

**PATENT FAIR USE 2.0**  
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I. INTRODUCTION

In their book, *The Patent Crisis and How the Courts Can Solve It*, Dan Burk and Mark Lemley argue that patent law should be tailored to industry characteristics.<sup>2</sup> They then explore doctrinal mechanisms by which courts can and should take up the laboring oar to accomplish the necessary tailoring. Burk and Lemley explore possibilities for industry-sensitive adjudication at numerous points throughout the patent lifecycle – from patent acquisition through claim interpretation to remedies.<sup>3</sup> Essentially absent (or present only in faint echoes) from their catalog of current and potential “policy levers” for the courts are infringement exemptions. The absence is striking in light of the fact that copyright law, which has been much more prone than patent law to legislative accommodation to particular industries,<sup>4</sup> nonetheless retains a robust judicial policy lever at the infringement stage – the fair use doctrine.<sup>5</sup> Though striking, the lack of discussion is not at all surprising. Patent law has no fair-use-type doctrine and the “research exemptions” that exist are either very narrow<sup>6</sup> or available only in highly specific circumstances.<sup>7</sup>

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<sup>2</sup> DAN L. BURK & MARK A. LEMLEY, *THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT* (2009).

<sup>3</sup> *Id.* at Chs. 9 and 10.

<sup>4</sup> See, e.g., Jessica Litman, *Digital Copyright* (2006). For an updated discussion of copyright legislative history, see Jessica Litman, *Real Copyright Reform*, 96 *Iowa L. Rev.* (forthcoming 2011).

<sup>5</sup> For an excellent recent overview and analysis of the fair use doctrine in copyright law, see Pamela Samuelson, *Unbundling Fair Uses*, 77 *Fordham L. Rev.* 2537 (2009).

<sup>6</sup> *Madey v. Duke University*, 307 F.3d 1351, 1362 (Fed. Cir. 2002) (university research did not qualify for the “very narrow and strictly limited” common law research exemption)

<sup>7</sup> See 35 U.S.C. 271(e)(1) (exemption for research related to FDA approval). See also KATHERINE J. STRANDBURG, *The Research Exemption to Patent Infringement: The Delicate Balance Between Current and Future Technical Progress*, in *Intellectual Property and Information Wealth* (Peter Yu ed. 2006)

In this Essay, I will argue that a fair use type infringement exemption should take its place in patent law's toolbox of policy levers and propose specific factors that should govern such an exemption.<sup>8</sup>

#### A. The Non-Contextual Focus of Patent Doctrine

Particularly in the United States, policing the scope of patent rights has been, at least in principle, a highly front-loaded enterprise, in which the patent scope determination is intentionally divorced from the context of infringement. An extensive set of patent validity doctrines, including limits on patentable subject matter,<sup>9</sup> the requirements of utility,<sup>10</sup> novelty,<sup>11</sup> and nonobviousness,<sup>12</sup> the written description, enablement, and best mode requirements,<sup>13</sup> and the requirement of definite claims<sup>14</sup> have served as a series of "doors"<sup>15</sup> through which a prospective patentee had to pass to obtain patent protection. The perspective of the "person having ordinary skill in the art" or PHOSITA, has been the primary mechanism by which the hurdles to obtaining patent protection were adjusted to particular technological areas.<sup>16</sup> At least until recently, once a patent was obtained, patent exclusivity was unyielding: injunctions were virtually certain at the end of a successful patent infringement suit<sup>17</sup> and compulsory licenses

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<sup>8</sup> In this effort I will build on the seminal work on "patent fair use," Maureen A. O'Rourke, *Toward a Doctrine of Fair Use in Patent Law*, 100 Colum. L. Rev. 1177 (2000).

<sup>9</sup> 35 U.S.C. § 101

<sup>10</sup> 35 U.S.C. §§ 101, 112

<sup>11</sup> 35 U.S.C. § 102

<sup>12</sup> 35 U.S.C. § 103

<sup>13</sup> 35 U.S.C. § 112

<sup>14</sup> 35 U.S.C. § 112

<sup>15</sup> *In re Bergy*, 596 F.2d 952, 960 (C.C.P.A. 1979)

<sup>16</sup> See, e.g., Rebecca Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of the PHOSITA*, 19 Berkeley Tech. L. J. 885 (2004); Cyril A. Soans, *Some Absurd Presumptions in Patent Cases*, 10 IDEA 433, 438 (1966) (coining the name "Mr. PHOSITA").

<sup>17</sup> *EBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 393-94 (2006) (describing the Federal Circuit's approach to injunctions in patent cases). The Supreme Court in *eBay*, *id.* at 394, softened this rule to some extent in some circumstances as discussed further *infra*.

were scorned.<sup>18</sup> An upfront-focused system has several purported advantages. Focusing the debate over patent rights at the front end is intended to bring certainty and, as with property rights in other contexts, to provide secure rewards to those who invest in technology and thus to facilitate a market.<sup>19</sup>

Of course, this system has never been as simple as the upfront doctrinal focus suggests. It has always been possible to challenge the validity of patent claims at the point of enforcement during litigation.<sup>20</sup> Though supposedly independent of the context of infringement, claim interpretation is a ubiquitous subject of dispute in litigation.<sup>21</sup> On the infringement side, the doctrine of equivalents developed to ensure that patentees were not deprived of their rewards by “unscrupulous copyists”<sup>22</sup> or, in more recent iterations, by unforeseeable and tangential technological developments.<sup>23</sup> Nonetheless, the basic conception of a system of upfront barriers followed by secure rights is well-ensconced.<sup>24</sup>

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<sup>18</sup>See, e.g., Colleen M. Chien, Cheap Drugs at What Price to Innovation: Does the Compulsory Licensing of Pharmaceuticals Hurt Innovation, 18 Berkeley Tech. L. J. 853, 857-64 (2003); Joseph A. Yosick, Compulsory Patent Licensing for Efficient Use of Inventions, 2001 U. Ill. L. Rev. 1275 (discussing the history of compulsory licensing in the United States).

<sup>19</sup> Guido Calabresi & A. Douglas Melamed. Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092-93 (1972). For discussions of the debate over the merits of “property rules” and “liability rules” in intellectual property, see, e.g., ROBERT P. MERGES, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 Cal. L. Rev. 1293(1996) ; James Bessen & Michael J. Meurer, Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk (2008); Mark A. Lemley & Philip J. Weiser, Should Property or Liability Rules Govern Information?, 85 TEX. L. REV 783 (2007); Daniel A. Crane, Intellectual Liability, 88 Tex. L. Rev. 253 (2009). See also *MercExchange, LLC v. eBay, Inc.*, 401 F.3d 1323, 1338 (Fed. Cir. 2005) (“Because the ‘right to exclude recognized in a patent is but the essence of the concept of property,’ the general rule is that a permanent injunction will issue once infringement and validity have been adjudged.”), rev’d sub nom *EBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 393-94 (2006).

<sup>20</sup> Chisum on Patents 19.02.

<sup>21</sup> See, e.g., Dan L. Burk and Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. PA. L. REV. 1743 (2009) and many references therein.

<sup>22</sup> *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 607 (U.S. 1950)

<sup>23</sup> *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 304 F.3d 1289, 1290 (Fed. Cir. 2002)

<sup>24</sup> For discussions and critiques of the Federal Circuit’s bright line “formalistic” approach, see, e.g., Jeffrey A. Lefstin, The Formal Structure of Patent Law and the Limits of Enablement, 23 Berkeley Tech. L.J. 1141, 1142-51 (2008) (describing the “new formalism of patent law” and the treatment of patent validity and infringement as conceptually separate and “binary” determinations); Timothy R. Holbrook, The Supreme Court’s Complicity in Federal Circuit Formalism, 20 Santa Clara Comp. & High Tech. L.J. 1 (2003); John R. Thomas, Formalism at the Federal Circuit, 52 Am. U. L. Rev. 771 (2003); Rochelle C. Dreyfuss, 23 Berkeley Tech. L.J. 787 (2008);

Around the turn of the twenty-first century, there began to be widespread dismay over the state of the patent system.<sup>25</sup> A number of factors contributed to the sense that something had gone wrong. Globalization of the system under the TRIPS Agreement pitted (or at least seemed to pit) patent rights against critical public health interests.<sup>26</sup> Patent protection expanded into subject areas, such as business methods, software, and biotechnology, in which it was more difficult to define rights than it had been in the paradigmatic chemical and mechanical fields.<sup>27</sup> These and other factors led to a burgeoning of the sheer numbers of patents the United States Patent and Trademark Office (USPTO) was required to consider.<sup>28</sup> Technological changes increased the importance of both cumulative innovation and complex products, lending greater salience to overlapping patent rights.<sup>29</sup> Innovation paradigms are also evolving, with user innovation, open innovation, and collaborative and open source approaches playing an increasingly important role.<sup>30</sup> Rather than purchasing products the patent rights over which are

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<sup>25</sup> See, e.g., Federal Trade Comm'n, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy* (2003), available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf>, and references therein; A PATENT SYSTEM FOR THE 21<sup>ST</sup> CENTURY, NAT'L RESEARCH COUNCIL OF THE NAT'L ACADEMIES (Stephen A. Merrill, Richard C. Levin, & Mark B. Myers, eds., 2004), and references therein; Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCI. 698 (1998); ADAM B. JAFFE & JOSH LERNER, *INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS AND WHAT TO DO ABOUT IT* (2004) and references therein; Rochelle C. Dreyfuss, *Pathological Patenting: The PTO As Cause or Cure*, 104 MICH. L. REV. 1559 (2006) (critiquing Jaffe and Lerner for its emphasis on patent invalidity and pointing out other potential sources of problems with the patent system).

<sup>26</sup> See generally Margaret Chon, *Intellectual Property and the Development Divide*, 27 *Cardozo L. Rev.* 2821 (2006); Rochelle C. Dreyfuss, *TRIPS-Round II: Should Users Strike Back?*, 71 *U. Chi. L. Rev.* 21 (2004); Daniel J. Gervais, *Intellectual Property, Trade & Development: The State of Play*, 74 *Fordham L. Rev.* 505 (2005); Peter Yu, *TRIPs and Its Discontents*, 10 *Marq. Intell. Prop. L. Rev.* 369 (2006). See also Thomas W. Pogge, *Human Rights and Global Health: A Research Program*, 36 *Metaphilosophy* 182 (2005) (discussing the impact of TRIPS on biotechnology and pharmaceuticals); Symposium, *Intellectual Property, Trade and Development: Accommodating and Reconciling Different National Levels of Protection*, 82 *Chi.-Kent L. Rev.* 1109 (2007) (collecting articles discussing the impact of intellectual property agreements on public health and agriculture); Symposium, *Traditional Knowledge, Intellectual Property, and Indigenous Culture*, 11 *Cardozo J. Int. & Comp. L.* 239 (2003) (collecting articles discussing the impacts of intellectual property agreements on indigenous cultures, plants, and medicines).

<sup>27</sup> See, e.g., BESSEN & MEURER, *supra* note 19 and references therein.

<sup>28</sup> See, e.g., Bronwyn Hall, *Exploring the Patent Explosion*, 30 *J. Tech. Transfer* 35 (2005)..

<sup>29</sup> There is a large and contentious literature on this topic, which is reviewed recently (and skeptically) in Jonathan Barnett, *Property as Process: How Innovation Markets Select Innovation Regimes*, 119 *Yale L.J.* 384 (2009).

<sup>30</sup> See, e.g., Yochai Benkler, *The Wealth of Networks* (2006); Katherine J. Strandburg, *Users as Innovators: Implications for Patent Doctrine*, 79 *U. Colo. L. Rev.* 467 (2008); Katherine J. Strandburg, *Evolving Innovation Paradigms and the Global Intellectual Property Regime*, 41 *Conn. L. Rev.* 861 (2009) and references therein.

“exhausted” by the sale,<sup>31</sup> consumers increasingly are licensees (and hence potential infringers) with ongoing obligations to patent holders.

Besides leading to a sense, at least in many quarters, of a patent system run amok, these changes drove a wedge between industries, since the changes played out in technology-specific ways.<sup>32</sup> In response, proposals for reform abounded. Legislation has been introduced repeatedly in Congress and, as Burk and Lemley explain, for the most part become stymied by opposing pressures from different industry sectors.<sup>33</sup>

With the legislature at an impasse, the courts – particularly the Supreme Court<sup>34</sup> – and the USPTO have stepped in with attempts to rein in perceived over-patenting. Commentators have also been prolific with suggestions for improving “patent quality.”<sup>35</sup> With important exceptions,

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<sup>31</sup> See *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617 (2008) (reaffirming that the patent exhaustion doctrine precludes a patent holder from asserting a claim against a third party purchaser).

<sup>32</sup> Burk & Lemley, *supra* note 2.

<sup>33</sup> *Id.* See also Jay P. Kesan and Andres A. Gallo, *The Political Economy of the Patent System*, 87 N.C. L. Rev. 1341 (2009). Note, however, that at this writing there is renewed optimism regarding the potential for passage of substantive patent reform legislation. See Patent Reform Act of 2010, S. 515. The current legislation would not provide the kind of ex post contextually sensitive enforcement advocated here, however.

