

# TEXAS INTELLECTUAL PROPERTY LAW JOURNAL

INTELLECTUAL PROPERTY LAW SECTION OF THE STATE BAR OF TEXAS  
THE UNIVERSITY OF TEXAS SCHOOL OF LAW

THE DISCLOSURE FUNCTION, ACADEMIC/PRIVATE PARTNERSHIPS, AND  
THE CASE FOR AFFIRMATIVELY USED, MULTINATIONAL GRACE PERIODS

*William G. Giltinan*

A UNIFIED FRAMEWORK FOR COMPETITION POLICY AND INNOVATION POLICY

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JUDGING MONOPOLISTIC PRICING: F/RAND AND ANTITRUST INJURY

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FACILITATING NEGOTIATION FOR LICENSING STANDARD-ESSENTIAL  
PATENTS IN THE SHADOW OF INJUNCTIVE RELIEF POSSIBILITIES

*Haksoo Ko*



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Volume 22

2014

Number 2

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*Haksoo Ko*

*Prepared at the University of Texas School of Law (U.S. ISSN #1068-1000)*

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Volume 22

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*The State Bar of Texas*

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Please cite as: TEX. INTELL. PROP. L.J.

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# The Disclosure Function, Academic/Private Partnerships, and the Case for Affirmatively Used, Multinational Grace Periods

William G. Giltinan\*

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## I. Introduction

In recent years there has been an increasing focus on promoting technology transfer through partnerships between research institutions and private entities interested in commercializing innovations resulting from such research, particularly smaller entities.<sup>1</sup> This paper examines the impact that one aspect of intellectual property law, patent grace periods, can have on such partnerships. Comparing and contrasting grace period provisions under the European Patent Convention, Japan's patent laws, and the U.S. America Invents Act, and illustrating how each set of laws impacts a theoretical partnership between an academic research institution and an early stage technology startup demonstrates how choices in grace period policies can support or hinder technology-transfer initiatives and create biases for and against small and large businesses. It also illustrates how liberal grace periods that can be used affirmatively are more supportive of patent law's disclosure function than restricted grace periods. Additionally, it discusses how discordant grace period provisions outside the United States mitigate the benefits of progressive grace period policy implemented under the America Invents Act (AIA).

The second part provides a general introduction to patent law, grace periods, and pre-filing disclosure policies implemented under the laws of the United States, Japan, and the European Patent Convention. The third part illustrates the impact that each system's laws are likely to have on a hypothetical partnership between an academic research institution and an early stage technology startup and the corresponding impact on patent law's disclosure function. The fourth part then proposes a unified set of grace period provisions and discusses the legal and political challenges facing grace period harmonization. Ultimately, this paper concludes that, due to the combination of increasing political pressure to promote technology transfer and the unilateral move by the United States to a first-inventor-to-file system with the passage of the America Invents Act, the conditions for implementing a harmonized, multinational grace period are more favorable now than at any time in recent history.

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<sup>1</sup> See generally NAT'L CTR. FOR SCI. & ENG'G STATISTICS, NAT'L SCI. FOUND., SCIENCE AND ENGINEERING INDICATORS 2012 §§ 4-4 to -6 (2012) (summarizing national and international research and development trends and comparisons).



## II. Grace Periods and Technology Transfer Generally

A patent is the result of a bargain—in return for disclosing an invention to the public so that others can learn from his innovation, the inventor is given a period of time during which he can exclude others from making, selling, importing, or otherwise using that invention.<sup>2</sup> For an invention to be worthy of a patent, it must meet certain requirements, including being new (meaning that the exact invention has not previously been disclosed to the public) and non-obvious (meaning that it is more than a trivial extension of what is already known).<sup>3</sup> Novelty and obviousness are measured against “prior art,” which is essentially the body of knowledge available to the public as of the date the patent application is filed.<sup>4</sup> Publications, public uses, product sales, presentations, and demonstrations can all be prior art.<sup>5</sup> Thus, if an invention is within the prior art at the time of filing, or is nothing more than an obvious extension of what is known at that time, it is not patentable.

One issue that arises when considering patent policy is whether earlier disclosures that came from the inventor’s own work should be considered prior art against that inventor. The patent laws of various jurisdictions address this issue by including exceptions through which a given publication or public use can be excluded from the prior art with respect to a given patent application under certain circumstances.<sup>6</sup> Such exceptions are often referred to as “grace periods.”<sup>7</sup> The circumstances that fall within the grace periods enacted by different countries range from virtually no exceptions in Europe, to limited exceptions in Japan, to very broad and progressive grace periods in the United States.<sup>8</sup>

This continuum in policy decisions is partly due to the fact that grace periods can be controversial from a policy perspective.<sup>9</sup> Proponents of progressive grace periods typically argue that allowing limited pre-filing disclosure by an inventor without loss of patent rights avoids draconian penalties

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<sup>2</sup> Pfaff v. Wells Elecs., Inc., 525 U.S. 55, 63–64 (1998); see also 35 U.S.C. § 271 (2006) (defining the scope of the patent monopoly).

<sup>3</sup> 35 U.S.C. §§ 102–103 (2006 & Supp. 2011). The non-obviousness requirement is often referred to as the “inventive step” requirement outside the United States.

<sup>4</sup> *Id.* § 102. Prior to the passage of the AIA, prior art could be measured from the date of invention as opposed to the application’s filing date. Robert A. Armitage, *Understanding the America Invents Act and Its Implications for Patenting*, 40 AIPLA Q.J. 1, 78 (2012). Now with the implementation of the AIA, the filing date is the critical date for determining the scope of the prior art, with only limited exceptions. See *infra* Part II.B.2.

<sup>5</sup> See Armitage, *supra* note 4, at 53–55 (discussing the changes to the prior art standard under the AIA).

<sup>6</sup> See *infra* Part II.B (discussing how pre-filing disclosures are addressed under the AIA, European Patent Convention, and Japan’s patent laws).

<sup>7</sup> *Id.*

<sup>8</sup> *Id.*

<sup>9</sup> See *infra* Part IV.B (discussing past criticisms of grace-period provisions).

for honest mistakes.<sup>10</sup> Opponents counter that grace periods contribute to legal uncertainty, promote sloppy practice, and can be abused to gain unwarranted patent term extensions.<sup>11</sup> In other words, grace periods are typically seen as a means to correct mistakes, and their critics focus on whether or not the benefit of allowing such corrections is worth the risk of potential abuse and the potential costs of allowing sloppy filing practices.

This paper views grace periods from a different perspective. Instead of viewing grace periods as merely a means to correct mistakes, it considers whether grace periods that can be used affirmatively, instead of simply to correct mistakes and misappropriations, will better serve patent law's disclosure function and be more supportive of technology-transfer partnerships.

Academic/commercial technology-transfer partnerships have become increasingly important over the last decade, both in the United States and abroad.<sup>12</sup> The Bayh-Dole Act in the United States<sup>13</sup> is widely seen as a success in terms of promoting such partnerships by encouraging commercialization of innovations resulting from government support of basic research. The Bayh-Dole Act is expressly biased, however, in favor of small businesses.<sup>14</sup> This is unsurprising given that U.S. economic policy generally promotes entrepreneurship as a driver of growth and job creation. Other countries, including Japan, England, Germany, Austria, Denmark, Norway, Portugal, Spain, and Finland have tried to replicate the success of the United States by implementing laws that mirror aspects of Bayh-Dole.<sup>15</sup> The results have been mixed.<sup>16</sup> In part this may be because of cultural issues and the fact that other aspects of each nation's laws are less optimized to meet the

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<sup>10</sup> See *infra* Part IV.A.2 (discussing the benefits of having few restrictions on grace-period provisions).

<sup>11</sup> See *infra* Part IV.B (discussing criticisms of grace-period provisions).

<sup>12</sup> See NAT'L CTR. FOR SCI. & ENG'G STATISTICS, *supra* note 1 (summarizing national and international research and development trends and comparisons); Thomas L. Bereuter & Peter Heimerl, *Lost in Translation: A European Perspective of Bayh-Dole*, 45 LES NOUVELLES 248, 251 (2010) (discussing challenges faced by European efforts to replicate U.S. success in academic/commercial partnering); Benton C. Martin, *The American Models of Technology Transfer: Contextualized Emulation by Developing Countries?*, 6 BUFF. INTELL. PROP. L.J. 104, 105 (2009) (discussing the challenges that developing countries face in implementing a system similar to the U.S. system); Michael S. Mireles, *Adoption of the Bayh-Dole Act in Developed Countries: Added Pressure for a Broad Research Exemption in the United States?*, 59 ME. L. REV. 259, 265-73 (2007) (discussing attempts by many countries to implement legislation similar to the Bayh-Dole act).

<sup>13</sup> 35 U.S.C. §§ 200-212 (2006).

<sup>14</sup> See *id.* § 200 ("It is the policy and objective of the Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts.").

<sup>15</sup> Mireles, *supra* note 12, at 265-75.

<sup>16</sup> *Id.*

needs of smaller, early stage entities.<sup>17</sup> As this paper illustrates, differences in patent law grace period provisions are one example.

#### A. Conditions for Patentability and Their Interaction with Grace Periods

Before the tradeoffs inherent in affirmatively used grace periods are analyzed in detail, it is necessary to define the concept of a grace period and consider its function in the mechanics of patent law. There are four basic conditions that must be met before a patent will be granted, each of which is relevant to the issue of grace periods. First, the invention must be of the type that the law is willing to accept as patentable.<sup>18</sup> Apparatuses, compounds, and processes are generally considered patentable subject matter, provided they are capable of commercial application.<sup>19</sup> Laws of nature, abstract ideas, and natural materials are within the public domain and are not patentable, regardless of whether or not they were previously known and understood.<sup>20</sup> Hence, while Einstein could not have patented the formula  $E=mc^2$ , he may have been able to patent a nuclear reactor that operated based on that principle.

Second, the invention must be described in sufficient detail to show that the inventor actually possesses the invention and to enable others of ordinary skill in the art to practice the invention.<sup>21</sup> This is the quid pro quo of the bargain—in return for adding to the body of public knowledge, the inventor is rewarded with a limited monopoly.<sup>22</sup> From as far back as the time of Thomas Jefferson it has been understood that “[t]he patent monopoly was not designed to secure to the inventor his natural right in his discoveries” but was instead “an inducement, to bring forth new knowledge” that furthered human understanding.<sup>23</sup> This disclosure function encourages inventors to disclose their inventions publicly so others can learn from them, and the limited monopoly allows such disclosures to be made without fear that free-riders will unfairly take advantage of the inventor’s work.<sup>24</sup> From a policy perspective, the importance of this function cannot be overstated. As Jefferson pointed out, monopolies are an embarrassment to capitalist systems that

<sup>17</sup> Compare, e.g., 35 U.S.C. § 200 (expressly favoring small businesses in the statutory language) with Sangyou gijyutsu youka hou [Industrial Technology Enhancement Act], Act No. 44 of 2000, art. 19 (Japan) (implementing Japan’s provisions similar to the U.S. Bayh-Dole Act, but without expressing any preference based on the size of the commercial entity).

<sup>18</sup> 35 U.S.C. § 101 (2006 & Supp. 2011) (addressing patentable subject matter in the United States).

<sup>19</sup> *Id.*

<sup>20</sup> *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012).

<sup>21</sup> 35 U.S.C. § 112 (2006 & Supp. 2011) (describing requirements for creating a patent).

<sup>22</sup> *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1345 (Fed. Cir. 2010) (“Every patent must describe an invention. It is part of the quid pro quo of a patent; one describes an invention, and, if the law’s other requirements are met, one obtains a patent.”).

<sup>23</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 9 (1966) (discussing the overall policy justifications underlying the patent system).

<sup>24</sup> *Id.*

can only be suffered under very limited circumstances.<sup>25</sup> Therefore, while an important secondary objective of the patent system is to promote economic growth by encouraging investment in research and development, the system's primary goal is to promote disclosure of innovations in order to foster growth of the body of information available to society.

The third requirement is that the invention must be novel, meaning that it has not previously been publicly disclosed.<sup>26</sup> The body of all public disclosures made prior to the filing of the patent application is referred to as the "prior art" and comprises publications, prior patent applications, public uses, and offers for sale.<sup>27</sup> If no example of the invention can be found in the prior art, it is novel.<sup>28</sup>

This is consistent with the fourth requirement—that the invention be more than an obvious extension of the prior art.<sup>29</sup> Determining obviousness is often the most difficult and complex issue in a patentability evaluation.<sup>30</sup> At the same time, it is critical to the issue of patent quality. If an applicant can receive a patent on an invention that a person of ordinary skill could have created herself without undue experimentation, then that applicant would be granted the extraordinary benefit of a monopoly without having contributed meaningfully to the body of human knowledge. In other words, there would be a failure of consideration in the theoretical contract underlying the patent system.

The concept of a grace period impacts the novelty and obviousness requirements directly and the subject matter and disclosure requirements indirectly. A grace period is a period of time prior to the filing of a patent application during which certain public disclosures are removed from the prior art by operation of law.<sup>31</sup> The public disclosures that are removed are generally those that were made by the inventor or that were derived from the inventor's work.<sup>32</sup> Thus, a grace period serves a fairness purpose by preventing an inventor's own work from being used against him and by preventing situations in which an inventor's work is disclosed by unscrupulous third parties before he files an application for a patent. By limiting the amount of time

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<sup>25</sup> *Id.*

<sup>26</sup> 35 U.S.C. § 102 (2006 & Supp. 2011); *see also* Armitage, *supra* note 4 (discussing the novelty standards under the AIA and the earlier Patent Act).

<sup>27</sup> 35 U.S.C. § 102.

<sup>28</sup> *Id.*

<sup>29</sup> *Id.* § 103; *see also* KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007) (discussing the obviousness standard and case law interpreting it).

<sup>30</sup> *See* KSR Int'l Co., 550 U.S. at 417–18 (discussing difficulties in the application of the obviousness standard).

<sup>31</sup> *See* Joseph Straus, *Grace Period and the European and International Patent Law, Analysis of Key Legal and Socio-Economic Aspects*, 20 IIC STUD. IN INDUS. PROP. & COPYRIGHT L. 3, 15 (2001) (describing the grace period provisions in German law).

<sup>32</sup> 35 U.S.C. § 102(b).

available to the inventor, the grace period does not overly alleviate the pressure to file a patent application quickly in order to preserve patent rights.<sup>33</sup> It merely adds a window of time in between the date of invention and the date of filing during which the inventor's own disclosures will not prejudice his rights. As such, grace periods are most often incorporated in the novelty provisions of patent statutes that specify the deadlines for filing an application.<sup>34</sup> Such provisions can be referred to as early filing requirements.

The impact of grace periods on the novelty and obviousness requirements is readily apparent. By removing certain disclosures from the body of prior art, a grace period marginally improves the chances of an invention being found to be new and non-obvious. To ensure that *quid pro quo* is maintained, only a limited number of disclosures that meet well-defined conditions can be excluded, and only during a limited time period.

The impact of grace periods on the subject matter and disclosure requirements is more subtle. Given that ideas and laws of nature are not patentable subject matter, an inventor who conceives a new idea or discovers a new law of nature faces a quandary. If the inventor publishes the idea before it is reduced to a commercialized form, that publication becomes part of the prior art.<sup>35</sup> As a publication that does not describe the commercialized invention itself, it would not defeat the novelty of a later patent application claiming a commercial embodiment.<sup>36</sup> It could, however, render claims in that application obvious.<sup>37</sup> Such a publication could also benefit third parties and enable them to beat the inventor to the patent office with applications that claim other commercial embodiments. Accordingly, a wise inventor will withhold any such publication until it has been reduced to a commercialized form that can support a patent application. Of course, were ideas and laws of nature themselves patentable, this would not be a concern. But, given that they are not, the researcher who conceives an idea or divines a new law of nature is faced with a choice of either withholding that discovery until it has been commercialized or publishing it and accepting the risk that it could be used against her in a future patent application.<sup>38</sup> Grace periods help alleviate that risk by providing a window of time after a publication during which a commercial embodiment can be developed, tested, and refined without risk of losing patent rights.<sup>39</sup>

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<sup>33</sup> See *id.* (limiting the exception to publications made up to one year prior to the effective filing date).

<sup>34</sup> See, e.g., *infra* Parts II.B.1 (discussing EPC provisions providing exceptions to early filing requirements), II.B.2 (discussing the U.S. grace-period provisions under the AIA), II.B.3 (discussing corresponding provisions under Japanese law).

<sup>35</sup> See *infra* Part II.B.

<sup>36</sup> See *infra* Part III.

<sup>37</sup> See *infra* Part III.

<sup>38</sup> See *infra* Part IV.C.

<sup>39</sup> See *infra* Part IV.C.

## B. Grace Periods in Europe, Japan, and the United States

To illustrate how grace periods operate in practice, three different approaches are considered: the early filing rules under the European Patent Convention (EPC), the similar provisions under Japan's patent statutes, and the approach under § 102 of the AIA. The European approach implements what is commonly referred to as an "absolute novelty" rule with virtually no grace period protections.<sup>40</sup> Under this system, all public disclosure, including that from the inventor, is treated as prior art.<sup>41</sup> The only exceptions are disclosures arising from wrongdoing at the expense of the applicant and disclosures at a very limited number of international exhibitions.<sup>42</sup> Those exceptions only apply to disclosures occurring no more than six months prior to the filing of the European application.<sup>43</sup>

The laws of Japan take a somewhat more permissive approach by expanding the number and types of commercial venues where the inventor can make pre-filing disclosures and allowing for public experimental uses prior to filing.<sup>44</sup> Japan still limits the exception to a six-month period and requires the inventor to claim the exception affirmatively at the time of filing.<sup>45</sup>

The U.S. law takes the most permissive approach.<sup>46</sup> Disclosure derived from the inventor's own work is excepted, provided it did not occur more than one year prior to the filing date.<sup>47</sup> There are no restrictions on the forums in which such disclosures are made and no express requirement that the inventor affirmatively claim the protection.<sup>48</sup>

The three systems thus present useful data points on a continuum of approaches from an almost zero tolerance European policy to a permissive U.S. system, with Japan's laws taking a middle ground.

### 1. Absolute Novelty and the EPO

Currently, the EPC has been adopted by all twenty-seven European Union member nations and several non-member nations in Europe, with the fourteenth edition of the EPC having gone into force in December 2007.<sup>49</sup>

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<sup>40</sup> See *infra* Part II.B.1.

<sup>41</sup> See *infra* Part II.B.1.

<sup>42</sup> See *infra* Part II.B.1.

<sup>43</sup> See *infra* Part II.B.1.

<sup>44</sup> See *infra* Part II.B.3.

<sup>45</sup> See *infra* Part II.B.3.

<sup>46</sup> See *infra* Part II.B.2.

<sup>47</sup> See *infra* Part II.B.2.

<sup>48</sup> See *infra* Part II.B.2.

<sup>49</sup> Convention on the Grant of European Patents (European Patent Convention), Oct. 5, 1973, 1065 U.N.T.S. 255, as amended by the Act Revising the European Patent Convention, Nov. 29, 2000, available at [http://documents.epo.org/projects/babylon/eponet.nsf/0/00E0CD7FD461C0D5C1257C060050C376/\\$File/EPC\\_15th\\_edition\\_2013.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/00E0CD7FD461C0D5C1257C060050C376/$File/EPC_15th_edition_2013.pdf).

The EPC is published in French, German, and English, all of which are official languages of the Convention.<sup>50</sup>

The EPC created a centralized European Patent Office (EPO) through which applicants can seek patent protection in one or more EPC signatory countries without having to file independent applications in each nation.<sup>51</sup> Through the EPO examination process, an application can be submitted in any of the three official languages and will be examined one time by a board of three examiners.<sup>52</sup> If the examiners determine that the application meets the requirements for patentability, the application is subject to an opposition period during which third parties can raise challenges.<sup>53</sup> If no successful challenge is mounted, the applicant can then nationalize the application in any EPC signatory country by providing a translation in the country's native language and paying the appropriate fees.<sup>54</sup> The applicant can then seek to enforce its patent in the local courts of each country where it nationalized the application.<sup>55</sup> The result is an efficient and professionally-run system that avoids redundant examinations by patent offices in each country but still leads to enforceable rights in local courts.

The substantive law governing the examination of European patent applications is set forth in the rules implemented under the EPC and decisions issued by the Enlarged Boards of Appeal.<sup>56</sup> The EPC sets forth the conditions for novelty as follows:

- (1) An invention shall be considered to be new if it does not form part of the state of the art.
- (2) The state of the art shall be held to comprise everything made available to the public by means of a written or oral description, by use, or in any other way, before the date of filing of the European patent application.

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<sup>50</sup> *Id.* art. 177. References to EPC provisions in this paper are to the official English version.

<sup>51</sup> *Id.* arts. 1, 2, 4 & 6.

<sup>52</sup> *Id.* arts. 14 & 18.

<sup>53</sup> *Id.* art. 99.

<sup>54</sup> *Id.* art. 3. This paper does not consider the impact of the proposed European unitary patent. See generally *Unitary Patent*, EUROPEAN PATENT OFFICE, <http://www.epo.org/law-practice/unitary/unitary-patent.html> (last updated Oct. 4, 2014).

<sup>55</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 3.

<sup>56</sup> *Id.* art. 21. Ordinary appeals by applicants are addressed by a three-judge Board of Appeal. *Id.* Decisions of the Board of Appeal are binding only on the appellee and do not establish substantive law that binds Examiners or other Boards of Appeal in future cases. *Id.* In most matters, Enlarged Boards of Appeal are made up of five legally-qualified judges and two technically-qualified judges. *Id.* art. 23. Decisions issued by Enlarged Boards are binding on Examiners and ordinary Boards of Appeal in other cases. *Id.* Enlarged Boards of Appeal have only a very limited jurisdiction, being restricted to questions submitted by the European Commissioner of Patents or cases in which different Boards of Appeal have taken divergent legal positions. *Id.*

(3) Additionally, the content of European patent applications as filed, the dates of filing of which are prior to the date referred to in paragraph 2 and which were published on or after that date, shall be considered as comprised in the state of the art.<sup>57</sup>

The EPC thereby creates a framework in which an invention is compared to the “state of the art” to determine if it is worthy of a patent.<sup>58</sup> The state of the art is made up of all information that has been “made available to” the public prior to the filing date and all later-published but earlier-filed European patent applications.<sup>59</sup> There is no exception in this provision for the inventor’s own disclosure, regardless of whether such disclosure was intentional, unintentional, or the result of a misappropriation.<sup>60</sup> Disclosure by the inventor is treated no differently than third party prior art, so long as it is made available to the public. For example, if an applicant market tested his invention to gauge commercial interest prior to filing a patent application, that application would not meet the novelty requirement as the market testing would have made the invention available to the public prior to the filing date. This is an absolute novelty requirement—any disclosure of the invention prior to filing an enabling application, regardless of the source of the disclosure, is likely to result in a loss of patent rights.

This rule is quite unforgiving. As summarized in *New Japan Chemical*, “[t]he case law accepts that information is ‘available to the public’ if only a single member of the public is in a position to gain access to it and understand it, and if there is no obligation to maintain secrecy.”<sup>61</sup> In other words, even a disclosure to a single person prior to filing an application can make the invention available to the public, and therefore not novel.

However, applicants are not completely without options. When the applicant has secured an obligation of confidentiality from the other party prior to the disclosure, that disclosure will not have been “made available to the public.”<sup>62</sup> Common sense dictates that such obligations should be in writing if possible, but obligations of confidentiality implied from the circumstances of the disclosure can also suffice.<sup>63</sup> Implied confidentiality situations are

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<sup>57</sup> *Id.* art. 54. Article 54 has additional sections addressing issues relating to patentability of pharmaceuticals and medical procedures, but those provisions do not directly impact early filing requirements. *Id.*

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

<sup>61</sup> *New Japan Chem. Co.*, Case No. T 1081/01, at 5–6 (Technical Bd. of Appeal, Eur. Patent Office Sept. 27, 2004).

<sup>62</sup> *EPO Board of Appeal Case Law*, 2012 OJ EPO Special Edition at 29 (“If the person who was able to gain knowledge of the invention was under an obligation to maintain secrecy, the invention cannot be said to have been made available to the public, provided the person did not breach that obligation.”), available at [http://archive.epo.org/epo/pubs/oj012/07\\_12/12\\_spe0.pdf](http://archive.epo.org/epo/pubs/oj012/07_12/12_spe0.pdf).

<sup>63</sup> *See id.* (“A tacit obligation to maintain secrecy could be presumed, for instance, where business partners had a shared interest in confidentiality . . .”).



considered on a case-by-case basis without bright-line rules,<sup>64</sup> and the need to establish confidentiality rests with the applicant.<sup>65</sup> Thus, the question of whether or not a particular disclosure has been made available to the public is often unclear until after a Board of Appeal considers the circumstances and the applicant provides evidence of the secrecy obligation.

The EPC includes two other protections as well, albeit very limited ones. Article 55 addresses what is referred to as “non-prejudicial disclosures” and provides:

(1) For the application of Article 54, a disclosure of the invention shall not be taken into consideration if it occurred no earlier than six months preceding the filing of the European patent application and if it was due to, or in consequence of: (a) an evident abuse in relation to the applicant or his legal predecessor, or (b) the fact that the applicant or his legal predecessor has displayed the invention at an official, or officially recognised, international exhibition falling within the terms of the Convention on international exhibitions signed at Paris on 22 November 1928 and last revised on 30 November 1972.

(2) In the case of paragraph 1(b), paragraph 1 shall apply only if the applicant states, when filing the European patent application, that the invention has been so displayed and files a supporting certificate within the time limit and under the conditions laid down in the Implementing Regulations.<sup>66</sup>

Article 55 therefore provides two very limited exceptions to the absolute novelty requirement of Article 54.<sup>67</sup> The first applies where there is “evident abuse in relation to the applicant.”<sup>68</sup> Evident abuse occurs where clear and unquestionable evidence establishes that a recipient of information disclosed that information without authorization.<sup>69</sup> “[T]here [is] abuse not only when there was the intention to harm, but also when a third party [acts] in such a way as to risk causing harm to the inventor, or when this third party failed to honour the declaration of mutual trust linking him to the inventor.”<sup>70</sup>

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<sup>64</sup> See *Siemens Aktiengesellschaft v. Hitachi, Ltd.*, Case No. T 1512/06 (Technical Bd. of Appeal, Eur. Patent Office Sept. 25, 2008) (finding that a tacit obligation between business partners existed, but only up to the point where parts were shipped for serial production); *TauroPharm GmbH v. Ed Geistlich Söhne AG Für Chemische Industrie*, Case No. T 0945/09 (Technical Bd. of Appeal, Eur. Patent Office June 23, 2010) (finding that a patient had no obligation of confidentiality with respect to the use of particular substance as a “catheter lock” when doctors explained the procedure and the patient was sufficiently lucid to understand it).

<sup>65</sup> See *Procter & Gamble Co. v. Personal Products Co.*, Case T 1054/92 (Technical Bd. of Appeal, Eur. Patent Office June 20, 1996) (interlocutory decision) (finding that where approximately one hundred persons tested diapers containing an absorbent material, there was insufficient proof that the tests were confidential, particularly in light of the large number of tests and the fact that not all of the used diapers were returned to the applicant).

<sup>66</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 55.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> CASE LAW OF THE BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE 69 (Legal Research Serv. for the Bds. of Appeal ed., 6th ed. 2010).

<sup>70</sup> *Id.*

The second limited exception covers display of the invention at certain “official, or officially recognised,” exhibitions.<sup>71</sup> There are very few of these exhibitions each year and the exception requires that a certificate supporting the applicant’s position that the exhibition was covered be filed within four months after the European application filing date.<sup>72</sup>

It is important to note that in both cases, the exception only applies to disclosures made during a six-month window preceding the filing of the European application, not the priority document. Whereas Article 89 of the EPC provides that applicants can receive the benefit of their filing dates in other Paris Convention countries for novelty purposes, it does not provide that the priority date applies to Article 55.<sup>73</sup> In 2000, an Enlarged Board of Appeal was faced with a situation where an oral disclosure was made within six months of the priority date, but more than six months prior to the filing of the European application.<sup>74</sup> The applicant attempted to seek shelter under Article 55 by arguing that the disclosure was an abuse and had occurred within six months of the priority date.<sup>75</sup> The Board held that the priority date was irrelevant and Article 55 did not apply.<sup>76</sup> Reasoning that Article 89 does not list Article 55 as a provision under which the priority date is recognized, the Board held that the only relevant date for the Article 55 exceptions is the European application filing date.<sup>77</sup>

As can be seen from the foregoing, the cutoff date for prior art is often critical. However, determining that cutoff date is not always easy. Under Article 87 of the EPC, a European application may claim a right of priority to an earlier filing.<sup>78</sup> This means that the state of the art is determined as of the date of the earlier filing as opposed to the date the European application is filed.<sup>79</sup> This allows an applicant to file in her home country initially and later file a related application in the EPO, presumably without fear that dis-

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<sup>71</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 55.

<sup>72</sup> Implementing Regulations to the Convention on the Grant of European Patents, r. 25, Dec. 7, 2006, as amended by decision of the Administrative Council of the European Patent Organisation, June 27, 2012.

<sup>73</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 89.

<sup>74</sup> *Univ. Patents, Inc. v. SmithKline Beecham Biologicals SA*, Case No. G 3/98, 2001 OJ EPO 62, 63 (Enlarged Bd. of Appeal July 12, 2000). The proceeding consolidated referred questions from two Technical Boards of Appeal. *Id.* at 62. In doing so, the Enlarged Board noted that national courts in Switzerland, the Netherlands, and Germany had reached contrary conclusions on the question of whether the six-month period referenced in Article 55 ended on the priority date or on the filing date of the European application. *Id.* at 64.

<sup>75</sup> *Id.* at 64.

<sup>76</sup> *Id.* at 71.

<sup>77</sup> *Id.*

<sup>78</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 87.

<sup>79</sup> *Id.*

closures after the initial filing date but before the European filing date will be used against the applicant.

The difficulty with this rule in practice is that there is no requirement that the priority document be identical to the later-filed European application. What is required by Article 87 is that the priority document and the European application disclose “the same invention.”<sup>80</sup> If a priority document is later held not to fully and properly disclose the same invention, the claim of priority is ineffective. If that occurs, the state of the art is determined as of the filing of the later European application and not as of the filing date of the initial application.<sup>81</sup> Not only does this enlarge the body of third-party prior art that can be used to defeat the novelty or inventive step requirement, it also means that the earlier application itself becomes part of the state of the art to the extent it is made public.

What does the phrase “the same invention” signify in this context? In 2001, an Enlarged Board of Appeal held that “‘the same invention’, referred to in Article 87(1) EPC, means that priority of a previous application . . . is to be acknowledged only if the skilled person can derive the subject-matter of the claim directly and unambiguously, using common general knowledge, from the previous application as a whole.”<sup>82</sup> In other words, if the subsequent application adds refinements to the invention disclosed in the priority document, the priority document (i) may itself be part of the state of the art with respect to the European application if it is made public and (ii) may not shield the applicant from other disclosures he himself makes between the two filings. Therefore, to be effective, priority documents must meet all of the disclosure requirements under the EPC and must do so with respect to the entire invention claimed.

In sum, the EPO early disclosure rules do not provide for a grace period in any meaningful sense. All disclosures made available to the public prior to filing a fully enabling application are treated as prior art.<sup>83</sup> The only exceptions are disclosures made under confidentiality obligations, abusive disclosures, and displays at certain pre-defined international exhibitions within

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<sup>80</sup> *Id.*

<sup>81</sup> *See, e.g.*, Case No. G 2/98, 2001 OJ EPO 413, 433 (Enlarged Bd. of Appeal May 31, 2001) (finding the same disclosure requirements apply to priority documents as apply to regular filings).

<sup>82</sup> *Id.* The concepts of “the application as a whole” and “common general knowledge” are of particular importance and provide some needed flexibility. As the priority document is considered “as a whole,” it is not necessary that the claims in the priority document be identical to the claims in the European application—it is only necessary that the application sufficiently disclose what is claimed in the European application. *See* *Esselte N.V. v. Bro. Kogyo Kabushiki Kaisha*, Case No. T 0515/00 (Technical Bd. of Appeal, Eur. Patent Office June 25, 2003) (noting that comparing the claims was not the correct approach). Additionally, where a feature claimed in the European application can be easily inferred by a skilled person using what he knows of the art from the priority document, it need not be expressly disclosed. *Id.*

<sup>83</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 54.

six months of the date the European application is filed.<sup>84</sup> Therefore, applicants interested in protection in Europe are well advised to avoid any disclosure of their invention prior to the date an application fully compliant with EPC rules is filed, either with the EPO or as a priority document.

## 2. Permissive Grace Periods and the U.S. Approach

The United States takes the opposite approach by providing a liberal, one-year grace period. In 2011 the United States passed the America Invents Act and in doing so implemented fundamental changes in U.S. patent laws.<sup>85</sup> The most notable change is a switch from a first-to-invent system to a first-inventor-to-file system.<sup>86</sup> Under the old first-to-invent system, there was no need for a grace period, per se. Publications, market testing, and offers of sale prior to filing a patent application were, if anything, evidence of the date of inventorship and could be used to pre-date a third party application with an earlier filing date.<sup>87</sup> But, there was an important exception.

The pre-AIA version of § 102(b) precluded patentability where “the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, *more than one year prior to the date of the application* for patent in the United States.”<sup>88</sup> This created a twelve-month deadline for filing a patent application after a foreign patent application was filed, the invention was disclosed in a publication, or the invention was sold or used publicly.<sup>89</sup> As a practical matter, while an inventor’s own disclosure of his invention through a publication or a public use or offer of sale taking place more than a year prior to the filing date precluded patentability, publications, public uses, and sales occurring less than a year prior to the filing date did not.<sup>90</sup> Accordingly, while the pre-AIA law did not have a grace period per se, its reliance on invention date as opposed to filing date and the one-year deadline imposed by § 102(b) were often treated as a grace period by U.S. practitioners.

Of course § 102(b) was not effective outside the United States. Where a publication or U.S.-based public use or sale did not preclude issuance of a U.S. patent, provided the twelve-month window was respected, such disclo-

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<sup>84</sup> *Id.* art. 55.

<sup>85</sup> Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (codified in scattered sections of 35 U.S.C.).

<sup>86</sup> Armitage, *supra* note 4; *see also* 35 U.S.C. § 102 (2006 & Supp. 2011) (defining novelty in terms of filing dates).

<sup>87</sup> *See generally* 35 U.S.C. § 135 (2006) (establishing a procedure for competing inventors to participate in an administrative proceeding called an interference to establish which party was the first inventor); U.S. PATENT & TRADEMARK OFFICE, U.S. DEP’T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 2300 (9th ed. 2014) (outlining the procedures utilized by the PTO when conducting interference proceedings).

<sup>88</sup> 35 U.S.C. § 102(b) (2006) (emphasis added).

<sup>89</sup> *Id.*

<sup>90</sup> *Id.*

tures could be treated as prior art outside the United States.<sup>91</sup> As a result, U.S. practitioners commonly advised clients that filing an enabling patent application prior to any publication, public use, or offer of sale was critical if patent protection outside the United States was to be sought. In other words, the more limited rules outside the United States often prevented U.S. applicants from taking full advantage of the flexibility available under the U.S. system.

Under the AIA, § 102 has been rewritten as part of the move to a first-inventor-to-file system and now includes a true grace period.<sup>92</sup> The new § 102 is best understood by considering it in sections. Sections 102(a) and 102(b)(1) provide:

(a) Novelty; Prior Art.—A person shall be entitled to a patent unless—

(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention; or

(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

(b) Exceptions.—

(1) Disclosures made 1 year or less before the effective filing date of the claimed invention.—A disclosure made 1 year or less before the effective filing date of a claimed invention shall not be prior art to the claimed invention under subsection (a)(1) if—

(A) the disclosure was made by the inventor or joint inventor or by another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor; or

(B) the subject matter disclosed had, before such disclosure, been publicly disclosed by the inventor or a joint inventor or another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor.<sup>93</sup>

The new § 102 thus takes an approach similar to that of the EPC and compares the invention as claimed to the prior art, which is defined as that which was available to the public prior to the application's filing date and that which was disclosed in earlier-filed patent applications by others.<sup>94</sup> This is the essence of the move to a first-inventor-to-file system as it requires that where an invention is not known to the public, the first inventor to file a

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<sup>91</sup> See, e.g., *supra* Part II.B.1 (discussing treatment of prior art under the EPC); *infra* Part II.B.3 (discussing treatment of prior art under Japanese law).

