

**Using Liability Rules to Stimulate Local Innovation
in Developing Countries:
A Law and Economics Primer**

By

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Using Liability Rules to Stimulate Local Innovation in Developing Countries: A Law and Economics Primer

By Tracy Lewis* and J. H. Reichman**

When economists speak of exclusive property rights, they envision an underlying legal structure that imposes an “absolute permission” requirement on access to and use of the protected subject matter. Under patents, copyrights, and related intellectual property regimes, for example, one cannot use the protected artist’s work or invention for specified purposes 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 harm they inflict. While typical examples sound in tort laws regulating the abatement of nuisances, liability rules also abound in the realm of intellectual property law, where however their function has often been ignored by mainstream economic theory concerning innovation. 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 is about new forms of liability rules that might profitably be used to

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stimulate local innovation in developing countries. Our thesis is that a properly designed liability rule to protect small-scale innovation 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 like those embodied in utility model laws, design protection laws, and other similar regimes operating in developed countries.

I. Introduction and Background

Historically, a robust regime of intellectual property rights rooted in actual or legal secrecy moderates between patentable inventions and free competition. These rules govern routine innovation; they mean that, under free competition, anyone can reverse engineer anyone else's novel application of know-how¹ to industry by proper means, but not by improper means. This regime provided investors with natural lead time in which to recuperate investments and establish their trademarks, but it gave investors no power to prevent follow-on applications by any third party who spent the time and money to reverse engineer. From this perspective, the routine engineers who implement common technical trajectories by applying know-how to industry may be characterized as an early example of an "open source" community. Viewed as a group phenomenon, their innovative activities feed a technological semi commons and benefit from it, precisely because their outputs could only attract exclusive property rights in cases of nonobvious inventions that exceed the reach of routine engineers.

Over time this regime breaks down because secrecy increasingly fails to constitute a

¹ [Move definition of know-how from last part to here].

meaningful trigger of protection, starting with industrial design in the 19th century and continuing into software engineering and genetic engineering at the end of the 20th century. Commercially valuable applications of know how are embodied on or near the face of products distributed in the open market throughout the world. Here the valuable know-how can no longer be locked in safes at the offices of innovative entrepreneurs. Anyone who duplicates the product may capture the investor's contribution without spending time and money to reverse engineer. This poses a zero lead-time problem, i.e. a chronic shortage of natural lead time that afflicts innovators in cutting edge technologies.

The Knee Jerk Solution of domestic and international rule makers has been to fill this gap with an expansion of exclusive property rights to address the risk of market failure. Two strategies are combined. In one, patents are expanded to cover investment in routine innovation, and copyrights are expanded beyond literary and artistic works in the historical and ordinary sense to encompass 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.

In previous articles, Professor Reichman explained how all countries, including the most advanced developed countries, could benefit from a compensatory liability regime that would broadly protect investment in subpatentable innovation. 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. As will appear below, 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 a proliferation of sui generis exclusive rights in developed countries, such as utility model laws, design protection laws, integrated circuit laws, plant variety protection laws, database protection laws, and the like.

For better or worse, virtually all European Union countries already possess these sui generis regimes, and the reliance of some on utility model laws will likely be codified and extended to all the others in a pending E.U. Directive. The United States traditionally resisted this approach, but has periodically allowed its patent law to protect gadgets that utility model laws would cover in foreign law. United States patent law thus tends to protect utility models in disguise, which masks a constant tension between its avowed allegiance to the nonobviousness standard of invention and the need to protect investment in socially useful gadgets. Recently, the U.S. has increasingly embraced sui generis regimes as well and enactment of a database protection law now seems inevitable.

As regards developing countries, qualified experts have long agreed that most developing countries would benefit from a special regime to protect small-scale innovation. This follows because the more limited technical capacities of producers in most of these countries are better suited to applications of inventions made elsewhere to local conditions than to developing bigger scale inventions from scratch, especially when these depend on basic research, in which most developing countries are deficient.

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. This law (unlike its German prototype) quickly broke its ties to industrial design as such and became a petty patent law covering small-scale innovations generally (more or less as occurred in Italy). During a lengthy period of time, there were some 200,000 Japanese utility model applications annually. 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 has become relatively unimportant because of major Japanese investments in basic research and the correspondingly greater role of patents there.

For all of these reasons, foreign experts 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. Moreover, for a variety of reasons not exclusively governed by the drive for harmonization, the European Union seems likely to adopt a federal utility model law. 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 all forms of innovation, as in the U.S., or a mixed patent-utility model regime, as in Italy, Germany and Japan. If this were true, then most developing countries would clearly benefit more from the latter option than the former.

The problems with either form of intellectual property protection are legion, 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”). These detriments include:

- 1) 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;
- 2) 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, and also because third parties will not readily disclose such applications in licensing transactions affecting small-scale innovation (see *Green Tulips*);
- 3) These same exclusive rights impoverish the public domain by denying access to routine innovations of other creative engineers, which would otherwise be free to reverse engineer by honest means;
- 4) They require elaborate negotiations and other transaction costs that, in relation to the caliber of the innovation, are seldom worthwhile even if they could succeed.
- 5) They generate lots of litigation whose costs are disproportionately large in relation to the social value of the innovation.
- 6) 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 (a “semi-commons”), so the progressive elaboration of the common technical paradigm is either aborted or retarded.
- 7) The natural “open source” character of routine innovation operating under traditional trade secret laws is thereby destroyed.
- 8) Overextended or hybrid regimes reward investors with exclusive rights for investing in forms of innovation that market-force competition would require

them to make anyway, just to stay competitive, often despite a risk of market failure driven by the problem of appropriability.

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. The solution is to modify and modernize these older forms of liability rules by adapting them to protect commercially valuable embodiments of know-how under present-day circumstances.

This is what a compensatory liability regime seeks to do. It solves the appropriability problem by forbidding slavish imitation, and it preserves the investor's incentives to invest in small-scale applications of know-how to industry by requiring follow-on improvers to compensate innovators for the costs of research and development. At the same time, it preserves the social benefits of liability rules by enabling all players to freely borrow each other's subpatentable technical contributions for purposes of follow-on applications in return for a reasonable automatic royalty (that might range between 3-9% of value), which contributes to the originator's cost of research and development. Naturally, the originator may borrow back the second comer's own follow on application by paying a similar tithe under specified conditions.

Despite the logical appeal of liability rules for managing subpatentable innovation, this option is almost never seriously considered by most specialists advising developing countries who dismiss them out of hand as misguided, speculative proposals.² It is true that few countries have enacted hybrid intellectual property laws based on liability rules, although there are more

² See most recently letter from Sybille E. Schalter, Max Planck Institute, Munich to Tinu Joshi, Development Commissioner, Ministry of Textiles, New Delhi, India, July 8, 2003.

operative examples than one might think.³ But one reason developing countries do not enact them is that 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) have kept them off the agenda of most developing countries. Yet, economic interest in liability rules is growing, and younger scholars are increasingly attracted to their study.⁴ As a result, it is becoming possible to focus high-level attention on liability rules for the first time, which is one of the purposes of this paper, 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 interest in investment in innovation.⁵ 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 regime to protect investment as such but on different and socially less costly principles. That study will appear later.