<sup>34</sup> See *Quanta Computer, Inc. v. LG Elecs., Inc.*, 553 U.S. 617 (2008) (reaffirming that the patent exhaustion doctrine precludes a patent holder from asserting a claim against a third party purchaser); *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007) (rejecting a rigid requirement that obviousness be demonstrated by evidence of a “teaching, suggestion, or motivation to combine” prior art references); *Microsoft Corp. v. AT&T Corp.*, 550 U.S. 437, 456 (2007) (rejecting an expansive interpretation of infringement provision involving component parts of a patented product manufactured domestically but assembled and sold abroad); *MedImmune, Inc. v. Genentech, Inc.*, 549 U.S. 118, 137 (2006) (holding a party is not required to break a license agreement “before seeking a declaratory judgment in federal court that the underlying patent is invalid, unenforceable, or not infringed”); *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 394 (2006) (holding that standard principles of equity apply when granting injunctive relief in patent disputes); *Ill. Tool Works, Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 45–46 (2006) (finding that a patent does not automatically confer market power); *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 138 (2006) (Breyer, J., dissenting) (criticizing the Court for choosing not to decide this case and supporting a more restrictive view of patentable subject matter); *Merck KGaA v. Integra Lifesciences I, Ltd.*, 545 U.S. 193, 208 (2005) (holding “the use of patented compounds in preclinical studies is protected” and is not infringement in most circumstances). See also John F. Duffy, *The Festo Decision and the Return of the Supreme Court to the Bar of Patents*, 2002 Sup. Ct. Rev. 273 (2002).

<sup>35</sup> One rough measure of the interest in the topic is that a LEXIS search in the US Law Reviews and Journals database yields 402 hits for the phrase “patent quality,” (search conducted on 5/4/2010), while there were only 22 such hits prior to 2000.

to which I will return, the interventions and proposals have maintained the focus on better defining the ex ante scope of patent exclusive rights.<sup>36</sup>

One important example of this focus is the Supreme Court’s recent opinion in *KSR v. Teleflex*,<sup>37</sup> in which the Court arguably raised the bar to patentability by recognizing that at least some level of creativity is the province of the ordinary artisan.<sup>38</sup> Even more recently, the Federal Circuit Court of Appeals, following prodding from both the PTO and at least some of the justices on the Supreme Court, moved to rein in the scope of patentable subject matter, particularly with regard to the interpretation of the ban on the patenting of “abstract ideas” which is crucial to determining the scope of patent rights in business methods and software.<sup>39</sup> The Supreme Court will soon rule on this issue as well.<sup>40</sup> The PTO has also made efforts to improve upfront quality control through its “second pair of eyes” review of certain business method patents<sup>41</sup> and its experimental “peer-to-patent” program.<sup>42</sup> The Federal Circuit’s claim construction jurisprudence reflects various attempts to establish an upfront clarity for the scope of patent rights – the focus

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<sup>36</sup> To be sure, commentators have debated when, as a matter of procedure and administrability, it is best to expend resources to determine the scope of patent rights definitively. See, e.g., Mark A. Lemley, Rational Ignorance at the PTO, 95 N.W. U. L. Rev. 1495 (2001); Jay P. Kesan, 17 Berkeley Tech. L.J. 763 (2002); F. Scott Kieff, The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules, 45 B.C. L. Rev. 55 (2003); Shubha Ghosh & Jay Kesan, What do Patents Purchase? In Search of Optimal Ignorance in the Patent Office, 40 Hous. L. Rev. 1219 (2004). These discussions still generally presume a conceptual separation between the definition of patent scope and the context of infringement, however. See Jeffrey A. Lefstin, The Formal Structure of Patent Law and the Limits of Enablement, 23 Berkeley Tech. L.J. 1141, 1147 (2008) (describing the Federal Circuit’s “rigid conceptual separation” between infringement and validity determination). Perhaps closest in spirit to the approach I advocate here are recent proposals for a return to a central claiming regime. See, e.g., Jeanne C. Fromer, Claiming Intellectual Property, 76 U. Chi. L. Rev. 719 (2009); Dan L. Burk & Mark A. Lemley, Fence Posts or Sign Posts? Rethinking Patent Claim Construction, 157 U. Pa. L. Rev. PENumbra 1743 (2009). These proposals still assume, however, that there is a proper scope of patent exclusivity, as against all comers, even if it is most desirable, as a practical and administrative matter to determine that scope in light of the accused product or process.

<sup>37</sup> *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007).

<sup>38</sup> *Id.* at 421.

<sup>39</sup> *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008), cert granted sub nom *Bilski v. Kappos*, No. 08-964.

<sup>40</sup> *Bilski v. Kappos*, No. 08-964.

<sup>41</sup> See, e.g., John R. Allison & Starling D. Hunter, *On the Feasibility of Improving Patent Quality One Technology at a Time: The Case of Business Methods*, 21 BERKELEY TECH. L.J. 729, 734–35 (2006) (describing the PTO’s “second pair of eyes” review of business method patent applications).

<sup>42</sup> See [www.peertopatent.org](http://www.peertopatent.org).

on the specification and prosecution history as sources of claim interpretation,<sup>43</sup> the ill-fated attempt to use dictionaries to establish claim term meanings,<sup>44</sup> the downplaying of “extrinsic evidence” and of the factual underpinnings of claim interpretation,<sup>45</sup> and the insistence that claim meaning be established independently of the product or process that is accused of infringement, for example.<sup>46</sup> Recent expansions in the written description<sup>47</sup> and utility<sup>48</sup> doctrines similarly focus on reining in over-patenting at the front end.

The long-running back-and-forth between the Federal Circuit and the Supreme Court concerning the contours of the doctrine of equivalents can also be seen largely as a colloquy over the extent to which claim scope can and should be set in stone at issuance.<sup>49</sup> While the doctrine eventually established recognizes the theoretical possibility of a need to encompass activity beyond the scope of the literal claims,<sup>50</sup> the foreseeability approach ensures that cases applying the doctrine will be few and far between.<sup>51</sup>

The results of the focus on upfront clarity have not been encouraging. Claim construction, for example, remains a mess, with the Federal Circuit disagreeing with the district courts in a large number of cases.<sup>52</sup> Validity is routinely disputed in litigation, though it is

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<sup>43</sup> Phillips v. AWH Corp., 415 F.3d 1303, 1315-17 (Fed. Cir. 2005) (en banc); Vitronics Corp. v. Conceptronic, 90 F.3d 1576, 1582-83 (Fed. Cir. 1996).

<sup>44</sup> Phillips, 415 F.3d at 1319-24; Tex. Digital Sys. v. Telegenix, Inc., 308 F.3d 1193 (Fed. Cir. 2002)

<sup>45</sup> Phillips, 415 F.3d at 1317-19; Cybor Corp. v. Fas Techs., 138 F.3d 1448 (Fed. Cir. 1998) (en banc). But see Cybor, 138 F.3d at 1473-78 (Rader, J., dissenting) (criticizing the Federal Circuit for adopting a de novo review standard for claim construction).

<sup>46</sup> Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996). See Chisum on Patents 18.03[1][b].

<sup>47</sup> Ariad Pharms., Inc. v. Eli Lilly & Co., 598 F.3d 1336 (Fed. Cir. 2010) (en banc).

<sup>48</sup> In re Fisher, 421 F.3d 1365 (Fed. Cir. 2005).

<sup>49</sup> Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 493 F.3d 1368 (Fed. Cir. 2007); Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722 (2002); Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 234 F.3d 558 (Fed. Cir. 2000) (en banc); Warner-Jenkinson Co. v. Hilton Davis Chemical Co., 520 U.S. 17 (1997); Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 72 F.3d 857 (Fed. Cir. 1995); Hilton Davis Chem. Co. v. Warner-Jenkinson Co., 62 F.3d 1512 (Fed. Cir. 1995) (en banc).

<sup>50</sup> Festo, 535 U.S. at 740.

<sup>51</sup> John R. Allison & Mark A. Lemley, *The (Unnoticed) Demise of the Doctrine of Equivalents*, 59 STAN. L. REV. 955, 977-78 (2007).

<sup>52</sup> See, e.g., Christian A. Chu, *Empirical Analysis of the Federal Circuit's Claim Construction Trends*, 16 Berkeley Tech. L.J. 1075 (2001); Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 Harv.

possible that proposals to permit early stage third party oppositions to patent rights might improve the situation.<sup>53</sup> In some industries, notably in information technology, the scope of rights is so uncertain that patents are deemed virtually useless except in portfolios.<sup>54</sup>

Thus, while there is much to be said for well-defined patent scope, experience demonstrates that there are important limitations, both theoretical and practical, to an entirely upfront approach. These limitations include the unpredictability of technology, and hence the inability to determine a priori how much downstream innovation a particular claim will be deemed to encompass<sup>55</sup> or how intertwined a particular patented invention will become with other “pieces” of technology;<sup>56</sup> the fact that patented technology, especially in some industries, is employed in contexts in which the spillover effects of exclusive rights vary widely;<sup>57</sup> and the inability to determine whether a particular invention might otherwise be independently invented and disseminated by another inventor before the expiration of the twenty-year patent term.<sup>58</sup> Commentators have also questioned the efficiency of investing in clearly determining property rights up front, in light of the very large fraction of patents that are never licensed, traded, or

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J.L. & Tech. 1 (2001); Kimberly A. Moore, *Markman Eight Years Later: Is Claim Construction More Predictable?*, 9 Lewis & Clark L. Rev. 231 (2005); Michael Saunders, *A Survey of Post-Phillips Claim Construction Cases*, 22 Berkeley Tech. L.J. 215 (2007); Lee Petherbridge, *The Claim Construction Effect*, 15 Mich. Telecomm. Tech. L. Rev. 215 (2008).

<sup>53</sup> See, e.g., Jay P. Kesan, *Carrots and Sticks to Create a Better Patent System*, 17 BERKELEY TECH. L.J. 763 (2002); Patent Reform Act of 2010.

<sup>54</sup> Bessen & Meurer, *supra* note 19; Mark A. Lemley, *Ignoring Patents*, 2008 Mich. St. L. Rev. 19 (2008); Christopher A. Cotropia and Mark A. Lemley, *Copying in Patent Law*, 87 N.C.L. Rev. 1421 (2009); Gideon Parchomovsky and R. Polk Wagner, *Patent Portfolios*, 154 U. Pa. L. Rev. 1 (2005).

<sup>55</sup> Patent jurisprudence recognized this issue early on, particularly in discussions of the scope of patentable subject matter. See, e.g., *Gottschalk v. Benson*, 409 U.S. 63, 67-68 (U.S. 1972); *O'Reilly v. Morse*, 56 U.S. 62, 113 (U.S. 1854)

<sup>56</sup> See, e.g., *Heller & Eisenberg*, *supra* note 25 for a discussion of the potential for “anticommons” problems with upstream patenting.

<sup>57</sup> For example, an invention may serve both as a commercial product (e.g. a pharmaceutical or diagnostic test) and as a research tool. The implications of exclusive rights may be quite different in the two contexts. For a discussion of this distinction, see Katherine J. Strandburg, *User Innovator Community Norms: At the Boundary between Academic and Industry Research*, 77 Fordham L. Rev. 2237 (2009).

<sup>58</sup> The Federal Circuit has at times considered near-simultaneous invention to be indicative of obviousness and at other times declined to do so. See *Chisum on Patents*, 5.05[7]; *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698 n.7 (Fed. Cir. 1983)

enforced (a clear distinction from real and personal property).<sup>59</sup> Some have even suggested reverting to a registration system for patents in light of the difficulties in examining patents at issuance.<sup>60</sup>

These limitations, which are very real, are in some respects the flipside of the frequently invoked concern with hindsight bias<sup>61</sup> (and the less frequently invoked, but equally important, countervailing attribution error<sup>62</sup>). While hindsight bias and the attribution error arise because of the difficulty in truly appreciating the past,<sup>63</sup> the failings of a focus on ex ante boundary-setting arise from the generally more severe difficulties in anticipating the future of technological evolution. The quest for certainty in intellectual property rights is doomed to failure. Nothing in our experience with real or personal property can really compare to the radical uncertainty that is

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<sup>59</sup> Lemley, *supra* note 54.

<sup>60</sup> F. Scott Kieff, *The Case for Registering Patents and the Law and Economics of Present Patent-Obtaining Rules*, 45 B.C. L. REV. 55 (2003).

<sup>61</sup> See, e.g., *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999); Gregory N. Mandel, *Patently Non-Obvious: Empirical Demonstration that the Hindsight Bias Renders Patent Decisions Irrational*, 67 Ohio St. L.J. 1391 (2006); Gregory Mandel, *Patently Non-Obvious II: Experimental Study on the Hindsight Issue before the Supreme Court in KSR v. Teleflex*, 9 Yale J. L. & Tech. 1 (2006-07).

