
Using liability rules to stimulate local innovation in developing countries: Application to traditional knowledge

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When economists speak of an underlying legal structure that imposes an “absolute permission” requirement on access to, and use of, knowledge goods protected by intellectual property rights (IPRs), they typically have in mind the domestic patent and copyright laws. Under these and related intellectual property regimes,

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one cannot normally make use of a protected invention or creative work of authorship for specified purposes and for limited periods of time without prior authorization of the rights holder, typically in the form of a license.

When economists speak of liability rules, in contrast, they envision an underlying legal structure that permits third parties to undertake certain actions without prior permission, provided that they compensate injured parties for all or part of the costs they inflict. While typical examples are found in tort laws regulating the abatement of nuisances,¹ liability rules also abound in the realm of intellectual property law, where, however, their function has largely been overlooked or mischaracterized by legal and economic scholars.² In this context, liability rules conjure up a regime built on a “take and pay” principle. Under such a regime, second comers can access and use the protected subject matter for specified purposes without permission, but they must compensate the first comer for these uses in one manner or another.

This chapter discusses new forms of liability rules that might profitably be used to stimulate local innovation in developing countries. Our thesis is that a properly designed liability rule to protect small-scale innovation in developing countries would overcome investors’ fears of market failure with fewer social costs than would accrue either under a regime of unbridled copying or under a regime of hybrid exclusive property rights, such as those embodied in laws that protect utility models, industrial designs, plant varieties, or miscellaneous other subject matters in developed countries.³ We also show how this regime could solve many of the problems that proposals to protect traditional knowledge currently pose.

I. Introduction and historical background

Qualified experts have long agreed that most developing countries would benefit from one or more special intellectual property regimes to protect small-scale innovation, particularly utility model or “petty patent” laws.⁴ This advice follows from the more limited technical capacities of producers

¹ See, e.g., Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972).

² Some notable exceptions include: R.D. Blair & T.F. Cotter, *An Economic Analysis of Damage Rules in Intellectual Property Law*, 39 WM. & MARY L. REV. 1585 (1998); J.O. Lanjouw & J. Lerner, *Tilting the Table? The Predatory Use of Preliminary Injunctions*, 44 J.L. & ECON. 573 (2001); Robert P. Merges, *Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations*, 84 CAL. L. REV. 1293 (1996), and M. Schankerman & Suzanne Scotchmer, *Damages and Injunctions in Protecting Intellectual Property*, 32 RAND J. ECON. 199 (2001).

³ See generally J.H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 COLUM. L. REV. 2432, 2453–2503 (1994) [hereinafter *Legal Hybrids*].

⁴ See, e.g., COMMISSION ON INTELLECTUAL PROPERTY RIGHTS, INTEGRATING INTELLECTUAL PROPERTY RIGHTS AND DEVELOPMENT POLICY 121 (2002) [hereinafter CIPR] (stating that, as compared with “the normal patent system, utility models or

in most of these countries, which are better suited to applications of inventions made elsewhere to local conditions than to developing bigger scale inventions from scratch, especially when the latter depend on basic research for which there is usually no adequate infrastructure.⁵

The Japanese experience empirically supports this approach. For decades, Japanese industries specialized in adapting or improving inventions developed elsewhere for further application. As we know, they were so successful that they often drove the original inventors out of the market for not keeping up fast enough with the pace of improvements. To the extent that intellectual property played a role in this transformative process, it was the Japanese utility model law that often carried the weight.⁶ This law (unlike its German prototype) quickly broke its ties to industrial design as such and became a general-purpose petty patent law covering small-scale innovations generally (more or less as occurred in Italy).⁷ Among other perceived benefits, this law enabled Japanese industries to surround foreign inventions with a bevy of lesser rights and thereby to induce their patent owners to enter into cross-licensing arrangements with improvers. Today, however, the utility model law of Japan is much less important because of major Japanese investments in basic research and the correspondingly enhanced role of patented technology there.⁸

Foreign experts thus find it logical to advise developing countries to emulate the Japanese example and to enact utility model laws to promote investment in small-scale innovation.⁹ Moreover, for a variety of reasons not exclusively governed by

petty patent systems typically require a lower level of inventive step, provide a shorter period of protection, and in not being subject to any substantive examination prior to grant, are cheaper to obtain”).

⁵ *Id.* at 121 (stressing focus of small and medium size enterprises “on relatively small incremental improvements to existing products rather than the development of completely new products”).

⁶ See, e.g., Shoji Matsui, *The Transfer of Technology to Developing Countries: Some Proposals to Solve Current Problems*, 59 J. PAT. OFF. SOC'Y 612 (1977); Chen Ruifang, *The Utility Model System and Its Benefits for China – Some Deliberations Based on German and Japanese Legislation*, 14 INT'L REV. INDUS. PROP. & COPYRIGHT L. [I.I.C.] 493 (1983); Robert E. Evenson, *Survey of Empirical Studies*, in STRENGTHENING PROTECTION OF INTELLECTUAL PROPERTY IN DEVELOPING COUNTRIES – A SURVEY OF THE LITERATURE 33, 41–42 (Wolfgang E. Siebeck ed., World Bank 1990)

⁷ For details, see *Legal Hybrids*, above n. 3, at 2455–59. See generally Mark D. Janis, *Second Tier Patent Protection*, 40 HARV. INT'L L.J. 151 (1999).

⁸ See KEITH E. MASKUS, *INTELLECTUAL PROPERTY RIGHTS IN THE GLOBAL ECONOMY* 143–48 (Institute for International Economics 2000) (stressing Japan's shift from an emphasis on learning and diffusion toward protecting underlying inventions through patents). See also Keith E. Maskus & Christine McDaniel, *Impacts of the Japanese Patent System on Productivity Growth*, 11 JAPAN AND THE WORLD ECONOMY 557–74 (1999).

⁹ See above nn. 4, 6 & 8. See also Hanns Ullrich, *GATT: Industrial Property Protection, Fair Trade and Development*, in GATT OR WIPO – NEW WAYS IN THE INTERNATIONAL PROTECTION OF INTELLECTUAL PROPERTY 127, 153–55 (F.-K. Beier & G. Schricker eds., John Wiley & Sons 1989); Rudolf Krasser, *Developments in Utility Model Law*, 26 I.I.C. 950 (1995).

the drive for harmonization, the European Union also seems likely to adopt a federal utility model law in the near future,¹⁰ which could engender some additional benefits from the transnational harmonization of intellectual property laws.

A. *Critique of the standard proposals*

As we see it, however, this well meaning advice to developing countries is based on the assumption that their only alternatives are either full patent protection of virtually all forms of technical innovation, as in the U.S.,¹¹ or a mixed patent-utility model regime, as in Italy, Germany, Japan, and prospectively, in the E.U. as a whole.¹² If this were true, then most developing countries would clearly benefit more from the latter option than the former.

The problems with *sui generis* intellectual property regimes, such as utility model laws and design protection laws, are legion,¹³ however, and they can be summarized as a cumulative tendency to generate excessive social costs that outweigh the likely social benefits (which is what we mean by “over-protection”).¹⁴ These detriments include:

¹⁰ See Green Paper on Utility Model Laws, Document COM (95) 370 final of 10 July 1995; Draft Utility Model Directive, Council Directive 97/0356 (COD), COM (1999) Official Journal of European Communities; Krasser, above n. 9.

¹¹ While this is currently the standard U.S. position, this country has begun to deviate from it by enacting *sui generis* laws to protect plant varieties, integrated circuit designs, and boat hull designs. See *Legal Hybrids*, above n. 3, 2465–71, 2478–80; Janis, above n. 7; see also J.H. Reichman, *Charting the Collapse of the Patent-Copyright Dichotomy*, 13 *CARDOZO ARTS & ENT. L.J.* 475, 504–06 (1995) [hereinafter, *Collapse of the Patent-Copyright Dichotomy*].

¹² See above n. 10. One recent source that does not make this assumption is CIPR, above n. 4, at 121 (noting and citing Prof. Reichman’s proposal for a “compensatory liability regime”).

Under either option, it is usually further assumed that any *sui generis* regime adopted to protect small-scale innovation would be supplemented by other *sui generis* regimes like those enacted in developed countries. Some of these regimes are already mandatory under international law. See, e.g., Agreement on Trade-Related Aspects of Intellectual Property Rights, 15 Apr. 1994, Marrakesh Agreement Establishing the World Trade Organization [hereinafter WTO Agreement], Annex 1C, *LEGAL INSTRUMENTS – RESULTS OF THE URUGUAY ROUND* vol. 31, 33 I.L.M. 81 (1994) [hereinafter TRIPS Agreement], arts. 25–26 (obligations to protect industrial designs); *id.*, arts. 35–37 (obligations to protect integrated circuit designs); *id.*, art. 27.3(b) (obligation to protect plant varieties in the absence of plant patent protection); *id.*, art. 39.3 (ambiguous obligation to protect undisclosed clinical test data pertaining to pharmaceutical or agricultural chemical products).

¹³ See, e.g., Janis, above n. 7; J.H. Reichman, *Design Protection and the New Technologies: The United States Experience in a Transnational Perspective*, 1991 *INDUS. PROP. & LE PROPRIÉTÉ INDUSTRIELLE* (Pt. 1) (May 1991), 257–74 (Pt. 2) (June 1991).

¹⁴ Accord Janis, above n. 7; cf. Calabresi & Melamed above n. 1, at 1107–08 (noting risk of under- or over-compensation from use of property rights without sound basis for *ex ante* valuation). See generally J.H. Reichman, *Of Green Tulips and Legal Kudzu: Repackaging Rights in Subpatentable Innovation*, 53 *VAND. L. REV.* 1753 (2000) [hereinafter *Green Tulips*].