<sup>92</sup> 35 U.S.C. § 102 (2006 & Supp. 2011).

<sup>93</sup> *Id.*

<sup>94</sup> Compare *id.*, with Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 54 (each defining novelty in terms of the state of the art at time of filing).

proper application will receive the patent, regardless of whether or not a later filer claims to have invented first.

Section 102(b)(1) then withdraws from the prior art disclosures that came from the inventor within twelve months of the filing date, thereby creating a true one-year grace period.<sup>95</sup> In doing so, the new provision considers both disclosures that arose from the inventor and those made after a disclosure by the inventor but before the inventor's filing date.<sup>96</sup> The identity of the discloser is irrelevant provided that the discloser "obtained the subject matter disclosed directly or indirectly from the inventor."<sup>97</sup> This provision thus protects the inventor from third parties who misappropriate information from the inventor and then make it public before the inventor makes it public or files an application. While such a disclosure would be prior art as to applications filed by third parties, it is not treated as prior art for applications filed by the original source of the information.<sup>98</sup> This addresses one of the primary arguments in favor of grace periods—the need to protect the inventor against misappropriations. However, as there is no requirement that the disclosure be an abuse, the provision goes further and allows for affirmative use by also protecting the inventor from her own disclosures and disclosures by others who obtain the subject matter from the inventor lawfully.

Section 102(b)(1)(B) addresses the situation in which there has been a public disclosure derived from the work of the inventor, and a third party subsequently makes another disclosure of the same subject matter.<sup>99</sup> In those cases, the second disclosure is excluded from the prior art as if it were derived from the first disclosure, without the necessity of proving derivation.<sup>100</sup>

Taking these provisions together, where there is a pre-filing disclosure, it will not matter if the disclosure is a third-party disclosure resulting from a misappropriation of the inventor's work, an accident on the part of the inventor, or an affirmative decision by the inventor to publish or market test the invention prior to filing, so long as (i) the disclosure comes directly or indirectly from the inventor, or (ii) the inventor or a third party who directly or indirectly obtained the information from the inventor makes an earlier public disclosure of the same subject matter.<sup>101</sup>

Similarly, § 102(b)(2) addresses prior-filed patent applications:

(2) Disclosures appearing in applications and patents.—A disclosure shall not be prior art to a claimed invention under subsection (a)(2) if—

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<sup>95</sup> 35 U.S.C. § 102(b).

<sup>96</sup> *Id.*

<sup>97</sup> *Id.*

<sup>98</sup> *Id.*

<sup>99</sup> *Id.*

<sup>100</sup> *Id.*

<sup>101</sup> 35 U.S.C. § 102(b).

(A) the subject matter disclosed was obtained directly or indirectly from the inventor or a joint inventor;

(B) the subject matter disclosed had, before such subject matter was effectively filed under subsection (a)(2), been publicly disclosed by the inventor or a joint inventor or another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor; or

(C) the subject matter disclosed and the claimed invention, not later than the effective filing date of the claimed invention, were owned by the same person or subject to an obligation of assignment to the same person.<sup>102</sup>

Under that section, disclosure appearing in a patent or published application shall not be prior art if it was “obtained directly or indirectly from the inventor or a joint inventor,” or the same subject matter had been publicly disclosed by the inventor or one who obtained the information from the inventor, and the disclosure occurred prior to the filing of the application in question.<sup>103</sup> Here again, two situations are addressed: where the disclosure can be proved to be from the inventor, and where an earlier public disclosure of the same subject matter can be proved to have been made by the inventor or by one who “obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor.”<sup>104</sup> The one-year grace period therefore applies both to public disclosures and to earlier patent filings by others.<sup>105</sup>

Section 102(b)(2)(C) fills a final gap by preventing an applicant’s own prior applications made within the one-year window from being treated as prior art.<sup>106</sup> In this provision, all that is required is that the subject matter in the prior disclosure and the invention in the current application be owned by, or subject to an assignment to, the same person.<sup>107</sup> Thus, filings made by the inventor himself that are not the subject of a priority claim will still not be held against the inventor for one year.<sup>108</sup> The assignment language in this provision is particularly important as it promotes collaboration within companies. Different inventions conceived by different members of a research team within a company are not held against each other provided they are both owned by the same entity.

Section 102(c) takes a further pro-collaboration stance, providing:

(c) Common Ownership Under Joint Research Agreements.—Subject matter disclosed and a claimed invention shall be deemed to have been owned by the same person or subject to an obligation of assignment to the same person in applying the provisions of subsection (b)(2)(C) if—

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<sup>102</sup> *Id.*

<sup>103</sup> *Id.*

<sup>104</sup> *Id.*

<sup>105</sup> *Id.*

<sup>106</sup> *Id.*

<sup>107</sup> 35 U.S.C. § 102(b).

<sup>108</sup> *Id.*

- (1) the subject matter disclosed was developed and the claimed invention was made by, or on behalf of, 1 or more parties to a joint research agreement that was in effect on or before the effective filing date of the claimed invention;
- (2) the claimed invention was made as a result of activities undertaken within the scope of the joint research agreement; and
- (3) the application for patent for the claimed invention discloses or is amended to disclose the names of the parties to the joint research agreement.<sup>109</sup>

This provision carries forward the intentions of the 2004 CREATE Act by continuing to promote and protect agreements under which distinct parties desire to collaborate on a research agenda.<sup>110</sup> In such situations, patent applications filed by one party to the agreement will not be used as prior art against applications filed by the other party, provided the invention arose from their joint research activities and the names of the parties to the agreement are disclosed.<sup>111</sup>

Viewed as a whole, it can be seen that the new § 102 is quite supportive of both collaboration and early disclosure of innovations. Where a disclosure is public and is the result of the inventor's work, the disclosure will not prejudice the inventor's patent rights.<sup>112</sup> Where the disclosure is in the form of an unpublished patent application, the disclosure will still not be used against the inventor provided the two applications are commonly owned or are owned by parties to a collaborative joint research agreement.<sup>113</sup> Unfortunately, the disclosure-promoting benefits of the new provision are rendered moot in many instances by intolerance for any pre-filing disclosures in patent systems outside the United States.<sup>114</sup>

### 3. Japan's Moderate Approach

Japan's law takes a middle ground approach. Prior to the 2011 revision to the Japan Patent Act, which went into effect in April of 2012, Japan's law allowed more pre-filing disclosure than is permissible under the EPC but placed restrictions on the types of permissible disclosures and the venues at which they could be made.<sup>115</sup> In the 2011 amendment, Japan amended the Act to eliminate many of those restrictions and thus moved closer to an open

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<sup>109</sup> *Id.* § 102(c).

<sup>110</sup> Cooperative Research and Technology Enhancement (CREATE) Act of 2004 § 2, 35 U.S.C. § 103(c) (2006).

<sup>111</sup> 35 U.S.C. § 102(c).

<sup>112</sup> *Id.* § 102.

<sup>113</sup> *Id.*

<sup>114</sup> See *infra* Parts II.B.4, III (illustrating the ramifications of pre-filing disclosures on international filings).

<sup>115</sup> Tokkyo hou [Patent Act], Act. No. 121 of 1959 (through amendments made by Act No. 109 of 2006) (Japan), translated at <http://www.cas.go.jp/jp/seisaku/hourei/data/PA.pdf>.



grace period, but it imposed more restrictions than are imposed by the United States under the AIA.<sup>116</sup>

The novelty requirement under Japan's patent law was unchanged by the amendment and is set forth in Article 29(1):

(1) An inventor of an invention that is industrially applicable may be entitled to obtain a patent for the said invention, except for the following:

(i) inventions that were publicly known in Japan or a foreign country, prior to the filing of the patent application;

(ii) inventions that were publicly worked in Japan or a foreign country, prior to the filing of the patent application; or

(iii) inventions that were described in a distributed publication, or inventions that were made publicly available through an electric telecommunication line in Japan or a foreign country, prior to the filing of the patent application.<sup>117</sup>

As with the EPC, the line is drawn at the time of filing.<sup>118</sup> Any invention publicly known, publicly worked, or described in a printed or online publication prior to the filing time can be used against the applicant.<sup>119</sup> Article 29(2) contains Japan's obviousness or inventive step provision:

Where, prior to the filing of the patent application, a person ordinarily skilled in the art of the invention would have been able to easily make the invention based on an invention prescribed in any of the items of the preceding paragraph, a patent shall not be granted for such an invention notwithstanding the preceding paragraph.<sup>120</sup>

The novelty and inventive step provisions work together in that the inventive step provision applies to inventions that are obvious in light of publications covered under the novelty provision.<sup>121</sup> Therefore, if a publication is excluded under Article 29(1), it is unavailable for assertion against the applicant under Article 29(2).<sup>122</sup>

The pre-2012 version of Article 30 provided a somewhat limited, but well thought out, set of exceptions designed to exclude certain disclosures occurring up to six months prior to the priority date from the prior art.<sup>123</sup> The exceptions covered testing as well as written and online publications by

<sup>116</sup> Tokkyo hou [Patent Act], Act. No. 121 of 1959 (through amendments made by Act No. 63 of 2011) (Japan), translated at [http://www.wipo.int/wipolex/en/text.jsp?file\\_id=299486](http://www.wipo.int/wipolex/en/text.jsp?file_id=299486).

<sup>117</sup> Patent Act (through amendments made by Act No. 109 of 2006), art. 29.

<sup>118</sup> *Id.* Under Japanese law, the time of filing is determined on a minute-to-minute basis. Examination Standards Office, Admin. Affairs Div., Japan Patent Office, *Examination Guidelines for Patent and Utility Model in Japan*, JPO, pt. II, ch. 2, § 1.2.1 (last updated July 1, 2013), [http://www.jpo.go.jp/cgi/linke.cgi?url=/tetuzuki\\_e/t\\_tokkyo\\_e/1312-002\\_e.htm](http://www.jpo.go.jp/cgi/linke.cgi?url=/tetuzuki_e/t_tokkyo_e/1312-002_e.htm).

<sup>119</sup> Patent Act (through amendments made by Act No. 63 of 2011), art. 29.

<sup>120</sup> *Id.*

<sup>121</sup> *Id.*

<sup>122</sup> *Id.*

<sup>123</sup> See Patent Act (through amendments made by Act No. 109 of 2006), art. 30 (addressing exceptions to lack of novelty of an invention).

the inventor and immunized presentations by the inventor at certain academic conferences and exhibition at certain tradeshow.<sup>124</sup>

The amended version of Article 30 retains the six-month timeframe but expands the applicability of the grace period by eliminating the defined list of exceptions in favor of a general exclusion.<sup>125</sup> Article 30(1) addresses disclosures made against the will of the person having the right to obtain a patent and excludes those disclosures from the prior art for the purposes of both novelty and inventive step.<sup>126</sup> The revised provision addresses persons “having the right to obtain a patent,” which is the same language used in the prior version of Article 30.<sup>127</sup> Accordingly, if a patent application is filed within six months of the date on which a disclosure of the inventor’s own work was made against the rights holder’s will, that disclosure is inapplicable for novelty and inventive step purposes.

The amended version of Article 30(2) addresses intentional disclosures by the rights holder. The provision covers disclosures by “an act of the person having the right to obtain a patent” and again applies only to publications made within six months of the priority date.<sup>128</sup> The Japan Patent Office (JPO) interprets this provision to cover acts of “person(s) having the right to obtain a patent at the time of the act causing the publication of the invention.”<sup>129</sup> In other words, the exclusion applies if the rights holder consented to the publication at the time of disclosure. Later rights holders cannot seek shelter under Article 30(2).

The revised provision is consistent with judicial interpretations of the prior version of Article 30. With respect to printed publications, the Tokyo High Court construed the prior version of the statute to require (i) that the publication be intentional and (ii) that it be by the rights holder.<sup>130</sup>

The revised version of Article 30(3) goes on to impose an affirmative duty on the applicant to claim the exception under Article 30(2) at the time of filing and to provide a certificate explaining the disclosure within thirty days thereafter.<sup>131</sup> As each of the exceptions under Article 30(2) address things done intentionally by the rights holder, the rights holder would be aware of them and should have no difficulty disclosing them to the JPO.<sup>132</sup>

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<sup>124</sup> *Id.*

<sup>125</sup> Patent Act (through amendments made by Act No. 63 of 2011), art. 30.

<sup>126</sup> *Id.*

<sup>127</sup> Compare Patent Act (through amendments made by Act No. 63 of 2011), art. 30, with Patent Act (through amendments made by Act No. 109 of 2006), art. 30.

<sup>128</sup> Patent Act (through amendments made by Act No. 63 of 2011), art. 30.

<sup>129</sup> Japan Patent Office, *Operational Guidelines for Applicants to Seek the Application of Exceptions to Lack of Novelty of Invention, Corresponding to the Patent Act Article 30 Revised in 2011*, JPO, § 3.4 (Sept. 2011), [http://www.jpo.go.jp/tetuzuki\\_e/t\\_tokkyo\\_e/pdf/e\\_pae\\_paa30/e\\_tebiki.pdf](http://www.jpo.go.jp/tetuzuki_e/t_tokkyo_e/pdf/e_pae_paa30/e_tebiki.pdf).

<sup>130</sup> HIROYA KAWAGUCHI, *THE ESSENTIALS OF JAPANESE PATENT LAW: CASES AND PRACTICE* 29 (2006).

<sup>131</sup> Patent Act (through amendments made by Act No. 63 of 2011), art. 30.

<sup>132</sup> *Id.*

This is analogous to a U.S. applicant's duty under Rule 56 to alert the Examiner to any prior public use or offer of sale that might be material to patentability.<sup>133</sup>

However, the requirement to disclose does not apply to acts made against the will of the rights holder.<sup>134</sup> This is reasonable because while an applicant can reasonably be presumed to have knowledge of his own actions, there is no reason to presume he knows of acts done against his will. Given that such acts could involve publication due to espionage,<sup>135</sup> it is possible that the misappropriation might not be detected until the publication is cited by the Examiner.

Even so, the disclosure requirement places a not insignificant burden on the applicant. In reviewing the revised version of Article 30, the JPO noted that "there are many cases where the certificates by the applicant alone are found to have a certain probative value if the matters to be proved are stated in detail."<sup>136</sup> The JPO concluded that, where the applicant describes the prior disclosure in detail, third parties will not be placed at a disadvantage even if additional supplementary documentation is not provided.<sup>137</sup> Thus, it is incumbent on the applicant to affirmatively notify the JPO that disclosures occurred and describe those disclosures specifically in order to seek shelter under the revised version of Article 30(2).<sup>138</sup> Such a requirement necessitates careful planning and record keeping on the part of the applicant. If the applicant is not advised of these requirements prior to the earliest disclosure, it could be burdensome to reconstruct the details when the application enters the JPO.

It is also notable that, unlike the EPC, the exceptions protecting an inventor from his own disclosure in Japan's Patent Act apply to acts and publications occurring six months prior to the priority date.<sup>139</sup> The filing date of

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<sup>133</sup> 37 C.F.R. § 1.56 (2013) ("Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section.").

<sup>134</sup> Japan Patent Office, *supra* note 129, § 6 ("Where the invention has been published against the right holder's will, the applicant is eligible for the application of paragraph (1) if he/she files a patent application within six months from the date of publication of the invention (the applicant is neither required to submit a document stating to the effect that he/she is seeking the application of paragraph (1) nor a 'Proving Document').").

<sup>135</sup> *Id.*

<sup>136</sup> *Id.* § 3.1.

<sup>137</sup> *Id.*

<sup>138</sup> *See id.* §§ 3.2–3.4.2 (describing the level of specificity required by the JPO to claim protection for intentional disclosures).

<sup>139</sup> *See, e.g., id.* § 5.3 (discussing the application of the revised version of Article 30 to international applications filed under the Patent Cooperation Treaty).

the Japanese application is only relevant with respect to a required statement explaining those disclosures.<sup>140</sup>

The novelty and obviousness exceptions for disclosures arising from the inventor in Japan are thus substantially more liberal than those available under the EPC in that (i) they protect the inventor against both misappropriation (as is available under the EPC) and voluntary disclosures regardless of the medium (which are prior art under the EPC) and (ii) are retroactive to the priority date instead of covering just the six-month window prior to the JPO filing date.<sup>141</sup> However, the exceptions are substantially more restrictive than the grace period available under the new U.S. AIA because the grace period must be affirmatively claimed, lasts for only six months as opposed to twelve, and requires detailed explanations by the applicant.<sup>142</sup>

#### 4. Related Doctrines and Exceptions

Before further analyzing and comparing grace period policies, it is useful to discuss two related concepts: experimental use and U.S. provisional patent applications.

##### a. Experimental Use

In the United States, experimental use is an equitable doctrine that addresses situations in which an invention requires public testing to determine its efficacy.<sup>143</sup> Prior to the passage of the AIA, experimental use was largely a question of whether or not a given public use would bar patentability under 35 U.S.C. § 102(b).<sup>144</sup> The Federal Circuit has explained that if a patent

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<sup>140</sup> See Tokkyo hou [Patent Act], Act. No. 121 of 1959 (through amendments made by Act No. 63 of 2011), art. 30(3) (Japan), translated at [http://www.wipo.int/wipolex/en/text.jsp?file\\_id=299486](http://www.wipo.int/wipolex/en/text.jsp?file_id=299486) (requiring that an applicant submit a document stating that any disclosures of the invention are excepted under Article 30).

<sup>141</sup> See generally Japan Patent Office, *supra* note 129, § 1 (“Exceptions to Lack of Novelty of Invention is stipulated in the Patent Act Article 30 which treat an invention as one that does not lack novelty due to a previous publication, if the invention has been published under specific conditions and a patent application has been filed within 6 months from the date of publication.”).

<sup>142</sup> Compare Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (codified in scattered sections of 35 U.S.C.), with Patent Act (through amendments made by Act No. 63 of 2011), art. 30.

<sup>143</sup> See *City of Elizabeth v. Am. Nicholson Pavement Co.*, 97 U.S. 126, 137 (1877) (concluding that it “cannot be said with justice” that a patentee receives an unfair advantage “when the delay [in filing a patent application] is occasioned by a bona fide effort to bring his invention to perfection, or to ascertain whether it will answer the purpose intended”). The foregoing case involved an improved wooden pavement that the inventor tested on a roadway available to the public prior to patenting. *Id.* at 133. The question faced by the Court was whether the testing was a pre-filing public use that barred patentability. *Id.* Given the nature of the invention, that the purpose of the use was testing to determine durability in real world conditions, and the level of control exercised by the inventor over the test, the Court determined that the testing was distinguishable from the type of prior public use that would unfairly extend the patent monopoly. *Id.* at 136–37.

<sup>144</sup> See, e.g., *Lough v. Brunswick Corp.*, 86 F.3d 1113, 1120 (Fed. Cir. 1996) (considering whether testing of prototype seals for marine out-drive engines taking place more than one year prior to fil-

challenger provides evidence of a public use occurring more than one year before the filing date, the patentee may come forward with evidence showing that the use qualified as experimental.<sup>145</sup> The duration of the testing period—both as an absolute measure and as compared to typical testing of similar products—whether payment was received,<sup>146</sup> confidentiality agreements, the number of tests that were performed, and the identity of the person performing the tests are all relevant to whether or not the use was experimental.<sup>147</sup> Two additional factors can be especially important in the determination: (i) the extent to which the inventor exercised control over the testing and (ii) the extent to which records of the testing were kept.<sup>148</sup> The exception, or in this case the negation of the § 102(b) bar, could apply to uses by the inventor and uses by an agent of the inventor under a confidentiality agreement and can also apply to sales made for experimental purposes.<sup>149</sup> However, care must be taken because the experimental use exception can be unavailable if the experiment was not evaluating a claimed feature of the invention.<sup>150</sup>

Thus, it can be argued that, to the extent a prior disclosure by an inventor falls within the definition of an experimental use, there is no need for a grace period. But, there are difficulties with this position. First, the inquiry into whether a use is experimental is highly fact-specific and is usually based on facts in the inventor's possession but not available to the public. Accordingly, the rule creates uncertainties both for inventors who wish to take advantage of the doctrine—because they may have difficulty determining how a particular action will ultimately be viewed by a court—and for the public, which has no way of knowing if a particular public use qualifies as experimental until suit is filed and discovery is taken.

The experimental use jurisprudence in the United States has not considered the new § 102 under the AIA, as that particular provision has only recently gone into effect. It is believed that Congress did not intend to unsettle

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ing barred patentability and noting that “[w]hether an invention was in public use prior to the critical date within the meaning of § 102(b) is a question of law”).

<sup>145</sup> *Id.*

<sup>146</sup> *Id.*

<sup>147</sup> *Eli Lilly & Co. v. Zenith Goldline Pharm., Inc.*, 471 F.3d 1369, 1381 (Fed. Cir. 2006) (listing indicia to be considered in evaluating experimental use).

<sup>148</sup> *Lough*, 86 F.3d at 1120 (“The last factor of control is critically important, because, if the inventor has no control over the alleged experiments, he is not experimenting. If he does not inquire about the testing or receive reports concerning the results, similarly, he is not experimenting.”).

<sup>149</sup> *See City of Elizabeth v. Am. Nicholson Pavement Co.*, 97 U.S. 126, 134 (1877) (addressing experimental use by the inventor and stating that “[t]he use of an invention by the inventor himself, or of any other person under his direction, by way of experiment . . . has never been regarded as” a public use); *EZ Dock, Inc. v. Schafer Sys., Inc.*, 276 F.3d 1347, 1352–53 (Fed. Cir. 2002) (finding that the sale of a docking system was experimental and not commercial in nature and therefore did not invoke the § 102(b) bar).

<sup>150</sup> *EZ Dock, Inc.*, 276 F.3d at 1353 (supporting the proposition that experimental use is inapplicable where the testing does not involve a claimed feature of the invention).

long-held legal principles in passing the AIA.<sup>151</sup> Accordingly, while the AIA does not expressly address the experimental use doctrine, it is likely that courts will continue to apply it in circumstances where there is a public use by the inventor or his agent. Notably, the inclusion of the grace period provisions in the new § 102 means that such inquiry will only apply in the limited circumstances where the public use or sale occurred more than a year prior to the application filing date.<sup>152</sup> Whether or not the courts will continue to allow a patentee to assert experimental use to negate such earlier disclosures remains to be seen.

The experimental use exception in the United States is a creation of the courts and is not set forth in statutory language. Prior to the amendment to Article 30, Japan took a different approach and wrote experimental use into its statutes. The previous version of Article 30 stated:

In the case of an invention which has fallen under any of the items of Article 29(1) by reason of the fact that the person having the right to obtain a patent has conducted a test, . . . such invention shall be deemed not have fallen under any of the items of Article 29(1) for the purposes of Article 29(1) and (2) for the invention claimed in a patent application which has been filed by the said person within six months from the date on which the invention first fell under any of those items.<sup>153</sup>

As Article 29 addresses the novelty requirement, the old version of Article 30(1) excluded disclosure resulting from testing by the person having a right to obtain a patent from the prior art.<sup>154</sup> The six-month limitation still applied,<sup>155</sup> meaning that longer-term experimentation conducted outside the protection of a confidentiality obligation could be problematic.

The revised version of Article 30 eliminates the express statutory recognition of an experimental use exception.<sup>156</sup> Instead, experimental use would be presumably included in the exception for acts of the rights holder. Again, however, the six-month limitation restricts the exception to a relatively narrow window of time leading up to the priority date.<sup>157</sup>

In contrast, the EPC does not recognize experimental use as an exception to public disclosure. Any use that makes the invention accessible to the public is prior art, unless it is an abuse or part of an authorized exhibition.<sup>158</sup> Thus, if an inventor desires to conduct experiments to test the efficacy or

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<sup>151</sup> See Armitage, *supra* note 4, at 45–46 (explaining that the legislative history of the AIA reflects that Congress intended to “leave as much settled law as possible untouched in the course of working the various reforms”).

<sup>152</sup> 35 U.S.C. § 102(c) (2006 & Supp. 2011).

<sup>153</sup> Patent Act (through amendments made by Act No. 109 of 2006), art. 30.

<sup>154</sup> *Id.*

<sup>155</sup> *Id.*

<sup>156</sup> Patent Act (through amendments made by Act No. 63 of 2011), art. 30.

<sup>157</sup> *Id.*

<sup>158</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 55.

marketability of his invention, he must do so privately or under a confidentiality obligation or file an application prior to commencing the experiments.

The continuum thus presents itself again with the United States taking the most permissive position with respect to experimental use, the EPC taking the most restrictive, and Japan walking a middle ground.

#### b. Disclosure Requirements and U.S. Provisional Practice

In 1994 the United States enacted provisions allowing the filing of provisional patent applications in connection with its implementation of the Uruguay Round Agreements.<sup>159</sup> Provisional applications have fewer technical requirements than formal applications and are not examined.<sup>160</sup> As a result, provisional applications cannot by themselves result in a U.S. patent. However, they can serve as a priority document for a subsequent formal filing, provided that filing occurs within one year of the date of the provisional filing.<sup>161</sup> In this way, provisional applications can be used as placeholders to preserve a priority date in the United States and abroad, without actually commencing the examination process.<sup>162</sup>

To receive a filing date, a provisional application need only identify the inventors, provide a specification in compliance with 35 U.S.C. § 112, include drawings if needed to understand the invention, and identify itself as a provisional filing.<sup>163</sup> Notably, the provisional application does not require claims.<sup>164</sup> Filing costs are lower, formalities are fewer, and there is no requirement that the provisional application be identical to the formal application, or that it be drafted to meet the same technical standards.<sup>165</sup> There are jokes stating that a sketch on a cocktail napkin could be filed as a U.S. provisional application.<sup>166</sup>

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<sup>159</sup> *GATT Uruguay Round Patent Law Changes*, USPTO.GOV, <http://www.uspto.gov/web/offices/com/doc/uruguay/summary.html> (last modified Aug. 1, 2007); see also 35 U.S.C. § 111(b) (2006 & Supp. 2011) (defining provisional applications).

<sup>160</sup> See 35 U.S.C. § 111(b)(8) (excepting provisional applications from the formality requirements of § 115 and the examination requirements of § 131).

<sup>161</sup> *Id.* § 119(e).

<sup>162</sup> *Id.* § 111(b)(8).

<sup>163</sup> 37 C.F.R. § 1.53(c) (2013).

<sup>164</sup> 35 U.S.C. § 111(b)(2).

<sup>165</sup> See *id.* § 111(b)(8) (excepting provisional applications from the formality and examination requirements).

<sup>166</sup> See, e.g., *Provisional Patent Applications: What's Not to Like? \*Is a Provisional Patent Application Right for You? Part I*, IP FOR THE LITTLE GUY (Aug. 2, 2012), <http://ipforthelittleguy.wordpress.com/2012/08/02/provisional-patent-applications-whats-not-to-like-is-a-provisional-patent-application-right-for-you-part-i> ("Everyone loves those stories about the someone they know who detailed their invention on a paper napkin and then filed the napkin as a provisional patent application.").

A U.S. formal application is permitted to claim priority to a provisional application.<sup>167</sup> Similarly, a provisional application can serve as a priority document for a foreign application and for international patent applications under the Patent Co-operation Treaty.<sup>168</sup> Provisional applications are thus seen as a low-cost alternative to filing a formal patent application that provides a twelve-month window of protection.<sup>169</sup> Therefore, if an applicant seeks protection in jurisdictions that are hostile to the U.S. grace period, she can file a provisional application prior to any public disclosure to preserve her rights. The applicant arguably can then engage in public market and product testing for a year before deciding to file a formal application. If the results of the testing are not promising, the applicant can simply allow the provisional application to go abandoned.<sup>170</sup> Given the lack of examination and the lower filing fees, this can be seen as a reasonable avenue for protecting rights in the absence of a multi-national grace period. Unfortunately, it is far less effective in practice and more often serves as a trap for the unwary than as an effective shield.

The main issue involves the disclosure and enablement requirements. If a formal application claims priority to a provisional application, the provisional application must support the claims that issue from that formal application.<sup>171</sup> Under U.S. law, this involves two primary requirements: (i) that the specification demonstrate that the inventor was in possession of the full invention at the time of the provisional filing and (ii) that the specification provide enough detail to enable one of ordinary skill in the art to practice the invention.<sup>172</sup> Where “means plus” claiming style is used, the structures for performing the claimed function must also be disclosed in the provisional application.<sup>173</sup> If any requirement is not met, the provisional filing date is

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<sup>167</sup> 35 U.S.C. § 119(e).

<sup>168</sup> Paris Convention for the Protection of Industrial Property art. 4, Mar. 20, 1883, 25 Stat. 1372, T.S. No. 379 (discussing priority documents and the twelve-month requirement); Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 87 (discussing priority rights for European applications); Patent Co-operation Treaty art. 8, June 19, 1970, 28 U.S.T. 7645, 1160 U.N.T.S. 231 (discussing priority claims).

<sup>169</sup> See Office for Tech. Commercialization, *Provisional Patent Application*, U. OF MINN., [http://www.research.umn.edu/techcomm/documents/Provisional\\_info.pdf](http://www.research.umn.edu/techcomm/documents/Provisional_info.pdf) (last visited Apr. 15, 2014) (“Provisional applications provide a ‘place holder’ to preserve patent rights if the invention will be publicly disclosed (i.e. in talks, posters, abstracts, or publications).”).

<sup>170</sup> 35 U.S.C. § 111(5).

<sup>171</sup> See *id.* § 111(b)(1) (requiring the specification of a provisional application to comply with the requirements of § 112).

<sup>172</sup> *In re Barker*, 559 F.2d 588, 591 (C.C.P.A. 1977); *New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1295 (Fed. Cir. 2002) (discussing the differences in the requirements).

<sup>173</sup> See *In re Donaldson Co., Inc.*, 16 F.3d 1189, 1193 (Fed. Cir. 1994) (discussing the interpretation of “means plus claims” during prosecution and litigation).



lost with respect to that claim, and the priority date will be the date on which the fully-compliant formal application was filed.<sup>174</sup>

This requirement can be even more challenging for inventors seeking international protection because there are differences in the disclosure requirements in different jurisdictions.<sup>175</sup> To further complicate matters, the law in this area evolves periodically. In Japan, for example, the Intellectual Property High Court issued an en banc decision in 2005 interpreting the support requirements for patent applications differently than they were previously interpreted by the JPO and practitioners.<sup>176</sup> The High Court concluded that the description of the patent was sufficient if a person of ordinary skill in the art could use the invention by knowing the contents of the patent description—this means that information generally known to people with ordinary skill in the art does not need to be included in the patent description.<sup>177</sup> This is conceptually different from the U.S. standard, and commentators appear to disagree on how this ruling should be interpreted.<sup>178</sup> To further illustrate the issue, a trilateral study was performed in which the United States Patent and Trademark Office (USPTO), JPO, and EPO each answered questions relating to their interpretations of respective patentability requirements.<sup>179</sup> At least one commentator concluded that the study illustrates that the JPO takes the strictest view of the three with respect to the

<sup>174</sup> See, e.g., *New Railhead Mfg., L.L.C.*, 298 F.3d at 1295 (finding that patentability was barred under § 102(b) based on a public use of the invention made more than twelve months before the formal application was filed but less than twelve months after a provisional application was filed because the provisional application did not fully meet the disclosure requirements of § 112).

<sup>175</sup> Compare U.S. PATENT & TRADEMARK OFFICE, *supra* note 87, §§ 2163–2164 (discussing guidelines for evaluating compliance with the written description and enablement requirements under U.S. law), with *Guidelines for Examination in the European Patent Office*, EUR. PAT. OFF., pt. F, ch. 3 (Sept. 2013), [http://documents.epo.org/projects/babylon/eponet.nsf/0/6c9c0ec38c2d48dfc1257a21004930f4/\\$FILE/guidelines\\_for\\_examination\\_2013\\_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/6c9c0ec38c2d48dfc1257a21004930f4/$FILE/guidelines_for_examination_2013_en.pdf) (discussing examination for “sufficiency of disclosure” in the EPO), and Examination Standards Office, *supra* note 118, at pt. 1, ch. 1, § 3 (providing guidelines for the Detailed Explanation of the Invention).

<sup>176</sup> Chiteki Zaisan Kōtō Saibancho [Intellectual Prop. High Ct.] Nov. 11, 2005, Hei 13 (gyō ke) no. 10042, SAIKŌ SAIBANSHO SAIBANREI JŌHŌ [SAIBANREI JŌHŌ] 1, [http://www.ip.courts.go.jp/eng/hanrei/g\\_panel/pdf/g\\_panel/2005-10042.pdf](http://www.ip.courts.go.jp/eng/hanrei/g_panel/pdf/g_panel/2005-10042.pdf) (Japan) (commonly referred to as the Polarizing Film Case).

<sup>177</sup> *Id.*

<sup>178</sup> Compare Yuriko Hamada, “Support Requirement” in *Japan: A Private Practitioner’s View*, in PATENT PRACTICE IN JAPAN AND EUROPE: LIBER AMICORUM FOR GUNTRAM RAHN 95 (Bernd Hansen & Dirk Schüssler-Langeheine eds., 2011), with Toshiaki Iimura, *Current State of Disclosure Requirements in Japan: A Judge’s View*, in PATENT PRACTICE IN JAPAN AND EUROPE: LIBER AMICORUM FOR GUNTRAM RAHN, *supra*, at 107.

<sup>179</sup> *Report on Comparative Study Carried Out Under Trilateral Project 24.2*, JPO, [https://www.jpo.go.jp/shiryō\\_e/toushin\\_e/kenkyukai\\_e/repo242.htm](https://www.jpo.go.jp/shiryō_e/toushin_e/kenkyukai_e/repo242.htm) (last visited Apr. 15, 2014). While this report focuses on biotechnology, an area in which different jurisdictions have come to different conclusions on various aspects of patentability, the questions relating to interpretation of disclosure requirements illustrate some of the differences in how each office interprets their respective requirements.

disclosure requirement.<sup>180</sup> It therefore seems possible that an inventor could unwittingly file a provisional application in the United States that meets the requirements of U.S. law as a priority document but fails to meet the disclosure requirements of the EPC or Japanese law.

As a result, relying on a hastily drafted provisional application, filed while the inventor is still refining the details of a commercial product and evaluating marketability of that product, is at best a risky proposition. Disclosures made between the filing of the provisional application and the filing of a later formal application could be treated as prior art if the provisional application is not sufficient under a given country's disclosure rules. Whereas that inventor can rely on the protection offered by the new grace period in § 102 in the United States, the more limited grace period in Japan and the lack of any meaningful grace period under the EPC mean that the inventor is well advised to forego reliance on any provisional filings unless those filings are drafted in a way that will meet all the formal requirements in each jurisdiction in which protection will be sought. This limitation dramatically undercuts the usefulness of both the U.S. provisional filing option and the U.S. grace period for any inventor that desires protection outside of the United States.

### III. Grace Period Impacts on Academic/Commercial Partnerships and Disclosure

To illustrate the practical implications of policy choices made in each of the three systems, consider the following hypothetical scenario.

Event	Date
1. Professor <i>A</i> at a U.S. research university publishes a paper in a scientific journal on a discovery (Initial Publication). The Initial Publication describes the structure and properties of a new semiconductor material and suggests that it may be useful in solar cells. The Initial Publication is important to Professor <i>A</i> both because he is seeking tenure and because he knows that others in the field are working in the same area and he wants to establish that he was the first one to discover this material. On the same day the Initial Publication comes out, the university's technology-transfer organization files a U.S. provisional patent application disclosing what has been published but no more (First Provisional).	1/10

<sup>180</sup> Hamada, *supra* note 178.

