹⁷ as the third sentence states, "the need for proportionality between the seriousness of the infringement and the remedies ordered as well as the interests of third parties shall be taken into account."¹⁸ This provision "means that judicial authorities need to balance the interests at stake,"¹⁹ including the effect of disposal and destruction on innocent third parties and on the public interest.²⁰ In addition, the section of the Agreement relating to border measures authorizes members to "order the destruction or disposal of infringing goods in accordance with the principles set out in Article 46."²¹

¹⁴ TRIPS, *supra* note 12, art. 46.

¹⁵ See, e.g., DANIEL GERVAIS, *THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS* 564–65, 585 (4th ed. 2012) (stating that "[o]nce a 'pirate' has been located . . . immediate action must be taken to seize infringing goods and implements (to avoid the displacement of such implements and opening a new factory a few miles away)"; that "one of the (few) effective deterrents against 'pirates' and counterfeiters is the seizure and destruction of pirated or counterfeit products"; and that the destruction of "counterfeit car parts or pharmaceuticals is often both a safe solution and effective deterrent to prevent reuse"); see also CARLOS MARIA CORREA, *TRADE-RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS: A COMMENTARY ON THE TRIPS AGREEMENT* 406 (2d ed. 2020) (stating that the aim of the provision referencing "counterfeit trademark goods" is to "prevent[] trademarks from being unlawfully fixed to the goods if released into commerce").

¹⁶ See TRIPS, *supra* note 12, art. 1(2) (stating that "[f]or the purposes of this Agreement, the term 'intellectual property' refers to all categories of intellectual property that are the subject of Sections 1 through 7 of Part II"). These include copyright and related rights, trademarks, geographical indications, industrial designs, patents, topographies of integrated circuits, and undisclosed information.

¹⁷ See GERVAIS, *supra* note 15, at 585 (defining these as "requirements existing at the time of entry into force of the Agreement"). According to Professor Gervais, this provision "was introduced to reflect a rule in countries such as Brazil where destruction of otherwise useful goods is allegedly unconstitutional." Daniel Gervais, *Of Clusters and Assumptions: Innovation as Part of a Full TRIPS Implementation*, 77 *FORDHAM L. REV.* 2353, 2354 n.5 (2009).

¹⁸ TRIPS, *supra* note 12, art. 46.

¹⁹ CORREA, *supra* note 15, at 406.

²⁰ See *id.*; GERVAIS, *supra* note 15, at 586.

²¹ TRIPS, *supra* note 12, art. 59. In full, this provision reads:

Without prejudice to other rights of action open to the right holder and subject to the right of the defendant to seek review by a judicial authority, competent authorities shall have the authority to order the destruction or disposal of infringing goods in

Consistent with Article 46, regional and domestic laws throughout the world generally include statutory provisions authorizing courts to order the recall, removal, and destruction of infringing goods. Article 10 of the European Union's 2004 Intellectual Property Rights Enforcement Directive (IPRED), for example, titled "Corrective Measures," states:

Member States shall ensure that the competent judicial authorities may order, at the request of the applicant, that appropriate measures be taken with regard to goods that they have found to be infringing an intellectual property right and, in appropriate cases, with regard to materials and implements principally used in the creation or manufacture of those goods. Such measures shall include: (a) recall from the channels of commerce; (b) definitive removal from the channels of commerce; or (c) destruction.²²

The domestic law of the various E.U. member states (as well as the United Kingdom, a former member state) implements these requirements.²³ Domestic law in

accordance with the principles set out in Article 46. In regard to counterfeit trademark goods, the authorities shall not allow the re-exportation of the infringing goods in an unaltered state or subject them to a different customs procedure, other than in exceptional circumstances.

²² Directive 2004/48/EC, of the European Parliament and of the Council of 29 April 2004 on the Enforcement of Intellectual Property Rights, art. 10(1), 2004 O.J. (L 195) 16, 23 (EC) [hereinafter IPRED]. See also Council Agreement on a Unified Patent Court (UPCA), art. 64, 2013 O.J. (C 175) 1, 17 [hereinafter UPCA] (stating that the Unified Patent Court (UPC) "may order, at the request of the applicant, that appropriate measures be taken with regard to products found to be infringing a patent," including "recalling the products from the channels of commerce," "definitively removing the products from the channels of commerce," or "the destruction of the products and/or of the materials and implements concerned"); Directive (EU) 2016/943, of the European Parliament and of the Council of 8 June 2016 on the Protection of Undisclosed Know-How and Business Information (Trade Secrets) Against Their Unlawful Acquisition, Use and Disclosure, art. 12, 2016 O.J. (L 157) 1, 15 (EU) [hereinafter Trade Secrets Directive] (authorizing, *inter alia*, destruction); Regulation (EU) 608/2013, of the European Parliament and of the Council of 12 June 2013 Concerning Customs Enforcement of Intellectual Property Rights and Repealing Council Regulation (EC) No 1383/2003, 2013 O.J. (L 181) 15, 30, art. 23 (authorizing destruction).

²³ For general overviews, see ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS IN THE EU MEMBER STATES (Flip Petillion ed., 2018); PAUL ENGLAND, A PRACTITIONER'S GUIDE TO EUROPEAN PATENT LAW: FOR NATIONAL PRACTICE AND THE UNIFIED PATENT COURT 227–29 (2d ed. 2022); OFFICE FOR HARMONISATION OF THE INTERNAL MARKET, OBSERVATORY ON STORAGE AND DESTRUCTION, <https://euipo.europa.eu/ohimportal/documents/11370/80606/Observatory+update+on+storage+and+destruction> [hereinafter OHIM]; Thierry Calame et al., *Summary Report, AIPPI Question Q236: Relief in IP Proceedings Other Than Injunctions or Damages*, 2013 AIPPI YEARBOOK, vol. III, at 11 (2013), <https://aippi.soutron.net/Portal/Default/en-GB/RecordView/Index/2971>.

Japan²⁴ and Taiwan²⁵ is similar. China's intellectual property statutes, by contrast, do not explicitly mention recall, removal, or destruction, although Chinese courts do sometimes order these remedies in the context of granting injunctive relief.²⁶ In Canada and the United States, the relevant statutes expressly authorize the destruction of trademark- and copyright-infringing goods, but not patent-infringing goods²⁷—

²⁴ See JAPANESE LAW TRANSLATION, COPYRIGHT ACT (1970), art. 112(2), <https://www.japaneselawtranslation.go.jp/en/laws/view/4207> (authorizing the rightsholder to “demand the taking of measures necessary to effect the cessation or prevention of the infringement, such as the destruction of objects constituting the acts of infringement, objects made by acts of infringement, and/or machines and tools used exclusively for acts of infringement”); JAPANESE LAW TRANSLATION, PATENT ACT (1959), art. 100(2), <https://www.japaneselawtranslation.go.jp/en/laws/view/4304> (authorizing the rightsholder to “demand measures necessary for the prevention of infringement, including the disposal of products constituting the act of infringement . . . and the removal of equipment used to infringe”); JAPANESE LAW TRANSLATION, TRADEMARK ACT (1959), art. 36(2), <https://www.japaneselawtranslation.go.jp/en/laws/view/4483> (authorizing the rightsholder to “demand the person to take measures necessary for the prevention of the infringement, including the destruction of articles which constitute the act of infringement and the removal of equipment used for or contributing to the act of infringement”); see also JAPANESE LAW TRANSLATION, DESIGN ACT (1959), art. 37(2), <https://www.japaneselawtranslation.go.jp/en/laws/view/4260>; JAPANESE LAW TRANSLATION, UTILITY MODEL ACT (1959), art. 27(2), <https://www.japaneselawtranslation.go.jp/en/laws/view/4259>. The English-language translations of Japanese law that we use throughout can be found on the Ministry of Justice's website at <https://www.japaneselawtranslation.go.jp/en>. For further discussion, see Kazuo Ubukata et al., *AIPPI Question Q236: Relief in IP Proceedings Other than Injunctions or Damages (Japan)*, 2013 AIPPI YEARBOOK, vol. III, at 243 (2013), <https://aippi.soutron.net/Portal/Default/en-GB/RecordView/Index/2971>.