For present purposes, what we can say is that our study of liability rules in general so far supports the view, previously expressed by Reichman, that insofar as most experts uniformly

³ British Design Law of 1988 (in part); U.S. Copyright Law, art. 115; Italian Copyright Law, art. 99.

⁴See, e.g., Ayres & Talley; see also others cf., Scotchmer & Samuelson, whose study of *Reverse Engineering* illuminates this field; see also *Manifesto* and *Legal Hybrids*.

⁵ Cf. also Scotchmer & Samuelson, *supra* note 4.

agree that developing countries should adopt some special intellectual property regime to promote investment in small-scale innovation, we are confident that a modified liability rule (or “compensatory liability regime,” hereafter, CLR) would promote the interests of developing 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 a CLR will solve the problem of market failure as well as a utility model law. But if we are right, the payoffs from a CLR could be enormous. 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 rights. Moreover, because the U.S. and EU keep pressing for more intellectual property rights, successful experimentation with a CLR could enable developing countries to meet protectionist pressures in ways that did much less harm to their own needs to catch up and to access scientific and technical data and information generated elsewhere.

In what follows, we shall first discuss the design of liability rules and how they can be implemented within existing institutions. We then briefly review the basic economic properties of a compensatory liability regime for small-scale innovation. In particular we show how such a regime could stimulate investment in small-scale innovation within the reach of local producers without blocking improvements or access to shared know-how available from the public domain. Finally, we briefly discuss some additional benefits that compensatory liability regimes can

deliver when applied to thorny new problems, for example, the protection of traditional cultural artifacts, traditional technical know-how, and as a response to growing demands for intellectual property rights in collections of data.

II. Designing A Compensatory Liability Regime

Quite simply, a liability rule is an option for one entrepreneur to make use of another entrepreneur's innovation under specified conditions. The conditions for use specify (i) how the property may be employed (ii) the period for which the innovation may be employed, (iii) the monetary or in kind payment the innovator receives as compensation, and (iv) provisions for revising the terms of use upon mutual agreement of the innovator and user.

In a previous article,⁶ Professor Reichman proposed a simple model, known as the Green Tulip Model, of a compensatory liability regime. In what follows, we first briefly summarize that model so that readers can envision a concrete example. We then elaborate in more abstract terms on what is provided for in each of the abovementioned conditions of use.

a. A Simple Model

Under this model, Plant Breeder A develops a green tulip (assumed to be unpatentable) which consumers do not like and do not buy. Plant Breeder B then develops a red, white, and green tulip by combining A's technique with techniques of his own, and all the Italo-Americans buy this tulip. Other plant breeders (collectively Breeders C) then combine these techniques

⁶ See J. H. Reichman, *Of Green Tulips and Legal Kudzu: Repackaging Rights in Subpatentable Innovation*, __ VANDERBILT L. REV. __ ().

with their own know-how to produce other commercially successful tulips bred off of A's and B's exemplars.

Under either a regime of free competition or a soft copyright-like regime, Breeder A would likely receive nothing from Breeders B and C, and might disappear from the market (as actually occurred with the creators of the first computerized spreadsheet, Visicalc). Under patent-like exclusive property rights, we can show that Breeders B and C are much less likely to breed off A's green tulip, at least until the expiry of the exclusive right, for reasons that are elaborated elsewhere and that are peculiar to the small-scale innovative milieu.

Under a compensatory liability regime, Breeder B could freely borrow A's green tulip to breed his red, white and green variety, while Breeders C could also freely borrow both A's and B's varieties to breed their own variations. But B would owe compensatory royalties to A for a specified period of time (ranging from 3 to 9% for reasons suggested elsewhere⁷), and breeders C would owe compensatory royalties to both A and B for the specified period of time.

Two further conditions apply. If green tulips as such suddenly became popular, neither B nor C could simply duplicate A's variety for head to head competition on the same market segment for a specified period of time. By the same token, Breeder A remains free to borrow back both B's and C's own varieties for purposes of breeding improved varieties of his own, so long as Breeder A compensates Breeders B and C for these uses at the going rates during the specified period of time. In that event, the collection agent would have to offset A's royalties from B and C for use of the green tulip variety by deducting any royalties owed to B and C for

⁷ See *Green Tulips supra* note 6 at ____.

the use of their techniques in follow-on applications.

b. Extrapolating Four General Conditions of Use

In what follows, we attempt to generalize four conditions of use that any compensatory liability regime would have to define. Here our treatment is deliberately abstract, and is not necessarily limited by the simple model described above.

Condition (i): Terms of Employment The terms of employment will normally depend on the nature of the innovation, and they will stipulate what uses of the property are acceptable. Possible uses might include utilizing or applying the innovation to produce a marketable service or product for sale, or employing the innovation as an input in a cumulative process to create an advanced or improved product or innovation. Further restrictions on use may limit the sharing of the innovation with others without compensation to the innovator or permitting others to examine the innovation for possible imitation or reverse engineering.

Condition (ii) Period of Employment: This provision indicates the time during which the innovation may be employed, as well as changes in conditions of use arising over time. Provisions for possible renewal of use privileges may also be stipulated. In principal the terms of exchange may become easier with time, reflecting the need to provide maximum protection for the innovator soon after her discovery when lead-time protection may be most critical

Condition (iii): Terms of Compensation: This provides for the innovator to receive a payment or other form of benefit as compensation for enabling others to access and use her innovation for certain purposes. The amount and form of payment will vary according to how the innovation is employed.

For instance, the innovator would presumably receive more generous compensation if his

innovation is employed by a rival supplier to manufacture a product that competes directly with that of the innovator. In most instances, the innovator's compensation takes the form of a license payment, which is designed to defray expenses incurred in the innovation process. Alternatively, compensation might be smaller and might take the form of a quid pro quo agreement entitling the innovator to access any follow on improvements to her property. Such agreements would be particularly useful with cumulative innovation where successive innovations build upon earlier innovations to make continual product improvements.

In most instances the innovator's compensation takes the form of a license payment is designed to defray expenses incurred in the innovation process. In earlier times the innovator's natural lead time would have afforded him a sufficient competitive advantage to recover these costs. The magnitude of the payment will generally depend on how the property is to be used and whether the user will make subsequent improvements on the property available to the original innovator. When product improvements are cumulative and supported by a community of innovators, licensing fees are likely to be small, reflecting future benefits the innovator expects to receive from improvements on his property and the fact that neither inputs and outputs may vary enough from the prior art to merit existing forms of stronger protection.

