A Codified Liability Regime to Stimulate Greater Investment in Subpatentable Innovation

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The global intellectual property system rests on a distinction between exclusive property rights and free competition. Exclusive rights vary in strength and intensity, but the opposite of protection is almost always free competition. Distinctions of intensity are drawn in terms of the length of protection given to different subject matters plus variable lists of exceptions and limitations to exclusive rights. But the bottom line is that, when protection is not available under the existing system, free competition prevails, and vice-versa (i.e., where there is exclusivity, free competition is deferred for a specified period of time).

This Article departs from a different position. It suggests that this black-and-white approach does not work well for subpatentable innovation, i.e., innovation that cannot meet the non-obviousness criteria of patent law but that nonetheless constitutes a novel and useful contribution to existing technical knowledge. The reason is that free competition often overwhelms and limits the incentives to invest in risky subpatentable innovation from the outset

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because successful innovations obtain no exclusive rights by default, and competitors may dominate in practice once the validity of the innovation becomes an established fact. The very success of any given innovation thus stimulates competitors to enter the market, which threatens to impede the first innovator's ability to recuperate initial investment costs in a risky venture, not to mention profits.

To address this problem, some countries have enacted sui generis *regimes of exclusive property rights, notably in the form of utility model laws. However, this model necessarily evokes the question of either too much or too little protection. It only affords the first innovators an opportunity to recuperate their costs if they meet a relatively high standard of eligibility, thus discouraging the undertaking of such a risk from the outset. Moreover, imitating patents at the subpatentable level raises serious questions of legitimacy in the first place, plus a very real and long-term set of impediments to free competition.*

This traditional approach thus ignores a second category of property rights that sounds in liability rules instead of property rights, a distinction first recognized by Guido Calabresi and Douglas Melamed. Recognizing this distinction could in turn open the door to a form of intermediate protection that seeks to address the risk of investment in subpatentable innovation without the social costs of exclusivity. The history of intellectual property suggests that we have reached the outer limits of exclusive intellectual property experiments. Instead, the time has come to try a liability rule where barriers to entry are as undesirable as too much exclusivity. A carefully constructed liability rule could provide an intermediate format for an intermediate subject matter, without impeding the principle of free competition.

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INTRODUCTION

This Article proposes to combine two elements hitherto largely extraneous to classical intellectual property law. The first is subpatentable innovation[1] — which, for the purposes of this work, we

[1] One of the Authors has defined "subpatentable innovation" in prior work as "small grain-sized innovation, based on cumulative and sequential know-how, that falls below the prevalent standard of nonobviousness applicable under relevant domestic patent laws." J. H. Reichman, *Of Green Tulips and Legal Kudzu: Repackaging Rights in Subpatentable Innovation*, 53 VAND. L. REV. 1743, 1762 (2000) [hereinafter *Of Green Tulips and Legal Kudzu*]. As further detailed in note 2 and accompanying text, sub-patentable innovation consists of novel and useful products that nonetheless constitute relatively modest variations of pre-existing ones. An example of a sub-patentable innovation would be a vial for the storage of vaccine that is new (i.e., not a copy of an existing vial) and useful (i.e., its practical application is the storage of a vaccine dose), but that is not sufficiently different from existing vaccine vials in order to satisfy the non-obviousness requisite of patent law. *Cf.* 35 U.S.C. § 103 (codifying non-obviousness as a patentability

define as products that fail to meet the non-obviousness threshold established in patent law but nonetheless constitute a novel and useful contribution to existing technological knowledge.[2] Subpatentable innovation is generally not protected under intellectual property laws except for countries that have adopted utility model laws[3] sounding in exclusive property rights.[4]

requirement in U.S. law). Such a vial would thus fail to qualify for a patent and, should demand for vials arise due to a spike in demand triggered by a pandemic or epidemic, anyone would be able to make, commercialize or otherwise utilize the vial without having to obtain permission from, or pay royalties to, the person or company that created it.

[2] Patent law establishes three cumulative criteria for a product or process to be deemed patentable: novelty, non-obviousness, and utility. *See* Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Agreement on Trade-Related Aspects of Intellectual Property Rights, art. 27.1, Apr. 15, 1994, 1869 U.N.T.S. 299, 311 [hereinafter TRIPS Agreement] (establishing these requirements at the international level); *see also* 35 U.S.C. §§ 101-103 (codifying these requirements in the domestic laws of the United States). For a lengthier discussion of the concept of sub-patentable innovation as a trigger for legal protection as per the regime proposed in this Article, see *infra* Part II.A.

[3] The World Intellectual Property Organization defines utility model regimes as those "provid[ing] protection of so-called 'minor inventions' through a system similar to the patent system." *Utility Models*, WORLD INTELL. PROP. ORG., https://www.wipo.int/patents/en/topics/utility_models.html (last visited Sept. 17, 2023) [https://perma.cc/8JUL-5S52]. Our use of the utility model analogy here is inspired by the work of Professor Mark Janis, who has defined utility models regimes as "regimes that feature relatively short-term protection but reflect origins in design law, particularly by employing a diminished standard of inventiveness, as compared to regular patent law." Mark D. Janis, *Second Tier Patent Protection*, 40 HARV. INT'L L.J. 151, 152 n.5 (1999).

[4] Utility model laws give rightsholders the exclusive right to prevent others from using or otherwise exploiting the utility model for commercial purposes. *See Utility Models*, *supra* note 3. The period of exclusivity is more limited than that of a patent, lasting typically between six to ten years counted from the date in which the application for the utility model was filed. *Id.*; *see* 35 U.S.C. § 154(a)(2) (implementing the 20-year term for patent protection in the United States); TRIPS Agreement, *supra* note 2, art. 33 (establishing a term of 20 years for patent protection); *see also* Paris Convention for the Protection of Industrial Property Arts. 1(2), 4(A)(1), 4(C)(1), 5(A)(5), 11, Mar. 20, 1883, 828 U.N.T.S. 107, 115-23, 141 (mandating protection for utility models).

The second element is a liability rule[5] (also known as a "take-and-pay rule").[6] The liability rule envisioned in this Article would be used to protect subpatentable innovation under a uniquely designed regime, also known as a *sui generis* regime. The proposed liability regime would thus build upon the second of two categories of entitlements initially identified by (then) legal scholars Guido Calabresi and Douglas Melamed,[7] rather than relying on the first category — exclusive property rights — as both classical and contemporary intellectual property regimes have repeatedly done.[8]

[5] *See* Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972) (explaining that "[w]henever someone may destroy the initial entitlement if he is willing to pay an objectively determined value for it, an entitlement is protected by a liability rule").

[6] *See, e.g.*, Jerome H. Reichman, *Rethinking the Role of Clinical Trial Data in International Intellectual Property Law: The Case for a Public Goods Approach*, 13 MARQ. INTELL. PROP. L. REV. 1, 44 (2009) (describing liability regimes as based on "'take now and pay later' rules"); *see also, e.g.*, Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CALIF. L. REV. 1293, 1302 (1996) (noting that liability rules "are best described as 'take now, pay later.' They allow non-owners to use the entitlement without permission of the owner, so long as they adequately compensate the owner later").

[7] Calabresi & Melamed, *supra* note 5, at 1106-10; *see* Christopher Buccafusco & Christopher Sprigman, *Valuing Intellectual Property: An Experiment*, 96 CORNELL L. REV. 1, 5-6, 33-35 (2010); Mark A. Lemley, *Contracting Around Liability Rules*, 100 CALIF. L. REV. 463, 463 (2012) (finding fault with some of the premises that have "been used to support the claim that IP rights must be protected by property rules"); Jerome H. Reichman, *A Compensatory Liability Regime to Promote the Exchange of Microbial Genetic Resources for Research and Benefit Sharing*, *in* DESIGNING THE MICROBIAL RESEARCH COMMONS: PROCEEDINGS OF AN INTERNATIONAL SYMPOSIUM 43, 45-48 (Paul F. Uhlir ed., 2011) [hereinafter *A Compensatory Liability Regime*] (collectively expanding the Calabresi-Melamed framework); J.H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 COLUM. L. REV. 2432, 2436-42 (1994) [hereinafter *Legal Hybrids*]; Reichman, *Of Green Tulips and Legal Kudzu*, *supra* note 1, at 1743-98; Jerome H. Reichman & Tracy Lewis, *Using Liability Rules to Stimulate Local Innovation in Developing Countries: Application to Traditional Knowledge*, *in* INTERNATIONAL PUBLIC GOODS AND TRANSFER OF TECHNOLOGY UNDER A GLOBALIZED INTELLECTUAL PROPERTY REGIME 337, 342-49 (Keith E. Maskus & Jerome H. Reichman eds., 2005). *See generally* Ian Ayres & J.M. Balkin, *Legal Entitlements as Auctions: Property Rules, Liability Rules, and Beyond*, 106 YALE L.J. 703, 704 (1996); Harold Demsetz, *When Does the Rule of Liability Matter?*, 1 J. LEGAL STUD. 13 (1972); Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655 (1994).

[8] *See infra* Part I.A.

This Article contends that risky investments in subpatentable innovations — defined as technical innovations that fail to meet the non-obviousness test of patent law[9] — would greatly benefit from a carefully constructed *sui generis* regime of intellectual property protection. Such a regime should not deter competition by dint of an exclusive property right, like that of patent law.[10] It would, instead, offset the risky investment (and likely possibility of failure) in subpatentable innovation at the outset by subjecting qualifying innovations[11] to a liability rule for a short period of time,[12] rather than an exclusive property right.[13] Under this approach, competitors would remain virtually free to copy or duplicate the qualifying subpatentable innovation once put on the market, as occurs at present; but such competitors would also be required to pay a small royalty from their sales to the originator, for a relatively short period of time.[14] Free market

[9] *See supra* note 2 and accompanying text. The definition proposed here and developed throughout this Article borrows from the legal concept established in utility model laws, which emphasizes a diminished standard of inventiveness or non-obviousness. *See also* Janis, *supra* note 3, at 152, 163.

[10] *See generally* Ioannis Lianos, *Competition Law and Intellectual Property Rights: Is the Property Rights' Approach Right?*, 8 CAMBRIDGE Y.B. EUR. LEGAL STUD. 153 (2006); *Competition and Patents*, WORLD INTELL. PROP. ORG., https://www.wipo.int/patent-law/en/developments/competition.html (last visited Sept. 17, 2023) [https://perma.cc/FC7B-PSNF]. For a discussion of how intellectual property and competition are not mutually exclusive concepts, see generally Shubha Ghosh, *Intellectual Property Rights: The View from Competition Policy*, 103 NW. U. L. REV. COLLOQUY 344 (2009) and Herbert J. Hovenkamp, *Intellectual Property and Competition*, *in* 1 RESEARCH HANDBOOK ON THE ECONOMICS OF INTELLECTUAL PROPERTY 1807 (Ben Depoorter & Peter Menell eds., 2019).

[11] *See infra* Part II (articulating the proposed qualification criteria, as well as the other requirements and features necessary to implement a codified liability regime for sub-patentable innovations).

[12] *See infra* Part II.B.1 (proposing a short period of exclusivity, lasting two years, followed by a four-year period of liability).

[13] *See* Calabresi & Melamed, *supra* note 5, at 1092 (explaining that "[a]n entitlement is protected by a property rule to the extent that someone who wishes to remove the entitlement from its holder must buy it from him in a voluntary transaction in which the value of the entitlement is agreed upon by the seller"); *see also* Merges, *supra* note 6, at 1302 (describing property rules as "absolute permission rules" and describing them as those imposing a system in which "one cannot take [an] entitlement[] . . . without prior permission of the owner").

[14] *See infra* Part II.B.2 (delineating the main features of the royalty scheme supporting the proposed regime).

success of such subpatentable innovations would thus reward the innovators' risky initial investments with a small percentage of the competitors' sales.

We note that, already under both international[15] and domestic[16] patent law, an approach that makes use of liability rules is available in certain circumstances: this happens in the case of compulsory licenses, which may be issued in situations of need for pharmaceuticals and other products without the consent of the patent holder, and which require the licensee to remunerate the patent holder.[17] Liability is also a structuring principle in other areas of intellectual property: U.S. copyright law, for example, has codified a compulsory license for making and distributing phonorecords.[18] However, in addition to being limited to certain products, current legal embodiments of liability approaches are only available as a last resort.[19] By contrast, the regime proposed in this Article would be based on a codified compulsory license from the outset.[20] As further discussed below, this would reduce both uncertainty

[15] TRIPS Agreement, *supra* note 2, art. 31.

[16] 28 U.S.C. § 1498(a); 35 U.S.C. § 203(a)(2). Compulsory licenses are also available in other areas of intellectual property law.

[17] *See* TRIPS Agreement, *supra* note 2, art. 31(h) (requiring "adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization"). For further discussion of the compulsory licensing regime for pharmaceuticals established through international law, see generally Sapna Kumar, *Compulsory Licensing of Patents During Pandemics*, 54 CONN. L. REV. 57 (2022) and Jerome H. Reichman, *Compulsory Licensing of Patented Pharmaceutical Inventions: Evaluating the Options*, 37 J.L., MED. & ETHICS 247 (2009) [hereinafter *Compulsory Licensing of Patented Pharmaceutical Inventions*].