²⁵ See LAWS & REGULATIONS DATABASE OF THE REPUBLIC OF CHINA (TAIWAN), TAIWAN COPYRIGHT ACT, art. 88-1, <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=J0070017> (June 15, 2022) (stating that “the injured party may request the destruction or other necessary disposition of goods produced as a result of the infringing act, or of articles used predominantly for the commission of infringing acts”); LAWS & REGULATIONS DATABASE OF THE REPUBLIC OF CHINA (TAIWAN), TAIWAN PATENT ACT, art. 96, <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=J0070007> (May 4, 2022) (stating that “the patentee may request for destruction of the infringing articles or the materials or implements used in the infringing act, or request for other necessary disposal”); LAWS & REGULATIONS DATABASE OF THE REPUBLIC OF CHINA (TAIWAN), TAIWAN TRADEMARK ACT, art. 69, <https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=J0070001> (May 24, 2023) (stating that the proprietor of a registered trademark “is entitled to demand for destruction of infringing articles and the materials or implements used in infringing the trademark” but that “the court may order other dispositions as it considers necessary after taking into account the need for proportionality between the seriousness of the infringement and the interests of third parties”).

²⁶ For recent discussion, see Ling Yu, *Permanent Injunction on Intellectual Property Rights: Judicial Experiences in China*, 45 EUR. INTEL. PROP. REV. 154, 156 (2023).

²⁷ For Canada, see Copyright Act, R.S.C. 1985, c C-42 § 34 (authorizing “delivery up”); Trademarks Act, R.S.C. 1983, c T-13 § 53.2(1) (authorizing courts to order “the destruction, exportation or other disposition of any offending wares, packages, labels and advertising material and of any dies used in connection therewith”). For the U.S., see 15 U.S.C. § 1118 (authorizing courts to order the destruction of “all labels, signs, prints, packages, wrappers, receptacles, and advertisements in the possession of the defendant” that infringe trademarks, as well as “all plates, molds, matrices, and other means of making the same”); 17 U.S.C. § 503(b) (authorizing courts to “order the destruction or other reasonable disposition of all copies or phonorecords found to have been made or used in violation of the copyright owner's exclusive rights, and of all plates, molds, matrices, masters, tapes,

though, as noted below, courts sometimes do order the destruction of the latter as well.²⁸ Conversely, in India, only the Patents Act and the Trade Marks Act expressly reference destruction.²⁹

Although we are not aware of any relevant published statistics, our sense of the matter, based on our experience and conversations with other scholars and practitioners around the world, is that courts (generally) are more likely to order the destruction of trademark- and copyright-infringing goods—especially, and consistent with the focus of Article 46, counterfeit or pirated goods—than they are to order the destruction of patent-infringing goods.³⁰ The frequency with which courts order the

film negatives, or other articles by means of which such copies or phonorecords may be reproduced”).

²⁸ See *infra* notes 30–32, 34 and accompanying text.

²⁹ See The Patents Act, 1970, § 108(2) (stating that the court may “order that the goods which are found to be infringing and materials and implements, the predominant use of which is in the creation of infringing goods shall be seized, forfeited or destroyed, as the court deems fit under the circumstances of the case without payment of any compensation”); The Trade Marks Act, 1999, § 135(1) (stating that a court may order “the delivery-up of the infringing labels and marks for destruction or erasure”). According to commentators, however, Indian courts have discretion to grant such relief in other types of IP cases as well. See Amarjit Singh Monga & Sagar Chanda, *AIPPI Question Q236: Relief in IP Proceedings Other than Injunctions or Damages (India)*, 2013 AIPPI YEARBOOK, vol. III, at 207 (2013), <https://aippi.soutron.net/Portal/Default/en-GB/RecordView/Index/2971>; see also Arpan Banerjee, Pooja Dodd & Bharat Dube, *Intellectual Property Litigation in India: A Rough Guide for Foreign Plaintiffs*, 33 EUR. INTEL. PROP. REV. 715, 719–20 (2011) (discussing statutory provisions on remedies for copyright, trademark, design rights, and patent infringement, though also noting that most IP cases “do not travel beyond the interlocutory stage”).

³⁰ This is surely true in the United States, where (as noted above) the relevant statutes expressly authorize the destruction of copyright- and trademark-infringing goods, but not patent-infringing goods. For citation to relevant copyright and trademark cases, see 5 J. THOMAS MCCARTHY, MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 30:9 (5th ed. 2023); 6 WILLIAM PATRY, PATRY ON COPYRIGHT § 22:87 (2023). By contrast, a review of 143 injunctions entered in patent infringement cases in 2010 disclosed only seven “requiring destruction, disablement, or delivery of specified material.” John M. Golden, *Injunctions as More (or Less) than Off Switches: Patent-Infringement Injunctions’ Scope*, 90 TEX. L. REV. 1399, 1451 (2012). Professor Golden further suggests that these seven injunctions “might reflect the influence of legal regimes such as copyright and trademark.” *Id.* See also Calame et al., *supra* note 23, at 6 (stating that Argentina does “not provide for delivery up or destruction of goods which infringe a patent”); Thomas Pattloch, *Patent Enforcement in China*, in PATENT ENFORCEMENT WORLDWIDE: WRITINGS IN HONOUR OF DIETER STAUDER 315, 343 (Christopher Heath ed., 3d ed. 2015) (stating that the “destruction of moulds and equipment . . . which is exclusively or mainly used for the production of [patent-]infringing items . . . is very hard to obtain from Chinese courts”); Hao Zhang & Deshan Li, *AIPPI Question Q236: Relief in IP Proceedings Other than Injunctions or Damages (China)*, 2013 AIPPI YEARBOOK, vol. III, at 86, 88–89 (2013), <https://aippi.soutron.net/Portal/Default/en-GB/RecordView/Index/2971> (stating that, in patent cases, “people’s court seldom supports” claims for destruction “in its judgment,” and that in copyright cases destruction “is limited to more serious infringing actions”). Although Professor Yu’s article does not break matters down by type of IP, the author’s findings suggest that, overall, destruction orders are relatively uncommon in China. See Yu, *supra* note 26, at 156. Further, thus far the only WTO dispute in which Article 46 has been at issue involved trademark-infringing goods. See Panel Report, *China—Measures Affecting the Protection and Enforcement of*

destruction of patent-infringing goods in particular also appears to vary among nations.³¹ Such orders appear to be rare in U.S. patent litigation,³² for example, and (according to secondary sources) relatively uncommon in China as well.³³ On the other hand, orders for the destruction of patent-infringing goods appear to be relatively common in Canada,³⁴ France,³⁵ Germany,³⁶ and the U.K.,³⁷ and they appear to be very common in Japan³⁸ and (as noted earlier) Taiwan.³⁹

Also consistent with TRIPs Article 46, regional and domestic laws sometimes expressly state that courts may deny orders for recall, removal, and destruction in appropriate cases. IPRED Article 10, for example, requires member states to ensure that domestic courts have such authority, stating that “[i]n considering a request for

Intellectual Property Rights, WTO Doc. WT/DS362/R, ¶¶ 7.393–395 (Mar. 20, 2009) (finding China’s customs measures with respect to imports violated TRIPs Articles 46 and 59, where “in regard to counterfeit trademark goods, China’s Customs measures provide that the simple removal of the trademark unlawfully affixed is sufficient to permit release of the goods into the channels of commerce in more than just ‘exceptional cases’”).

³¹ For purposes of this Paper, we have not undertaken to determine whether, in countries in which destruction is not routinely granted, destruction orders are substantially more common in certain areas (e.g., pharmaceuticals, telecommunications, etc.) than in others. This may be a worthwhile future empirical project.

³² See Golden, *supra* note 30, at 1451.

³³ See Pattloch, *supra* note 30, at 343; Zhang & Li, *supra* note 30; Yu, *supra* note 26, at 156.

³⁴ See *Janssen-Ortho Inc. v. Novopharm Ltd.*, [2006] F.C. 1234, ¶ 131 (Can.) (stating that “[n]ormally an order for delivery up or destruction of offending goods would follow an award of an injunction”). Consistent with *Janssen-Ortho*, sources inform us that Canadian courts routinely order the destruction of patent-infringing goods, though sometimes parties may agree to some other disposition.