To encourage efficient use of property and adequate investment, the default terms of exchange should be clearly delineated. This would distinguish liability rules from unfair competition protection and compulsory licensing where initial entitlements and use provisions are unclear. The initial terms of exchange can be benchmarked according to the licensing terms observed in other related markets. Where appropriate benchmarks are unavailable, initial terms might be determined by considering something akin to the *Georgia Pacific Factors*, which U.S.

federal courts have employed to determine reasonable royalty rates for government use of patents.⁸ In addition, by allowing the parties to choose terms from a limited menu of options,⁹ flexible arrangements may be accommodated by conditioning use fees on the how the property is to be employed and on the revenue requirements of the innovator

As a general rule, we argue that for small-scale innovation, license rates will be small to reflect the relative ease of sequential innovation that borrows so heavily from the existing knowledge base. In practice, we would expect that most royalty amounts would actually be negotiated as occurs under Harry Fox licenses in the music industry today. Once the liability entitlement became clear in law, the parties would quickly bargain for a moderate rate, in the knowledge that they may have to settle any such transaction in the future with each of them appearing as borrower or innovator at different times. This is empirically verified by practice under Harry Fox licenses (200,000 voluntary licenses annually versus some 20 compulsory licenses) which demonstrate that parties tend to bargain around a clear liability entitlement. (In developing countries, governments could assist in the creation of suitable intermediary agencies analogous to a collection society).

Condition (iv): Renegotiation of terms of use: This condition provides a major benefit to the innovator and user by allowing the parties to renegotiate use terms to their mutual advantage. We anticipate in most instances the default terms of exchange under liability rules will afford the innovator sufficient payments to cover costs while providing users with the

⁸ See §1498 U.S. Code; J. H. Reichman with Cathy Hasenzahl, *NONVOLUNTARY LICENSING OF PATENTED INVENTIONS: THE LAW AND PRACTICE OF THE UNITED STATES* (UNCTAD/ICISD, forthcoming 2003).

⁹ See Reichman, *Legal Hybrids* (key).

desired access to the innovation. Nonetheless, cases may arise in which the initial terms of exchange require modification. Liability rules provide a streamlined method for buyers and sellers to negotiate away from the initial agreement to their mutual advantage.

For instance, an innovator who felt it was important to develop his property exclusively could, under liability rules, bargain with the potential user for less access to the property and even conceivably buy out that party's option to use. Alternatively, a user of the property who wanted to attain less restrictive use could conceivably bargain with the innovator in order to achieve greater or more convenient access to the property. We envision bargaining between the innovator and user would be facilitated by an arbitration process specified in the liability rule regime.¹⁰

III. **How Liability Rules Facilitate Small-Scale Innovation**

Liability rules are designed to benefit the innovator and user in numerous ways. In what follows, we attempt to explain these benefits from a law and economics perspective.

Liability rules replace lead time protection necessary to compensate small-scale innovators

Most of what sui generis intellectual property laws seek to protect are commercially valuable applications of know-how to industry, which cannot effectively benefit from the trade

¹⁰ Some legal scholars have criticized liability rules based on the presumption that the initial terms of exchange may be set incorrectly to attain allocative efficiency. While there are no guarantees that the default exchange terms will be correct, the provision allowing parties to bargain to new mutually beneficial terms can rectify initial errors in the terms of trade. Just as parties may bargain to different terms under property rules, they may likewise bargain to better terms of trade under liability rules as well.

secret laws that traditionally gave investors in technical know-how a period of natural lead time to recuperate their investments. Compensatory liability rules effectively substitute for this loss in lead time protection by providing compensation to innovators for their creative effort. In return for this consideration, innovators make their property, largely in the form of technical know-how and skilled efforts, available to follow on developers and innovators. This arrangement has the advantage of providing ample incentives to the innovator to generate new knowledge without restricting follow on users from employing the know-how to create better products or to add to the accumulated stock of knowledge.

Liability rules are flexible and span the spectrum of property right entitlements already existing

By design, liability rules are sufficiently flexible and general in their possible provisions to include virtually every arrangement of property right use that one can imagine. For instance, public domain use is just a special case of the liability rule, where there are minimal restrictions on how the property can be employed and the price users pay is usually nominal, just enough to cover the transfer of the property from the innovator to the user. In this setting there is a presumption of free use of property. Such arrangements will be appropriate when much of the innovator's research is publicly supported, or evolves from knowledge already accumulated in the public domain.

At the other extreme, are property rules with use restrictions so severe that the effective price users pay for the property without the consent of the innovators is infinite. We anticipate for most cases, particularly for small-scale innovation, liability rule entitlements will typically

fall in between the extremes of public domain use, with a user price of zero, and property rules with user prices so high as to preclude others from accessing the innovation.

In effect, our compensatory liability regime satisfies, in the context of legal regulation of innovation, the first principle of medicine: *primum non-nuocere*, first do no harm. Liability rules can be designed to duplicate the effects of absolute property rights where the implied price of use is essentially infinite. On the other hand, when such extreme protection of property is not required, liability rules are readily fashioned to permit follow-on applications of innovation at moderate use prices. Liability rules therefore can mimic the performance of a strong property rights regime when required, but are sufficiently flexible to maintain the desired classic open source nature of routine engineering, by promoting follow-on applications, and by preserving the research commons.

Liability rules facilitate exchange between privately informed users and innovators

Some might argue that since absolute property rights are but a special case of liability rules one can simply begin with property rules, and allow the parties to bargain into liability rules, if desired. ¹¹ At first glance this is compelling. However this reasoning overlooks the difficulties of bargaining to efficient exchange when property entitlements are absolute.

The formal demonstration that bargaining breaks down under property rules first appears in Myerson and Satterthwaite (1983). They demonstrate that with absolute property rights, two parties privately informed about their value of exchange are unable to bargain to efficiency, even

¹¹ Reference to Merges and others.

when both realize exchange of property would increase their total surplus. The rationale for this is that the innovator with absolute rights has an incentive to exaggerate the costs of making his property accessible to others, in order to obtain a maximum price for the exchange. At the same time, a buyer has incentives to understate his value of use to acquire the property at a minimum price. As a result of these deceptions, the buyer and seller may place such great demands on each other that a mutually beneficial exchange of property is precluded. This impasse may even occur when both parties know exchange would yield them both a greater surplus. 12

Essentially, there is a breakdown of Coasian exchange here. Rational self-interested parties are supposed to bargain to their mutual benefit. This is a cruel irony for those who believe all that is required is to establish clear absolute property rights and then rely upon the behavior of self-interested individuals to bargain to a surplus maximizing state. Unfortunately, Coasian exchange tends to break down when the bargainers are privately informed and property ownership is absolute.