- Overextended or hybrid exclusive rights disrupt the sharing of technical know-how that powers most scientific and technical progress, especially through spillovers that come from reverse engineering;¹⁵
- They thus block or slow the natural progression of follow-on applications by enabling the exclusive right holder to deny them or to hold out against their use,¹⁶ and because third parties will not readily disclose such applications in licensing transactions affecting small-scale innovation;¹⁷
- These same exclusive rights impoverish the public domain by denying access to the routine innovation of other creative engineers, who would otherwise be free to reverse engineer by honest means;¹⁸
- They require elaborate negotiations and other transaction costs which, in relation to the caliber of the innovation at stake, are seldom worthwhile even if they could succeed;¹⁹
- They potentially generate lots of litigation whose costs are disproportionately large in relation to the social value of the innovation at issue;
- They breed high duplication costs because routine engineers must work around routine innovation that was previously available from the public domain or through reverse engineering from a semicommons, so the progressive elaboration of the common technical trajectory is either aborted or retarded;²⁰
- The natural “open source” character of routine innovation operating under traditional trade secret laws is thereby destroyed;²¹
- Overextended or hybrid regimes reward investors with exclusive rights for investing in forms of innovation that market-force competition might require them to make anyway, just to stay competitive.

We contend that these problems are best avoided by a change in direction away from exclusive property right protection back toward a resurrection of liability rules like those underlying classical trade secret protection.²² The

¹⁵ See most recently J.H. Reichman, *Saving the Patent Law from Itself*, in PERSPECTIVES ON PROPERTIES OF THE HUMAN GENOME PROJECT 289, 291–95 (F. Scott Kief ed., 2003) [hereinafter *Saving the Patent Law*]. See generally Pamela Samuelson & Susan Scotchmer, *The Law and Economics of Reverse Engineering*, 111 YALE L.J. 1575 (2002).

¹⁶ See *Green Tulips*, above n. 14; see generally Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989 (1997).

¹⁷ See *Green Tulips*, above n. 14, at 1767–71. ¹⁸ See *Saving the Patent Law*, above n. 15.

¹⁹ Difficulties of administration and enforcement may help to explain why entrepreneurs in many developing countries have lately made little use of utility model laws even where enacted. See CIPR, above n. 4, at 121.

²⁰ See *Saving the Patent Law*, above n. 15. ²¹ See *id.*

²² Despite certain “property-like” qualities implicit in the possibility of an injunction to deter improper appropriation of trade secrets, “liability for the appropriation of a trade secret rests on a breach of confidence or other wrongful conduct in acquiring, using, or disclosing secret information,” and not on an exclusive rights rationale. RESTATEMENT (THIRD) OF UNFAIR COMPETITION §§ 39, 40 (1993). See further below n. 28 and accompanying text.

better solution is to modify and modernize such rules by adapting them to protect commercially valuable applications of know-how to industry in developing countries, with a view to enhancing their overall competitiveness in the incipient transnational system of innovation.²³

B. Historical and comparative roots of a proposed compensatory liability regime

Historically, a robust regime of intellectual property rights rooted in actual or legal secrecy always mediated between patentable inventions and free competition.²⁴ These rules apply especially to routine innovation that cannot meet the nonobviousness requirement of domestic or international patent laws.²⁵

Classical trade secret law reinforces the competitive ethos by ensuring that any second comer can reverse engineer any innovator's novel but unpatented application of know-how to industry by proper means.²⁶ But if improper means are used, the second comer must either pay compensation or suffer a delay in entering the market equivalent to the originator's lead-time advantages that were wrongfully curtailed.²⁷ This regime thus provides investors with natural lead time in which to recuperate investments and establish their trademarks, but it gives them no power to prevent follow-on applications by any third party who spends the time and money to reverse engineer by proper means. "In this respect, trade secret law behaves like a liability rule (or

²³ Cf. Keith E. Maskus & Jerome H. Reichman, *The Globalization of Private Knowledge Goods and the Privatization of Global Public Goods* [this volume], Pt. III ("Balancing Public and Private Interests in an Emerging Transnational System of Innovation"); J.H. Reichman, *From Free Riders to Fair Followers: Global Competition under the TRIPS Agreement*, 29 N.Y.U. J. INT'L L. & POL. 11, 26–85 (1996).

²⁴ This segment is based on *Saving the Patent Law*, above n. 15.

²⁵ 35 U.S.C. 103 (2000); TRIPS Agreement, above n. 12, arts. 27.1 (codifying nonobviousness standard of eligibility in patent law), 39 (codifying obligation to protect trade secrets within framework of international unfair competition law).

²⁶ Know-how consists of information about how to organize a certain production in the most efficient and competitively advantageous manner. See STEPHEN P. LADAS, PATENTS, TRADEMARKS AND RELATED RIGHTS: NATIONAL AND INTERNATIONAL PROTECTION § 867, at 1617 (1975). The term is not limited to an isolated technique or formula, but rather encompasses the entire industrial process from choice of raw materials to modalities of distribution, "a manufacturing art." FRANÇOIS MAGNIN, KNOW-HOW ET PROPRIÉTÉ INDUSTRIELLE 114 (1974). See generally WILLIAM KINGSTON, DIRECT PROTECTION OF INNOVATION 21–33 (Kluwer 1987).

²⁷ See above n. 22. As information, know-how may be kept under actual secrecy or under legal secrecy, but its commercial value normally depends on the degree of secrecy that surrounds it. However, secret know-how remains vulnerable to reverse engineering by honest means, so that in today's innovation-based markets, first comers obtain only lead-time advantages and any power conferred by their trademarks. See, e.g., Samuelson & Scotchmer, above n. 15.

quasi-liability rule), with the added wrinkle that the rate or value of the entitlement is determined by the market and not by government intervention.”²⁸

In a recent article, Professor Reichman observed that the routine engineers working on common technical trajectories under the aegis of trade secret protection form a natural “open source” community that operates under a de facto sharing ethos.²⁹ The members of this community depend on the reciprocal insights and contributions they derive from the semicommons in which their shared body of technical knowledge resides and on their inability to remove these cumulative contributions from that semicommons.³⁰

Because most innovation consists of cumulative and sequential applications of know-how to industry by routine engineers at work on common technical trajectories, free market economies in the nineteenth century depended primarily on the liability rules of unfair competition law (in which trade secret laws reside³¹) and only tangentially on the exclusive rights of patent law, which protected a relatively circumscribed set of nonobvious inventions beyond the reach of these same routine engineers.³² However, this classical, pro-competitive system of industrial property law broke down rapidly in recent years because secrecy as a trigger for liability protection became increasingly scarce or irrelevant.

Beginning with industrial design in the late nineteenth century and continuing with software and biogenetic engineering in the late twentieth century, the routine engineer’s applications of commercially valuable know-how to industry were increasingly embodied on or near the face of products distributed in the open market. Any second comer could duplicate them without need of incurring the time and costs of reverse engineering.³³ These conditions,

²⁸ *Legal Hybrids*, above n. 3, at 2440 fn. 29. “Nevertheless, the consent of the owner is not a prerequisite . . . ; the objectively determined value that allows a second comer to extinguish this entitlement is the (variable) cost of reverse engineering by proper means,” unless the second comer voluntarily acquires the innovator’s lead time in lieu of actually incurring these costs. *Id.* Cf. John C. Stedman, *Trade Secrets*, 23 OHIO ST. L.J. 4, 21 (1967) (coining the term “disappearing rights”).

²⁹ See *Saving the Patent Law*, above n. 15, at 294.

³⁰ *Id.* at 293–95. (“The progressive development of know-how is thus a community project that benefits from the countless small-scale contributions to the prior art by individuals who draw from the public domain to make improvements, and who thereby enrich the public domain by generating new information that others in the technical community may exploit to their own advantage.”).

³¹ See TRIPS Agreement, above n. 12, art. 39.1 (collocating international protection of trade secrets within article 10^{bis} of the Paris Convention for the Protection of Industrial Property, 20 Mar. 1883 *as last revised at* Stockholm, 14 July 1967, 21 U.S.T. 1583, 828 U.N.T.S. 305 [hereinafter Paris Convention], which governs unfair competition law).

³² Cf. Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265 (1977).

³³ See J.H. Reichman, *Computer Programs as Applied Scientific Know-How*, 42 VAND. L. REV. 639, 656–69 (1989). See also Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2208, 2332–65 (1994).

elsewhere encapsulated in the phrase “incremental innovation bearing know-how on its face,”³⁴ produced a chronic shortage of natural lead time and mounting fears of market failure and suboptimal investment in research and development owing to the rapid and widespread duplication of innovative products.³⁵

The uncritical response of domestic and international rule makers has been to fill this perceived gap in intellectual property law with an expansion of exclusive property rights to address the risk of market failure.³⁶ Two strategies are combined. In one, patent eligibility standards are broadened and lowered to cover investment in routine innovation, and copyright protection is expanded beyond literary and artistic works in the historical and ordinary sense to encompass computer software and other applications of know-how to industry. The second strategy is to multiply hybrid regimes of exclusive property rights, which inevitably mutate into patent-like regimes that seek to suppress unauthorized follow-on applications.³⁷ These trends have been further intensified by the ability of investors to commercialize disembodied information as such in the digital online environment, without embodying it in physical artifacts, and by their successful lobbying campaign to reinforce electronic and contractual fencing mechanisms³⁸ through powerful new exclusive rights sounding in copyright and database protection laws.³⁹

³⁴ See *Legal Hybrids*, above n. 3, at 2511.

³⁵ “Would-be investors in applications of know-how to industry understand that their contributions can be instantly duplicated without the second-comer having to defray the costs of reverse engineering (‘zero lead time’ problems).” *Saving the Patent Law*, above n. 15, at 295. *But see* M. Boldrin & D. Levine, *The Case Against Intellectual Property*, 92 AM. ECON. REV. 209 (2003), who assert that even the smallest lead time advantage may be sufficient to afford innovators sufficient compensation in the absence of patent or copyright protection.