³⁵ Sources inform us that in France parties often request, and courts often order, the recall and destruction of patent-infringing goods, though sometimes such requests are simply boilerplate and the resulting orders are not enforced, and that French courts are receptive to denying requests for destruction when they understand the remedy to be disproportionate. See also ENGLAND, *supra* note 23, at 228 (citing French decisions both permitting and denying the recall of infringing products).

³⁶ See *id.* (stating that, according to the German Supreme Court, disproportionality—which as noted below would be grounds for denying a destruction order—is only found in narrowly defined circumstances”) (citing BGH, Apr. 10, 1997, I ZR 242/94, GEWERBLICHER RECHTSSCHUTZ UND URHEBERRECHT [GRUR] 1997, 899—*Vernichtungsanspruch*). Although the cited decision involved trademark infringement, the principle that disproportionality is limited to exceptional circumstances also has been articulated in German patent cases. See, e.g., LG München I, Aug. 5, 2022, 21 O 8891/21, ¶ 176; OLG Karlsruhe, Mar. 10, 2021, 6 U 9/16, 2022 GEWERBLICHER RECHTSSCHUTZ UND URHEBERRECHT [GRUR] 641, 652—*Polsterumarbeitungsmaschinen*. See also *infra* note 41 and accompanying text.

³⁷ See, e.g., *Merck Canada Inc. v. Sigma Pharms. PLC*, [2013] EWCA (Civ) 326, [88]–[95] (discussing various considerations informing the court’s discretion whether to order destruction).

³⁸ For example, in eight of nine patent infringement decisions issued in 2021 available on <https://www.courts.go.jp/index.html> or <https://ipforce.jp/Hanketsu/2021-1> in which Japanese courts granted injunctive relief in favor of the prevailing patent owner, the courts also authorized the destruction of the infringing goods. In the one case in which the court did not order destruction, the court credited testimony that the defendant was not in possession of the infringing goods because it could not raise enough capital to pay the manufacturer and never received them. See *Ōsaka Chihō Saibansho* [Osaka Dist. Ct.] Sept. 16, 2021, Reiwa 1 (wa) no. 9113, <https://ipforce.jp/Hanketsu/jiken/no/13311>.

³⁹ See *supra* note 9 and accompanying text.

corrective measures, the need for proportionality between the seriousness of the infringement and the remedies ordered as well as the interests of third parties shall be taken into account.”⁴⁰ Domestic laws in at least some E.U. countries, accordingly, make explicit reference to proportionality,⁴¹ as does the Agreement on a Unified Patent Court (UPCA).⁴² In contrast, the relevant statutes in Japan⁴³ and (except for the Trademark Act) in Taiwan⁴⁴ do not expressly include similar language; neither do the statutes in some common law countries such as the U.S., the U.K., Canada, and India, though courts in these jurisdictions appear to possess such authority as a matter of equitable discretion.⁴⁵

When courts *do* engage the question of whether recall, removal, or destruction would cause disproportionate harm to the defendant or to third parties, they are apt to consider a variety of factors. First, as one might expect, courts often are unwilling to

⁴⁰ IPRED, *supra* note 22, art. 10(3). *See also* Trade Secrets Directive, *supra* note 22, arts. 12(3), 13 (providing various safeguards and expressly authorizing members to permit courts “ordering the withdrawal of the infringing goods from the market . . . [to] order, at the request of the trade secret holder, that the goods be delivered up to the holder or to charitable [organizations]”).

⁴¹ To cite one example, see Patentgesetz [PatG] [Patent Act], Aug. 30, 2021, BUNDESGESETZBLATT [BGBl] at 4074, art. 140a(4) (Ger.), https://www.gesetze-im-internet.de/englisch_patg/englisch_patg.html (stating that the remedies of recall, removal, and destruction “shall be ruled out if such a claim is disproportionate in an individual case” and that “[w]hen examining proportionality consideration shall also be given to the legitimate interests of third parties”). By contrast, the corresponding provision of the French Intellectual Property Code does not expressly mention proportionality. *See* CODE DE LA PROPRIÉTÉ INTELLECTUELLE [CPI] [Intellectual Property Code] art. L615-7-1 (Fr.) (“En cas de condamnation civile pour contrefaçon, la juridiction peut ordonner, à la demande de la partie lésée, que les produits reconnus comme produits contrefaisants et les matériaux et instruments ayant principalement servi à leur création ou fabrication soient rappelés des circuits commerciaux, écartés définitivement de ces circuits, détruits ou confisqués au profit de la partie lésée.” [“In the event of a civil conviction for infringement, the court may order, at the request of the injured party, that the products recognized as infringing products and the materials and instruments mainly used in their creation or manufacture be recalled from commercial channels, permanently removed from these channels, destroyed or confiscated for the benefit of the injured party.”]). Commentators believe, however, that as in common-law jurisdictions French courts would apply more generally applicable legal principles to deny orders that threatened the defendant or third parties with disproportionate harm. *See* Pierre Gendraud et al., *AIPPI Question Q236: Relief in IP Proceedings Other than Injunctions or Damages (France)*, 2013 AIPPI YEARBOOK, vol. III, at 129 (2013), <https://aippi.soutron.net/Portal/Default/en-GB/RecordView/Index/2971> (citing authority that French courts “may . . . consider that an injunction is sufficient to prevent the repetition of the acts of infringement, so that it is not necessary to add a measure of confiscating and destroying the stock”).

⁴² *See* UPCA, *supra* note 22, art. 64(4) (stating that “[i]n considering a request for corrective measures,” including recall, removal and destruction, “the Court shall take into account the need for proportionality between the seriousness of the infringement and the remedies to be ordered, the willingness of the infringer to convert the material into a noninfringing state, as well as the interests of third parties”).

⁴³ *See supra* note 23.

⁴⁴ *See supra* note 25.

⁴⁵ *See supra* notes 27, 29.

require that infringing products be recalled from end consumers.⁴⁶ Beyond that, to cite some examples, commentators observe that German courts consider factors such as whether the accused products are counterfeits, the degree and severity of fault on the part of the infringer, the identity of the infringer (e.g., manufacturer versus carrier), the value and amount of infringing goods, whether an alternative remedy such as modification of the infringing goods or damages would suffice, the need for deterrence, and the public interest.⁴⁷ In a similar vein, Canada's Federal Court of Appeal has stated that "[w]here a defendant is found to have infringed a patent for an invention consisting of a new combination of old parts" or "where by removing a part the article will be rendered noninfringing," a court will probably deny an order for destruction.⁴⁸ On the other hand, the Court of Appeal for England and Wales perceived no error in a lower court's exercise of discretion to order destruction where it was "the best way to ensure compliance with an injunction," to prevent "an unwarranted advantage when the [supplementary protection certificate] expired," and "there were no third party interests which required consideration."⁴⁹

Seen in this light, although the outcome of the decision referred to in the Introduction⁵⁰ may break new ground in Taiwan, it is broadly consistent with what one would expect to observe elsewhere. Given that the infringing portions of the accused machines were removable and the machines themselves were in the possession of third parties, ordering the machines' destruction probably would strike

⁴⁶ See, e.g., OHIM, *supra* note 23, at 12, 22; Calame et al., *supra* note 23, at 9. In U.S. trademark and copyright cases, courts sometimes include in an injunctive order that infringing manufacturers recall, at their own expense, infringing products from their distributors. See 5 MCCARTHY, *supra* note 30, § 30:8 (discussing cases); 6 PATRY, *supra* note 30, § 22:80. Moreover, although a detailed discussion is beyond the scope of this article, U.S. constitutional law (generally, the due process clause) imposes limits on the enforceability of court orders against nonparties. See, e.g., Nat'l Ass'n for Stock Car Racing, Inc. v. Does, 584 F. Supp. 2d 824, 829–30 (W.D.N.C. 2008) (discussing requirements for the lawful disposition of allegedly counterfeit trademarked items); cf. Gary M. Hnath, *General Exclusion Orders Under § 337*, 25 NW. J. INT'L L. & BUS. 349, 352–54 (2004–05) (discussing the legal basis for general exclusion orders entered by the U.S. International Trade Commission, authorizing the detention of infringing goods intended for delivery to nonparties).