Now, by contrast, a liability rule specifying initial rights of exchange moderates the demands an innovator and a potential user might place on each other. When the innovator is obliged to provide some access to his intellectual property, he cannot predict initially whether he will wish to be a net buyer or seller of the property. He might decide to independently market his property, so he will wish to buy back the option to property access from the user. Alternatively he may discover that others are better at developing his innovation, and therefore he would want to sell additional access to potential users. Similarly the user who is granted some initial rights

12 (RCA case).

of access cannot determine at the outset whether he wants to purchase additional access rights, or sell his existing rights back to the innovator.

Bargaining from an initial entitlement of partial use introduces countervailing incentives for either party to make claims about their value of exchange. For example, an innovator who claims it is extremely costly to make his property accessible to users is both signaling his reluctance to sell access to potential users, and his willingness to pay to retire the use options buyers currently hold. Such exaggeration is ill advised. The innovator may realize his property generates more value when users have greater access to it. Exaggeration precludes potentially profitable adjustments in exchange for both parties. Realizing this, each party has incentives truthfully to reveal their value of exchange. This behavior facilitates trade, which enhances the value of exchange and generates greater surplus for both parties.

Liability rules induce greater follow-on innovation and spur cumulative development

Because liability rules ensure access to a first comer's innovation, follow on innovators are willing to invest greater resources to improve the extant technology or to add to the current stock of knowledge. Also innovators who add to the current product design or technological know how are assured of having access to further technological improvements under liability rule provisions. This reciprocity of improvement and exchange induces each innovator to participate in the cumulative development of property in the knowledge that he will benefit from design and technology innovations in the future.

Under this system there is no free riding. On the contrary, the original innovator stands to benefit from multiplier or lottery effects if many second comers decide to use his contributions

in follow-on applications. However, the first comer cannot block or thwart these follow-on applications, and the new know-how gained through this process is shared by or accessible to all members of the relevant technical community. In this sense, the natural open source character of these communities under traditional trade secret laws is preserved, and all the know-how resides in a freely accessible research commons, even if usage is subject to a tithe for research and development costs during a set period of time.

A great benefit of the system is that it reinforces competition rather than distorting it, as occurs under regimes of exclusive property rights. Businessmen remain free to act on their hunches and invest where their sense of the value of their know-how takes them, without permissions or holdouts. But if they succeed, subsequent users must pay them for use of their know-how in follow on applications, so that innovators become automatic partners in the follow-on processes for a fixed period of time. In effect, the initial investor's entitlement includes a built in grant back clause as he is entitled to borrow back the second comer's follow-on contribution in return for the standard R&D compensatory tithe.

Liability rules protect the innovator against misappropriation

By opting into a properly designed liability regime, the innovator is immunized for a specified period of time against wholesale duplication of his property by free riders who compete head to head on the same market segment. This solves the problems created by the lack of a general misappropriation norm in common law countries, and it focuses the compensatory liability principle on socially productive follow-on applications. The duration of sanctioned use is set for a reasonable period of time, comparable to the natural lead time innovators enjoyed

when product design and technology were less transparent to imitators.

The system does not countenance wholesale duplication or slavish imitation as a legitimate form of head to head competition on the same market segment. In other words, it awards investors a form of protection against unfair competition (misappropriation) that is not generally available under Anglo-American law, and this period of protection could last longer than the period of compensatory liability for follow-on applications. We estimate that the value of this protection adds from two to four per cent to the value of the base royalties applicable to follow-on applications.

While innovators do not obtain an exclusive right, they do obtain clear, legally protected entitlements, which is altogether different from the uncertainties of unfair competition law. The entitlement does not confer a power to exclude follow on applications; but it does confer an absolute right to compensation even as it gives competitors an absolute right to borrow for follow-on purposes, in exchange for a duty to compensate. 13

13 Some might argue there is a potential cost to the innovator of foregoing exclusive property protection when he opts into a compensatory liability rule. However, one should not suppose either that an innovator is otherwise entitled to misappropriation or that misappropriation alone would solve the problem. These are two common errors.

Misappropriation is not generally available, especially in English-speaking countries, because the principle is that imitation is the lifeblood of commerce, and there is a right of free competition. Historically, the bias is to err on the side of not stifling competition, which of course depends on natural lead time. In practice this bias becomes unsustainable under modern conditions, so English-speaking countries hypocritically extend the patent copyright-paradigms and multiply exclusive rights to combat wholesales duplication while pretending to have no general law forbidding slavish imitation

This leads some commentators to posit a misappropriation law as a general solution to the problems we are addressing. (See Karjala; example of Gordon.) But this solution solves only the head to head free rider problem while complicating the really important problem, which is value-adding follow-on applications (*cf* Lemly). Here the failing is that misappropriation gives only an uncertain entitlement dependent on the judges estimation of the value of the second comer's contribution in light of the first comer's cost. This is inherently speculative, uncertain, unreliable and cannot support rational investment strategy.

Proponents of exclusive rights are correct to mistrust the pure misappropriation doctrine, but wrong to think that it is the only form a liability rule can take. *See NBA vs. Motorola* where Judge Winters judicially refined misappropriation in economic terms. An economically oriented misappropriation regime is better than nothing, but it cannot address the present dysfunctional nature of the intellectual property system. (See Reichman, *Saving the*

Liability rules halt the proliferation of rights

Another important benefit of liability rules is they arrest the proliferation of property rights that threaten to stall innovation and the cumulative development of new intellectual property. Liability rules remove the right of innovators to prohibit others from accessing and using property, while providing compensation to investors for their creative efforts. Liability rule entitlements bypass the anticommons and thereby encourage joint use and development of intellectual property. These streamlined entitlements reduce the wasteful practices of strategic and defensive patenting, and ever growing quest for rights. An added side benefit of liability rules is that they would increasingly reduce the pressure on overworked patent administrators to determine which of countless new innovation claims meet standards for patent protection.

Compensatory liability rules do not substitute for, but rather complement the absolute property right regime in this way. If an innovation turns out to meet the nonobviousness standard and is otherwise patentable, and a patent actually issues, the patent law would apply and displace the compensatory liability regime. But that regime could still safeguard the rights holder's interests during the patent pending period, just as occurs with utility models in foreign law. We would expect judges to raise the level of non-obviousness for patent purposes over time, once such a liability regime was enacted, because there would no longer exist any need to extend patent protection downwards to address the problem of small-scale applications of know-how, for example, business methods. We think this would benefit all patent regimes, which should

Patent Law from Itself (forthcoming 2004)). A compensatory liability regime that incorporates a misappropriation function can solve these problems at acceptable costs. Absent this consideration, innovator may be unwilling to incur sufficient R&D costs, and he might not be willing to forego the protection of a stronger legal monopoly.

confine their dealings to truly nonobvious inventions.