³⁶ The deliberate nature of this legislative transformation, brought about by special interest lobbying, was clear to qualified observers. See, e.g., JOSEPH JEHL, *LE COMMERCE INTERNATIONALE DE LA TECHNOLOGIE – APPROCHE JURIDIQUE* 79, 110 (1985), who found:

[T]he protection of know-how tends to approach that conferred on patents . . . Firms are trying to win recognition of an exclusive right in their know-how that is of the same nature as a patent. Their efforts aim in effect to obtain a right to be exercised against third parties, in general. One can therefore declare that the protection of know-how completes and imitates that of patents.

Id. at 110 (trans). See also WILLIAM KINGSTON, above n. 26, at 21–33 (deploring overextension of patents and advocating a suitable form of direct protection for merely incremental innovation).

³⁷ See generally *Green Tulips*, above n. 14, and *Legal Hybrids*, above n. 3; see also *Collapse of the Patent-Copyright Dichotomy*, above n. 11.

³⁸ See, e.g., J.H. Reichman & Jonathan A. Franklin, *Privately Legislated Intellectual Property Rights: Reconciling Freedom of Contract with Public Good Uses of Information*, 147 U. P.A. L. REV. 875 (1999).

³⁹ See, e.g., Pamela Samuelson, *Mapping the Digital Public Domain: Threats and Opportunities*, 66 LAW & CONTEMP. PROBS. 148 (2003); J.H. Reichman, *Database*

In effect, a mindless proliferation of exclusive property rights has thus shrunk the vast semicommons previously governed by pro-competitive liability rules and converted “the collective knowledge available to the technical community as a whole into artificial private preserves, which have to be negotiated and combined to support investment in research and development.”⁴⁰ In previous articles, Professor Reichman discussed the high social costs of these trends and the risk that, by making inputs into future innovation too costly and difficult to obtain, these ad hoc solutions could ultimately destabilize the national systems of innovation that rely on them to excess.⁴¹ He argued, instead, that a more enlightened approach was to formulate a rational set of liability rules, not rooted in actual or legal secrecy, that could restore the historical buffer zone between exclusive intellectual property rights and free competition. To avoid the problems of over-protection identified above, without incurring the problems of under-protection likely to arise if small-scale innovators were left totally vulnerable to free-riding duplicators, the solution is to modify and modernize older forms of liability rules by adapting them to protect commercially valuable embodiments of know-how under present-day circumstances.

His proposal for a “compensatory liability regime,” elaborated in two earlier articles⁴² and further illustrated in this chapter, aims to accomplish this task. In our view, all countries – including technically advanced developed countries – could benefit from a compensatory liability regime that would broadly protect investment in subpatentable applications of know-how to industry.⁴³ Our

Protection in a Global Economy, 2002 REVUE INTERNATIONALE DE DROIT ECONOMIQUE 455 (2002); J.H. Reichman and Paul F. Uhler, *A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment*, 66 LAW & CONTEMP. PROBS. 315, 361–415 (2003).

⁴⁰ *Saving the Patent Law*, above n. 15, at 296–97 (stressing emergence of anti-commons effects). See generally Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anti-Commons in Biomedical Research*, 280 SCIENCE 698 (1998); James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, 66 LAW & CONTEMP. PROBS. 33 (2003).

⁴¹ *Saving the Patent Law*, above n. 15 at 299 (stressing the extent to which proliferating exclusive rights “disrupt the natural sharing mechanisms that benefit routine engineers, impede follow-on innovation, foster thickets of rights and other barriers to entry that slow the pace of innovation, and generally impoverish the public domain on whose inputs future innovators depend”).

⁴² See *Green Tulips*, above n. 15, and *Legal Hybrids*, above n. 3, at 2511–56 (“Portable Trade Secrets”).

⁴³ By “subpatentable” innovation, we mean innovation that fails to meet the nonobviousness standard of eligibility for protection under the domestic patent laws currently in force, which differ from country to country. These innovations typically consist of applications of know-how and skilled efforts to industry. Here we have particularly in mind those types of small-scale innovations that are currently covered by *sui generis* exclusive rights in developed countries, and that create all the problems identified earlier. See above nn. 3, 11–22 and accompanying text.

main reason for contributing this chapter, however, is to argue that developing countries eager to stimulate local innovation might particularly find such a regime well suited to the technical capabilities of their small and medium sized entrepreneurs. These countries also occupy the best position to implement and experiment with liability rules in their domestic laws.⁴⁴

Despite the logical appeal of liability rules for managing subpatentable innovation, many specialists advising developing countries have never seriously considered this option, and some dismiss it out of hand as misguided, speculative proposals.⁴⁵ We concede that few countries have enacted such laws, although there are more working examples of liability regimes than one might suppose.⁴⁶ However, one reason that developing countries have not sufficiently explored this option is precisely because their technical legal advisors either do not understand the purpose and economics of liability rules at all, and do not want to overcome their ignorance, or because special interest lobbies fear them and advise against them, or both. One way or another, fear and ignorance (plus critical attacks by some academics)⁴⁷ have until recently kept them off the agenda of most developing countries.

⁴⁴ Cf. CIPR, above n. 4, at 121 (noting need to test such proposals in developing countries).

⁴⁵ See most recently letter from Sybille E. Schalter, Max Planck Institute, Munich to Tinu Joshi, Development Commissioner, Ministry of Textiles, New Delhi, India, 8 July 2003 (on file with authors).

⁴⁶ See, e.g., Italian Copyright Law No. 633 of 22 Apr. 1941, *as amended*, art. 99 (protecting technical drawings and engineering project designs under a liability regime); United Kingdom's Copyright, Designs and Patents Act 1988, ch. 48 §§ 213–64 (unregistered designs) (subsequently overridden by E.U. Design Regulation); United States Copyright Law, 17 U.S.C. § 115 et seq. (2000) (converting exclusive reproduction right in musical works to liability regime for mechanically recorded songs). The United States Semiconductor Chip Protection Act of 1984, 17 U.S.C. §§ 908(a) (2000) contains a de facto liability rule for unregistered mask works, which terminates if application for registration is not made within two years of first commercial exploitation. A similar principle was incorporated into the E.U.'s Design Regulation of 21 October 2002 implementing Council Regulation (EC) No 6/2002 of 12 December 2001 on Community Designs.

Recent research suggests that the regime implementing government use of patented inventions in the United States under 28 U.S.C. §1498 (2000) manifests many of the characteristics of a compensatory liability regime. See J.H. REICHMAN WITH CATHERINE HASENZAH, *NONVOLUNTARY LICENSING OF PATENTED INVENTIONS: THE LAW AND PRACTICE OF THE UNITED STATES*, UNCTAD/ICTSD (2003) (draft version available at <http://www.icts.org>). Anecdotal evidence suggests that the use of compulsory licenses for dependent patents (blocking patents) in Italian law mimics the functions of a compensatory liability regime; further investigation is under way.

⁴⁷ See, e.g., Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655 (1994); Dennis S. Karjala, *Misappropriation as a Third Intellectual Property Paradigm*, 94 COLUM. L. REV. 2594 (1994); Jane C. Ginsburg, *Four Reasons and a Paradox: The Manifest Superiority of Copyright over Sui Generis Protection of Computer Software*, 94 COLUM. L. REV. 2559 (1994). See also Richard A. Epstein, *Steady the Course: Property*

Nevertheless, economic interest in the use of liability rules as a tool for managing intellectual property is growing,⁴⁸ and their potential benefits for developing countries have begun to attract official interest. The Commission on Intellectual Property Rights, for example, expressed interest in this approach, while recognizing that the administrative and enforcement aspects of such a system “need to be tested to assess its practicality in developing countries.”⁴⁹ Younger scholars in different countries are writing doctoral dissertations on applications of compensatory liability principles to current intellectual property problems.⁵⁰ The prospect of some type of intellectual property protection for traditional knowledge has elicited keen academic interest in these proposals⁵¹ and has led the World Intellectual Property Organization (WIPO) to include this scheme in recent proposals for future action.⁵² As a result, it has become possible to focus serious high-level attention on liability rules for the first time, which is one of the purposes of this chapter, and which will make the case for them more robust.

Our own collaboration on this chapter is a case in point, because, so far as we know, it represents the first collaboration between an economist and an intellectual property scholar on proposals for liability rules to stimulate investment in innovation. Indeed, we ultimately intend to push the case for liability rules well beyond the protection of small-scale innovation and to propose a regime that could operate side by side with the patent law, as an alternative

Rights in Genetic Material, in PERSPECTIVES ON PROPERTIES OF THE HUMAN GENOME, above n. 15, at 153–94 (defending “all or nothing” approach).

⁴⁸ Virtually all of the serious economic investigations of liability rules to this point have focused on their application to nuisance law. Included among these are two path-breaking analyses, IAN AYRES, OPTIONAL LAW: REAL OPTIONS IN THE STRUCTURE OF LEGAL ENTITLEMENTS (forthcoming 2005); Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Cosean Trade*, 104 YALE L.J. 1027 (1995). These studies, even though the problems they address are most readily interpreted as applying to nuisance law reactions, are quite closely related to the approach we adopt here in our treatment of liability rules for innovation. Cf. also Samuelson & Scotchmer above n. 15, whose study of *Reverse Engineering* illuminates this field.

⁴⁹ CIPR, above n. 4, at 121.

⁵⁰ See, e.g., Daehwan Koo, *Alternative Proposals and Effective Protection of Computer Programs*, 2 BUFF. INTELL. PROP. L.J. 49 (2003). At least three other dissertations that focus on compensatory liability rules are known to be underway in the U.S., U.K., and Belgium at the time of writing.