⁴⁷ See, e.g., BENKARD, PATENTGESETZ, § 140a, abs. 4, Rn. 8–8d (8th ed. 2015); THOMAS KÜHNEN, PATENT LITIGATION PROCEEDINGS IN GERMANY: A HANDBOOK FOR PRACTITIONERS, §§ 1401–03, 1432–38 (Frank Peterreins tr., 7th ed. 2015); OHIM, *supra* note 23, at 17–18. See also ENGLAND, *supra* note 23, at 228 (stating that, although "the removal of infringing goods from the channels of commerce may be inappropriate in cases where it deprives the public of goods on which they have in some manner become dependent," it is unclear whether "a willingness of the infringer to convert infringing goods would necessarily avoid an order or removal or destruction"). But see OLG Düsseldorf, Nov. 5, 2020, I-2 U 63/19, ¶ 108 (stating that complete destruction is precluded if it is possible to modify the product or destroy only parts in such a way that it is no longer infringing the patent, and that milder remedies shall be given priority); Entwurf eines Gesetzes zur Verbesserung der Durchsetzung von Rechten des geistigen Eigentums [Draft Law to Improve Enforcement of Intellectual Property Rights], Drucksache 16/5048, Apr. 20, 2007, at 32 (German Parliament's legal explanatory memorandum of Patent Act § 140a, stating that if the infringement can be eliminated by other means, the destruction is not necessary) (on file with authors).

⁴⁸ Baxter Travenol Labs. of Canada Ltd. v. Cutter (Canada), Ltd. (1983), 68 C.P.R. (2d) 179, ¶¶ 69, 73 (Can. C.A.).

⁴⁹ Merck Canada Inc. v. Sigma Pharms. PLC, [2013] EWCA (Civ) 326, [91], [93].

⁵⁰ See text accompanying notes 1–2.

many observers as a disproportionate response to the infringement in suit. In the following Parts, however, we endeavor to flesh out the economic function of destruction by showing how destruction serves both a complementary and a substitutionary function vis-à-vis injunctive relief. We also argue that, to the extent courts can and do consider proportionality in evaluating the need for destruction, they should be at least marginally more open to considering proportionality in evaluating the need for injunctive relief as well, particularly when there is a risk of patent holdup or unnecessary environmental harm.

III. Destruction's Economic Function

From an economic perspective, two goods (call them *A* and *B*) are complements if an increase in the demand for one of them (*A*)—resulting, for example, from a decrease in price or a change in income or taste—correlates with an increase in the demand for the other (*B*).⁵¹ They are considered substitutes if an increase in the demand for the one correlates with a decrease in the demand for the other.⁵² As explained below, the remedies of recall, removal, and (especially) destruction can be viewed as serving both complementary and substitutionary purposes.

First, these remedies are *complements* to an award of injunctive relief. Whether or not one views them, as Taiwan's Intellectual Property Court does, as in general "subsumed within" (or perhaps just an aspect of) a grant of permanent injunctive relief, it is obvious that an increase in the number of injunctions would correlate with an increase, to some degree at least, in the numbers of orders for recall, removal, and destruction. Conversely, it would be very odd for a court to order the recall, removal, and destruction of infringing goods and not at the same time order the defendant to cease their manufacture, use, and sale as well.⁵³

⁵¹ See, e.g., THOMAS F. COTTER & JEFFREY H. HARRISON, LAW AND ECONOMICS: POSITIVE, NORMATIVE, AND BEHAVIORAL PERSPECTIVES 9 (3d ed. 2014); Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 TEX. INTELL. PROP. L.J. 1, 13–14, 85–86 (2001).

⁵² See Blair & Cotter, *supra* note 51, at 13 n.54. An increase in the demand for *X* need not correlate with a one-to-one increase (or decrease) in the demand for *Y*. The degree of complementarity or substitutability between two goods is measured by their cross-elasticity of demand:

$$\eta = \partial Q_A / \partial P_B \cdot P_B / Q_A.$$

$\eta > 0$ would indicate that the products are substitutes, $\eta < 0$ that they are complements. If two products are perfect substitutes, $\eta = \infty$. If two products are perfect complements (for example, products that are generally consumed in fixed proportions such as right and left shoes), one could say that $\eta = -\infty$, though for practical purposes it may make sense to consider the *combination* of *A* and *B* as the relevant product. See generally *id.*

⁵³ One might imagine a case in which, say, by the time the judgment is entered, the patent in suit has expired, and domestic law (1) forbids the entry of a "springboard" injunction forbidding the defendant's future manufacture, use, and sale of the patented subject matter but (2) permits the recall, removal and destruction of subject matter that was made, used, and sold during the patent term. We are not sure whether these two conditions would ever both be satisfied under any country's law, however. In the U.S., for example, the Federal Circuit has stated that, under 35 U.S.C. § 283, "[a]n injunction is only proper to prevent future infringement of a patent, not to remedy past infringement,"

In addition, however, the remedies of recall, removal, and destruction can be viewed as *substitutes* for the ongoing monitoring of compliance with an injunction—a point the English courts have noted on more than one occasion.⁵⁴ To be sure, destruction is not a perfect substitute for monitoring; a defendant could be required to destroy its existing stock and then secretly manufacture additional infringing products in violation of an injunction. Destruction therefore reduces, but does not eliminate, the need for the parties or the court to ensure compliance, though courts can mitigate this risk as well, at least in some countries, by ordering the destruction of equipment used to make infringing merchandise.⁵⁵

More generally, if the cost of monitoring is high in comparison with the cost of destruction, one would expect courts to be more receptive to substituting destruction for monitoring (though this way of thinking about the issue poses a question of whether, as a matter of policy, courts should take into account only their own administrative costs associated with monitoring, or also the cost to the parties—or to society more generally, as described below). This expectation seems roughly consistent with the commentary on Article 46, which, as noted above, suggests a greater need for destruction to deter “fly-by-night” trademark and copyright counterfeiters.⁵⁶ One might also expect courts to be more likely to order destruction (1) when the cost of long-term storage is high (as it might be for copyright- and trademark-infringing goods, given the long terms of protection for these IP rights, compared to patents) or (2) when the cost of ensuring compliance is high because the resources available for monitoring are inadequate or the sanctions for violating injunctions (e.g., contempt of court or fines) are minimal. The first of *these* predictions is consistent with the current practice in the United States (and, according to conventional wisdom, other countries as well), under which courts are indeed more likely to order destruction of copyright- and trademark-infringing goods than they are to order the destruction of patent-infringing goods.⁵⁷ On the other hand, the benefits of ordering destruction would be lower (and the social costs correspondingly higher) when the accused product can be modified to be noninfringing and when there is little

which would seem to rule out both springboard injunctions and post-termination orders for recall, removal, and destruction. *See Spine Sols., Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1320 (Fed. Cir. 2010). Other nations, including Germany and the U.K., permit springboard injunctions under some circumstances. *See, e.g., KÜHNEN, supra* note 47, § 1145, at 358–59 (citing BGH, Feb. 21, 1989, GEWERBLICHER RECHTSSCHUTZ UND ÜRHEBERRECHT [GRUR] 1990, 997 – *Ethofumesate*); *Smith & Nephew PLC v. Convatec Techs. Inc.*, [2013] EWHC (Pat) 3955 [171].

⁵⁴ *See Merck Canada Inc. v. Sigma Pharms. PLC*, [2013] EWCA (Civ) 326, [90] (“[I]t is important to remember what the jurisdiction to grant an order for delivery up is for. It is not anything more than a way of making sure that the injunction is obeyed.” (quoting *Mayne v. Pharmacia*, [2005] EWCA (Civ) 294 (Jacob, L.J.))).

⁵⁵ *See, e.g., UPCA, supra* note 22, art. 64 (stating that the court “may order, at the request of the applicant, that appropriate measures be taken with regard to products found to be infringing a patent and, in appropriate cases, with regard to materials and implements principally used in the creation or manufacture of those products,” including “the destruction of the products and/or of the materials and implements concerned”).

⁵⁶ *See supra* note 15 and accompanying text.