Beginning with liability rules is superior to contracting into liability rules

Some legal scholars advocate contracting into liability rules from an initial position of property rules. 14 This rests on the belief that we reside in a Coasian world, whereby rational self-interested parties bargain to efficient outcomes, provided they possess well defined rights over their property. This view, which has come to be known as the Coase Theorem in the law and economics literature, is known not to work under realistic conditions where buyers and sellers of the property are privately informed of the relative benefits derived from exchange with others. 15

We contend that bargaining from property rules to liability rules represents a critical error in timing. Once innovators are granted absolute property entitlements, their self-interest to bargain for the maximum price of exchange has already been established. As we have argued above, buyers and sellers starting at extreme positions along the exchange spectrum are less likely to reach agreement on efficient exchange. The conditions they impose on each other are often too demanding to allow for mutually profitable trade to occur. This problem is most acute in the absence of well-functioning, frictionless markets where there are few potential buyers and sellers of the property. Ironically, this case where the markets for exchange are thin is the very environment for which the Coasian solution to exchange is presumed to be most effective.

Starting from property rules, follow-on innovators and consumers are uncertain whether

14 Refs. See esp. Merges.

15 Cites to relevant papers

they will have access to an original innovation. This will have a chilling effect on follow on investment and development. Further, when it is only current property right holders who may negotiate to subsequent liability rules, opportunities arise for existing right holders to exclude or discount other stakeholder interests not currently represented in the negotiations.

In contrast, under liability rules access to technical know-how for follow on users is guaranteed at well-specified terms of exchange. For small-scale innovations, the level of royalties for the automatic licenses is strictly limited because the bulk of transparent contributions to know-how presumably consist of public domain matter. Under this assumption, we expect the potential range of royalties varying from 3-9 per cent is actually quite generous (when compared to say, royalties under compulsory licenses). The generosity of this royalty scheme is enlarged by the built-in protection against wholesale duplication (which we estimate at 2-4 per cent) and by the built in grant back clause (2-4 per cent).

We emphasize that liability rules permit the innovator and user to change the initial mandated terms of exchange to their mutual benefit. True, instances may arise in which the parties are unable agree to alternative fair terms of use. In such instances, we do not envision much litigation over royalties, at least not beyond a mandatory arbitration stage. The default royalty terms offered by liability rules restrict the benefits and set the limits on what litigation would provide either party. 16

16 See further *infra* note 17 and accompanying text.

Liability rules dominate compulsory licensing

Our proposed liability rule regime is distinguished from compulsory licensing in several critical respects. First, there are no compulsory licenses under the proposed liability rules because there are no exclusive rights to cut back upon. There is an entitlement to compensation, implemented by a standard automatic license, which allows second comers to use the originator's novel contribution for follow-on innovation and pay the standard title

Unlike mandatory licenses, which are typically stipulated as a remedy for antitrust violation and patent misuse, or for government use provisions, liability rules are intended for widespread application, even in settings where antitrust issues or potential misuse of property is not deemed relevant. Further in contrast to mandatory licensing, where the licensing terms are subject to bargaining, and possible litigation, liability rules set out the terms of property use initially as default arrangements that may subsequently be altered by mutual consent of the supplier and user of the intellectual property. Finally liability rules insure reciprocal use rights, so that a first innovator is guaranteed access to the improvements on his original property by follow on innovators. Typically such provisions are not automatic with mandatory licensing, though in principle reciprocal licensing could be arranged, albeit at some additional administrative cost

Liability rules avoid the costs of infringement remedies

Some analysts argue that a form of liability rule entitlement already is provided for under patent and copyright protection. An infringer using property without consent is charged a fee equal to the property holder's foregone profit or expected license payment. In effect, the

argument goes, property rules convert into liability rules by allowing infringers to access property by making compensatory payments to the property holder.

Notice however, that this provision for making property available to users differs significantly from our proposed liability rule. For example, in many instances, infringers will be enjoined from using the property if detected early enough by the property holder. If the infringer succeeds in accessing the property before being detected, the compensation he will be required to pay will be uncertain, *ex ante*, depending on the adversarial and litigious process the courts adopt. Added to the fees for unauthorized use may be punitive damages set at levels to deter future infringements. Consequently, there will be a diminished use and transfer of property under this violation of property rules both because of the possibility of injunction and the uncertain and high fees infringers are liable for.

Liability rules that rely on infringement are costly to adjudicate and cause rights holders and follow on users to behave strategically and defensively to protect their private interests. In contrast, our proposed compensatory liability rules would set down guaranteed terms of use that facilitate the use and exchange of intellectual property. Such guarantees will induce greater follow on innovation and more application and commercial development of intellectual property.

Transaction costs and litigation costs should be low for the following reasons. Any industry covered by the system must adopt an arbitration or mediation process as a condition to litigation. This process should primarily serve to determine whether the second comer merely duplicated the first comer's contribution or actually improved it (if only by cost reduction). It should also determine whether the second comer took a relatively small, medium, or large amount of the first comer's contribution, which in turn affects whether the title will be small,

moderate or relatively large.¹⁷

It is expected that, as a practical matter in most industries, a voluntary licensing arrangement would be established (like the Harry Fox licenses under the liability rules governing mechanical recordings in copyright law), and these agencies would collect and distribute the royalties. Indeed, the Harry Fox experience demonstrates concretely that, once entitlements under a compensatory liability rule are legislatively made clear, parties normally bargain around them with less friction and lower costs than occurs with exclusive rights.

Liability rules are easily accommodated under TRIPS

The compensatory liability regime is designed to be neutral with respect to the international standards of intellectual property protection. No such standards apply to liability rules, other than trade secret laws. While the TRIPS Agreement requires states to adopt the nonobviousness standard of patent law, there is as yet no uniformity about this standard. Any state adopting a compensatory liability regime (CLR) would still have to respect international rules of non-obviousness with regard to patents. This is as true for utility models in European Union law as it would be for a compensatory liability regime in a developing country, and it would work out about the same.¹⁸

¹⁷ By the same token, we would expect very little litigation because the only real issue in most cases is the amount to be paid, basically an accounting transaction. If powerful litigants understand that a standard default percentage royalty is the likely outcome of any contested case, that is, six per cent (which is more than three per cent and less than nine per cent), why would they incur the costs of litigating if the facts of creation and borrowing for follow-on purposes are otherwise clear?

¹⁸ For other TRIPS implications, including design laws, *see infra* text accompanying note ____.

If states were foolish enough to harmonize the nonobviousness standard and further relinquish sovereignty in this regard, 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, i.e., we would expect the existence of compensatory liability rules to drive the nonobviousness standard upwards, which would be better for worldwide innovation and competition.