⁵¹ See, e.g., Thomas Cottier & Marion Panizzon, *Legal Perspectives on Traditional Knowledge: The Case for Intellectual Property Protection* [this volume]; Graham Dutfield, *Legal and Economic Aspects of Traditional Knowledge* [this volume]; Antony Taubman, *Saving the Village: Conserving Jurisprudential Diversity in the International Protection of Traditional Knowledge* [this volume]. See also Tom Dedeurwaerdere, *Governance of Biodiversity as a Global Public Good: Bioprospection, Intellectual Property Rights and Traditional Knowledge* (Research Unit on Biodiversity of the Centre for Philosophy of Law, Catholic University of Lovain-la-Neuve, Belgium, 5 February 2004).

⁵² See WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Seventh Session, Geneva, WIPO/GRKTF/IC/7 (20 Apr. 2005).

regime to protect investment as such, but on different and socially less costly principles. That study will appear later.⁵³

For present purposes, we can say that our study of liability rules in general so far supports the view that, insofar as most experts agree that developing countries should adopt some special intellectual property regime to promote investment in small-scale innovation, a modified liability rule (or compensatory liability regime, hereafter, CLR) would promote the interests of those countries better and at lower social costs than would a utility model law. In short, we think developing countries should experiment with a CLR in lieu of a utility model law and test the results.

If we are wrong, little harm would be done, because we are confident that a CLR will solve the problem of market failure at least as well as a utility model law. But if we are right, the payoffs from a CLR could be significant. Developing countries might then find themselves equipped with a new, user-friendly, intellectual property regime that would be tailor-made to their interests, in the sense that it would not block improvements or shrink the public domain, which is not true of utility model laws, design laws or other *sui generis* exclusive property rights. Moreover, because the U.S. and E.U. keep pressing these countries for stronger intellectual property protection, successful experimentation with a CLR could enable developing countries to respond to protectionist pressures in ways that did not impede their own needs to catch up and to access scientific and technical data and information generated elsewhere.⁵⁴

In what follows, we shall first discuss the design of liability rules and how they can be implemented within existing institutions. We then briefly show how such a regime could stimulate investment in small-scale innovation within the reach of local producers operating in developing countries but without blocking improvements or access to shared know-how available from the public domain. Finally, we discuss additional benefits that a compensatory liability regime could deliver if applied to the thorny new problem of protecting traditional knowledge, and we provide a detailed model of such a regime.

II. Designing a compensatory liability regime

Quite simply, a liability rule is an option for one to use another party's innovation under specified conditions.⁵⁵ Ideally, the conditions for use should specify (1) how the innovation may be employed; (2) the period for which it may

⁵³ Tracy Lewis & J.H. Reichman, *Alternatives to Patents: Law and Economics of a Multipurpose Liability Rule*, paper presented to Ecoinformation Lecture Series (Duke University School of Law, Apr. 2004).

⁵⁴ Cf. Reichman, *Database Protection in a Global Economy*, above n. 39; J.H. Reichman & Pamela Samuelson, *Intellectual Property Rights in Data?*, 50 VAND. L. REV. 51, 145–51 (1997) (proposing liability rule approach to database protection).

⁵⁵ Cf. AYRES, *OPTIONAL LAW*, above n. 48.

be employed; (3) the monetary or in kind payment the innovator should receive as compensation (or at least a method for determining it); and (4) provisions for revising the terms of use upon mutual agreement of the innovator and user.⁵⁶

In a previous article, Professor Reichman proposed a simple model, known as the Green Tulip Model, of a compensatory liability regime for subpatentable innovation.⁵⁷ In what follows, we first briefly summarize the key elements of that model and elaborate some general observations concerning its potential significance. We then proceed to discuss the special problems surrounding the protection of traditional knowledge, and we propose a new model (“The TK Model”) specifically to resolve those problems.

A. A simple model

Under the simple model, a qualifying innovator obtains three distinct rights. These include a right to prevent wholesale duplication, a right to compensation from value-adding improvers, and a right to make use of a second comer’s value-adding improvements for purposes of making further improvements of his or her own.

1. Descriptive analysis

The first entitlement given to qualifying innovators under a compensatory liability regime (CLR) is a right to prevent second comers from competing on the same market segment for a specified period of years with a product that constitutes a wholesale duplication of the innovator’s initial product. This right applies even if the second comer clearly identifies the source of origin to avoid deceiving or confusing consumers.⁵⁸

One can characterize this right either as a liability rule based on conduct, i.e., as a form of misappropriation to be lodged within the ambit of unfair competition law,⁵⁹ or as a limited power to exclude (“quasi-property right”). What matters is less the characterization than the fact that, under existing Anglo-American law, at least, subpatentable innovators obtain no such right⁶⁰ unless

⁵⁶ We provide details in our work-in-progress, above n. 53.

⁵⁷ See generally *Green Tulips*, above n. 14.

⁵⁸ See generally *id.* at 1787–91. It thus falls outside the ambit of existing unfair competition law in the U.S, see RESTATEMENT (THIRD) OF UNFAIR COMPETITION, above n. 22, §§ 38–40, and international law, see Paris Convention, above n. 31, art. 10^{bis}. For a weaker version of this right, see below text accompanying nn. 124–25.

⁵⁹ Cf. Wendy J. Gordon, *On Owning Information: Intellectual Property and the Restitutory Impulse*, 78 VA. L. REV. 149 (1992); Karjala, above n. 47. See also Rochelle C. Dreyfuss, *Information Products: A Challenge to Intellectual Property Theory*, 20 N.Y.U. J. INT’L L. & POL. 897 (1988).

⁶⁰ See above n. 58; C. Owen Paepke, *An Economic Interpretation of the Misappropriation Doctrine: Common Law Protection for Investments in Innovation*, 2 HIGH TECH. L.J. 55 (1987). Continental European law increasingly provides some vague prescriptions against

they qualify for one of the hybrid IPRs that produce the cumulative anti-competitive effects previously identified.

The second right available from a compensatory liability regime entitles qualifying innovators to reasonable compensation, for a specified period of time, from second comers who base value-adding improvements on the formers' novel technical contributions.⁶¹ Implicit in this entitlement is the inability of qualifying innovators to prevent second comers from using or "borrowing" the protected technical contribution for purposes of making, producing and selling improved products, so long as the latter remain willing to pay the requisite compensation. In short, the second comer's absolute right to borrow for purposes of value-adding improvements is complemented by an absolute duty to pay reasonable compensation for this privilege.

The compensation to be paid is best understood as a contribution to the first comer's costs of research, development and marketing,⁶² which avoids the free-rider problem inherent in knowledge goods.⁶³ The valuation problem is rendered manageable by two simplifying assumptions. One, suggested by Professor Lemley, is that an improver may usefully be understood to have made either a small, medium, or large improvement on the originator's own technical contribution,⁶⁴ which conversely implies that he took either a large, medium, or small quantum of the originator's protected subject matter. The second facilitating assumption is that, precisely because we are dealing with subpatentable innovation to begin with, the technical contributions at issue are generally small in scale and heavily conditioned by prior art in the public domain.⁶⁵ For this and other reasons, including decades of experience with valuing patented inventions taken for government use under section 1498 of the United States Code (which operates as a de facto liability regime),⁶⁶ the range of royalties available under the simple model could be relatively modest.⁶⁷ We are also comforted by the thought that arguing about a couple of percentage points in royalties, ideally before a mediator or an arbitrator, is

"parasitical copying." See ANSELM KAMPERMAN SANDERS, *UNFAIR COMPETITION LAW: THE PROTECTION OF INTELLECTUAL AND INDUSTRIAL CREATIVITY* 24–78 (1997).

⁶¹ See *Green Tulips*, above n. 14, at 1778–81. ⁶² See *Legal Hybrids*, above n. 3, at 2533–39.

⁶³ See, e.g., Wendy J. Gordon, *Asymmetric Market Failure and the Prisoner's Dilemma in Intellectual Property*, 17 U. DAYTON L. REV. 853, 854–59 (1992) (discussing conditions for market failure).

⁶⁴ See Lemley, above n. 16.

⁶⁵ See *Green Tulips*, above n. 14, at 1783–86 (affirming that "the single source of greatest value added to any small-scale innovation is always the public domain") (quote at 1785).

⁶⁶ See Reichman with Hasenzahl, above n. 46.

⁶⁷ See *Green Tulips*, above n. 14, at 1784 (suggesting a normal range of three to nine percent, while expressing willingness to consider "a range with more bite" if empirically justifiable). For an economic analysis of the valuation problem, see Lewis & Reichman, above n. 53 (work-in-progress).

socially preferable to litigating costly actions for infringement, at least where only subpatentable innovation is at stake.

The third distinct right that a compensatory liability regime confers on qualifying originators entitles them to make use of the second comers' own technical improvements, under specified conditions, for purposes of further improving the very products that initially qualified them for protection. However, the first comer must not himself become a wholesale duplicator of the improved product; and he must be willing to pay the second comer a reasonable compensation for his value-adding use of the latter's technical contribution during a specified period of time. In effect, this third right functions as a built-in grant-back clause, roughly analogous to the dependent licenses (or "anti-blocking" licenses) available in most foreign jurisdictions for patentable improvements to patented products.⁶⁸

There are numerous other features of the simple model for a CLR that we omit here for reasons of space.⁶⁹ At this point, readers would understandably appreciate a concrete illustration, like that which accompanied the Green Tulip Model.⁷⁰ Rather than repeating that example here, however, we have provided – later in this study – another concrete illustration based on a hypothetical application of traditional knowledge to medicinal products in a hypothetical developing country.⁷¹ Readers should feel free to consult that illustration at any time.