[18] 17 U.S.C. § 115 (establishing the compulsory licensing regime); *see also* 17 U.S.C. § 101 (defining phonorecords as "material objects in which sounds, other than those accompanying a motion picture or other audiovisual work, are fixed by any method now known or later developed, and from which the sounds can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device").

[19] For example, in the case of pharmaceuticals, TRIPS imposes several conditions for a compulsory license to be issued, including that efforts be made to obtain a voluntary license or other type of permission from the patent holder and that adequate remuneration be paid to the rightsholder. TRIPS Agreement, *supra* note 2, art. 31(b)(h). *But see id.* art. 31(b) (further establishing the possibility of a waiver of the requirement that proposed users seek permission from the patent holder before a compulsory license is issued in cases of "national emergency or other circumstances of extreme urgency").

[20] *See infra* Part II.

and transaction costs.[21] Moreover, and once again unlike existing approaches, our proposal would apply to any products qualifying as subpatentable innovation, irrespective of the field of technology.[22]

The Article proceeds as follows. Part I situates our proposed liability regime for subpatentable innovation in the context of scholarly discussions surrounding exclusive rights, incentives theory, and innovation policy. Part II describes the proposed regime in greater detail. It begins by articulating the main features of the regime: eligibility criteria, term, and royalty structure. It then turns to the operationalization of the proposal, detailing its institutional design, required formalities, royalty collection and enforcement. Part III considers the broader implications of the proposal: liability rules to enlarge "incentives to try"; provide easy access to markets; reduce risk; provide for customizable regimes; stimulate greater reliance on market-based results; afford the possibility of lottery effects; and also help to avoid the pressures and contradictions of the non-obviousness analysis in patent law. The Article concludes with a brief summary.

I. EXCLUSIVE RIGHTS VERSUS LIABILITY RULES IN THE CONTEXT OF INTELLECTUAL PROPERTY AND INNOVATION POLICY

Historically, the dominant approach in the design of intellectual property regimes has rested on the use of exclusive rights.[23] This approach largely ignores a second type of property right sounding in

[21] *See infra* Part III.

[22] *See infra* Part III; *see also infra* note 45 and accompanying text.

[23] For a discussion of the exclusionary functions of patents, see, for example, Amy Kapczynski & Talha Syed, *The Continuum of Excludability and the Limits of Patents*, 122 YALE L.J. 1900, 1900 (2013). For a comprehensive overview of how the contemporary intellectual property system was structured around paradigms of exclusivity and excludability, see generally DANIEL J. GERVAIS, THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS (1998) and Peter Drahos, *The Universality of Intellectual Property: Origins and Development* (World Intell. Prop. Org., Paper No. 98/1, 1998), https://www.wipo.int/edocs/mdocs/tk/en/wipo_unhchr_ip_pnl_98/wipo_unhchr_ip_pnl_98_1.pdf [https://perma.cc/292Y-HQ5V]. *See also* Jeremy Waldron, *From Authors to Copiers: Individual Rights and Social Values in Intellectual Property*, 68 CHI.-KENT L. REV. 841, 842 (1993) ("From the point of view of moral justification, the most important thing about any property right is what it prohibits people from doing . . . . This applies to intellectual property as much as to property in material resources.").

liability rules instead of exclusive property rights.[24] Recognizing this distinction opens the legislative door to a form of intermediate protection that seeks to relieve the risks of investment in subpatentable innovation without the offsetting costs of exclusivity to the public at large. From a historical perspective, this approach suggests that intellectual property law may have reached the outer limit of exclusive property experiments. If so, the time has come to try a liability rule instead, especially because barriers to entry may be as undesirable as too much exclusivity.[25] In this Part, the Article contrasts existing intellectual property regimes based on exclusive rules with the largely unexplored model provided by liability rules. It then makes the case that a liability regime is uniquely suited to protect subpatentable innovation.

[24] *See* Calabresi & Melamed, *supra* note 5, at 1092 ("Whenever someone may destroy the initial entitlement if he is willing to pay an objectively determined value for it, an entitlement is protected by a liability rule.").

[25] Our primary concern throughout this work is barriers to market entrance resulting in diminished competition (or absence thereof) leading to (a) situations of deadweight loss resulting from monopoly-like pricing, or (b) situations in which exclusive rights function as a deterrent to market entrance in ways that deprive society from beneficial incremental innovation. *See, e.g.*, Steve P. Calandrillo, *An Economic Analysis of Property Rights in Information: Justifications and Problems of Exclusive Rights, Incentives to Generate Information, and the Alternative of a Government-Run Reward System*, 9 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 301 (1998); F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697 (2001); Benjamin N. Roin, *Intellectual Property Versus Prizes: Reframing the Debate*, 81 U. CHI. L. REV. 999, 1027-39 (2014). For a discussion of problems specific to the context of pharmaceuticals, see, for example, CYNTHIA M. HO, ACCESS TO MEDICINE IN THE GLOBAL ECONOMY: INTERNATIONAL AGREEMENTS ON PATENTS AND RELATED RIGHTS (2011); Robin C. Feldman, David A. Hyman, W. Nicholson Price II & Mark J. Ratain, *Negative Innovation: When Patents Are Bad for Patients*, 39 NATURE BIOTECH. 914 (2021); Duncan Matthews, *Intellectual Property Rights, Human Rights and the Right to Health*, *in* INTELLECTUAL PROPERTY RIGHTS AND HUMAN RIGHTS: A PARADOX 118 (Willem Grosheide ed., 2009); Joseph E. Stiglitz & Arjun Jayadev, *Medicine for Tomorrow: Some Alternative Proposals to Promote Socially Beneficial Research and Development in Pharmaceuticals*, 7 J. GENERIC MEDS. 217 (2010). For a discussion of these problems in the context of asymmetries between the Global South and the Global North, see, for example, Brook Baker, HEALTH GAP (2016), http://www.unsgaccessmeds.org/inbox/2016/2/26/z73kpodxk4jw96mhqe2tivq0sd1g3v [https://perma.cc/7XMD-W4JM]; Jean Tirole, *Intellectual Property and Health in Developing Countries*, *in* UNDERSTANDING POVERTY 303 (Abhijit Vinayak Banerjee, Roland Bénabou & Dilip Mookherjee eds., 2006); Peter K. Yu, *TRIPS Enforcement and Developing Countries*, 26 AM. U. INT'L. L. REV. 727 (2011).

A. The Prevalence of Exclusive Property Regimes

Current and longstanding innovation policy has historically been structured around exclusive intellectual property rights. The system as it currently stands provides exclusive rights in the form of patents for scientific and technical innovations that are novel, non-obvious, and useful;[26] copyrights for original and creative literary and artistic works;[27] and trademarks for distinctive brands.[28] Alongside these basic regimes, there are also a number of *sui generis* laws protecting industrial designs,[29] databases,[30] and, most recently, genetic resources and traditional knowledge under the Convention on Biological Diversity.[31]

Legislators in some countries have further recognized the need for intellectual property to cover some forms of subpatentable innovation in what are known as utility model laws.[32] Utility models have been called "minor inventions" and "minor improvements of existing products."[33] Because they display a lower level of inventiveness when

[26] *See* TRIPS Agreement, *supra* note 2, art. 27.

[27] *Id.* art. 9.

[28] *Id.* art. 15.

[29] *Id.* art. 25.

[30] *Id.* art. 10(2).

[31] Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79.

[32] *See Utility Models*, *supra* note 3. At the time of writing, the following offered protection under a utility model regime: Albania, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Belarus, Belize, Botswana, Brazil, Bulgaria, Cabo Verde, Chile, China, Costa Rica, Croatia, Czech Republic, Denmark, Dominica, Dominican Republic, Egypt, El Salvador, Estonia, Ethiopia, Finland, France, Georgia, Germany, Ghana, Greece, Guatemala, Honduras, Hungary, Indonesia, Ireland, Italy, Japan, Kazakhstan, Kenya, Kyrgyzstan, Lao People's Democratic Republic, Malaysia, Mexico, Mongolia, Mozambique, Oman, Namibia, Nicaragua, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Republic of Korea, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Swaziland, Tanzania, Thailand, Tonga, Trinidad and Tobago, Turkey, Uganda, Ukraine, United Arab Emirates, Uruguay, Uzbekistan and Vietnam. The African Regional Intellectual Property Organization (ARIPO), an intergovernmental organization, the Organisation Africaine de la Propriété Intellectuelle ("OAPI"), an organization primarily of French-speaking countries, and the Andean Community, a free trade area, have also established regimes for the protection of utility models. *Id.*

[33] *Id.*

compared to patent-qualifying inventions,[34] utility models do not have to meet the higher threshold of non-obviousness (as opposed to patent-qualifying inventions).[35] Laws conferring protection on utility models provide rightsholders with yet another embodiment of a property-like rule: the exclusive right to prevent unauthorized parties from using or exploiting the qualifying utility model for commercial purposes.[36]

While the adoption of a utility model system may sound appealing at first, it risks yielding a form of overly strong protection. First, the end result is too much like a watered-down patent regime.[37] And second, eligibility may still in some cases be hard to obtain from the perspective of the would-be risk taker, as applicants for protection under utility model laws must still demonstrate that their inventions meet the requirements of novelty, "inventiveness,"[38] and utility, as well as certain other criteria established by varying domestic laws.[39]

We thus contend that what the experience with utility model laws actually illustrates is the outer limits of intellectual property regimes designed as systems based on exclusive property rights. Ultimately, a regime purely based on exclusivity risks delivering more social costs than benefits when weighed against the benefits of free competition. It may exclude too much at the eligibility stage (i.e., novel and useful innovations that fail to meet patent law's non-obviousness test) and

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[34] *Id.*

[35] *Id.*; *see* Janis, *supra* note 3, at 152 n.5.

[36] *Utility Models*, *supra* note 3.

[37] *See* Janis, *supra* note 3, at 152 (labeling utility model regimes a "second tier" form of patent protection); *see also* Reichman, *Of Green Tulips and Legal Kudzu*, *supra* note 1, at 1757 (labeling it a "patent-like approach" as opposed to a patent proper approach).

[38] The World Intellectual Property Organization describes the requirement of "inventiveness" as a lower form of non-obviousness, and notes that national legislators often do away with this requirement entirely. *See Utility Models*, *supra* note 3. For a discussion of the non-obviousness requirement in patent law, see *infra* note 94 and accompanying text.

[39] *See Utility Models*, *supra* note 3. The World Intellectual Property Organization summarizes the requirements for obtaining protection under (national-level) utility model laws as follows: qualifying inventions must "(i) be within the eligible subject matter; (ii) they must be novel; (iii) they must involve an inventive step (non-obvious); (iv) they must have industrial applicability (utility); and (v) they must be described in an application in a sufficient and complete manner." *Id.*

may confer overly strong protection to rightsholders (i.e., quasi-absolute exclusionary power).

From an innovation policy perspective, a key problem is how to predict ex ante which subpatentable innovations deserve hard protection on hard patent-like eligibility criteria? In other words, what is a defensible line between patent law and subpatentable innovation, and who should determine the reward applicable to the second category?

This Article highlights the artificiality of the current tendency to distinguish only between patentable and non-patentable innovation.[40] A better system would instead focus on making room for innovators who build off each other's work.[41] The article contends that subpatentable innovation should benefit from some form of intellectual property protection, but that does not mean that another exclusive property right — as embodied in utility model laws, where adopted — is the proper solution. On the contrary, what the modern economy really needs is a regime that uniquely stimulates "incentives to try,"[42] that is, incentives to invest in new innovation despite the odds against success in the first

[40] We employ the notion of artificiality here in the same vein of legal scholar Alan Watson when noting that often law functions as "an artificial creation in the sense that its [doctrinal] divisions . . . are the invention of legislators, jurists or judges, rather than belonging to the nature of things." Alan Watson, *Artificiality, Reality and Roman Contract Law*, 57 TIJDSCHRIFT VOOR RECHTSGESCHIEDENIS [LEGAL HIST. REV.] 147, 147 (1989) (Neth.).

[41] There is a long tradition in innovation theory and scholarship recognizing the relevance of pre-existing knowledge and technology in the production of innovative products and processes. *See generally* ROBERT K. MERTON, ON THE SHOULDERS OF GIANTS: A SHANDEAN POSTSCRIPT (1965). This same tradition is recognized in, and to some degree incorporated into, the ethos of patent law. *See, e.g.*, Mark A. Lemley, *The Myth of the Sole Inventor*, 110 MICH. L. REV. 709, 710-11 (2012); Arti K. Rai, *Fostering Cumulative Innovation in the Biopharmaceutical Industry: The Role of Patents and Antitrust*, 16 BERKELEY TECH. L.J. 813 (2001); Bhaven Sampat & Heidi L. Williams, *How Do Patents Affect Follow-on Innovation? Evidence from the Human Genome*, 109 AM. ECON. REV. 203 (2019); Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. ECON. PERSPS. 29 (1991).