⁵⁷ *See supra* notes 30–32 and accompanying text.

risk that it will be altered back.⁵⁸ Complex products embodying separable patent-infringing components might often fall within this category, which again would lead one to predict that, all other things being equal, courts would be less likely to order the destruction of patent-infringing goods. Whether the second prediction, relating to the cost of ensuring compliance, holds true would be an interesting subject for empirical investigation, though we expect it would be difficult both to obtain the necessary data and to formulate consistent criteria for comparing the frequency and magnitude of sanctions meted out for violating injunctions.

Destruction may generate other social costs as well, some of which may not adequately be taken into consideration under current practice. First, destruction can compound the social costs resulting from injunctive relief insofar as it renders impossible the redesign or selling off (even after the term of protection expires) of already-manufactured infringing goods. As one of us has noted elsewhere,⁵⁹ the social costs of injunctive relief can include harms both to consumers, who will be unable to obtain the goods from the infringer, and to the infringing firm itself, which forfeits any prospect of recovering whatever investment it made to make those goods. Knowing *ex ante* the risk of incurring this second harm, moreover, firms may be marginally less likely to invest in developing products that, *ex post*, would present a small but nonzero probability of infringing some other firm's IP rights. IP rights, after all—especially patents—are probabilistic in the sense that their scope and validity often are uncertain until, *ex post*, scope and validity are tested in court.⁶⁰

To be sure, the risk of generating these social costs may well be, on net, worthwhile if the enforcement of IP rights is necessary to induce the creation and dissemination of inventions or other subject matter that otherwise would not exist (either at all, or until later in time) or to produce other desirable social goods (such as the reduction of consumer search costs resulting from the enforcement of trademark rights)—though, ideally decisionmakers would balance the loss of these social benefits against the social harms noted above before rendering a decision. And while we cannot expect real-world policymakers, much less courts, to engage in such balancing on a case-by-case basis, arguably courts should be more receptive to awarding ongoing royalties in lieu of injunctive relief (and destruction) in certain discrete circumstances. These may include cases in which (1) widespread access to the infringing subject matter is, for reasons of health or safety, sufficiently important

⁵⁸ On the other hand, if springboard injunctions are forbidden, there would seem to be more need for destruction to ensure that defendant does not gain an unfair advantage by selling unlawfully made products immediately upon expiration of the patent term. This prediction, however, is not borne out by U.S. practice, where we have seen that courts do not order springboard injunctions in patent cases but also do not commonly order the destruction of patent-infringing products either. *See supra* note 53.

⁵⁹ *See* Thomas F. Cotter, *On the Economics of Injunctions in Patent Cases*, 11 ZEITSCHRIFT FÜR GEISTIGES EIGENTUM INTELL. PROP. J. 293, 293 (2019).

⁶⁰ *See* Mark A. Lemley & Carl Shapiro, *Probabilistic Patents*, 19 J. ECON. PERSP. 76, 76 (2009).

to justify an exceptional restriction of the IP owner's rights (e.g., in some patent infringement cases involving essential medicines or medical devices) or (2) there is a substantial risk of "holdup" arising from, *inter alia*, the infringer having incurred non-re-deployable sunk costs, *ex ante*, in reasonable reliance on its ability to employ what turns out to be, *ex post*, infringing subject matter.⁶¹ Focusing on this second risk in particular, one would expect the risk of holdup to be greater, all other things being equal, in patent cases than in copyright or trademark cases to the extent that much, or perhaps most, patent infringement is the result of independent invention, not copying,⁶² and therefore may be in some sense innocent or inadvertent.⁶³ Thus, such destruction would exacerbate the *ex ante* risk of patent holdup by turning otherwise re-deployable sunk costs into costs that are non-re-deployable because the subject matter, having been destroyed, no longer exists.⁶⁴

⁶¹ See Cotter, *supra* note 59, at 298–99 (citing Thomas F. Cotter, Erik Hovenkamp & Norman Siebrasse, *Demystifying Patent Holdup*, 76 WASH. & LEE L. REV. 1501, 1521 (2019)). As the cited article notes, "to the extent . . . past or 'sunk' costs cannot be redeployed to produce a noninfringing product, they are, to use [Oliver] Williamson's terminology, 'asset-specific' and therefore capable of generating lock-in effects." Cotter, Hovenkamp & Siebrasse, *supra*, at 1520. Consequently, "if the patent holder can credibly demand to enjoin the use of the infringing technology *ex post*, the manufacturer often would be better off agreeing to pay a royalty that exceeds the technology's *ex ante* value, rather than to write off those asset-specific sunk costs as a loss." *Id.* at 1521. The patent owner's ability to extract these additional rents, moreover, "is socially inefficient, both because the risk of being held up *ex post* may induce implementers to forgo otherwise productive investments, and because the holdup portion of the royalty exceeds the value of the patent over the state of the art." See Cotter, *supra* note 59, at 298–99.

There may be other valid reasons for awarding ongoing royalties in lieu of injunctive relief. U.S. law, for example, imposes compulsory licensing for various uses of copyrighted works, such as "cover" versions of previously recorded music. See *generally* 17 U.S.C. § 115(1). The above discussion is therefore not intended to be a comprehensive list of situations in which a liability rule may be preferable to a property rule.

⁶² See Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law*, 87 N.C. L. REV. 1421, 1422 (2008) (reporting that "a surprisingly small percentage of patent cases involve even allegations of copying, much less proof of copying," and that "[c]opying in patent law seems to be very much the exception, not the rule, except in the pharmaceutical industry"). Independent creation is nonactionable in copyright and trade secret law, by contrast, and (probably) relatively rare in trademark cases, at least in cases involving relatively well-known marks.

⁶³ See Cotter, *supra* note 59, at 304, stating that:

[E]vidence that it would have been practical for the defendant to engage in good faith *ex ante* bargaining . . . would suggest that holdup was avoidable For example, if the accused product embodies relatively few potentially patented features (as in cases involving drugs and other discrete products), the ability to discover and bargain over the relevant patents in advance probably should result in a finding that the probability of holdup was low. Alternatively, the evidence might show that the defendant refused the opportunity to bargain in good faith prior to launch. On the other hand, if transaction costs were high, the further finding that the defendant incurred substantial nonsalvageable sunk costs (or higher *ex post* switching costs, or lower *ex post* network benefits) would indicate both a high probability of, and substantial harm resulting from, holdup.

⁶⁴ See *generally* Cotter, Hovenkamp, and Siebrasse, *supra* note 61, at 1531–32 (defining holdup rents as $\mathcal{H} = k_1 + \Delta\pi_2 + \Delta k_2$, where the first term on the right-hand side (k_1) is equal to the implementer's non-redeployable sunk costs, the second term ($\Delta\pi_2$) is the differential benefit accruing from

In addition, a growing literature highlights the potential environmental costs of recall, removal, and destruction. In a recent article, for example, Professor Charlotte Vrendenburg notes that environmental impacts can be substantial when goods are “taken off the market and then dumped or destroyed,” whether by “burning (often in the open air), crushing or shredding.”⁶⁵ Moreover, she argues that while:

The destruction of infringing products is obviously not in line with this idea [of reducing waste and preserving resources] . . . neither is the immediate ban on trading, withdrawal from trade and possible storage. Think of the waste of materials and raw materials, the logistics of withdrawal from commerce and—subsequently—the storage of an enormous quantity of goods, while the necessary storage space is becoming increasingly scarce, particularly in urban areas.⁶⁶

Given these costs, Vrendenburg contends that jurisdictions could be more receptive to other options for dealing with infringing goods, including allowing infringers to donate these goods to charitable organizations, removing patent—or design right—infringing parts from a larger product, or, at least, recycling or “upcycling” infringing products into something new.⁶⁷ We discuss some of these

switching to a noninfringing alternative technology *ex post*, and the third term (Δk_2) is the differential cost incurred from switching to a noninfringing alternative technology *ex post*. If we assume, for simplicity, that, in a given case, the second and third terms are zero (meaning that the benefits and costs associated with the alternative technology are the same *ex post* as they would have been *ex ante*), the holdup rent consists entirely of the value of k_1 . If all of the implementer’s sunk costs “could be salvaged or redeployed (e.g., for use in implementing the noninfringing alternative),” *id.* at 1507 n.15, then $k_1 = 0$, and on these facts there is no holdup rent. If the infringing goods are destroyed, however, they are no longer redeployable, and $k_1 > 0$; and if the equipment used to make the goods is also destroyed, the value of k_1 will be even larger. For these reasons, a credible threat of destruction exacerbates the IP owner’s ability to extract holdup rents.