2. General observations

For reasons of space, we have deferred a detailed economic analysis of the compensatory liability concept to a later article.⁷² Here we stress the pro-competitive nature of such a regime, which further distinguishes it from most other hybrid intellectual property rights. Under the latter regimes, which typically confer patent-like exclusive rights, second comers cannot make unauthorized improvements unless they are certain that they fall beyond the scope of protection that each regime affords.⁷³ Because, moreover, the technological know-how at issue is small in scale by definition,⁷⁴ second comers may feel disinclined to reveal it in the kind of upfront negotiations that might clarify these scope of protection problems, lest the first comer beat them to the punch, given the second comer's lack of either technical or legal leverage.⁷⁵ For

⁶⁸ See TRIPS Agreement, above n. 12, art. 31(l) (authorizing such licenses). For the unhappy situation in the U.S., where no such mandatory licenses are available, see Lemley, above n. 16.

⁶⁹ See *Green Tulips*, above n. 14, at 1781–96; *Legal Hybrids*, above n. 3, at 2529–56.

⁷⁰ See *Green Tulips*, above n. 14, at 1756–76.

⁷¹ See below text accompanying nn. 116–28. ⁷² See above n. 53.

⁷³ See *Green Tulips*, above n. 14. For an excellent analysis of the kind of problems this determination engenders, see generally Lemley, above n. 16.

⁷⁴ This smallness of scale is implicit in its characterization as "subpatentable." See above n. 43 and accompanying text.

⁷⁵ See *Green Tulips*, above n. 14, at 1766–71.

this and other reasons, we confidently predict that second comers would more actively and willingly pursue value-adding improvements under a CLR than under existing hybrid regimes that confer patent-like protection.

By the same token, a CLR avoids the consequences of market failure that might occur if small-scale innovators were otherwise left vulnerable to unbridled competition.⁷⁶ In such a raw state of affairs, where the first comer obtains nothing from improvers, both logic and experience predict some risk that the former may even disappear from the market and take their technical skills with them.⁷⁷ Yet, the first comer may in fact have made the qualitatively greater technical contribution to the larger community, and his inability to return to the fray if second comers free ride on his R&D costs may in itself constitute a major social cost that remains hidden from view.

From this perspective, the compensatory liability regime may usefully be understood as creating a kind of technology pool,⁷⁸ but one that advances, rather than undermines, the public interest. We defer a discussion of this concept to a later article. Nevertheless, we emphasize here that, by ensuring reciprocal access to small-scale applications of technical know-how to industry in return for relatively modest contributions to R&D costs, the CLR tends to restore or recreate the fruitful semicommons that previously depended upon reverse engineering and natural lead time in a climate of actual or legal secrecy.⁷⁹

Enactment of a compensatory liability regime would also intrinsically reinforce efforts by local courts and administrators in developing countries to maintain a relatively high standard of nonobviousness in their domestic patent laws, consistent with the flexibility that the TRIPS Agreement still allows.⁸⁰ This premise follows from the availability of an alternative or second tier regime that would protect investment in innovation as such,⁸¹ which should attenuate pressures to use the patent system as a roving unfair competition law to protect “slivers of innovation.”⁸² Over time, the mere existence of a compensatory liability regime should thus serve to flush lots of small-scale borderline innovation out

⁷⁶ See *id.* at 1763–66.

⁷⁷ This occurred, for example, in the case of spreadsheets, where the pioneer, Visicalc, eventually left the market after the superior redesign embodied in Lotus 1–2–3.

⁷⁸ Cf. Robert P. Merges, *Institutions for Intellectual Property Transactions: The Case of Patent Pools*, in *EXPANDING THE BOUNDARIES OF INTELLECTUAL PROPERTY* 123 (Rochelle Cooper Dreyfus et al. eds., Oxford University Press 2001).

⁷⁹ See above nn. 31–35 and accompanying text.

⁸⁰ As most recently recommended by CIPR, above n. 4, at 116 (urging developing countries “to explore whether a different higher standard [of nonobviousness] is more desirable” than “the currently prevalent low standard” in developed countries).

⁸¹ Cf. KINGSTON, above n. 26.

⁸² *Saving the Patent Law*, above n. 15, at 296 (criticizing use of lowered nonobviousness standards “to rescue commercially valuable slivers of innovation that had nowhere else to go”).

of the local patent system⁸³ and into its more pro-competitive embrace, while offering otherwise productive innovators (including those operating within a university context) a legislative alternative to the patenting of research results.

Finally, the compensatory liability regime is designed to be neutral with respect to existing international standards of intellectual property protection. No such standards directly apply to liability rules, other than those governing trade secret laws and broader unfair competition norms.⁸⁴ While the TRIPS Agreement requires members to adopt the nonobviousness standard of patent law,⁸⁵ there is as yet no uniformity about this standard. Any state adopting a compensatory liability regime would still have to respect international rules of nonobviousness with regard to patents. This holds true for utility models in European Union law as it would for a compensatory liability regime in a developing country, and it would work out about the same, bearing in mind that national treatment will be required in virtually all cases.⁸⁶

If developing countries were foolish enough to acquiesce in ongoing efforts to harmonize the nonobviousness standard of patent law and thus to further relinquish sovereignty in this regard,⁸⁷ then the compensatory liability regime, like utility model regimes, would continue to apply to subpatentable innovation, although more innovation might then be covered by patents. We would prefer to see the opposite. We would expect the existence of compensatory liability rules to drive the nonobviousness standard upwards, which would be better for worldwide innovation and competition.⁸⁸ In any event, the international rule of national treatment would almost always apply because of a recent WTO Appellate Body decision to this effect.⁸⁹ Anyone operating under a compensatory liability regime at home would remain free to apply for patents or *sui generis* exclusive rights abroad, and anyone operating under patents or a *sui generis* right abroad would remain free to seek compensatory liability protection in countries that afford it.⁹⁰

⁸³ Cf. CIPR, above n. 4, at 116 (stating that the “objective of any standard should be to ensure that routine increments to knowledge, involving minimal creative effort, should not generally be patentable”).

⁸⁴ See TRIPS Agreement, above n. 12., arts. 2.1 (incorporating Paris Convention, art. 10^{bis}), 39.

⁸⁵ See *id.* art. 27.1.

⁸⁶ See United States – Section 211 Omnibus Appropriations Act of 1998, Appellate Body Report, WT/DS176/AB/R (2 Jan. 2002), available at http://www.wto.org/english/tratop_e/appellate_body_e.htm

⁸⁷ See Maskus & Reichman, above n. 23, at III.A(1).

⁸⁸ See e.g., John H. Barton, *Issues Posed by a World Patent System* [this volume].

⁸⁹ See above n. 86.

⁹⁰ However, conflicts might theoretically arise with norms governing design protection and integrated circuit designs under the TRIPS Agreement, and with marketing rights to patented pharmaceuticals that sometimes apply, all of which we ignore here. For present purposes, we also ignore priority rights in designs and utility models under the Paris Convention. *Green Tulips*, above n. 14, at 1761–91.

B. *Application of liability rules to the protection of traditional knowledge*

We believe that the simple model (or Green Tulip Model), summarized at the outset of this chapter and previously illustrated by Professor Reichman, adequately describes how a compensatory liability regime might serve generally to stimulate investment in small-scale innovation in the developing countries. That model was partly premised on the need to protect novel plant varieties under international intellectual property law.⁹¹ It was intended to demonstrate the superiority of liability rules over the patent-like hybrid regime that developed countries seek to impose on the developing world.⁹²

In this section, we elaborate a comparable model to illustrate the potential application of compensatory liability rules to the protection of traditional knowledge (“the TK Model”). This topic has elicited favorable attention from both academic and political circles,⁹³ probably because it bridges the gap between the prevalent view in developed countries that traditional knowledge belongs in the public domain and the aspirations of many developing country governments for a strong exclusive property right in traditional knowledge.⁹⁴ A compensatory liability regime would effect a compromise between these two positions.⁹⁵ In particular, it would temporarily remove eligible traditional knowledge from the limbo of a true public domain and relocate it to a semicommons, from which it could freely be accessed and used

⁹¹ See TRIPS Agreement, above n. 12, art. 27.3(b)(requiring WTO members to protect plant varieties either by patents “or by an effective *sui generis* system or by any combination thereof”). See further Michael Blakeney, *Stimulating Agricultural Innovation* [this volume]; Robert E. Evenson, *Agricultural Research and Intellectual Property Rights* [this volume].

⁹² International Convention for the Protection of New Varieties of Plants, 2 Dec. 1961, 33 U.S.T. 2703, 815 U.N.T.S. 89, as amended 23 Oct. 1978, 33 U.S.T. 2703, 1861 U.N.T.S. 281 [hereinafter UPOV I], as amended 19 Mar. 1991, available at <http://www.upov.int/en/publications/conventions/1991/pdf/act1991.pdf> [hereinafter UPOV II].

⁹³ See, e.g., Cottier & Panizzon, above n. 51; Dutfield, above n. 51; Taubman, above n. 51.

⁹⁴ The legal anthropologist, Rosemary Coombe, astutely observes that the construct of a public domain is itself a product of the observers’ own social and cultural mores. See Rosemary Coombe, *Protecting Cultural Industries to Promote Cultural Diversity: Dilemmas for International Policymaking Posed by the Recognition of Traditional Knowledge* [this volume]; see also Taubman, above n. 51; Cottier & Panizzon, above n. 51 (recommending use of some traditional IPR, but not necessarily an exclusive property right, and welcoming attention to a compensatory liability regime).