[42] *See infra* Part III.A.

place, plus the risk of rapid duplication by free riders if and when the unprotected innovation ultimately succeeds on the market.[43]

The proposal set out below[44] introduces a codified liability rule that would impose a built-in compulsory license favoring subpatentable innovators. Unlike patents or other exclusive rights regimes, however, this proposal does not give rise to the blocking effects of a regime of exclusive rights, nor does it discriminate against fields of technology, as is the case with most *sui generis* regimes.[45] So far, intellectual property policy has proved to be a poor fit for certain types of socially valuable innovations that depend on market-based results, thereby often yielding chronically inadequate incentives at the outset. This occurs when would-be investors in innovative and socially valuable products cannot or do not anticipate recouping their front-end costs owing to the risk of unbridled free competition,[46] which may obviate any suitable reward for their initially risky investments.[47] One recent example in the public

[43] *See* Reichman, *Of Green Tulips and Legal Kudzu*, *supra* note 1, at 1763-64; *cf.* Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1989); Sears, Roebuck & Co. v. Stiffel Co., 376 U.S. 225 (1964) (collectively highlighting the problem of slavish imitation of products on the market).

[44] *See infra* Part II.

[45] It is worth noting that this "transversal" approach to fields of technology is consistent with the policy animating classical intellectual property that prescribes that patent rights be made available to qualifying inventions irrespective of their field of technology. TRIPS Agreement, *supra* note 2, art. 27(1) (establishing that "patents shall be available and patent rights enjoyable without discrimination as to . . . the field of technology . . ."). *But see id.*, art. 27(3) (giving national-level legislators the possibility of excluding certain products or processes from patentability, including diagnostic, therapeutic and surgical methods, plants and animals). Plant varieties must nonetheless be patent-eligible. *Id. See generally* Mark D. Janis & Stephen Smith, *Technological Change and the Design of Plant Variety Protection Regimes*, 82 CHI.-KENT L. REV. 1557 (2007) (providing an overview of the legal regime protecting plant varieties and of its implementation across different industries).

[46] *See* Reichman, *Of Green Tulips and Legal Kudzu*, *supra* note 1, at 1750-51 ("The vulnerability of small grain-sized innovation to free-riding duplicators who incur no appreciable costs of reverse engineering and who confer no appreciable lead time advantages on those who first performed the underlying R&D under these conditions breeds fears of market failure.").

[47] In this context, investments are risky in the sense that it is hard to predict the likelihood of success at the end of the research and development ("R&D") process, as well as the likelihood of commercial success of any given product. This, in turn, renders

spotlight was the "structure, sequence and organization" of computer programs,[48] which in most non-patentable cases may no longer qualify as copyrightable subject matter in the aftermath of the recent Supreme Court decision in *Google v. Oracle*.[49] In other subject matter areas, even when an intellectual property right becomes theoretically available, incremental innovation in certain socially valuable goods may remain subject to a risk of underfunding and underproduction through current market conditions. A noteworthy example of this latter situation arises in research and development ("R&D") on certain chronically underfunded diseases (e.g., neglected tropical diseases[50] and rare

the prospects of return-on-investment capital (and possibly other resources) uncertain. For a discussion of the function of the patent system in catalyzing investment in risky innovation, see generally Eric Budish, Benjamin N. Roin & Heidi Williams, *Patents and Research Investments: Assessing the Empirical Evidence*, 106 AM. ECON. REV. 183 (2016); Kenneth W. Dam, *The Economic Underpinnings of Patent Law*, 23 J. LEGAL STUD. 247 (1994); Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265 (1977); Henry G. Grabowski, Joseph A. DiMasi & Genia Long, *The Roles of Patents and Research and Development Incentives in Biopharmaceutical Innovation*, 34 HEALTH AFFS. 302 (2015); Heidi L. Williams, *How Do Patents Affect Research Investments?*, 9 ANN. REV. ECON. 441 (2017).

[48] The concept of "structure, sequence and organization" is often described as referring to the "non-literal elements" of a computer program. Courts in the United States adopted the concept in *Whelan Assocs., Inc. v. Jaslow Dental Lab'y, Inc.*, 797 F.2d 1222, 1224 (3d Cir. 1986) (holding that the structure, sequence, and organization of a computer program is protectible by copyright). *But see* Comput. Assocs. Int'l, Inc. v. Altai, Inc., 982 F.2d 693, 707-11 (2d Cir. 1992) (narrowing the *Whelan* holding by directing courts to filter out elements "dictated by efficiency," "dictated by external factors" and "elements taken from the public domain").

[49] Google LLC v. Oracle Am., Inc., 141 S. Ct. 1183 (2021); *see also* Mark A. Lemley & Pamela Samuelson, *Interfaces and Interoperability After* Google v. Oracle, 100 TEX. L. REV. 1, 3 (2021).

[50] The World Health Organization defines these diseases as a "diverse group of 20 conditions that are mainly prevalent in tropical areas, where they mostly affect impoverished communities and disproportionately affect women and children." *Neglected Tropical Diseases*, WORLD HEALTH ORG., https://www.who.int/health-topics/neglected-tropical-diseases#tab=tab_1 (last visited Sept. 8, 2023) [https://perma.cc/JBE4-NB2W]. Examples of these diseases include Chagas disease, dengue and chikungunya. *Id.*

diseases[51]), where market limitations inherently restrict the incentives flowing even from an exclusive right.[52]

In still other cases, there are subpatentable (or non-copyrightable) goods "bearing know-how on their faces"[53] that are so easily copied that investors cannot even rely on traditional lead time advantages to recover their costs or enable profits.[54] The classic example is that of *sui*

[51] The World Health Organization labels over 5,000 diseases as rare. *See Frequently Asked Questions: Rare Diseases*, WORLD HEALTH ORG., https://www.who.int/standards/classifications/frequently-asked-questions/rare-diseases (last visited Sept. 8, 2023) [https://perma.cc/9HPC-TXGV]. Quantifications of rareness vary at the domestic level. For instance, the U.S. Orphan Drug Act defines "rare disease or condition" primarily as one that "affects less than 200,000 persons in the United States." 21 U.S.C. § 360bb(a)(2) (codifying the Orphan Drug Act); *see also* Jeff Aronson, *Rare Diseases, Orphan Drugs, and Orphan Diseases*, 333 BRIT. MED. J. 127, 127 (2006).

[52] *See generally* Henry Grabowski, *Increasing R&D Incentives for Neglected Diseases: Lessons from the Orphan Drug Act*, *in* INTERNATIONAL PUBLIC GOODS AND TRANSFER OF TECHNOLOGY UNDER A GLOBALIZED INTELLECTUAL PROPERTY REGIME, *supra* note 7, at 458 (explaining challenges to stimulating research in rare diseases due to insufficient market incentives); Stephen M. Maurer, Arti Rai & Andrej Sali, *Finding Cures for Tropical Diseases: Is Open Source an Answer?*, 3 PLOS MED. 183 (2004) (discussing how proposed initiatives could restore competition in drug marketplaces); Joseph E. Stiglitz, *Scrooge and Intellectual Property Rights*, 333 BRIT. MED. J. 1279 (2006) (arguing that the societal costs of granting exclusive control over intellectual property rights may outweigh the benefits).

[53] One of us has developed this concept in prior work, explaining that: "[M]uch of today's most advanced technology enjoys a less favorable competitive position than that of conventional machinery because the unpatentable, intangible know-how responsible for its commercial value becomes embodied in products that are distributed on the open market. A product of the new technologies, such as a computer program or an integrated circuit design, or even a biogenetically altered organism may thus *bear its know-how on its face*, a condition that renders it as vulnerable to rapid appropriation by second comers . . . ." J. H. Reichman, *Design Protection and the New Technologies: The United States Experience in a Transnational Perspective*, 19 U. BALT. L. REV. 6, 137 (1989) [hereinafter *Design Protection and the New Technologies*].

[54] Lead time can be understood as the "interval of lead time in which to recuperate the originators' initial investment or their losses from unsuccessful essays, not to mention the goal of turning a profit." J.H. Reichman, *Past and Current Trends in the Evolution of Design Protection Law – A Comment*, 4 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 387, 401 (1993); *see* Reichman, *Of Green Tulips and Legal Kudzu*, *supra* note 1, at 1747. *See generally* Douglas Gary Lichtman, *The Economics of Innovation: Protecting Unpatentable Goods*, 81 MINN. L. REV. 693, 727-28 (1997) (describing how lack of sufficient lead time on the market may deter would-be innovators from commercializing their products); Jerome H. Reichman, *Intellectual Property in the Twenty-First Century: Will the Developing*

generis design protection laws.[55] These laws traditionally give industrial designers an exclusive right that confers relatively short-term protection, with a pathway to trademark protection, which in turn can potentially last forever.[56] Design protection requires a certain amount of creativity and innovative capacity that most people lack while recognizing that, once designs enter the market, they are easily duplicated because each design typically bears the designer's know-how on its face.[57] This factor can even drive the initial innovator out of the market when competitors have greater market power. Hence, in order to stimulate sufficient investment in innovative designs, diverse laws in different countries give designers a period of lead time on the market, which can last as little as three years (as is the case under European

Countries Lead or Follow?, 46 HOUS. L. REV. 1115, 1130 (2009) (describing further how lack of sufficient lead time on the market may deter would-be innovators from commercializing their products).

[55] *See* BRAD SHERMAN & LIONEL BENTLY, THE MAKING OF MODERN INTELLECTUAL PROPERTY LAW: THE BRITISH EXPERIENCE 63-64 (1999) (describing the emergence of the first statute conferring legal protection on designs). *See generally* Ralph D. Clifford & Richard J. Peltz-Steele, *The Constitutionality of Design Patents*, 14 CHI.-KENT J. INTELL. PROP. 553 (2015); Susanna Monseau, *European Design Rights: A Model for the Protection of All Designers from Piracy*, 48 AM. BUS. L.J. 27 (2011); J. H. Reichman, *Design Protection and the Legislative Agenda*, 55 LAW & CONTEMP. PROBS. 281 (1992); Reichman, *Design Protection and the New Technologies*, *supra* note 53; J. H. Reichman, *Design Protection in Domestic and Foreign Copyright Law: From the Berne Revision of 1948 to the Copyright Act of 1976*, 1983 DUKE L.J. 1143 (1983); Lena Schickl, *Protection of Industrial Design in the United States and in the EU: Different Concepts or Different Labels?*, 16 J. WORLD INTELL. PROP. 15 (2013).

[56] *See generally* William M. Landes & Richard A. Posner, *Trademark Law: An Economic Perspective*, 30 J.L. & ECON. 265 (1987) (using economics to explain the structure of trademark law).

[57] *See supra* note 53 and accompanying text. *See generally* GRAEME B. DINWOODIE & MARK D. JANIS, TRADE DRESS AND DESIGN LAW (2010) (addressing how intellectual property law can provide optimal protection for designs); Jason J. Du Mont & Mark D. Janis, *US Design Patent Law: A Historical Look at the Design Patent/Copyright Interface*, *in* THE COPYRIGHT/DESIGN INTERFACE: PAST, PRESENT AND FUTURE 341 (Estelle Derclaye ed., 2018) (addressing the interface between design patent protection and copyright protection).

Union law for unregistered designs)[58] or as long as at least ten years under the TRIPS Agreement.[59]

While the rationale behind design protection remains sound, it nonetheless begs a larger question that has become increasingly important in the modern economy. Many other types of innovations that are not patentable could produce socially valuable outcomes if investors were not risk-averse owing to the prospect of immediate duplication by uninhibited free riders once market success becomes likely.[60] Subpatentable innovation bearing the innovator's know-how on or near its face generally raises the same set of problems that industrial designers routinely face.[61] Yet, only if the innovation in question can slip into design laws will these innovators be assured of some legally enforceable lead time advantages so as to undertake the risks of investment at the outset. From this perspective, given the increasing capacity of free riders to duplicate an ever-increasing amount of information, one must ask whether the principle underlying design protection laws should not be adapted and extended to a much broader range of subpatentable innovative products, but with a different legal

[58] *Design Protection*, YOUR EUR., https://europa.eu/youreurope/business/running-business/intellectual-property/design-protection/index_en.htm (last visited Sept. 8, 2023) [https://perma.cc/9MLN-VYWE].

See generally 3 LADDIE, PRESCOTT AND VITORIA: THE MODERN LAW OF COPYRIGHT AND DESIGNS (4th ed. 2011) (compiling copyright and design laws of the United Kingdom); DAVID STONE, EUROPEAN UNION DESIGN LAW: A PRACTITIONER'S GUIDE (2d ed. 2016) (analyzing and explaining European Union design law).

[59] TRIPS Agreement, *supra* note 2, art. 26.3. *See generally* A HANDBOOK ON THE WTO TRIPS AGREEMENT 116-20 (Antony Taubman, Hannu Wager & Jayashree Watal eds., 2012) (outlining industrial design protection under the TRIPS Agreement). It is worth noting that the TRIPS Agreement is in conflict with U.S. design patent law because it requires non-obviousness rather than originality for eligibility. *Cf.* 35 U.S.C. § 171 ("Whoever invents any new, original and ornamental design for an article of manufacture may obtain a patent therefor . . . ."). It also lasts for 15 years from the date of grant. 35 U.S.C. § 173; *see also* J.H. Reichman, *The TRIPS Agreement Comes of Age: Conflict or Cooperation with the Developing Countries*, 32 CASE W. RSRV. J. INT'L L. 441, 442-44 (2000) (contextualizing the minimum standards set in the TRIPS Agreement).