<sup>62</sup> See, e.g., Bradford S. Simon, *Intellectual Property and Traditional Knowledge: A Psychological Approach to Conflicting Claims of Creativity in International Law*, 20 Berkeley Tech. L.J. 1613 (2005); Joseph S. Miller, *Hoisting Originality*, 32 Cardozo L. Rev. 451, 485-86 (2009) (noting that “people respond to situations more uniformly than a typically personality-centered view of human behavior would suggest”)

<sup>63</sup> Well-recognized difficulties of this type in patent law include: i) the difficulty in determining, especially at the time of examination, whether a particular invention is nonobvious or whether it is simply part of an ongoing stream of routine advances, see, e.g., articles within 12 Lewis & Clark L. Rev., *Business Law Forum: Nonobviousness—The Shape of Things to Come*; ii) the imprecision of language, and hence the inability to ensure that claim terms will be interpreted as conceived of by the patentee and examiner at the time of examination, see, e.g., *Festo*, 535 U.S. at 731-32 (discussing limitations of language as a rationale for the doctrine of equivalents). These difficulties are exacerbated by the inability of non-technically-trained judges and juries to capture accurately the perspective of the PHOSITA About this quandary, Learned Hand, writing in 1911, opined:

“I cannot stop without calling attention to the extraordinary condition of the law which makes it possible for a man without any knowledge of even the rudiments of chemistry to pass upon such questions as these. The inordinate expense of time is the least of the resulting evils, for only a trained chemist is really capable of passing upon such facts, e.g., in this case the chemical character of Von Furth's so-called "zinc compound," or the presence of inactive organic substances. In Germany, where the national spirit eagerly seeks for all the assistance it can get from the whole range of human knowledge, they do quite differently. The court summons technical judges to whom technical questions are submitted and who can intelligently pass upon the issues without blindly groping among testimony upon matters wholly out of their ken. How long we shall continue to blunder along without the aid of unpartisan and authoritative scientific assistance in the administration of justice, no one knows; but all fair persons not conventionalized by provincial legal habits of mind ought, I should think, unite to effect some such advance.” *Parke-Davis & Co. v. H. K. Mulford Co.*, 189 F. 95, 115 (C.C.D.N.Y. 1911).

endemic to patent law. While there may be occasional situations in which the value of a piece of real property drastically changes as a result of, say, a discovery of valuable minerals, a decision to build a shopping mall down the street (or even an economic recession), uncertainty moves from the periphery to the center when it comes to intellectual property. Moreover, the overlapping nature of patent rights dramatically increases the potential for windfalls and the extent to which windfalls spill over to implicate the future of innovation.

Given the important implications of technological unpredictability, one might expect patent law to have developed a robust set of ex post doctrines to deal with it.<sup>64</sup> This has not been the case. Where such doctrines have been developed in the past, for the most part mere vestiges of them remain today. Thus, as already discussed, the doctrine of equivalents plays very little role in today's infringement determinations.<sup>65</sup> Doctrines that might cabin the enforcement of patent rights have fared much worse. The exemption for experimental use of patented inventions, with the exception of a statutory exemption focused on dealing with regulatory delay in the pharmaceutical context, has shrunk arguably to the point of non-existence in Federal Circuit case law.<sup>66</sup> The so-called "reverse doctrine of equivalents," which allows courts to find non-infringement in cases where an accused product or process fits within the claim scope despite radical change by the infringer, is occasionally acknowledged but never applied.<sup>67</sup> The Federal

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<sup>64</sup> The unpredictability I focus on here is distinct from a form of unpredictability that is recognized in patent doctrine – the concept of "unpredictable arts." See, e.g., Sean B. Seymore, *The Enablement Pendulum Swings Back*, 6 Nw. J. Tech. & Intell. Prop. 278 (2008) (describing the implications for "unpredictable arts" for patent disclosure doctrine). The doctrine of "unpredictable arts" recognizes the ex ante unpredictability of success for inventive efforts in some arenas, whereas I focus here on the unpredictability of how technology will progress after invention.

<sup>65</sup> Allison & Lemley, *supra* note 51.

<sup>66</sup> For a review of both the general and specific exemptions, see Katherine J. Strandburg, *The Research Exemption to Patent Infringement: The Delicate Balance Between Current and Future Technical Progress*, in *INTELLECTUAL PROPERTY AND INFORMATION* Wealth 107, 112-15 (Peter Yu ed., 2006)

<sup>67</sup> Burk & Lemley, *supra* note 2 at \_\_; *Roche Palo Alto LLC v. Apotex, Inc.*, 531 F.3d 1372, 1378 (Fed. Cir. 2008) ("The reverse doctrine of equivalents is rarely applied, and this court has never affirmed a finding of non-infringement under the reverse doctrine of equivalents.").

Circuit has clarified that there is no “de minimis” exception to patent infringement.<sup>68</sup> The doctrine of patent misuse is rarely successful at the Federal Circuit; moreover, what it reaches outside of antitrust violations is increasingly unclear.<sup>69</sup> Unlike some other jurisdictions, the United States has no recent history of working requirements<sup>70</sup> and makes very limited use of compulsory licensing.<sup>71</sup>

Of course, skeptics will respond to arguments in favor of contextual infringement exemptions with a number of critiques. First, one might argue that incorporating infringement exemptions and defenses into patent law will undermine the certainty of rights that is the aim of the emphasis on defined patent scope. Second, one might argue that exemptions and defenses will undermine incentives to invent, disclose and disseminate (through commercialization) new technology.<sup>72</sup> Both of these arguments have some appeal, but neither is sufficient to outweigh the potential benefits of appropriately tailored post hoc policy levers.

Given the current state of things, it is not at all clear that much certainty would be lost by adopting a set of exemptions and defenses sensitive to the context of an alleged infringement. In practice, as already discussed, the validity and scope of a patent are not finally determined until the outcome of litigation is known. If an infringement exemption can do a reasonably predictable job of improving social welfare at the back end, it may be worth some additional blurring of the already muddy boundaries of patent rights. If we institute a fair-use-type infringement exemption, both inventors and users of patented technology will naturally

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<sup>68</sup> See, e.g., *Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1299 (Fed. Cir. 2009).

<sup>69</sup> See Chisum on Patents 19.04; Robin C. Feldman, *The Insufficiency of Antitrust Analysis for Patent Misuse*, 55 *Hastings L.J.* 399, 425-31 (2003).

<sup>70</sup> Chisum on Patents 19.04

<sup>71</sup> Joshua D. Sarnoff and Christopher M. Holman, 23 *Berkeley Tech. L.J.* 1299, 1351-55 (2008).

<sup>72</sup> For discussions of the traditional incentive theories of patenting, see, e.g., Roger D. Blair & Thomas F. Cotter, *Rethinking Patent Damages*, 10 *Tex. Intell. Prop. L.J.* 1, 78-80 (2001); Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 *U. Chi. L. Rev.* 1017, 1024-28 (1989); Katherine J. Strandburg, *What Does the Public Get? Experimental Use and the Patent Bargain*, 2004 *Wis. L. Rev.* 81 (2004).

incorporate the potential for such exemptions into their planning. Indeed, the primary distinction between the present situation and one with a robust system of exemptions is not really between ex ante certainty and ex post adaptability, but between a system that recognizes the significance of the context in which patented technology is used and one that does not.

The potential effects of contextualized infringement determinations on incentives are also insufficient grounds to reject these potential policy levers outright. First, as the example of the doctrine of equivalents shows, it is possible to use ex post doctrines to enhance a patentee's position as well as to weaken it.<sup>73</sup> Moreover, any cabining of patent rights – whether through patentable subject matter, obviousness, utility, or any other doctrine – in principle “reduces” some kinds of incentives. On the flip side, any expansion of patent rights – via any doctrine – in principle adds to the deadweight loss of exclusivity. The point of using doctrines as policy levers,<sup>74</sup> however, is to get beyond this standoff to consider more specifically questions such as “Incentives to do what?” “What specific decreased incentives in exchange for what particular social benefits?”

Instituting ex post exemptions and defenses is one way to tailor patent rights to these more specific questions. So, for example, where the increase in incentives provided by enforcing patent rights in a particular context is small relative to the costs of exclusivity or where the social cost of the additional incentives is particularly large, an exemption or defense can carve out specific types of uses, using a scalpel rather than a cleaver to shape a socially beneficial patent scope.

Allowing more flexibility at the time of infringement would also take the pressure off of doctrines such as patentable subject matter and claim construction. For example, I have argued

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<sup>73</sup> See Timothy R. Holbrook, *Equivalency and Patent Law's Possession Paradox*, 23 Harv. J. Law & Tech. 1, 17-18 (2009) (discussing implications of assessing equivalency at time of infringement).

<sup>74</sup> Dan L. Burk and Mark A. Lemley, 89 Va. L. Rev. 1575 (2003)./

elsewhere for a “business method use” exemption, which would avoid the difficulties inherent in determining, from abstract claim language, whether a particular claimed invention “is” a business method.<sup>75</sup> Similarly, I have argued that a research use exemption can avoid the need to determine whether a particular invention “is” a research tool in the abstract.<sup>76</sup> Such ex ante (and unavoidably abstract) determinations would be necessary to implement patentable subject matter exclusions, but are not necessary to implement use exemptions. Almost by definition, an infringement exemption can account for the fact that different uses of patented technology have different social costs and benefits. Neither social nor private costs and benefits are all-or-nothing quantities.

One important exception to the present dearth of ex post policy levers in patent law arises out of the Supreme Court’s 2006 decision in *eBay v. MercExchange*.<sup>77</sup> There, a unanimous Supreme Court over-turned a Federal Circuit rule that virtually guaranteed an injunctive remedy for infringement.<sup>78</sup> The Court ruled instead that the grant of an injunction is a discretionary measure decided after considering a “well-established” four-factor test, taking into account whether the plaintiff can establish “(1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.”<sup>79</sup> The justices differed as to the extent to which this test aimed to take account of

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<sup>75</sup> Katherine J. Strandburg, *What If There Were a Business Method User Exemption to Patent Infringement?*, 2008 Mich. St. L. Rev. 245.

<sup>76</sup> Strandburg, *Users as Innovators*, supra note 30 at 500.

<sup>77</sup> 547 U.S. 388 (2006).

<sup>78</sup> *MercExchange, LLC v. eBay, Inc.*, 401 F.3d 1323, 1338 (Fed. Cir. 2005) (“Because the ‘right to exclude recognized in a patent is but the essence of the concept of property,’ the general rule is that a permanent injunction will issue once infringement and validity have been adjudged.”), rev’d sub nom *EBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 393-94 (2006).

<sup>79</sup> 547 U.S. at 391.

changes in the innovation environment,<sup>80</sup> but lower courts have relied on the case to provide leeway to take account of the effects that patent injunctions can have on complex, inter-related technologies, particularly in dealing with non-practicing entities.<sup>81</sup> Besides exercising discretion with respect to the granting of injunctions, courts have begun to award ongoing royalties – which have many of the same effects as compulsory licenses.<sup>82</sup>

Of course, after *EBay v. MercExchange*, one must ask whether more is needed. Is the discretion now afforded to courts at the remedies stage sufficient to provide ex post contextual policy levers where they are desirable? There are three basic reasons why the answer to this question is no. First, as mentioned above, the *EBay* factors are not tailored to promote innovation. There is no particular reason to think that courts applying them will make the most socially beneficial choices about when to grant (or not to grant) injunctive relief. Thus, at the very least, it would be desirable to explore factors that courts should consider in making the decision. Second, there are reasons to anticipate specific types of market failures in patent licensing that are not illuminated by the *EBay* test. Many of these parallel those that have been advanced to justify fair use in copyright law. Third, there are situations in which the social costs of exclusivity in a particular context simply outweigh the social benefits of the additional patent incentive provided by infringement liability in that context. The ex ante doctrines of patentable subject matter, nonobviousness, and so on cannot identify these situations.

The lower courts' responses to the *EBay* ruling demonstrate that district court judges, at least, find it useful to have some mechanism for ex post tailoring at their disposal. The extent to

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<sup>80</sup> Compare 547 U.S. at 394-95 (Roberts, J., concurring) with 547 U.S. at 395-97 (Kennedy, J., concurring).

<sup>81</sup> See, e.g. Stacy Streur, *The eBay Effect: Tougher Standards but Courts Return to the Prior Practice of Granting Injunctions for Patent Infringement*, 8 *Nw. J. Tech. & Intell. Prop.* 67 (2009).

<sup>82</sup> See, e.g., *Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1316 (Fed. Cir. 2007) (majority and concurrence debating whether ongoing royalties constitute a compulsory license). See also H. Tomas Gomez-Arostegui, *Prospective Compensation in Lieu of a Final Injunction in Patent and Copyright Cases*, 78 *Fordham L. Rev.* 1661 (2010).

which courts have grasped at this slim reed of ex post tailoring power begs the question whether there might be other and better ways to design a set of “policy levers” to be applied at the time of infringement. The rest of this Article considers that question. In Part II, I review a previous proposal for “patent fair use” and discuss how social and technological changes since that proposal was made have bolstered the case for a fair-use-type exemption and provided insights into how it should be designed. Part III discusses proposals to deal with some of the issues discussed in Part II either by beefing up existing doctrine or by some form of an independent inventor defense and concludes that those proposals are less desirable than a general fair use type defense. Part IV provides the justification for the “patent fair use 2.0” proposal, sets it out in some detail, and then illustrates how it might be applied to the cases of open source software and essential medicines. Part V concludes.

## II. WHY PATENT FAIR USE NOW?

### A. Professor O’Rourke’s Patent Fair Use Proposal

This article is certainly not the first to recognize many of these justifications for infringement exemptions. In particular, a groundbreaking article by Maureen O’Rourke ten years ago proposed a version of “patent fair use” based on many of the considerations that will be discussed here.<sup>83</sup> Reasoning by analogy to fair use in copyright and expanding on existing patent doctrines, O’Rourke identified a list of five factors, which she argued should form the basis of a patent fair use doctrine: “i) the nature of the advance represented by the infringement; ii) the purpose of the infringing use; iii) the nature and strength of the market failure that prevents a license from being concluded; iv) the impact of the use on the patentee’s incentives and overall social welfare; and v) the nature of the patented work.”<sup>84</sup>

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<sup>83</sup> Maureen A. O’Rourke, *Toward a Doctrine of Fair Use in Patent Law*, 100 COLUM. L. REV. 1177 (2000).

<sup>84</sup> *Id.* at 1205.