<p>2. The university's technology-transfer organization arranges a meeting between Professor <i>A</i> and Entrepreneur <i>E</i>, who is interested in commercializing new discoveries in green technologies. In answering Entrepreneur <i>E</i>'s questions about potential applications of his discovery, Professor <i>A</i> explains certain details regarding use of the semiconductor material in solar cells. The details were not disclosed in the Initial Publication. Entrepreneur <i>E</i> signs a confidentiality agreement at the meeting.</p>	1/15
<p>3. About one week after the meeting, Entrepreneur <i>E</i>'s startup entity enters into a license agreement with the university. The license agreement gives the startup entity the exclusive worldwide right to develop products incorporating inventions set forth in the First Provisional.</p>	1/23
<p>4. Over the next several weeks, Entrepreneur <i>E</i> works with some of his engineers and Professor <i>A</i>. Under the direction of Entrepreneur <i>E</i> and Professor <i>A</i>, the engineers develop a prototype commercial solar cell (First Prototype). Testing reveals that, while expensive to produce, the First Prototype appears to be at least 20% more efficient than competing cells. To make it work, the engineers create a sophisticated electronic controller that monitors and regulates the cell output.</p>	3/1
<p>5. Entrepreneur <i>E</i> shows the First Prototype to Customer <i>C</i>, a solar cell distributor that Entrepreneur <i>E</i> had dealings with in the past. Customer <i>C</i> is intrigued by the efficiency improvements but is concerned about the manufacturing cost. Customer <i>C</i> also suggests changes in the form factor that would make it easier to integrate the prototype with other products he sells. There is no formal confidentiality agreement with Customer <i>C</i>, but Entrepreneur <i>E</i> has worked with Customer <i>C</i> before and believes Customer <i>C</i> will be discreet.</p>	3/15
<p>6. Entrepreneur <i>E</i> directs the engineers to make a new prototype (Second Prototype) that incorporates changes suggested by Customer <i>C</i>. Entrepreneur <i>E</i> shows the Second Prototype to Investor <i>I</i>. Investor <i>I</i> is interested but decides not to provide funding until she is comfortable that there will be sufficient product demand and a way is found to lower the manufacturing cost. As Investor <i>I</i> is active in the green-technology area, she sees many business plans and prototype products. She also sits on the boards of many startup companies that develop products in this area. She strongly prefers not to sign confidentiality</p>	4/1

<p>agreements because she believes they are litigation traps, but she has a good reputation, and Entrepreneur <i>E</i> is confident that Investor <i>I</i> would not share details of the refined prototype with anyone else without his consent.</p>	
<p>7. The engineers, working with Professor <i>A</i> and Entrepreneur <i>E</i>, further refine the prototype. The result is another prototype (Third Prototype) that is very similar in principle to the first two, but has a more marketable form factor and will be less costly to manufacture.</p>	4/21
<p>8. Entrepreneur <i>E</i> displays the Third Prototype at a small conference on green energy technologies and generates substantial interest. There are still concerns about the manufacturing cost, however. Investor <i>I</i> is impressed with the response and agrees to provide initial funding for the company to work with a manufacturing partner to determine if the product can be manufactured cost effectively. Another provisional application that describes the Third Prototype is filed the day the conference begins (Second Provisional).</p>	5/1
<p>9. Entrepreneur <i>E</i>, Professor <i>A</i>, and Manufacturing Partner <i>M</i> work together over the next two months to further refine the design and do a short manufacturing run. A formal confidentiality agreement is in place. They are confident that if it is manufactured in quantity, the refined design can be manufactured for only 10% more than the cost of current offerings. Testing of the initial units confirms that they perform at least 15% better than currently available cells.</p>	9/1
<p>10. Based on the test results and a business plan developed by Entrepreneur <i>E</i>, Investor <i>I</i> commits to fund the company. A public launch is planned for an international tradeshow in December. The day the tradeshow opens, the university files formal patent applications with the USPTO, the EPO, and the JPO. The applications fully describe the semiconductor material and the latest commercial embodiments of the solar cell. Claims are directed to the solar cell as a device and the semiconductor as a material. All three applications claim priority to both provisional applications. The company is convinced that competitors will quickly copy its product if it is not protected.</p>	12/15

### A. Patentability in the United States

There is nothing in the above scenario that would likely preclude patentability of the claims in the formal application in the United States, particularly under the AIA—the filing of the formal U.S. application was made less than one year from the earliest disclosure.<sup>181</sup> Because the first disclosure, and each subsequent disclosure, was derived from the work of the inventor, none would be considered prior art due to the U.S. grace period.<sup>182</sup> Therefore, there is no need to rely on experimental use, abusive disclosure, or any other exception to remove those events from the prior art.

Nor is there any concern regarding the sufficiency of the First Provisional or Second Provisional under U.S. disclosure rules. Assume the worst-case scenario, in which both the First Provisional and Second Provisional are found lacking in terms of the requirements imposed by 35 U.S.C. § 112. In the United States, the priority date against which prior art is measured would then revert to the filing date of the formal application.<sup>183</sup> That change expands the prior art against which the claims are evaluated to include publications, uses, sales, and demonstrations occurring between the filing of the First Provisional and the filing of the formal application.<sup>184</sup> Those pieces of prior art fall into two categories: (i) those that were disclosed by the applicant (in particular, the Initial Publication, the disclosures to Customer *C*, Investor *I*, and Manufacturing Partner *M*, and the disclosures at the first conference and the International Trade Show) and (ii) those that were disclosed by third parties.

With respect to category (i) disclosures, each was disclosed “1 year or less before the effective filing date” and was “made by the inventor or joint inventor or by another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor.”<sup>185</sup> Therefore, they are not prior art under the definition of § 102.<sup>186</sup> With respect to category (ii) disclosures, the analysis is more nuanced.

If the third-party prior art in question is a public disclosure, then to the extent the “subject matter disclosed” was publicly disclosed by Professor *A* or Entrepreneur *E* before the disclosure in question, it would be excluded from the prior art.<sup>187</sup> This creates a strong incentive for inventors to publicly

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<sup>181</sup> See 35 U.S.C. § 102 (2006 & Supp. 2011) (stating that if filing of a formal application is made less than one year from earliest disclosure, the disclosure is not considered prior art).

<sup>182</sup> *Id.*

<sup>183</sup> See, e.g., *New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1295 (Fed. Cir. 2002) (applying the date of the filing of the formal application as the correct priority date when the corresponding provisional application did not adequately support the claims in the issued patent).

<sup>184</sup> *Id.*

<sup>185</sup> 35 U.S.C. § 102(b)(1)(A).

<sup>186</sup> *Id.*

<sup>187</sup> *Id.* § 102(b)(1)(B).

disclose innovations early so that the disclosure can be used to pre-date later disclosures by third parties. This is consistent with the academic need for early publication. To the extent the subject matter of the third-party public disclosure was similar, but not identical, to the subject matter disclosed by the inventor, it could potentially be considered prior art under an obviousness analysis. This further strengthens the incentive to disclose as it encourages the inventor to make each public disclosure as full and complete as possible to maximize the chances that third-party disclosures will not include subject matter not previously disclosed by the inventor. To the extent a third party discloses genuinely new subject matter, it is justifiably prior art available for use against the applicant.

If the prior art in question is a patent application filed after the Initial Publication but before the filing of the formal application, the same result is obtained. If “the subject matter disclosed” in a patent application “was obtained directly or indirectly from the inventor or a joint inventor,” then the patent application would be excluded from the prior art.<sup>188</sup> If the patent application discloses subject matter “publicly disclosed by the inventor or a joint inventor or another who obtained the subject matter disclosed directly or indirectly from the inventor or a joint inventor” prior to the filing of the earlier application, the patent application would also be excluded from the prior art.<sup>189</sup> This protects the inventor from third parties who learn of the inventor’s work but beat the inventor in a race to the patent office. At the same time, it allows for third parties who add to the inventor’s work (i.e., disclose subject matter that is not disclosed by the inventor) to obtain patents on those extensions. That risk not only incentivizes the original inventor to make full and complete disclosure as early as possible, it also encourages prompt subsequent disclosure of improvements by the inventor and prompt patent filings by the inventor to cover those improvements.

#### B. Patentability in Japan

The situation is more precarious under Japanese law. The maximum grace period allowed in Japan is six months.<sup>190</sup> Momentarily putting aside the provisional filings, consider Events 1–8 (Initial Publication, meeting with Entrepreneur *E*, meeting with Customer *C*, meeting with Investor *I*, and first conference). All were voluntary acts by the rights holder—all are ineligible for protection under the amended version of Article 30(2) because each occurred more than six months before filing.<sup>191</sup>

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<sup>188</sup> *Id.* § 102(b)(2)(A).

<sup>189</sup> *Id.* § 102(b)(2)(B).

<sup>190</sup> Tokkyo hou [Patent Act], Act. No. 121 of 1959 (through amendments made by Act No. 63 of 2011), art. 30 (Japan), *translated at* [http://www.wipo.int/wipolex/en/text.jsp?file\\_id=299486](http://www.wipo.int/wipolex/en/text.jsp?file_id=299486).

<sup>191</sup> *Id.* This statement intentionally disregards the filing of the First Provisional and confidentiality obligations, both of which are addressed later.

While the Initial Publication is eligible prior art as a publication, it did not describe the commercial embodiment of the solar cell. Therefore, as it should be possible to include elements in the claims directed to the solar cell that were not discussed in the Initial Publication, it is unlikely to defeat novelty in Japan to the extent that those elements are part of the invention.<sup>192</sup> The Initial Publication did suggest the potential for using the newly discovered material in a solar cell, so there is a possibility that it renders broad claims to the solar cell obvious and may preclude patentability in Japan on that basis.<sup>193</sup> The answer to that question would focus on the refinements made by Entrepreneur *E*, Professor *A*, the engineers, and Manufacturing Partner *M* after the Initial Publication issued. While that does offer some hope for the applicant, it is important to note that the core innovation that led to the development of the technology was not those improvements; it was the material discovered by Professor *A*. To the extent the material itself was disclosed or rendered obvious by the Initial Publication, the claims to the material are likely to be rejected.<sup>194</sup> Therefore, even though patentability of a commercial embodiment of the solar cell that includes those improvements may be possible, such a patent would not reward the real innovation behind the discovery.

The remaining events that took place prior to the six-month window could also preclude patentability under Japanese law to the extent that they made the invention publicly known.<sup>195</sup> The confidentiality agreements with Entrepreneur *E* and Manufacturing Partner *M*, and the employee-like relationship of the engineers, would likely shield those particular disclosures.<sup>196</sup> The meetings with Customer *C* and Investor *I* are more problematic, and a fact-based inquiry would be needed to determine if the circumstances of those disclosures were sufficient to create an obligation of secrecy.<sup>197</sup> In the case of Investor *I*, as she is in the business of making investments in technology companies and such discussions are ordinarily considered confidential by both parties, the chances are good that an implied confidential relationship will be found. In the case of Customer *C*, the situation may be more difficult, as it is less common for communications with potential customers to be treated as confidential and it may be impossible to demonstrate

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<sup>192</sup> *Id.* art. 29.

<sup>193</sup> *See id.* (“(2) Where, prior to the filing of the patent application, a person ordinarily skilled in the art of the invention would have been able to easily make the invention based on an invention prescribed in any of the items of the preceding paragraph, a patent shall not be granted for such an invention . . .”).

<sup>194</sup> *Id.*

<sup>195</sup> *Id.*

<sup>196</sup> *See Patent Act* (through amendments made by Act No. 63 of 2011), art. 29 (requiring in essence that the disclosure be one that makes the information available to the public).

<sup>197</sup> *See id.* (negating novelty only when the invention is known to the public); KAWAGUCHI, *supra* note 130, at 26 (“The concept of ‘public’ is interpreted to mean a state where the technical contents of the invention are known to a person without a secrecy obligation.”).

that sufficient obligations of secrecy were in place at the time of the disclosure. Under Japanese law, disclosure to a single individual can constitute making the invention publicly known, so the first prototype itself is likely to be prior art for both novelty purposes and obviousness purposes.<sup>198</sup>

The first conference is more problematic still. Here there is no obligation of confidentiality with respect to the attendees and, since the conference occurred more than six months prior to the formal filing, there is no opportunity to argue that one of the exceptions in Article 30 should apply.<sup>199</sup> Therefore, the Second Prototype would also likely be considered prior art under Article 29(1).<sup>200</sup> Had that conference taken place one month later, it would be eligible for the exception as a voluntary act of the rights holder.<sup>201</sup>

The international tradeshow would more likely fit within the exception. Here, however, timing becomes an issue. If the tradeshow opened even one minute before the application was filed, it would be necessary to claim an exception when entering examination before the JPO.<sup>202</sup> If the JPO application was filed before the tradeshow opened, the show would be irrelevant.<sup>203</sup> If it opened before the filing was completed, a claim of entitlement to protection under Article 30(2) and a subsequent proving document would be required.<sup>204</sup> Again, without experienced counsel analyzing the circumstances of each disclosure in detail prophylactically, it is unlikely this issue will be considered prior to the disclosure itself, so the opportunity to claim the exception could be lost.

The foregoing analysis intentionally disregards the First Provisional and Second Provisional. As has been noted, if a priority document does not adequately support the claims under the relevant law, it is disregarded. Under Japanese law, adequate support requires at least that the disclosure is such that a person of ordinary skill in the art could use the invention by knowing the contents of the patent description along with any generally held knowledge relating to the art.<sup>205</sup> In this hypothetical, the Initial Publication would likely suffice with respect to the patent claims for the material itself. This could save the applicant. Problematically, it does not describe any of the later-developed commercial embodiments and only suggests the use of

<sup>198</sup> Patent Act (through amendments made by Act No. 63 of 2011), art. 29.

<sup>199</sup> See *id.* art. 30(1)–(2) (addressing exceptions to lack of novelty of inventions).

<sup>200</sup> *Id.* See also KAWAGUCHI, *supra* note 130, at 27 (noting that, in terms of publications, prior art is considered to be distributed when “the public may have access to [it]”).

<sup>201</sup> See Patent Act (through amendments made by Act No. 63 of 2011), art. 30(2) (discussing voluntary disclosures up to six months prior to filing).

<sup>202</sup> Examination Standards Office, *supra* note 118.

<sup>203</sup> *Id.*

<sup>204</sup> Patent Act (through amendments made by Act No. 63 of 2011), art. 30(2).

<sup>205</sup> Chiteki Zaisan Kōtō Saibansho [Intellectual Prop. High Ct.] Nov. 11, 2005, Hei 13 (gyō ke) no. 10042, SAIKŌ SAIBANSHO SAIBANREI JŌHŌ [SAIBANREI JŌHŌ] 1, 12–13, [http://www.ip.courts.go.jp/eng/hanrei/g\\_panel/pdf/g\\_panel/2005-10042.pdf](http://www.ip.courts.go.jp/eng/hanrei/g_panel/pdf/g_panel/2005-10042.pdf) (Japan).



the material in a solar cell. Accordingly, it is unlikely to provide sufficient support for claims directed to the solar cell. For those claims, the First Provisional is unlikely to be adequate and the Initial Publication would be prior art as discussed above. But if the material itself is ultimately patented, there would be little negative impact on the applicant by losing coverage for devices that use that material.

The Second Provisional, which describes the second prototype in detail, is more likely to be sufficient for claims directed to the solar cells. This has a number of implications. For one, the first conference would be potential prior art to the extent that it opened before the Second Provisional was filed. If it was filed after the opening, it may be possible to claim protection under Article 30(2), provided the issue was noted in time to claim the exception.

The purpose of the foregoing discussion is to illustrate the complexity of the decisions and analyses required when notice conditions are placed on grace periods, as Japan has done, and how even slight variations in facts can lead to different results. As can be seen, under Japanese law, it is possible to make some pre-filing disclosure without forfeiting patent rights. But, that disclosure must be carefully planned so that it fits within the six-month window, and the exception must be timely claimed and specifically described.<sup>206</sup> Care must also be taken that the applicable priority document meets the evolving Japanese disclosure requirements, which appear to be stricter than those of the United States. This implies that provisional applications are likely to provide a false sense of security unless they are drafted as complete patent applications that take into account the disclosure requirements of each target country. The cost and complexity of doing that seems to undercut the objective of provisional applications, which is to provide a quick, low-cost entry into the patenting process.<sup>207</sup> The necessity of preparing such detailed applications is also likely to delay disclosure and force the applicant to file applications describing early prototypes as opposed to refined and tested commercial embodiments.

### C. Patentability under the EPC

Unsurprisingly, the situation under the EPC is the most restrictive. The disclosures to Entrepreneur *E* and Manufacturing Partner *M* were made under express confidentiality obligations, and the disclosures to the engineers and Investor *I* would likely be considered to have been made under at least

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<sup>206</sup> See Patent Act (through amendments made by Act No. 63 of 2011), art. 30(4) (discussing the written claim requirement).

<sup>207</sup> See *GATT Uruguay Round Patent Law Changes*, *supra* note 159 (“The provisional application provides a mechanism whereby applicants can quickly and inexpensively (\$150/\$75) establish an early effective filing date in a patent application which establishes a constructive reduction to practice for any invention described in the provisional application. The filing of a provisional application also provides up to twelve months to further develop the invention, determine marketability, acquire funding or capital, seek licensing or seek manufacturing.”).

implied obligations of confidentiality under EPC law. Therefore, none of those events made the invention available to the public and none should impact patentability. The disclosure to Customer *C* could be more problematic as it may or may not be seen as having been made under a condition of secrecy. If it is found not to be protected by a condition of secrecy, then that disclosure would make the first prototype prior art unless the First Provisional was deemed sufficient disclosure. Because the First Provisional did not disclose the structure of any solar cell, that result is unlikely.<sup>208</sup> Therefore, with respect to claims directed to a solar cell as opposed to the semiconductor material, it is unlikely the First Provisional would be sufficient.<sup>209</sup> As a result, the Initial Publication is arguably prior art with respect to those claims, and the second prototype may be prior art with respect to those claims to the extent Customer *C* did not have an obligation of secrecy.

Assuming such an obligation was present, the second prototype displayed at the first conference would arguably be protected by the Second Provisional, as the Second Provisional is said to have fully described the second prototype. However, because changes were made between the second prototype and the final commercial version described in the formal application filed with the EPO, the result would depend on whether or not the applicable claims met the “same invention” standard. If not, each would be prior art for inventive step and novelty purposes, as each was clearly available to the public. Regardless, because the Initial Publication did not address solar cells in detail, it would be available as prior art against those claims and may, conceivably, render them un-patentable based on the lack of an inventive step.<sup>210</sup>

In sum, patentability in the EPO is suspect for all claims. If the First Provisional is sufficient to support claims to the semiconductor material, then the applicant may receive adequate protection for that but not for the solar cell claims. All hope rests on the adequacy of the First Provisional.

#### D. Biases and Competing Pressures in Technology-Transfer Partnerships

The above scenario is not unrealistic. According to the Association of University Technology Managers, U.S. universities executed 4,899 license agreements, filed 19,905 U.S. patent applications, and earned \$2.5 billion in

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<sup>208</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 87 (requiring that the original application be “in respect of the same invention” described in the earlier application for a priority claim to be valid).

<sup>209</sup> *Id.*

<sup>210</sup> *See id.* art. 52(1) (stating that “European patents shall be granted for any inventions, in all fields of technology, provided that they are new, [and] involve an inventive step”); *id.* art. 56 (“An invention shall be considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art.”).

licensing income in 2011.<sup>211</sup> The importance of academic-commercial partnerships was highlighted by the passage of the Bayh-Dole Act in December of 1980.<sup>212</sup> One of the primary purposes of the legislation was to encourage academic institutions to work with commercial entities, especially small businesses, to commercialize inventions arising from federal funding.<sup>213</sup> The hypothetical is not only realistic, it is an example of a major force driving innovation and commercialization of new discoveries today.<sup>214</sup>

The hypothetical also exhibits a U.S.-centric economic focus on entrepreneurship and small business, highlighting issues that can be more challenging for partnerships with small, early-stage companies than for partnerships with large, well-established commercial entities. Perhaps most importantly, the need for outside funding and the lack of established customer networks and product development procedures can force smaller organizations to disclose their work to third parties in order to obtain funding, receive market feedback, determine manufacturing costs, and validate their business plans. Such organizations can also be less experienced with intellectual property law nuances and unable or unwilling to engage experienced counsel at the early stages. As a result, such organizations are more likely to make potentially damaging disclosures than are more established companies. Such companies also have less access to experienced legal counsel and are likely to have less bargaining power when developing partnerships than large organizations.

Further issues arise from the fact that academic culture is different than corporate culture. Advancement in academia is largely driven by publications, thus creating a strong incentive for researchers to publish results as quickly as possible.<sup>215</sup> Conversely, corporate culture may prefer to delay widespread disclosure until product launch. The result is a unique combination of competing pressures and interests:

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<sup>211</sup> Ass'n of Univ. Tech. Managers, *AUTM U.S. Licensing Activity Survey Highlights*, AUTM, [http://www.autm.net/AM/Template.cfm?Section=FY\\_2011\\_Licensing\\_Activity\\_Survey&Template=/CM/ContentDisplay.cfm&ContentID=8731](http://www.autm.net/AM/Template.cfm?Section=FY_2011_Licensing_Activity_Survey&Template=/CM/ContentDisplay.cfm&ContentID=8731) (last visited Apr. 15, 2014).

<sup>212</sup> 35 U.S.C. §§ 200–212 (2006).

<sup>213</sup> *Id.* § 200; see also *Bayh-Dole Act*, AUTM, [http://www.autm.net/Bayh\\_Dole\\_Act/11606.htm](http://www.autm.net/Bayh_Dole_Act/11606.htm) (last visited Apr. 15, 2014) (summarizing the history of the legislation and the major provisions of the statute).

<sup>214</sup> See generally Dov Greenbaum, *Academia to Industry Technology Transfer: An Alternative to the Bayh-Dole System for Both Developed and Developing Nations*, 19 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 311 (2009) (discussing university technology-transfer issues).

<sup>215</sup> *Id.*

<b>Interest</b>	<b>Researcher</b>	<b>Corporate Partner</b>	<b>Venture Capitalist</b>
Early disclosure	Pressure to publish early in widely distributed journals.	Potential for competition encourages delayed disclosure.	Fiduciary duties and wise investment practices require disclosure to validate business plans.
Patent protection	Research results are often unpatentable subject matter. Research often does not focus on commercialized embodiments.	Cost/benefit analysis is required for each patent filing. Patent applications may not be filed until after business plans are solidified. Access to sophisticated IP counsel may be limited for early-stage entities.	Patent applications are seen as potential security for investors.
Confidentiality agreements	Utility is limited to portions of research not published.	May be difficult to obtain as third parties can see such agreements as a source of liability. Can be especially difficult for early-stage entities without proven track records. Engaging counsel to draft and negotiate agreements can strain resources of early-stage entities.	Create liability issues on a number of fronts, especially where the investment strategy focuses on a particular industry or technology. Imbalance in negotiating power with companies seeking funding can make it impossible for such companies to obtain documents to evidence confidentiality obligations.
Market validation	Tend to leave to commercial partner.	Important for business planning and fund raising but can create disclosure risks.	Fiduciary duties and wise investment practices require at least anecdotal testing to determine market potential.

### E. Conclusion

It can be argued that if the facts were changed slightly or interpreted differently, other outcomes could be achieved. Such arguments do not detract from the core argument that the liberal, unrestricted grace period implemented under the AIA encourages and protects early disclosures such as those described in the foregoing hypothetical, while the qualified grace period of Japan and the absolute novelty rule of the EPC both create substantial risks and ultimately discourage such disclosures. While careful planning in light of specific requirements of each jurisdiction's laws can sometimes allow these types of disclosures, such planning requires substantial knowledge of patent law details in each nation. Simple mistakes can result in a loss of patent rights.

Based on risks such as these, it is common for patent attorneys to advise applicants to withhold any public disclosure until formal applications can be drafted that cover commercial embodiments and comply with the laws of each jurisdiction in which protection is sought.<sup>216</sup> That approach is likely to impose significant disclosure delays and may well also delay the acquisition of venture funding as there will be fewer opportunities to market test and refine the invention. As a result, (i) large organizations with experienced patent counsel and sufficient resources to self-fund research and development have a meaningful advantage over smaller, less sophisticated organizations and organizations requiring outside funding to bring products to market, (ii) academic researchers who require the ability to publish research results as early as possible and the technology-transfer organizations that work with them to commercialize their discoveries are at a disadvantage due to the tension between the academic pressure to publish and the patent system's incentive to withhold publication until the detailed requirements of the patent laws in each applicable jurisdiction are satisfied, and (iii) the pro-small-business benefits of the disclosure policies implemented under U.S. law are

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<sup>216</sup> See, e.g., *Provisional Patent Applications: What's Not to Like? \*Is a Provisional Patent Application Right for You? Part I*, supra note 166 (discussing the risks inherent when new matter is inserted into a formal application claiming priority to a provisional application); U.S. Patent & Trademark Office, *Provisional Application for Patent*, USPTO.GOV (Feb. 2011), [http://www.uspto.gov/patents/resources/types/provisional\\_appRevised.pdf](http://www.uspto.gov/patents/resources/types/provisional_appRevised.pdf) (recommending that the disclosure in a provisional application be as complete as possible and cautioning that the formal application must be fully supported by the provisional); Shelley M. Cobos, *The Risks of Provisional Patent Applications for Inventors and Startups*, L.A. LAW., Oct. 2009, at 9 (commenting on the U.S.-based risks of provisional filings); *Provisional Patent Applications*, ARNOLD, KNOBLOCH & SAUNDERS, L.L.P., [http://usptclaw.com/child\\_2/provisional\\_patent\\_applications.htm](http://usptclaw.com/child_2/provisional_patent_applications.htm) (last visited Apr. 15, 2014) (commenting on the risks of provisional applications, particularly in Europe, and the challenges faced by early-stage companies with respect to such filings); Micah D. Stolowitz, *Patents: The Secret Is Out – Publication of Pending U.S. Patent Applications and Five Patent Pitfalls for the General Business Lawyer*, STOEL RIVES LLP, <http://www.stoel.com/files/stolowitz.pdf> (last visited Apr. 15, 2014) (discussing disclosure requirements and risks outside of the United States).

undermined by the contrary provisions outside the United States whenever an innovator seeks protection abroad. Finally, while the foregoing risks may be understood by patent attorneys, that does not mean that they are well understood by the innovators themselves. As a result, they are likely to do more to create litigation and loss of rights by deserving inventors than to serve the patent system's goal of promoting disclosure in support of innovation.

#### **IV. Analysis and Proposal**

The analysis of the foregoing hypothetical suggests that implementation of a harmonized grace period would promote faster dissemination of information on new discoveries and help even the playing field for smaller entities and academic/commercial partnerships. At least three questions remain, however: (i) what exactly would such a grace period look like, (ii) what are the arguments against implementing a multinational grace period, and (iii) what political and other hurdles need to be overcome?

##### **A. Proposed Grace Period Characteristics**

To achieve the benefits of promoting earlier disclosure of innovation and leveling the playing field for smaller entities and academic/commercial collaborations, individual nations with strict novelty rules or restricted grace periods should instead implement open grace period provisions that can be used affirmatively. The affirmative use aspect is important. As opposed to grace periods designed merely to allow applicants to correct mistakes and avoid loss of rights due to abuses, the goal of an affirmatively used grace period is to encourage early disclosure of innovations and enable applicants to collaborate more freely for a reasonable period of time in order to refine and market test inventions prior to filing formal applications. More specifically, a grace period designed for affirmative use should (i) eliminate risks for inventors who make early disclosures of foundational information relating to their inventions, (ii) provide a sufficient opportunity to test and refine commercial embodiments prior to filing, and (iii) remove traps for those who require investors and feedback from customers in early stages of product development.

A grace period with the following characteristics should meet those objectives: a duration of twelve months, no restrictions on type of disclosure protected or formalities to claim protection, and reasonable protections against third-party applications and filings made between the applicant's initial public disclosure and his filing of a formal application.

### 1. *Duration of Twelve Months*

The U.S. grace period under the AIA applies for disclosures occurring up to twelve months before the priority date.<sup>217</sup> To the extent that the purpose of the grace period is to promote affirmative use by applicants, having a full year is more desirable than a shorter time frame, such as a six-month window. Product refinement, prototype development, and market testing require time. Those activities are also often prerequisites to obtaining financing or determining if cost-effective manufacturing is feasible. Given the effort required, twelve months is not an unreasonable time period. Quantitative research is needed to confirm that twelve months truly is an appropriate timeframe. Studies to determine what percentage of technology-transfer startups are in a position to launch products within twelve months of their formation, or within twelve months of initial discussions relating to a new offering, would be instructive on this point, as would additional research on the time required to secure venture funding.

The six-month time period in Japan's revised grace period provisions,<sup>218</sup> the EPC abuse provision, and the very limited EPC exhibition provision<sup>219</sup> are likely to prove too short to be effective. While having a shorter time period may be effective for correcting ill-conceived and abusive disclosures, it is likely to be ineffective if the purpose of the grace period is to promote affirmative use and collaboration with less sophisticated early-stage organizations. Were the window limited to six months, the pressure to withhold disclosures for at least some period would remain for all but the most sophisticated and well-funded companies that already had the necessary funding, resources, and market expertise.

### 2. *No Formalities or Restrictions on the Type of Disclosure Protected*

Unless the purpose of the grace period is to promote and support certain venues or disclosure methods, there seems little reason to place restrictions on how or where disclosure is made.<sup>220</sup> Given ongoing innovations in virtual meeting technologies and the delivery of online and mobile information, it also seems unlikely that all future information dissemination methods could

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<sup>217</sup> 35 U.S.C. § 102(b) (2006 & Supp. 2011).

<sup>218</sup> Tokkyo hou [Patent Act], Act. No. 121 of 1959 (through amendments made by Act No. 63 of 2011), art. 30 (Japan), *translated at* [http://www.wipo.int/wipolex/en/text.jsp?file\\_id=299486](http://www.wipo.int/wipolex/en/text.jsp?file_id=299486).

<sup>219</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 55.

<sup>220</sup> One counter-argument to this assertion is that certain disclosures that are provable (e.g. publications in journals or presentations at conferences that require submission of written articles) would be preferable as they would ameliorate some of the proof issues involved in proving derivation. However, any such restriction would eliminate disclosures in other forums, such as to prospective customers or investors and would thereby weaken the protection offered by the grace period. While it is true that such disclosures are less public than publications or large conferences, they are often critical in reducing a new discovery to a marketable product.

be addressed preemptively. The lack of a strong policy reason to favor some venues and disclosure methods over others and the difficulty in accounting for new technological developments provides little justification to restrict the types of communications that would be eligible for grace-period protection.<sup>221</sup>

Additionally, there seems to be little justification for requiring affirmative claims of grace-period protection such as are necessary under Japanese law<sup>222</sup> and the EPC,<sup>223</sup> particularly in jurisdictions where the examining authority does not impose a general disclosure obligation on the applicant. If such disclosures are not required for ordinary applications, the implication is that the examining authority does not rely on applicant disclosure statements in the examination process. As such, there is no cost saving achieved by requiring disclosure to the examination authority beforehand. There may be a benefit to requiring applicants to identify disclosure events that are not easily found by others, such as communications to small groups, but these disclosures are irrelevant to the extent that they occur during a protective grace-period window.

For jurisdictions such as the United States that do impose a disclosure obligation, disclosure of information regarding events occurring within a grace period would fit under the general disclosure obligation and should not be treated differently.<sup>224</sup> In fact, the filer has an incentive to make such disclosures as they then become part of the prosecution record and are less likely to be problematic in later litigation.<sup>225</sup>

Accordingly, the benefits gained by requiring formalities such as affirmative claims of grace-period protection over and above pre-existing disclosure requirements—or by restricting the types of disclosures eligible for grace-period protections—would seem to be outweighed by the chilling ef-

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<sup>221</sup> It is also likely that drawing a bright line requiring all communications to be protected would cut down on future litigation costs because there would be no need to prove facts relating to the nature of the communication during opposition or litigation proceedings. Disclosures occurring during the grace period would be irrelevant and those occurring prior to the window would all be prior art. Therefore, the need to prove the circumstances of particular disclosures would be greatly reduced.

<sup>222</sup> Patent Act (through amendments made by Act No. 63 of 2011), art. 30 (discussing the requirement under Japanese law that a claim to the grace period be submitted to the JPO and that it contain information about any disclosures made by the applicant).

<sup>223</sup> Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 55(2) (requiring that any display of the invention at an approved exhibition be disclosed at the time of filing).

<sup>224</sup> See 37 C.F.R. § 1.56 (2013) (imposing a generalized disclosure obligation).

<sup>225</sup> See *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 426 (2007) (noting in dicta that the rationale for presuming validity of a patent is diminished when a relevant reference was not considered during examination); *but see* *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2252 (2011) (concluding that failure to consider a reference during examination does not alter the presumption or the need for clear and convincing evidence to overcome it).



fect such restrictions might have on other useful disclosures and the risk that inequitable penalties will be imposed for inadvertent mistakes.

### 3. *Protections against Third-Party Disclosures and Filings*

Perhaps the most difficult characteristic of a grace period is determining exactly what impact a pre-filing disclosure will have when third parties also make public disclosures of similar information or file competing patent applications. When a third party makes a disclosure of similar subject matter during the grace period or files a competing patent application prior to the applicant's filing date, either (i) the disclosure or filing was derived in whole or in part from information provided by the later applicant, or (ii) the disclosure or filing was created independently. In the case of independently developed material, it would be inequitable to protect the later applicant against the earlier public disclosure, and any such disclosure would justifiably be prior art against the first filing.<sup>226</sup> However, in the case of derived material, the first-filing applicant should not be rewarded for claiming credit for another's innovation. In such cases, the earlier discloser would need to prove derivation.<sup>227</sup>

A system that requires proof of derivation is likely to lead to difficult, fact-intensive inquiries. More importantly, it creates risk every time an applicant makes a pre-filing disclosure. The risk is that a third party will beat the applicant to the applicable patent office, and the applicant will be forced to prove both the content and date of his earlier disclosure as well as that the later disclosure or application was derived from it. To the extent that the purpose of the grace period is to create a reliable safe harbor exception that can be affirmatively used to promote early disclosures, creation of such risk is counterproductive. Therefore, a bright-line first-to-file or first-to-disclose rule is desirable in terms of limiting litigation costs, but it creates fairness concerns.

U.S. law under the AIA takes an extreme first-to-disclose position by effectively presuming derivation once public disclosure of the same subject matter has been made.<sup>228</sup> This is not dissimilar to the approach taken in U.S. copyright law in which copying may be presumed if it is shown that an alleged infringer had access to a prior work and then created something substantially similar.<sup>229</sup> The difficulty here is that it raises fairness concerns where a third party, unaware of the prior disclosure, separately invents and

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<sup>226</sup> See *supra* Part II.B.2 (discussing the operation of the U.S. grace period under the AIA).

<sup>227</sup> 35 U.S.C. § 102(b) (2006 & Supp. 2011).

<sup>228</sup> See *id.* (excluding disclosures from prior art where the inventor, or one who has derived from the inventor, has previously disclosed the same "subject matter").

<sup>229</sup> See *Baby Buddies, Inc. v. Toys R Us, Inc.*, 611 F.3d 1308, 1316 (11th Cir. 2010) (discussing the substantial-similarity standard in copyright law); *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 429 (1984) (analogizing patent law to copyright law in the context of infringement litigation).

files a competing application. Perhaps more troubling is the fact that the presumption rule could apply in cases where disclosure is made to a small number of people to the same extent that it applies to wide-spread publications. The rationale for allowing a presumption of derivation is severely undercut to the extent it applies to disclosures that are not widely available.

The opposite alternative is to implement a strict first-to-file rule in which the later applicant loses patent rights when a third party beats him to the relevant patent office, regardless of the later applicant's prior public disclosures. In such a system, the first patent application would likely fail because the earlier disclosure would be prior art against it. Without the benefit of a derivation exception, the second application would also likely fail because the earlier filing would be prior art against it. As a result, nobody would receive patent protection, a harsh result that seems counterproductive to the patent system's goal of encouraging investment in research and development.

A further difficulty with such a rule is that it creates the same strong disincentive for early disclosures that is created by absolute novelty rules. Any pre-filing disclosure could result in a third party winning the race to the patent office and thereby divesting the true inventor of the right to obtain a patent. The presumption rule under the AIA is superior in this regard as it strongly promotes the earliest possible public disclosure by allowing the earlier discloser to use such disclosures to defeat later filers without risking a loss of rights.<sup>230</sup> While this does raise a fairness issue in the case of a competing filer who did not derive his work from that of the first discloser, it seems a better compromise because the prior disclosure is prior art likely to negate or severely limit any patent protection that would result from the first application anyway.

In light of the fact that both bright-line rules raise meaningful fairness concerns, a middle ground approach may prove the best alternative. In such a system, derivation would be presumed where another party makes a pre-filing disclosure that is likely to reach a wide audience. Otherwise, deriva-

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<sup>230</sup> See *supra* Part II.B.4.b (discussing the issue of how a priority document is treated when it is found not to be fully supporting of a later application). If the priority document is treated as having no effect, there is no advantage to the inventor in making a partial disclosure in an early filing. Under such a system, a presumed derivation rule seems the preferable alternative. If a partial disclosure in an early filing were not entirely discounted, but instead treated as prior art against a later application, then a strict first-to-file approach could be more palatable. In such a system, the earlier disclosure would provide a defense against third-party prior art and filings, but only to the extent of what it disclosed. If it disclosed enough to anticipate or render the third-party application or disclosure obvious, it removes the disclosure from the prior art with respect to the filer's later application. In other words, even if it does not fully support the ultimate patent claims, it can still remove a piece of prior art that it anticipates or renders obvious. Substantial further research would be needed before such a system could be seriously proposed.

tion would have to be proven.<sup>231</sup> This option would appear to mitigate the fairness concern under the AIA system that arises when a limited-audience disclosure creates a presumptive effect without truly making the innovation publicly available. It would also further incentivize making disclosures in a way that is likely to reach more people. While an independent third-party inventor who did not disclose her innovation could be unfairly denied protection under such a rule, that inventor would still have an opportunity to prove derivation in fact. Even though this would create the prospect of expensive litigation, the costs would be borne by either the inventor who chose to withhold disclosure unwisely or by a misappropriator in the event that derivation is proven and cost shifting is available. Therefore, the allocation of risk does not seem unreasonable if the goal is to promote early dissemination of new discoveries.