[60] *See supra* note 1 and accompanying text (describing an example of a subpatentable innovation that would be novel and socially useful while failing to meet the patent law requirement of non-obviousness).

[61] *See supra* note 53 and accompanying text.

foundation — namely, a *sui generis* liability regime rather than an exclusive property right.[62]

At this point, it is worth recalling that intellectual property law generally rests on two different economic approaches.[63] One is the exclusive rights model discussed above.[64] However, an alternative model, known as a liability rule, has long been identified but seldom utilized in intellectual property and innovation policy.[65] Under a liability rule, competitive producers remain free to enter a given market segment but they may remain subject to a duty to compensate a prior entrant for a specified period of time. For example, that is the case with regard to certain musical works under copyright law.[66]

Given this background, the time has come to consider whether subpatentable innovations generally, and not just industrial designs, also merit a suitable form of protection. If the answer seems clear, one must further ask how such a *sui generis* regime should be implemented so as to avoid unduly undermining free competition.

B. Advantages of Liability Rules

As recognized by Calabresi and Melamed, a liability rule operates as a "take-and-pay" rule.[67] As noted above, compulsory licenses, which constitute a limited embodiment of "take-and-pay" approaches, have already figured in the codified limitations and exceptions to diverse

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[62] *See infra* Part II. *But see* Peter Asch & Gary A. Gigliotti, *The Free-Rider Paradox: Theory, Evidence, and Teaching*, 22 J. ECON. EDUC. 33, 33 (1991) (arguing that one of the "difficult[ies] with the standard presentation of free riding is that its view of 'rational' behavior is ethically questionable"); Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1032 (2005) (cautioning against "the effort to permit inventors to capture the full social value of their invention — and the rhetoric of free riding in intellectual property more generally").

[63] *See supra* notes 23–25 and accompanying text.

[64] *See supra* note 13 and accompanying text.

[65] *See* Calabresi & Melamed, *supra* note 5 at 1092.

[66] 17 U.S.C. § 115 (establishing that "[a] person may by complying with the provisions of this section obtain a compulsory license to make and distribute phonorecords of a nondramatic musical work, including by means of digital phonorecord delivery").

[67] *See* Calabresi & Melamed, *supra* note 5, at 1092; *see also supra* note 6 and accompanying text.

intellectual property regimes, notably both copyrights and patents.[68] These compulsory licenses often remain highly controversial remedies to offset the social costs of exclusivity in specified circumstances.[69] We argue that what needs to be tested, instead, is the very possibility of building a *sui generis* regime around a form of codified compulsory licensing from the bottom up, as an incentive to risky investment in innovative products in countries where substantive patentability criteria would otherwise mean that these products would fail to meet the high standard of non-obviousness.

When could such a remedy in itself sufficiently support investment in socially valuable innovation despite an absence or virtual absence of any exclusive rights at the outset?[70] That is the direction this Article looks to when it considers subpatentable innovation generally. No one doubts the social importance of subpatentable innovation in general,[71] but the risks of investing in such innovation at present have not been sufficiently evaluated. Hence, the only legal stimulus besides all-or-

[68] *See supra* notes 15–20 and accompanying text.

[69] *See, e.g.*, Colleen V. Chien, *Cheap Drugs at What Price to Innovation: Does the Compulsory Licensing of Pharmaceuticals Hurt Innovation?*, 18 BERKELEY TECH. L.J. 853, 853 (2003) (suggesting that compulsory licenses probably do not harm innovation); Kumar, *supra* note 17, at 57 (describing successful uses of compulsory licensing in the context of access to medicines); Reichman, *Compulsory Licensing of Patented Pharmaceutical Inventions*, *supra* note 17, at 247 (describing disagreements about compulsory licensing between nations party to the TRIPS agreement).

[70] *See* Reichman, *Legal Hybrids*, *supra* note 7, at 2442-43; *see also* Reichman, *Of Green Tulips and Legal Kudzu*, *supra* note 1, at 1798.

[71] *See generally* Reichman, *Legal Hybrids*, *supra* note 7 (describing the importance of intellectual property rights despite their social costs); Reichman, *Of Green Tulips and Legal Kudzu*, *supra* note 1 (demonstrating why certain intellectual property rights protections can thwart socially desirable outcomes).

nothing patents on subpatentable innovation to date has taken the form of utility model laws,[72] which amount to modified patent-like regimes.[73]

What this Article suggests instead is that a better solution is to codify a liability rule to stimulate investment in subpatentable innovation from the outset. Such a regime would defend investors from the risks of forfeiture arising from a system of unbridled and efficient competition, i.e., copying; but it would not reward the innovator with a lengthy period of exclusivity, so much as with a limited form of "take-and-pay" protection under a codified compulsory license. This liability rule would thus make copiers ex post partners in the innovative venture for a specified period of time, as in the manner of a compulsory license. In this case, however, the number of partners subject to de facto compulsory licenses is unlimited in principle from the start. Revenues from a codified liability rule would constitute a market-based reward to the subpatentable innovator, because the more that copiers serve the public interest in access to innovation, the bigger the reward to the subpatentable innovator for the otherwise risky investment in such subpatentable innovation to begin with. Another way to put it is that, while compulsory licenses already exist as a remedy of last resort, this proposal would turn them into an ex ante modality of compensation for innovative contributions.

The key word in the approach proposed here is "innovation," which requires a legally operative definition that distinguishes it beyond

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[72] *See* UMA SUTHERSANEN, UTILITY MODELS AND INNOVATION IN DEVELOPING COUNTRIES, at ix-xi, 1-2 (2006); Hans-Peter Brack, *Utility Models and Their Comparison with Patents and Implications for the U.S. Intellectual Property Law System*, BOS. COLL. INTELL. PROP. & TECH. F., 2009, at 1-3; Daniel R. Cahoy & Lynda J. Oswald, *Is Legal Harmonization Always Better? The Counter-Case of Utility Models*, 58 AM. BUS. L.J. 525, 525-26 (2021); Peter A. Cummings, *From Germany to Australia: Opportunity for a Second Tier Patent System in the United States*, 18 MICH. ST. J. INT'L L. 297, 300 (2010); Janis, *supra* note 3, at 151-52; Alfred Radauer, Cristina Rosemberg Montes, Oliver Cassagneau-Francis, Heinz Goddar & Carl-Richard Haarmann, *The Myth of the "Small Patent for the Small Inventor" — Strategic Motives to Use Second-Tier Patent Systems (Utility Models) in Selected European Countries*, 14 J. INTELL. PROP. L. & PRAC. 771, 771-72 (2019); Uma Suthersanen & Graham Dutfield, *Utility Models and Other Alternatives to Patents*, *in* INNOVATION WITHOUT PATENTS 18, 18 (Uma Suthersanen, Graham Dutfield & Kit Boey Chow eds., 2007).

[73] *See* Uma Suthersanen, *Utility Models: Do They Really Serve National Innovation Strategies?*, *in* THE INNOVATION SOCIETY & INTELLECTUAL PROPERTY 2, 2-3 (Josef Drexl & Anselm Kamperman Sanders eds., 2019); *see also* Janis, *supra* note 3, at 152.

novelty.[74] If the demonstrably novel contribution rises to the level of an innovation, as ultimately defined below, it may well have significant social value. However, one only truly knows what that value amounts to once the novel product is put on the market. Yet, the risk of rapid copying may deter the would-be innovator from undertaking the needed investment in the first place because recovery of that investment remains uncertain, given the ease of copying most subpatentable innovations (that is, those that, while novel, fail to meet the non-obviousness standard of patentability once their marketability is determined in practice).

This Article aims to overcome that hurdle without going to the opposite extreme, namely, without awarding subpatentable innovators with a lengthy period of exclusive property rights à la utility model laws. Having recognized that there is a case for intellectual property protection of subpatentable innovation should not automatically trigger a corresponding methodology rooted in exclusive rights. The reason is that overreliance on exclusive property rights constitutes a simplification of the term "property rights" as initially conceived by Calabresi and Melamed themselves.[75] As these authors correctly recognized, property rights can be implemented either through an exclusive rights regime or by means of a liability rule that deliberately eschews exclusivity in return for a pay-per-use modality.[76] Nevertheless, insufficient attention has been paid to the possibility of using liability rules in intellectual property more generally, specifically as a regime to incentivize investment in subpatentable innovation rather than adopting another exclusive property regime on questionable grounds. In so doing, a relatively short period of initial exclusivity would, nonetheless, be advisable to facilitate market entry, backed up by a longer period of rights sounding in a liability rule rather than a codified exclusivity regime. Under such a liability regime, second comers would

[74] We discuss the treatment of innovation in the literature, as well as our proposed definition of "innovative" for purposes of the application of the proposed liability regime below. *See infra* note 81 and accompanying text (surveying literature on innovation); *infra* Part II.A (introducing our proposed standard of eligibility).

[75] *See* Calabresi & Melamed, *supra* note 5, at 1092; *see also supra* note 13 and accompanying text.

[76] *See* Calabresi & Melamed, *supra* note 5, at 1105-10.

be free to exploit the protected innovation once introduced onto the market in return for a specified royalty from actual sales for a relatively short period of time. By the same token, all would-be users of the same innovation in that period would be under a similar duty to pay the specified royalty to the qualifying innovator under a "take-and-pay" rule.

The proposed regime should not block access to, and use of, subpatentable innovation once it has been legally established as such. On the contrary, the objective is to maximize the use of subpatentable innovation while at the same time requiring follow-on users to pay a small royalty to the protected innovator for a relatively short period of time. Under this approach, the gains from subpatentable innovations are widely spread in the sense that all those who need them can freely use them while paying royalties to the innovators who made them possible. Subpatentable innovators could thus benefit from their investment without, however, blocking the ability of others to put their innovative outcomes to general use in the public interest.

The public, in turn, would benefit twice under this approach.[77] First, the economy gets a socially valuable subpatentable innovation made available to all; second, the mechanism of rewarding the innovator does not hinder would-be users' competitive access to that innovation, so long as they are willing to pay a reasonable tithe to the innovator for a relatively short period of time.[78] In sum, a liability rule of this kind may be conceived as a built-in ex ante compulsory license, rather than as an exception to exclusive property rights. In this case, however, by adopting a liability rule for subpatentable innovation, the entire protectionist regime is built around this same codified compulsory license from the outset. While that might sound radical, it only seems so because legislators have been so blinded by the hereditary resort to exclusive property rights as the preferred incentive mechanism. The time has come, instead, to develop an appropriate intermediate regime based on a liability rule from the outset, so that we can in fact measure

[77] *See generally* Calabresi & Melamed, *supra* note 5, at 1093-1105 (discussing the advantages of both property and liability rules from the combined perspectives of economic efficiency, distributive justice, and other justice-enhancing goals).

[78] *See infra* Part II.B.

the benefits and detriments of such a regime in practice with the minimum cost to public welfare.

C. Liability Norms as Means to Stimulate Investment in Subpatentable Innovation

This Article contends that the economic principles that justify design protection laws could readily apply to other types of innovative products that are left entirely to free competition under present-day conditions. That is, the risky contribution of investors in innovative products may be readily copied, either because they bear any given innovator's know-how on their face, or because the valuable know-how can be easily reverse-engineered from the initial contribution once its marketability has been established.[79] Assuming (for now) that the products in question are demonstrably innovative,[80] even if subpatentable, why should the relevant innovators also not deserve some protection from unbridled copying for a limited period of time? Should all subpatentable innovations become instantly subject to free competition, or should intellectual property law afford investors in subpatentable innovation a relatively short period of tailor-made incentives in order to maximize that investment, given that subpatentable innovation generally may be unduly hindered by the fact that even the most novel exemplars can be so easily copied?

One should also ask what kind of intellectual property right could achieve this goal without unduly discouraging further investment in innovation by the back door (i.e., by giving the first investor an excessive power to control the market to the detriment of robust competition). Rather than a totally unregulated form of competition, with the unforeseen social costs it often entails, this Article proposes a more lightly regulated system for subpatentable innovation based on a liability rule — with a view to stimulating greater investment in innovative goods generally, and not merely copied goods. Do industrial designs constitute a unique phenomenon meriting a unique regime; or could the policy behind the protection of industrial designs be extended

[79] *See supra* note 53 and accompanying text.

[80] *See infra* Part II.A (discussing the operative definition of "innovative contribution" adopted in our proposed framework).

to a much broader class of goods that should benefit from some carefully crafted stimulus to investment in the form of a short-term right that is not necessarily exclusive in nature?

The relevant concept here is *innovation*.[81] If the good is not truly innovative, as defined below,[82] then unbridled market competition should determine its investors' profits. But if the good is deemed innovative under appropriate criteria, then legislators should look beyond the existing choice between design protection law and unregulated competition in order to stimulate other types of subpatentable innovation generally.

