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IP Law Center, Golden Gate University School of Law

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MORAL RIGHTS: PRINCIPLES, PRACTICE AND NEW TECHNOLOGY, by **Mira T. Sundara Rajan**. Oxford University Press, 2011. 572 pp. Paperback \$150

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The stated purpose of Sundara Rajan's book on moral rights is twofold, namely to establish what is meant by moral rights as a global phenomenon and to examine moral rights issues in view of new technological developments. She states right up front that she approaches the subject with a clear goal, which is "to make a case for moral rights as an essential weapon in the fight to preserve human creativity in the Digital Age" (p.29). The text is well written and easy to read, perhaps because it is more a collection of interesting vignettes rather than a pedantic scholarly narrative. However, despite the word "practice" in the title, practitioners should not expect the book to be a comprehensive reference, as the cases selected do not necessarily reflect the entire body of case law on the subject.

In terms of structure, the book is divided into ten self-contained chapters, which is advantageous for readers who want to pick and choose just one or two chapters. The first chapter (pp.1-30) provides an introduction to the basic notions of moral rights law and explains why moral rights are ever more relevant in the digital age, but it does not really explain in what sense moral rights differ from economic rights when it comes to the challenges of the digital environment, especially as far as enforcement issues are concerned. Similarly, the second half of the book, which is meant to address the current and future development of moral rights in view of technological change, dedicates almost as much space to regular copyright law as it does to moral rights.

The second chapter (pp.31-113) essentially outlines the law of moral rights in France, Germany, and the United Kingdom, and gives some background on the historical development of the doctrine. Sundara Rajan begins each country description with brief discussions of the very early stages of the doctrine's development, but then rather abruptly jumps to overviews of current moral rights law in these countries, basically leaving gaps of up to 200 years in the case of France and the United Kingdom. In addition, the legal overviews are at times rather cursory and suffer from the fact that they focus heavily on statutory rules, thereby disregarding to a large extent the sometimes rich and complex case law, even though it is critically important for a proper understanding of delicate issues such as waivers. In the section on the United Kingdom, Sundara Rajan claims that moral rights were recognized in the 1769 landmark case of *Millar v. Taylor* and then rejected for good in 1775 in *Donaldson v. Beckett*. Although it is true that the non-pecuniary interests that later became the justification for moral rights were, in retrospect, neatly outlined by Lord Mansfield in *Millar*,¹ he neither had a clear theory of moral rights in the modern sense nor did the facts of these cases involve a moral rights scenario. Both *Millar* and *Donaldson* were about common law copyright protection in the context of what today would be a straightforward copyright infringement case. Saying that *Millar* recognized moral rights is as much an exaggeration as saying that *Donaldson* rejected moral rights. Sundara Rajan seems to acknowledge this herself in the fourth chapter, explaining that *Donaldson* was "essentially a response, not to the moral rights idea, but to a different type of claim" (p.241), but this statement should have been included in the discussion of these cases in the second chapter in order to avoid misunderstandings.

The third chapter (pp.115-225) continues to provide overviews of different moral rights regimes, in particular those of the United States, Australia, Canada, India, Japan, and Russia. This is perhaps where Sundara Rajan makes her most valuable contribution to the study of moral rights by going beyond the often discussed jurisdictions of Western Europe and the United States. Indeed, one of the best segments of the book is the subchapter on India (pp.163-81), precisely because the author provides quite a bit more background and detail than she does about other countries. The pages describing the many transformations of Russian moral rights law are also illuminating (pp.188-222).

In the fourth chapter (pp.227-81), Sundara Rajan reviews the status of moral rights in the most important international copyright treaties, in particular the Berne Convention, the TRIPS Agreement, the WIPO Copyright Treaty, and the WIPO Performances and Phonograms Treaty. Occasionally, it would