Of course, this increased risk of being held up may itself be a reason why destruction is understood as serving a deterrent purpose, over and above the deterrent value of injunctive relief. In theory, if additional deterrent value is needed in a given case and other options, such as punitive damages, are not available under domestic law, a destruction order could be a net positive. Indeed, one of the standard law-and-economics rationales for awarding punitive damages in IP cases—to deter “catch-me-if-you-can” infringers, *see* Colleen Chien et al., *Enhanced Damages, Litigation Cost Recovery, and Interest*, in *PATENT REMEDIES AND COMPLEX PRODUCTS: TOWARD A GLOBAL CONSENSUS* 90, 98 (2019) [hereinafter *COMPLEX PRODUCTS*]—sounds a lot like the rationale for TRIPs Article 46, *see supra* notes 12–13 and accompanying text. As always, however, one must also be aware of the corresponding risk of overdeterrence, as well as other unintended social costs.

⁶⁵ Charlotte J.S. Vrendenburg, *Duurzamer Vorderen en Veroordelen in IE-zaken* [More Sustainable Claims and Judgments in IP Cases], *INTELLECTUELE EIGENDOM EN RECLAMERECHT* [IER] 2022/33, 275, 276 (2022) (Neth.) (quoting, in the text above, a machine translation from the original Dutch).

⁶⁶ *Id.* at 277; *see also* Charlotte J.S. Vrendenburg, *Towards a Judicial Sustainability Test in Cases Concerning the Enforcement of Intellectual Property Rights*, 2023 GRUR INT. 1125, 1127 (2023) [hereinafter Vrendenburg, *Judicial Sustainability*] (reiterating this point).

⁶⁷ *See* Vrendenburg, *supra* note 65, at 278–79; Vrendenburg, *Judicial Sustainability*, *supra* note 66, at 1128. Vrendenburg defines “upcycling” as “a form of re-use in which the product remains wholly or partly intact, but value or creativity is added to it, for example by giving it new life and a new function.” Vrendenburg, *supra* note 65, at 279 (citing N.Q. Dorenbosch, *Upcycling-op het Snijvlak van Duurzamheid en Intellectuele Eigendom*, IER 2022/18, at 147). As Vrendenburg notes,

options, particularly ongoing royalties and the removal of infringing parts, in greater detail in Part IV below. As a matter of legal doctrine, moreover, she argues that the environmental harms arising from storage and destruction should factor into the “interests of third parties” that TRIPs Article 46 states “shall be taken into account” before destruction is warranted.⁶⁸

In summary, the social benefits of destroying patent-infringing goods are likely to be lower on average than the benefits of destroying trademark- or copyright-infringing goods given the longer term of protection for the latter (and thus the higher costs of long-term storage). The social benefits of destruction also are likely to be lower, and the social costs to the infringer and third parties correspondingly higher, for products that can be effectively modified to be noninfringing; complex products incorporating one or a small number of patent-infringing features that can be removed and replaced by functional noninfringing features would tend to fall within this

however, TRIPs Article 46 does not foresee the mere removal of an infringing trademark as sufficient to permit the release into commerce of counterfeit trademark goods, other than in exceptional cases; moreover, some trademarks, such as product design, cannot be removed; and, even where debranding, recycling, or upcycling is feasible, owners may object if there remains some risk of residual confusion. *See id.* (first citing Dorenbosch, *supra*, at 147–49; then citing Annette Kur, ‘As Good as New’—Sale of Repaired or Refurbished Goods: Commendable Practice or Trade Mark Infringement?, 70(3) GRUR INT. 228, 228 (2021); and then citing A.M. van Aerde, *Transformatie van Stofelijke Objecten Onderworpen aan Intellectuele-Eigendomsrechten [Transformation of Material Objects Subject to Intellectual Property Rights]*, IER 2022/11, 96 (2022)). Further, donation to charitable organizations—though expressly permitted under Article 12(3) of the Trade Secrets Directive—might have to be accompanied with some assurance that the infringing goods do not make their way back to the channels of commerce, where they could compete with noninfringing merchandise. *See* Vrendenburg, *supra* note 65, at 278; Vrendenburg, *Judicial Sustainability*, *supra* note 66, at 1128.

Vrendenburg also notes that permitting infringers to sell off their stock of infringing goods would reduce the costs of storage or destruction, while noting that European courts do not employ this option very often. *See* Vrendenburg, *supra* note 65, at 278; Vrendenburg, *Judicial Sustainability*, *supra* note 66, at 1127; *see also infra* note 85.

⁶⁸ *See* Vrendenburg, *supra* note 65, at 281; *see also* Vrendenburg, *Judicial Sustainability*, *supra* note 66, at 1129 (noting the relevance of fundamental rights, including the right to environmental protection as set forth in Article 37 of the Charter of Fundamental Rights of the European Union, and as referenced in both IPRED and the Trade Secrets Directive). Notwithstanding these concerns, however, the Court of Justice of the European Union recently held that member states cannot preclude courts from ordering the destruction of genuine gray-market goods that have been imported into a member state without authorization of the rightsholder. *See* Case C-355/21, *Perfumesco.pl sp. z o.o. sp.k. v. Procter & Gamble Int’l Operations SA*, ¶¶ 43–56 (Oct. 13, 2022). That said, the fact that courts in E.U. member states *may* order destruction does not mean that they *must* do so under all circumstances, as commentators have been quick to point out. *See* Jan Jacobi, *CJEU Clarifies that Destruction of Goods May be Claimed Irrespective of Infringement Type*, 17 J. INTELL. PROP. L. & PRAC. 975, 977 (2022) (stating that “categorically allowing the destruction of infringing goods should be questioned if suitable alternatives are present to the parties,” and noting that Recital 28 of the Trade Secrets Directive states that destruction “should not be preferential if other viable options are present”); Agnieszka Sztoldman, *Destruction of Goods as a Corrective Measure Ordered by National Courts*, 72 GRUR INT. 686, 694 (2023) (noting that “Article 10(1) does not exclude EU Member States from establishing factors to be considered when deciding on the acceptability of the destruction of infringing goods, such as the gravity of the infringement or the interests of third parties”).

category. For these reasons, we would predict that, in general, courts would be less likely to order the destruction of patent-infringing goods than of trademark- or copyright-infringing goods. Furthermore, such variations as do exist among states might be explainable, at least in part, by disparities in monitoring costs or the effectiveness of contempt sanctions for violating injunctions—though we can only speculate whether the empirical evidence would substantiate this hypothesis. Finally, however, it may be that the social costs of destruction have been underestimated across the board once environmental consequences are taken into account. These consequences can be reduced to the extent infringing products can be put to other uses through recycling or upcycling, or the products can be donated to charitable organizations or sold off in limited quantities pursuant to an ongoing royalty. A greater receptivity to these alternatives therefore would seem to be a step in the right direction. As most people today recognize, environmental degradation contributes to, among other problems, climate change,⁶⁹ and in the years to come, harms from climate change are projected disproportionately to harm the poorest nations in the world.⁷⁰ To the extent IP law can, however modestly, avoid causing unnecessary environmental harm by eliminating unnecessary orders for the storage and destruction of infringing goods, it would make a positive contribution to both global and long-term social welfare.⁷¹

IV. Destruction, Injunctions, and Proportionality

Turning to our second principal topic, given that courts generally have, and sometimes exercise, the authority to consider proportionality when deciding whether to order the destruction of infringing goods, one might wonder why legislatures and courts (other than in the United States and, to a lesser degree, other common-law countries) are so unwilling to consider proportionality when deciding whether to grant or stay injunctive relief. After all, there would be some overlap among the factors courts would be weighing in both contexts. As noted above, in deciding whether a destruction order would be proportionate, courts consider factors including the extent to which the defendant is at fault, the value and amount of the infringing goods, whether the infringing product can be rendered noninfringing, and the effect on third parties.⁷² Similarly, in deciding whether to grant, deny, or “tailor” (e.g., stay, for purposes of redesign or sell-off) injunctive relief, courts in both the U.S. and the

⁶⁹ See *Knowledge for Policy, Climate Change and Environmental Degradation*, EUR. COMM’N (Oct. 20, 2022), https://knowledge4policy.ec.europa.eu/climate-change-environmental-degradation_en.