Could risky investments in innovative goods not be worth rewarding by means of a carefully contrived mode of short-term protection? This Article argues that they are, because of the possible constraints on

[81] For a discussion of the concept of innovation in the context of incentives theory, see generally DEAN BAKER, ARJUN JAYADEV & JOSEPH STIGLITZ, INNOVATION, INTELLECTUAL PROPERTY, AND DEVELOPMENT: A BETTER SET OF APPROACHES FOR THE 21ST CENTURY (2017), https://cepr.net/images/stories/reports/baker-jayadev-stiglitz-innovation-ip-development-2017-07.pdf [https://perma.cc/9AZK-GWVQ];SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES 31-58 (2004); Jonathan M. Barnett, *Intellectual Property as a Law of Organization*, 84 S. CAL. L. REV. 785 (2011); William Fisher, *Theories of Intellectual Property*, *in* NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY 168 (Stephen R. Munzer ed., 2001); Ove Granstrand, *Towards a Theory of Innovation Governance and the Role of IPRs*, 69 GRUR INT'L 341 (2020); Steven Shavell & Tanguy van Ypersele, *Rewards Versus Intellectual Property Rights*, 44 J.L. & ECON. 525 (2001); Joseph E. Stiglitz, *Economic Foundations of Intellectual Property Rights*, 57 DUKE L.J. 1693 (2008); Heidi L. Williams, *Intellectual Property Rights and Innovation: Evidence from Health Care Markets*, 16 INNOVATION POL'Y & ECON. 53 (2016); Brian D. Wright, *The Economics of Invention Incentives: Patents, Prizes, and Research Contracts*, 73 AM. ECON. REV. 691, 703-04 (1983); Tim Wu, *Intellectual Property, Innovation, and Decentralized Decisions*, 92 VA. L. REV. 123 (2006). *See also* Ian Ayres & Amy Kapczynski, *Innovation Sticks: The Limited Case for Penalizing Failures to Innovate*, 82 U. CHI. L. REV. 1781, 1805 (2015) (noting that "innovation has many modes, only some of which correlate well to the assumptions of the public-goods account of information"). *But see* Rochelle Dreyfuss & Susy Frankel, *From Incentive to Commodity to Asset: How International Law is Reconceptualizing Intellectual Property*, 36 MICH. J. INT'L L. 557, 560-66 (2015) (challenging the incentives framework in innovation theory and practice); Eric E. Johnson, *Intellectual Property and the Incentive Fallacy*, 39 FLA. ST. U. L. REV. 623, 628-35 (2012) (further challenging the incentives framework in innovation theory and practice).

[82] *See infra* Part II.A (describing the eligibility criteria under the proposed liability regime).

investment in subpatentable innovation that often go unnoticed.[83] The fact that current innovation policy treats designs differently from other types of subpatentable goods is short-sighted. What policymakers should care about is stimulating more investment in subpatentable innovation generally, i.e., goods that are both novel and truly innovative but fail to satisfy the obviousness criterium of patent law, instead of seeking to stimulate investment in industrial designs alone.

To this end, this Article will propose the adoption of a new form of protection that relies primarily on a liability rule rather than an exclusive property right. In effect, such a regime would confer a very short period of exclusivity followed by a "right to use" rooted in a de facto codified compulsory license.[84] During this latter period, would-be users would thus pay a small percentage of the revenues obtained on the free market to the original innovators under a liability rule (i.e., a "take-and-pay" rule) as a way to incentivize investment in subpatentable innovation from the outset.[85]

The Article thus attempts to demonstrate the potential advantages of a *sui generis* liability rule for this purpose as compared with other types of incentives — codified or not — based largely on exclusive rights. The primary advantages of such a codified liability rule are that it would provide an *incentive to try*; a reduction of risk from rapid free riding and copying; and market-based results reinforced by a short lead-time advantage.[86]

In sum, the time has come to implement a second layer of recognized intellectual property rights that bolster and support the basic regime of existing exclusive rights while also expanding the benefits of such protection into broader regimes of subpatentable innovation founded on liability rules. Here, the effort is to stimulate interest in needed incentives without the social costs of exclusive rights, while avoiding some of the under-reported and under-estimated social costs of unbridled free competition that may otherwise inhibit risky investment in subpatentable innovation from the outset. In short, this Article envisions an intermediate area between exclusive rights and free

[83] *See supra* note 47 and accompanying text.

[84] *See infra* Part II.B.

[85] *Id.*

[86] *See infra* Part III.

competition, which could have an important role to play in the modern, global economy that would benefit from a broadened stream of creative efforts.

II. IMPLEMENTING A CODIFIED LIABILITY RULE TO REWARD SUBPATENTABLE INNOVATION

This Article now formulates a proposal for the implementation of a *sui generis* regime that, unlike utility model laws, would not rely on an exclusive property right. Instead, under this proposal, the subpatentable innovator should obtain only a very short-term period of exclusivity in order to establish the product on the market, followed by a prescribed longer period during which those who commercialize the subpatentable innovation are obligated to pay a small royalty on each sale to the protected innovator. In effect, this approach would codify a de facto compulsory license from the outset in place of the exclusive property models adopted in the design and utility model laws of some European countries.[87] The following sections describe the proposed regime in greater detail.

A. Eligibility

Global patent law prescribes three criteria for eligibility, i.e., novelty, inventive step, and industrial application.[88] The United States

[87] *See* Henning Grosse Ruse-Khan, *The International Legal Framework for the Protection of Utility Models* 4 (Max Planck Inst. for Intell. Prop. & Competition L., Research Paper No. 12-10, 2012), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2160229 [https://perma.cc/2CW8-Q2VB]; *see also supra* notes 55–59 and accompanying text.

[88] TRIPS Agreement, *supra* note 2, art. 27.1.

implements these requirements as novelty,[89] non-obviousness,[90] and utility.[91]

Under the proposed *sui generis* regime for subpatentable innovation, both novelty and utility would remain requirements. However, instead of non-obviousness, the applicant would need to prove the existence of an innovative contribution beyond the prior art. This contribution would presumably be of social value, which could stem from the market response.[92] This proposition does not mean that every type of innovative contribution would necessarily be of social value, given that markets sometimes ignore social value.[93] However, in those cases where

[89] 35 U.S.C. § 102. For a definition of novelty in patent law, see, for example, JONATHAN S. MASUR & LISA LARRIMORE OUELLETTE, PATENT LAW: CASES, PROBLEMS, AND MATERIALS 43 (1st ed. 2021), where the authors provide that "[a] claimed invention is unpatentable for lack of novelty only if a single piece of *prior art* — an earlier reference, such as a publication or item for sale — discloses every element of the claim . . . ."

[90] 35 U.S.C. § 103. For an explanation of the differences between novelty and non-obviousness in patent law, see MASUR & OUELLETTE, *supra* note 89, at 121, where the authors explain how "the novelty doctrine is also quite limited: an invention is anticipated only if a *single* prior art reference discloses *all* elements of the claimed invention. . . . [M]any inventions differ only slightly from the prior art . . . [or] are predictable combinations of two or more pieces of prior art. . . . The legal doctrine that blocks such variations from being patented is *nonobviousness*."

[91] 35 U.S.C. §§ 101, 112. For a definition of utility in patent law, see, for example, MASUR & OUELLETTE, *supra* note 89, at 153, where the authors state that "*utility* requires that the invention be operable and that it have some demonstrated real-world use at the time of filing."

[92] When performing an analysis of non-obviousness, courts sometimes examine "secondary considerations," including whether a given product or process achieved "commercial success" or constituted a response to "long felt but unsolved needs." Graham v. John Deere Co., 383 U.S. 1, 17 (1966); *see also* KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 401-02, 404 (2007) (adopting the *Graham* approach to secondary considerations); Andrew Blair-Stanek, *Increased Market Power as a New Secondary Consideration in Patent Law*, 58 AM. U. L. REV. 707, 717-23 (2009); Natalie A. Thomas, Note, *Secondary Considerations in Nonobviousness Analysis: The Use of Objective Indicia Following* KSR v. Teleflex, 86 N.Y.U. L. REV. 2070, 2078 (2011).

[93] *See generally* Mario Biagioli, *Weighing Intellectual Property: Can We Balance the Social Costs and Benefits of Patenting?*, 57 HIST. SCI. 140, 159-61 (2019) (weighing the social costs and benefits of patent protection); Michele Boldrin & David K. Levine, *The Case Against Patents*, 27 J. ECON. PERSPS. 3, 18 (2013) (explaining that patents are sometimes ignored or scarcely used in certain industries); Andrew C. Michaels, *Benefits of the Invention and Social Value in Patent Law*, 29 GEO. MASON L. REV. 827 (2022) (arguing that while patent law has a role in shaping the direction of innovation, it isn't completely

social value is questionable, market demand results only in a liability rule and not in an exclusive property right.

This Article defines "innovative contribution" as a demonstrable technological advancement beyond the prior art that does not rise to the level of non-obviousness. Under current patent law, non-obviousness refers to situations in which, even though an existing single source does not disclose each and every component of the claimed invention, that invention nonetheless results from an unpredictable combination of components disclosed in more than one pre-existing source.[94]

concerned with the rate of innovation or benefits of technology). One of the areas in which this dissociation is especially pronounced is pharma and biopharma. *See generally* Rena Conti, Richard G. Frank & Jonathan Gruber, *Addressing the Trade-Off Between Lower Drug Prices and Incentives For Pharmaceutical Innovation*, BROOKINGS INST. (Nov. 15, 2021), https://www.brookings.edu/essay/addressing-the-trade-off-between-lower-drug-prices-and-incentives-for-pharmaceutical-innovation/ [https://perma.cc/7HGQ-RKMF] (arguing that the trade-off between innovation and drug prices is likely avoidable); Suerie Moon, Jorge Bermudez & Ellen 't Hoen, *Innovation and Access to Medicines for Neglected Populations: Could a Treaty Address a Broken Pharmaceutical R&D System?*, 9 PLOS MED., 2012, at 1 (arguing for treaties to harmonize global access to innovation); Frank Mueller-Langer, *Neglected Infectious Diseases: Are Push and Pull Incentive Mechanisms Suitable for Promoting Drug Development Research?*, 8 HEALTH ECON. POL'Y & L. 185 (2013) (discussing research incentives for promoting drug development research for rare diseases).

[94] *See generally* 35 U.S.C. § 103 ("A patent for a claimed invention may not be obtained . . . if the differences between the claimed invention and the prior art are such that the claimed invention . . . would have been obvious . . . to a person having ordinary skill in the art [of the claimed invention]."); *KSR*, 550 U.S. at 399 (holding that under the "'teaching, suggestion, or motivation' (TSM) test [added to the § 103 analysis by the Federal Circuit] a patent claim is only proved obvious if the prior art, the problem's nature, or the knowledge of a person having ordinary skill in the art reveals some motivation or suggestion to combine the prior art teachings"); *Graham*, 383 U.S. at 17 (determining the analysis for applying § 103 as "the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved"); DONALD S. CHISUM, 5 CHISUM ON PATENTS § 16.02(1)(a)(ii) (2023); Christopher A. Cotropia, *Nonobviousness as an Exercise in Gap Measuring*, *in* 2 INTELLECTUAL PROPERTY AND INFORMATION WEALTH: ISSUES AND PRACTICES IN THE DIGITAL AGE 21 (Peter K. Yu ed., 2007); Lee Petherbridge & R. Polk Wagner, *The Federal Circuit and Patentability: An Empirical Assessment of the Law of Obviousness*, 85 TEX. L. REV. 2050, 2059-64 (2007) (tracing the precedential history of "non-obviousness" and § 103); Jason Rantanen, *The Federal Circuit's New Obviousness Jurisprudence: An Empirical Study*, 16 STAN. TECH. L. REV. 709, 713, 719-21 (2013) (analyzing the precedential history of § 103 and presenting empirical data that suggests that after the *KSR* holding the Federal Circuit "is more

According to the doctrine of obviousness, the question thus becomes one of assessing whether an expert in the relevant technical field(s) would find a combination of these elements to be obvious.[95]

In contrast, by doing away with non-obviousness as a qualifying criterion, the proposed regime makes room for innovations in the technical sense that do not meet patent law's strict standard of non-obviousness. In other words, these subpatentable innovations may nonetheless be socially valuable. However, both the social value and the reward are strictly determined in this case by the market's actual response to the subpatentable innovation and not by an examiner's a priori evaluation. This approach thus becomes technically feasible once the reward to the subpatentable innovator is, in fact, determined by a

willing to conclude that the inventions it reviews are obvious"); Giles S. Rich, *Laying the Ghost of the "Invention" Requirement*, 1 APLA Q.J. 26 (1972), *reprinted in* 14 FED. CIR. BAR J. 163, 170 (2004) ("If, for example, a *combination* is claimed, Section 103 requires that to invalidate the claim, it must be shown that the *combination* was obvious, not merely its components."). For a treatment of the role of the non-obviousness requirement as a balancing mechanism in the patent system, see, for example, *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989), where the Court noted that the requirement is meant to strike a "balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy." *See also* Laura G. Pedraza-Fariña & Ryan Whalen, *A Network Theory of Patentability*, 87 U. CHI. L. REV. 63, 63-64 (2020) (arguing that "the goal of nonobviousness should be to reward, and therefore to incentivize, those risky distant searches and recombinations that produce the most socially significant innovations"). In some areas of technology, a presumption of obviousness can apply in certain circumstances. *See, e.g.*, *In re* Dillon, 919 F.2d 688, 692 (Fed. Cir. 1990) ("[S]tructural similarity between claimed and prior art subject matter, proved by combining references or otherwise, where the prior art gives reason or motivation to make the claimed compositions, creates a *prima facie* case of obviousness."); *see also* Takeda Chem. Indus. v. Alphapharm Pty., Ltd., 492 F.3d 1350, 1356 (Fed. Cir. 2007) (reaffirming the approach taken by the Federal Circuit in *In re Dillon*). The Federal Circuit's treatment of non-obviousness has nonetheless faced criticism. *See, e.g.*, Jay Jongjitirat, Note, Leapfrog Enterprises v. Fisher-Price*: Secondary Considerations in Nonobviousness Determinations*, 42 UC DAVIS L. REV. 599, 602 (2008).