have been helpful if some of the claims had been better supported by evidence, for example the claim that 19th century authors such as Victor Hugo “certainly recognized the idea of moral rights and were familiar with its significance as a legal concept in French and Continental law” (p.243), or that the presence of moral rights in the 1928 Berne Convention “was clearly a product of their efforts” (p.243), which is not at all that clear.² Moreover, the statement that the WIPO Copyright Treaty “makes no reference whatsoever to moral rights” (p.259) is difficult to understand given the explicit reference in Article 1(4) to the Berne Convention, which obviously includes a moral rights provision in Article 6bis. Perhaps the most interesting topic of this chapter is the question of why moral rights for performers were included in the WIPO Performances and Phonograms Treaty, the answer to which is not self-evident given the traditionally hostile attitude of the United States, its primary driver, towards moral rights generally. Unfortunately, the book does not go beyond suggesting that an extra layer of rights might benefit the music industry indirectly (pp.267-68). Sundara Rajan concludes the chapter with a call for further international harmonization in order to adapt moral rights to technological change, but she wisely warns that an international legislative framework will not be enough and that “the solutions will need to address long-term problems, deeply ingrained legal biases, and deep-seated cultural prejudices” (p.280).

The fifth chapter (pp.283-319) marks the beginning of the second part of the book, which is dedicated to moral rights in the digital context. In particular, Sundara Rajan discusses moral rights as they apply to computer programs as “literary works” and reviews different national approaches that tend to be somewhat restrictive even in countries in which moral rights are generally accepted. She concludes that “the legal imperative to treat computer programs as literary works may be mistaken” (p.297) and recommends the exemption of functional uses from moral rights protection by limiting moral rights to the protection of honor and reputation. In addition, she argues in favor of exceptions to allow for the development of new features or programs, without, however, giving concrete details on how such an exemption would have to be crafted. Sundara Rajan also reiterates the importance of applying moral rights in the corporate context on the basis of a human rights argument and with the goal of establishing “a more humane environment in the software industry” (p.301). This line of thought is a distinctive feature of the book, even though there is no apparent reason to recast moral rights protection in human rights language in order to make the case for applying moral rights in a corporate context. A purely utilitarian rationale invoking the importance of attribution as an economic value would probably be more effective in practice. The motion picture and videogame

industries are good examples of how complex attribution systems can develop even in the absence of statutory moral rights protection as an important element of doing business, selecting talent, and building careers.

The sixth chapter (pp.321-73) addresses moral rights and digital issues in music, again on the basis of an understanding of moral rights as “human rights of authors and artists” (p.327). By contrast, however, the chapter’s primary focus is on economic rights in the context of sampling, mixing, file-sharing, legal downloading, and the global licensing of music through ISPs. From the point of view of moral rights, the most interesting segments in this chapter relate to whether splitting albums, format shifting, and the use of music to create ringtones violate moral rights, the latter of which is explored through the lens of a pioneering decision by the German Supreme Court. As part of her recommendations, Sundara Rajan reiterates that moral rights should also be protected in the digital context but cautions that they should be “subject to certain modifications which are appropriate to this environment” (p.371). In her view, this means that the right of attribution should be “exercised with technological necessity in mind” and that the right of integrity should be “restricted to situations of damage to reputation” (p.371). The latter is, of course, exactly what the minimum standard of the Berne Convention is all about.

Moral rights in film are the subject matter of the seventh chapter (pp.375-435). The fact that motion pictures cannot be created without the collaboration of a large number of people has always been a challenge for copyright law. This is no different for moral rights. Accordingly, the focus of this chapter is placed on the definition of authorship in moral rights law, which is indeed an important topic given that the exercise of these rights depends on establishing authorship. Sundara Rajan’s review of the laws of various countries shows that there are vastly different approaches to authorship across the globe. A large portion of this chapter is dedicated to India, which is particularly useful, because it brings lesser-known, yet very interesting cases to the attention of a broader audience. As part of her recommendations, she concludes that the moral rights of disclosure, attribution, and integrity are “appropriate for film”, but “should be tailored to the practical requirements of the medium” (p.433). Sundara Rajan also observes that moral rights have not chilled the film industry in those countries that do have them, and that the defensive position of the United States is “quite anomalous” in this respect (p.434), potentially generating “national embarrassment” if “Hollywood’s neglect of moral rights translates into American disregard for America’s own filmmakers” who receive better protection abroad than at home (p.434). Consequently, she concludes this

chapter with a call for the United States not to be left behind, as there is “little need for the American film industry to be fearful” (p.435).