⁷⁰ See, e.g., Nicolas Taconet, Aurélie Méjean & Céline Guivarch, *Influence of Climate Change Impacts and Mitigation Costs on Inequality Between Countries*, 160 CLIMATIC CHANGE 15, 16 (2020) (stating that “climate change will induce impacts that hit primarily the poorest countries”).

⁷¹ See, c.f., WILLIAM MACASKILL, WHAT WE OWE THE FUTURE (2022). See also William Macaskill, *Longtermism*, <https://www.williammacaskill.com/longtermism> (last visited Nov. 21, 2023) (discussing “longtermism” and the idea that what we do today can affect how well or how poorly future people’s lives will go).

⁷² See *supra* notes 46–49 and accompanying text.

U.K. are apt to consider, among other matters, the behavior of the parties, the hardship to the defendant if it is enjoined (which may be lessened if there are noninfringing options available to the defendant), and the effect on third parties (or more broadly, the public interest).⁷³ To be sure, in both contexts there are other relevant factors as well, including (in respect to injunctions) whether money damages would be an adequate remedy, and the U.S. and the U.K. clearly differ in their estimation of how frequently courts should exercise their discretion to deny or stay injunctive relief.⁷⁴ But money damages sometimes must be calculated anyway to compensate for past infringement, and given the overlap among the other factors, one might ask whether it would entail *that* much more work for courts in civil law countries to consider proportionality as a precondition to granting injunctive relief.⁷⁵ On the other hand, if one is of the view that the civil law countries are generally correct in awarding injunctions to prevailing IP owners as a matter of course, perhaps the question should be addressed from the opposite perspective: if it is best, on balance, to avoid inquiries into proportionality for purposes of granting injunctive relief, should courts also avoid the topic when asked to order the destruction of infringing merchandise?

One way to approach these questions is to map out the four possible combinations of standards for granting injunctions and destruction orders, as illustrated by the box below:

	Injunctions Automatic	Injunctions Discretionary
Destruction Automatic	Type 1	Type 3
Destruction Discretionary	Type 2	Type 4

⁷³ For extensive discussion and citation to relevant cases, see Lionel Bently & Sir Richard Arnold, *United Kingdom*, in *INJUNCTIONS IN PATENT LAW: TRANS-ATLANTIC DIALOGUES ON FLEXIBILITY AND TAILORING* 261, 271–84 (Jorge L. Contreras & Martin Husovec eds., 2022) [hereinafter *DIALOGUES*]; John M. Golden, *United States*, in *DIALOGUES*, *supra*, at 291, 295–96, 304–06; Norman V. Siebrasse et al., *Injunctive Relief*, in *COMPLEX PRODUCTS*, *supra* note 64, 115, 132–33, 135–41. As the titles of these works indicate, the authors' discussion principally relates to patent disputes, but in both the U.S. and the U.K., the same general principles would apply across different substantive bodies of law.

⁷⁴ There are also differences regarding the burden of proof, with U.S. courts interpreting *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006), as placing the burden on plaintiffs to show that injunctive relief is warranted, and U.K. courts placing the burden on the defendant to show why it is not. See Norman V. Siebrasse et al., *Injunctive Relief*, in *COMPLEX PRODUCTS*, *supra* note 64, at 125–126, 154–55 (discussing the competing approaches to the issue of who has the burden when a court is deciding whether to grant injunctive relief).

⁷⁵ *But see discussion infra* note 78.

Thus, in what we are referring to as a “Type 1” regime, courts would automatically award the prevailing IP owner a permanent injunction, and a destruction order would automatically follow. In a “Type 2” regime, by contrast, courts would automatically award the prevailing IP owner a permanent injunction, but destruction orders would be discretionary. In a “Type 3” regime, courts would apply a discretionary standard in determining whether to grant injunctive relief, but, when they do grant injunctive relief, a destruction order would automatically follow. Finally, in a “Type 4” regime, both injunctions and destruction orders would be discretionary. Having laid out the four possibilities, we may then ask why a court or legislature might choose to adopt one of these four combinations over the others.

We will start by noting that, in previous work, one of us has argued that—putting aside cases in which courts might deny or stay injunctive relief primarily on public interest grounds, such as some patent cases involving drugs or medical devices—courts could apply the following heuristic to determine when or whether to grant, deny, or tailor injunctive relief in patent (and, by extension, other IP) cases: (1) grant injunctions when the probability of holdup is low, (2) deny injunctions when the probability of holdup is high and the expected cost of “valuation errors,” that is, errors in correctly determining the compensation due to the rights holder, is low to moderate, and (3) when the matter is indeterminate, grant injunctions subject to stays.⁷⁶ For present purposes, suffice it to say that if one agrees that there is some nontrivial class of cases in which courts should deny or stay injunctive relief, then one would prefer either Type 3 or 4 from the above taxonomy. But if we start from the premise that holdup (or, more broadly, proportionality considerations) are sufficiently compelling in some class of cases to weigh against the granting of injunctive relief, opting for a Type 3 regime—under which destruction is automatic once a court decides to grant injunctive relief—seems perverse. If anything, there probably are *more* reasons, including environmental costs, for destruction potentially to be a disproportionate remedy than there are for injunctive relief to be disproportionate. In addition, a Type 3 regime also could give rise to some unintended negative consequences. One could imagine cases in which a court that is sensitive to the risks of holdup or disproportionality concludes that, on balance, injunctive relief nonetheless is warranted but that destruction would be unnecessary to ensure compliance. If destruction is a necessary consequence of granting an injunction, however, the court would then be left with two undesirable options: either to forgo the benefits of granting the injunction or to generate the costs associated with unnecessary destruction. The rule therefore could result in either too few injunctions from the

⁷⁶ See Cotter, *supra* note 59, at 303–07. The logic of the argument is, briefly, that injunctive relief reduces the risk of judicial error in calculating appropriate compensation (i.e., over- or under-compensation), but that it also increases the risk of holdup when conditions favoring holdup (e.g., inadvertent infringement coupled with the presence of non-redeployable sunk costs, or switching costs that are higher *ex post* than *ex ante*) are present. The article argues that the above three heuristics would enable courts to approximate the social welfare enhancing solution for a given case at a reasonable administrative cost.

standpoint of social welfare or too much destruction. For these reasons, it seems clear to us that Type 4 is superior to Type 3.

If, on the other hand, one concludes that injunctions should be automatic, the choice is between Type 1 and Type 2; we would expect most jurisdictions favoring automatic injunctions to opt for Type 2, at least in principle. For one thing, as discussed above, the relevant legal instruments, including TRIPs Article 46, appear to contemplate such an approach.⁷⁷ Moreover, while the Type 2 approach is premised on the assumption that the benefits of discretionary injunctive relief are not worth the candle—or that the social costs of such an approach, including the administrative burden and the risk of judicial error in setting ongoing royalties, are too high⁷⁸—it

⁷⁷ There could be other doctrinal reasons as well for treating the two remedies differently. Until recently, for example, German courts were unwilling to take third-party interests into account in deciding whether to stay injunctive relief in patent cases, *see* BGH, May 10, 2016, X ZR 114/13—*Wärmetauscher*, ¶ 45, but were statutorily obligated to do so when deciding whether to order destruction, *see supra* note 41. Under a 2021 amendment, German courts are now obligated to consider third-party interests when deciding whether a grant of injunctive relief would be disproportionate, *see* Patentgesetz [PatG] [Patent Act], Aug. 30, 2021, BUNDESGESETZBLATT [BGBl] at 4074, § 139 (Ger.), (stating, *inter alia*, that “[d]er Anspruch ist ausgeschlossen, soweit die Inanspruchnahme aufgrund der besonderen Umstände des Einzelfalls und der Gebote von Treu und Glauben für den Verletzer oder Dritte zu einer unverhältnismäßigen, durch das Ausschließlichkeitsrecht nicht gerechtfertigten Härte führen würde” “[t]he claim is excluded if, due to the special circumstances of the individual case and the requirements of good faith, the claim would lead to disproportionate hardship for the infringer or third parties that is not justified by the exclusive right”), though to date there have been no patent cases in which German courts have exercised this discretion to stay injunctions. Indeed, at least one court has concluded that the relief afforded to third parties under the 2021 amendment remains “subsidiary” to the compulsory licensing option available under German Patent Act § 24. *See* LG Düsseldorf, July 7, 2022, 4c O 18/21—*Sofosbuvir*; *see also* Karsten Schnetzer, *Verhältnismäßigkeit und Schutz Dritter gem. § 139 Abs. 1 Satz 3 PatG—zum Urteil des LG Düsseldorf vom 7.7.2022—4 c O 18/21—Sofosbuvir*, 3/2023 MITTEILUNGEN DER DEUTSCHEN PATENTANWÄLTE 102 (critiquing the decision).