Regardless of which approach is selected, some level of presumption appears to be desirable to avoid disincentivizing early disclosures. However, it does not have to be the broad presumption offered under the AIA.

#### B. Previous Criticism of Grace Periods

While the benefits of affirmatively used grace periods have not been widely considered, the concept of a harmonized international grace period is not a new proposal.<sup>232</sup> Germany, the United Kingdom, and other nations have had grace periods in the past.<sup>233</sup> In fact, the idea of a harmonized grace period has been debated, particularly in Europe, for decades and has been proposed by American commentators as well.<sup>234</sup> In 2001, the Max Planck

<sup>231</sup> Note that this is different than limiting the types of disclosures that an applicant can make with impunity within the grace period. The distinction is that the applicant's disclosures, regardless of type, cannot be used against the applicant, but only certain of those disclosures may be used against a third party.

<sup>232</sup> Earlier proposals largely focused on shorter timeframes and did not discuss the derivation issue in detail. See, e.g., Straus, *supra* note 31, at 51–54 (discussing examples of such proposals prior to 2000); Margo A. Bagley, *The Need for Speed (and Grace): Issues in a First-Inventor-To-File World*, 23 BERKELEY TECH. L.J. 1035, 1057–58 (2008) (advocating the United States putting pressure on other countries to adopt a grace period).

<sup>233</sup> The German grace-period provision in the German Patent Act (revised in 1936) reads “any description or use within six months prior to the filing of the application shall not be taken into account if it is based upon the invention of the applicant or his predecessor in title.” Straus, *supra* note 31, at 15. The U.K. grace-period protections of the time were more detailed and covered various situations, including abusive disclosure (in which event the patent had to have been filed “as soon as reasonably practicable” after the inventor learned of the disclosure), anything done in consequence of a communication to the government, publications and disclosures occurring six months prior to filing, and testing occurring one year prior to filing. *Id.* at 17. Germany currently provides a grace period for industrial designs as well. Gesetz über den rechtlichen Schutz von Design [Law on the Legal Protection of Design], Mar. 12, 2004, BUNDESGESETZBLATT, TEIL 1 [BGBl. 1] at 390, § 6 (Ger.). As late as the early 1960s, grace periods were also available in Ireland and Italy. Straus, *supra* note 31, at 87.

<sup>234</sup> See generally Straus, *supra* note 31, at 51–72 (discussing pre-2001 European consideration of grace periods); Bagley, *supra* note 232 (noting the benefits of grace periods for academic collabo-

Institute published a detailed review of the prior consideration of grace periods, particularly in Europe, written by Joseph Straus.<sup>235</sup> In that work, he ultimately came down in favor of a unified grace period similar to the one proposed herein but did not address promoting its affirmative use to improve the patent system's disclosure function.<sup>236</sup> In doing so, he cataloged the common criticisms of grace periods, which are summarized and answered in turn below.

*1. Abuse of Deadlines, Sloppy Practice, and Risk to the Inventor*

One set of objections center on the idea that grace periods erode the certainty provided by first-to-file systems by allowing inventors to extend patent monopolies by delaying filing deadlines or promoting sloppy practice by enabling inventors to make ill-considered disclosures instead of filing patent applications.<sup>237</sup> A corollary to this criticism is a concern that such disclosures put the inventor at risk by increasing the chances that others will misappropriate the inventor's work after an early disclosure has been made.<sup>238</sup>

With respect to this criticism, it is significant to note that countries have had grace periods in the past and did not experience such abuses. Supporters of grace periods have commented that actual experience under the old German grace period did not result in this type of abuse, and that the seemingly complex three-tiered grace period previously available in the United Kingdom also appeared to work well and required little refinement from the courts.<sup>239</sup> Nor has there been criticism that the pre-AIA U.S. system was subject to meaningful abuses in this regard. Given that there has been substantial multinational historical experience with grace periods and little documented abuse, this concern appears to be more academic than practical.

The more difficult concern is that such disclosures will act as a disservice to the inventor as they increase the risk that others will misappropriate the inventor's work.<sup>240</sup> This argument has merit, particularly in light of surveys that have shown that many innovators believe secrecy and first-mover status are as or more important than patents to their ability to appropriate the

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rations and smaller entities); Erin Shinneman, *Owning Global Knowledge: The Rise of Open Innovation and the Future of Patent Law*, 35 BROOK. J. INT'L L. 935 (2010) (noting the positive effect of grace periods on collaborative partnerships).

<sup>235</sup> Straus, *supra* note 31.

<sup>236</sup> *Id.* at 109.

<sup>237</sup> *See id.* at 87 (arguing that Articles 54 and 55 of the EPC arose primarily from the Strasborg Convention and that the primary reason grace periods were not adopted at that time was the concern that they would promote sloppy practices).

<sup>238</sup> *Id.* at 62.

<sup>239</sup> *Id.* at 18, 71.

<sup>240</sup> *Id.* at 58; *see also supra* Part IV.A.3 (discussing treatment of prior disclosures, particularly by third parties, under the proposed system).

benefits of their research and development investment.<sup>241</sup> However, the argument disregards at least two important considerations. First, to the extent the patent system is intended to foster rapid dissemination of information on new developments, patent disclosures help achieve that goal, despite any negative impact on the inventors.<sup>242</sup> Second, it is the inventor who remains in control, even when grace periods are available. If an inventor has sufficient resources to develop an invention and prepare it for commercialization using just internal resources, the existence of a grace period does not inhibit his ability to do so. Instead, it opens the benefits of the patent system to those inventors who do not have such resources by making it easier and less risky for them to use early disclosures to help finalize their inventions and obtain needed financing.

Furthermore, this criticism appears to reflect a questionable assumption. At their core, absolute novelty systems used in first-to-file jurisdictions such as Europe appear to view invention as a discrete event that occurs privately and is identifiably complete at a moment in time.<sup>243</sup> If this assumption is true, then the objection that grace periods promote sloppy practice would appear reasonable, as there would be no reason not to require immediate filing of patent applications once the inventive moment has been achieved. However, if commercialization of an invention requires refinement, collaboration, and validation with third parties who may not be willing to enter se-

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<sup>241</sup> See Wesley M. Cohen et al., *R&D Spillovers, Patents and the Incentives to Innovate in Japan and the United States*, 31 RES. POL'Y 1349, 1355 (2002) (concluding based on survey data that "secrecy is more central to the appropriability strategies of the US firms," while "patents appear to be more heavily featured in the appropriability strategies of Japanese firms"); James Bessen, *Patents and the Diffusion of Technical Information*, 86 ECON. LETTERS 121 (2005) (generally discussing companies' decision-making strategies for deciding between patents and trade secrets); Christian Helmets & Mark Rogers, *Does Patenting Help High-Tech Start-Ups?*, 40 RES. POL'Y 1016, 1018 (2011) (considering data relating to start-up companies in the U.K. and noting that the data suggests patents provide limited actual value in commercializing inventions but are generally desirable for reputational reasons); Ronald J. Mann & Thomas W. Sager, *Patents, Venture Capital, and Software Start-Ups*, 36 RES. POL'Y 193, 207 (2007) (noting that data suggests that the ability to use patents to appropriate value from innovation varies significantly among companies, even within a single industry); Wesley M. Cohen, Richard R. Nelson & John P. Walsh, *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (Or Not)* 14–24 (Nat'l Bureau of Econ. Research, Working Paper No. 7552, 2000) (discussing reasons for and against patenting based on survey data).

<sup>242</sup> See *Graham v. John Deere Co.*, 383 U.S. 1, 9 (1966) (discussing the overall policy justifications underlying the patent system and noting that from as far back as the time of Thomas Jefferson it has been understood that "[t]he patent monopoly was not designed to secure to the inventor his natural right in his discoveries" but was instead "an inducement, to bring forth new knowledge" that furthered human understanding).

<sup>243</sup> See, e.g., Convention on the Grant of European Patents (European Patent Convention), *supra* note 49, art. 54 (establishing that any disclosure occurring prior to filing is prior art). Note also that Europe, unlike the United States, has no "continuation-in-part" practice that allows inventors to incrementally expand the disclosure of patent applications after filing. See U.S. PATENT & TRADEMARK OFFICE, *supra* note 87, § 201.08 (discussing continuation-in-part practice in the United States).

crecy agreements, or takes place over a period of time during which publication of research must be withheld, then requiring immediate filing prior to any disclosure is out of step with the realities of how development occurs. While the former situation may be achievable by large and well-funded entities, the latter is more likely to be the case for smaller, early-stage companies, particularly when they attempt to partner with academic researchers.<sup>244</sup> Therefore, this criticism results in part from a lack of understanding of small-business entrepreneurship and an undue focus on the abilities and resources of larger entities.

## 2. Legal Uncertainty

A further series of objections to grace periods is based on the idea that they foster legal uncertainty.<sup>245</sup> The concern here is that a competitor will learn of an innovation through a public disclosure but will not know whether that innovation can be freely copied since there is no way of knowing if a patent application will be filed until well after the grace period expires. This argument does not hold up under closer scrutiny.

To begin with, the period of uncertainty foretold by this objection is already present in the system. Patent applications are generally maintained in secrecy until they are published eighteen months after the initial filing, thereby creating at least a year and a half of uncertainty in many situations.<sup>246</sup> That uncertainty does not evaporate upon publication of a patent application. Given that examination periods for applications are typically several years—and continuation practice can last substantially longer—the issue date of a patent is typically long after the publication date.<sup>247</sup> Considering that claims are commonly amended during prosecution and that the scope of protection granted depends on the claims that issue as opposed to the claims that publish, it is likely in the current system that prospective

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<sup>244</sup> See Bagley, *supra* note 232, at 1047 (concluding that the U.S. grace-period provisions are more favorable to smaller companies and academic institutions than patenting rules implemented under the EPC).

<sup>245</sup> See Straus, *supra* note 31, at 58 (suggesting that people who are aware of a disclosure may assume the information is free for the taking).

<sup>246</sup> See generally Tegernsee Experts Grp., *Study Mandated by the Tegernsee Heads: 18-Month Publication*, USPTO.GOV (Sept. 2012), [http://www.uspto.gov/ip/global/18\\_months\\_publication.pdf](http://www.uspto.gov/ip/global/18_months_publication.pdf) (discussing the state of the eighteen-month publication rule in different countries).

<sup>247</sup> In 2012, the average total pendency of applications at the USPTO was 32.4 months with 1,157,147 applications in prosecution. U.S. Patent & Trademark Office, U.S. Dep't of Commerce, *Performance and Accountability Report: Fiscal Year 2012*, USPTO.GOV, 17, 177 tbl.3, <http://www.uspto.gov/about/stratplan/ar/USPTOFY2012PAR.pdf> (last visited Apr. 15, 2014). In 2011, average pendency at the EPO and JPO was 40.5 and 34.0 months respectively. Eur. Patent Office, Japan Patent Office, Kor. Intellectual Prop. Office, State Intellectual Prop. Office of China & U.S. Patent & Trademark Office, *IP5 Statistics Report 2011 Edition*, FIVEIPOFFICES, 72 tbl.4 (Dec. 2012), <http://www.fiveipoffices.org/stats/statisticalreports/ip5-statistics-2011.pdf>. The total numbers of applications pending at the EPO and JPO in 2011 were 355,803 and 448,123 respectively. *Id.*

competitors will remain uncertain as to the scope of protection available for a given innovation for several years. Therefore, the idea that adoption of grace periods will substantially add to uncertainty seems somewhat overblown given how much uncertainty is already present in the system.

It must be conceded that inclusion of a grace period could extend the period of uncertainty to some extent where applicants intentionally delay filings until the end of the grace-period window. However, such uncertainty is mitigated by the pro-disclosure pressure created by derivation presumptions and is otherwise not necessarily detrimental to the goals of the patent system. Even though, as Thomas Jefferson pointed out, the primary goal of the patent system is to increase the body of human knowledge, a secondary objective is to provide an incentive for research and development investment.<sup>248</sup> Free riding occurs when one party reaps economic benefits by copying an innovation developed through the research and development investment of another.<sup>249</sup> The concerns regarding legal certainty focus on legal certainty for potential free riders.<sup>250</sup> Since assisting free riding is contrary to the patent system's goal of encouraging investment in research and development by ensuring investors will have an opportunity to reap the rewards of their investment,<sup>251</sup> the idea that grace periods should be avoided because they create uncertainty for free riders is not a compelling argument. On the contrary, to the extent that such uncertainty has any impact, it could easily encourage third parties to enter into license agreements with first movers instead of merely copying their innovations. If there is a possibility that patent protection will be granted, entering into a license arrangement is the only comparatively certain way of mitigating that risk.

Accordingly, the conclusions that uncertainty will be meaningfully increased by wider adoption of grace periods and will have a net negative impact on the objectives of the patent system are questionable at best.

### 3. *The Paris Problem*

In *University Patents*, the Enlarged Board of Appeal referred to another objection relating to the adoption of a grace period under the EPC.<sup>252</sup> Citing notes from the 1962 proceedings of the fifth meeting of the Patents Working Party held in Brussels, the Board pointed out that the committee had consid-

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<sup>248</sup> See *Graham v. John Deere Co.*, 383 U.S. 1, 9 (1966) (discussing the primary objective of disclosure).

<sup>249</sup> See Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1032 (2005) (discussing free riding in detail and concluding that the goal of eliminating free riding is not compatible with intellectual property rights).

<sup>250</sup> See, e.g., Straus, *supra* note 31, at 58 (characterizing the issue in terms of "uncertainty for others").

<sup>251</sup> See *Graham*, 383 U.S. at 9 (discussing the objectives of the patent system).

<sup>252</sup> *Univ. Patents, Inc. v. SmithKline Beecham Biologicals SA*, Case No. G 3/98, 2001 OJ EPO 62, 75 (Enlarged Bd. of Appeal July 12, 2000).

ered the adoption of a broader grace-period provision under the EPC but rejected the idea citing the Paris Convention.<sup>253</sup> In the minds of the committee members, the only proper way to implement a multinational grace period would be to amend the Paris Convention to require its signatory countries to implement the grace periods.<sup>254</sup> Absent such a requirement, the committee felt that unilateral adoption of a grace period in the EPC would lead to a false sense of security among filers.<sup>255</sup> The fear was that filers would become comfortable with the idea of a grace period in Europe and assume that it applied to all of their filings, not just those in the EPO.<sup>256</sup> Therefore, the committee concluded that the Paris Convention would need to be amended to provide a grace period in all signatory countries before the EPC should adopt such a provision.<sup>257</sup>

It is reasonable to assume that different jurisdictions having different grace-period provisions could lead to mistakes and uncertainty. That is precisely the case today, in fact. Filers are faced with very liberal grace-period provisions in the United States, limited grace-period provisions in Japan, and virtually no protection for pre-filing disclosures in Europe.<sup>258</sup> As has been pointed out, this dramatically undermines the benefits of the U.S. grace period and the number of cautionary articles citing this risk, particularly in connection with U.S. provisional practice, bolsters the concerns raised by the committee.<sup>259</sup>

That said, given the recent amendment to U.S. law and the amount of effort required to make it happen, it is extraordinarily unlikely that the United States will reverse its position on grace periods. Therefore, the cited risk will remain for all U.S. filers, and it is unlikely that other nations adopting grace periods would add meaningfully to the problem. On the contrary, given that the United States, Japan, and the EPO account for approximately half of the world's patent filings, having similar grace periods in at least these three jurisdictions would be a substantial step toward alleviating the committee's concerns by creating a greater degree of uniformity in three of the most important economic regions.<sup>260</sup>

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<sup>253</sup> *Id.*

<sup>254</sup> *Id.*

<sup>255</sup> *Id.*

<sup>256</sup> *Id.*

<sup>257</sup> *Id.*

<sup>258</sup> See *supra* Part II.B (discussing each jurisdiction's pre-filing disclosure provisions).

<sup>259</sup> See sources cited *supra* note 216 (listing sources of warnings of similar concerns raised in connection with U.S. provisional practice).

<sup>260</sup> See World Intellectual Prop. Org., *2012 WIPO IP Facts and Figures*, WIPO, at 17, [http://www.wipo.int/export/sites/www/freepublications/en/statistics/943/wipo\\_pub\\_943\\_2012.pdf](http://www.wipo.int/export/sites/www/freepublications/en/statistics/943/wipo_pub_943_2012.pdf) (last visited Apr. 15, 2014) (reporting that in 2010, the United States led the world in patent filings with 24.8% of the filings, Japan was third with 17.4% of the total, and the EPO was fifth with 7.6%). The report further notes that the top three countries, the United States, China, and Japan, accounted for about 62% of filings, meaning that a unified grace period across just the United



Additionally, as is evidenced by the different positions taken in these jurisdictions, the Paris Convention does not create a legal impediment to an incremental adoption of grace-period provisions. Accordingly, the objection that it must be amended prior to individual Paris Convention signatory countries considering grace periods does not withstand close consideration.

#### 4. *First-to-Invent*

One of the early objections raised in opposition to grace periods, particularly in Europe, was that such a change should only be considered in connection with a move by the United States to a first-to-file system.<sup>261</sup> Straus goes so far as to argue that the first major period of European commentary on grace periods “became nearly entirely controlled by a ‘package deal’ ideology, namely to accept the grace period in exchange of [sic] the introduction of the first-to-file system in the United States of America.”<sup>262</sup> When that effort failed, the dispute between supporters and detractors of grace periods “became even more emotional and controlled by dogmatic thinking.”<sup>263</sup>

As previously discussed, the adoption of the AIA signaled a monumental change to U.S. patent law, moving the United States from a first-to-invent system to a first-inventor-to-file system.<sup>264</sup> This change was made unilaterally and not as part of any package deal. As such, this objection to grace periods is no longer applicable. More to the point, the adoption of the AIA by the United States could now serve as the impetus for revitalizing the discussion of grace periods because the United States has now removed what was seen by many as the crucial roadblock to adoption of grace periods internationally.<sup>265</sup>

### C. The Disclosure Function

This paper argues that adoption of grace periods that can be affirmatively used supports the patent system’s disclosure function by encouraging earlier dissemination of information about new discoveries. This raises the issue of how well the patent system currently supports the disclosure function and whether adoption of a multinational grace period will help or harm the present situation.

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States, China, Japan, and the EPO would create harmonization impacting nearly 70% of all filers.  
*Id.*

<sup>261</sup> Straus, *supra* note 31, at 55.

<sup>262</sup> *Id.*

<sup>263</sup> *Id.*

<sup>264</sup> See Armitage, *supra* note 4, at 4 (“In a nutshell, the AIA completes a 30-year journey to remake, in their entirety, each of the foundational assumptions underlying the operation of the U.S. patent system.”).

<sup>265</sup> This point has also been made by a federal circuit judge. Randall Rader, Chief Judge, U.S. Court of Appeals for the Fed. Circuit, The Growing Imperative to Internationalise the Law at the IBIL 4th Annual Sir Hugh Laddie Lecture (June 27, 2012), available at [http://www.ucl.ac.uk/laws/ibil/index.shtml?events\\_past](http://www.ucl.ac.uk/laws/ibil/index.shtml?events_past).

A number of commentators have recently questioned whether or not patents provide useful information.<sup>266</sup> Such commentators rely on surveys in which participants are asked where they receive information on new innovations and what role those sources play in their investment-backed decisions.<sup>267</sup> One thing the underlying studies have in common is that researchers report that journals, conferences, and reverse engineering are as important or more important sources of information than patents.<sup>268</sup>

To the extent that conferences, journals, and reverse engineering are more important sources of information for researchers, the patent system should promote such disclosures instead of inhibiting them. Whereas a strict novelty approach discourages such disclosures and restricted grace periods constrain them, open grace periods encourage exactly the types of disclosures thought to be the most useful. Therefore, implementation of grace periods that are affirmatively used to allow for and encourage early dissemination of information through journals, conferences, and product demonstrations are likely to be more supportive of the disclosure function than the current system.

## V. Conclusion

This paper compares three very different approaches to grace periods and illustrates their application through a hypothetical example of an academic/commercial partnership involving a small business. Based on that analysis, it concludes that the current availability of open grace periods in the United States, but not outside the United States, has several drawbacks including (i) forcing applicants to forego the potential advantages of affirmative disclosure provided under the U.S. system, (ii) providing an unfair advantage to large self-funded research and development organizations that can bring innovations to commercial fruition without the need to seek third-party assistance or open market testing, and (iii) posing challenges to partnerships between academic researchers, who are under strong pressure to publish early, and commercial partners, who are incentivized to withhold such disclosures until just prior to commercialization in order to maximize potential patent rights. An open multinational grace period could address those deficiencies. The proposed grace period largely follows the model set forth in the recently enacted AIA but notes potential alternatives relating to the treatment of third-party disclosures made during the grace-period win-

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<sup>266</sup> See Lisa Larrimore Ouellette, *Do Patents Disclose Useful Information?*, 25 HARV. J.L. & TECH. 545, 601 (2012) (summarizing the literature criticizing the usefulness of patent disclosures and concluding that (i) the criticism of the usefulness of such disclosures is likely overstated, (ii) the literature suggests that many patents fail to meet existing disclosure rules, and (iii) the switch to a first-to-file system will result in races to file that will further exacerbate the existing problems with the quality of patent disclosures).

<sup>267</sup> See *id.* at 562 (discussing surveys on the use of patents as a source of information).

<sup>268</sup> *Id.* at 562–63.

dow. Several classic objections to grace periods were then discussed. Each objection was found wanting in light of the conclusion that affirmatively used grace periods are more supportive of the disclosure function of the patent system, particularly in light of evidence that many researchers find journals, conferences, and competitive product analysis to be important information sources in addition to patent publications.

Ultimately, the premise of this paper, that a multinational grace period based on the U.S. model would strengthen the patent system overall, appears to be borne out. However, grace periods remain controversial. The primary opposition still appears to come from Europe and to the extent that a grace period is adopted under the EPC, it is likely to be more restrictive than the model proposed herein. As noted in the above analysis, a more restrictive grace period is unlikely to achieve the disclosure benefits because it will be riskier to use affirmatively. Commentators in Europe remain sharply divided on the issue and at least one court has concluded that it is infeasible for the EPC to incorporate such a change without a substantive amendment to the Paris convention.

Despite the evident political challenge, there is hope since the United States has made a monumental step toward patent law harmonization with the adoption of a first-inventor-to-file system. Given that unilateral move toward harmonization, it seems appropriate to challenge European policy makers and those influenced by them to consider the question of grace periods anew and reengage in the debate about whether multinational adoption of open grace periods would help or hurt the global patent system's goal of encouraging innovation by supporting investment in research and development and encouraging rapid dissemination of information on new innovations. In fact, the unilateral move by the United States may signal that the chances of achieving agreement on a multinational grace period are better today than they have been at any time since the adoption of the EPC.



# A Unified Framework for Competition Policy and Innovation Policy

Keith N. Hylton\*

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## I. Introduction

In most legal systems, competition policy and innovation policy are developed and applied within separate spheres. In the United States, one executive branch department—the Antitrust Division of the Justice Department—and one federal agency—the Federal Trade Commission—enforce the federal antitrust laws. Another federal agency, the Patent and Trademark Office, grants patents and registers trademarks. No one suggests that these agencies should adopt a common regulatory policy.

However, competition and innovation policies are inextricably intertwined. The prominent U.S. government antitrust cases of recent years have been brought against innovative firms in the technology industry—including Microsoft, Google, and Apple.<sup>1</sup> Throughout the history of antitrust enforcement, firms that have gained market power through innovation have often been targets of antitrust litigation. Defendants in the most important antitrust cases shaping monopolization law—Standard Oil, United States Steel, and Alcoa<sup>2</sup>—became dominant primarily through innovation in technology and business methods.

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<sup>1</sup> *United States v. Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001); *Google, Inc. v. United States*, 95 Fed. Cl. 661 (Fed. Cl. 2011); *In re Apple iPhone Antitrust Litig.*, 874 F. Supp. 2d 889 (N.D. Cal. 2012).

<sup>2</sup> *Standard Oil Co. of N.J. v. United States*, 221 U.S. 1 (1911); *United States v. U.S. Steel Corp.*, 251 U.S. 417 (1920); *United States v. Aluminum Co. of Am.*, 148 F.2d 416 (2d Cir. 1945).

A common theory of innovation, dating to Schumpeter, is that it creates temporary monopoly power, enabling the innovator to earn a supra-competitive profit as a rent on innovation until competitors copy the innovation and drive profits back down to the long-run competitive equilibrium level.<sup>3</sup> The potential for a temporary monopoly spurs innovation. Innovation leads to monopoly. Monopoly leads to entry. Entry restores competitive pricing. To the extent that this theory explains a great deal of innovation observed in competitive markets, it implies that the same set of economic concerns should drive both the regulation of competition and the regulation of innovation.

In this article, Part II describes a model of competition law enforcement that treats competition and innovation policy as the inseparable partners they ought to be. The enforcement authority determines an optimal punishment knowing that if it sets the penalty too high, it will reduce firms' incentives to invest in innovation, and if firms do not invest, new goods and new markets will not be created. The authority therefore moderates the penalty in order to maintain investment incentives. This is distinguishable from the efficiency-based analysis associated with the Chicago School of Antitrust.<sup>4</sup> Efficiency, in the sense of reducing supply-side costs or enhancing demand-side value to consumers, has been accepted by antitrust courts and enforcement agencies since the Chicago revolution as a reason for moderating antitrust penalties.<sup>5</sup> Innovation, by contrast, remains a topic that is viewed as too speculative by the enforcement agencies to serve as a justification for moderating penalties.<sup>6</sup>

The implications of this framework for competition policy and innovation policy are quite different from what is commonly observed today. Optimal antitrust enforcement of monopolization law is more lenient when dynamic competition—primarily the innovation incentive—is taken into account. The optimal penalty is less than the level that internalizes consumer harm, the efficient penalty under the

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<sup>3</sup> Antonella Laino, *Innovation and Monopoly: The Position of Schumpeter* 2–3 (Munich Pers. RePEc Archive, Paper No. 35321, 2011), available at <http://mpra.ub.uni-muenchen.de/35321/>.

<sup>4</sup> See INGO L.O. SCHMIDT & JAN B. RITTALER, A CRITICAL EVALUATION OF THE CHICAGO SCHOOL OF ANTITRUST ANALYSIS 105–13 (1989) (examining the efficiency-based analysis of the Chicago School of Antitrust).

<sup>5</sup> *Id.*

<sup>6</sup> Douglas H. Ginsburg & Joshua D. Wright, *Dynamic Analysis and the Limits of Antitrust Institutions*, 78 ANTITRUST L.J. 1, 10–11 (2012) (noting that the extent to which innovation concerns should influence antitrust enforcement policy is a long-standing issue). See also JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY (3d ed. 1950); Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS 609, 614–22 (1962) (analyzing the utility of antitrust enforcement in terms of monopoly and innovation); Jonathan B. Baker, *Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation*, 74 ANTITRUST L.J. 575 (2007) (discussing whether allowing antitrust enforcement to serve as a price control method positively influences innovation); Keith N. Hylton, *Brown Shoe Versus the Horizontal Merger Guidelines*, 39 REV. OF INDUS. ORG. 95 (2011) (noting that innovation is treated as a basis for enhancing antitrust enforcement in the most recent horizontal merger guidelines).

Chicago School model.<sup>7</sup> Under certain conditions, subsidization of the monopolist is an optimal policy. As for innovation policy, one possible response to a patent application is granting the patent and giving the patent holder a monetary prize as well.

In some respects, this model turns modern competition policy—which emphasizes the short-run welfare of consumers—on its head. Under the model’s prescriptions, enforcement authorities should give considerably more attention to innovation concerns than they do now. Much of current antitrust enforcement in the United States and the European Union adopts policies that are inconsistent with the recommended enforcement policies of this framework.<sup>8</sup>

Part II presents two models of antitrust enforcement. The first, which this article refers to as the static enforcement model, is the now-standard efficiency theory of antitrust enforcement. Under the static model, antitrust enforcement should aim to internalize consumer harm. In the second model, which incorporates innovation, the internalization policy is observed to be too punitive and reduces overall welfare relative to a more lenient policy. The relative leniency results because punishment must be constrained in order to maintain innovation incentives.

Part III discusses some implications for modern antitrust policy, as exemplified by the Supreme Court’s decision in *FTC v. Actavis, Inc.* and recent enforcement policies of the United States and the European Union.<sup>9</sup> From the perspective of this article’s framework, modern antitrust policy is in many respects misguided. The innovation implications of antitrust enforcement received little consideration in *Actavis*, and current enforcement policies on matters such as patent infringement litigation reflect the same failure.

## II. Models of Antitrust Enforcement

This section describes two models of antitrust enforcement. The first is called the static model, and it considers the tradeoff between consumer harm and productive efficiency. The key source for the static model is Becker’s theory of law enforcement, which as a byproduct provides a formal version of the Chicago model of antitrust enforcement.<sup>10</sup> The Becker theory recommends a shift away from an enforcement policy that seeks to eliminate any prospect of gain to the offender—the

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<sup>7</sup> See Keith N. Hylton & Haizhen Lin, *Innovation and Optimal Punishment, with Antitrust Applications*, 10 J. COMP. LAW & ECON. 1 (2014) (examining the efficiency difference between the optimal penalty and the efficiency penalty of the Chicago School of Antitrust efficiency-based analysis).

<sup>8</sup> Not all of antitrust law is opposed to this framework. In fact, David Evans and I have argued that the dynamic enforcement model provides a positive theory of Section 2 doctrine, which is otherwise puzzlingly lenient. David S. Evans & Keith N. Hylton, *The Lawful Acquisition and Exercise of Monopoly Power and Its Implications for the Objectives of Antitrust*, 4 COMPETITION POL’Y INT’L 203 (2008).

<sup>9</sup> *FTC v. Actavis, Inc.*, 133 S. Ct. 2223 (2013).

<sup>10</sup> Gary S. Becker & George J. Stigler, *Law Enforcement, Malfeasance, and Compensation of Enforcers*, 3 J. LEGAL STUD. 1 (1974).

dominant punishment policy from the time of Bentham—toward an enforcement policy of internalizing the social harm caused by the offender’s conduct.<sup>11</sup> In the antitrust setting, this implies that consumer harm should be internalized by the monopolizing firm.

The second model is called the dynamic model, and it offers a simple method of incorporating innovation into the enforcement theory.<sup>12</sup> When innovation is incorporated, the internalization policy of Becker is excessively punitive. The optimal antitrust penalty in the dynamic model is unambiguously less than the internalizing penalty.

The dynamic competition view of antitrust enforcement has been in existence for a long time. It can be dated to Schumpeter.<sup>13</sup> Still, there has been little effort to incorporate innovation concerns into models of antitrust enforcement. The dynamic framework described here was initially described informally by Evans and Hylton,<sup>14</sup> and formalized in an article by Hylton and Lin.<sup>15</sup>

#### A. Static Antitrust Enforcement Model

Firms have a choice over whether to perform a monopolizing act.<sup>16</sup> The act could be a decision to enter into an exclusivity contract or to tie one product to another. The monopolizing act allows the firm to increase its price, leading to a transfer ( $T$ ) of consumer surplus to the firm. The price increase also leads to a reduction in output to a level below the competitive level and an associated loss in consumer welfare ( $D$ ), which this article will also refer to as “deadweight loss.” After the monopolizing act, consumers are left with the residual surplus ( $W$ ).

The firm’s monopolizing act may have efficiency consequences. For example, an exclusive dealing contract with a key input supplier could have a monopolizing

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<sup>11</sup> *Id.*

<sup>12</sup> Evans & Hylton, *supra* note 9; Hylton & Lin, *supra* note 8.

<sup>13</sup> Baker, *supra* note 7.

<sup>14</sup> Evans & Hylton, *supra* note 9 (analyzing American antitrust laws and their framework and offering a new dynamic framework).

<sup>15</sup> Hylton & Lin, *supra* note 8.

<sup>16</sup> This can play out in the FRAND context. See Rebecca Haw Allensworth, *Casting a FRAND Shadow: The Importance of Legally Defining “Fair and Reasonable” and How Microsoft v. Motorola Missed the Mark*, 22 TEX. INTELL. PROP. L.J. (forthcoming 2014) (discussing the fair and reasonable standard within the scope of monopolization through essential patents); Roger D. Blair & Thomas Knight, *Problems in Sharing the Surplus*, 22 TEX. INTELL. PROP. L.J. (forthcoming 2014) (discussing the FRAND limitations on monopolization and its effect on sharing the surplus); Thomas F. Cotter, *The Comparative Law and Economics of Standard-Essential Patents and FRAND Royalties*, 22 TEX. INTELL. PROP. L.J. (forthcoming 2014) (discussing FRAND limitations on monopolization with essential patents); William H. Page, *Judging Monopolistic Pricing: F/RAND and Antitrust Injury*, 22 TEX. INTELL. PROP. L.J. (forthcoming 2014) (discussing pricing in a monopolization under FRAND limits); D. Daniel Sokol & Wentong Zheng, *FRAND in China*, 22 TEX. INTELL. PROP. L.J. (forthcoming 2014) (discussing the implications of patent monopolization under FRAND in China); Christopher S. Yoo, *Standard-Setting, FRAND, and Opportunism*, 22 TEX. INTELL. PROP. L.J. (forthcoming 2014) (discussing the role of FRAND in monopolization through essential patents).



effect by excluding rival firms from access to the supplier, but it could also enhance efficiency by reducing supply costs.<sup>17</sup> The efficiency gain ( $E$ ) is realized in the form of a reduction of average cost from  $c_0$  to  $c_1$ . The new cost curve ( $c_1$ ) is shown with a dotted line because it assumes that the efficiency gain is a random event that may or may not materialize. The efficiency gain could be greater than the deadweight loss ( $E > D$ ). If so, then the firm's monopolizing act would enhance social welfare.

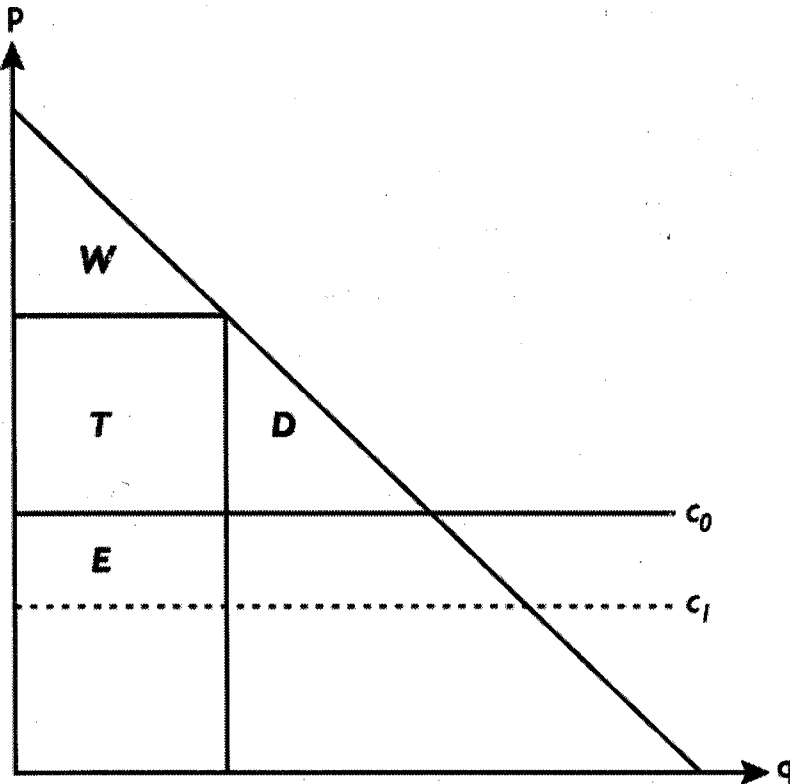


Figure 1: Welfare consequences of monopolizing act that also reduces costs.<sup>18</sup>

$W$ : residual surplus left with the consumer

$T$ : transfer of consumer surplus to the firm

$D$ : loss in consumer welfare from an increased price

$E$ : efficiency gain

$c_0$ : original cost curve       $c_1$ : new cost curve

<sup>17</sup> For a review of the efficiency consequences of vertical contracting, see Andy C. M. Chen and Keith N. Hylton, *Procompetitive Theories of Vertical Control*, 50 HASTINGS L. J. 573 (1999).