The eighth chapter (pp.437-85) returns to more standard turf by addressing moral rights in the visual arts. Sundara Rajan aptly notes that, in this area, moral rights attract ready sympathy, receive stronger protection than other kinds of works, and are recognized even where the general recognition of moral rights is in doubt, such as in the United States. She also observes that “moral rights of visual artists often turn upon a special approach to the interpretation of the moral right of integrity in the visual context” (p.439), which is indeed the case, given that some countries tend to extend the right of integrity into the realm of preservation of cultural heritage, thereby extending the traditionally individualist approach to moral rights into the social sphere. In this context, the book briefly discusses the Visual Artists Rights Act of 1990 and the special provisions regarding the visual arts in Canadian moral rights law, and further includes short reviews of illustrative international cases, such as the *Calatrava* case in Spain. A recurring theme in this and previous chapters is the author’s culturally sensitive critique of copyright law and Western moral rights regimes as being based upon a romantic notion of authorship that is exaggerated and often inadequate to deal with the needs for attribution and integrity of Aboriginal communities. Accordingly, in the context of the Australian *Yumbulul* case, Sundara Rajan explores the idea of an “Aboriginal moral right that would be vested in the community concerned” and that may also be a “possible solution to the dangers of cultural appropriation” (p.454), but she also openly acknowledges the difficulties in applying such a right in practice. A large part of this chapter is devoted to conceptualizing moral rights as a bridge between intellectual property rights and the protection of cultural heritage, using Indian moral rights cases as a conduit for discussion.

The ninth chapter (pp.487-532) addresses moral rights in the context of what Sundara Rajan calls “open access”. It includes an analysis of creative commons licenses, which put a premium on attribution and integrity, but, contrary to what the book claims, do not provide an “alternative to copyright protection” (p.497). The entire idea of creative commons is to work within the copyright system and use it to enforce its licensing terms when necessary, even if the standard terms of creative commons licenses happen to be more permissive than others. Sundara Rajan also criticizes the creative commons approach of enabling free access while retaining a certain level of authorial control by arguing that authors cannot make a living giving away their works for free. The latter may be true in the abstract, but the argument overlooks that the creative commons movement does not force

anybody to make his or her work available for free. It simply provides licensing options for those who want to disseminate their works without being paid while providing users with legal certainty about the terms of the applicable copyright license. In the balance, this passage creates a surprising contrast in attitude to the first 500 pages of the book, which are almost exclusively concerned with the non-economic interests of authors on the basis of moral rights understood as human rights. Following a few words about the theoretical relevance of moral rights in the context of the free software movement and large-scale collaborative undertakings of the Wikipedia type, Sundara Rajan turns to the Google Book project. This is an unusual choice for a book on moral rights, given that moral rights are the least of Google's copyright problems, with the exception perhaps of the question of whether displaying "snippets" of texts violates the author's moral right of integrity. Unfortunately, however, this issue is not explored in depth. Analytically, the claim that the moral right of disclosure is implicated if a book is included in Google's archives (p.524) is also strange, because this right is typically understood to be limited to the *first* disclosure, and such disclosure must have happened long before Google incorporated the book in its digital archive.

In the tenth chapter (pp.533-35), Sundara Rajan concludes the book with two messages that are keyed to her two stated purposes of defining moral rights and exploring their application in the digital environment. First, she finds that moral rights are a "robust doctrine" that is "widely accepted in countries representing diverse traditions" and that consists of increasingly different approaches also throughout common law countries (p.533). Second, she maintains that moral rights are ever more needed in the digital environment, because they "protect knowledge" and "turn social attention to the human side of culture" (p.535).

The book is definitely an interesting read. Those who are not familiar with moral rights or copyright law may want to read it as a whole, as a collection of stimulating issues, not just regarding moral rights, but also regarding economic rights. Scholars in the field who are already well-read on the doctrine of moral rights and its history can still benefit by focusing on Sundara Rajan's overview of moral rights regimes that are not as well known in the Western hemisphere, in particular the previously under-explored countries of Russia and India.