In any event, the international rule of national treatment would almost always apply because of a recent WTO Appellate Body decision to this effect. Here, anyone operating under a compensatory liability regime at home would be free to apply for sui generis exclusive rights abroad, and anyone operating under sui generis rights abroad would be free to seek compensatory liability protection in countries giving it, in lieu of rights otherwise guaranteed to foreign nationals, such as pertain to design rights.¹⁹ However, no group could force other countries to adopt or abandon their preferred regimes with respect to their own nationals.²⁰

IV. Additional Applications of Particular Interest to Developing Countries

a. Applications of Traditional Knowledge to Industry

There are two fundamentally false notions, at opposite poles from each other, that tend to confuse the issues surrounding proposals to protect the traditional knowledge of indigenous

¹⁹ See TRIPS Agreement, arts ____; *infra* text accompanying notes ____.

²⁰For present purposes we ignore priority rights in designs and utility models under the Paris Convention.

peoples and make it difficult to achieve substantial progress, let alone discover an elegant solution to an objectively hard problem. The first is the notion that traditional intellectual property regimes will resolve most or all of the problems in the end, or at least provide a template for deriving yet another poorly conceived set of hybrid exclusive property rights from the clutter of pre-existing models that progressively hinder competition in developed countries.²¹ Equally pernicious is the second notion 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, in contrast, 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, given the changed conditions that govern technological progress at the start of the twenty-first century.

(1) Understanding the Problem

When scholars imply that “traditional knowledge” represents something new on the intellectual property horizon, they obscure the fact that we are really talking about the oldest form of “cumulative and sequential innovation.”²² If this traditional lore has become valuable today, it is because applications of know-how to industry generally represent one of the most

²¹ See generally, J. H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 COLUM. L. REV. 2432-2448 (1994).

²² See Richard Nelson, 94 COLUMB. L. REV. __ (1994)

valuable forms of commoditized information in today's knowledge-based economy.²³ There is no qualitative difference between those who make small-scale innovations by traditional means 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 biologically engineered products.

Traditional knowledge is more intuitive, less bound by formal technical paradigms than modern innovation, and it takes place by accretions over a very long period of time. Like present-day applications of know-how to industry, however, it proceeds mostly by trial and error.²⁴ The moment that either a traditional innovator (and his assignees) or a modern innovator decide to invest time, skilled efforts, and moves to produce an industrial application of their know-how, they both face a common risk of market failure if second comers can merely duplicate the product without contributing to the costs of research and development.

It may be that a local entrepreneur adapts a water pump to suit his peculiar environmental needs, in which case he has generated some "new" technical know-how. It may be that a local entrepreneur adapts a traditional design to leather goods or tableware. It may be that a local shaman provides a treatment for fever or kidney stones or burns derived from native plants and materials. What matters is not that the technology in question meets some abstract theoretical or

²³ Know-how is simply information about how to do something that will provide an industrial or commercial advantage. See LADAS (1975). 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, *Reverse Engineering*, __ YALE L. REV. __ (2002). In this sense, trade secret protection confers only a "disappearing right." Stedman, OHIO STATE L. J. (1968).

²⁴ See LADAS (1975). See also (French author) KNOW-HOW ET PROPRIETE INDUSTRIELLE (1974).

legal criterion of “novelty.” What matters from an economic perspective is that the entrepreneur, designer, or commercially-minded practitioner in question can appropriate the fruits of his or her investments, turn a reasonable profit, and establish a trademarked foothold in the market without being driven out of the market by free-riding second comers who duplicate their products without making any corresponding contributions of their own and who sell below first comers marginal costs of production.

From this perspective, all know-how pertains to technical communities, not to individuals, so long as we understand that “routine engineers” in the patent sense depend on the reciprocal insights and contributions the community derives from a public domain, or more accurately from a “research commons.” 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. These cumulative but predictable additions to the prior art represent “skilled efforts,” and are undoubtedly individual achievements (*leistung*); but historically they did not attract exclusive property rights precisely because they do not surpass the ability of the routine engineers who comprise the relevant technical communities.

Historically, the legal protection of know-how – at least in common law countries – reflects the community based character of innovation and its dependence on shared information and on access to the information commons that is the heritage of the community as a whole. The legal protection of know-how 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 their contribution from the public domain by means of exclusive property rights. In other words, 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.”²⁵ Or, as Professor Stedman once phrased it, he who generates know-how owns a “disappearing property right.”²⁶

(2) *Solving the Problem*

Consistent with the general tenor of this chapter, we believe that present-day applications of know-how to industry could benefit most from a modified liability rule or what we have called a “compensatory liability regime.” This is the one known regime that can provide the benefit-sharing outcomes desired by those who champion the rights of indigenous peoples without impoverishing the public domain or creating barriers to entry.

Obviously, because traditional know-how has, by definition, been around for a very long time, we must adapt the CLR concept to factual realities in order to achieve specific policy outcomes. Here the first and most crucial step is to determine three distinct stages in which traditional know-how might attract some degree of protection, and to differentiate the modalities of protection accordingly. The first, most primitive state in which traditional know-how appears is in the raw form in which it has been held by its indigenous providers, either in absolute or relative secrecy, or perhaps in a geographically delineated public domain. The second state of

²⁵ LADAS (1975).

²⁶ Stedman, *Trade Secrets*, OHIO STATE LAW J. ____ (196_).

relevant consideration is the extent to which that same know-how is or is not available for public scientific research. The third state, and the one that normally attracts the most attention, arises when either the indigenous providers or some external entrepreneur decides to invest in a commercial application of the knowledge in question.

So long as the traditional know-how is held in its raw or primitive state, there is little room for formal intellectual property protection. In a sense, any claim for compensation here arises either from a violation of the relative secrecy in which the know-how was kept or under a theory of unjust enrichment, which in effect converts the status of inchoate know-how to a paying public domain. The Convention on Biodiversity provides some legal foundation to support just such a claim; local legislation may enact entitlements sounding in unjust enrichment; and there is a pattern of customary practice forming to support such claims against foreign investors. However, this strategy lies beyond the scope of this chapter.

When, instead, the indigenous providers take some formal action to make their traditional know-how available for commercial exploitation, then it becomes feasible to remove it from a true public domain and temporarily transfer it to a research commons, where it would become protected by a compensatory liability regime along the lines discussed earlier in this paper. Under such a regime, the indigenous providers should possess a clear entitlement to compensation for all commercial applications of their traditional know-how during a specified period of time. The duration of protection could be considerably longer than we envision for present-day technical innovation, in view of the eleemosynary goals at stake and the slow accretion of technical knowledge over time. By the same token, the royalty rates could be

slightly higher than those we envision for present-day small-scale innovators, for much the same reason, and use of the *Georgia Pacific* factors mentioned earlier might be especially appropriate in certain cases. However, no entrepreneur who invested in any single commercial application could prevent other entrepreneurs from investing in follow-on applications, and all investors would owe compensatory tithes to the indigenous originators and, where applicable, to those entrepreneurs whose improvements were borrowed for further follow-on applications.