<sup>18</sup> Keith N. Hylton & Haizhen Lin, *Optimal Antitrust Enforcement, Dynamic Competition, and Changing Economic Conditions*, 77 ANTITRUST L.J. 247 (2010).

Based on these assumptions, the efficient enforcement policy internalizes the social costs of the monopolizing firm's conduct.<sup>19</sup> Under the internalization approach, the firm would choose to perform a monopolizing act when and only when the gain to the firm exceeds the loss to consumers. Efficient conduct would not be prohibited. The internalization rule generates a simple recommendation for the optimal monetary penalty: if enforcement is perfect and costless, the penalty should be set equal to the sum of the transfer from consumers and the foregone consumer surplus ( $T+D$ ).

If the enforcement authority is unlikely to detect and bring an enforcement action in every instance of a monopolizing act, the optimal penalty will include a multiplier. Additionally, if enforcement is expensive, the cost should be internalized to the firm.<sup>20</sup> If the probability of enforcement is  $P$ , and the enforcement cost is  $C$ , then the optimal antitrust penalty is  $(T+D)/P+C$ , which I will refer to as the *static penalty*,<sup>21</sup> because my description of the enforcement problem does not incorporate any consideration of the innovation effects of antitrust enforcement.

This model is, for the most part, suggestive because it treats enforcement as an exclusively public sector activity. When private enforcement actions are modeled, a link is found between the probability of a private action and the profitability of a lawsuit.<sup>22</sup> If the multiplier is set at a level that induces all victims to bring suit, the probability of an enforcement action will be 100 percent. However, once the probability of a private enforcement action reaches 100 percent, there will no longer be a need to multiply damages. It follows that the optimal multiplier for private lawsuits efficiently balances the supply of lawsuits with the number required by the optimal deterrence goal.<sup>23</sup>

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<sup>19</sup> Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. Pol. Econ. 169 (1968). "Internalization results in 'first-best' deterrence—in the sense that the monopolization decision will be made when and only when it increases social welfare. We are equating first-best deterrence with optimal deterrence, but the two can be distinguished in some settings. For example, if enforcement agents have discretion over whether to bring an action in court or in an administrative proceeding, an optimal enforcement regime might discourage costly types of litigation or weak claims." Hylton & Lin, *supra* note 19, at 251 n.12. See also Keith N. Hylton & Thomas J. Miceli, *Should Tort Damages Be Multiplied?*, 21 J.L. ECON. & ORG. 388, 410 (2005) (discussing first-best and optimal deterrence in the private enforcement setting).

<sup>20</sup> The assumption that enforcement is a natural byproduct of an offense simplifies matters, but it is not necessarily valid. Suppose the enforcement agency decides each case by comparing the gain from enforcement to its cost. In that case, an optimal scheme might shift the enforcement cost to the agency in order to generate efficient enforcement decisions.

<sup>21</sup> KEITH N. HYLTON, *ANTITRUST LAW: ECONOMIC THEORY AND COMMON LAW EVOLUTION* 43–52 (2003); William M. Landes, *Optimal Sanctions for Antitrust Violations*, 50 U. CHI. L. REV. 652, 653–57 (1983).

<sup>22</sup> Hylton & Miceli, *supra* note 20 (discussing links between damage recovery in private lawsuits and the level of enforcement).

<sup>23</sup> *Id.*

### B. Dynamic Antitrust Enforcement Model

This section describes an innovation-sensitive enforcement model. Return to Figure 1 and suppose that there are two time periods. In the first, the firm decides whether to invest in an activity that generates the market. In the second, the firm decides whether to perform the monopolizing act.

For example, suppose the firm designs and produces a new, superior type of artificial tooth during the first period.<sup>24</sup> The firm cannot get a patent on the design and the tooth is easily replicable. Facing the risk of immediate competition from firms that copy its design, the firm may choose to take an action that excludes rivals for some period of time necessary to recoup investment costs. For example, the firm might enter into exclusivity contracts with the most important downstream sellers of dental products.<sup>25</sup>

In this dynamic story, some surplus is transferred to the firm ( $T$ ) and some is destroyed ( $D$ ), but the firm's conduct also rewards consumers with the residual surplus that remains after the monopolizing conduct ( $W$ ). If not for the firm's first-period investment, which was undertaken because of anticipation of profits generated from second-period exclusionary conduct, consumers would never have received the residual surplus.

The optimal antitrust penalty has to be designed to reconcile conflicting welfare concerns. There is the static welfare concern addressed earlier, under which the monopolizing firm should be forced to regurgitate the transfer and pay for the destroyed surplus in order to optimally regulate its incentive to monopolize. However, the penalty will also affect investment incentives. In order to optimally regulate investment incentives in isolation, the ideal penalty would be negative—a subsidy equal to the residual surplus. The private benefit of the firm's investment is simply the transfer ( $T$ ). The social benefit is the sum of the transfer and the residual surplus ( $T+W$ ). In order to align private incentives with social incentives, the firm should be awarded a bounty equal to the residual surplus ( $W$ ).<sup>26</sup>

To find the optimal penalty, consider the objective function that a social planner would maximize. Although the expression for the objective function is set out in the margins, this article tries to explain it in the text with sufficient intuition to make the footnoted material unnecessary to follow the argument.

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<sup>24</sup> David S. Evans & Keith N. Hylton, *The Lawful Acquisition and Exercise of Monopoly Power and Its Implications for the Objectives of Antitrust*, 4 COMPETITION POL'Y INT'L 203, 233 (2008) (proposing the example based on *United States v. Dentsply Int'l, Inc.*, 399 F.3d 181 (3d Cir. 2005)).

<sup>25</sup> *Id.*

<sup>26</sup> I assume that the monopolizing firm cannot engage in price discrimination. If the firm implements perfect price discrimination in the monopolization stage, charging each consumer the maximum that he is willing to pay, there will be no economic basis for imposing a penalty or providing a subsidy. The perfectly discriminating monopolist will not destroy any surplus. Given this, there will be no need to impose the static penalty in order to regulate the monopolization incentive. And since the perfectly discriminating monopolist will not externalize any surplus that it generates from innovation to consumers, there will be no need to provide a subsidy in order to optimally regulate the investment incentive.

From Figure 1, the gain from monopolization is the sum of the transfer and the efficiency gain ( $T+E$ ). Recall that the monopolizing act generates both a wealth transfer from consumers and an efficiency gain at the same time. To simplify, let  $M$  represent this total gain ( $M = T+E$ ). Since the efficiency gain is a random variable, so is  $M$ . Because the firm will monopolize whenever its total gain is greater than the expected penalty ( $PF$ ), the probability that monopolization will occur is just the probability that  $M > PF$ , and the probability that monopolization will not occur is the probability that  $M < PF$ .<sup>27</sup>

The firm will invest before knowing the value of the total gain ( $M$ ) that will be realized. After all, if the efficiency gain results from a cost reduction due to a new technology, the innovating firm will not know how great its total gain is until the technology is in place. The firm will invest if the expected gain from monopolization, net of the penalty, is greater than the investment cost. If the investment cost is a random variable, then there is a cutoff cost level equal to the expected return from monopolization—above which the firm will not invest and below which the firm will invest. The probability that the firm will invest is then the probability that the cost of investment is below the cutoff value.<sup>28</sup>

The objective of the enforcement authority is to choose the optimal fine to maximize the net benefit to society. The net benefit consists of several separable components. First, there is the benefit that is internal to the business enterprise. That benefit is simply the expected profit from investment—the difference between the expected gain from monopolization and the cost of investment given that the firm chooses to invest. The expected penalty is not subtracted off the expected profit because the penalty is simply a transfer of resources within society.<sup>29</sup>

Second, the enforcement authority would consider the gain to consumers if the firm decides to invest and monopolize, which is the residual surplus that remains after monopolization. However, given that the firm monopolizes, and society will bear an expected enforcement cost, the net gain to society, under this set of events, is the residual surplus to consumers less the expected enforcement cost.<sup>30</sup> Raising the fine for monopolization reduces this gain to society as long as the residual surplus is greater than the cost of enforcing the law. If the residual surplus is less than the expected cost of enforcement, then consumers do not gain anything when the firm monopolizes; in other words, the gain is not worth the cost from the perspective of the consumer. This implies that the authority should be willing to increase

<sup>27</sup> Assume  $M$  is governed by the probability distribution  $H(M)$ . Since the expected fine is equal to the probability of enforcement multiplied by the fine, the firm will monopolize whenever  $M > PF$ . Since the probability that the firm will not monopolize because  $M < PF$  is given by  $H(PF)$ , the probability that the firm will monopolize is  $1 - H(PF)$ .

<sup>28</sup> Let the investment cost ( $k_o$ ) be governed by the probability distribution  $\Psi$  with corresponding density  $\psi$ . The potential offender invests when  $k_o < \bar{k}_o = (1-H(PF))[E(M | M > PF) - PF]$  and the probability of investment is  $\Psi(\bar{k}_o)$ .

<sup>29</sup> In technical terms,  $\Psi(\bar{k}_o) \{[(1-H(PF))E(M | M > PF) - E(k_o | k_o < \bar{k}_o)]\}$ .

<sup>30</sup> In technical terms, this component of the authority's objective function is  $\Psi(\bar{k}_o)(1-H(PF))(W-PC)$ .

the fine when innovation offers little in the form of residual surplus to consumers. This would discourage monopolization, thereby preserving more of the potential innovation surplus for society.

Third, the enforcement authority would consider the benefit to society if the firm invests and then chooses not to monopolize after observing its total gain ( $M$ ) in relation to the expected penalty.<sup>31</sup> This is a possible outcome because the firm invests without knowing its total gain. The firm then observes its total gain after investment and decides whether to monopolize. Thus, a firm may invest and then choose not to monopolize because the realized gain is too low relative to the expected penalty for monopolization.

The third outcome is the ideal one for the enforcement authority because it entails society getting the innovation surplus and the allocatively efficient outcome *ex post*. One way the authority could secure this result is to promise not to punish the firm before it invests, and then surprise the firm by imposing an extremely harsh punishment after it invests. However, such an approach would work only once. Firms would wise up and refuse to invest in the future after one firm was snookered in such a fashion by the enforcement agency. The authority will have to commit to an enforcement policy.

The optimal penalty maximizes the enforcement authority's objective function, which consists of the three components just mentioned.<sup>32</sup> The optimal anti-trust penalty in the dynamic setting is of the form  $(1-\theta)(\text{Static Penalty}) + \theta(\text{Innovation Subsidy})$ , where  $\text{Static Penalty} = (T+D)/P+C$ ,  $\text{Innovation Subsidy} = -W/P+C$ , and the subsidy weight is  $0 < \theta \leq 1$ .<sup>33</sup>

Put more plainly, the optimal dynamic penalty is a weighted average of the static penalty and a subsidy based on the residual surplus. Moreover, since the subsidy weight is positive, the optimal dynamic penalty is unambiguously less than the static (internalizing) penalty.

The subsidy weight ( $\theta$ ), itself an increasing function of the penalty, varies with the relative responsiveness of the firm's monopolization and investment incentives to changes in the penalty. If a change in the penalty would have no effect on *ex ante* investment, while discouraging the monopolizing act, the subsidy weight would be close to zero and the dynamic penalty would be roughly the same as the static penalty. This might be observed if the firm's discount rate is so high that a change in the penalty has little effect on *ex ante* investment incentives. If the

<sup>31</sup>  $\Psi(\bar{k}_o)H(PF)S$ .

<sup>32</sup> Putting all of the components described so far together, the authority's objective function is  $NB = \{[(1-H(PF))E(M|M > PF) - E(k_o | k_o < \bar{k}_o)] + (1-H(PF))(W-PC) + H(PF)S\}$ .

<sup>33</sup> Hylton & Lin, *supra* note 8. If  $F$  represents a fine, then a more precise description of the optimal penalty is as follows:

$$F^* = (1-\theta)\left(\frac{T+D}{P}\right) + \theta\left(\frac{-W}{P}\right) + C$$

where  $\theta$  is a discontinuous function of  $F$  with the properties  $\theta > 0$ ;  $\theta = 1$  for  $F^* \leq 0$ , and  $\theta(F^*) > 0$  for  $F^* > 0$ .

change in the penalty has a big impact on *ex ante* investment, the subsidy weight will be close to 1, and the optimal penalty is likely to be negative—specifically, a subsidy based on the residual consumer surplus.

The sign and size of the optimal antitrust penalty depends on several factors. If the expected enforcement cost is greater than the residual surplus ( $PC > W$ ), then the optimal penalty is always positive. This is the case in which the administrative cost of enforcement is larger than the residual surplus from innovation—the residual value to consumers is too small to justify the administrative costs of the assessment process. The penalty in this case is never as large as the static penalty. Its size is determined by that of the subsidy weight, which itself is determined by the relative elasticities of investment and monopolization with respect to the penalty. As the elasticity of monopolization increases relative to the elasticity of innovation, the optimal penalty approaches the static penalty.

If the expected enforcement cost is less than the residual surplus ( $PC < W$ ), the optimal dynamic penalty could be a penalty or a subsidy depending on the elasticities that determine the subsidy weight. If the elasticity of innovation is greater at every penalty level than the elasticity of monopolization, the optimal subsidy weight will be equal to 1, and the optimal penalty will be negative. If the elasticity of innovation is not greater than the elasticity of monopolization, the optimal penalty will be positive.

As a result, the regulatory program suggested by this analysis looks roughly as follows. If the expected enforcement cost exceeds the residual surplus, the penalty is positive, but not as high as the static penalty. There is no need to subsidize in this case because there is no benefit externalized by the innovation. The entire benefit from innovation is enjoyed by the firm. Still, since there is a benefit from innovation, the optimal policy is lenient relative to the static enforcement policy.

If the expected enforcement cost is less than the residual surplus, then there is an external benefit resulting from innovation, even after monopolization occurs. The decision to penalize or to subsidize depends on the comparative sensitivities of investment and monopolization to changes in the penalty. If investment is more sensitive to the penalty than monopolization is, then a subsidy is the solution. If monopolization is more sensitive than investment, penalization is optimal. The reason is intuitive. The authorities want to enhance society's wealth as much as possible at the lowest cost in terms of diminished investment.<sup>34</sup> If investment is very sensitive, then the authority will have to subsidize. If monopolization is most sensitive, then the authority can maintain investment while discouraging monopolization.

Although the pure innovation subsidy ( $-W/P + C$ ) is a potentially optimal policy given the right set of parameter values (1. residual surplus greater than expected enforcement cost, and 2. elasticity of investment greater than elasticity of monop-

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<sup>34</sup> Robert H. Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 34 HASTINGS L.J. 65, 65 (1982).

lization), the penalty that internalizes consumer harm  $((T+D)/P)$  is never an optimal policy in the dynamic setting. The dynamic enforcement model puts a greater emphasis on internalizing the residual surplus from innovation than on internalizing the consumer harm.

The asymmetric treatment of the innovation benefit and the consumer harm is a reflection of the relative importance of innovation to social welfare. Innovation is necessary in order for any consumer benefit to be realized. The model thus implies that the optimal penalty should be constrained in order to maintain the innovation incentive.

### III. Patent Policy

This article has emphasized the antitrust application of this model, but it applies equally well to intellectual property. The model suggests a process that the enforcement authority should implement for the issuance of patents.

Instead of assuming that the firm takes some exclusionary act after investment, assume now that the firm approaches the enforcement authority to ask for a patent. In this story, the firm invests and then approaches the enforcement authority. The enforcement authority charges a fee, or perhaps awards a subsidy (negative fee). The probability of enforcement can remain in the model, on the assumption that there is a chance  $(1-P)$  that the authority will simply grant the patent without charging a fee.

If the residual surplus to consumers is less than the expected administrative cost, the enforcement authority will charge a positive fee for the patent. The fee is designed to reduce the likelihood that the firm will choose to pursue the patent. In other words, the scenario envisioned under this sequence of events is as follows: (1) the firm invests in innovation, (2) the firm approaches the authority to seek a patent, disclosing its innovation (if necessary for replication), (3) the authority states a fee for the patent, and (4) after comparing the fee to the return from the patent, the firm decides whether to pursue the patent.

If the residual surplus exceeds the expected administrative cost, the authority may give a monetary award or impose a fee, depending on the comparative elasticities of investment and monopolization with respect to the penalty. In this scenario: (1) the firm invests in innovation, (2) the firm seeks a patent and discloses, (3) the authority offers a monetary award with the patent (an award that internalizes the residual surplus of consumers); and (4) the firm accepts the patent and the award.

#### A. Observations and Implications

This is a good point at which to compare the implications of the static and dynamic enforcement models. In antitrust enforcement, the dynamic model is obviously lenient relative to the static model. The static policy requires the imposition of a penalty that internalizes consumer harm. The dynamic model imposes a penalty that falls short of internalizing consumer harm because it is a weighted average of the penalty that internalizes consumer harm and an innovation subsidy. Moreo-

ver, under some conditions, the dynamic model provides an award or subsidy to the monopolizing firm rather than a penalty. The possibility of subsidizing a monopolizing firm is a regulatory option that has not been considered by any antitrust enforcement authority.

In innovation policy, the standard approaches have considered patents and prizes as alternatives. In this model, one regulatory option is to award a patent and a prize to the firm. Again, this is a regulatory option that does not appear to have been adopted in any intellectual property regime.

Where are subsidies or prizes most likely to be efficient? This model implies that there are two areas of inquiry in determining the efficiency of a prize to the monopolizing firm. The first is whether the residual surplus to consumers—that is, the consumer surplus that remains after the firm has monopolized—is greater than the average administrative cost of enforcing the law. If the residual surplus is less than the average administrative cost, then the authority should impose a penalty, never a prize. The simple reason is that monopolization offers relatively little to consumers, even though it enhances the profits of the firm, so the authority should discourage it more aggressively than in the case where the innovation benefits consumers even after administrative costs are taken into account.

If the residual surplus is high, the second line inquiry is an examination of the relative sensitivities of investment and monopolization to the size of the penalty. If raising the penalty significantly harms investment incentives while having a comparatively mild effect on the monopolization incentive, then a subsidy may be efficient. The reason is that it is better to have the innovation, even if it comes with a monopoly, than to not have it at all. Conversely, if the monopolization elasticity is much greater than the investment elasticity, then a penalty is likely to be optimal because the penalty will not greatly dampen investment incentives but will dampen the likelihood of monopolization.

Putting these observations together suggests that subsidization is likely to be the optimal response when the firm's innovation is especially valuable to the consumer. For potentially life-saving products, consumers are likely to be willing to pay considerably more than the monopoly price for the product, which means that the residual surplus after monopolization is likely to be high. The other consideration is the sensitivity of investment to the penalty, which is equivalent to considering the sensitivity of investment to the firm's profits. Research and development expenditure appears to be sensitive to cash flow in the pharmaceutical industry.<sup>35</sup> These observations suggest the pharmaceutical industry as a candidate for the subsidization policy.

The current direction of antitrust and innovation policy appears to be directly opposed to the sort of protection of innovation incentives suggested in this frame-

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<sup>35</sup> Sean Nicholson, *Financing Research and Development*, in *THE OXFORD HANDBOOK OF THE ECONOMICS OF THE BIOPHARMACEUTICAL INDUSTRY* 47, 59–60 (Patricia M. Danzon & Sean Nicholson eds., 2012).



work. Much antitrust litigation is directed toward the technology, healthcare, medical drug, and medical device industries. Patent exploitation methods are increasingly challenged on antitrust grounds.<sup>36</sup> Based on news accounts, actors in the medical and high technology sectors seem to face an ever-increasing risk of antitrust litigation, from consumers and from the government. Much modern scholarship questions the value of protecting innovation profits relative to the value of increasing access to drugs and technological innovations.<sup>37</sup> The increasing burden of antitrust litigation and regulatory expropriation probably has worked to dampen incentives to innovate.

One example is the Supreme Court's decision in *FTC v. Actavis, Inc.*, a pharmaceutical patent infringement case.<sup>38</sup> The Court held that the rule-of-reason test applies to reverse payment settlements, overturning the scope-of-patent test adopted by most courts.<sup>39</sup> Under the scope-of-patent test, an agreement to settle a patent infringement dispute would be upheld if the terms of the agreement were within the scope of the challenged patent.<sup>40</sup> For example, if a patent holder and an alleged infringer settled a dispute by forming an agreement in which the alleged infringer would not attempt to enter the market until several years after the expiration of the patent, such an agreement would violate the scope-of-patent test. However, if the settlement granted no more protection from competition to the patent holder than was already promised by the patent, then the agreement would not violate the antitrust laws.

It is not immediately clear that the rule-of-reason test will ultimately result in a substantially greater risk of antitrust liability to patent holders than the scope-of-patent test. A carefully executed rule-of-reason evaluation of a patent settlement involves an analysis of several complicated issues, and it is unclear how they will be resolved at this stage.<sup>41</sup> Still, courts may over time develop rules that make it difficult for parties to bring successful antitrust challenges to reverse payment settlements of patent infringement disputes. The rules may make success under the rule-of-reason test just as difficult as under the scope-of-patent rule. In that case, potential complainants will be reluctant to file antitrust challenges. In the short run, the switch from the scope-of-patent test to the rule-of-reason test kicks up a thick cloud of uncertainty. Patent holders will be unable to predict the rule that courts might apply, especially given the difficulty of the analysis. This uncertainty will generate litigation and multiply the uncertainty surrounding the costs of patent infringement litigation. Since patent infringement litigation is one of the costs of

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<sup>36</sup> See, e.g., Douglas H. Ginsburg & Joshua D. Wright, *Dynamic Analysis and the Limits of Antitrust Institutions*, 78 ANTITRUST L.J. 1 (2012).

<sup>37</sup> See generally, RONALD A. CASS & KEITH N. HYLTON, *LAW OF CREATION: PROPERTY RIGHTS IN THE WORLD OF IDEAS* (2013).

<sup>38</sup> *FTC v. Actavis, Inc.*, 133 S. Ct. 2223 (2013).

<sup>39</sup> *Id.*

<sup>40</sup> *Id.*

<sup>41</sup> Keith N. Hylton & Sungjoon Cho, *Injunctive and Reverse Settlements in Competition-Blocking Litigation*, 36 EUR. J.L. & ECON. 243 (2013).

holding a patent, the switch to the rule-of-reason test effectively reduces the value of patents, especially in the pharmaceutical industry, where many of the reverse payment settlements occur.

The court's analysis of the issues in *Actavis* reflects the view that every dollar of consumer surplus transferred to the patent holder as a result of the patent right reduces consumer surplus by the same amount. This view misses the fact that up to the level of protection necessary to bring the innovation to market, there is no such dollar-for-dollar tradeoff. The patent is what brings the product's market into existence. In the absence of the patent, there is no market in the product, and no consumer surplus. This is the reason why the need to maintain incentives to innovate sets a limit on the extent to which consumer harm can be internalized under the dynamic enforcement model.

The fallacy reflected in the reasoning of the *Actavis* majority is the notion that because rents from innovation and the surplus to consumers both come from the same fixed lump of potential consumer surplus ( $W+T+D$  in Figure 1), enhancing protection of the rents from innovation necessarily implies a reduction in value to consumers. In actuality, there is no lump of surplus to distribute to consumers if firms do not innovate. The protection of incentives to innovate should therefore be given a higher priority than the enhancement of the share of the innovation surplus going to consumers. A legal rule, such as that announced in *Actavis*, that attempts to enhance the share of innovation surplus going to consumers at the expense of reducing innovation incentives is likely to reduce both consumer surplus and innovation incentives in the long run.

On a more general level, *Actavis* calls for an accommodation of patent and antitrust policies in areas in which the scope of either area of law may be contested. In this article's framework, the same economic issues are at stake, whether one refers to an issue as one of patent policy or one of antitrust policy. Within a framework that addresses those issues squarely, a consistent set of policies emerges. Under such a set of policies, there would be no point in treating antitrust and patent policies as if they are in conflict with one another.

There are other recent examples in which courts and enforcement authorities, like the Supreme Court in *Actavis*, have treated the tradeoff between innovation rents and consumer surplus as having a zero sum. The Federal Trade Commission and the European Commission have both expressed the view that antitrust law constrains the enforcement of patents, especially standard-essential patents, through injunctions.<sup>42</sup> Standard-essential patents are often accompanied by a commitment to license on "fair, reasonable, and nondiscriminatory terms" (FRAND). It appears to

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<sup>42</sup> See, e.g., Neal R. Stoll and Shepard Goldfein, *Setting the Standard for Product Innovation*, NYLJ, vol. 249, No. 28 (Feb. 11, 2013), available at [http://www.skadden.com/sites/default/files/publications/Setting\\_the\\_Standard\\_For\\_Product\\_Innovation.pdf](http://www.skadden.com/sites/default/files/publications/Setting_the_Standard_For_Product_Innovation.pdf); Melissa Lipman, *EU Antitrust Unit May Fight More Cos. On Standard Patents* (Jan. 30, 2013), available at <http://www.law360.com/articles/411319/eu-antitrust-unit-may-fight-more-cos-on-standard-patents>.

be the policy of both the Federal Trade Commission and the European Commission that any effort to enforce a standard-essential patent through the use of an injunction may be an antitrust violation, especially if the patent is encumbered by a FRAND commitment.<sup>43</sup>

The insertion of antitrust law into the patent enforcement process is a questionable expansion of the writ of antitrust enforcement agencies.<sup>44</sup> The decision to enforce a patent through seeking an injunction has historically been a matter of patent law. If the patent is judged invalid, the holder loses his infringement suit. The FRAND commitment layers a contractual obligation on top of this procedure. A firm that is sued for infringement has the option of bringing a breach of contract claim against the patent holder when he has violated the FRAND commitment. Inserting antitrust law into this process adds a layer of additional legal complexity, untethered to the policies of patent law and contract law. To the extent that antitrust laws provide anything novel here, it is as a source of rules that might support a decision that is inconsistent with either patent law or contract law—either taking property granted under the patent law or finding contractual obligations where contract law would not. This observation alone does not imply that the application of antitrust law in this setting is socially undesirable. However, it does suggest that the application carries a cost, in terms of uncertainty, that could distort innovation incentives unless cabined or constrained within relatively clear lines.

The United States enforcement authorities and the European Commission adopt the view that a FRAND commitment is equivalent to a waiver of the right to seek an injunction.<sup>45</sup> This is an example of a phantom contractual obligation, created by antitrust law, that is not an implication of either contract law or patent law. Sure, a commitment to license on FRAND terms is a contractual commitment to negotiate on such terms before seeking an injunction, but if the potential licensee demands terms that are more favorable to itself than the FRAND commitment implies (e.g., a license fee of zero), then the threat to seek an injunction should be viewed as one of the weapons in the arsenal of the patent holder.

The Federal Trade Commission may now view it as routine to require holders of standard-essential patents to agree not to enforce the patents through an injunction when they seek agency approval of a proposed merger.<sup>46</sup> The firms that have agreed to such terms have done so in order to complete a proposed merger, so they presumably have concluded that the merger is more valuable than the right to enforce their patents through injunction threats. The question, though, is whether the

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<sup>43</sup> See, e.g., Lipman, *supra* note 43.

<sup>44</sup> See Joshua D. Wright & Douglas H. Ginsburg, *Whither Symmetry? Antitrust Analysis of Intellectual Property Rights at the FTC and DOJ*, 9 COMPETITION POL'Y INT'L 41 (2013).

<sup>45</sup> See Sharis Pozen, *Antitrust Agencies Will Remain Focused On Patent Conduct* (Feb. 4, 2013), available at <http://www.law360.com/articles/411620/antitrust-agencies-will-remain-focused-on-patent-conduct>.

<sup>46</sup> See Donald Martin, *SEP Antitrust Analysis – More Complex Than It Seems* (Dec. 19, 2012), available at <http://www.law360.com/articles/401810/sep-antitrust-analysis-more-complex-than-it-seems>.

Federal Trade Commission's policy of disarmament is socially desirable. To the extent that it reduces the value of patents, and in turn, the reward from innovation, it is unlikely to be socially desirable. Additionally, there is the question of whether the Federal Trade Commission should be permitted, as a matter of policy and of constitutional law, to condition the right to merge on the forfeiture of a property right.

Antitrust law, in the view of the enforcement agencies, focuses primarily on the enhancement of short-run consumer surplus.<sup>47</sup> The dynamic effect, also known as innovation tradeoff, is not part of the agencies' analysis. The intervention of antitrust policy would be acceptable if it took into consideration the same concerns as the patent law. Its failure to do so may harm consumers in the long run. At the least, some effort should be made in the enforcement process to balance innovation effects with consumer welfare effects.

This article has only scratched the surface of the many ways in which antitrust under the static enforcement framework conflicts with innovation incentives. The areas of conflict are so numerous that a suitably funded enforcement agency could supplant the work of the patent courts. For example, suppose a firm lawfully acquires a patent. What prevents the Federal Trade Commission from suing the firm on the ground that its patent was based on something the agency views as a trivial technological innovation and the primary effect of the patent is to extract welfare from consumers in violation of the antitrust laws? There may not yet have been such a bold assertion by an enforcement agency, but it seems to be the logical endpoint of current enforcement policy.<sup>48</sup>

#### IV. Conclusion

Competition and innovation policies are equally implicated in many cases, especially under Section 2 of the Sherman Act. The Chicago School analysis, largely of the 1970s and 1980s, advanced antitrust policy by making efficiency an important matter of concern in antitrust enforcement. The antitrust revolution that remains to occur is a movement toward a policy that takes innovation incentives seriously. The enforcement agencies appear to be moving in the opposite direction, displacing innovation policies of the intellectual property laws with antitrust policies aimed at increasing the share of innovation surplus going to consumers. Although the model presented here has been applied in a short and preliminary manner, it suggests that this policy is shortsighted.

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<sup>47</sup> Lande, *supra* note 35.

<sup>48</sup> See *Walker Process Equip., Inc. v. Food Mach. & Chem. Corp.*, 382 U.S. 172 (1965) (holding that antitrust law applies when a firm uses a fraudulently obtained patent to exclude rivals). There is nothing in the model of this article that suggests that the fraudulent use of intellectual property protection—patent or trademark protection—should not be treated as an antitrust violation. The example I offer in the text is an enforcement action in response to lawfully acquired intellectual property protection.

Benjamin Franklin famously said that those “who can give up essential liberty to obtain a little temporary safety, deserve neither liberty nor safety.”<sup>49</sup> Similarly, an antitrust policy of sacrificing innovation incentives to redistribute innovation surplus is likely to be an impoverishing policy for consumers in the long run.

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<sup>49</sup> 6 BENJAMIN FRANKLIN, *Pennsylvania Assembly: Reply to the Governor (1755)*, reprinted in THE PAPERS OF BENJAMIN FRANKLIN 238, 242 (1963).



# Judging Monopolistic Pricing: F/RAND and Antitrust Injury

William H. Page\*

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## I. Introduction

In *Microsoft Corp. v. Motorola, Inc.*, a United States district court calculated ranges of royalties that Motorola could lawfully charge Microsoft for the use of patents that were essential to the H.264 industry standard for video compression and the 802.11 (Wi-Fi) industry standard for wireless local networking.<sup>1</sup> The standards-setting organizations<sup>2</sup> (SSOs) had adopted patented technology, including Motorola's, as part of their standards, but only

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\* Marshall M. Criser Eminent Scholar, University of Florida Levin College of Law. I thank Herbert Hovenkamp, Mark Lemley, Rosanna Lipscomb, Luke McLeroy, and John Page for their comments. I also thank the participants at a conference on FRAND and the Antitrust/Intellectual Property Interface at the University of Texas School of Law and a workshop at the University of Florida Levin College of Law. I thank Robert Levine for research assistance.

<sup>1</sup> *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 2111217, at \*1–3 (W.D. Wash. Apr. 25, 2013). This opinion is headed “Findings of Fact and Conclusions of Law” but does not formally separate factual and legal rulings. *Id.* at \*1. It deals with both factual and legal issues within divisions based on subject matter: (1) SSOs, (2) the economics and mechanics of calculating reasonable royalties, (3) Motorola's patents in each of the standards at issue, and (4) the actual calculation of RAND rates. *Id.* at \*5–101.

<sup>2</sup> The Institute of Electrical and Electronics Engineers (IEEE) established the 802.11 standard; the International Telecommunications Union (ITU) established the H.264 standard. *Id.* at \*1.

on the condition that patent owners would charge licensees reasonable and nondiscriminatory (RAND) royalties for standards-essential patents (SEPs).<sup>3</sup> Motorola, claiming that Microsoft's products infringed its SEPs, had asked for royalties equal to 2.25% of the revenue from sales of products like Windows and Xbox that use the patents.<sup>4</sup> Microsoft immediately sued, claiming that Motorola's royalty demand breached its contractual RAND commitments, of which Microsoft was a third-party beneficiary.<sup>5</sup>

In an important opinion, Judge James L. Robart determined the RAND ranges as a step toward resolving the breach of contract claim.<sup>6</sup> The RAND rates he reached were far below Motorola's original demand.<sup>7</sup> Judge Robart presented his analysis in the form of a hypothetical bilateral negotiation between a licensee and a patent owner seeking royalties subject to a RAND commitment.<sup>8</sup> In substance, he directly calculated RAND royalties, guided by a widely held scholarly view of the economic functions of a RAND commitment. In doing so, he closely examined the technology and the market, relying on expert testimony, strong assumptions, and comparable royal-

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<sup>3</sup> *Id.* Most other organizations and authorities now add "fair" to RAND to produce FRAND, but the terms are interchangeable. In this article, I will follow the usage of the court in the case I am considering.

<sup>4</sup> *Id.* at \*2.

<sup>5</sup> See *Microsoft Corp. v. Motorola, Inc.*, 854 F. Supp. 2d 993, 1002–03 (W.D. Wash. 2012) (holding that Microsoft was a third-party beneficiary of an enforceable obligation, but leaving open the calculation of the RAND royalty). Judge Robart had denied injunctive relief, limiting Microsoft's remedy to a RAND royalty. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2012 WL 5993202, at \*7–8 (W.D. Wash. Nov. 30, 2012). More recently, the court denied Microsoft's motion for summary judgment on its claim for breach of contract. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 4053225, at \*7–9 (W.D. Wash. Aug. 12, 2013) (holding that there were genuine issues of fact on the questions of whether Motorola violated its duty of good faith and fair dealing by its royalty demands or by seeking injunctive relief). See also *Microsoft Corp. v. Motorola, Inc.*, 696 F.3d 872, 875 (9th Cir. 2012) (affirming the blocking of German injunctions against Microsoft).

<sup>6</sup> *Microsoft*, 2013 WL 4053225, at \*3 (stating that the court determined "a RAND rate and range to assist the finder-of-fact in determining whether or not Motorola had breached its RAND commitments"). In the August opinion, the court granted in part and denied in part motions for summary judgment by both Microsoft and Motorola on issues related to breach of contract. *Id.* at \*19. There was later a jury trial on Microsoft's damage claim. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 5373179, at \*1 (W.D. Wash. Sept. 24, 2013). The court denied Motorola's motions for judgment as a matter of law. *Id.* at \*16. A jury awarded Microsoft \$11,492,686 in damages—for its expenses in the relocation of a distribution center to the Netherlands because of Motorola's efforts to seek an injunction in Europe—and \$3,031,720 in attorneys' fees and costs. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 6000017, at \*2 (W.D. Wash. Nov. 12, 2013). Judge Robart later entered a final judgment on Microsoft's contract claim and the court's findings of fact and conclusions of law on the RAND issue, making those determinations immediately appealable. *Id.* at \*6. Motorola has appealed the decision to the Federal Circuit. *Microsoft*, 2013 WL 6000017, *appeal docketed*, No. 14-1089 (Fed. Cir. Nov. 15, 2013).

<sup>7</sup> *Microsoft*, 2013 WL 2111217, at \*4.

<sup>8</sup> *Id.* at \*14.



ties, especially those charged by two patent pools he found to be comparable with appropriate adjustments.

Judge Robart's opinion, the first judicial calculation of RAND royalties, established starting points for analysis of the many issues posed by RAND commitments. As one indication of its importance, another district judge followed Judge Robart's approach to determine RAND rates for other patents essential to the Wi-Fi standard—this time, patents owned by a patent assertion entity.<sup>9</sup> As another indication of the opinion's importance, a leading scholar has already argued bluntly that “Judge Robart's analysis is wrong.”<sup>10</sup> The analysis thus provides a useful occasion to compare its approach to other judicial efforts to control monopolistic prices.