O'Rourke's explication of these factors focused on the potential for market failure in the patent system and on the implications of a fair use finding for patentee incentives to invent. Thus, for example, she notes that "commercial use is much more likely to harm the patentee's incentives without a corresponding increase in social welfare,"<sup>85</sup> points to the statutory exemption for use of patented inventions to prepare for FDA approval as an example of a situation in which the social value of certain types of infringement has been deemed to outweigh any corresponding depression of incentives,<sup>86</sup> and discusses a number of situations in which fair use could be used to ensure that patentees do not have overly broad ability to hamper follow-on innovation. For example, her first factor is included for reasons similar to those justifying the reverse doctrine of equivalents – to protect radical improvers from hold-up by earlier patentees.<sup>87</sup>

O'Rourke focuses heavily on the need for fair use in circumstances in which network effects give patentees overly broad control over markets extending beyond the market for the patented invention itself,<sup>88</sup> discussing the case of software application programming interfaces ("APIs") in detail.<sup>89</sup> She recognizes the potential for licensing breakdown in situations involving complex products that implicate many patents (the "anticommons" problem) and the related possibility that licensing breakdown might undermine the "blocking patents" doctrine.<sup>90</sup> The blocking patents doctrine assumes that those who improve significantly upon patented inventions will be able to coordinate exploitation of the improvement with the initial patentee because both parties will be motivated to cross-license.<sup>91</sup>

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<sup>85</sup> Id. at 1206.

<sup>86</sup> Id. at 1197-98.

<sup>87</sup> Id. at 1228-30.

<sup>88</sup> Id. at 1233-34.

<sup>89</sup> Id. at 1211-35.

<sup>90</sup> Id. at 1236-39. See also, Robert Merges, Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents, 62 Tenn. L. Rev. 75 (1994).

<sup>91</sup> O'Rourke, *supra* note 83 at 1194.

Importantly, O’Rourke suggests that a fee should sometimes be charged for patent “fair use.”<sup>92</sup> In this respect her proposal foreshadows the practices of those district courts that have ordered ongoing royalties while denying injunctions in the wake of *EBay v. MercExchange*.<sup>93</sup>

#### A. Signs of the Times: O’Rourke’s Concerns Remain Valid Today

Most of the arguments O’Rourke made in her 2000 article remain compelling today. Indeed, in many respects, O’Rourke’s article was ahead of its time. Many of the justifications she advanced for some form of patent fair use have become considerably stronger in recent years. While the anticommons problem was recognized at the turn of this century, the particular issues raised by non-practicing entities (so-called “patent trolls”) in relation to complex technology were not yet widely recognized.<sup>94</sup> By 2006, however, Justice Kennedy’s concurrence in *EBay v. MercExchange* responded explicitly to concerns about non-practicing entities and the problem of hold-up for complex technologies.<sup>95</sup> Similarly, while the research exemption was a topic of concern in 2000, the Federal Circuit’s 2002 *Madey v. Duke* opinion heightened concerns about the diminishing scope of the common law exemption.<sup>96</sup> The issue of unauthorized research tool use remains much discussed and unresolved.<sup>97</sup> Longstanding concerns about the

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<sup>92</sup> Id. at 1234 – 35.

<sup>93</sup> See discussion, *supra*.

<sup>94</sup> The first use of the term “patent troll” in a law review article, for example, was in 2003. Michael J. Meurer, *Controlling Opportunistic and Anti-Competitive Intellectual Property Litigation*, 44 B.C. L. REV. 509 (2003).

<sup>95</sup> 547 U.S. at 396 (“An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees. . . . For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent.”) (Kennedy, J., concurring).

<sup>96</sup> *Madey v. Duke Univ.*, 307 F.3d 1351, 1362–63 (Fed. Cir. 2002) (experimental use defense persists in a “very narrow form”). Though the Supreme Court did preserve a broad reading of the statutory FDA exemption. *Merck KGaA v. Integra Lifesciences I, Ltd.*, 545 U.S. 193 (2005).

<sup>97</sup> See *id.* at n. 7 (explicitly leaving open the status of research tools under the statutory research exemption); *Proveris Sci. Corp. v. Innovasystems, Inc.*, 536 F.3d 1256 (Fed. Cir. 2008) (device used in development of FDA submissions but not itself subject to FDA approval was not covered by statutory research exemption). See also *Strandburg, Users as Innovators*, *supra* note 30 at 502-03.

applicability of patent infringement doctrine to reverse engineering of software, a central focus of O'Rourke's analysis, also remain.<sup>98</sup>

#### B. Signs of the Times: Evolving Reasons for Patent Fair Use

Not only have developments over the past ten years heightened some of the concerns motivating O'Rourke's fair use proposal, but also new issues have come to the fore that both provide additional rationales for a fair use type infringement exemption and help us to flesh out relevant factors for such an exemption.

Traditionally, one could divide the world of potential patent infringers into several categories: commercial users of industrial processes, commercial manufacturers of patented products, innovators building upon patented products or processes, and consumers of patented products. Commercial users of industrial processes and manufacturers of patented products could be expected to negotiate patent licenses. Follow-on innovators were protected by a complex of patent doctrines: the reverse doctrine of equivalents (or its predecessors) in principle protected radical innovators from hold-up by earlier inventors; the experimental use exemption permitted inventors to build upon the patent disclosures of earlier inventors; and the doctrine of blocking patents, which allows the patenting of improvements without the permission of earlier inventors (in contrast to the situation in copyright law),<sup>99</sup> encouraged inventors of complementary inventions to negotiate cross-licenses. In a world dominated by manufacturer innovation, there was little need to worry about infringement by what we would now call end users of technology. Consumers of patented products were protected by the doctrine of patent

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<sup>98</sup> Jeanne C. Fromer, Patent Disclosure, 94 Iowa L. Rev. 539 (2009)

<sup>99</sup> See Julie Cohen and Mark Lemley, Patent Scope and Innovation in the Software Industry, 89 Cal. L. Rev. 1, 23-25 (2001)

exhaustion (which holds that a patentees rights in a particular artifact are “exhausted” when the artifact is sold to a consumer by an authorized manufacturer).<sup>100</sup>

Recent changes in law and technology have changed the landscape. Traditional approaches may no longer suffice to induce the optimal level of invention, disclosure, and dissemination of new technology. Here I discuss five important developments, which provide reasons for concern about the balance among patent exclusivity, access, and follow-on innovation: i) the increasing importance (and recognition of) non-traditional paradigms of innovation, including open source approaches and user innovation, especially within communities of users; ii) a breakdown of the effectiveness of patent exhaustion and repair and reconstruction as means to take consumers out of the patent infringement loop; iii) growing evidence of the ineffectiveness of patent notice and search, especially in some technological arenas; iv) increasing recognition of the prevalence of independent invention among potential infringers; and v) the increasing ubiquity of software in technology, which is accompanied by a growing separation of design from manufacture and a movement toward mass customization. Each of these developments upsets assumptions underlying the traditional patent regime, changing the balance of costs and benefits of patenting in ways that may justify broader infringement exemptions.

### 1. Alternative Paradigms of Innovation

Numerous patent doctrines reflect an assumption of an industrial seller innovator. Yet, as others and I have discussed in more detail elsewhere, that paradigm is increasingly out of date.<sup>101</sup>

The success of the open source software movement, with its increasingly important role in

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<sup>100</sup> The Supreme Court recently reaffirmed this doctrine in *Quanta Computer, Inc. v. LG Elecs., Inc.*, 128 S. Ct. 2109, 2117 (2008). See also Chisum on Patents, 16.03[2][a].

<sup>101</sup> See, e.g., Strandburg, Users as Innovators, supra note 30; Benkler, supra note 30; von Hippel, supra note **Error! Bookmark not defined.**

commercial ventures, is itself a game changer.<sup>102</sup> Moreover, that success has spawned a number of attempts to introduce similar collaborative models into other arenas, including biotechnology,<sup>103</sup> agriculture,<sup>104</sup> and traditional tangible products.<sup>105</sup> Alongside the growing importance of this particular model of collaborative innovation is increasing recognition of the importance of users as technology innovators and of the extent to which groups of users of similar technology often share their inventions freely with one another, even in commercial contexts.<sup>106</sup> Technological shifts, especially the increasing importance of software as a component of technology and of computers as means for facilitating collaboration, suggest that the contribution of these non-traditional paradigms is likely to grow.<sup>107</sup>

Where user, open, and collaborative innovation predominate, a number of basic assumptions of patent doctrine are undercut.<sup>108</sup> Incentives to invent, disclose, and disseminate technology may be provided by use, by reciprocal exchange, or by other non-patent mechanisms, decreasing the importance of patent incentives and correspondingly tilting the cost-benefit balance away from exclusivity. Such approaches sometimes target markets under-served by or outside of the scope of the markets that are important to the patentee, thus decreasing the impact

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<sup>102</sup> See STEVENWEBER, THE SUCCESS OF OPEN SOURCE (2004); Siobhan O'Mahony & Beth Bechky, *Boundary Organizations: Enabling Collaboration Among Unexpected Allies*, 53 ADMIN. SCI. Q. 422 (2008).

<sup>103</sup> For a recent review of these efforts, see Emily Marden, *Health Care & Pharmaceuticals: Open Source Drug Development: A Path to More Accessible Drugs and Diagnostics?*, 11 Minn. J.L. Sci. & Tech. 217 (2010). See also Strandburg, *Evolving Innovation Paradigms*, supra note 30 and references cited therein.

<sup>104</sup> See, e.g., Keith Aoki, "Free Seeds, Not Free Beer": Participatory Plant Breeding, Open Source Seeds, and Acknowledging User Innovation in Agriculture, 77 Fordham L. Rev. 2275 (2009).

<sup>105</sup> For an interesting example of such a project see [www.quirky.com](http://www.quirky.com). Of course, community innovation of tangible products is not at all new. See, for example, Nikolas Franke and Sonali Shah, *How Communities Support Innovative Activities: An Exploration of Assistance and Sharing among End-Users*, 32 Res. Pol'y 157 (2003) (studying community innovation among users of sports equipment).

<sup>106</sup> See von Hippel, *Democratizing Innovation*, supra note **Error! Bookmark not defined.**; Eric von Hippel & Georg von Krogh, *Free Revealing and the Private Collective Model for Innovation Incentives*, 36 R&D Mgmt. 295(2006); Joachim Henkel, *Selective Revealing in Open Innovation Processes: The Case of Embedded Linux*, 35 Res. Pol'y 953(2006); Dietmar Harhoff, et al., *Profiting from Voluntary Information Spillovers: How Users Benefit by Freely Revealing Their Innovations*, 32 Res. Pol'y 1752(2003).

<sup>107</sup> See, e.g., Benkler, supra note 30; Carliss Baldwin and Eric von Hippel, *Modeling a Paradigm Shift: From Producer Innovation to User and Open Collaborative Innovation*, Working Paper, available at <http://hbswk.hbs.edu/item/6325.html>.

<sup>108</sup> Strandburg, *Users as Innovators*, supra note 30.

of infringement on the patentee's profits and increasing the potential positive social externalities of unauthorized use. Moreover, user, open, and collaborative innovations are often either unpatentable because of issues of inventorship due to their incremental and emergent origins or unpatented because their inventors do not wish to patent them or lack the funds to do so. Because these innovations are not patent protected, the blocking patent doctrine -- patent law's mechanism for balancing rights between initial and follow-on inventors -- breaks down.<sup>109</sup>

## 2. The Declining Relevance of Patent Exhaustion and the Repair/Reconstruction Distinction

Under the traditional seller innovator paradigm, the doctrines of patent exhaustion (corresponding to copyright's "first sale" doctrine<sup>110</sup>) and repair/reconstruction<sup>111</sup> provided significant protection for consumers against being liable for patent infringement while making ordinary use and repair of their purchases. The protection provided by these doctrines is shrinking, however.

First, the position of users of patented products and processes has shifted drastically due to the increasing dominance of software and business method claims. More and more often, ordinary consumers find themselves in the position, not of purchasers of products about which patent rights have been exhausted, but of users of patented processes or "systems" to which patent exhaustion may not apply.<sup>112</sup> While in most situations to date commercial entities mediate

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<sup>109</sup> Ex ante licensing approaches, such as the General Public License ("GPL") often used in open source software, are of only limited use in the patent context, since infringers need not be copiers and thus need have no pre-existing relationship with a patentee in order to infringe. For an extensive recent discussion of the GPL, see Greg R. Vetter, Commercial Free and Open Source Software: Knowledge Production, Hybrid Appropriability, and Patents, 77 *Fordham L. Rev.* 2087 (2009).

<sup>110</sup> 17 U.S.C. 109.

<sup>111</sup> Chisum on Patents, 16.03[3]

<sup>112</sup> The Supreme Court held in *Quanta Computer, Inc. v. LG Elecs., Inc.*, 533 U.S. 617 (2008), that method patents may be exhausted by the sale of an item that "substantially embodies" the method. The scope of situations in which exhaustion applies to methods is not at all clear, however. The district court in *Katz Interactive Call Processing Patent Litig. v. DirecTV Group, Inc.*, 2009 U.S. Dist. LEXIS 72134 (C.D. Cal. May 1, 2009), determined that

consumers' access to patented technology and provide any necessary licenses, those same licenses often purport to restrict significantly what purchasers can do with the technology.<sup>113</sup>

While the Supreme Court in *Quanta* reaffirmed the doctrine of patent exhaustion, the Court specifically declined to address what limits (if any) apply to adhesion contract restrictions on consumer use.<sup>114</sup> Lower courts have generally enforced such restrictions.<sup>115</sup>

Moreover, patents are increasingly likely to cover things that users and small entrepreneurs can do and make for themselves, without a manufacturer or other commercial intermediary.<sup>116</sup> These types of actors generally have neither the sophistication nor the funds to engage in patent clearance searches (indeed, many have argued that even sophisticated players cannot effectively clear patent rights in the software and business method arenas<sup>117</sup>) or the wherewithal to engage effectively in case-by-case licensing transactions even if they do learn of a potentially relevant patent.