A compensatory liability regime along these lines will overcome the investors' risks of market failure without impeding follow-on applications, without erecting barriers to entry, and without impoverishing the public domain. It represents a new and dynamic form of "paying public domain" if you will, adapted to commercial applications of technical knowledge. However, this adaptation is not perpetual, and should not last too long.

In other words, we are seeking to identify a specific point in time when the conversion of traditional knowledge from inchoate public domain status to a temporary paying commons could induce more social benefits than costs. Ideally, this would entail some community decision to make the know-how available to commercial investment. Otherwise, without some positive decision to "go public," the community simply relies on secrecy, on laws regulating access to traditional knowledge and genetic resources, and principles of unjust enrichment, but not on intellectual property protection as such.²⁷

In all cases, uses of the protected technical knowledge for nonprofit or public research

²⁷ Some additional provisions may become necessary to protect the database housing specific collections of information or data against wholesale appropriation. See J. H. Reichman, *Database Protection in a Global Economy* (2002).

purposes must be preserved either by law or by appropriate contractual templates that ensure access to and use of the relevant information for such purposes.²⁸ This availability for public research purposes further recognizes the public domain status of traditional knowledge in its inchoate state, and alleviates the social costs of temporarily transferring it to a paying commons. By the same token, if the public research results lead to new commercial applications that are not patentable, they should likewise become subject to the compensatory liability regime, with benefits to be shared with the indigenous providers.

As discussed earlier in this article, a collection society would be needed to implement a compensatory liability regime, and some administrative considerations are further discussed below in connection with cultural industries that exploit traditional designs. Here, in the context of industrial property, it is important to recognize that some applications of traditional know-how would have to be transferred under blanket licenses that were based on authorizing a specific sector or group to make use of a specific application in return for a negotiated payment schedule. For example, medical treatments would almost certainly require blanket licenses based on estimated values because payments could not be directly recouped from patients. This is no more difficult to arrange than the blanket licenses used for public performances of music and for photocopying in the United States. However, rates should reflect the reality of an entitlement by which the innovative community possesses no power to exclude while the user community possesses no power to use without compensation.

While the distribution of royalties among indigenous providers poses well-known

²⁸ See Reichman & Uhlir, *A Contractually Reconstructed Research Commons* (2003).

difficulties for which we have nothing new to add, it must be stressed that the collection of royalties under the automatic licenses of a compensatory liability regime is a separate and different issue. Until such royalties are collected under enabling local legislation there is no distribution problem. Any problems of distribution should not therefore impede early collection of royalties, which can be held in trust for the appropriate beneficiaries once these are determined. Care must be taken to keep transaction costs low – in the manner of the Harry Fox licenses in the United States – lest administrators siphon off the benefits at the expense of indigenous providers.

While states that protect applications of traditional know-how under domestic regimes of compensatory liability cannot impose such regimes on foreign countries, neither can foreign countries prevent states from adopting such regimes. The existence of such regimes in local laws then supports demands for their recognition at the international levels. At the same time, developing countries must probably grant national treatment to foreigners under one interpretation of a recent WTO Appellate Body decision.

Developing countries should use these regimes and the recognition of rights in traditional knowledge abroad as bargaining chips within the larger framework of “Bargaining Around the TRIPS Agreement.”²⁹ In this connection international recognition could eventually be achieved via anti-misappropriation rules anchored in article 10*bis* of the Paris Convention (*cf.* TRIPS art 39) or under a specific treaty, perhaps one modeled on the Geneva Phonograms Convention of 1975. However, care must be taken to avoid bad bargains. For example any deal that required

²⁹ Reichman & Lange (1998).

developing countries to recognize the European Union's perpetual exclusive property right in databases would cost developing countries far more than any regime of know-how protection could possibly yield. By the same token, a compensatory liability regime for applications of know-how to industry can provide a workable alternative model for database protection that could benefit all participating countries.³⁰

b. Cultural Artifacts Not Otherwise Covered by Copyright Laws

The question of protecting cultural artifacts, especially those generated by indigenous populations, raises many difficult questions, but two specific issues must be kept separate. One is the status of the artifact in its original, pure or traditional condition. Another is the status of modern applications of traditional artifacts to derivative or follow on products.

The two situations arise, for example, in a country like India, which aims to promote its design industries. These industries make use of traditional designs either in their pure state or in modern applications.

The status of the pure traditional design poses difficult problems because it will probably have entered the public domain. Whether access to and use of the contents of this domain should be limited in the interest of compensating tribal or ethnic originators of these designs, or their descendants, raises complex policy issues beyond the scope of this article, which ultimately should be resolved in international trade agreements. Clearly, the integrity of the design, the origin of its authentic producers, and the authenticity of their production can all be guaranteed by various means already known to intellectual property law. But can any thing else be done when

³⁰ See further *infra* text accompanying notes ____.

industrial use is made of the pure traditional designs without destroying the public domain?

The answer is yes, in that a kind of “paying public domain” right can be instituted if desired on other grounds, and this would effectively institute a liability regime. Indeed, such a regime, if adopted, should require a formal point of initiation – as, for example, a specific date from which the tribe or state declares its intention to collect under a paying public domain apparatus, – and the period of liability should then have a specific endpoint, after which the pure design returns to a true public domain status.

If it becomes politically expedient to afford traditional designs some protection for trade reasons (in order to bolster developing countries’ stake in the intellectual property system), then a liability rule is always a better solution than some new exclusive right. A liability rule maintains access and prevents holdouts against uses, except perhaps certain uses the state wishes to outlaw. But it merely suspends the gratis use of a true public domain during a period of compensatory use in a temporary paying commons. While this relocation necessarily imposes some deadweight loss on some potential consumers, these might be offset by new incentives to exploit old designs.

This solution would not solve the unauthorized foreign use problem unless a treaty eventually recognized a paying public domain mechanism as between participating countries. But it would afford a basis for negotiating such a treaty, which is not possible as matters stand.

A compensatory liability solution is less contentious with respect to present-day applications of traditional designs, which modernize, update or otherwise build on those designs. Here the interest – as in all design laws – is to stimulate the more recent investment without

impeding access to the underlying traditional design, which we assume to reside in the public domain (or a paying public domain as described above). Here a liability rule has all the advantages previously listed in regard to utility models and few of the disadvantages familiar from design laws (especially transaction costs). On the domestic front, we cannot see any reason to prefer sui generis design laws, which have never worked anywhere despite 200 years of experimentation, to a compensatory liability rule, which has never been given a chance to work in this area despite partial incorporation into British law in 1988.³¹

The one complication is that the TRIPS Agreement requires that states provide foreigners from states members of the World Trade Organization with a sui generis design law built on exclusive property rights. This is a nuisance, and it illustrates where the TRIPS delegates wandered into areas that were not ripe for consensus. But the answer is that India or the developing countries should simply make their existing design protection laws available to foreigners. States remain free to provide their nationals with different treatment, and if the compensatory liability regime turns out to be better than traditional design laws, then it can be opened to foreigners who request it under the principle of national treatment. By the same token, Indian exporters cannot be denied national treatment under foreign design laws merely because they are entitled only to compensatory liability rules at home.³² That follows under a recent WTO Appellate Body decision.