A contractual RAND commitment leaves to the courts the task of deciding what rates are reasonable<sup>11</sup>—in effect, regulating monopoly pricing. Economists are ordinarily skeptical of any form of official price regulation.<sup>12</sup> Courts themselves often claim to be less well equipped than administrative agencies to calculate reasonable prices.<sup>13</sup> For example, the Supreme Court has refused, claiming incapacity and an undue risk of unintended consequences, to base the legality of price-fixing agreements on whether the prices fixed were reasonable<sup>14</sup> or to prohibit excessive pricing by a lawful mo-

<sup>9</sup> *In re Innovatio IP Ventures LLC Patent Litig.*, No. 11-C-9308, 2013 WL 5593609, at \*4 (N.D. Ill. Oct. 3, 2013) (“The parties agree that Judge Robart's methodology is appropriate for the court to use here to set a RAND rate in this case.”).

<sup>10</sup> J. Gregory Sidak, *The Meaning of FRAND, Part I: Royalties*, 9 J. COMPETITION L. & ECON. 931, 968 (2013).

<sup>11</sup> *Microsoft Corp. v. Motorola, Inc.*, 854 F. Supp. 2d 993, 1001–02 (W.D. Wash. 2012) (“Because the policies leave it to the parties to determine what constitutes a RAND license, when such a genuine disagreement arises . . . the only recourse for the parties is to file a lawsuit in the appropriate court of law.”).

<sup>12</sup> *See, e.g., W. KIP VISCUSI ET AL., ECONOMICS OF REGULATION AND ANTITRUST* 646 (4th ed. 2005) (analyzing energy regulation). The authors conclude that “the imposition of a binding price ceiling reduces social welfare by decreasing the amount exchanged in the market” and “in light of the excess demand, how the good is allocated to consumers can create additional welfare losses.” *Id.*

<sup>13</sup> *See, e.g., In re N.J. Title Ins. Litig.*, 683 F.3d 451, 457 (3d Cir. 2012) (“The nonjusticiability strand [of the filed rate doctrine] recognizes that federal courts are ill-equipped to engage in the rate making process, which does not depend on whether agencies actually use their superior expertise.”); *Arsberry v. Illinois*, 244 F.3d 558, 562 (7th Cir. 2001) (observing that the filed rate doctrine is based in part “on historical antipathy to rate setting by courts, deemed a task they are inherently unsuited to perform competently”).

<sup>14</sup> *United States v. Trenton Potteries Co.*, 273 U.S. 392, 398 (1927) (“[I]n the absence of express legislation requiring it, we should hesitate to adopt a construction making the difference between legal and illegal conduct in the field of business relations depend upon so uncertain a test as whether prices are reasonable—a determination which can be satisfactorily made only after a complete survey of our economic organization and a choice between rival philosophies.”); *see also United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150, 221 (1940) (observing that if “the reasonableness of prices” were to “become an issue in every price-fixing case . . . the Sherman Act would soon be emasculated; its philosophy would be supplanted by one which is wholly alien to a system of free

nopolist.<sup>15</sup> Courts rarely mandate low prices as a remedy for proven monopolization.<sup>16</sup>

However, courts do regularly calculate overcharges to purchasers as antitrust injuries attributable to instances of price fixing or monopolization.<sup>17</sup> This article compares Judge Robart's RAND analysis, stripped of its bargaining language, to these determinations of antitrust injury and damages. *Microsoft* involved only a claim for breach of contract.<sup>18</sup> The determination of the RAND ranges was a step in the determination of liability—whether a

competition; it would not be the charter of freedom which its framers intended"); *United States v. Addyston Pipe & Steel Co.*, 85 F. 271, 291 (6th Cir. 1898) (holding that a bid-rigging association, "however reasonable the prices they fixed, however great the competition they had to encounter, and however great the necessity for curbing themselves by joint agreement from committing financial suicide by ill-advised competition, was void at common law, because in restraint of trade, and tending to a monopoly").

<sup>15</sup> See *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004) ("The mere possession of monopoly power, and the concomitant charging of monopoly prices, is not only not unlawful; it is an important element of the free-market system. The opportunity to charge monopoly prices—at least for a short period—is what attracts 'business acumen' in the first place; it induces risk taking that produces innovation and economic growth."). As Judge Easterbrook put it, "the antitrust laws do not deputize district judges as one-man regulatory agencies." *Chi. Prof'l Sports Ltd. P'ship v. Nat'l Basketball Ass'n*, 95 F.3d 593, 597 (7th Cir. 1996).

<sup>16</sup> William H. Page, *Mandatory Contracting Remedies in the American and European Microsoft Cases*, 75 ANTITRUST L.J. 787, 800–01 (2009) (describing how courts mandated information disclosure rather than mandating prices); Case T-167/08, *Microsoft Corp. v. Comm'n*, 2012 E.C.R. 243 (evaluating Microsoft's proposed license agreements for compliance with a previous order to make interoperability information available on RAND terms); William E. Kovacic, *Failed Expectations: The Troubled Past and Uncertain Future of the Sherman Act as a Tool for Deconcentration*, 74 IOWA L. REV. 1105, 1106 n.9 (1989) (citing *Hartford-Empire Co. v. United States*, 323 U.S. 386, 413–18 (1945)) ("A second form of remedy with structural implications in monopolization litigation is compulsory licensing of property rights such as patents, sometimes on a royalty-free basis."). In several other instances, consent orders have required royalty-free licensing. *E.g.*, William E. Kovacic, *supra* (citing *In re Eli Lilly & Co.*, 95 F.T.C. 538, 546–52 (1980) and *In re Xerox Corp.*, 86 F.T.C. 364, 373–83 (1975)). In *Microsoft*, the final judgments required Microsoft to make the communications protocols in Windows available on reasonable and nondiscriminatory terms, but Microsoft voluntarily chose to suspend all royalties. See William H. Page & Seldon J. Childers, *Measuring Compliance with Compulsory Licensing Remedies in the American Microsoft Case*, 76 ANTITRUST L.J. 239, 248–49 (2009) (discussing Microsoft's royalty holiday and its indefinite extension).

<sup>17</sup> See *infra* Part IV.

<sup>18</sup> Motorola brought a parallel patent infringement action, but the court stayed those proceedings pending resolution of the FRAND issues. *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 6000017, at \*1–2 (W.D. Wash. Nov. 12, 2013). In entering final judgment on the contract claims and certifying them for appeal, Judge Robart noted that the contract and patent actions "have been consolidated for all purposes" and raise issues that "are 'substantially' the same." *Id.* at \*4. Consequently, the parallel claims and counterclaims "need only be decided once; after appeal, the mirror image claim or counterclaim can be dismissed as moot or otherwise disposed of. Accordingly, the court declines to certify any of the duplicative RAND claims in the patent action." *Id.*

breach of the RAND commitment occurred—rather than a step in the determination of damages.<sup>19</sup> Nevertheless, the calculation of a RAND rate is parallel in theory, structure, and practice to the calculation of damages for an illegal overcharge under a standard of antitrust injury. Both exercises, moreover, have the goal of creating incentives that enhance social welfare. Paradoxically, this analysis may actually limit the role of antitrust enforcement in the RAND context. Standard-setting and RAND requirements raise antitrust issues,<sup>20</sup> but if contract enforcement can protect the antitrust interest, even by drawing insights from antitrust law and economics, then antitrust enforcement becomes correspondingly less necessary or appropriate.

The next part of this article describes the economic function of the RAND mechanism. It then shows in Part III how Judge Robart interpreted the RAND requirement and applied it to Motorola's SEPs. Part IV compares his analysis to the calculation of overcharges caused by monopolistic exclusion.

## II. RAND in Theory

The RAND commitment is ambiguous.<sup>21</sup> For example, the SSOs for the 802.11 and H.264 standards “declined to provide a definition of what constitutes RAND terms” and “do not attempt to determine what constitutes a reasonable royalty rate.”<sup>22</sup> Some argue that this ambiguity is a serious flaw in the RAND mechanism<sup>23</sup> and have proposed mechanisms to better assure that royalties for SEPs are optimal.<sup>24</sup> Others argue that the generality of the

<sup>19</sup> *Id.* at \*3.

<sup>20</sup> *See, e.g.,* Rambus Inc. v. FTC, 522 F.3d 456, 459 (D.C. Cir. 2008); Broadcom Corp. v. Qualcomm Inc., 501 F.3d 297, 314 (3d Cir. 2007); *see also* George S. Cary et al., *The Case for Antitrust Law to Police the Patent Holdup Problem in Standard Setting*, 77 ANTITRUST L.J. 913, 924 (2011) (arguing that antitrust is the preferable regulatory regime for controlling hold-up by SEPs); Joseph Kattan, *FRAND Wars and Section 2*, 27 ANTITRUST, Summer 2013, at 30, 32 (arguing that breach of a FRAND commitment may amount to monopolization even without deception of the SSO).

<sup>21</sup> *See* Ericsson Inc. v. D-Link Sys., Inc., No. 6:10-CV-473, 2013 WL 4046225, at \*25 (E.D. Tex. Aug. 6, 2013) (“The paradox of RAND licensing is that it requires a patent holder to offer licenses on reasonable terms, but it offers no guidance over what is reasonable.”); Daniel G. Swanson & William J. Baumol, *Reasonable and Nondiscriminatory (RAND) Royalties, Standards Selection, and Control of Market Power*, 73 ANTITRUST L.J. 1, 5 (2005) (“[T]here are no generally agreed tests to determine whether a particular license does or does not satisfy a RAND commitment.”).

<sup>22</sup> Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 WL 2111217, at \*10 (W.D. Wash. Apr. 25, 2013).

<sup>23</sup> Jorge L. Contreras, *Fixing FRAND: A Pseudo-Pool Approach to Standards-Based Patent Licensing*, 79 ANTITRUST L.J. 47, 52 n.23 (2013) (collecting authorities emphasizing the ambiguity of FRAND and RAND terms).

<sup>24</sup> *See, e.g.,* Josh Lerner & Jean Tirole, *Standard-Essential Patents 4* (Nat'l Bureau of Econ. Research, Working Paper No. 19664, 2013), available at <http://www.nber.org/papers/w19664> (arguing that FRAND limits are likely ineffective and proposing instead a “structured price commitment process” in which, “after a dis-

RAND commitment is unavoidable because of practical<sup>25</sup> and antitrust<sup>26</sup> impediments to SSOs establishing more specific price constraints.

Although ambiguous, the RAND commitment can impose real constraints because, like any standard of reasonableness, it draws meaning from its purpose.<sup>27</sup> For example, if a court requires an antitrust offender to charge reasonable prices as a remedy, the meaning of the requirement depends on the nature of the offense. Firms have sometimes agreed in consent decrees to offer royalty-free licenses, implicitly acquiescing in the determination that only a price of zero is reasonable. In the European case on Microsoft's abuse of dominance, a remedy requiring Microsoft to charge a reasonable royalty for its communications protocols meant that the royalty should "reflect only the possible intrinsic value of the information in question, and exclude the strategic value stemming from the mere ability it affords to interoperate with Microsoft's operating systems."<sup>28</sup> The intrinsic value of the technology, including trade secrets, depended entirely on its innovative character<sup>29</sup> and not on its secrecy, which was strategic.<sup>30</sup>

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covery phase, IP holders non-cooperately [sic] announce price caps on their offerings" to establish an "ex-ante competitive benchmark").

<sup>25</sup> Joseph Scott Miller, *Standard Setting, Patents, and Access Lock-In: RAND Licensing and the Theory of the Firm*, 40 IND. L. REV. 351, 370 (2007) (arguing that the RAND commitment is not too vague, but instead "is appropriately open-textured, given that participants in the standard-setting process do not yet know the contours of the standard that will emerge, or how the as-yet-unknown patents essential to the standard should be valued in the standard-based market that develops").

<sup>26</sup> *Microsoft*, 2013 WL 2111217, at \*13 (noting expert testimony that SSOs fear antitrust liability for setting prices *ex ante*); Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, in 1 INNOVATION POLICY AND THE ECONOMY 119, 142 (Adam B. Jaffe et al. eds., 2001) ("[A]ntitrust concerns have led [SSO] to steer clear of such *ex ante* competition, on the grounds that their job is merely to set technical standards, not to get involved in prices, including the terms on which intellectual property will be made available to other participants. The ironic result has been to embolden some companies to seek substantial royalties after participating in formal standard setting activities.").

<sup>27</sup> As the Supreme Court observed long ago, the meaning of reasonableness "varies in the different fields of the law, because it is used as a convenient summary of the dominant considerations which control in the application of legal doctrines." *United States v. Trenton Potteries Co.*, 273 U.S. 392, 397 (1927).

<sup>28</sup> Case T-167/08, *Microsoft Corp. v. Comm'n*, Celex No. 62008TJ0167, ¶ 30 (June 27, 2012) (EUR-Lex), available at <http://curia.europa.eu/juris/celex.jsf?celex=62008TJ0167&lang1=en&type=TEXT&ancre>.

<sup>29</sup> *Id.* ¶ 31.

<sup>30</sup> *Id.* ¶¶ 143–144 ("[I]n the absence of innovation, secrecy by itself represents only strategic value for a licensee, while fixed development costs are not . . . a correct basis for valuing intellectual property."). According to the court, this interpretation did not weaken legal protection for trade secrets generally; it only remedied a specific violation. *Id.* ¶ 150 ("Contrary to what has been argued by Microsoft, the effect, in the context of this case, of assessing the innovative character of the technologies covered by the contested decision by reference to novelty and inventive step is not to extinguish generally the value of intellectual property rights, trade secrets or other confidential information or, a fortiori, to make innovative character a precondition for a product or information to be

The RAND commitment in collective standard-setting also serves purposes that shape its meaning: to foster optimal adoption of the standard by deterring hold-up and royalty stacking.<sup>31</sup> First, consider hold-up. A standard enables and promotes interoperability and innovation in high technology markets, but also gives the included technologies, including SEPs, a degree of monopoly power, which increases as more firms adopt the standard. It also may give SEP owners the opportunity to exploit firms that make sunk investments in the technologies embodied in the standard.<sup>32</sup> According to the most widely held theory, a RAND commitment limits the patent owner to the royalty it would have received apart from the monopoly power the owner acquired by inclusion of its intellectual property in an industry standard.<sup>33</sup> Before inclusion in the standard, the technology likely had to compete with substitutes.<sup>34</sup> After inclusion in the standard, the technology's owner should keep whatever advantage it had over substitutes *ex ante*. Consequently, the patent owner is entitled to the incremental value that the patented technology offered over the next-best alternative technology immediately before the SSO adopted the standard.<sup>35</sup> The patent owner is not entitled to

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covered by such a right or to constitute a trade secret in general.”). For judicial methods of valuing intangibles in the tax context, see Yariv Brauner, *Value in the Eye of the Beholder: The Valuation of Intangibles for Transfer Pricing Purposes*, 28 VA. TAX REV. 79, 103 (2008) (criticizing the implementation of the arms-length principle as a basis for valuing intangibles for tax purposes).

<sup>31</sup> Shapiro, *supra* note 26, at 140 (“The essence of cooperative standard setting is not the sharing of risks associated with specific investments, or the integration of operations, but rather the contribution of complementary intellectual property rights and the expression of unified support to ignite positive feedback for a new technology.”); see also Dennis W. Carlton & Allan L. Shampine, *An Economic Interpretation of FRAND*, 9 J. COMPETITION L. & ECON. 531, 544 (2013); Sean P. Gates, *Standards, Innovation, and Antitrust: Integrating Innovation Concerns Into the Analysis of Collaborative Standard Setting*, 47 EMORY L.J. 583, 597 (1998); Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CALIF. L. REV. 1889, 1896 (2002); David J. Teece & Edward F. Sherry, *Standards Setting and Antitrust*, 87 MINN. L. REV. 1913, 1953 (2003).

<sup>32</sup> Lemley, *supra* note 31, at 1893.

<sup>33</sup> FED. TRADE COMM’N, *THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION* 22–23 (2011).

<sup>34</sup> Brief of Amici Curiae the Institute of Electrical & Electronics Engineers, Inc. et al. in Support of Neither Party at 22, *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297 (3d Cir. 2007) (No. 06-4292) (“[T]here certainly can be and usually are competing technologies before the standard is adopted—and thus competition for inclusion in the standard.”), *quoted in* Kattan, *supra* note 20, at 31.

<sup>35</sup> FED. TRADE COMM’N, *supra* note 33, at 23 (“Courts should cap the royalty at the incremental value of the patented technology over alternatives available at the time the standard was chosen.”); see also Cary et al., *supra* note 20, at 915 (describing *ex ante* policies). Gregory Sidak argues that Judge Robart’s measure is inconsistent with an IEEE bylaw that provides that “a patent claim is essential if ‘there was no commercially and technically feasible non-infringing alternative’ for the patent at issue ‘at the time of the [proposed] IEEE Standard’s approval.’” Sidak, *supra* note 10, at 981 (alteration in original) (quoting IEEE-SA Standards Board Bylaws § 6.1 (Dec. 2012)). He continues, “by

hold up a licensee<sup>36</sup> by exploiting the market power attributable either to the standard itself or to sunk investments that licensees make in the technology in order to comply with the standard.<sup>37</sup> Hold-up reduces social welfare because it deters efficient investments in technologies covered by industry standards and inhibits efficient adoption of a technologically superior standard.

The incremental-value standard suggests that if there are two technologies *ex ante* that serve the needs of the standard equally, the RAND royalty for the chosen SEP should reflect only licensing costs, including opportunity costs, but economic profit should be zero. This outcome is obvious if the alternative technology is in the public domain. One might argue that this outcome should hold even if the alternative technology is patented because “the two patent holders would negotiate the price down to effectively zero (ignoring the cost of implementing the alternatives) because both desire to have their technology incorporated into the standard, and both know that their technology will be worth practically nothing if it is not adopted into the standard.”<sup>38</sup> One court found such a result to be an implausible outcome of real-world bargaining or one that, if adopted as a measure of the RAND royalty, might deter future investment in innovative technology.<sup>39</sup> Nevertheless, in principle, the profit-component RAND royalty for SEPs with perfect substitutes *ex ante* might well be zero without undermining incentives to invest

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definition, one cannot apply the *ex ante* incremental value rule to determine the value of or FRAND royalties for patents essential to IEEE standards because there are, at the relevant moment, no non-infringing substitutes for the patents over which to calculate incremental value. Judge Robart, however, assumed that there *are* substitutes at the time of standard adoption, indeed so many compelling substitutes that the chosen technology makes only a small incremental contribution to the value of the standard over the contribution that the runnerup technology would have made if it had been chosen instead.” *Id.* In this passage, Sidak interprets the IEEE bylaw to mean that technology is essential to a standard only if there were no alternative technologies before the adoption of the chosen technology into the standard. A better interpretation is that the technology is essential *to the standard* if, for a firm seeking to comply with the standard, there were no non-infringing alternative technologies immediately after the chosen technology was included in the standard, regardless of how many alternative technologies were available *ex ante* for possible inclusion in the standard.

<sup>36</sup> Apple, Inc. v. Motorola, Inc., 869 F. Supp. 2d 901, 913 (N.D. Ill. 2012) (“The purpose of the FRAND requirements . . . is to confine the patentee’s royalty demand to the value conferred by the patent itself as distinct from the additional value—the hold-up value—conferred by the patent’s being designated as standard-essential.”).

<sup>37</sup> Microsoft Corp. v. Motorola, Inc., No. C10-1823JLR, 2013 WL 2111217, at \*10 (W.D. Wash. Apr. 25, 2013) (defining hold-up as the “ability of a holder of an SEP to demand more than the value of its patented technology and to attempt to capture the value of the standard itself”); Suzanne Michel, *Bargaining for RAND Royalties in the Shadow of Patent Remedies Law*, 77 ANTITRUST L.J. 889, 892 n.9 (2011).

<sup>38</sup> *In re Innovatio IP Ventures LLC Patent Litig.*, No. 11-C-9308, 2013 WL 5593609, at \*20 (N.D. Ill. Oct. 3, 2013) (summarizing the expert testimony of Dr. Gregory Leonard).

<sup>39</sup> *Id.*

because every investor in technology must take account of the risk that others' innovative efforts will render its own technology valueless.

There is one important caveat. The *ex ante* standard excludes hold-up from RAND but does not necessarily exclude consideration of the contingent value of the patent to the standard. As Thomas Cotter has noted, patent owners and licensees often agree to running royalties based on the licensee's actual use of the patent because of difficulties in estimating the future value of the patent and concerns about efficient input pricing in future production by the licensee.<sup>40</sup> Courts evaluating royalties under a RAND standard must therefore distinguish hold-up from the value of the patent's contribution to the standard and to the licensee.

Economists also agree that a RAND royalty should prevent royalty stacking, which occurs if owners of strongly complementary SEPs individually charge profit-maximizing royalties to an implementer.<sup>41</sup> Royalty stacking poses the following Cournot complements or "anti-commons" problem: in pursuing their individual self-interests, the owners of complementary patents impose external costs on one another, inefficiently reducing demand for one another's products by increasing the price of and reducing the output of downstream standards-compliant products.<sup>42</sup> The sum of the stacked royalties to the implementer is higher than a single royalty that would be charged by a monopolist who controlled both complementary patents. There are many opportunities for royalty stacking when a single high-technology product implicates hundreds of standards with thousands of complementary SEPs, many with monopoly power.<sup>43</sup>

### III. RAND Measures in *Microsoft v. Motorola*

In *Microsoft*, Judge Robart endorsed, in principle, the economic rationale for RAND outlined above.<sup>44</sup> This part of the article will examine the criteria he adopted and the reasons he gave for them. It will then show how he applied the criteria to the two standards at issue in the case. The next part

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<sup>40</sup> Thomas F. Cotter, *Comments on Sidak, Part 3: Should a FRAND Royalty be Higher than a Reasonable Royalty?*, COMP. PAT. REMEDIES (Dec. 18, 2013, 4:39 AM), <http://comparativepatentremedies.blogspot.com/2013/12/comments-on-sidak-part-3-should-frand.html>.

<sup>41</sup> *Microsoft*, 2013 WL 2111217, at \*11–12; see also Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 2013 (2007).

<sup>42</sup> See Lemley & Shapiro, *supra* note 41, at 2013–14 (describing the inefficiencies associated with Cournot complements and double marginalization).

<sup>43</sup> Kattan, *supra* note 20, at 31.

<sup>44</sup> *Microsoft*, 2013 WL 2111217, at \*10–12. In a more recent decision, another court acknowledged the centrality of hold-up and royalty stacking in the RAND calculus but insisted that any contentions that a proposed royalty was unreasonable on either ground be supported by evidence. *Ericsson Inc. v. D-Link Sys., Inc.*, No. 6:10–CV–473, 2013 WL 4046225, at \*25–26 (E.D. Tex. Aug. 6, 2013) (finding a royalty proposal reasonable because defendants "failed to present any evidence of actual hold-up or royalty stacking").

will argue that his analysis can be understood in terms of the economics of antitrust damages.

### A. Formulating the Measures

Microsoft argued that the court should calculate “the incremental value of the technology compared to the alternatives that could have been written into the standard”<sup>45</sup>—invoking the theoretical principle that a RAND royalty should exclude the hold-up value attributable to the patent’s inclusion in a standard. Judge Robart found that standard appropriate in theory, but difficult for courts to implement because substituting one patent for another in a standard may change the standard’s performance in multiple ways.<sup>46</sup> In form, he endorsed Motorola’s suggestion that he should conduct a hypothetical bilateral negotiation between Microsoft and Motorola to identify a reasonable royalty.<sup>47</sup> He pointed to the fifteen *Georgia-Pacific*<sup>48</sup> factors courts have long used to determine damages for patent infringement, which assume a hypothetical bilateral negotiation based on the value of a patent in its real-world market.<sup>49</sup>

The *Georgia-Pacific* factors and their bargaining framework are problematic even in the non-RAND context. Mark Lemley and Carl Shapiro note that the bargaining framework is a distraction because the parties obviously did not agree.<sup>50</sup> The substance of the analysis, such as it is, lies in the factors themselves. Lemley and Shapiro distill the fifteen *Georgia-Pacific* factors to three: “the significance of the patented invention to the product

<sup>45</sup> *Microsoft*, 2013 WL 2111217, at \*13.

<sup>46</sup> *Id.*; see also Jorge L. Contreras, *Rethinking RAND: SDO-Based Approaches to Patent Licensing Commitments*, Int’l Telecomm. Union [ITU] Patent Roundtable, at 8–9 (Geneva Oct. 10, 2012), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2159749](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2159749) (noting that few SEP owners negotiate royalties before the adoption of a standard, in part because of uncertainties about the future market).

<sup>47</sup> *Microsoft*, 2013 WL 2111217, at \*14; cf. Damien Geradin & Miguel Rato, *Can Standard-Setting Lead to Exploitative Abuse? A Dissonant View on Patent-Hold Up, Royalty Stacking and the Meaning of FRAND*, 3 EUR. COMPETITION J. 101, 114 (2007) (“‘Fair and reasonable’ licensing terms . . . consist of those terms determined through fair, bilateral negotiations between individual IPR owner and standard adopter in accordance with the market conditions prevailing at the time of such negotiations.”).

<sup>48</sup> *Microsoft*, 2013 WL 2111217, at \*15 (citing *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970)); see, e.g., *LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 76 (Fed. Cir. 2012); *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 314 n.8 (3d Cir. 2007); Geradin & Rato, *supra* note 47, at 120.

<sup>49</sup> See *Microsoft*, 2013 WL 2111217, at \*15 (observing that courts have “experience in conducting hypothetical bilateral negotiations to frame the reasonable royalty inquiry in patent infringement cases under the *Georgia-Pacific* framework”). Commentators have suggested using the *Georgia-Pacific* factors to evaluate FRAND obligations. *Id.* at \*16 (citing Anne Layne-Farrar, A. Jorge Padilla & Richard Schmalensee, *Pricing Patents for Licensing in Standard-Setting Organizations: Making Sense of FRAND Commitments*, 74 ANTITRUST L.J. 671, 673 (2007)).

<sup>50</sup> Lemley & Shapiro, *supra* note 41, at 2019 (observing that the negotiation is “counterfactual in important respects”).



and to market demand, the royalty rates people have been willing to pay for this or other similar inventions in the industry, and expert testimony as to the value of the patent.”<sup>51</sup> Even in this reduced form, the factors provide little guidance because they identify categories of evidence, but provide “no overriding principle by which to quantify and hence to weigh conflicting indicators.”<sup>52</sup>

Judge Robart modified the *Georgia-Pacific* factors to assure that his hypothetical negotiation would not result in hold-up or royalty stacking, the twin concerns of the economic analysis of RAND.<sup>53</sup> In doing so, he changed the factors so radically that the bilateral negotiation framework lost whatever analytical significance it might have had. Parties in the modified negotiation, he asserted, “would consider the RAND commitment and its purposes,” like the purpose of promoting “widespread adoption of the standard through avoidance of holdup and stacking.”<sup>54</sup> For example, they would exclude the hold-up value from the royalty by considering the SEPs’ contribution to the licensee’s sales, their relative importance to the standard,<sup>55</sup> and the alternative technologies that the SSO could have used in the standard.<sup>56</sup> They would avoid stacking by considering “other SEP holders and the royalty rate that each of these patent holders might seek from the implementer based [on] the importance of these other patents to the standard and to the implementer’s products.”<sup>57</sup> When considering comparable royalties, they would look only to royalties in licenses of RAND-committed patents,<sup>58</sup> so rates

<sup>51</sup> *Id.* at 2018–19.

<sup>52</sup> Alan Devlin, *Improving Patent Notice and Remedies: A Critique of the FTC’s 2011 Report*, 18 MICH. TELECOMM. & TECH. L. REV. 539, 565 (2012); see also John C. Jarosz & Michael J. Chapman, *The Hypothetical Negotiation and Reasonable Royalty Damages: The Tail Wagging the Dog*, 16 STAN. TECH. L. REV. 769, 771 (2013) (stating that the Federal Trade Commission, practitioners, and academics are all studying damage calculations in patent cases and proposing various fixes for calculating royalties).

<sup>53</sup> *Microsoft*, 2013 WL 2111217, at \*18–20.

<sup>54</sup> *Id.* at \*20. Judge Robart noted the need to “mitigate the risk of patent hold-up that RAND commitments are intended to avoid.” *Id.* at \*12. He noted later in the opinion, with respect to stacking, that ninety-two companies own SEPs, some very important, for the 802.11 and H.264 standards. *Id.* at \*52. If each SEP owner took a royalty rate similar to what Motorola asked, the sum of the royalties would exceed the selling price of the Xbox. *Id.* at \*73. At that stage in the litigation, Motorola had reduced its demand to a figure between 1.15% and 1.73% of end-product sales. *Id.* at \*72–73.

<sup>55</sup> *Id.* at \*18–19. The court also excluded consideration of the value of the standard under the tenth and eleventh factors, which look to the benefits of the patent to the infringer and the extent to which the infringer is using the patent. *Id.* at \*19. It also considered the standard in comparing the relative value of the patent to unpatented elements of the alleged infringer’s product. *Id.*

<sup>56</sup> *Id.*

<sup>57</sup> *Id.* at \*20.

<sup>58</sup> *Id.* at \*19 (noting that the court also eliminated consideration of whether the patent owner had preserved its monopoly by restricting licensing because under a RAND commitment the patent owner must license its patents to every implementer on reasonable terms).

Motorola had actually reached in bilateral negotiations with licensees not subject to RAND obligations were irrelevant.<sup>59</sup> Finally, Microsoft would take account of the fact that a RAND royalty must be high enough “to induce the creation of valuable standards.”<sup>60</sup>

Parties bargain to advance their self-interest within established legal standards. They consider conflicting social welfare goals like avoiding hold-up only if an enforceable legal rule requires them to do so. Consequently, it is the legal definition of RAND that Judge Robart articulated that matters, not any imaginary public-spirited bargain. Despite Judge Robart’s recurrent references to hypothetical negotiations, he calculated a range of RAND rates by evaluating the evidence, choosing benchmarks, and making assumptions consistent with the twin imperatives of avoiding hold-up and royalty stacking.<sup>61</sup> For example, in considering comparable royalties, he identified two patent pools, one for each standard, as appropriate benchmarks in the RAND context because they were likely to point to rates that avoided hold-up and stacking.<sup>62</sup> Even though SSOs do not (yet) require SEP owners to participate in pools, the RAND commitment is designed to accomplish goals similar to those of pools.<sup>63</sup> The court’s selection and modification of the pools indicates the court’s recognition of these efficiency concerns.

### B. Applying the Measures

This section describes how Judge Robart calculated RAND royalties in *Microsoft*, emphasizing how he applied the economic standard for RAND to the circumstances of the case. Although he was limited by gaps in the record, he tried repeatedly to identify specific values that reflected the standard of economic welfare.

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<sup>59</sup> *Microsoft*, 2013 WL 2111217, at \*71 (concluding that some royalties were not clearly subject to a RAND obligation). Some of the negotiated rates were unreliable because the parties were in the process of settling other litigation. VTech, for example, agreed to a rate of 2.25% for the 802.11 and H.264 SEPs under threat of pending litigation, in which liability for other infringements was the determining factor. *Id.* at \*67. RIM also negotiated its license of SEPs in the 802.11 and H.264 standards as part of a settlement of other infringement litigation as part of a bundle of Motorola’s cellular technology, so it was impossible to isolate the amounts paid just for 802.11 and H.264. *Id.* at \*68–70. Moreover, the rates did not apply to all of RIM’s products. *Id.*

<sup>60</sup> *Id.* at \*20.

<sup>61</sup> Judge Holderman made a similar calculation of the RAND royalties for Innovatio’s SEPs for the 802.11 standard, basing the estimate on a share of the average profit on a Wi-Fi chip. *In re Innovatio IP Ventures LLC Patent Litig.*, No. 11-C-9308, 2013 WL 5593609, at \*38–43 (N.D. Ill. Oct. 3, 2013).

<sup>62</sup> *Microsoft*, 2013 WL 2111217, at \*20.

<sup>63</sup> Contreras, *supra* note 23, at 75–78.

## 1. The H.264 Standard

To set the stage, Judge Robart described the development of video compression, the history of the standard, and the different types of compression within the H.264 standard.<sup>64</sup> For example, he distinguished compression of now-obsolete interlaced video from compression of more advanced and widely used progressive video.<sup>65</sup> He also considered the quantity and quality of Motorola's SEPs, relying on expert testimony from both sides.<sup>66</sup> Of the more than 2,500 patents essential to the H.264 standard, he observed that Motorola had sixteen, divided into six families,<sup>67</sup> all of which were of limited value to Microsoft for various reasons. One family, for example, was limited to hardware implementations of the H.264 standard.<sup>68</sup> All were limited mainly to interlaced video<sup>69</sup> that Microsoft's products, particularly Windows and Xbox, do not support.<sup>70</sup> Most important, some were of diminished value in the RAND context because there were alternatives to them prior to the development of the H.264 standard—a direct comparison to *ex ante* royalties in calculating RAND royalties.<sup>71</sup> The court discounted testimony that failed to isolate the importance of Motorola's SEPs to Microsoft's products from the importance of the H.264 standard to those products.<sup>72</sup>

In determining RAND royalties, Judge Robart looked primarily to comparables.<sup>73</sup> In doing so, he rejected using royalties that Motorola had negotiated in real bilateral negotiations as benchmarks,<sup>74</sup> even though these kinds of royalties are highly probative in ordinary patent infringement litigation applying the *Georgia-Pacific* factors. In the RAND context, Judge Robart reasoned that royalties negotiated for patents that were not subject to a

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<sup>64</sup> *Microsoft*, 2013 WL 2111217, at \*21–26.

<sup>65</sup> *Id.* at \*21–22.

<sup>66</sup> *Id.* at \*30.

<sup>67</sup> *Id.* at \*27.

<sup>68</sup> *Id.*

<sup>69</sup> *Id.* at \*30–31.

<sup>70</sup> *Microsoft*, 2013 WL 2111217, at \*43. The court concluded that Motorola's SEPs for the H.264 standard were of "only minor importance to the overall functionality" of Windows and Xbox. *Id.* at \*47–48.

<sup>71</sup> *Id.* at \*36, \*42. For example, the court examined Motorola's "paired macroblock MBAFF" prediction technique, finding that it added value to the standard, but noting that it was not proven to be superior to the alternative single macroblock MBAFF. *Id.* at \*33–36. It similarly determined that Motorola's PAFF family of patents added value to the standard relative to alternatives, but the value was limited because it only applied to interlaced video. *Id.* at \*39. As to the Scan family of patents, the court noted the absence of "concrete evidence . . . as to why the suggested alternatives could not have been incorporated into the H.264 Standard without degradation." *Id.* at \*42.

<sup>72</sup> *Id.* at \*44.

<sup>73</sup> *Id.* at \*64.

<sup>74</sup> *Id.* at \*66–70 (finding the following not comparable: (1) a 2.25% royalty for Motorola's 802.11 and H.264 SEPs negotiated in a settlement to infringement litigation involving other patents not subject to a RAND commitment and (2) a royalty that covered patents in addition to Motorola's 802.11 and H.264 SEPs).

RAND commitment, or that were subject to contaminating influences, were irrelevant.<sup>75</sup> Instead, Judge Robart used royalties established by the MPEG H.264 patent pool (in a process that did not involve bilateral negotiations at all) as a benchmark.<sup>76</sup> The pool covers over 2,400 patents, with royalties ranging from ten cents and twenty cents per unit of the licensee's sales, depending on the licensee's volume, with an annual cap of five million dollars.<sup>77</sup> Microsoft argued that the pool was particularly relevant because the owners of MPEG H.264 SEPs, including both Microsoft and Motorola,<sup>78</sup> established the pool shortly after the adoption of the standard, so the royalties it set were estimates by the owners (including Motorola) of the *ex ante* value of the patents themselves.<sup>79</sup>

Judge Robart agreed, with two qualifications. First, the pool rates may be lower than would be expected in a bilateral negotiation, even under a RAND commitment, because they distribute royalties based on the absolute number of patents in a portfolio rather than their relative importance to the standard.<sup>80</sup> This qualification recognized the contingent value of the patent to the standard mentioned earlier. Second, SEP owners that join a pool receive not only royalties, but also the value of access to other patents in the pool.<sup>81</sup> Nevertheless, Judge Robart concluded that the pool rate provided a good starting point for estimating a lower bound of the RAND rate because the pool's pricing goals were consistent with the purpose of fostering widespread implementation of the standard<sup>82</sup>—the pool rate is set high enough to attract SEP owners (including Motorola's parent company, Google) but low enough to attract licensees.<sup>83</sup>

The court found that Motorola should receive “royalties equivalent to what it would have received if it and the other holders of other readily identifiable H.264 SEPs were all added to the pool with the current pool rate structure.”<sup>84</sup> That standard took into account all of Motorola's SEPs as well

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<sup>75</sup> *Id.*

<sup>76</sup> *Microsoft*, 2013 WL 2111217, at \*82.