Similarly, in the past, the repair/reconstruction doctrine generally protected consumers when they engaged in intuitively reasonable manipulations of their patented purchases. Thus, in the “old” days, consumers found it unreasonable to be precluded from repairing things they had

exhaustion applied to sale of a service, for example, but the question was one of first impression and similar questions have not yet been addressed by other courts.

<sup>113</sup> There are reasons to be concerned about the permissible scope and terms of these licenses. Others have discussed this issue, primarily in the context of software copyright licenses. See, e.g., Anthony Reese, *The First Sale Doctrine in the Era of Digital Networks*, 44 *B.C.L. Rev.* 577 (2003); Glen O. Robinson, *Personal Property Servitudes*, 71 *U. Chi. L. Rev.* 1449 (2004); Elizabeth I. Winston, *Why Sell What You Can License? Contracting Around Statutory Protection of Intellectual Property*, 14 *Geo. Mason L. Rev.* 93 (2006).; Molly Shaffer van Houweling, *The New Servitudes*, 96 *Geo. L.J.* 885 (2008); Saami Zain, *Quanta Leap or Much Ado about Nothing*, 20 *Alb. L.J. Sci. & Tech.* 67 (2010). I do not discuss it here.

<sup>114</sup> *Quanta*, 533 U.S. at n. 7. See also *McFarling v. Monsanto Co.*, 545 U.S. 1139 (2005), denying cert in *Monsanto Co. v. McFarling*, 363 F.3d 1336 (Fed. Cir. 2004), which enforced a contractual restriction on use of second generation patented seeds.

<sup>115</sup> See discussion of the case law in Zain, *supra* note 113.

<sup>116</sup> This is the case for business method and software patents and increasingly may be the case for tangible goods as technology for “mass customization” through “toolkits” and for “3D printing” improves. See e.g., Eric von Hippel, *Perspective: User Toolkits for Innovation*, 18 *J. Prod. Innovation Mgmt.*, 247 (2001); Simon Bradshaw et al., *The Intellectual Property Implications of Low-Cost 3D Printing*, 7 *Scripted* 5 (2010) (discussing the issue in the context of UK law).

<sup>117</sup> Bessen & Meurer, *supra* note 19; Burk & Lemley, *supra* note 2.

purchased, even if those items were patented. Patent doctrine recognized this expectation as legitimate.<sup>118</sup> Reconstruction of patented inventions, however, was much more likely to be the province of commercial players.<sup>119</sup> The repair/reconstruction doctrine evolved to separate these two types of behavior, broadly privileging repair, even when it involved using after-market parts, while counting wholesale reconstruction of patented products as infringement (and thus protecting patentees from attempts by competitors to undermine patent exclusivity through the sale of “parts”).<sup>120</sup> Nowadays, however, consumers are increasingly “prosumers,” who expect to interact with the products they purchase in creative and innovative ways.<sup>121</sup> The applicability of the repair/reconstruction distinction either to the increasing number of products that are licensed rather than purchased or to significant consumer customization is unclear at best.

### 3. Breakdown of Patent Notice and Search

Much has been written lately about the breakdown of the patent notice function in certain technological areas. As discussed in detail by Bessen and Meurer, for example, this breakdown is due in part to inherent difficulties in describing software and business method inventions, in part to low standards for enablement and description in these areas, which permit broad and vaguely bounded claims, and in part to the unpredictability of claim construction, which can lead to patent coverage of inventions that were completely unforeseeable at the time of patenting.<sup>122</sup> The import of these problems is to increase the cost of patent search and

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<sup>118</sup> Chisum on Patents, 16.03[3].

<sup>119</sup> *Id.*

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

<sup>121</sup> The term “prosumer” has taken on a variety of meanings. Here I adopt the meaning originated by Alvin Toffler, who coined the term in 1980, Alvin Toffler, *The Third Wave* (1980), and discussed in a recent book co-authored with his wife, Alvin Toffler and Heidi Toffler, *Revolutionary Wealth* (2006) (prosumer is “One who create goods, services or experiences for his own satisfaction, rather than for sale or exchange.”) The Tofflers’ predictions of “revolutionary wealth” are sadly pre-2008, but their predictions of a rise in “presumption” are reflected in widespread Web 2.0 phenomena and perhaps in an incipient wave of mass customization of tangible goods.

<sup>122</sup> See Bessen & Meurer, *supra* note 19.

decrease its effectiveness (to the point where, in software for instance, even sophisticated commercial players reportedly opt out of patent clearance and hope for the best<sup>123</sup>).

Patent search problems will be even greater for those engaged in the new innovation paradigms. Consumer innovators lack the sophistication and funds to embark on searches. Moreover, emergent innovations such as open source software lack a central “blueprint” which even could be compared with patent claims.<sup>124</sup>

#### 4. The Importance of Independent Invention

Though copying has never been a requirement of patent infringement (as it is for copyright infringement), much of traditional patent doctrine and rhetoric assumes implicitly that infringers are generally copyists.<sup>125</sup> While independent, nearly simultaneous invention has undoubtedly always been common, the extent to which infringement suits involve independent inventors as defendants is newly recognized and probably increasing as a result of the patent notice problems described in the previous section. Empirical studies at least suggest that a large fraction of accused infringers, if not most, are independent inventors (or at least are not copyists).<sup>126</sup>

Independent invention (at least if it is close to the time of patenting) diminishes the force of the free rider justification for patenting, suggesting that the patent incentive may not have been needed to induce a given invention.<sup>127</sup> Even if we need the prospect of a patent to induce a

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<sup>123</sup> Lemley, Ignoring Patents, *supra* note 54.

<sup>124</sup> While most open source software projects seem to have some kind of hierarchical structure for vetting “official” versions, see Weber, *supra* note 102, it seems unlikely, at least for a complex piece of software such as an operating system, that even the vetters have a complete view of the detailed implementation of algorithms in the various modules and all of their interactions. Moreover, one of the values of open source software is its customizability by users. Customizers are even less likely to be able to perform a proper patent clearing search.

<sup>125</sup> See, e.g., *Festo*, 535 U.S. at 727; *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 607 (1950) (explaining the doctrine of equivalents as a defense against “unscrupulous copyists”).

<sup>126</sup> See, e.g., Christopher A. Cotropia and Mark A. Lemley, Copying in Patent Law, 87 N.C. L. Rev. 1421 (2009).

<sup>127</sup> For this reason, nearly simultaneous invention is sometimes treated as a “secondary consideration” suggesting obviousness. See Chisum on Patents 5.05[7].

race to produce a particular innovation, economic arguments suggest that there is no need for a winner-take-all regime.<sup>128</sup>

Moreover, fairness concerns weigh against imposing infringement liability on independent inventors; those concerns are enhanced when the preferred alternative – patent search – is expensive or infeasible. For all of these reasons, commentators have increasingly suggested either an independent inventor defense or other means to decrease the burden of patent liability for independent inventors.<sup>129</sup>

One justification for nonetheless deeming independent inventors to be infringers relies on the idea that duplicative research is wasteful, a justification which is at least controversial.<sup>130</sup> Moreover, this justification makes sense only if the patent notice function is effective so that search costs are not too high. This does not seem to be the case in many arenas, as just discussed.

Another justification for holding independent inventors liable for infringement applies to those who keep their inventions as trade secrets. Potential infringement liability might induce some inventors to opt for patenting rather than trade secrecy.<sup>131</sup> It is not at all clear that trade secrecy is worse for society than patenting in situations where independent invention occurs,

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<sup>128</sup> See, e.g., Stephen M. Maurer and Suzanne Scotchmer, *The Independent-Invention Defense in Intellectual Property*, 69 *Economica* 535 (2002); Carl Shapiro, *Patent Reform: Aligning Reward and Contribution*, in 8 *INNOVATION POLICY AND THE ECONOMY*, Adam Jaffe, Josh Lerner, and Scott Stern, eds. (2007) at 111; Samson Vermont, *Independent Invention as a Defense to Patent Infringement*, 105 *Mich. L. Rev.* 475 (2006).

<sup>129</sup> See, e.g., Oskar Liivak, *Rethinking the Concept of Exclusion in Intellectual Property*, *Geo. L. J.* (forthcoming 2010); Shapiro, *supra* note 128; Samson Vermont, *Independent Invention as a Defense to Patent Infringement*, 105 *Mich. L. Rev.* 475 (2006); Mark A. Lemley, *Should Patent Infringement Require Proof of Copying?*, 105 *Mich. L. Rev.* 1525 (2007); Samson Vermont, *The Angel is in the Big Picture: A Response to Lemley*, 105 *Mich. L. Rev.* 1537 (2007).

<sup>130</sup> See, e.g., Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 *Colum. L. Rev.* 839, 870-79 (1990)

<sup>131</sup> This theory is reflected in patent case law, which treats an inventor's own trade secret exploitation of an invention as "public use", but allows patenting in the face of a third party's secret use. See, e.g., *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550 (Fed. Cir. 1983) ("Early public disclosure is a linchpin of the patent system. As between a prior inventor who benefits from a process by selling its product but suppresses, conceals, or otherwise keeps the process from the public, and a later inventor who promptly files a patent application from which the public will gain a disclosure of the process, the law favors the latter.")

however. Independent inventors operating in secret are still presumably in competition with one another (at least if they are commercial inventors), so the public gets the benefit of lower prices, even if disclosure is delayed. Moreover, only one of these inventors need make the choice to freely reveal the invention to undermine the secrecy of the others. In any event, prior user defenses, which excuse infringement by independent inventors who do not make it to the patent office first, are common in other patent systems<sup>132</sup> and the United States has implemented such a defense in the business method patent arena<sup>133</sup> without apparent ill effect.

##### 5. Mass Customization and the Separation Between Manufacture and Design

Much has been made in the copyright literature about the changing structure of the entertainment industry, from a system of centralized production aimed at mass markets to an increasingly decentralized and individualized marketplace, in which users play important roles in disseminating and creating content.<sup>134</sup> Similar changes in the production of goods are under discussion in the management literature, but have been little noted in the legal literature.<sup>135</sup>

Just as computer technology and the Internet have lessened (or even undermined) the need for identical mass-produced entertainment products, the increasing role of computerized design, manufacture, and operation with respect to tangible goods makes it easier to customize

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<sup>132</sup> See Christopher Garrison, Exceptions to Patent Rights in Developing Countries, International Centre for Trade and Sustainable Development, Issue Paper No. 17 (October 2006) at 5-6, 49-50 (discussing prior user rights in various countries).

<sup>133</sup> 35 U.S.C. 273(b).

<sup>134</sup> See, e.g., Edward Lee, Warming up to User-Generated Content, 2008 U. Ill. L. Rev. 1459; Steven A. Hetcher, Using Social Norms to Regulate Fan Fiction and Remix Culture, 157 U. Pa. L. Rev. 1869 (2009); Daniel Gervais, The Tangled Web of UGC: Making Copyright Sense of User-Generated Content, 11 Vand. J. Ent. & Tech. L. 841 (2009); Debora Halbert, Mass Culture and the Culture of the Masses: A Manifesto for User-Generated Rights, 11 Vand. J. Ent. & Tech. L. 921 (2009); Steven Hetcher, Hume's Penguin, or, Yochai Benkler and the Nature of Peer Production, 11 Vand. J. Ent. & Tech. L. 963 (2009); Mary W.S. Wong, "Transformative" User-Generated Content in Copyright Law: Infringing Derivative Works or Fair Use?, 11 Vand. J. Ent. & Tech. L. 1075 (2009); Jane C. Ginsburg, Separating the Sony Sheep from the Grokster Goats: Reckoning the Future Business Plans of Copyright-Dependent Technology Entrepreneurs, 50 Ariz. L. Rev. 577 (2008).

<sup>135</sup> See, e.g., von Hippel, Democratizing Innovation, supra note **Error! Bookmark not defined.**

products and to design user-friendly “toolkits” for customization.<sup>136</sup> The line between user and manufacturer is beginning to blur. Moreover, some experts predict an increasing availability of custom fabrication plants which will even more significantly blur the distinction between user and manufacturer and between designing and producing tangible goods.<sup>137</sup> If these predictions are realized, not only will consumers be more able to design their own products, but also there will likely be a growing number of “designer innovator” entrepreneurs who, rather than contracting with a manufacturer to produce products using their designs, will seek to market designs directly to consumers. Patents may or may not play an important role in such new business models.<sup>138</sup> In this brave new world, ordinary consumers may be able to make more extensive modifications of patented technology than was possible with earlier tangible goods. They may also be more likely to stumble upon patented technology through independent invention, to be able to make copies of patented technology for their own use, and to be “innocent purchasers” of infringing technology made by others. All of these developments taken together mean that it will become more and more likely that small entities (consumers or “designer innovators”), for whom the transaction costs involved in clearing patent rights would be prohibitive, will be patent infringers not protected by patent exhaustion or the repair/reconstruction doctrine.

### III. EXISTING EX POST DOCTRINES AND RECENT PROPOSALS

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<sup>136</sup> See, e.g., Nikolas Franke & Frank Piller, *Value Creation by Toolkits for User Innovation and Design: The Case of the Watch Market*, 21 J. Prod. Innovation Mgmt. 401(2004); Nikolas Franke & Eric A. von Hippel, *Satisfying Heterogeneous User Needs via Innovation Toolkits: The Case of Apache Security Software*, 32 Res. Pol'y 1199(2003); Lars Bo Jeppesen, *User Toolkits for Innovation: Consumers Support Each Other* (Copenhagen Bus. Sch. Dep't Econ. & Strategy 2005); Eric A. von Hippel & Ralph Katz, *Shifting Innovation to Users via Toolkits* (2002), available at <http://ssrn.com/abstract=309740>.