⁷⁸ The U.S. approach, which requires courts to consider whether the IP owner is faced with irreparable harm such that monetary damages would not be an adequate remedy, *see eBay*, 547 U.S. at 591, clearly adds some extra steps to the analysis. In addition, courts in many countries routinely bifurcate damages and liability determinations; as a result, they often never reach any determination of damages because the parties settle in the interim. For this reason, a discretionary injunctive standard would increase administrative costs and might also pose problems relating to valuation error, particularly in jurisdictions in which discovery is narrowly restricted. For discussion of how courts in the U.S. assess ongoing royalties, and a critique thereof, *see* Golden, *supra* note 73, at 306–07. For competing views of how German courts might do so, if and when they exercise their authority under the new German law, *see* Fabian Hoffmann, *Der Ausgleichsanspruch im Patentrecht: Die leistungsgerechte Monetisierung eines Drohpotenzials* [The Claim to Compensation in Patent Law: The Performance-based Monetization of Threatening Potential], 2022 GEWERBLICHER RECHTSSCHUTZ UND URHEBERRECHT [GRUR] 286; Ansgar Ohly, *Der Ausgleichsanspruch gemäß § 139 I 4 PatG als Rechtsfortwirkungsanspruch* [The Claim for Compensation in Accordance with § 139(I)(4) of the Patent Act as a Claim for Continued Legal Effect], 2022 GEWERBLICHER RECHTSSCHUTZ UND URHEBERRECHT [GRUR] 303; Christian Osterrieth, *Kriterien der Angemessenheit des Ausgleichs nach § 139 I 4 PatG* [Criteria of the Appropriateness of the Compensation According to § 139(I)(4) PatG], 2022 GEWERBLICHER RECHTSSCHUTZ UND URHEBERRECHT [GRUR] 299; Gerhard Wagner, *Die Aufopferung des Patentrechtlichen Unterlassungsanspruchs* [The Sacrifice of the Injunction Claim Under Patent Law], 2022 GEWERBLICHER RECHTSSCHUTZ UND URHEBERRECHT [GRUR] 294.

does not follow that the social costs of destruction are never worth avoiding. After all, even if one believes that the risk of holdup is in general an insufficient reason to deny injunctions, one could still conclude that the *additional* risk of holdup, as described above,⁷⁹ counsels caution in automatically granting destruction orders.⁸⁰ Further, the mandatory destruction of infringing goods in every case in which an injunction issues seems unnecessarily wasteful when there is little to no risk that the defendant will violate the terms of the injunction⁸¹ or the infringing features can be removed and replaced with functional substitutes.⁸²

That said, we do think that, at least in patent infringement actions, holdup is a sufficient threat in a large enough class of cases that Type 4 would be preferable to Type 2.⁸³ Again, the fact that proportionality is relevant to recall, removal, and destruction suggests that it might not be *such* a radical step to consider it more frequently in relation to injunctive relief as well. Moreover, as noted above, even when courts do not order destruction the costs, including environmental costs, of long-term storage can be high.⁸⁴ At least in some cases, courts could reduce these costs by being more receptive to allowing infringing goods already produced to be used and sold pursuant to an ongoing royalty or donated to charity—both of which would necessarily entail some relaxing of a general rule in favor of automatic injunctions.⁸⁵ In this regard, a policy in favor of reducing unnecessary destruction

⁷⁹ See *infra* note 84 and accompanying text.

⁸⁰ Additionally, while parties can always bargain around an injunction if it is in their interest to do so (though the *ex ante* threat or *ex post* imposition of injunctive relief may in some cases exacerbate holdup), they can bargain around destruction only before the order is carried out. Thus, if one of the goals of the IP system is to induce voluntary bargaining, decisionmakers are right to be more cautious about entering destruction orders than about ordering injunctive relief.

⁸¹ Recall from above that destruction is a substitute for the ongoing monitoring of the defendant's compliance with the injunction. See *supra* notes 54–55 and accompanying text.

⁸² Courts might be well-advised, in other words, to take Portia's advice to "[s]hed . . . no blood, nor cut . . . less nor more/but just a pound of flesh." WILLIAM SHAKESPEARE, *THE MERCHANT OF VENICE* act. IV, sc. 1.

⁸³ Whether a change from Type 2 to Type 4 would have made a difference in Case No. 45 (the Taiwanese case with which we began the paper) is unclear given that the defendant manufacturer in that case was aware of the patent in suit *ex ante* and therefore presumably could have bargained *ex ante* to continue the authorized manufacture of the machines. On the other hand, both the risk and resulting harm from valuation error may have been low. The court of second instance apportioned damages by evaluating the technical contribution and the economic value presented by the two inventions at issue to come up with a damages figure of TWD\$190,371, or 5.7%, of the value of the infringing goods. See *supra* note 5 and accompanying text. In any event, one could certainly imagine other cases where the risk of holdup is greater, and a denial or stay of injunctive relief might be warranted.

⁸⁴ See *supra* text accompanying note 66.

⁸⁵ See Vrendenbarg, *supra* note 65, at 278 (describing sell-off as "an eminently sustainable alternative," albeit one that is not often seen in court decisions and noting its limitations in cases where post-sale trademark confusion, or safety or health problems, might result from the continued sale or use of infringing products); Vrendenbarg, *Judicial Sustainability*, *supra* note 66, at 1127.

would result in some reduction in injunctive relief as well; the complementary relationship between the two remedies would to some extent run both ways.

V. Summary and Conclusion

But when you talk about destruction.

Don't you know that you can count me out?

John Lennon & Paul McCartney, *Revolution* (1968)

When the Beatles published their song *Revolution* back in 1968, they probably were not thinking about the destruction of IP-infringing goods, but this type of destruction, like other (more serious) types, sometimes does impose substantial social costs. In the present context, these costs may be borne by the infringer, by third parties, and more broadly by the physical environment, in ways that can be both wasteful and unnecessary. If then, as argued above, destruction serves as a substitute for the ongoing monitoring of an infringer's compliance with an injunction, courts should carefully consider whether, on the facts of a given case, destruction is really necessary to ensure such compliance. Particularly in patent cases in which the infringing goods can be rendered noninfringing through alteration—or at least stored for the (comparatively short) duration of the patent term—courts should eschew the unnecessary social costs resulting from burning, shredding, or dumping infringing subject matter.

More generally, we have argued that because courts in many countries routinely consider proportionality as a precondition to ordering the destruction of IP-infringing goods, they also should be more receptive to considering proportionality as a precondition to awarding injunctive relief. While recognizing that a stay or denial of injunctive relief can generate additional work for the parties and the court, as well as introducing some risk of error in accurately determining the amount of an ongoing royalty, we argue that—at least in some cases—the public interest in avoiding patent holdup weighs against *both* injunctions and destruction. Given the complementary nature of injunctions and destruction, moreover, fewer injunctions would also mean less destruction and thus fewer resulting environmental costs. And the more we can “count destruction out,” as it were, without compromising the incentives provided by robust IP rights, the better off we all will be.