<sup>77</sup> *Id.* at \*78–79.

<sup>78</sup> *Id.* \*75.

<sup>79</sup> *Id.* at \*79. For a discussion of similarities between SSOs and pools, see Lerner & Tirole, *supra* note 24, at 5.

<sup>80</sup> *Microsoft*, 2013 WL 2111217, at \*80. Judge Robart adopted an incremental measure in his modification of *Georgia-Pacific*. *Id.* He also expressed concern that, if he simply adopted the pool rate as the RAND rate, owners of important SEPs would be less likely to participate in pools. *Id.* For a discussion of why pools often assign patents equal weight in distributing royalties, see Lerner & Tirole, *supra* note 24, at 20–21 (“[E]xcept for those patents that are constrained [sic] by within-functionality substitution, all patents are equal once they have been made essential by the standard setter.”).

<sup>81</sup> *Microsoft*, 2013 WL 2111217, at \*81.

<sup>82</sup> *Id.* at \*82.

<sup>83</sup> *Id.*

<sup>84</sup> *Id.* at \*84 (considering three scenarios for calculating RAND royalties and selecting the second).

as eighty-nine others not currently in the pool.<sup>85</sup> Under this formula, Microsoft would owe Motorola its share of the pool royalties, or 0.185 cents per unit, plus the value that Motorola would gain by having access to the other technology in the patent pool.<sup>86</sup> The court estimated the latter amount to be twice the pool royalty because Microsoft pays into the pool as a licensee about twice what it receives in royalties from the pool as a licensor and would only do that if the value of access to pool patents was worth the difference.<sup>87</sup> Judge Robart also found that Motorola's parent company, Google, is comparable to Microsoft in ways relevant to the calculation.<sup>88</sup> Therefore, the lower bound of the RAND royalty Microsoft would owe Motorola was three times Motorola's share of the pool royalties—still a fraction of a cent per unit. Judge Robart explained his derivation of this formula much more fully in a remarkable 1,500-word footnote, consisting of an algebraic statement and solution of the problem of isolating the lower bound of a RAND rate.<sup>89</sup> Critical assumptions in this calculation were, first, that Motorola's

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<sup>85</sup> *Id.*

<sup>86</sup> *Id.*

<sup>87</sup> *Microsoft*, 2013 WL 2111217, at \*84.

<sup>88</sup> *See id.* (“Microsoft and Google are similarly situated as sophisticated, substantial technology firms with vast arrays of technologically complex products.”).

<sup>89</sup> *Id.* at \*85 n.23. Judge Robart reasoned that the value of joining a pool,  $VP$ , was equal to the benefits of joining the pool less the costs. *Id.* On the plus side of  $VP$ , he added the royalties the patent owner would receive for its patents in the pool ( $P_+$ ), the value of the owner's IP rights to pool patents ( $IP$ ), and the “external value the company derives from adding its patents to the pool, such as promoting participation in the pool and thereby encouraging widespread adoption of the standard” ( $E$ ), assuming that the pool patents were all licensed at the same rate. *Id.* On the minus side, he identified the royalties the owner pays for pool patents ( $P_-$ ) and the opportunity cost associated with not licensing its patents outside the pool ( $OC$ ). *Id.* The value of abstaining from the pool,  $VA$ , was parallel to the  $VP$  formula. *Id.* On the plus side,  $VA$  consisted of the RAND royalties the owner could collect for its patents outside the pool ( $A_+$ )—this figure, of course, was the RAND rate that the court was trying to determine—and the value of the IP rights to pool patents that the owner presumably would acquire to practice the standard. *Id.* On the minus side were the cost of acquiring those rights ( $A$ ) and the opportunity cost associated with not joining the pool. *Id.* He noted that the IP value of the pool patents is on both sides of the equation, so he cancelled it out. *Id.* The court reasoned that a company that owned unusually important patents might find it more valuable to abstain from the pool, while one with less valuable patents might gain by joining the pool. *Id.* It assumed, however, that Motorola's patents were of average value relative to the pool, so it did not have to include a coefficient to adjust for any such disparity. *Id.* This step allowed the court to find that for Motorola,  $VP$  was equal to  $VA$ . *Id.* There was an equivalent  $OC$  value on each side of the equation, so they canceled out. *Id.* Microsoft's internal documents suggested that  $E$  was its primary reason for participating. *Id.* In fact, Microsoft paid twice as much in royalties into to the H.264 pool as it received ( $P_- = 2P_+$ ), yet it still participated in the pool, so  $E$  must have offset this deficit to make  $VP$  greater than zero. *Id.* For that to occur,  $E$  would have to be at least equal to  $P_+$  ( $0 \leq VP = P_+ - P_- + E = P_+ - 2P_+ + E = E - P_+$ ), so the court assumed that they were equal, both for Microsoft and Google. *Id.* Finally, the court noted that the value to SEP owners of abstaining from participation in a pool is the difference between what it would receive by charging RAND royalties ( $A_+$ , the variable at issue in the case) and the amount it

patents were of average value and, second, that Motorola, if it remained outside the pool, would have to pay in royalties 1.5 times what it would pay in royalties as a member of the pool.

That calculation established the lower bound of the RAND range. To establish the upper bound, Judge Robart suggested that a hypothetical licensee would calculate the most it could pay for all H.264 SEPs and still have a profitable business.<sup>90</sup> The starting point for calculating that amount, he determined, would be “the aggregate licensing fee of all essential patents calibrated against the principle that license fees should not be stacked in such a way that makes implementation of the standard prohibitively expensive.”<sup>91</sup> In this passage, Judge Robart recognized that even the upper bound for royalties under a RAND commitment required internalizing the Cournot complements problem by hypothesizing a blanket license of SEPs. The court concluded the maximum blanket royalty would be \$1.50 per unit because that was the figure proposed during the initial negotiation of the H.264 patent pool.<sup>92</sup> Motorola’s share of that amount, based on the number of patents in the pool, was about a nickel per unit.<sup>93</sup> The upper bound of the RAND range would be three times that, again to account for the value of access to other patents in the pool.<sup>94</sup>

## 2. The 802.11 Standard

As with the H.264 standard, Judge Robart began his calculation of RAND rates for Motorola’s SEPs in the 802.11 standard for Wi-Fi by examining the technology underlying the standard and identifying its core enabling features.<sup>95</sup> Although “the majority of the technologies available to and/or adopted by the 802.11 drafters were in the public domain and not covered by patents,”<sup>96</sup> many companies have asserted that they own patents

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would have to pay for licenses to patents in the pool ( $A$ ). *Id.* Because the court concluded that the values of participating and abstaining from the pool must be equal both to each other and (netting benefits and costs) to zero for patents of average value like Motorola’s, then  $A_+$  must be equal to  $A$ . ( $VA = 0 = A_+ - A$ , so  $A_+ = A$ ). *Id.* Consequently, all that remained was for the court to determine  $A$ . *Id.* Unfortunately, there was no evidence of this value, so Judge Robart guessed it would be 1.5 times  $P$ . *Id.* He thought it would be higher than the pool rate “but not twice as high because some, if not all, of the companies holding SEPs would be subject to the RAND commitment.” *Id.* It would therefore also be equal to three times  $P_+$ . *Id.* This figure was appropriate as a lower bound of the RAND royalty, despite the fact that the pool distributed royalties based only on the number rather than the importance of patents in the portfolio, because Motorola’s SEPs only cover relatively unimportant obsolete technology.

<sup>90</sup> *Id.* at \*86.

<sup>91</sup> *Id.*

<sup>92</sup> *Id.* at \*87.

<sup>93</sup> *Microsoft*, 2013 WL 2111217, at \*87.

<sup>94</sup> *Id.*

<sup>95</sup> *Id.* at \*51 (naming network setup, channel access management, data modulation, and security encryption as core enabling features).

<sup>96</sup> *Id.* at \*50.

essential to the standard.<sup>97</sup> Motorola claimed to hold twenty-four such patents, but it provided little evidence that its patents were actually SEPs for the 802.11 standard.<sup>98</sup> According to the court, this lowered their value because it made it less likely that Microsoft actually used them.<sup>99</sup> The only Microsoft product that uses Motorola's patents under this standard is the Xbox, and it only uses eleven of the twenty-four, so only those eleven were relevant to the calculation.<sup>100</sup> As with Motorola's SEPs for the H.264 standard, the court found that Motorola's SEPs for the 802.11 standard were of limited value to Microsoft because of functional limitations and uncertainties about their importance to the standard or the Xbox.<sup>101</sup>

The court considered three benchmarks in determining a range of RAND royalties for SEPs in the 802.11 standard. First, it looked to the Via 802.11 patent pool even though, unlike the MPEG H.264 pool, it was established several years after adoption of the standard and had only a handful of SEP holders and licensees as participants.<sup>102</sup> The Via pool had denied Motorola access because its evaluator determined that Motorola's patents were not essential to the standard.<sup>103</sup> Nevertheless, Judge Robart found that the Via pool provided a decent benchmark for an upper bound to the range of RAND royalties because it focused directly on the 802.11 standard and set its rates, albeit unsuccessfully, in order to promote widespread adoption.<sup>104</sup>

The court had the benefit of expert testimony for this calculation, but the experts had based their calculations on the 183 patents that Motorola had claimed as essential to the 802.11 standard, not the eleven that it ultimately litigated.<sup>105</sup> Consequently, the court recalculated the relative value of the eleven patents, assuming they were in the Via patent pool.<sup>106</sup> Following the experts' methodologies, the court found that Motorola's patents would account for about 10% of the patent pool royalty revenue.<sup>107</sup> Applying this percentage to the royalty revenue, Microsoft would have paid to the Via patent pool a royalty of about two cents per unit, or just under \$300,000.<sup>108</sup> As in its treatment of the MPEG pool, the court accounted for the value of access to other patents in the pool by tripling the per-unit price to six cents per

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<sup>97</sup> *Id.* at \*52.

<sup>98</sup> *Id.* at \*53.

<sup>99</sup> *Microsoft*, 2013 WL 2111217, at \*53.

<sup>100</sup> *Id.* at \*55.

<sup>101</sup> *See id.* at \*55–64 (examining the role of the patents and their value to Microsoft in channel access, data modulation, network setup, and security).

<sup>102</sup> *Id.* at \*87, \*89.

<sup>103</sup> *Id.* at \*88.

<sup>104</sup> *Id.* at \*89.

<sup>105</sup> *Microsoft*, 2013 WL 2111217, at \*90.

<sup>106</sup> *Id.*

<sup>107</sup> *Id.* at \*91.

<sup>108</sup> *Id.*

unit as the upper bound of a RAND royalty.<sup>109</sup> This was the upper bound of the RAND royalty rate for three reasons: the Via pool did not include all SEP holders, there was no evidence that any of Motorola's patents were any more or less valuable than any other SEPs, and Motorola's contribution to the standard as a whole was relatively small, especially for Microsoft.<sup>110</sup>

The second benchmark the court considered was the royalty that Marvell Semiconductor Inc. (Marvel), a chipset manufacturer, paid for SEPs within the 802.11 standard.<sup>111</sup> Microsoft, among many other companies, buys Wi-Fi chipsets from Marvell for about \$3.00 per unit in order to assure Wi-Fi functionality in its products—in Microsoft's case, the Xbox.<sup>112</sup> Marvell pays a royalty of 1% of the price of its chipsets, or about three cents, to ARM Holdings both for use of the SEPs to build its chips and for the instructions to developers that use the chips.<sup>113</sup> In part because of fears of royalty stacking, this figure is viewed as the ceiling for the semiconductor industry, which the court found was analogous to the video games used with the Xbox.<sup>114</sup>

The last benchmark the court considered was a study by InteCap, a consulting firm that evaluated Motorola's 802.11 portfolio in 2003.<sup>115</sup> That study proposed a tiered pricing strategy under which chipset designers would pay one royalty, and manufacturers of 802.11-enabled end products, such as video games, would pay another.<sup>116</sup> The court found these rates to be relevant because InteCap accounted for royalty stacking and the relative values of the finished products.<sup>117</sup> InteCap recommended that makers of finished goods like the Xbox pay 0.1%, or between twenty and forty cents, per device sold.<sup>118</sup> This amount assumed that Motorola SEPs contributed a quarter of the functionality of the 802.11 standard.<sup>119</sup> Because the evidence showed Motorola's real contribution was closer to 1%, the court reduced the InteCap royalty by a factor of twenty-five, to between .8 and 1.6 cents per unit.<sup>120</sup>

Judge Robart found some confirmation of the validity of his three RAND benchmarks in their proximity to one another and in the fact that their average of 3.47 cents per unit was close to all of them.<sup>121</sup> He then cal-

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<sup>109</sup> *Id.*

<sup>110</sup> *Id.* at \*92.

<sup>111</sup> *Microsoft*, 2013 WL 2111217, at \*93.

<sup>112</sup> *Id.*

<sup>113</sup> *Id.* at \*94.

<sup>114</sup> *See id.* (concluding that a 1% royalty rate was reasonable).

<sup>115</sup> *Id.* at \*95.

<sup>116</sup> *Id.*

<sup>117</sup> *Microsoft*, 2013 WL 2111217, at \*96–97.

<sup>118</sup> *Id.* at \*98.

<sup>119</sup> *Id.* at \*96.

<sup>120</sup> *Id.* at \*98.

<sup>121</sup> *Id.* at \*99 (averaging the three benchmarks of .8, 3.5, and 6.114).



culated the upper bound of the RAND range at 19.5 cents per unit.<sup>122</sup> Microsoft had originally suggested a royalty of 6.5 cents, which it based on the assumption that Motorola was a member of the Via patent pool.<sup>123</sup> Judge Robart tripled this figure, as with the H.264 standard, to account for the value of access to other patents in the pool.<sup>124</sup> He found insufficient evidence to estimate a lower bound, so he simply chose .8 cents per unit, the lowest figure in his adjusted InteCap analysis.<sup>125</sup>

#### IV. RAND and Optimal Penalties

A collectively-established standard is exclusive, conferring market power on the patents essential to it. The RAND commitment limits the owners of those patents to the royalties they could have commanded before the patents became essential to the standard. It thus prohibits SEP owners from exploiting the standard's enhancement of their monopoly power, either by holding up licensees or stacking royalties. In *Microsoft*, Judge Robart implemented this conception of the RAND commitment by calculating rates based on benchmark royalties untainted by hold-up or stacking. Although Microsoft never actually paid the royalties Motorola demanded, the overcharge those royalties represented relative to RAND rates was central to the breach of contract claim. Judge Robart instructed the jury that it could "compare Motorola's offers against the RAND royalty rate and range determined by the court" in determining whether Motorola breached its duty of good faith and fair dealing.<sup>126</sup>

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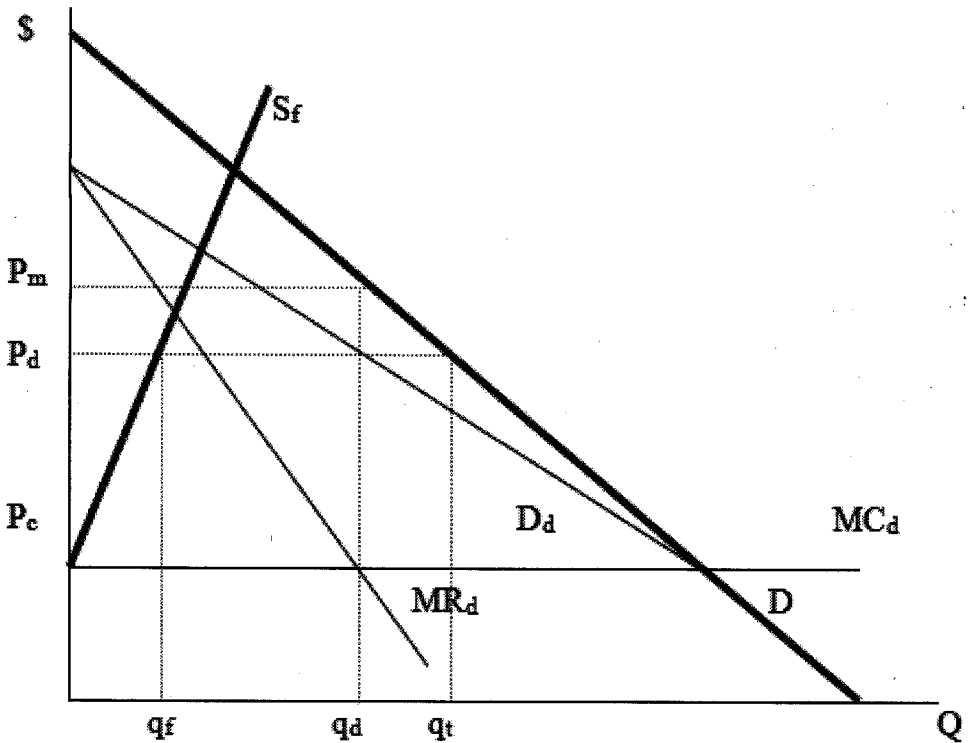
<sup>122</sup> *Id.* at \*100.

<sup>123</sup> *Microsoft*, 2013 WL 2111217, at \*100.

<sup>124</sup> *Id.*

<sup>125</sup> *Id.* at \*101. Judge Holderman's estimated royalty for Innovatio's 802.11 SEPs was comparable. *In re Innovatio IP Ventures LLC Patent Litig.*, No. 11-C-9308, 2013 WL 5593609, at \*38 (N.D. Ill. Oct. 3, 2013). Because he found that Innovatio's nineteen patents were all very important to the Wi-Fi standard, he concluded that they were in the top 10% of an estimated three thousand or so Wi-Fi SEPs. *Id.* at \*43. The three hundred patents in the top 10% likely accounted for 84% of the average profit on a Wi-Fi chip. *Id.* Innovatio's royalty was thus 19/300 of 84%, or 9.56 cents—"the pro rata share of the value in the top 10% of all 802.11 standard-essential patents attributable to Innovatio's nineteen-patent portfolio." *Id.* This royalty was approximately three times Judge Robart's estimated average royalty, but the difference was appropriate because Innovatio's patents were far more important to the Wi-Fi standard than Motorola's were. *Id.* at \*44.

<sup>126</sup> Jury Instructions ¶ 19, *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 5397931 (W.D. Wash. Sept. 4, 2013). The damages Microsoft sought in the contract action were for expenses it incurred because of Motorola's efforts to seek injunctive relief from the International Trade Commission and in courts in the United States and Europe in violation of its duty of good faith and fair dealing under the RAND commitment. *Id.* ¶ 24.



The court's analysis in determining the RAND rate was similar in structure and purpose to the measurement of an antitrust injury. Antitrust courts estimate a monopolistic overcharge when they assess damages for price fixing or anticompetitive exclusion, comparing a defendant's actual price with the price in a counterfactual or but-for world in which the violation did not occur.<sup>127</sup> The overcharge from price fixing is antitrust injury because it measures individual harm causally linked to a collusive output restriction and corresponding welfare loss.<sup>128</sup> Similarly, if a dominant firm were to exclude a fringe of smaller rivals by nakedly exclusionary contracts with input suppliers, the difference between the dominant firm price and the monopoly price would be an illegal overcharge.<sup>129</sup> In the accompanying diagram, if the

<sup>127</sup> Roger D. Blair & William H. Page, "Speculative" Antitrust Damages, 70 WASH. L. REV. 423, 429 (1995).

<sup>128</sup> See, e.g., *Reiter v. Sonotone Corp.*, 442 U.S. 330, 343 (1979) (discussing Sherman Act provisions that protect against price fixing).

<sup>129</sup> John E. Lopatka & William H. Page, *Who Suffered Antitrust Injury in the Microsoft Case?*, 69 GEO. WASH. L. REV. 829, 833 (2001) ("Exclusionary practices can also impose antitrust injury if, for example, they succeed in reducing output and increasing prices to consumers, either by raising the costs of rivals or by driving them from the market entirely."); William H. Page, *Optimal Antitrust Penalties and Competitors' Injury*, 88 MICH. L. REV. 2151, 2156 (1990); William H. Page, *The Scope of Liability for Antitrust Violations*, 37 STAN. L. REV. 1445, 1474-75 (1985); cf. *In re Neurontin Antitrust Litig.*, MDL No. 1479, 2009 WL 2751029, at \*12-13 (D.N.J. Aug. 28, 2009) (holding that alleged overcharges to direct purchasers of prescription drugs because of monopolistic conduct aimed at excluding generic competition was antitrust injury). For

dominant firm illegally excluded the fringe output ( $S_f$ ), it would have a monopoly not on the residual demand ( $D_d$ ), but the entire market demand ( $D$ ). The overcharge would be the difference between the corresponding profit-maximizing prices  $P_m$  and  $P_d$ . This difference between the monopoly and dominant firm prices would represent antitrust injury to purchasers because it would be directly proportional to the inefficiency that the offense created—a larger deadweight welfare loss attributable to a greater output restriction (from  $q_t$  to  $q_d$ ) and a higher price.<sup>130</sup> To estimate the actual overcharge in litigation, courts would rely on economic experts to project the but-for world based on a competitive benchmark, which might be prices before or after the violation or prices in a comparable market (a yardstick measurement) in which no violation occurred.<sup>131</sup> Courts have developed widely accepted standards for evaluating the reliability of expert testimony in making these sorts of projections.<sup>132</sup>

Calculating hold-up that violates a RAND commitment is comparable in theory and practice to calculating an overcharge attributable to monopolistic exclusion.<sup>133</sup> When an SSO writes a patent into a standard, it excludes the owner's rivals in much the same way that a monopolistic practice ex-

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fuller discussion of antitrust injury, see William H. Page, *The Chicago School and the Evolution of Antitrust: Characterization, Antitrust Injury, and Evidentiary Sufficiency*, 75 VA. L. REV. 1221, 1268–78 (1989) (discussing antitrust policy, rules, and models) and William H. Page, *Antitrust Damages and Economic Efficiency: An Approach to Antitrust Injury*, 47 U. CHI. L. REV. 467, 472 (1980) (considering the impact of damages on anticompetitive conduct).

<sup>130</sup> See, e.g., *Walker Process Equip. Inc. v. Food Mach. & Chem. Corp.*, 382 U.S. 172, 174 (1965) (holding that a firm may monopolize by acquiring a patent through fraud on the patent office). If the patent enhances the firm's monopoly power by excluding rivals, the resulting overcharge imposes antitrust injury on consumers. Christopher R. Leslie, *The Role of Consumers in Walker Process Litigation*, 13 SW. J.L. & TRADE AM. 281, 289–95 (2007). A circuit court held that deceptive nondisclosure of patents on technology before an SSO was not an antitrust violation if it did not actually cause the SSO to standardize the technology. *Rambus, Inc. v. Fed. Trade Comm'n*, 522 F.3d 456, 466–67 (D.C. Cir. 2008). If it only allowed the SEP owner to avoid a RAND commitment, it did not impose antitrust injury. *Id.* For criticism of *Rambus* on the issue of causation, see Michael A. Carrier, *A Tort-Based Causation Framework for Antitrust Analysis*, 77 ANTITRUST L.J. 991, 1013–15 (2011) and Stacey L. Dogan & Mark A. Lemley, *Antitrust Law and Regulatory Gaming*, 87 TEX. L. REV. 685, 722 (2009). In the analogy proposed in the text, the firm's conduct does create additional monopoly power.

<sup>131</sup> See PETER DAVIS & ELIANA GARCÉS, *QUANTITATIVE TECHNIQUES FOR COMPETITION AND ANTITRUST ANALYSIS* 352–64 (2010) (discussing methods of quantifying damages based on but-for analysis).

<sup>132</sup> See generally Robert Kneuper & James Langenfeld, *The Potential Role of Civil Antitrust Damage Analysis in Determining Financial Penalties in Criminal Antitrust Cases*, 18 GEO. MASON L. REV. 953, 964–80 (2011) (summarizing techniques that economic expert witnesses use in estimating antitrust overcharges).

<sup>133</sup> William M. Landes, *Optimal Sanctions for Antitrust Violations*, 50 U. CHI. L. REV. 652, 669 (1983); see also Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169 (1968) (discussing generally the distortion of resource allocation due to monopolistic exclusion).

cludes fringe firms.<sup>134</sup> Adoption of a standard by itself does not ordinarily violate the antitrust laws because, on balance, it is likely to increase efficiency by facilitating interoperability and innovation. However, the RAND commitment, or some other effective price constraint, is integral to this balance. If the owner departs from its RAND commitment, it reduces efficiency by exploiting the monopoly power the standard creates to charge a royalty above what it could have charged *ex ante* in competition with non-compliant rivals. The resulting hold-up is analogous to an overcharge by a firm that acquired monopoly power by exclusionary conduct.

Because the *ex ante* royalty is for a patented product, it may itself reflect a degree of monopoly power comparable to the position of the dominant firm in the foregoing diagram. If the SEP owner acquired its patent lawfully, the monopoly power attributable to the patent is lawful.<sup>135</sup> If, however, an SSO were to establish a standard that conferred monopoly power on SEP owners without a price constraint, it would likely violate the antitrust laws and be liable for treble damages for any overcharges. It follows that if SEP owners ignore a RAND price constraint and set royalties that reflects monopoly power conferred by the standard, the difference is tantamount to an illegal overcharge.

Part of the ability of SEP owners to hold up licensees reflects *ex post* opportunism—exploitation of firms that have made technology-specific investments in the standard. Nevertheless, hold-up in this instance is also comparable to antitrust injury. In *Image Technical*,<sup>136</sup> the Supreme Court mistook Kodak's *ex post* exploitation of the buyers of its durable goods for true market power.<sup>137</sup> Because Kodak faced competition in the product market for its copiers, its ability to hold up customers in its aftermarket was only

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<sup>134</sup> See, e.g., *Broadcom Corp. v. Qualcomm Inc.*, 501 F.3d 297, 314 (3d Cir. 2007) (“When a patented technology is incorporated in a standard, adoption of the standard eliminates alternatives to the patented technology.”); *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492, 500 (1988) (“Agreement on a product standard is . . . implicitly an agreement not to manufacture, distribute, or purchase certain types of products.”). For discussion of the damage model used by the excluded rival in *Indian Head*, see ANTITRUST DAMAGES PROJECT COMM., AM. BAR. ASS'N., PROVING ANTITRUST DAMAGES: LEGAL AND ECONOMIC ISSUES 226–29 (William H. Page ed., 1996). For discussion of the exclusionary potential of standard-setting, see Richard Gilbert, *Competition Policy for Industry Standards*, in OXFORD HANDBOOK ON INTERNATIONAL ANTITRUST ECONOMICS (forthcoming) (manuscript at 5–19), available at [http://works.bepress.com/cgi/viewcontent.cgi?article=1040&context=richard\\_gilbert](http://works.bepress.com/cgi/viewcontent.cgi?article=1040&context=richard_gilbert).

<sup>135</sup> Leslie, *supra* note 130, at 283. The *ex ante* royalties may themselves represent an overcharge if the patent was acquired by fraud. *Id.* at 289–95.

<sup>136</sup> *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451 (1992).

<sup>137</sup> See Benjamin Klein, *Market Power in Antitrust: Economic Analysis After Kodak*, 3 SUP. CT. ECON. REV. 43, 57–58 (1993) (stating that the assessment of market power and the risk of hold-up must be evaluated as of a time before the customer made seller-specific investments).

contractual and not a matter of antitrust concern.<sup>138</sup> Standard-setting, however, entails the joint action of rivals that creates market power for SEPs. Firms that adopt the standard are not in privity with the SEP owner and therefore cannot protect themselves contractually by anticipating future hold-up. Thus, exploitation of their sunk investments in the standard is monopolistic and would reflect antitrust injury in the absence of an effective RAND commitment or other price constraint.

The *ex ante* standard, if used as a practical benchmark, would replicate a before-and-after model of antitrust damages—the extent of the overcharge is the difference between prices during the offense and the prices that would have prevailed if conditions before had continued.<sup>139</sup> In some circumstances, the court might look to a different yardstick for a RAND price, one unaffected by hold-up. Judge Robart adopted essentially this latter strategy by looking to the patent pools as a starting point for estimation of *ex ante* royalties. The H.264 pool was a closer fit because SEP owners formed it in the wake of the standard's adoption. Even in that instance, of course, the court recognized the need to expand the pool to include all essential patents and to adjust the pool royalty—a need that might be still greater if the relevant SEP had extraordinary value *ex ante*. Legally enforcing the RAND commitment can eliminate a deadweight loss and enhance social welfare if it can be done with reasonable accuracy, without unnecessary speculation, and at a reasonable cost.

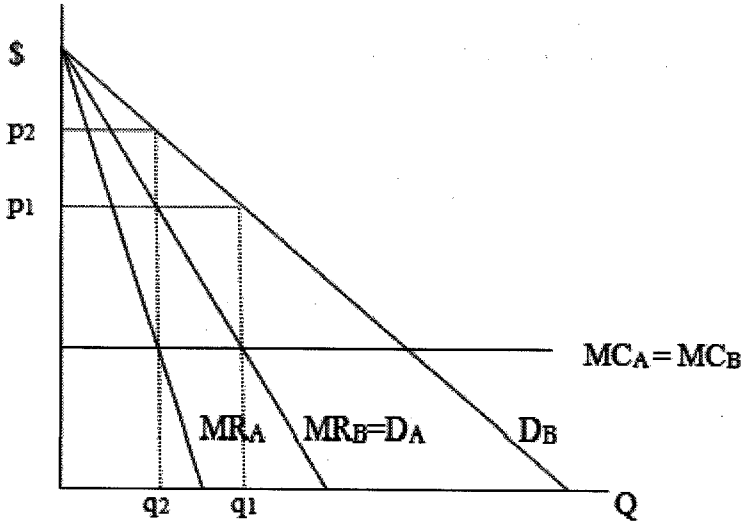
Using RAND commitments to control royalty stacking is also comparable to the assessment of antitrust damages. Royalty stacking is a form of double marginalization or compounding monopolies. The following diagram illustrates the problem of double marginalization in a closely related vertical context. Assume that good *A* is an input for the production of good *B*. The marginal cost of producing *A* is  $MC_A$ , and the marginal cost of producing *B* is  $MC_B$ .  $MC_B$ , apart from the cost of *A*, is zero, so  $MC_A = MC_B$ . If one producer controls production of both *A* and *B*, the demand for the downstream product, *B*, and the marginal cost of producing *B* would determine the profit-maximizing price. The producer would equate the marginal revenue from *B* ( $MR_B$ ) with  $MC_B$  at an output of  $q_1$ , which corresponds to a price of  $p_1$  on  $D_B$ .

Now suppose different monopolists control the production of *A* and *B*. In that case, the *B* monopolist's demand for *A*, or  $D_A$ , would be the marginal value of *A* to it at each output level, or simply  $MR_B$ , which reflects the addition to total revenue from the sale of an incremental unit of *B*, given  $D_B$ . The *A* monopolist would construct its  $MR_A$ , the marginal revenue curve, cor-

<sup>138</sup> See *id.* at 50–58 (stating that if consumers know about a restrictive service policy at the time of purchasing the equipment, hold-up is not an issue because the consumers will contract for the protection they want).

<sup>139</sup> See Blair & Page, *supra* note 127, at 443–50 (explaining the before-and-after model).

responding to  $D_A$ . It would set its output where  $MR_A$  is equal to  $MC_A$ . The resulting output,  $q_2$ , of both  $A$  and  $B$  would be lower than under an integrated monopoly. The price of  $A$  alone would be  $p_1$ ; the corresponding price of  $B$ ,  $p_2$ , would be higher than under an integrated monopoly.



The Cournot complements problem presents an analogous form of double marginalization by rival monopoly suppliers of complements to the same purchasers. Because each firm separately charges a monopoly price, the monopolies compound and the output in the market is lower and the price higher than if a single monopolist produced the goods as a bundle.<sup>140</sup> Lemley and Shapiro show that if an implementer faces linear demand and constant marginal cost, its output would be twice as high if a monopolist or joint venture of three SEPs charged a single royalty for all of the products than if three separate patent owners charged individual monopoly royalties.<sup>141</sup>

The Cournot complements problem arises only if goods are strongly complementary and have few substitutes. Standardization, if successful, reduces the availability of substitutes and increases the degree of complementarity among products within the standard. It excludes rivals and thus increases the degree of monopoly power held by SEP owners, thus aggravating potential Cournot complements problems. Although the SSO generally focuses on technology rather than specific licensing terms,<sup>142</sup> it imposes a RAND commitment to foster efficient royalties for all patents made essential by the process by internalizing the externalities in pricing of

<sup>140</sup> For a mathematical proof, see Lemley & Shapiro, *supra* note 41, at 2046–48.

<sup>141</sup> *Id.* at 2014.

<sup>142</sup> Lemley, *supra* note 31, at 1951.

SEPs that are Cournot complements.<sup>143</sup> For similar reasons, antitrust authorities have recognized the Cournot complements problem as a justification for pooling complementary patents.<sup>144</sup> If the SSO imposed no pricing constraint, it would likely violate the antitrust laws, and royalty stacking by its members would be an illegal overcharge.

Royalty stacking contradicts the goal of the RAND commitment to foster widespread adoption of the standard. For SEP owners to charge their individual monopoly, royalty rate would represent an overcharge relative to the royalty charged by a joint venture or pool of firms that participated in the standard. Indeed, some observers have recently suggested that “SSO[s] might sponsor or otherwise facilitate formation of a patent pool . . . [or] require *ex ante* disclosures from patent holders of whether they will participate in a patent pool (and which one).”<sup>145</sup> Even if the SSO does not actually form a pool or require SEP owners to participate in one, the RAND royalty should be calculated to avoid the market failures that a pool would address.

Again, the difference between the actual price under royalty stacking and the but-for price that avoids royalty stacking is analogous to antitrust injury. The but-for world is one in which royalties for patents do not reflect stacking attributable to the increased monopoly power and greater complementarity that the standard confers. Presumably, the RAND commitment would not prohibit stacking of royalties to the extent that it reflected only the degree of complementarity and monopoly power the SEPs possessed before becoming essential to a standard.<sup>146</sup>

Judge Robart’s calculation of RAND royalties by reference to patent pools was consistent with this approach to concerns about royalty stacking. For the H.264 pool, in calculating the lower bound of a RAND rate for royalties of average value like Motorola’s, he looked to a multiple of the actual rates charged by the pool. For the upper bound, he estimated Motorola’s proportional share of “the aggregate licensing fee of all essential patents cal-

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<sup>143</sup> See, e.g., Nicholas Economides & Steven C. Salop, *Competition and Integration Among Complements, and Network Market Structure*, 40 J. INDUS. ECON. 105, 108–09 (1992) (explaining Cournot complements).

<sup>144</sup> U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY § 5.5 (1995), available at <http://www.justice.gov/atr/public/guidelines/0558.pdf> (“Cross-licensing and pooling arrangements . . . may provide procompetitive benefits by integrating complementary technologies, reducing transaction costs, clearing blocking positions, and avoiding costly infringement litigation.”); see also Herbert Hovenkamp, *Antitrust and the Movement of Technology*, 19 GEO. MASON L. REV. 1119, 1129 (2012) (“Pooling of complementary patents can also address double marginalization problems when licenses must otherwise be obtained from separate sources.”).

<sup>145</sup> Michael A. Lindsay & Robert A. Skitol, *New Dimensions to the Patent Holdup Saga*, 27 ANTITRUST 34, 39 (2013).

<sup>146</sup> Judge Robart evidently saw no need to make this distinction, perhaps because Motorola’s patents only contributed to stacking *ex post*.

ibrated against the principle that license fees should not be stacked in such a way that makes implementation of the standard prohibitively expensive.”<sup>147</sup> In essence, this amount reflected projection of a monopoly price charged by a single pricing entity that controlled all essential and complementary patents in the standard.