<sup>137</sup> See, e.g., Eric von Hippel, *Perspective: User Toolkits for Innovation*, 18 J. Prod. Innovation Mgmt., 247 (2001); Simon Bradshaw et al., *The Intellectual Property Implications of Low-Cost 3D Printing*, 7 Scripted 5 (2010) (discussing the issue in the context of UK law).

<sup>138</sup> This issue is worthy of more extensive consideration, which I do not attempt here.

While there is no general defense to patent infringement analogous to copyright's fair use doctrine, there are, as already discussed in passing, various ex post doctrines in patent law that seek to address the issues of transaction failures, the balance between initial and follow-on innovators, and the potential that overriding societal costs may outweigh the benefits of patenting. These doctrines are inadequate to the task of serving as effective policy levers for various reasons: As discussed above, some, such as the experimental use exemption<sup>139</sup> and prior user defense for business methods,<sup>140</sup> are too narrowly targeted or interpreted to serve the purpose. Others, such as the reverse doctrine of equivalents<sup>141</sup> and patent misuse,<sup>142</sup> are never or increasingly rarely applied. Still others, such as the doctrines of patent exhaustion and repair/reconstruction, are no longer adequate in light of social and technical changes.<sup>143</sup> The most recent addition to the list – the discretion given to district court judges as a result of the Supreme Court's *EBay v. MercExchange* decision – is promising but at least to date inadequately tailored to the innovation issues motivating the patent system.<sup>144</sup>

In light of the slim ex post options available under existing law, commentators have made a number of suggestions for reform. These suggestions fall primarily into two categories: proposals to beef up existing doctrines and proposals to deal with independent invention.

#### A. Proposals to Beef Up Existing Doctrines

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<sup>139</sup> See discussion, supra, at \_\_\_. See also Katherine J. Strandburg, *The Research Exemption to Patent Infringement: The Delicate Balance Between Current and Future Technical Progress*, in *Intellectual Property and Information Wealth*, Peter Yu, ed. (2006) for a review; Burk & Lemley, supra note 2.

<sup>140</sup> See discussion, supra, at \_\_\_. See also Burk & Lemley, supra note 2.

<sup>141</sup> See discussion, supra, at \_\_\_. See also Burk & Lemley, supra note 2.

<sup>142</sup> See discussion, supra, at \_\_\_. See also Burk & Lemley, supra note 2.

<sup>143</sup> See discussion, supra, at \_\_\_.

<sup>144</sup> See discussion, supra, at \_\_\_.

A number of scholars (including this one) have argued for a more expansive research exemption, while others have disputed the wisdom of such an exemption.<sup>145</sup> The Supreme Court has in fact taken an expansive approach to the statutory exemption for experimentation related to FDA approval.<sup>146</sup> While I continue to believe an expansive research exemption is a good idea, there are limits to what a piecemeal approach can accomplish (particularly if implemented by statute).

For example, I have argued elsewhere that a business method use exemption would be justified by arguments based on user innovation very similar to those I offered for expanding the research exemption.<sup>147</sup> Despite the similar justifications, these proposals raise entirely separate questions under existing law. Similarly, the statutory exemption from imposition of remedies (but not from infringement liability) for a medical practitioner's "performance of a medical or surgical procedure on a body"<sup>148</sup> is ill-equipped to deal with issues raised by the outsourcing of diagnostic testing to independent laboratories, despite the fact that similar questions about doctors as user innovators and the importance of non-commercial motivations arise.<sup>149</sup> Where there are, as argued by O'Rourke and as I will argue below, general principles that indicate a need for exemption from infringement it is sensible at least to consider the merits of a more general approach.

The reverse doctrine of equivalents is, of course, a general approach and several authors (including Burk and Lemley in the book that is the impetus for this symposium) have suggested

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<sup>145</sup> For reviews of the literatures see Joshua D. Sarnoff and Christopher M. Holman, Recent Developments Affecting the Enforcement, Procurement, and Licensing of Research Tool Patents, 23 Berkeley Tech. L.J. 1299 (2008) (relating to research tools); Strandburg, *supra* note 7 (relating to both common law and statutory exemptions).

<sup>146</sup> *See e.g.*, Merck KGaA v. Integra Lifesciences I, Ltd., 125 S. Ct. 2372 (2005); Eli Lilly & Co. v. Medtronic, Inc., 496 U.S. 661 (1990).

<sup>147</sup> Strandburg, *supra* note 75.

<sup>148</sup> 35 USC 287(c)

<sup>149</sup> Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc., 548 U.S. 124 (U.S. 2006) (Writ of certiorari dismissed as improvidently granted in case involving patentability of broad claims to medical diagnostic tests); Prometheus Labs., Inc. v. Mayo Collaborative Servs., 581 F.3d 1336 (Fed. Cir. 2009) (finding broad claims to medical diagnostic tests patentable) (petition for cert pending).

revitalizing it.<sup>150</sup> The doctrine, which the Federal Circuit recently described as “rarely invoked and virtually never sustained,”<sup>151</sup> might in principle have the potential to play a role similar to the role that “transformative use” plays in copyright’s fair use doctrine.<sup>152</sup> It could be employed to deal with “blocking patent failure,” in which bargaining between initial and follow-on inventors with overlapping patent rights breaks down or there is independent invention of a significant advance over a patented technology.

The reverse doctrine of equivalents is unlikely to rise to the occasion, however. The doctrine applies, according to the Supreme Court, “where a device is so far changed in principle from a patented article that it performs the same or similar function in a substantially different way, but nevertheless falls within the literal words of the claim.”<sup>153</sup> Simply reading this description within the context of modern patent law is enough to explain why the defense is never successful. It has the ring of a remnant of a historical central claiming regime in which it made sense to invoke the “principle” of an invention.<sup>154</sup> In its current form it makes little sense in a peripheral claiming regime. Moreover, the doctrine is described in terms that are unmoored from any innovation policy goal and will certainly seem obscure to any jury tasked with applying it (the “unreversed” doctrine of equivalents is bad enough in that respect).<sup>155</sup>

Finally, depending on how an expanded reverse doctrine of equivalents were defined, even a beefed up form of this defense could be substantially under and over inclusive: Why

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<sup>150</sup> See, e.g., Burk & Lemley, *supra* note 2; Timothy R. Holbrook, *Equivalency and Patent Law’s Possession Paradox*, 23 Harv. J. Law & Tech. 1, 12-15 (2009); Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L.J. 1, 118-23 (2004); Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1010-13 (1997); Merges & Nelson, *supra* note 130 at 856-66.

<sup>151</sup> *Depuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314 (Fed. Cir. 2009)

<sup>152</sup> See Samuelson, *supra* note 5.

<sup>153</sup> *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608-09, 70 S. Ct. 854, 94 L. Ed. 1097, 1950 Dec. Comm’r Pat. 597 (1950) (emphasis added)

<sup>154</sup> Burk & Lemley, *supra* note 21 at 1773-74 (describing how the reverse doctrine of equivalents originated in a central claiming regime).

<sup>155</sup> See Jeffrey A. Lefstin, *The Formal Structure of Patent Law and the Limits of Enablement*, 23 Berkeley Tech. L.J. 1141, n. 23 (2008) (making a similar point).

apply it only when the accused infringing product or process “performs the same or similar function” or when there is a “fundamental change in the basic principle by which the device operates”<sup>156</sup>? And do we really want to exempt infringement even in cases in which the infringer copied and there was no reason to expect bargaining breakdown (suppose, for example, the initial patentee offers a standard non-exclusive license to all comers)? (Perhaps so, if the new invention is a big enough advance, but the present form the reverse DOE does not account for these factors at all.)

In sum, while the impetus to revive the reverse doctrine of equivalents is a sound one, accounting for the size of an improvement in a multi-factored fair-use-type test is likely both to reflect the underlying policy goals more accurately and to be more palatable to decisionmakers. Similar problems arise when considering the potential for patent misuse to play an important role as an ex post policy lever, as Burk and Lemley acknowledge.<sup>157</sup>

#### B. Proposals to Deal with Independent Invention

A number of legal commentators have proposed exempting independent inventors from infringement liability.<sup>158</sup> As discussed above, there are several policy reasons to favor such a proposal, given the importance of independent invention and the growing difficulty, at least in some technological arenas, of performing cost-effective patent clearances.

In a response to a thoughtful analysis and proposal by Samson Vermont,<sup>159</sup> however, Mark Lemley has argued that an independent inventor defense might be very strong medicine indeed, given the historical prevalence of nearly simultaneous invention.<sup>160</sup> Though this is not necessarily reason not to enact such a defense (if the defense is warranted, the prevalence of

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<sup>156</sup> *Depuy Spine*, 567 F.3d at 1338.

<sup>157</sup> *Supra* note 2.

<sup>158</sup> See, e.g., references *supra* note 128.

<sup>159</sup> Vermont, *supra* note 128.

<sup>160</sup> Lemley, *supra* note 128 at 1528.

independent invention also suggests a very large social payoff from enacting it), it does give one pause. Moreover, as Lemley also argues, there may be special concerns about an independent inventor defense in particular arenas (Lemley mentions pharmaceuticals) involving high costs and high expected payoffs.<sup>161</sup> Lemley suggests four approaches, short of an independent invention defense, to address some of the problems posed by infringement liability for independent inventors: i) requiring copying as an element of willful infringement; ii) expanding prior user rights beyond business methods; iii) using nearly simultaneous invention as a secondary indication of obviousness; and iv) taking account of independent invention in evaluating whether to award injunctive relief.<sup>162</sup>

These are all sensible suggestions for stopping short of a bright line independent inventor defense. Incorporating the questions of copying and independent invention into a fair-use-like exemption from infringement liability similarly would add flexibility and be less drastic than an across-the-board independent invention defense (and, if fair use can be accompanied by an obligation to pay royalties, might be very similar indeed to the suggestion regarding injunctive relief). A fair-use-type exemption has at least two types of advantages over Lemley's proposals, however.

First, rather than simply scaling back liability when there is independent invention, it permits courts to tailor the exemption in light of the technology involved and other relevant factors. Second, and I think importantly, a fair-use-type defense could handle a point that is not much discussed in the independent invention analyses. The world of potential infringers is not

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<sup>161</sup><sup>161</sup> Lemley, *supra* note 128 at 1529. He also argues that an independent inventor defense might make it more difficult to have a workable market for patent rights. *Id.* at 1531-32. This argument applies to virtually any *ex post* policy lever. However, like Vermont in his reply to Lemley's critique, *supra* note 128 at 1539-40, I think this argument is not particularly strong, given the many degrees of uncertainty already plaguing the definition of patent rights. Moreover, if the copyright context is at all analogous, it gives cause for hope since the market for copyrighted works seems to have survived the *ex ante* uncertainties of the fair use defense.

<sup>162</sup> Lemley, *supra* note 128 at 1532-35.

simply divided into copyists and independent inventors. There are degrees of copying and independent invention. There are those who copy from an unmarked (but patented) product and those who copy slavishly from the patent itself. There are those who are “inspired” by the patent, but produce radical improvements. There are independent inventors who willfully turn their eyes away from clearly relevant patent literature and those who would have to make large investments to determine whether they are infringing another’s patent. Further, there is a whole gray area of other potential infringers: those who copy from an independent inventor, those who copy from a copyist, and so forth. Taking copying and independent invention into account as factors in a fair-use-type analysis permits a more nuanced (and less difficult to implement) response to these various factual scenarios, providing policy levers that can take into account differences between technologies and other contextual factors.

#### IV. PATENT FAIR USE 2.0: A PROPOSAL

Given the reasons to favor a fair-use-like patent infringement exemption, what should it look like? As with copyright’s fair use, there is a tension between providing flexibility and giving patentees, potential fair users, and courts sufficient clarity of implementation. While O’Rourke’s proposal is an excellent jumping-off point, I have argued elsewhere that it may be quite difficult for courts to implement.<sup>163</sup> In particular, factors iii) (“the nature and strength of the market failure that prevents a license from being concluded”) and iv) (“the impact of the use on the patentee’s incentives and overall social welfare”)<sup>164</sup> are little more than directions to grant fair use where it would be socially desirable to do so. Necessarily, O’Rourke’s proposal also fails to incorporate factors whose relevance has only become apparent during the past ten years. Can we do better? Though it is an inherently difficult task, I think so. In particular,

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<sup>163</sup> See Strandburg, *supra* note 72.

<sup>164</sup> O’Rourke, *supra* note 8 at 1206-07.

developments over the past ten years may allow us to be more specific about some of the factors that should be considered.

To come up with a list of relevant factors, it is helpful to back up and categorize the circumstances under which exemption from infringement may be appropriate. Because of the strength of the arguments for exempting independent inventors from liability, I begin by dividing the analysis between factors that should be relevant whether or not the infringer has copied from the patentee and factors that are relevant only when there is no copying. This is also a useful division because the analogy to copyright fair use is most relevant in situations involving copying. Since independent inventors (and others who have not copied from the patentee) have a stronger case for exemption than copyists do, any factors that might weigh in favor of exempting a copyist should weigh in favor of exempting an independent inventor as well. The next section discusses such factors. After considering factors that would be relevant even when there has been copying, I turn to consider factors that will be relevant only when an alleged infringer has not copied from the patentee.