⁹⁵ In reality, customary perceptions, practices and norms concerning TK vary widely. While the CLR fits between the two extremes, one can find communities in the world whose IP-related norms fall all along the continuum from very exclusive rights in some (but not all) useful knowledge, to no property rights at all in knowledge that may well have commercial value to others. See, e.g., Russel L. Barsh, *Indigenous Knowledge and Biodiversity*, in *CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY* (Darrell A. Posey, ed., UNEP & INTERMEDIATE TECHNOLOGY PUBLS. 1999), at 73–76.

for specified purposes, in return for the payment of compensatory royalties for a specified period of time.⁹⁶

Nevertheless, we recognize that the movement to include traditional knowledge within the worldwide intellectual property system raises certain unique problems that liability rules cannot resolve. Foremost among these is the perception that traditional knowledge necessarily partakes of the life and mores of indigenous peoples, which even the most carefully crafted intellectual property regime could disrupt.⁹⁷

We agree that policymakers must take this very real concern into account. Even so, there is a growing demand from within native populations and their governments for the protection of traditional knowledge against unauthorized appropriations that cannot be ignored, especially in light of obligations arising under the Convention on Biological Diversity (CBD).⁹⁸ The advent of major academic institutes devoted to the scientific study and commercial application of ancient remedies in India and China, for example, point the way to the future and underscore the need for an appropriate form of intellectual property protection for those who develop and harbor traditional knowledge and who consent to participate in such an exercise.⁹⁹

By the same token, a compensatory liability regime can do little to help any indigenous groups who are determined to keep their traditional knowledge secret or who, for one reason or another, prefer to opt out of an emerging worldwide scheme of intellectual property protection. In such cases, the most that international law can provide is some legal framework to reinforce the principles of prior informed consent and equitable sharing of benefits set out in the CBD, which, as Professor Correa points out, logically translate into measures to protect holders of traditional knowledge against specified forms of misappropriation.¹⁰⁰ In what follows, we accordingly assume that the holders

⁹⁶ Experts versed in international IP lore will doubtless recognize the imprint of a *domain publique payant* (paying public domain) on this model. See, e.g., Taubman, above n. 51. However, there is more to it than that. While it is true that a CLR is far less radical and unfamiliar at the margins than critics pretend, as Professor Taubman points out, the model we propose is also far less familiar than a knowledge of existing liability rules might lead one to suppose.

⁹⁷ See, e.g., Coombe, above n. 94; Taubman, above n. 51; see also David Lange, *Comment: Traditional Knowledge, Folklore and the Case for Benign Neglect* [this volume]; Paul J. Heald, *The Rhetoric of Biopiracy*, 11 *CARDOZO J. INT'L & COMP. L.* 519 (2003) (expressing skepticism about the use of IPRs to protect traditional knowledge).

⁹⁸ Convention on Biological Diversity (CBD), 5 June 1992, 31 I.L.M. 818, available at <http://www.biodiv.org/convention/articles.asp> (last accessed 28 July 2004), art. 8(j). See, e.g., Cottier & Panizzon, above n. 51; Dutfield, above n. 51; Blakeney, above n. 91.

⁹⁹ See especially Cottier & Panizzon, above n. 51. See also the work of Anil Gupta and his Honeybee Network, discussed in G. DUTFIELD, *INTELLECTUAL PROPERTY, BIOGENETIC RESOURCES AND TRADITIONAL KNOWLEDGE* (Earthscan Pubs. 2004), at 180–82.

¹⁰⁰ See CBD, above n. 98, arts. 1, 2, 8(j); C.M. Correa, *Traditional Knowledge and Intellectual Property: Issues and Options Surrounding the Protection of Traditional*

of traditional knowledge in question have voluntarily made it available in order to obtain the benefits of a compensatory liability regime.¹⁰¹

1. Understanding the problem: Traditional knowledge is know-how

While recognizing the need to keep traditional knowledge within a broader cultural matrix, we deem it equally important to avoid mystifying or unduly complicating the topic by supposing that traditional knowledge represents something truly new and unique in the intellectual property firmament, for which the “wheel” of protection must be reinvented from scratch. The proper point of departure is to collocate the problem of stimulating investment in commercial applications of traditional knowledge within the larger quest for appropriate means to promote investment in small-scale innovation generally, while taking into account the changed conditions that govern technological progress at the start of the twenty-first century.

From this perspective, traditional knowledge represents the oldest form of “cumulative and sequential innovation” known to man.¹⁰² If this traditional lore has become commercially valuable today, it is because applications of know-how to industry generally represent one of the most valuable forms of commoditized information in today’s knowledge-based economy.¹⁰³

There are differences of degree, of course, but not of classificatory nature, between those who cultivate small-scale innovations by traditional means, primarily relying on instinct and trial-and-error, and those who use modern technical or scientific means to apply know-how to industry in the form of computer programs, industrial designs, or even many biogenetically engineered products. Traditional knowledge is more intuitive, not bound by formal technical paradigms, and, guided by instinct, it often takes place by slow accretions of experience over long periods of time. Like present-day applications of know-how to industry, however, it proceeds mostly by trial and

Knowledge, Quaker United Nations Office Discussion Paper 18 (2001); see also Dutfield, above n. 51. Protection against misappropriation can, however, conflict to some degree with the common law tradition that allows reverse engineering of trade secrets by proper means. How to reconcile this potential conflict is beyond the scope of this chapter.

¹⁰¹ Moreover, rights in TK are usually accompanied by duties; so that even when knowledge is made available to the wider public for specified uses, tribal specialists may still retain obligations to spirits, to the elders or the community as a whole, in order to ensure that such knowledge is not misused. See, e.g., Darrell A. Posey, *Selling Grandma: Commodification of the Sacred Through Intellectual Property Rights*, in *CLAIMING THE STONES/NAMING THE BONES: CULTURAL PROPERTY AND THE NEGOTIATION OF NATIONAL AND ETHNIC IDENTITY* (E. Barkan & R. Bush, eds., Getty Pubs., 2002), at 205–06.

¹⁰² See, e.g., Richard Nelson, *Intellectual Property Protection for Cumulative Systems*, 94 *COLUM. L. REV.* 2678 (1994); see also Richard Nelson, *Linkages Between the Market Economy and the Scientific Commons* [this volume].

¹⁰³ See generally *Legal Hybrids*, above n. 3, at 2504–29; see also J. JEHL (quoted above n. 36); KINGSTON, above n. 26. For a definition of know-how, see above n. 26.

error.¹⁰⁴ More to the point, the moment that either a traditional innovator (or his assignees) or a modern innovator decides to evaluate the prospects for an industrial application of their know-how, they both face a common risk of market failure if second comers can merely duplicate the end result without contributing to old or new costs of research and development.

It may be that a local craftsman adapts a traditional design to leather goods or tableware. It may be that a local shaman provides the larger community with a treatment for fever or kidney stones derived from native plants and materials. It may be that a local entrepreneur adapts a foreign water pump to suit his peculiar environmental needs, in which case he has generated some “new” technical know-how. What matters is not so much the technical degree of “novelty” that characterizes their respective contributions. From an economic perspective, what matters is that these outward-looking, commercially-minded practitioners should be able to appropriate the fruits of their creative efforts, skills, and collective or individual investments, and to establish reputational credentials. They should not have to fear being driven out of the market by free-riding second comers who duplicate their products without making any corresponding contributions of their own, who sell below the first comers’ marginal costs and, in the worst case, appropriate reputational credit for the work of others.¹⁰⁵

As the classical intellectual property system viewed it, all know-how pertained to technical communities, not to individuals. It belonged collectively to those “routine engineers” (in the patent sense) who depend on the reciprocal insights and contributions that the relevant technical community derives from the public domain, or more accurately, from the research semicommons that houses the results of reverse engineering by proper means.¹⁰⁶ The legal protection of know-how – at least in common-law countries – is thus organized around liability rules that discourage certain forms of conduct harmful to the community as a whole. It does not allow innovators to remove contributions to the knowledge semicommons by means of exclusive property rights.¹⁰⁷ As Steven Ladas phrased it in 1975, “know-how deserves protection only insofar as it is in consonance with the unhampered utilization of knowledge essential to the principle of free competition.”¹⁰⁸

2. Solving the problem: A TK model of compensatory liability

Consistent with the general tenor of this chapter, we believe that present-day applications of traditional knowledge to industry could benefit most from a

¹⁰⁴ See LADAS, above n. 26; see also MAGNIN, above n. 26. *But see* Heald, above n. 97 (differentiating problem of incentives for new innovation from that of equitable rewards for past contributions).

¹⁰⁵ On the last point, *cf.* Coombe, above n. 94.

¹⁰⁶ See *Saving the Patent Law*, above n. 15 at 293–95.

¹⁰⁷ See above nn. 25–35 and accompanying text. ¹⁰⁸ LADAS, above n. 26.

modified liability rule or what we have called a “compensatory liability regime.” This regime can provide the benefit sharing outcomes desired by those who champion the rights of indigenous peoples¹⁰⁹ without impoverishing the public domain and without hindering follow-on innovation or otherwise creating barriers to entry.

Because traditional know-how has, by definition, usually existed for long periods of time, we must adapt the CLR concept to certain factual anomalies in order to achieve specific policy outcomes. Here we identify three distinct stages in which traditional knowledge might attract some degree of protection, and we differentiate the modalities of protection accordingly. Traditional knowledge first encounters national and international legal systems in the raw form in which its indigenous providers keep it, whether in absolute or relative secrecy, or perhaps in some geographically defined public domain.¹¹⁰ The second stage of relevant consideration turns on the extent to which that knowledge is to be made available for nonprofit public research. The third stage, and the one that normally attracts the most attention, arises when either the indigenous providers or some external entrepreneur attempts to reap the benefits from commercial application of the knowledge in question.