³¹ There is also a two year unregistered design right in the E.U., which moves towards a liability rule against slavish imitation.

³² For present purposes, I ignore the Berne Convention and assume that the WTO's Appellate Body's decision on national treatment will apply.

As a result, an Indian designer can have the best of both worlds, compensatory liability rules at home and exclusive design rights abroad, assuming that a compensatory liability regime is better, as we do. The benefits are that traditional designs would remain either in the public domain or in a paying public domain; new applications of those designs could not be slavishly duplicated for a period of time; but these new applications could not preclude others from fairly competing with new applications of their own based on the underlying traditional design or based on protected improvements for which compensation must be paid over a specified period of time.

Some have objected that such a law would pose heavy administrative burdens on developing countries, and 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 lengthy period of protection, rather than the relatively short lead-time period we prefer for small-scale innovation.³³

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 over a longer period). Because there is no injunction, and the second comer remains free to borrow the originator's innovation for follow-on purposes, the need to involve the courts is minimal. At bottom, the parties have an accounting transaction, which presents a problem of collection and verification, but this should not normally entail a judicial process. In

³³ See letter from Sybelle Schlatter, *supra* note ____.

the United States, where there is a liability regime within the copyright law for musical works or sound recordings, a voluntary collection society (the Harry Fox agency) manages some 200,000 voluntary licenses a year.

It would be possible to refine a pure liability rule by instituting a one or two year blocking period, during which no unauthorized follow-on application could be made without permission. This would add to the legal transaction costs and would also strengthen the incentive effect. But it is not clear that this refinement is necessary in developing countries that experiment with a small-scale innovation law based on compensatory principles.

c. Database Protection Laws

The controversy surrounding the legal protection of databases, which was temporarily removed from the international intellectual property agenda in 1996, will soon return to the forefront of attention. A new database protection bill is about to be introduced in the United States, which endorses a different approach from that of the European Union. The latter adopted a Directive in 1996, which imposes one of the strongest exclusive rights ever known on the most suspect subject category ever brought within the ambit of worldwide intellectual property protection for a potentially perpetual period of time. The latest U.S. approach, while formally sounding in unfair competition law rather than exclusive rights as such, could similarly provide very strong protection against both wholesale copying and follow-on applications of collections of information for a potentially unlimited period of time.

The complexities of database protection in general and the harms it could inflict on

innovation everywhere cannot be examined in this chapter.³⁴ What remains clear is that immense pressures will be put on developing countries to accommodate one of these solutions lest local free riding subvert the database protection policies of the E.U. and eventually the U.S.

Professor Reichman has elsewhere explained why developing countries should consider responding to these pressures in terms of a rule against wholesale duplication modeled on the Geneva Phonograms Convention of 1975.³⁵ Here instead we call attention to the fact that the great unsolved problems arising from the database protection controversy pertain to follow-on applications and to the prevalence of sole source providers in the database industry. Under both the E.U. and latest U.S. proposals, follow-on applications will require licensed authorization by originators whose collections will become progressively larger and more comprehensive over time. This creeping glacial effect only reinforces the problem of sole source providers generally, and it will both retard the pace of follow-on applications and elevate the costs of inputs across the entire innovation based economy, including both the theoretical and applied sciences.

What lobbyists in both the European Union and the United States have so far prevented is any serious consideration of breaking the problem open by enacting a compensatory liability regime for follow-on applications valid for a reasonable period of time. This regime would ensure that value-adding providers could not free ride on pre-existing collections of data; but it would also ensure that those originators could not impede value-adding uses by second comers who paid their statutory tithes.

³⁴ See, e.g., Jane Ginsburg (2001); J. H. Reichman, *Database Protection in a Global Economy* (2002).

³⁵ See *supra* note ____.

By the same token, a compensatory liability regime solves the sole source problem, because value-adding competitors can always enter the market with investments of their own, regardless of the first comer's market power. They could not, however, free ride on the originator's prior investments, and they could not prevent those same originators from adding value of their own in order to remain competitive in related markets, either by independent new investment or by paying compensatory tithes to borrow some of the value-adding data back from second comers.

The end result would be a more competitive worldwide database industry, one not dominated by a handful of firms as at present. If and when database protection reaches the legislative agenda of developing countries, they will have a unique opportunity to introduce and experiment with these liability principles, which hardball lobbying in the E.U. and U.S. have otherwise derailed.

V. Conclusion

This article has provided a law and economics primer to support proposals for the use of compensatory liability principles to stimulate investment in small-scale or subpatentable innovation. While all countries could benefit from laws embodying these principles, 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, 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.

A “compensatory liability regime” along these lines would entitle innovators to three distinct forms of relief: 1) protection against wholesale duplication, 2) reasonable compensation for follow-on applications, and 3) a right to borrow back the improver’s own improvements for purposes of further innovation in return for similar compensatory payments. There is good reason to believe that such schemes can generate private collection agencies to bargain around the liability rules and keep transaction costs low. Such regimes should stimulate investments in small-scale innovation without obstructing follow-on applications, without creating barriers to entry, and without impoverishing the research commons or the public domain, as occurs under hybrid exclusive property rights in developed countries.

To the extent that developing countries opted 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 to stimulate small-scale innovation within the capabilities of local producers that would protect investment while facilitating exchange and spillovers of knowledge in follow-on applications and in other ways that avoid depleting the public domain. Second, it could help to solve thorny problems of protecting cultural resources and traditional know-how, including even therapeutic and biological know-how, without removing these controversial subject matters from a commons accessible to all. Such a regime would, in short, help to preserve the natural open source character of the community-generated know-how and artifacts

in question.

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

Meanwhile, policymakers in developing countries should understand that our proposals are unfamiliar to most intellectual property experts in developed countries, who tend to dismiss liability rules out of hand either from ignorance or other reasons. Developing countries cannot therefore pursue this line of self-help strategy without concentrating proper intellectual and other resources on learning and experimentation. At the same time, the risks remain low because liability rules inherently generate lower social costs than exclusive rights; hence they tend to do little or no harm, except allegedly to under stimulate investment (a prospect which we believe can be empirically demonstrated to be false).

Moreover, governments that experiment with liability rules can continue to meet international obligations by offering foreigners the minimum exclusive rights, where required (e.g., in design protection laws), while maintaining a parallel liability rule for the salient matter

in the local economy. By the same token, local innovators operating under liability rules cannot be denied access to exclusive property rights abroad under prevailing treaty rules.³⁶

³⁶ These rules also require countries adopting liability rules to make them available to foreigners who seek their protection in the name of national treatment.