#### A. Fair Use Even for Knowing Copyists

There are three types of analytically distinct (though possibly overlapping) situations in which an infringement exemption might be socially desirable even when an infringer has copied from the patentee. First, there are situations involving excusable licensing failure. Second, there are situations involving large improvements (analogous to “transformative uses” in copyright fair use). Third, there are situations in which patent incentives are not needed (or, more precisely, where the boost to invention resulting from patent incentives is not worth the tradeoff in exclusivity). Each type of situation suggests factors to consider in a fair-use-type approach.

##### 1. Excusable Licensing Failures

The category of excusable licensing failures has a large overlap with the types of concerns motivating at least some understandings of copyright fair use.<sup>165</sup> Three sub-categories are useful in the analysis: under-served markets, what O’Rourke calls “anti-patent” refusals to license,<sup>166</sup> and “anticommons”-type hold-up in relation to complex products or processes.<sup>167</sup>

a. Under-Served Markets

Under-served markets can arise either because potential users are unable to pay the patented price or because the transaction costs of licensing exceed the value of use. The most noted example of under-served markets in patent law involves patented pharmaceuticals.<sup>168</sup> It is evident that there are large numbers of individuals in developing countries who would benefit from life-saving drugs yet are unable to pay the going rate. Arguably, generic companies could manufacture and sell inexpensive drugs to these under-served markets without undercutting the pharmaceutical companies’ profits from patented medicines in developed countries. In considering whether a fair use exemption should apply, courts should look for situations involving high social value and low ability to pay. In some cases the distinction between commercial and non-commercial use is a reasonable proxy for ability to pay (and would weigh in favor of exempting educational and non-profit research uses, for example).

The pharmaceutical example points up a dilemma often posed by the possibility of fair-use-type exemptions for under-served markets, however. While the social value of providing life-saving medicines to those who cannot afford them is extremely high, the potential for arbitrage – leakage of cheap goods back into the market for those who can pay – weighs against

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<sup>165</sup> See Wendy J. Gordon, Fair Use as Market Failure, A Structural and Economic Analysis of the Betamax Case and Its Predecessors, 82 Colum. L. Rev. 1600, 1601-02 (1982).

<sup>166</sup> O’Rourke, *supra* note 8 at 1199.

<sup>167</sup> See Heller & Eisenberg, *supra* note 25.

<sup>168</sup> See, e.g., Kevin Outterson, Patent Buy-Outs for Global Disease Innovations for Low- and Middle-Income Countries, 32 Am. J. L. and Med. 159 (2006); Graham Dutfield, Delivering Drugs to the Poor: Will the TRIPS Amendment Help?, 34 Am. J. L. and Med. 107 (2008);

the benefit of providing lower-priced drugs only to those who cannot afford the going rate.<sup>169</sup> If such gray market goods undermine drug inventors' ability to recoup their investment, future innovation might be in danger. This possibility clearly must play a role in weighing whether to allow an exemption for the purpose of serving those who lack ability to pay.

In the pharmaceutical example, a generic manufacturer is needed to give those in developing countries access to the patented technology. In this respect it differs from the personal use paradigm which commonly dominates thinking about fair use as a response to under-served markets in copyright.<sup>170</sup> For personal use, the concern is less about ability to pay than about prohibitive transaction costs associated with licensing. Increasingly, as discussed above, consumers have the potential to infringe patents directly, without the mediation of a manufacturer. In situations where there is no easy way to purchase an embodiment or a standard license to a patented invention, transaction costs may make licensing ineffective. Such situations weigh in favor of a fair use exemption. Exempting personal use would even be in line with the Federal Circuit's recent narrow reading of the experimental use exemption as extending to uses "for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry"<sup>171</sup> and could be quite effective in protecting user innovators whose customizations might stray beyond "repair" and into "reconstruction."

Factors to consider in determining whether an exemption should be made for an under-served market should thus include whether the use was commercial or non-commercial, the likely danger to the patentee's markets due to arbitrage, and the availability of low-transaction

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<sup>169</sup> See, e.g., Michael Ilg, *Market Competition in Aid of Humanitarian Concern: Reconsidering Pharmaceutical Drug Patents*, 9 *Chi-Kent J. Intell. Prop.* 149 (2010); Peter Lee, *Toward a Distributive Commons in Patent Law*, 2009 *Wis. L. Rev.* 917.

<sup>170</sup> A similar concern does arise with respect to potential fair use of copyrighted textbooks in developing countries. Margaret Chon, *Intellectual Property "From Below": Copyright and Capability for Education*, 40 *U.C. Davis L. Rev.* 803 (2007).

<sup>171</sup> *Madey*, at 1362, citing *Embrex, Inc. v. Service Engineering Corp.*, 216 F.3d 1343, 1349, 55 *U.S.P.Q.2D* (BNA) 1161, 1163 (Fed. Cir. 2000).

cost means to obtain embodiments of or licenses to the patented technology that would obviate the need for unauthorized activity.

b. “Anti-Patent” Refusals to License

In the copyright context, fair use is often employed to facilitate criticism, parody, and other uses of copyrighted material to which a copyright owner objects not out of a desire to control the market for the patented invention but out of a desire to suppress a socially desirable activity that might undermine (rather than compete in) the patentee’s market.<sup>172</sup> These fair uses often implicate First Amendment concerns which generally are not salient in the patent context.<sup>173</sup> Nonetheless, similar concerns underlie arguments for a research exemption applied to “experimenting on” a patented invention to understand, design around, or improve upon it.<sup>174</sup> O’Rourke also identifies refusals to permit reverse engineering to develop compatible products as similarly intended to subvert the limitations of the patent right by extending a patentee’s control to markets for complementary goods.<sup>175</sup> Refusals to license substantial improvements as a means to hold up the improver for higher royalties also fit into a category of “anti-patent” refusals to license.

c. Hold-up Due to “Anticommons”-Type Issues

As O’Rourke and many others have pointed out, patent licensing may fail because of “anticommons” issues, in which negotiations over licensing are complicated by a need to assemble large number of licenses to produce a particular product or implement a particular process.<sup>176</sup> At the time of O’Rourke’s writing, concern about the anticommons problem focused

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<sup>172</sup> See, e.g., Samuelson, *supra* note 5; Gordon, *supra* note 165; O’Rourke, *supra* note 8 at 1207.

<sup>173</sup> See, e.g., Samuelson, *supra* note 5 at 2546-2568.

<sup>174</sup> See, e.g., Eisenberg, *supra* note 72; Strandburg, *supra* note 72.

<sup>175</sup> O’Rourke, *supra* note 8 at 1227-30.

<sup>176</sup> *Id.* at 1179-80. See also, e.g., Heller and Eisenberg, *supra* note 25; Mark A. Lemley and Carl Shapiro, Patent Holdup and Royalty Stacking, 85 *Tex. L. Rev.* 1991 (2007).

on biotechnology and gene patenting.<sup>177</sup> In the past ten years, however, it has become evident that major anticommons issues arise in the information technology arena.<sup>178</sup> While these issues can sometimes be resolved by forming patent pools (in which a number of industry players are granted cross-licenses to one another's patented technology),<sup>179</sup> patent pools are actually rather rare.<sup>180</sup> Moreover, these problems are exacerbated where, as is often the case in the information technology sector, some patents are held by non-practicing entities that have no interest in cross-licensing.<sup>181</sup>

At least some Supreme Court justices recognized this issue when deciding the *EBay* case, discussed above.<sup>182</sup> While the factors set out in *EBay* to guide courts' discretion in awarding injunctive are not tailored to innovation concerns, courts have in fact employed them to deny injunctions and impose ongoing royalties primarily in cases involving non-practicing entities, as discussed by Burk and Lemley.<sup>183</sup>

Though *EBay v. MercExchange* has alleviated concerns about hold-up from "patent trolls," the danger that courts may not have their eyes on innovation policy and may simply turn the "injunction always" rule into a "no injunctions for non-practicing entities" rule remains. Thus, for example, whether the infringer is a copyist or an independent inventor and the extent of the inventive contributions of patentee and infringer arguably should play a role in determining whether injunctive relief is warranted and whether a royalty should be imposed in a potential

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<sup>177</sup> Heller and Eisenberg, *supra* note 25

<sup>178</sup> See, e.g., Lemley and Shapiro, *supra* note 176; Sapna Kumar and Arti Rai, 85 *Tex. L. Rev.* 1745, 1756-57 (2007)

<sup>179</sup> See, e.g., Ed Levy et al., *Patent Pools and Genomics: Navigating a Course to Open Science?*, 16 *B.U. J. Sci. & Tech. L.* 75 (2010); Carl Shapiro, *Navigating the Patent Thicket: Cross-Licenses, Patent Pools, and Standard Setting*, in 1 *Innovation Policy & the Economy* 118, 120 (Adam B. Jaffe, Josh Lerner & Scott Stern, eds., 2001), available at <http://faculty.haas.berkeley.edu/shapiro/thicket.pdf>

<sup>180</sup> See David Serafino, *Survey of Patent Pools Demonstrates Variety of Purposes and Management Structures*, *Knowledge Ecology Int'l*, June 4, 2007, <http://www.keionline.org/misc-docs/ds-patentpools.pdf> for a recent survey of patent pools; Merges, *supra* note 19 at 1355.

<sup>181</sup> See, e.g., Lemley & Shapiro, *supra* note 176 at 2015.

<sup>182</sup> 547 U.S. at 395-97 (Kennedy, J., concurring).

<sup>183</sup> Burk & Lemley, *supra* note 2. See also, Streur, *supra* note 81, at 67.

anticommons scenario. An independent inventor will be particularly subject to hold-up if he or she has made a substantial investment in producing a complex product incorporating a patented invention. Such an inventor may have been unable, as a practical matter, to have negotiated a license before making the investment. Conversely, a company that knowingly copies highly innovative technology from a non-practicing entity is probably not a victim of licensing failure. These considerations might be squeezed into the “balance of hardships” and “public interest” prongs of the *eBay* analysis,<sup>184</sup> but a fair-use-type analysis would accommodate innovation-related concerns much more cleanly.

## 2. Substantial Improvements

Copyright fair use doctrine relies heavily on the extent to which a particular use is “transformative.”<sup>185</sup> The motivation behind this reliance is the intuition that the public should not be deprived of a major advance because the initial author refuses to “play along.” The argument is similar in the patent law context and is the basis for the reverse doctrine of equivalents already discussed at length. In the patent context, the evaluation of the substantiality of the improvement should also take into account the size of the technological contribution of the initial innovator. It is longstanding patent doctrine that a “pioneer” inventor should be afforded a broad scope of equivalents in assessing infringement.<sup>186</sup> That doctrine, like the reverse doctrine of equivalents, had its roots in central claiming and is somewhat difficult to apply under the present peripheral claiming system.<sup>187</sup> It can be quite sensibly taken into account in a fair-use-type analysis, however, where the relative sizes of the initial invention and improvement are

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<sup>184</sup> 547 U.S. at 393-94.

<sup>185</sup> See, e.g., Samuelson, *supra* note 5 at 2619.

<sup>186</sup> See, e.g., Burk & Lemley, *supra* note 21 at 1772-73, n. 13.

<sup>187</sup> *Id.*

relevant to how the returns from the invention should be divided and indicative of whether there is likely to be a hold-up problem or licensing breakdown.

There is one major difference between patent law and copyright law that would seem to obviate the need for a fair-use-type exemption for improvers except in the most extreme circumstances (where one might suspect a bargaining breakdown due to holdup). Unlike authors (who are not permitted *ex ante* to obtain copyright in unauthorized transformative works),<sup>188</sup> improvers on patented technology can proceed without authorization and are specifically permitted to obtain patents on their improvements.<sup>189</sup> This “blocking patent” doctrine is assumed to result in the salutary situation in which it is in both parties’ interests to come to terms, cross license their patents, and proceed to make use of the improved technology.<sup>190</sup> The expectation that this will ordinarily occur is probably behind the present, rather dusty, status of the reverse doctrine of equivalents.<sup>191</sup> Unless there is some reason to think that initial and follow-on inventors cannot come to terms, why confer a fair use defense on the improver? Thus, a likelihood of “blocking patent failure” would strongly increase the force of an argument for an exemption for a substantial improver.

While O’Rourke argues that fair use analysis should consider the possibility of blocking patent failure due to difficulties of valuation, especially where there is potential for hold-up due to large disparities in the values of the contributions made by initial and follow-on inventors,<sup>192</sup> recent developments provide much stronger reasons to anticipate that the blocking patent doctrine may not be sufficient to protect the substantial improver. First, the blocking patent doctrine assumes that the improver is able and willing to patent the improvement. As discussed

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<sup>188</sup> 17 U.S.C. 103(a).

<sup>189</sup> 35 U.S.C. 101.

<sup>190</sup> See discussion, *supra*.

<sup>191</sup> See discussion, *supra*.

<sup>192</sup> O’Rourke, *supra* note 8 at 1204.

above, this may not be the case for many of those involved in new innovation paradigms. User innovators may not have the resources to patent their improvements or may belong to communities in which free revealing rather than patenting is the norm.<sup>193</sup> Open source software developers may have non-pecuniary motivations that preclude (and would be dampened by) applying for patents.<sup>194</sup> In many cases in which a widespread group of contributors undertakes highly cumulative innovation, patent protection is simply unavailable either in principle or as a practical matter.

If patenting is inconsistent with the innovation paradigm that produces the improvement, the blocking patent doctrine breaks down. Assuming the improvement is disclosed, as it often will be under new innovation paradigms, the initial inventor can freely use the improvement, while retaining the right to sue the improver for patent infringement. In such circumstances, the initial inventor has no reason to come to terms – even if the improvement is a major advance. Fair use for the improver may be a socially desirable means to solve this breakdown.