[95] This expert in the relevant technical area is often referred to as PHOSITA (a "person having ordinary skill in the art"). *See, e.g.*, Standard Oil Co. v. Am. Cyanamid Co., 774 F.2d 448, 454 (Fed. Cir. 1985) (describing the PHOSITA as a person who "thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate, whether by patient, and often expensive, systematic research or by extraordinary insights").

share of the proceeds from actual sales on the relevant market. If the market decides the claimed innovation is worth paying for, then the regime proposed here provides a mechanism for the innovator to be rewarded by a small percentage of the proceeds for a limited period of time in order to encourage this type of risk-taking from the outset. As further explained in the following section, a "take-and-pay" solution is thus what is on the table.

B. Temporal Articulation of the Exclusivity and Liability Periods

Once a qualifying subpatentable innovation entered the market, it would remain necessary to provide the risk-taker with a short period of exclusivity in order to establish a viable mechanism for cost recovery. Beyond this initially short period, free competition would be allowed for a specified interim period during which competitors must pay a small royalty to the designated innovator.

1. Short-Term Entry-Level Exclusivity Followed by a Specified Liability Period

The sole purpose of a limited period of exclusivity at the outset is to enable the subpatentable innovator to establish a viable distribution system. Given that the innovation in question is subpatentable by definition, a lengthy period of exclusive protection is inadvisable. The life cycle of technological innovation is already fast-moving as a rule,[96] and the possibility of fully open competition should not be unduly delayed. Therefore, we propose the adoption of a two-year period of

[96] *See generally* Bent Dalum, Christian Ø.R. Pedersen & Gert Villumsen, *Technological Life-Cycles: Lessons from a Cluster Facing Disruption*, 12 EUR. URB. & REG'L STUD. 229 (2005); Jochen Markard, *The Life Cycle of Technological Innovation Systems*, 153 TECH. FORECASTING & SOC. CHANGE, Apr. 2020; Edward T. Popper & Bruce D. Buskirk, *Technology Life Cycles in Industrial Markets*, 21 INDUS. MKTG. MGMT. 23 (1992); Margaret Taylor & Andrew Taylor, *The Technology Life Cycle: Conceptualization and Managerial Implications*, 140 INT'L. J. PROD. ECON. 541 (2012). For a discussion of patenting activity in the context of technology life cycles, see generally Reinhard Haupt, Martin Kloyer & Marcus Lange, *Patent Indicators for the Technology Life Cycle Development*, 36 RSCH. POL'Y 387 (2007) and Heini M. Järvenpää, Saku J. Mäkinen & Marko Seppänen, *Patent and Publishing Activity Sequence Over a Technology's Life Cycle*, 78 TECH. FORECASTING & SOC. CHANGE 283 (2011).

exclusivity at the outset, followed by a four-year period, during which the "take-and-pay" rule applies. After this cumulative period of protection, free competition would prevail.[97]

In evaluating this proposal, one may consider that after the short exclusivity period of two years, the regime automatically triggers a de facto compulsory license. That license, in turn, seeks to ensure that the subpatentable innovator is not deprived of a reward by the effects of unbridled competition. On the contrary, the better the market responds, the more the innovator will be rewarded for undertaking a risky investment at the outset without any exclusive property right to distort the competitive marketplace.

2. Royalty Rates

Because the proposed liability regime would only last a relatively short period of time, it can be argued that a fairly robust royalty should be appropriate so as not to unduly deter the incentive to innovate. The overall objective is to encourage maximum distribution of innovative products while ensuring an equitable reward for subpatentable innovators.

While methods for calculating patent royalties are complex and percentages vary from industry to industry,[98] the evidence suggests that

[97] It is worth noting that this proposed temporal range fits within the timelines established by utility model laws adopted in several countries, with the difference that the liability rule proposed here would replace the existing schemes of exclusive property rights. *See supra* notes 58–59 and accompanying text.

[98] *See generally* Thomas F. Cotter, *Four Principles for Calculating Reasonable Royalties in Patent Infringement Litigation*, 27 SANTA CLARA COMPUT. & HIGH TECH. L.J. 725 (2011); Christopher B. Seaman, *Reconsidering the Georgia-Pacific Standard for Reasonable Royalty Patent Damages*, 2010 BYU L. REV. 1661 (2010); Ted Sichelman, *Innovation Factors for Reasonable Royalties*, 25 TEX. INTELL. PROP. L.J. 277 (2018); Norman V. Siebrasse & Thomas F. Cotter, *A New Framework for Determining Reasonable Royalties in Patent Litigation*, 68 FLA. L. REV. 929 (2016). For further discussion of royalty setting across a variety of licensing contexts and sectors of technology, see generally Patricia Cappuyns & Jozefien Vanherpe, *Patent Royalties and Competition Law: The* Genentech *Judgment of the Court of Justice of the European Union*, LES NOUVELLES, Dec. 2016, at 283; Jorge L. Contreras & Richard J. Gilbert, *A Unified Framework for RAND and Other Reasonable Royalties*, 30 BERKELEY TECH. L.J. 1451 (2015); Fernando J. Leiva Bertran & John L. Turner, *Welfare-Optimal Patent Royalties When Imitation Is Costly*, 137 J. ECON. BEHAV. & ORG. 457 (2017); Mark A. Lemley & Carl Shapiro, *A Simple Approach to Setting Reasonable Royalties*

they range from approximately three percent to ten percent of the retail price of any given product.[99] Because the proposed liability rule would only apply to subpatentable innovation, there is an argument that the royalty should be set towards the lower end of this spectrum. On the other hand, the proposed liability rule only lasts for a relatively short period of time, while there is a built-in opportunity for rewarding the innovator with lottery effects if multiple producers distribute the same products in the open market. From this perspective, while a three percent royalty seems rather weak, and ten percent too strong, a base rate of six percent could strike a reasonable compromise, subject to further considerations set out below.

Given the proposed six-year term of duration for the proposed liability rule, competitors would likely enter the market at different times, and each would pay the protected innovator for as long as the liability regime remains in force. The objective is to create the conditions to bring as many competitors into the market as the market will sustain under these conditions, with the assumption that the price of the innovation should decline as more competitors enter the market.

Under this approach, initial competitors would pay the fixed royalty of six percent of the purchase price to the innovator for the entire period. Later market entrants, albeit paying the same rate, will in all likelihood pay less as competition drives prices down. Recognizing that the proposed six percent royalty over a fixed period of time can last only up to six years, we do not reduce the royalty for late entrants, as that could unduly undermine the incentives of both the initial innovator and early market entrants.

for Standard-Essential Patents, 28 BERKELEY TECH. L.J. 1135 (2013); Nathaniel C. Love, *Nominal Reasonable Royalties for Patent Infringement*, 75 U. CHI. L. REV. 1749 (2008); Carl Shapiro, *Injunctions, Hold-Up, and Patent Royalties*, 12 AM. L. & ECON. REV. 280 (2010).

[99] *See, e.g.*, LICENSING EXECS. SOC'Y. (U.S. & CAN.), INC., LES HIGH TECH SECTOR ROYALTY RATES & DEAL TERMS SURVEY REPORT 2021, at 4 (2022) ("For example, based on the combined samples, the average royalty rate for the deals involving only one type of IP is about 4.9%, much lower than the 6.28% for the deals with multiple types of IP."); Thomas R. Varner, *Technology Royalty Rates in SEC Filings*, LES NOUVELLES, Sept. 2010, at 120, 124 (providing statistics for the median royalty rates for bare patent and patent plus know-how licenses across multiple industries). *But see* Michael Risch, *Patent Challenges and Royalty Inflation*, 85 IND. L.J. 1003, 1017-24 (2010) (surveying factors contributing to the inflation of royalty rates).

Early entrance is thus subject to the liability rule but has the advantage of a new market. Later entrance is subject to both the liability rule and competition from early entrants who are subsequently released from the liability rule. Early entrants clearly get an advantage in exchange for a modest liability rule that enables them to compete with the innovator. Later entrants (for example, those entering during the fifth or sixth year) have to make a decision: do they want immediate market entrance now, in which case they have to pay a royalty under the liability rule, while competing with prior entrants who may no longer be subject to the liability rule? Or do they want to wait for that rule to expire, in which case the price will likely be entirely determined by free market competition?

Under this approach, the subpatentable innovator remains subject to free market competition in the sense that, so long as later market entrants pay the royalty, the innovator cannot keep them at bay. However, if would-be competitors ignore the standard deal, then they infringe the liability rule and must also cover the costs of litigation.

C. Implementing the Proposed Regime

The criteria for eligibility as a protectible subpatentable innovation under the scheme proposed in this Article were discussed earlier in section II.A. Here the Article discusses the institutional arrangements needed to operationalize the proposed liability regime.

1. Institutional Design

At present, when the U.S. Patent and Trademark Office ("PTO") examines utility patent applications, it already evaluates the statutory criteria of novelty, non-obviousness, and utility.[100] If a regime protecting subpatentable innovation were enacted, it is safe to assume that the patent applicant will always prefer to obtain a patent whenever that is possible. By the same logic, however, that applicant would normally prefer to have at least the fallback protection conferred by the liability rule rather than facing unbridled competition if the patent application is ultimately denied. For the sake of efficiency, therefore,

[100] *See supra* notes 89–91 and accompanying text.

this inference should be built into the procedural aspects of the system wherever possible. More specifically, under our preferred implementation of the regime, a failure to meet the non-obviousness requirement under the patent application should automatically trigger a secondary evaluation under the eligibility criteria for the liability rule protecting subpatentable innovation. The patent applicant should not be required to make a secondary application if all that the innovation qualifies for is protection under the liability rule.[101]

Nevertheless, it should always remain possible for the innovator to apply solely for protection under the liability rule. In that case, the examiner would only evaluate the eligibility criteria discussed earlier in this Article, namely novelty and utility meeting the standard of "innovative contribution."[102]

Under this approach, when performing a non-obviousness analysis, examiners would always know that a failure to meet that standard would not impede protection as a subpatentable innovation. That alternative should help to reduce the amount of weak or questionable patents emanating from the existing process, especially the tendency to lower the non-obviousness standard in some fields.[103]

[101] We note here that an alternative embodiment of the proposal is possible, in which examination under the liability rule is subject to an express request of the applicant at the time of the patent application and which, if triggered (by the application's failure to meet the non-obviousness requirement), would also require the payment of a supplemental fee. This option would have the advantage of requiring the commitment of fewer resources at the Patent and Trademark Office. We contend nonetheless that an optimal implementation of the proposal should be based on automatic examination, as a way to expedite the decision about product qualification under the liability rule, as well as to leverage the familiarity of the examiner with the product and claims. Additionally, automatic examination would also provide greater legal certainty, as both applicants for intellectual property protection and would-be competitors would have complete information about the legal status of the product under the two potentially applicable regimes (patent and liability).

[102] *See supra* Part II.A (defining innovative contribution as "a demonstrable technological advancement beyond the prior art that does not rise to the level of non-obviousness").

[103] *See generally* Gregory Mandel, *The Non-Obvious Problem: How the Indeterminate Nonobviousness Standard Produces Excessive Patent Grants*, 42 UC DAVIS L. REV. 57 (2008). *See also* GLORIA K. KOENIG, PATENT INVALIDITY: A STATISTICAL AND SUBSTANTIVE ANALYSIS § 1-5 (1974) (collectively discussing the failure to meet the non-obviousness standard as one of the most common causes of patent invalidity); John R. Allison & Mark A. Lemley,

The PTO fee schedule would need to be updated to reflect the costs imposed by this dual-level examination system.[104] By the same token, examination solely for the liability regime would be funded through the payment of an ad hoc fee by applicants who do not simultaneously apply for patent protection.