### V. Breach of the RAND Commitment as an Antitrust Violation

The argument so far analogizes the calculation of RAND rates to the measure of antitrust injury—charging excess royalties is comparable to an overcharge attributable to anticompetitive exclusion. One might reasonably ask whether a breach of the RAND commitment should more properly be viewed as an antitrust violation compensable by antitrust damages. Joseph Kattan has argued as much.<sup>148</sup> He notes that the inclusion of a patent in a standard accompanied by a RAND commitment excludes the next-best alternative technology, but only through competition on the merits before the SSO and a voluntary eschewal of monopoly power by the winning technology.<sup>149</sup> Later breach of the RAND commitment makes the initial exclusion anticompetitive, much as recoupment of losses during a period of below-cost pricing completes the offense of predatory pricing.<sup>150</sup>

If this presentation of the relationship between the RAND commitment and antitrust injury is correct, it should typically be unnecessary to extend antitrust liability to these circumstances. The contractual RAND commitment, if effective, limits monopoly power in the same way as a long-term supply contract with an enforceable price term. The Supreme Court held in *General Dynamics* that a merger of coal producers could not reduce competition because the acquired firm had formed long-term contractual commitments to supply their available reserves at specified prices.<sup>151</sup> In other words, enforcement of those contracts would prevent any anticompetitive behavior by the merging coal producers. Similarly, the enforcement of the contractual commitments in standard-setting is the most direct and effective method of vindicating the interests of competition.

Another analogy might be *Trinko*, in which the Supreme Court declined to extend liability under the Sherman Act to include Verizon’s failure to share its network elements with competitive carriers.<sup>152</sup> In doing so, the Court described the comprehensive regulatory scheme within which the

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<sup>147</sup> *Microsoft Corp. v. Motorola, Inc.*, No. C10-1823JLR, 2013 WL 2111217, at \*86 (W.D. Wash. Apr. 25, 2013).

<sup>148</sup> Kattan, *supra* note 20, at 32–34.

<sup>149</sup> *Id.* at 33–34.

<sup>150</sup> *Id.*

<sup>151</sup> *United States v. Gen. Dynamics Corp.*, 415 U.S. 486, 502–03, 506 (1974).

<sup>152</sup> *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 415 (2004).



FCC policed incumbent carriers' sharing obligations<sup>153</sup> and concluded that "the regime was an effective steward of the antitrust function."<sup>154</sup> Granted, the Court in *Trinko* compared judicial and administrative supervision of a sharing obligation,<sup>155</sup> while in the RAND setting the choice is between alternative judicial mechanisms—contract or antitrust litigation. Nevertheless, the contractual obligation is the critical limit on monopoly power. Breach of that obligation is the lynchpin of any anticompetitive effect. Before extension of Sherman Act liability, there should be a clear showing that enforcement of the contractual commitment is insufficient to protect the antitrust interest.

## VI. Conclusion

Although Judge Robart's hypothetical bargaining was mainly window dressing for his reasoning, the substance of the opinion will likely have important effects on real-world bargaining. Bargaining occurs, as the well-worn metaphor puts it, in the shadow of the law that courts create.<sup>156</sup> In a real-world bilateral negotiation, parties take positions that account for legal constraints, anticipating the likely outcome should the dispute reach the courts.<sup>157</sup> Judge Robart's opinion exposes a range of formidable practical challenges to the calculation of RAND price. At the same time, it provides some evidence of the law for future negotiations by defining the permissible benchmarks for the identification of a reasonable price.

We can understand Judge Robart's analysis better by comparing it to the principle and practice of antitrust injury for antitrust violations. The antitrust injury doctrine links antitrust remedies to the theory of optimal penalties by requiring that compensable damages be causally related to the output restriction associated with an offense, either collusive or exclusionary. The RAND commitment serves a similar function, even in cases in which the SEP owner has not violated the antitrust laws. It limits the SEP owner to a but-for royalty that reflects neither hold-up nor royalty stacking. That is, the SEP owner is limited to royalties that reflect the *ex ante* value of its intellectual property, not the incremental monopoly power that the standard provides or the risk of double marginalization from individual monopoly pricing, a risk that the standard might actually enhance by fostering greater complementarity.

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<sup>153</sup> *Id.* at 412–13.

<sup>154</sup> *Id.* at 413.

<sup>155</sup> *Id.* at 414–15.

<sup>156</sup> Michel, *supra* note 37, at 893; Robert H. Mnookin & Lewis Kornhauser, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 YALE L.J. 950, 968 (1979).

<sup>157</sup> Cf. Oliver Wendell Holmes, *The Path of the Law*, 10 HARV. L. REV. 457, 460–61 (1897) ("The prophecies of what the courts will do in fact, and nothing more pretentious, are what I mean by the law.").

Judge Robart's reliance on an inclusive patent pool formed near the adoption of a standard as a benchmark captured both of these theoretical criteria for a RAND price. He justified the use of the pools specifically because their prices directly reflected the participants' efforts to avoid hold-up and stacking. A patent pool represents an attempt to implement *ex post* the goals of the SSO. Equally important, he modified the royalties charged by the pools by assuming that the pools included all of the relevant SEPs. These became his yardsticks and he used their royalty rates to project a but-for world in which an individual owner of Motorola's SEPs charged RAND royalties.

# Facilitating Negotiation for Licensing Standard-Essential Patents in the Shadow of Injunctive Relief Possibilities

Haksoo Ko\*

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## I. Introduction

Apple and Samsung, two of the world’s premier technology companies, have been involved in legal disputes in many parts of the world. In Korea, Samsung filed a lawsuit against Apple in 2011 at the Seoul Central District Court.<sup>1</sup> One of the issues before the court was whether injunctive relief can be granted when a holder of standard-essential patents (SEPs)<sup>2</sup> made a commitment during the process of determining the standard that it would license its patents under FRAND (fair, reasonable, and non-discriminatory) terms.<sup>3</sup> Whether to allow an injunction to the holder of SEPs in a dispute involving such patents would likely have significant implications for the ongoing disputes between Apple and Samsung. Further, the issue of whether an injunction can be granted may have an impact not just on the parties in the pending dispute, but also on various stakeholders who participate in the standard-setting process at various standard-setting organizations (SSOs). This would in turn have an impact on various parties’ business strategies involving processes of determining standards and implementing them.

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<sup>1</sup> Seoul Central District Court [Dist. Ct.], 2011Ga-Hap39552, Aug. 24, 2012 (S. Kor.).

<sup>2</sup> Regarding SEPs, a simplistic explanation would be that they refer to a patent that must be used in order to comply with a technical standard.

<sup>3</sup> The term FRAND is often used interchangeably with the term RAND (reasonable and non-discriminatory). Since there is no noticeable difference between the two terms, the term FRAND is used throughout this paper.

At the most basic level, parties would be placed under a drastically different bargaining situation depending on the availability of injunctive relief. If an injunction is available, a patent holder would seek to prohibit patent implementers from using the patents under dispute immediately, whereas if an injunction is not available, implementers would choose to continue to use the patents and pay damages that the court may (or may not) impose. In the former case, the patent holder would typically be given very strong bargaining leverage, while in the latter case, the opposite would in general be true. Due to this consideration, depending on the availability of injunctive relief, technology companies participating in the standard-setting process will adopt different strategies and behaviors at various stages of determining standards, which will impact the rules and processes of determining standards at many SSOs.

This article examines the justifiability of granting an injunction to holders of SEPs who made a FRAND commitment when those patent holders are in disputes with implementers regarding specific terms of a license arrangement. In doing so, this article explores how relevant transaction costs can be reduced. From a policy perspective, when an injunction is available, the main policy concern is about patent holders engaging in *ex post* opportunism of hold-up and demanding an exorbitant royalty amount from patent implementers. On the other hand, with no possibility of injunctive relief, the main concern is about patent implementers not engaging in good faith negotiations with the patent holder on royalty and other important license terms, and thus unduly delaying the negotiations. Indeed, if no injunction is available, an implementer may use a “wait-and-see” approach, trying to gauge the attitude of the court and of the patent holder. This type of opportunistic behavior is called reverse hold-up.<sup>4</sup>

Seen from this perspective, central policy considerations should include how to prompt parties to engage in good faith negotiations and how to induce them to reach mutually agreeable terms in an expedient manner. This article proposes a mechanism for court proceedings that reduces the incentives for parties to engage in opportunistic behavior and instead induces parties to engage in negotiations. Under the proposed mechanism, the parties would be pressured to negotiate in good faith and in earnest in order to reach an agreement. The court would in turn be relieved from the burden of having to determine whether to grant an injunction, at least during the initial phase of a lawsuit, and could instead exert pressure on the parties, explicit or implicit, not to engage in opportunistic behavior.

This article proceeds as follows. Section II summarizes the court proceedings in Korea between Apple and Samsung with a focus on the issues related to FRAND terms. Section III examines how parties may engage in opportunistic behavior like hold-up or reverse hold-up, depending on their business strategies and also on the

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<sup>4</sup> Damien Geradin, *Reverse Hold-Ups: The (Often Ignored) Risks Faced by Innovators in Standardized Areas* 6 (Nov. 12, 2010) (unpublished manuscript), available at <http://ssrn.com/abstract=1711744>.

court's attitude regarding the availability of an injunction. Section IV proffers a new mechanism that discourages parties from engaging in hold-up or reverse hold-up and instead prompts parties to engage in negotiations to reach an agreement on specific license terms in relation to the associated FRAND commitment. Finally, Section V provides a conclusion.

## II. Korean Court Proceedings Between Apple and Samsung

Samsung filed a lawsuit against Apple in Korea in front of the Seoul Central District Court in April of 2011, alleging Apple's violation of its patent rights.<sup>5</sup> The court determined that several models of Apple's iPhone and iPad did indeed violate Samsung's patent rights and awarded damages to Samsung in the amount of 40 million South Korean Won (approximately \$37,000).<sup>6</sup> The court additionally issued an order against Apple to cease infringements of Samsung's patent rights.<sup>7</sup> In the lawsuit, Samsung claimed that certain Apple products, including the iPhone 3GS, the iPhone 4, the iPad 1, and the iPad 2, infringed several patents that Samsung held concerning 3GPP (Third Generation Partnership Project) communication standards and also upon a patent that Samsung held concerning a certain method of providing data services utilizing mobile devices.<sup>8</sup>

On rebuttal, Apple argued five points. First, Apple claimed that it simply did not infringe Samsung's patent rights since it employed a distinct manufacturing methodology that allowed it to maneuver outside the scope of Samsung's patents.<sup>9</sup> Second, Apple argued that Samsung's patents at issue were invalid.<sup>10</sup> Third, Apple cited the patent exhaustion doctrine and asserted that, since it purchased the base chips, which implemented the patents at issue from Intel, Samsung's rights were exhausted and thus Samsung could not make a claim against Apple regarding these patents.<sup>11</sup> Fourth, Apple contended that Samsung's lawsuit itself constituted a violation of Korea's antitrust law because the suit was seeking to deny access to essential facilities and to impose undue and unreasonable transactional conditions on Apple.<sup>12</sup> In addition, Apple alleged that Samsung was practicing deceptive customer solicitation behavior.<sup>13</sup> Fifth, Apple proclaimed that Samsung's lawsuit violated the FRAND commitment that Samsung made at the European Telecommunications Standards Institute (ETSI) during the standard-setting process for the patents at issue.<sup>14</sup>

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<sup>5</sup> Seoul Central District Court [Dist. Ct.], 2011Ga-Hap39552, Aug. 24, 2012 (S. Kor.).

<sup>6</sup> Seoul Central District Court [Dist. Ct.], 2011Ga-Hap39552, Aug. 24, 2012, at 2 (S. Kor.).

<sup>7</sup> *Id.*

<sup>8</sup> *Id.* at 3–4.

<sup>9</sup> *Id.* at 4.

<sup>10</sup> *Id.*

<sup>11</sup> *Id.*

<sup>12</sup> Seoul Central District Court [Dist. Ct.], 2011Ga-Hap39552, Aug. 24, 2012, at 4–5 (S. Kor.).

<sup>13</sup> *Id.*

<sup>14</sup> *Id.* at 5.

With regard to the claim that Samsung violated its FRAND commitment, Apple characterized Samsung's FRAND commitment as an offer for an irrevocable license agreement.<sup>15</sup> Thus, Apple's position was that a valid license agreement was entered into between Apple and Samsung when Apple began to implement Samsung's patents since Apple's use of Samsung's patents constituted an acceptance of Samsung's existing offer.<sup>16</sup> Apple also claimed that Samsung's FRAND commitment intrinsically includes a promise not to seek a court's order for injunction.<sup>17</sup> According to Apple, Samsung therefore had an obligation to negotiate with Apple to finalize the terms of the license agreement.<sup>18</sup> Further, Apple contended that filing a lawsuit seeking an injunction constitutes an illegal abuse of rights by a patent holder.<sup>19</sup>

The Korean court determined that Apple violated Samsung's rights for certain patents, while acknowledging that Apple did not violate Samsung's rights in certain other patents.<sup>20</sup> On Apple's claim related to Samsung's FRAND commitment, the court reasoned that simply using Samsung's SEPs did not mean that a binding contract was entered into.<sup>21</sup> The court further reasoned that a FRAND declaration, without more, cannot be construed to include a commitment not to seek injunctive relief.<sup>22</sup>

### III. Hold-Up and Reverse Hold-Up

An interesting and perhaps unique aspect of standard-setting through a SSO is that the parties involved in the standard-setting process do not determine the applicable royalty rates at the time they determine the standard.<sup>23</sup> During the standard-setting process, holders of SEPs only commit that they will provide a license under FRAND terms.<sup>24</sup> Specific royalty rates and other key terms that would apply in an individual license contract are to be determined between the patent holders and individual implementers after SEPs are determined.<sup>25</sup> Due to this aspect of standard-

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<sup>15</sup> *Id.* at 4–5.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*

<sup>18</sup> Seoul Central District Court [Dist. Ct.], 2011Ga-Hap39552, Aug. 24, 2012, at 4–5 (S. Kor.).

<sup>19</sup> *Id.*

<sup>20</sup> *Id.* at 184–86.

<sup>21</sup> *Id.* at 172.

<sup>22</sup> *Id.* at 172, 176.

<sup>23</sup> Geradin, *supra* note 4, at 4.

<sup>24</sup> See, e.g., Dennis W. Carlton & Allan L. Shampine, *An Economic Interpretation of FRAND*, 9 J. COMPETITION L. & ECON. 531 (2013) (attempting to decipher and analyze the economic and legal meaning of FRAND). It remains unclear, however, if the results of academic attempts to understand FRAND can easily and readily be applied to actual court cases in order to get a definitive answer as to whether certain proposed license terms should be deemed to satisfy FRAND.

<sup>25</sup> If the applicable royalty rate could be pre-announced during the process of standard-setting, then there would not be a need for the parties to negotiate the royalty rate after a standard had been determined, and that way the overall bargaining process could be simplified a great deal. However, pre-announcing royalty rates is practically impossible due to concerns related to antitrust and other legal issues. Jorge L. Contreras, *Rethinking RAND: SDO-Based Approaches to Patent Licensing*

setting, determination of SEPs is sometimes followed by a difficult and complex bargaining process between the holders of the SEPs and the implementers. This bargaining process can become convoluted and prolonged since there is a serious incentive problem for parties that encourages them to engage in opportunistic behavior. The patent holder, once its patents become SEPs, has an obvious incentive to charge a high royalty rate in order to maximize its profits, possibly defying expectations of the parties involved in the process of determining the SEPs. On the other hand, implementers of SEPs have a strong incentive to use the patents for commercial purposes, often on an expedited basis, and to minimize the payment of royalties to the patent holder by proclaiming that FRAND dictates a low royalty rate.

Because of this conflict of interest between patent holders and implementers, determining the applicable royalty rate can easily become a very contentious process, and sometimes a legal dispute arises as a result. In dealing with the possibility of legal disputes, individual parties consider and calibrate their respective bargaining power once a lawsuit is brought to a court. This, in turn, determines the parties' bargaining power during the initial phase prior to the filing of a lawsuit. When considering the possibility of a lawsuit, a crucial factor that determines the parties' bargaining power is the availability of an injunction. A legal regime in which a court may grant an injunction against an implementer gives patent holders a strong bargaining advantage. This is because a patent holder would simply file a lawsuit seeking an injunction if the parties failed to reach an agreement through negotiation. Some argue that a patent holder may even have an incentive to engage in hold-up by imposing a royalty rate that could be viewed as exorbitant or unreasonably high.<sup>26</sup> Because filing a lawsuit seeking an injunction could serve as a readily available and extremely powerful alternative for patent holders, patent holders may be adamant in demanding a royalty rate that is extraordinarily high. At the same time, the mere possibility of an injunctive order from the court would place the implementer at a grave disadvantage vis-à-vis the patent holder. The inequality of the bargaining power would be particularly severe if the immediate use of the patent was indispensable for the implementer in order to beat or at least follow the current market trend. Consideration of the time-sensitive nature of implementing newly developed and patented standard technologies may be especially important in fast changing markets, such as the market for mobile devices, where older versions of products become obsolete in a matter of months and newer versions appear constantly.

On the other hand, in a legal regime where injunctive relief is not available to SEP-holders, reverse hold-up by a patent implementer is possible.<sup>27</sup> Reverse hold-

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*Commitments*, Int'l Telecomm. Union [ITU] Patent Roundtable, at 11–13 (Geneva Oct. 10, 2012), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2159749](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2159749).

<sup>26</sup> E.g., Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 2025 (2007); Carl Shapiro, *Injunctions, Hold-Up, and Patent Royalties*, 12 AM. L. & ECON. REV. 280, 297–98 (2010).

<sup>27</sup> Geradin, *supra* note 4, at 10–11.

up could take the form of an implementer's use of SEPs without obtaining a license from the patent holders and without exerting serious effort to negotiate with the patent holders to agree on definitive license terms. That way, a patent implementer strives to obtain favorable license terms or just starts using the SEPs without engaging in any direct communication or negotiation with the patent holder. This incentive is compatible with the implementer's goal since it may not have much to lose by engaging in reverse hold-up. Further, even if a lawsuit is filed by the patent holder, the patent holder cannot stop the implementer from using the patent because an injunction is not available as a legal remedy in this regime. Even in the event that the court finds that the implementer has been using the patent without obtaining legitimate legal rights, all that can be awarded against the implementer would be damages for illegitimate past use. An award of damages is possible only when the patent holder files a lawsuit and when the court agrees with the patent holder that the implementer does not have a valid legal right to use the SEP at issue. Also, the amount of damages is usually capped at the amount of loss incurred by the patent holder (or amounts calculated using proxies for such loss), and no damages are awarded against prospective future violations of the patent holder's rights.<sup>28</sup> The maximum amount an implementer has to pay would be the amount of loss incurred by the patent holder or, more likely, an amount smaller than the actual loss incurred.<sup>29</sup> Therefore, SEP-implementers may well have incentives to use the SEPs without engaging in serious efforts to reach an agreement with the holders of the SEPs. Rather, the implementers may show a wait-and-see attitude even when there is a possibility of a lawsuit by choosing to use SEPs without obtaining an explicit license.

From the above discussion, it is clear that under the current regime of standard-setting through SSOs, holders of SEPs and their implementers have incentives to engage in opportunistic behavior in the forms of hold-up and reverse hold-up, respectively. These incentives could be ameliorated by the parties' consideration of their reputation in the market and other legal or business factors. These factors include the remedies available through private contracts, the generous terms that are sometimes available in cross-licensing arrangements, and the specific and concrete commitments that are often made by a patent holder not to engage in hold-up—these may be made in addition to and separate from a FRAND commitment. Thus, whether there are incidents of hold-up, reverse hold-up, or both, and how frequently these incidents take place is a matter to be resolved through observations of the parties' actual behavior in the marketplace. Nonetheless, there remains an important policy decision that courts often have to make as to whether to grant an injunction when the SEP holder requests one. In general, if the possibility of hold-up is more serious than the possibility of reverse hold-up, then it would be more difficult to justify making an injunction available to the patent holder. On the other hand, if reverse hold-up is considered to be a more serious problem, then making an injunc-

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<sup>28</sup> *Id.* at 17.

<sup>29</sup> This is due to practical limitations related to meeting evidentiary requirements.



tion available would be more easily justified. Given the lack of definitive factual evidence, it could be too cumbersome for a court to declare that an injunction would or would not be readily available as a remedy. Below is a proposal for a mechanism for court proceedings under which the court would avoid the question of whether an injunction is available—at least during the initial stage of a lawsuit. Under this mechanism, the court instead exerts pressure on the parties to negotiate further in order to reach an agreement. The parties in turn, being aware that the court's review of their negotiating behavior may have a significant impact on the court's decision as to whether the proposed license terms satisfy FRAND, would have strong incentives to negotiate in good faith and in earnest.

#### IV. Fostering Good Faith Negotiations: A Proposal

In considering whether the court should grant an injunction when an implementer uses SEPs without obtaining permission from the holders of the SEPs, the conceptual dichotomy between a property rule and a liability rule can serve as a useful starting point.<sup>30</sup> A legal regime where an injunction is available as a remedy can be considered to be a regime where a property rule is in force. On the other hand, a legal regime that does not allow for an injunction can be interpreted as a regime with a liability rule. Generally speaking, under a property rule, parties are encouraged to negotiate between themselves, and the results of the negotiation are expected to reflect the parties' preferences and subjective valuations. However, under a liability rule, a court or third-party adjudicator gets involved as a de facto price-setter by determining the amount of damages or other monetary compensation a party has to pay the other. A liability rule can be justified where parties face exorbitant transaction costs for bargaining, and where it is not too difficult to assess the value of the subject matter in dispute. This is usually the case when there is a substitute market or other proxy available. On the other hand, a property rule can be justified where the amount of the relevant transaction costs is relatively modest, and where subjective or non-market values play an important role in reaching a mutually satisfactory agreement.

The court's role in a property rule regime would include delineating property rights and assigning such rights to the appropriate parties. This would indirectly prompt and facilitate the parties' direct bargaining and negotiation. On the other hand, in a liability rule regime, the court would have to assess the value of the rights violated and award damages. Of course, assessing damages may be an exceedingly difficult task for the court, particularly if the subject matter in dispute does not have comparable markets and there is no standard valuation method.

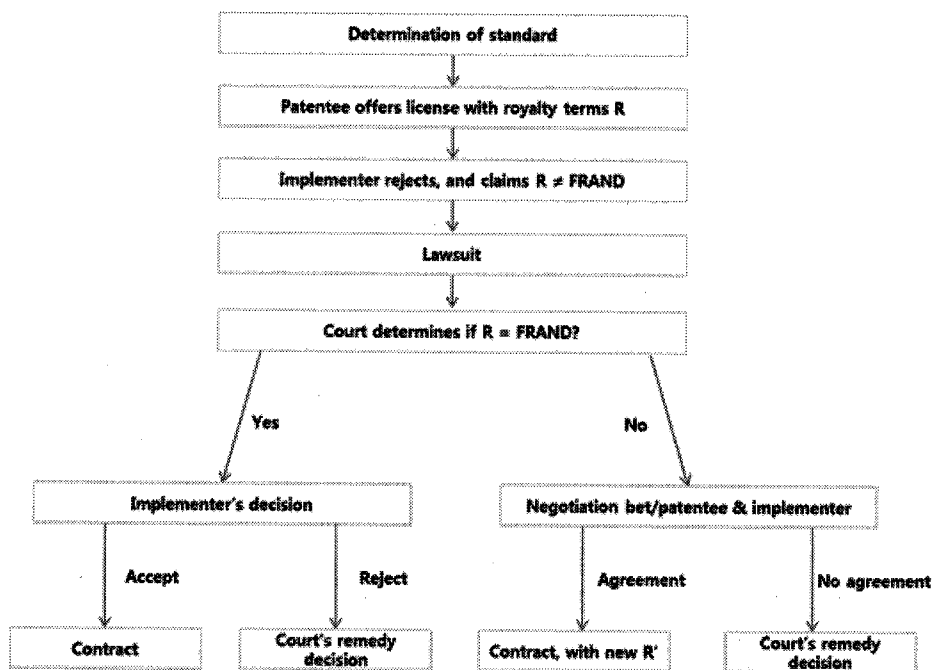
The above distinction between a property rule and a liability rule can be incorporated into a proposal for a model of dispute resolution that fosters bargaining between the parties. As seen in the above section, if no injunction is available, an im-

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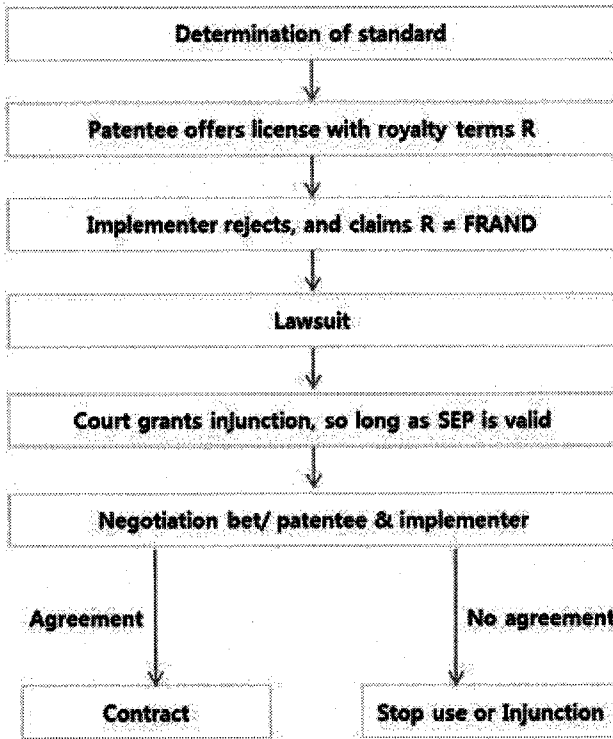
<sup>30</sup> Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1106–10 (1972).

plementer of a patent would not have much incentive to engage in good faith negotiation with the patent holder. Rather, if it is certain that no injunction is available and that the amount of damages will never exceed the costs incurred by the patent holder (which in turn would not be much different from the benefits conferred upon an implementer), then the implementer may have a perverse incentive to engage in reverse hold-up. On the other hand, if an injunction is available, the parties would be prompted to engage in good-faith negotiation sooner rather than later. The main concern in this situation is that the patent holder may engage in hold-up and demand an exorbitant amount of royalties.

**Figure 1. Regime with No Injunction**

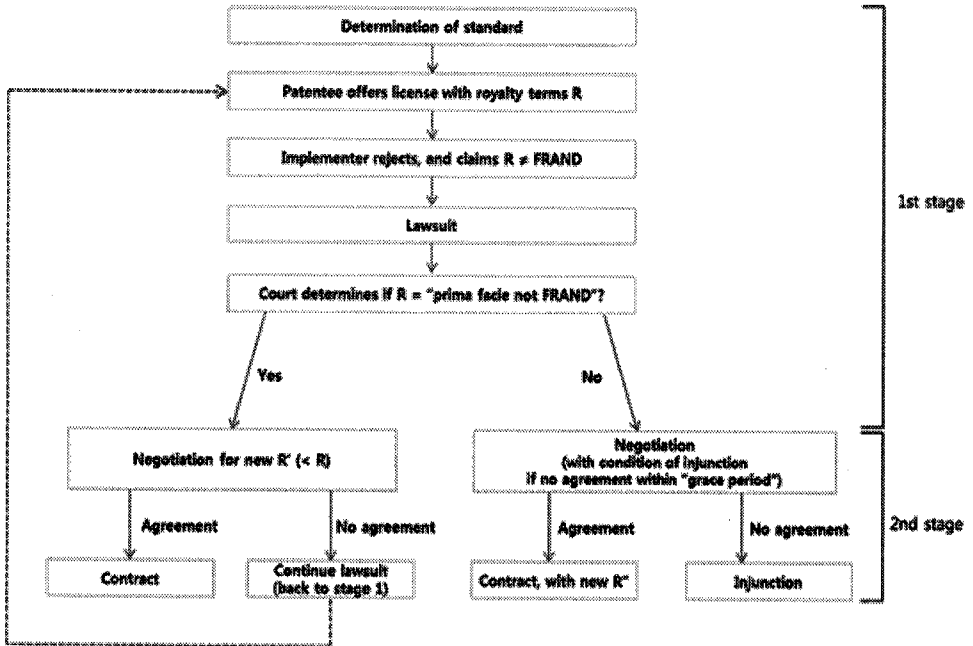


The flowcharts in Figure 1 and Figure 2 show the general court procedures when an injunction is not available and when it is available, respectively. In Figure 1, where injunctive relief is not available, the court's decision is made conceptually in two phases. During the first phase, the court determines whether the proposed license terms, represented collectively as  $R$ , satisfy the requirements of the relevant FRAND commitment. If the court determines  $R$  to be FRAND, then the implementer has to accept those terms in order to use the patent. If the court determines that  $R$  fails to satisfy the FRAND requirement, then the parties are left to negotiate further. If this renegotiation is successful, the parties would then reach an agreement with new contract terms. If the renegotiation is not successful, then the court would intervene and decide a remedy as the second phase of the court proceeding.

**Figure 2. Regime with Injunction**

In Figure 2, where injunctive relief is available, the overall procedure becomes much simpler. After a lawsuit is filed, the court makes a decision on whether to grant an injunction. The court's determination here is relatively simple because the court can grant an injunction so long as the patent at issue is valid. With an injunctive order, the patent holder can seek to enforce the order or, alternatively, the parties can negotiate further to reach an agreement. If they reach an agreement through renegotiation, they would enter into a contract. If they cannot reach an agreement, the implementer would not be able to use the patent.

Figure 3. Regime with Two-Stage Procedure



The two cases explained above can serve as important benchmarks, and they can be extended and modified as well. In particular, if the possibilities of hold-up and reverse hold-up are serious threats in the context of encouraging voluntary negotiations between the parties, an alternative procedural model can be devised. Figure 3 depicts a flowchart of the general procedure of this alternative model. This procedure would lower transaction costs between the parties and help alleviate concerns about hold-up and reverse hold-up.<sup>31</sup>

<sup>31</sup> In a related vein, some commentators propose a model where the court is asked to determine whether the contract terms in dispute can be deemed to satisfy FRAND requirements. James Ratliff & Daniel L. Rubinfeld, *The Use and Threat of Injunctions in the RAND Context*, 9 J. COMPETITION L. & ECON. 1, 12–20 (2013). In their model, the availability of injunctive relief plays no significant role since the court can consider granting an injunction only as a last resort when the implementer declines the offered FRAND license and continues to infringe. *Id.* at 18. The legal regime envisaged through their model is akin to the one proposed in Figure 1 in that the availability (or not) of injunctive relief has virtually no impact on the parties' negotiating behavior. Contrary to this, some commentators discuss a model with a legal regime where the court grants an injunction only when it has sufficient evidence that the patent implementer is unwilling to cooperate, which the authors explain is similar to the general legal regime in Europe. Gregor Langus, Vilen Lipatov & Damien Neven, *Standard-Essential Patents: Who is Really Holding Up (and When)?*, 9 J. COMPETITION L. & ECON. 253, 255–56 (2013). They find that in this regime the patent imple-

The new procedure shown in Figure 3 employs a two-step approach to resolve a dispute regarding license terms for SEPs. First, after a lawsuit is filed, the court would take a quick look at the submitted evidence and render an interim and provisional decision as to whether the license terms offered or counter-offered can be considered prima facie FRAND (the “Interim FRAND” decision). During this part of the proceedings, the court would consider, in an expedited manner, the parties’ prior efforts to reach an agreement containing reasonable license terms. The court’s decision would not be final and would only give the parties a limited opportunity to present their evidence and argue their case. Procedurally, rules for this initial phase of the new mechanism could stipulate that, after the initial claim is submitted, each party has only one opportunity to rebut the other party’s claims and any requests for further rebuttal would be denied.

In the event that the offered license terms are determined to be Interim FRAND, the parties could be given a grace period of several months to permit further negotiation. If the parties are unable to reach an agreement during the grace period, the court would make a definitive determination on the FRAND issue. At the end of the definitive determination phase, if the offered license terms are finally determined to satisfy the FRAND commitment, the court could grant an injunction to the patent holder. This court decision could be justified on the presumption that the patent implementer is perhaps more at fault in the parties’ failure to reach an agreement on license terms, and that it may be more important to prevent reverse hold-up. Thus, once the court makes an Interim FRAND decision, the parties would be placed under considerable pressure to negotiate in earnest and reach an agreement in an expeditious manner during the grace period.

On the other hand, during the initial phase, if the license terms offered prior to the filing of the lawsuit are determined not to be Interim FRAND, the parties are left to negotiate new license terms. In rendering its decision regarding Interim FRAND, the court may choose to indicate which party appears to have been unreasonable or failed to show good faith during the initial negotiation process. In such a case, the designated party has a significant disadvantage during the subsequent renegotiation process. This, in turn, induces the parties to be reasonable and exhibit good faith during the initial negotiation process.

Further, it should be emphasized that this mechanism emphasizes exerting pressure on the parties to negotiate and reach a voluntary agreement. Thus, if the venue for resolving disputes needs to be considered, it would be only natural that the parties be brought before the court or a third-party adjudicator who would play a role in facilitating the parties’ negotiation instead of imposing a ruling, at least during the initial phase of the dispute resolution procedure. From this perspective, regulatory or administrative proceedings should be avoided to the extent that they face difficulties in fostering good-faith negotiations between the parties. Thus, a regula-

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menter has a strong strategic tool and that, even with an injunction available, the holder of a weak patent can end up accepting below FRAND royalty rates. *Id.* at 277.

tory or administrative agency should avoid involvement unless there is a clear indication that the mechanisms for determining standards and enforcing them do not function properly and have caused the parties to not be given enough opportunities to engage in arm's length negotiations to enter into voluntary and welfare-enhancing contractual arrangements. On the other hand, a government regulatory agency should get involved if there are instances of clear violations of applicable competition law. However, the existence of a FRAND commitment would not *per se* warrant a regulatory intervention. One main reason why a government agency should avoid getting involved is that, when a government agency plays an active role, the parties' incentives to bargain between themselves and reach a voluntary agreement easily dissipate. The overall regime of establishing standards through SSOs and granting licenses under FRAND terms has been developed based on the premise that this regime would work because of voluntary bargaining between parties.<sup>32</sup> Depriving the parties of the opportunity and incentives to bargain is practically to deny the *modus operandi* of this regime.

The main benefits of the proposed procedure are two-fold. First, the court would not have to make a definitive determination during the initial phase of a lawsuit as to whether the license terms negotiated between the parties satisfy the FRAND commitment. Instead, the court would only be asked to make an interim determination without having to examine the case at hand very carefully or thoroughly. Second, and more importantly, with the proposed procedure, the parties would be placed under significant pressure to negotiate in good faith—exchanging offers and counter-offers with truly reasonable terms. This occurs because there is otherwise a grave risk that the terms offered or counter-offered will be declared not to satisfy Interim FRAND. If that happens, the party that is viewed to have been unreasonable would be placed at a significant disadvantage in subsequent bargaining. That way, possibilities of hold-up and reverse hold-up would be alleviated, and the parties would be prompted to engage in good faith negotiations from the start.

## V. Conclusion

The legal dispute between Apple and Samsung is commonly portrayed in media as a dispute concerning the validity of several patents held by Samsung. Important policy issues surrounding the current regime of determining and implementing standards at large SSOs underlie this dispute. Since a patent holder proposing its patent be adopted as part of a standard cannot fix and pre-announce the royalty rate that would be applied once its patent becomes a standard, practically the only thing it can do prior to the adoption of the standard is to make a FRAND commitment and to induce the participants in the standard-setting process to view its patent favorably. Once the patent becomes part of a standard, the patent holder and patent

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<sup>32</sup> This presumption could be challenged. However, doing so would require a large-scale reexamination of the overall system of standard-setting through SSOs (with FRAND commitment and without determining royalty rates) and the applicable rules' impact on competition, which is beyond the scope of this article.

implementer have to negotiate in order to fix the royalty rate and other key terms of the license agreement. This negotiation process between the parties is bound to be difficult and may commonly produce stalemates. Negotiations can easily become complicated because once a standard is determined, the parties have starkly different economic interests and have incentives to engage in hold-up or reverse hold-up.

These stalemates may eventually result in lawsuits between the parties, and the court's task is not easy. In particular, the patent holder would typically petition the court to grant an injunction against the implementer. Determining whether to allow for such an injunctive order could easily become a very contentious and complicated legal process. This article proposes a new mechanism for court proceedings under which the parties would be pressured to negotiate in good faith and in earnest to reach an agreement before coming to the court and placing their stalemate into a formal dispute resolution process. That way, concerns arising from the possibility that the parties may engage in hold-up or reverse hold-up would be ameliorated. Under the new mechanism, the court would also be relieved from the burden of having to determine whether to grant an injunction, at least during the initial phase of a lawsuit, and instead would be able to exert pressure on the parties, explicit or implicit, not to engage in opportunistic behavior.