Second, the blocking patent doctrine is less effective where the “improver” is an independent inventor and/or the initial inventor is a non-practicing entity. Having invested heavily in marketing a product or using a process that is only later determined to infringe an earlier patent, the substantial improver may be subject to holdup issues similar to those discussed in section 1.c above. Additionally, if the initial patentee is not locked by upfront investment into using the improvement (or never intends to practice either patent), the improver again may be subject to holdup.

### 3. Alternative Innovation Paradigms

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<sup>193</sup> See sources supra note 106.

<sup>194</sup> See, e.g., Karim Lakhani & Robert G. Wolf, *Why Hackers Do What They Do: Understanding Motivation and Effort in Free/Open Source Software Projects* (MIT Sloan Sch. of Mgmt., Working Paper No. 4425-03, 2003), available at <http://ssrn.com/abstract=443040>.

As I have argued elsewhere in the context of user innovation,<sup>195</sup> the availability of non-patent-motivated innovation paradigms for a particular technology weakens the argument for patent exclusivity because it changes the cost-benefit tradeoffs. Thus, if user innovation (or some other non-patent-based paradigm) predominates either in a particular case or in the field of the invention that fact should weigh in favor of an infringement exemption. The extent to which an exemption should be favored also depends on the extent to which the alternative innovation paradigm leads to disclosure and dissemination of inventions. Open source software, for example, is non-patent-motivated, widely disclosed, and widely disseminated. The prevalence of open source approaches in a particular technological area weighs in favor of an infringement exemption. User innovation is frequently non-patent-motivated, but whether it is widely disclosed and disseminated will depend on whether the invention is self-disclosing or could be kept as a trade secret, whether it can be easily “picked up” by other users once disclosed, whether there are norms of free revealing among a particular group of users and so forth. In a fair-use-type approach, the availability and nature of alternative innovation paradigms should factor into determining whether an infringement exemption is appropriate.

#### B. Fair Use For Independent Inventors, Other Non-Copyists, and “Innocent” Copyists

When an accused infringer is an independent inventor or other non-copyist, there are additional factors that could weigh in favor of an infringement exemption. First, as already discussed,<sup>196</sup> the fact of independent invention itself weighs in favor of an exemption. As noted, however, non-copyists are not all alike and neither are copyists. To avoid some of the potential for over-reaching of a strict independent inventor defense (and to deal with other non-copyists

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<sup>195</sup> Strandburg, *Users as Innovators*, supra note 30.

<sup>196</sup> See discussion, supra.

and with “innocent” copyists who copy without knowledge of the patent), one should consider the circumstances of any infringement that occurs without knowledge of the patent.

Besides considering whether the infringer is an independent inventor, it is also sensible to consider to what extent the infringer’s ignorance of the patent was reasonable under the circumstances. Relevant circumstances would include patent search costs (which will depend upon the technological area, as discussed above), custom within a particular industry (which may be evidence of search costs or of norms of reciprocal forbearance), the extent to which the infringer should have been able to foresee the possibility of infringing the patent at issue (which may be related to the fuzziness of claim boundaries) and the extent to which a particular infringer could reasonably be expected to have the sophistication and funds to undertake the necessary patent search (which may be related to whether the infringer is a commercial or nonprofit entity or a small entity or individual). Consideration of context is important to avoid encouraging “head in the sand” behavior by potential infringers and to determine whether an infringement exemption is appropriate for those who are neither knowing copyists nor true independent inventors.

### C. Summary of Patent Fair Use 2.0 Proposal

The above analysis leads to the following proposed factors for courts to consider in determining whether to award an infringement exemption (or alternatively to refrain from awarding an injunction and impose an ongoing royalty):

- 1) Is there a justifiable failure to purchase or license due to:
  - a. The social value of making the invention available to a market that the patentee will not be able to serve, such as those who are unable to pay or those

for whom the transaction costs of licensing are prohibitive (taking into account the potential damage to the patentee's interests by arbitrage);

b. An "anti-patent" license failure due to the patentee's attempt to squelch further innovation or to exert control over markets beyond the scope of the claims; or

c. A failure to license due to anticommons-type hold-up?

- 2) Did the infringer make a substantial improvement over the patentee's invention and was there some reason for blocking patent failure?
- 3) Does the availability of alternative innovation paradigms in the technological arena provide evidence of reduced importance of patent incentives?
- 4) Was the infringer a knowing copyist, independent inventor, or something in between? If the infringer was not a knowing copyist was her failure to locate the patent through search reasonable in light of patent search costs in the particular technology, custom in the industry, the foreseeability of infringement, and the infringer's commercial, non-commercial, or small entity status?

#### D. Applications

To breathe some life into the proposed fair use 2.0 analysis, this section briefly discusses two possible applications: open source software and essential medicines.

##### 1. Open Source Software

There has been considerable concern about the vulnerability of open source software to patent infringement liability, which could arise either as a result of independent invention or because one of one of a myriad of widely distributed contributors inserts infringing code into an

open source project.<sup>197</sup> Under current law, there is no likely defense to such a claim<sup>198</sup> and while the *EBay v. MercExchange* approach might undercut a request for injunctive relief from a non-practicing entity, it is not at all clear that courts would refuse to enjoin an open source program if a software company marketing a competing product were to sue. On the other hand, applying the fair-use-type factors proposed here would exempt open source software in most cases, as follows:

- 1) Is there a justifiable failure to purchase or license?

This factor may not weigh strongly in favor of open source software that infringes patents held by companies marketing competing products, though the fact that open source software is available to everyone at no charge is somewhat favorable. Of course, in particular cases, this factor may have more weight.

- 2) Did the infringer make a substantial improvement over the patentee's invention and was there some reason for blocking patent failure?

The analysis of this factor will depend upon the extent to which the open source software is innovative beyond the patentee's claims. If there is a substantial improvement, this factor is strongly in favor of an exemption for the open source software since the inability of the open source community to patent its improvements leads to a complete blocking patent failure.

- 3) Does the availability of alternative innovation paradigms in the technological arena provide evidence of reduced importance of patent incentives?

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<sup>197</sup> See, e.g., Ronald J. Mann, Commercializing Open Source Software: Do Property Rights Still Matter?, 20 Harv. J. Law & Tech. 1, 37 (2006) (raising this question and discussing it in the context of litigation in which SCO group sued IBM, contending that Linux contained some lines of proprietary code); Greg Vetter, The Collaborative Integrity of Open-Source Software, 2004 Utah L. Rev 563, 593; Joe Mutschelknaus, Spillover Effect: Investigating Patent Implications to Open-Source Software Copyright Licenseing, 19 Fed. Cir. B.J. 409 (2009-10) (discussing how the GPL attempts to deal with patent issues); John Tsai, For Better or Worse: Introducing the GNU General Public License Version 3, 23 Berkeley Tech. L.J. 547 (2008) (same).

<sup>198</sup> Though some have suggested that an infringement exemption for open source software be considered. See, e.g., Garrison, *supra* note 132.

This factor will generally weigh strongly in favor of exempting the open source software unless there is evidence that open source is not playing an important role in innovation in the particular arena.

- 4) Was the infringer a knowing copyist, independent inventor, or something in between? If the infringer was not a knowing copyist was her failure to locate the patent through search reasonable?

This factor will probably favor exemption since the open source community likely invented independently. Even if a contributor knowingly contributed patented code, it may be unreasonable to expect the core developers to police such infringement.<sup>199</sup> Moreover, it would in most cases be unreasonable to expect participants in an emergent and modular innovation paradigm such as open source software to conduct patent searches and attempt patent clearance. As already discussed, the information technology arena is one in which even commercial players have found it prohibitively difficult to conduct patent searches.

The proposed fair use-type exemption thus would probably apply to most open source projects. Adopting such an exemption would therefore remove the shadow of potential infringement liability from such projects. Note, however, that the exemption would not be automatic. If an open source project blatantly and knowingly copied patented code, encouraged its contributors to ignore patents when making their contributions, and so forth, it would not be eligible for the exemption. The proposal thus has advantages over a bright line “open source” defense.<sup>200</sup>

## 2. Essential Medicines

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<sup>199</sup> The issues here would be comparable to those that arise in considering the liability of internet service providers for infringement, an issue dealt with in the copyright context by “safe harbor” provisions. 17 U.S.C. 512.

<sup>200</sup> See Garrison, *supra* note 132.

The problem of access to medicine is hugely important in the international arena and has inspired a correspondingly vast literature.<sup>201</sup> Here I do not attempt to engage that literature seriously. The analysis simply illustrates how the proposed factors would apply in the context of a domestic patent infringement case against a very low cost provider of essential medicines to those with very low incomes. I will assume in this discussion that the infringer is a nonprofit entity.

1) Is there a justifiable failure to purchase or license?

Where patients are in need of essential medicines and unable to afford them, there is a very strong social benefit to providing those medicines. The rub, of course, is the arbitrage problem. Rather than simply assume in the abstract that gray market goods are a problem, an ex post fair-use-type analysis would permit a factual investigation of whether the infringing provision of drugs was in fact creating an opportunity for arbitrage. So, for example, if the drugs were administered at clinics operated by a nonprofit entity with reasonably strict standards for patient income, rather than provided directly to patients for use at home, or were prepared in some way to differentiate them from brand name drugs so as to discourage corrupt behavior by the provider, these facts would weigh in favor of an exemption.

2) Did the infringer make a substantial improvement over the patentee's invention and was there some reason for blocking patent failure?

This factor would not favor an exemption with respect to essential medicines in most circumstances, though one could imagine cases of new use where it might come into play.

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<sup>201</sup> See, for a small taste, Symposium, Global Access to Health: Legal, Business, and Policy Obstacles, 34 Am. J. L. and Med. 97 (Erik Iverson and Regina Rabinovich, eds. April 2008); James Love and Tim Hubbard, Prizes for Innovation of New Medicines and Vaccines, 18 Ann. Health L. 155 (2009); Cynthia Ho, Competing Patent Perspectives, 46 Hous. L. Rev. 1047 (2009).

- 3) Does the availability of alternative innovation paradigms in the technological arena provide evidence of reduced importance of patent incentives?

This factor will generally weigh strongly against infringement exemptions in the pharmaceutical arena.

- 4) Was the infringer a knowing copyist, independent inventor, or something in between? If the infringer was not a knowing copyist was her failure to locate the patent through search reasonable?

Again, this factor will weigh against exemption unless the infringer is the inventor of a new use for the medicine.

The bottom line of such an analysis will probably favor the patentee most of the time. But the analysis suggests room for creativity on the part of those seeking to serve those who are unable to pay for essential medicines because of its connection to the facts on the ground with respect to the issue of gray market goods. It thus might provide a path out of the stalemate caused by attempts to balance the value of essential medicines to those who cannot afford them against the value of as-yet-uninvented future medicines.

## V. CONCLUSIONS

This Essay has attempted to update the inquiry into the wisdom of “patent fair use” to account for the evolution of technology and of inventive paradigms in the years since O’Rourke’s seminal treatment of the issue in 2000. I have argued that a fair-use-type ex post approach to cabining patent exclusivity is even more attractive as a theoretical matter now than it was in 2000. I have also suggested a set of “patent fair use 2.0” factors that would be relevant to such an exemption: 1) Is there a justifiable failure to purchase or license due to the social value of serving an under-served market (taking into account the potential damage to the patentee’s

interests by arbitrage), “anti-patent” license failure due to the patentee’s attempt to squelch further innovation or to exert control over markets beyond the scope of the patent, or failure to license due to anticommons-type hold-up? 2) Did the infringer make a substantial improvement over the patentee’s invention and was there some reason for blocking patent failure? 3) Does the availability of alternative innovation paradigms in the technological arena provide evidence of reduced importance of patent incentives? 4) Was the infringer a knowing copyist, independent inventor, or something in between? If the infringer was not a knowing copyist was her failure to locate the patent through search reasonable in light of patent search costs in the particular technology, custom in the industry, the foreseeability of infringement, and the infringer’s commercial, non-commercial, or small entity status?

While this Essay has been primarily in the nature of a thought experiment about optimal doctrine, it is obviously important to consider whether any of this is at all practical. Could the judiciary implement a fair-use-type exemption? The fair use exemption in copyright, though later codified, began in just that way,<sup>202</sup> as did the limits on patentable subject matter in patent law,<sup>203</sup> which arise from similar policy concerns. So it might be possible in principle for judges to make such a move. At this point, however, a wholesale move to a fair-use-type exemption by the judiciary seems highly unlikely. A statutory fair-use-type exemption is perhaps more likely, but only just so. Failing that, what can we hope to obtain from a discussion such as this one? First, the law regarding the award of injunctions under the *EBay* decision is only beginning to develop. The analysis here could inform how courts interpret the “balance of hardships” and “public interest” prongs of the test. Second, there will continue to be proposals for, and

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<sup>202</sup> See, e.g., *Harper & Row, Inc. v. Nation Enterp.*, 471 U.S. 539, 547 (1985) (17 U.S.C. 107 codifies the traditional “fair use” privilege).

<sup>203</sup> See, e.g., *Diamond v. Chakrabarty*, 447 U.S. 303(1980) (citing the history of the ban on patent “laws of nature, physical phenomena, and abstract ideas”).

occasional enactment of, more limited exemptions in various contexts. While limited exemptions may not be optimal, the factors here can provide guidance both in evaluating the need for a particular limited exemption and in designing its implementation. For example, the analysis suggests how one might design an independent inventor-type exemption that might avoid some of the over- and under- coverage of a bright line rule. Finally, a conversation about the analytical basis for infringement exemptions can help to illuminate commonalities among proposals for specific exemptions, as in the example of business methods and research tools discussed above.