2. Formal Requirements: Notice and Registration

Within the different regimes of existing global intellectual property laws, the technical formalities imposed on rightsholders — for example, a duty to register or to provide would-be users with notice of protection — vary considerably from one regime to another. Over time, copyright laws have largely eliminated mandatory formalities,[105] while trademark

Empirical Evidence on the Validity of Litigated Patents, 26 AIPLA Q. J. 185, 210-11 (1998); Sarah Burstein, *Visual Invention*, 16 LEWIS & CLARK L. REV. 169, 181 (2012); Rebecca S. Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 BERKELEY TECH. L.J. 885, 887 (2004); Janice M. Mueller & Daniel Harris Brean, *Overcoming the "Impossible Issue" of Nonobviousness in Design Patents*, 99 KY. L.J. 419, 523-27 (2011). *But see* Gregory N. Mandel, *Patently Non-Obvious: Empirical Demonstration That the Hindsight Bias Renders Patent Decisions Irrational*, 67 OHIO ST. L.J. 1391, 1395-96 (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, 18-25 (2007) (collectively arguing that, in some cases, the non-obviousness requirement may be applied too stringently). For emerging challenges surrounding the application of the non-obviousness standard, particularly in the context of artificial intelligence, see Ryan Abbott, *Everything is Obvious*, 66 UCLA L. REV. 2 (2019).

[104] *USPTO Fee Schedule*, U.S. PAT. & TRADEMARK OFF., https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule (last updated Sept. 1, 2023) [https://perma.cc/9HHQ-E9YK].

[105] *See* 17 U.S.C. § 411(a). For a discussion of the evolution of copyright formalities in U.S. law, see generally PAUL GOLDSTEIN, GOLDSTEIN ON COPYRIGHT (3d ed. 2018); STEF VAN GOMPEL, FORMALITIES IN COPYRIGHT LAW: AN ANALYSIS OF THEIR HISTORY, RATIONALES AND POSSIBLE FUTURE (2011); Daniel Gervais & Dashiell Renaud, *The Future of United States Copyright Formalities: Why We Should Prioritize Recordation, and How to Do It*, 28 BERKELEY TECH. L.J. 1459 (2013); Jane C. Ginsburg, *The U.S. Experience with Mandatory Copyright Formalities: A Love/Hate Relationship*, 33 COLUM. J.L. & ARTS 311 (2010); Christopher Sprigman, *Reform(aliz)ing Copyright*, 57 STAN. L. REV. 485 (2004). For the international intellectual property framework, see Berne Convention for the Protection of Literary and Artistic Works art. 5(2), Sept. 28, 1979, S. TREATY DOC. No. 99-27; TRIPS Agreement, *supra* note 2, art.2, art. 9(1); WIPO Copyright Treaty art. 1(4), Dec. 20, 1996, 2186 U.N.T.S. 121, 153; WIPO Performances and Phonograms Treaty art. 20, Dec. 20, 1996, 2186 U.N.T.S. 203, 252.

law has come to increasingly rely on a notice requirement.[106] In contrast, patent laws have long required both registration and formal examination at the granting stage, and the United States makes some form of notice advisable by tying damage remedies to marking requirements,[107] as further detailed below.[108] Moreover, the utility model laws enacted in some countries may also impose a system of registration and examination.[109]

Although the arguments against mandatory notice requirements in copyright law and to a lesser extent even trademark law are persuasive,[110] given that the proposed regime of protection for subpatentable innovation under a liability rule constitutes a novel approach under existing intellectual property regimes, it seems functionally advisable to envision putting some burdens of registration and notice on those subpatentable innovators who otherwise comply with the eligibility requirements discussed above.[111]

More specifically, there are at least three reasons to implement a registration and notice system with regard to subpatentable innovation within the regime proposed here. First, a notice requirement helps to shift expectations with regard to a new regime. Second, because potential users are freely allowed to enter the market, it seems only fair that they should be warned in advance that a royalty must be paid to innovators on sales of the relevant products.[112] Third, as further discussed below, some patent laws even allow the calculus of damages to be influenced by the presence or absence of notice to would-be users.[113]

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[106] *See* 15 U.S.C. § 1111. *See generally* J. THOMAS MCCARTHY, 3 MCCARTHY ON TRADEMARKS AND UNFAIR COMPETITION § 19:1 (5th ed. 2023).

[107] *See* 35 U.S.C. § 287(a).

[108] *See infra* note 117 and accompanying text.

[109] *See Utility Models*, *supra* note 3.

[110] *See* Gervais & Renaud, *supra* note 105, at 1475-76.

[111] *See supra* notes 89–95 and accompanying text. That said, it would also be necessary to determine the nature of any penalty imposed on those who fail to comply with the notice requirement. *See infra* note 117 and accompanying text.

[112] *See* Sprigman, *supra* note 105, at 501 (discussing the signaling function of copyright formalities).

[113] *See infra* note 117 and accompanying text.

The liability rule proposed in this Article should be structured around a regime that requires both registration and notice. As indicated in the previous section, a patent application failing to meet the non-obviousness requirement should automatically trigger a secondary evaluation under the proposed liability rule wherever enacted, without the need for the applicant to make another application.[114] At the same time, applicants would have the option of applying directly and solely for protection under the proposed liability regime. In all cases, formal registration under the liability regime would be a mandatory requirement to obtain protection.

The proposed regime should also require successful applicants to give notice by displaying a symbol on products qualifying as protectible subpatentable innovations. For example, on analogy to the marking requirements in patent law, one could use the letter L followed by the registration number for this purpose.[115] During pendency of the application, the symbol/number combination could also be used to denote the status of the application. If the application for protection under the liability rule is made in connection with a patent application, then the liability symbol-number would be combined with the patent notice. This allows applicants to go on the market immediately, while giving notice of the application to potential competitors who become liable either to the patentee (if the patent is granted) or to the beneficiary of a liability rule (if one is codified). In effect, this means that would-be competitors must evaluate the possibility of a retroactive

[114] *See supra* note 101.

[115] The proposed symbol and notice system is modeled after current domestic patent laws in a number of countries, which require the display of some symbol or wording indicative of protection. For instance, United States patent law establishes the following marking system: "Patentees, and persons making, offering for sale, or selling within the United States any patented article for or under them, or importing any patented article into the United States, may give notice to the public that the same is patented, either by fixing thereon the word 'patent' or the abbreviation 'pat.', together with the number of the patent, or by fixing thereon the word 'patent' or the abbreviation 'pat.' together with an address of a posting on the Internet, accessible to the public without charge for accessing the address, that associates the patented article with the number of the patent, or when, from the character of the article, this cannot be done, by fixing to it, or to the package wherein one or more of them is contained, a label containing a like notice." 35 U.S.C. § 287(a).

obligation to pay a share of the royalties for the maximum period specified under the take-and-pay regime.[116]

A codified liability regime could also be structured in a way in which failure to adopt the notice symbol should not forfeit protection, but rather would result in a lower royalty to be paid under the liability rule. This idea is modeled after what already happens in some domestic patent laws. For instance, the United States establishes the following penalty for failure to mark patented products:

> In the event of failure so to mark, no damages shall be recovered by the patentee in any action for infringement, except on proof that the infringer was notified of the infringement and continued to infringe thereafter, in which event damages may be recovered only for infringement occurring after such notice. Filing of an action for infringement shall constitute such notice.[117]

Because the proposed liability regime is new, the notice requirement should be strict. Would-be competitors must be able to assess the risks and potential obligations that they face in their pricing strategies if and when entering the market. At the same time, we note in passing that the decision to grant or deny the liability rule must be expeditious so as not to unduly deter would-be competitors.[118] The advantage of a liability rule is, indeed, to encourage competitors to enter the market, so long as they calculate the risk of paying a small percentage of sales revenue for a short period of time to the innovator.

Once the protected innovation symbol was properly given, the would-be user should have a duty to promptly notify the innovator of intent to use, with the duty to pay royalties on a timely basis. In this regard, if and when multiple users indicate an intention to use, the innovator could expect to gain substantial income generated during the liability period.[119]

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[116] That is, six years. *See supra* Part II.B.

[117] 35 U.S.C. § 287(a).

[118] *See supra* note 101 (further discussing the advantages of an expeditious review process).

[119] *See infra* Part III.G (discussing how lottery effects may occur under the proposed regime).

3. Royalty Collection

The proposed regime would benefit from the establishment of a collection society from the outset. Within the realm of copyright law, collection societies have long been recognized for their role in relieving the burden on individuals to enforce their own rights, once they report infractions of rights to a society that is equipped to operate on an efficient and broad-ranging basis.[120] In the proposed regime, we borrow from lessons learned in copyright law and practice,[121] and adapt those lessons to the foreseeable needs of subpatentable innovators.

We thus posit that a regime built on a liability rule could be even more dependent on a relevant collection society than an exclusive property right. Even regimes based on exclusive property rights often benefit from the role performed by collective rights organizations, as seen in the case of copyright law and musical works.[122] Nevertheless, the fact that usage of the protected subpatentable innovation is not prohibited after two years but remains nonetheless subject to a "take-and-pay" royalty, implicitly suggests the need for some reporting and supervising machinery to enforce the proposed outcomes. In other words, it should not be legal to use the protected innovation without declaring an intent to use from the outset to the collection society. This declaration, in turn, implies consent and adhesion to a reporting system that makes royalties calculable and enforceable. A failure to report promptly should thus

[120] As Robert Merges has explained, "[T]hose with a recurring need to transact in intellectual property rights invest in administrative structures that lower the costs of exchanging rights. Among other functions, these collective rights organizations promulgate rules and procedures for placing a monetary value on members' property rights. They thus conserve on transaction costs either by making it easier to identify and locate rightholders, or by creating the occasion for repeat-play, reciprocal bargaining, versus more costly one-shot exchanges." Merges, *supra* note 6, at 1294. *See also generally* Stanley M. Besen, Sheila N. Kirby & Steven C. Salop, *An Economic Analysis of Copyright Collectives*, 78 VA. L. REV. 383, 383 (1992); Christian Handke & Ruth Towse, *Economics of Copyright Collecting Societies*, 38 INT'L REV. INTELL. PROP. & COMPETITION L. 937 (2007).

[121] These lessons also include caveats about collection societies. *See generally* Daniel Gervais, *Collective Management of Copyright: Theory and Practice in the Digital Age*, *in* COLLECTIVE MANAGEMENT OF COPYRIGHT AND RELATED RIGHTS (Daniel Gervais ed., 2d ed. 2010); Jonathan Band & Brandon Butler, *Some Cautionary Tales About Collective Licensing*, 21 MICH. ST. INT'L L. REV. 687 (2013).

[122] *See* Merges, *supra* note 6, at 1328-40.

trigger a higher royalty payment as a penalty for burdening the liability rule from the outset. By the same token, prompt reporting and payment should enable second-comers to access and use the protected innovation at the lowest required cost, that is, in terms of obligatory royalties.

We note that copyright holders, albeit heterogenous, constitute a fairly well demarcated set of markets.[123] By contrast, one would expect that subpatentable innovators will form a much broader and more variable array of market entrants.[124] As such, reliance on industry self-organization is not to be expected, but should rather constitute a pre-designed component of the law. An optimal embodiment of the proposed liability regime would thus envision an entity modeled after the collection societies that have been operating in the copyright space for decades. In this regard, the law enacting the liability rule should itself institute a collection society to make the system work more efficiently from the outset.

Specifically, we propose to locate the collection society within the ambit of the PTO. The legislators should create an office within the PTO, which would establish one or more appropriate collection societies and decide how they should operate. For instance, these societies could be public or semi-private. Ideally, however, they would operate on a private or semi-private basis under an obligation to report to the office, and to conform to the rules established by the office.[125] We note that this particular feature of the proposed liability rule thus entails a structural change to the PTO, albeit a relatively modest one. We further note that maintenance costs largely fall on third parties — the private or semi-private societies — rather than the agency, which would thus assume a primarily supervisory role.

[123] *See id.* (focusing on copyright collectives in the music industry).

[124] In his work on collective rights organizations, Merges also studies the case of patent pools in the automobile and aircraft manufacturing industries. *Id.* at 1340-54. Because our proposal is not technology- or industry-specific, the typology of sub-patentable innovators seeking to qualify for protection under the liability rule is expected to be even more heterogenous.

[125] *See id.* at 1335-38 (describing existing reporting mechanisms within collection societies operating in the music industry).

4. Enforcement

In case of infringement of the proposed liability rule, rightsholders should have the option to bring a lawsuit against the alleged infringer(s), much like what happens with patent rights.[126] Similarly, injunctions would be available to qualifying applicants.[127]

However, because we envision a key role for a collection society or societies, such entities could themselves manage the enforcement regime for the liability rule.[128] Because the liability rule envisions the possibility of violations around a variety of markets, a single collection society with specialized sub-offices seems the most efficient option. At the same time, the duration of protection has deliberately been made relatively short, which suggests that the collection society must be able to act quickly and efficiently to obtain relevant injunctions. The objective is to ensure that users comply with the rules established by the collection society overseeing the liability rule from the start.

III. BROADER IMPLICATIONS OF THE PROPOSED LIABILITY RULE

The previous parts have outlined the specific embodiment of the liability regime envisioned here with reference to subpatentable innovation. We now consider the broader implications of such a proposal. First of all, a liability rule has a built-in competitive component that other legal regimes sounding in exclusive property

[126] *See* 35 U.S.C. § 271(a) (governing direct infringement: "[W]hoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent"); *see also* 35 U.S.C. § 271(b) (governing indirect infringement in the form of inducement); 35 U.S.C. § 271(c) (governing indirect infringement in the form of contributory infringement).