So long as providers prefer to keep their traditional know-how in its raw or inchoate state, there is little room for formal intellectual property protection. As previously observed, any claim for compensation here arises either from an improper violation of the relative secrecy in which the know-how was held or of the social and religious constraints upon its use that the relevant community imposes,¹¹¹ and it is rooted in a theory of unjust enrichment. The Convention on Biodiversity provides some legal foundation to support such a claim in the international context; local legislation sounding in unjust enrichment may explicitly regulate these unauthorized uses; and there is a pattern of customary practice forming to support such claims against foreign entrepreneurs.¹¹²

When, instead, the appropriate indigenous providers signal their willingness to make traditional know-how available for commercial exploitation, then it becomes feasible to remove it even from a true public domain and temporarily transfer it to a semicommons, where it can attract protection under a compensatory liability regime along the lines discussed earlier in this chapter.¹¹³ Under such a regime, the indigenous providers should possess a clear entitlement

¹⁰⁹ See, e.g., Cottier & Panizzon, above n. 51; Dutfield, above n. 51.

¹¹⁰ See, e.g., Taubman, above n. 51; Coombe, above n. 94. ¹¹¹ See Coombe, above n. 94.

¹¹² See, e.g., Taubman, above n. 51; Correa, above n. 101; Dutfield, above n. 51.

¹¹³ This move in effect converts the status of the knowledge in question from that of a true public domain to a paying public domain, or semicommons. *Accord* Taubman, above n. 51. We beg all the thorny questions that may complicate the process of identifying the “appropriate indigenous providers” for purposes of triggering intellectual property protection, *cf.* Coombe, above n. 94, although we are encouraged by successful efforts in this regard, for example, in Australia and New Zealand case law. *See further* Taubman, above n. 51.

to prevent wholesale duplication of their compiled information and to reasonable compensation for all follow-on commercial applications of their traditional knowledge during a specified period of time.

One could argue that the duration of protection should be longer than we envision for present-day subpatentable innovation generally, in view of the equitable or “justice” goals that underlie the scheme¹¹⁴ and of the typically slow accretion of traditional knowledge over time. By the same token, the royalty rates could be somewhat higher than those we envision for small-scale technical innovators generally, for much the same reasons.¹¹⁵ However, no entrepreneur who invested in any commercial application of the traditional knowledge in question could prevent other entrepreneurs from investing in follow-on, value-adding applications of that same knowledge, and all investors would owe compensatory tithes to the indigenous originators, or, where applicable, to other entrepreneurs whose improvements had been borrowed as inputs for further follow-on applications.

Consider, for example, the following scenario. A certain tribe (T) in Ruritania holds traditional knowledge about, let us say, the bark and leaves of the “kew tree,”¹¹⁶ which they have long used successfully to soothe and cure skin burns. The tribe’s authorized representatives,¹¹⁷ having been apprised of the government’s efforts to protect traditional knowledge and to stimulate investment in local innovation, decide to make its knowledge available¹¹⁸ under a compensatory liability regime. In this connection, we further assume that Ruritania will fiscalize the costs of clinical trials for all medicinal products based on T’s traditional knowledge as a public good.

Assuming that T’s burn remedy as derived from the kew tree had been properly registered under the local CLR, no one else (subject to Ruritania’s territorial jurisdiction, at least) can duplicate this remedy for commercial purposes for a specified period of time, let us say, for a twenty-year period specifically provided for qualifying traditional knowledge. However, the research exemption incorporated into Ruritania’s CLR should authorize access to and use of T’s remedy for purposes of nonprofit public research.

¹¹⁴ Cf. Cottier & Panizzon, above n. 51.

¹¹⁵ See above nn. 62–67 and accompanying text. Use of some of the valuation techniques applied to government use of patents under current U.S. law might prove relevant here. See REICHMAN WITH HASENZAHN, above n. 46.

¹¹⁶ Any resemblance between this kew tree and real world flora is purely coincidental.

¹¹⁷ See above n. 113.

¹¹⁸ We skim over the form of “making available” in some kind of registration system, possibly a database, in the knowledge that WIPO and others have studied these aspects in detail. See, e.g., Cottier & Panizzon, above n. 51; Peter Drahos, *Indigenous Knowledge, Intellectual Property and Biopiracy: Is a Global Bio-Collecting Society the Answer?*, 2000 EUR. INTELL. PROP. L. REV. 245 (2000).

Shortly thereafter, local Firm A considers investing its own technical knowledge and skills to combine ingredients derived from kew tree bark and leaves with other ingredients known to its researchers, with a view to producing an improved treatment for burns. Observe that, if T possessed a patent or patent-like exclusive rights in its traditional knowledge, it could block A's follow-on application,¹¹⁹ while Firm A might fear to disclose its own business plan or its formula, lest T go into partnership with others willing to pay more.

Instead, under the applicable CLR, Firm A knows that it can "borrow" T's knowledge of using kew tree bark and leaves to cure burns for purposes of deriving an improved product, subject to a duty to pay T compensatory royalties falling within a specified statutory range for a specified period of time. T's total earnings will then depend on the sums it receives from direct treatment by its shamans (or by other authorized practitioners) of burn patients¹²⁰ and on the royalties it receives from the sales of A's kew-tree based unguent. For present purposes, we assume that revenues from the latter source are relatively high in relation to the former, although the opposite could just as well occur.

Meanwhile, the owners of pharmaceutical Firm B (a locally owned subsidiary of a large foreign company incorporated in Ruritania) have observed Firm A's successful marketing of its kew-tree derived burn unguent with keen interest. Indeed, Firm B's executives authorized considerable R&D expenditures to identify the specific ingredients in the kew bark and leaves that produce healing effects; and they endowed the local university's chemistry department with a grant to help their own researchers to synthesize the active ingredients.¹²¹ With this task accomplished, Firm B's researchers then proceeded to combine these ingredients with other ingredients it had already been using in existing products, to develop a new product for the rapid healing of surgical wounds.¹²²

Because neither T nor Firm A holds patents or patent-like exclusive rights on the pre-existing remedies, they cannot prevent Firm B from developing its

¹¹⁹ Unless the second comer's follow-on improvement itself acquired a patent or patent-like entitlement and the relevant legislation contained an anti-blocking provision, such as a compulsory license for dependent patents. Cf. TRIPS Agreement, above n. 12, art. 31(l). We ignore this possibility for present purposes.

¹²⁰ To the extent that the TK takes the form of a physical application, rather than the use of a product, royalties would also depend on a blanket license to be paid by medical practitioners for use of the TK, rather than on a case-by-case basis, which would be unwieldy and counterproductive to monitor. Needless to say, we are familiar with such blanket licenses – and with the collection societies needed to administer them – from copyright and related rights laws.

¹²¹ Cf. Arti K. Rai & Rebecca S. Eisenberg, *Bayh-Dole Reform and the Progress of Biomedicine*, 66 *LAW & CONTEMP. PROBS.* 289 (2003).

¹²² In our minds, at least, the surgical wound treatment represents a different market segment from that on which Firm A's burn unguent is distributed.

value-adding surgical wound product.¹²³ By the same token, Firm B need not prematurely disclose its synthetic processing technology nor its business strategy to T or Firm A in order to obtain licenses, in which case fear of opportunistic behavior might have aborted the whole project. Instead, Firm B understands that it remains free to borrow both A's more refined burn cure know-how and T's original TK for purposes of developing its own follow-on product without obtaining permission. By the same token, Firm B also knows that it must pay compensatory liability royalties to both T and A for specified periods of time, in addition to recouping its own considerable costs of R&D. Firm B's business plan must accordingly factor these liabilities into its accounts from the start if it is to reap a profit in the end.

Let us now assume that Firm B's surgical wound cure scores a resounding success with medical practitioners. In that event, both T and Firm A may experience lottery effects that could greatly exceed any returns they might otherwise have obtained under an exclusive property rights regime. Firm A could also stand in a better position to develop additional products of its own than would be the case if exclusive rights blocked the trail of improvements. For example, Firm A could eventually borrow back Firm B's synthetic improvements to develop an improved, value-adding surgical wound treatment of its own, in return for compensatory royalties payable to both B and T.

We note in passing that the protection against wholesale duplication of a covered product, which is a salient feature of the CLR regime,¹²⁴ need not be coterminous in time with the protection against follow-on applications. For example, after a specified period, say, ten years, other Firms C might be allowed to produce competing versions of both A's burn cure and B's surgical wound treatment even for head-to-head competition in the same market segment.¹²⁵ In that event, generic producers C need not negotiate up-front licenses with T, B, or A. But C's prices must reflect the compensatory royalties they owe to T, B, and A for the remainder of the respective protection periods (which could themselves vary in length). Moreover, the applicable royalty rates might be higher for posterior generic reproduction than those applicable in cases where the second comers were actually generating value-adding improvements.

¹²³ If A held a patent and B held an improvement patent, we would have the blocking situation depicted above n. 119. If A held a patent and B held only a compensatory liability right, we would have a tricky situation analogous to the case in which one European producer owned a biotech patent that threatened to block another European's use of a plant breeder's right. It is instructive to note that, in such a case, the E.U.'s Directive on Biotechnology clearly envisions a compulsory license to unblock the use of the plant breeder's right. See E.U. Directive 98/44/EC (6 July 1998), art. 12, available at http://europa.eu.int/eur-lex/pri/en/oj/dat/1998/l_213/l_21319980730en00130021.pdf (last visited 1 Aug. 2004).

¹²⁴ See above n. 58 and accompanying text.

¹²⁵ We assume this option would reflect a policy decision concerning public interest limitations to be imposed on even the already limited rights under a compensatory liability regime.