[127] *See* 35 U.S.C. § 283 ("The several courts having jurisdiction of cases under this title may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable."). The requirements that need to be satisfied by claimants seeking injunctive relief would also apply here, as they do across other areas of the law. *See, e.g.*, Weinberger v. Romero-Barcelo, 456 U.S. 305, 311-13 (1982) (articulating the four-factor test that has long applied to claims for injunctive relief).

[128] As Merges notes, "institutions are enforcement technologies too, and they are often generated intentionally to reduce transaction costs and to increase the value of assets." Merges, *supra* note 6, at 1318.

rights lack altogether. Generally speaking, the proposed regime encourages use, whereas an exclusive property right discourages use — leading, in some cases, to situations in which the social costs of exclusivity are too high. Utility models, for example, entail patent-like social costs. In contrast, the proposed regime lowers those costs while increasing access to potentially socially valuable innovation. We do not want to block access to innovation as it occurs under utility models; we do want to increase access to innovation while rewarding the innovator.

The deeper implications of this approach are spelled out below and can be summarized as follows: liability rules enlarge "incentives to try"; provide easy access to markets; reduce risk; provide for customizable regimes; such regimes stimulate greater reliance on market-based results; afford the possibility of lottery effects; and also help avoid the pressures and contradictions of the non-obviousness analysis in patent law. This Part more fully addresses these topics below.

A. Liability Rules Enlarge "Incentives to Try"

The existence of codified intellectual property rules tells us what legislators predict as a needed stimulus to encourage investment in certain domains. Liability rules, on the other hand, allow policymakers *to discover* what actually needs stimulation under free market conditions. The conventional approach leaves society with either the risk of market failure, unless a particular innovator qualifies for some form of intellectual property protection, or a regime of *sui generis* protection. Under a liability rule, instead, there is a built-in *incentive to try*. Liability rules thus put a more empirical spin on innovation policy, allowing for the discovery of needed incentives. The system proposed here has therefore an in-built capacity for empirically detecting areas that need legal incentivization.

Liability rules can enlarge models of incentives based on the received wisdom that certain product areas need a stimulus to investment. However, instead of an ex ante reward, liability rules often should provide a new emphasis on *incentives to try*. In so doing, they constitute a broadly available substitute for, and a tolerable alternative to, exclusive property rights.

B. Easy Access to Markets

Under the proposed liability rule, there is no pre-existing duty for competitors to negotiate market entry, as under legal regimes sounding in exclusive property rights, including utility model laws. The only conditions that competitors must meet are to give notice and to pay the small royalty based on actual sales. This ease of market entry is balanced by another effect of liability rules, which is to eliminate the possibility of free riding on the risky investments of others.

We note that with this low-barrier approach to market entry,[129] trademark protection should further assume a particularly important role in this context. It is highly likely that entrants to the market under the liability rule will also need trademark protection in order to preserve their market space, once established.

Nevertheless, it is important to bear in mind that trademark law must not be stretched so as to become an endless *sui generis* regime. One of the main goals of trademark law is to prevent confusion in the marketplace;[130] however, trademarks are not designed to affect the quantum of investment and should not become endless substitutes for suitably designed intellectual property laws. A liability rule, instead, is itself designed to stimulate and augment investment in subpatentable innovation well beyond anything that trademark law could or should provide.

C. Reduction of Risk

The use of liability rules has a market stimulation effect through the reduction of risk faced by all parties seeking access to relevant markets. From the perspective of second comers, market entrance as a would-be competitor becomes less risky because there is no longer an obligatory pre-existing negotiation with rightsholders. Market entrance here is not conditioned on a permissive gesture from a rightsholder.[131] At the same

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[129] On the pro-competitive role of liability rules, see Reichman, *Legal Hybrids*, *supra* note 7, at 2520-29.

[130] *See* MCCARTHY, *supra* note 106, § 2:1.

[131] This reduces both legal uncertainty and transaction costs; in principle, this reduction should be beneficial from a social welfare perspective. *See* Merges, *supra* note 6, at 1316 ("[T]he risk of 'bargaining break-down' in the improvement-pioneer licensing

time, however, existing rightsholders no longer run the risk of free riding by competitors who benefit from their contributions. In this sense, the market decides who benefits, undeterred by those who defend existing barriers to entry, while so-called competitors cannot free ride on eligible innovations without creating their own innovative products.

D. Customizable Regimes

In its essence, the *sui generis* regime proposed in this Article is built around a liability rule rather than an exclusive property right. It also applies to all innovative contributions without regard to the field of technology or domain therein. In the usual model, that is, an exclusive property rights regime, the legislator starts with a system of exclusive rights that is typically bounded by the possibility of a compulsory license,[132] as is the case in the context of patented pharmaceuticals.[133] Here, instead, the legislator would start with a codified compulsory license, which would not discriminate among subject matters provided that the qualifying standard of innovation is satisfied.

The adoption of liability rules can thus avoid problems that traditionally arise from the rigidity of codified exclusive property rights. Liability regimes can also be more easily adapted to meet new needs as they arise than either codified patent or copyright regimes.

E. Greater Reliance on Market-Based Results

Liability regimes implement market-based solutions that may require more flexible ex ante technical legal measures than traditional patent regimes. Exclusive property regimes typically embody intricate

negotiations is real enough. A liability rule prevents the social welfare loss that would result from such a breakdown.").

[132] *See supra* notes 15–19 and accompanying text.

[133] *See supra* notes 15–19 and accompanying text.

eligibility requirements[134] and exclusions.[135] A liability rule adheres more closely to market-based solutions than, for example, a utility model law, while more broadly incentivizing investment in novel and useful contributions to the prior art.

Rather than judicial estimates of value, the market decides "value" by avoiding instant free riding for innovative contributions.[136] There is, instead, an assured period during which rightsholders are entitled to the payment of royalties, which does not otherwise impede free competition after a brief transition period. To state it perhaps more forcefully: let the market decide who are the innovative winners, but let the winner obtain a partial short-period of immunity from free riding after the fact — that is, after the market grants them the status of "winners" for a short period that does not otherwise impede fee-paying competitors who lawfully copy their way into the market.

[134] In addition to requirements of novelty, non-obviousness and utility (described in notes 88–91 and accompanying text) patent law requires the disclosure of information about the claimed invention in particular ways, creating the additional requirements of enablement (35 U.S.C. § 112(a) which directs patent applicants to describe the claimed invention "in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same") and written description (35 U.S.C. § 112(a) further establishes that the enablement requirement be satisfied through "a written description of the invention").

[135] Abstract ideas, laws of nature, natural phenomena and products of nature are excluded from patentability. *See* Gottschalk v. Benson, 409 U.S. 63, 67 (1972) (holding that phenomena of nature, mental processes and abstract intellectual concepts are not patentable); Bilski v. Kappos, 561 U.S. 593, 601, 603, 612 (2010) (holding that abstract ideas are unpatentable); Mayo Collaborative Servs. v. Prometheus Lab'ys, 566 U.S. 66, 86-87 (2012) (creating a multi-step test to determine whether a claim is directed at a law of nature, product of nature, or abstract idea (step 1) and whether it contains an inventive concept (step 2)); Alice Corp. v. CLS Bank Int'l, 573 U.S. 208, 226-27 (2014) (holding that generic computer implementation of an abstract idea is not sufficient to render the idea patent-eligible).

[136] *See generally* Ante Farm, *Pricing and Price Competition in Consumer Markets*, 120 J. ECON. 119 (2017) (articulating the general principle that "in markets where buyers take prices as given and prices are set by sellers . . . a market prices goes down if – and only if – a price cut *appears profitable to a firm even if its competitors follow suit*") (emphasis added).

F. Avoiding the Pressures and Contradictions of the Non-Obviousness Analysis

A liability rule avoids the all-or-nothing hazards of the non-obviousness regime under patent law.[137] It operates as a safeguard against poor quality patents, because it gives examiners an intermediate space for conceptualizing the degree of inventiveness. A decision that a given innovation does not meet the non-obviousness criterion would no longer open the door to immediate, unbridled competition. Instead, under the proposed regime, a rejection based on non-obviousness does not automatically mean that the innovation enters the public domain. Rather, it allows qualifying innovators to prove the value of their efforts through competition whose very success is generated by the needs and decisions of would-be competitors, not judges. At the same time, successful competitors generate rewards to the original innovator under a "take-and-pay" regime.

G. Possibility of Lottery Effects

Since the market decides whose innovative contributions are truly valuable, winners may have unexpectedly large results[138] because they have not otherwise constrained the body of potential users. Once the market decides that it likes or needs a given subpatentable innovation, then the originator will become a "winner" for a specified period without unbridled free riding. Truly innovative products that are widely used may thus generate lottery effects after the fact, because so many competitors deem them useful, even though such lottery effects as a rule are unpredictable at the outset.

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[137] *See supra* Part I.A; *see also* Daralyn J. Durie & Mark A. Lemley, *A Realistic Approach to the Obviousness of Inventions*, 50 WM. & MARY L. REV. 989, 990 (2008) (noting that "[o]bviousness is the ultimate condition of patentability. The nonobviousness requirement . . . is in dispute in almost every case, and it is responsible for invalidating more patents than any other patent rule"); *id.* (citing NON-OBVIOUSNESS: THE ULTIMATE CONDITION OF PATENTABILITY (John F. Witherspoon ed., 1980)).

[138] One of the Authors has developed the idea of liability rules as catalysts for the potential monetization at a large scale of a given innovation (i.e., lottery effects) in prior work. *See* Reichman, *Legal Hybrids*, *supra* note 7, at 2504-39.

CONCLUSION

The notion that every creation or innovation that is not copyrightable or patentable should immediately become subject to the rigors of free competition needs to be reconsidered. The proliferation of *sui generis* regimes adopted in various countries attest to this phenomenon but may also be an indicator of a rigid approach to addressing the relevant or resulting problems emerging from the application of legal regimes based on exclusive property rights.[139]

In contrast, this Article insists that regimes of exclusive property rights are an obsolete and socially costly way to deal with these subpatentable subject matters, as attested in part by the failure of existing *sui generis* regimes to attract universal or even broad adoption. What this Article suggests, instead, is that investors in subpatentable innovation do need a form of *sui generis* protection for a limited period of time, but that an exclusive property right constitutes the wrong approach to solving this problem. On the contrary, what needs to be developed is a different kind of *sui generis* regime for qualifying subpatentable innovation based on a liability rule — i.e., a "take-and-pay as you go" regime — rather than an exclusive property right.

Under a liability rule, would-be competitors are not excluded from the market after a short introductory period of two years. On the contrary, would-be competitors may enter or even flood the competitive market, but they would now be subject to an obligation to pay a small royalty to the qualifying subpatentable innovator for a relatively short period of time.

The point of the exercise is to encourage more investment in subpatentable innovation while at the same time preserving patent protection for those few innovations that truly meet the substantive criteria of patentability. The proposed regime thus solves a nagging problem that the lack of protection for subpatentable innovation has increasingly demonstrated, namely, that costly investments in such contributions are steadily undermined by the fact that those who invest in risky enterprises are never assured of recovering their costs even when the innovation succeeds. That result follows because the moment the subpatentable innovation looks like a winner on the product market,

[139] *See generally id.* at 2453-2500.

big-time investors can readily overwhelm the innovator who initially took the risk and thus syphon off the resulting profits on their innovative products. This risk elevates the cost and risk of investing in subpatentable innovation over time. The existing global intellectual property regime is still largely based on the economics of the nineteenth and early twentieth centuries — thus creating a gap that inherently limits creative responses to the need for subpatentable innovation.

In today's economy, where companies and other actors (which now begin to include artificial intelligence) have greatly increased the possibilities for socially valuable subpatentable innovation, the outdated system of totally free competition has progressively discouraged investment in one of our most potentially valuable sectors. By the same token, it will not do to burden commerce and society with another exclusive property right when a liability rule can provide the needed stimulus without unduly burdensome social costs. Under this proposed regime, would-be competitors must recognize the virtue of the initial investment in qualifying subpatentable innovation by paying a small royalty on duplicative products for a relatively short period of time. By that means, free competition is not unduly hindered while the qualifying subpatentable innovator is rewarded by a small slice of the competitor's revenue and is thus enabled to benefit from the success of investing in the relevant subpatentable innovation, even if the result is wholesale competition. Indeed, the more competition there is under this framework, the more the risky investment is shown to have benefited the public, while those who took the initial risk are rewarded without hindering access to the competitive market.

In sum, under a "take-and-pay" rule, everyone benefits from risky but successful investment in subpatentable innovation. As a result, we should see more robust investment in needed subpatentable innovation, while those who meet the non-obviousness standard of patent law remain unaffected. Such a regime would help to ensure that the non-obviousness standard is properly maintained and is not lowered by hidden desires to reward subpatentable innovators. On the contrary, this proposed regime would help to ensure that patents properly reward only those who deserve them.

Finally, investment in socially valuable subpatentable innovation is not discouraged by the existing risk of virtually instant duplication on

the products market by more powerful would-be competitors who free ride on the initial investment. They would, instead, now become subject to a codified compulsory license that operates without the distortions of regimes built around existing models of exclusive property rights.