C. *Further observations*

The TK model of a compensatory liability regime outlined above represents a new and dynamic form of a “paying public domain,” adapted to commercial applications of traditional knowledge. However, the relocation of traditional knowledge it envisions from an inchoate public-domain status to a legally defined semicommons should be temporary, not perpetual, and it should not last too long. In other words, we are seeking to define and legally identify specific beginning and ending points in time during which the collocation of traditional knowledge in a paying semicommons could likely yield greater social benefits than costs.¹²⁶

In all cases, use of the protected traditional knowledge for nonprofit or public research purposes should be preserved either by law or by appropriate contractual templates.¹²⁷ This availability for public research further attenuates the social costs of temporarily relocating traditional knowledge to a paying semicommons. Nevertheless, if the public research results lead to qualifying new commercial applications, they should likewise become subject to the compensatory liability regime, with benefits to be shared with the indigenous providers.¹²⁸

a. Administrative burdens Some observers have objected that a CLR might impose heavy administrative burdens on developing countries, and that they could not cope with the resulting volume of litigation. It is also said that the delay caused by administrative and judicial deficiencies would necessitate a very lengthy period of protection.¹²⁹ These well-meaning criticisms betray a misunderstanding of the differences between a liability rule and a regime of exclusive property rights.

Under our proposed liability rule, no injunction can issue to prevent unauthorized follow-on applications (although one could issue for slavish imitation during a specified period). Because there is normally no risk of an injunction, and the second comer remains legally entitled to borrow the originator’s technical contributions for follow-on purposes, the need to involve the courts’ judicial and administrative apparatus remains minimal. At bottom, the parties

¹²⁶ Some additional provisions may become necessary to protect databases housing specific collections of information or data concerning traditional knowledge against wholesale appropriation. See Reichman, *Database Protection in a Global Economy*, above n. 39.

¹²⁷ Cf. Reichman & Uhlir, above n. 39, at 425–60.

¹²⁸ If public research results lead to patentable applications, appropriate legislation should, of course, also ensure that benefits are shared with indigenous providers. See, e.g., Cottier & Panizzon, above n. 51.

¹²⁹ See Letter from Sybelle Schlatter, above n. 45.

have an accounting transaction, which presents problems of collection and verification, but this should not normally entail a judicial process.¹³⁰

Developing countries that enact utility model laws could face greater judicial and administrative burdens than under a CLR (or at worst an equivalent burden). Moreover, the relevant burdens imposed by TRIPS-mandated intellectual property standards generally would greatly outweigh the burdens of implementing a compensatory liability regime, and only the poorest “least-developed countries” can avoid some of those burdens until 2016.¹³¹

As previously observed, a collection agency is needed to properly implement a compensatory liability regime. Some applications of traditional know-how, such as medical treatments (not products), would have to be regulated by blanket licenses that authorized a specific sector or group of practitioners to make use of specific applications under a negotiated payment schedule, because payments could not otherwise be recouped from patients one by one. This task is no more difficult for a collection agency to organize than the blanket licenses used for public performances of music or for the photocopying of periodicals in the United States.

We acknowledge that crafting modalities for the distribution of royalties among deserving indigenous providers poses well-known difficulties for which we offer no new solutions. We stress, nonetheless, that the collection of royalties under the automatic licenses of a compensatory liability regime raises separate and distinctly different issues from those of distribution. Until and unless such royalties are collected under enabling local legislation, there is nothing to distribute. Any problems of distribution thereafter should not impede early collection of royalties, which can be held in trust for the appropriate beneficiaries however these are to be determined. Care must be taken to keep transaction costs low – in the manner of the Harry Fox licenses in the United States¹³² – lest administrators siphon off the benefits at the expense of indigenous providers.

b. The international dimension Developing countries that proceeded to enact compensatory liability regimes in their domestic laws would likely have to operate without formal international recognition of such regimes for an unknown period of time. Moreover, they would probably have to grant national treatment under such laws to all WTO nationals seeking their

¹³⁰ In the United States, where there is a liability regime within the copyright law for musical works reproduced on sound recordings, a private collection society (the Harry Fox Agency) manages some 200,000 voluntary licenses a year. See M. WILLIAM KRASILOVSKY & SIDNEY SHEL, *THIS BUSINESS OF MUSIC* 237–38 (Billboard Books 7th ed., 1995); Lydia P. Loren, *Untangling the Web of Music Copyrights*, 53 *CASE W. RES. L. REV.* 673 (2003).

¹³¹ See WTO Doha Ministerial Conference, Declaration on the TRIPS Agreement and Public Health, WT/MIN(01)/DEC/W/2 (14 Nov. 2001) [hereinafter Doha Declaration on TRIPS and Public Health].

¹³² See above n. 130.

protection, at least according to the WTO Appellate Body's path breaking decision on national treatment under both the Paris Convention and the TRIPS Agreement.¹³³ Members would not be entitled to demand for their citizens that foreign countries reciprocally provide similar CLR protection abroad, absent some treaty obligation to this effect.

This legal reality constitutes less of a handicap than one might suppose, however, in part because both the Paris Convention and the TRIPS Agreement will allow innovators operating in countries that adopt CLR regimes to claim patent and utility model rights abroad, where available, in all other WTO Members, without regard to reciprocity.¹³⁴ The fact that a national of Ruritania obtained only compensatory liability rights at home would thus not bar him from filing for utility model protection in other developing or developed countries. Nor would it prevent him from obtaining full patent protection in Occitania, if that country were foolish enough to protect small-scale innovation in its domestic patent law (as most developed countries increasingly tend to do).

In sum, while states that wish to protect applications of traditional knowledge under domestic regimes of compensatory liability cannot impose such regimes on foreign countries, neither can foreign countries prevent interested states from adopting such regimes. The first task is, therefore, for developing countries willing to experiment with such regimes to get underway and to share their experiences with other interested countries, ideally through the good offices of WIPO's Intergovernmental Committee on Traditional Knowledge, which is charged with elaborating proposals for international action. A period of experimentation would prove beneficial to all concerned with this issue, while the existence of such regimes in the domestic laws of some developing countries would further support demands for the recognition of rights in traditional knowledge at the international level.

To some extent, developing countries can use these domestic regimes and the growing demand for international recognition of rights in traditional knowledge as bargaining chips within the larger framework of "Bargaining Around the TRIPS Agreement."¹³⁵ However, care must be taken to avoid bad bargains. For example, any deal that required developing countries to recognize the European Union's perpetual exclusive property right in noncopyrightable databases would impose far greater social costs on developing countries

¹³³ See above n. 86.

¹³⁴ See above n. 86; Paris Convention, above n. 31, arts. 1(3) (definition of industrial property), 2(1) (national treatment), 4^{bis} (independence of patents); TRIPS Agreement, above n. 12, arts. 2.1 (incorporating Paris Convention's substantive rules, now said to include national treatment), 3.1 (national treatment under TRIPS).

¹³⁵ See generally David Lange & J.H. Reichman, *Bargaining Around the TRIPS Agreement: The Case for Public-Private Initiatives to Facilitate Worldwide Intellectual Property Transactions*, 9 DUKE J. COMP. & INT'L L. 11 (1998).

than any benefits that a TK protection regime could possibly yield. By the same token, a compensatory liability regime for applications of know-how to industry could itself be adapted to provide a workable alternative model for database protection that might benefit all participating countries.¹³⁶

III. Conclusion

This chapter has argued the case for the use of compensatory liability principles to stimulate small-scale or subpatentable innovation in developing countries. While we contend that all countries could benefit from laws embodying these principles,¹³⁷ developing countries in particular would find them more beneficial than the hybrid regimes of exclusive property rights – such as utility model laws, design protection laws, plant variety laws, and the like – that traditional legal scholarship usually endorses. A compensatory liability regime solves the problem of market failure arising from applications of know-how to industry under present-day conditions without the high social costs that hybrid regimes of exclusive property rights are known to generate. In particular, it encourages follow-on applications without creating barriers to entry and without impoverishing either the research commons or the public domain, as occurs under the hybrid regimes that developed countries have adopted.

To the extent that developing countries opt to experiment with compensatory liability regimes, they would find them beneficial in at least three important ways. First, it could give them an important tool with which to stimulate investment in small-scale innovation falling within the technical capabilities of local producers. Second, it could help to solve thorny problems surrounding the drive to bring owners of traditional knowledge into the realm of intellectual property protection without unduly disrupting their community ties and without removing this controversial subject matter from a semicommons accessible to all. Such a regime would, in short, help to preserve the natural open-source character of community-generated know-how, both new and old.

Third, successful experience with the use of liability rules in this one area could empower developing countries to adopt similar solutions to resolve other hard problems on the frontier of the worldwide intellectual property system, such as growing demands for the legal protection of noncopyrightable cultural artifacts, of noncopyrightable collections of data, and of confidential test data resulting from the clinical trials of new pharmaceutical products.¹³⁸ While these topics lie beyond the scope of this chapter, we are confident that

¹³⁶ See, e.g., Reichman, *Database Protection in a Global Economy*, above n. 39; Reichman & Samuelson, above n. 53, at 145–51.

¹³⁷ A searching economic analysis of the superiority of liability rules over exclusive rights in these and other cases has been deferred to a later article. See above n. 53.

¹³⁸ Cf. TRIPS Agreement, above n. 12, art. 39.3.

compensatory liability principles would help to resolve the very thorny problems they currently pose for the international IP community.

Finally, looking down the road, we believe that compensatory liability principles could eventually constitute the basis for a bold new strategy to provide second-tier protection of medium and even large-scale innovation in developed countries, an alternative to the patent system that would directly protect investment as such without requiring nonobviousness and without blocking follow-on applications. This more advanced use of liability rules goes well beyond the protection of subpatentable innovation, discussed here, and represents a new theoretical point of departure for a future study.¹³⁹ Ideally, it would supplement the patent system and avoid the many distortions that currently arise when this system is applied to protect investment rather than truly nonobvious inventions. However, that topic lies beyond the scope of this chapter and will be discussed in a separate work in progress.

¹³⁹ See Tracy Lewis & J.H. Reichman, above n. 53 (work-in-progress).