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- ¹ See also Cyril P. Rigamonti, Deconstructing Moral Rights, 47 Harv. Int'l L.J. 353, 381-82 (2006).
- ² For a different account on why moral rights were inserted into the Berne Convention during the 1928 revision conference, see Cyril P. Rigamonti, The Conceptual Transformation of Moral Rights, 55 Am. J. Comp. L. 67, 111-119 (2007).

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CLEAN TECH INTELLECTUAL PROPERTY: ECO-MARKS, GREEN PATENTS, AND GREEN INNOVATION, by **Eric L. Lane**. Oxford University Press, 2011. 276 pp. Paperback \$185

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Eric Lane seeks to explain the title of his book, CLEAN TECH INTELLECTUAL PROPERTY: ECO-MARKS, GREEN PATENTS, AND GREEN INNOVATION, by justifying the categories of clean tech and clean tech intellectual property (IP). But experts sum it up, they define clean tech by its goals and intentions, i.e., what it does instead of what it is: [C]lean tech is marked by its diversity but unified by its purpose. That purpose, of course, is to benefit the environment and mitigate climate change by “generating energy through renewable sources, boosting energy efficiency, and reducing greenhouse gas emissions” (p.1).

Given this broad set of goals for clean tech, and the broader set of technologies and practices that can promote or hinder those goals, Lane addresses a similarly broad set of IP topics, which he collectively labels “eco-marks”, “green patents”, and “green IP” (p.1). Green IP is “characterized by clean tech’s unique features, which tend to make certain issues more prevalent in clean tech IP than in IP focused on other industries” (p.2). The specific issues that Lane addresses are: (1) patent prosecution, portfolios and licensing; (2) clean tech patent litigation (including assertions by non-practicing entities, who are sometimes pejoratively referred to—but not by Lane—as patent “trolls”); (3) green branding, greenwashing, and enforcement of eco-marks; and (4) policies, initiatives, and debates over how best to promote development (and patenting) of clean tech (pp.ix-xii). Of course, these are only a few of the topics that Lane could have addressed, which include but are not limited to: (5) different approaches to promoting innovation, from reliance on private enterprise and markets (and competition regulation) to government procurement to university-based development to commons-based approaches; (6) IP and international trade law concerns; (7) copyrights and

digital rights (including interoperability concerns, anti-circumvention measures, and limits on reverse engineering); (8) data protection and access; and (9) information privacy (particularly with regard to smart grid and other innovative technologies).¹

Fortunately, and notwithstanding the typical promotional over-reaching (the front inside cover calls the book the “first comprehensive review of intellectual property and clean technology”), all clean tech IP is not Lane’s focus. Rather, and much more manageably, Lane focuses on the issues of greatest importance to his self-proclaimed specialty (and thus to his clientele, and to others who are similarly situated), i.e., “helping technology companies build, grow, and manage their patent and trademark portfolios, with a particular focus on renewable energy and other areas of clean technology” (“About the Author”). Lane thus bases his book on personal experience and additional information gained from interviews with technology developers (“Acknowledgements”). Consequently, the book’s scope is manageable, its focus is practical, its knowledge-base is real, and it is well-documented with concrete examples. Although the book is partially adapted from law review articles typically read by academics (“Acknowledgements”), the book’s audience appears to be principally business people who need an exposure to these legal issues and thus may become more interested in pursuing green tech IP, the general public, and non-IP lawyers who may not have encountered the area. IP lawyers and IP academics may still be interested in reading about the topics with which they are not already familiar with or assigning the book to students. As an introduction to the issues, it does a terrific job. As an explanation of how to actually make the required business and legal decisions it may be seriously lacking.

As Lane himself notes “[o]ne of the themes this book explores is the importance of green patents to small clean tech innovators, entrepreneurs, and startups” (p.4). Lane’s theme makes eminent sense, the book fulfills the promise of this theme more than adequately. Recent survey evidence has demonstrated that entrepreneurs—particularly venture-financed startups—may rely more on patents than do other inventors, businesses, and related institutions:

While venture-backed startup executives rate the incentive value [of patents] more highly than do those at [Dunn & Bradstreet-sampled] companies, in no category are patents reported to provide even a “moderate” incentive for any of the four entrepreneurial activities about which we queried.²

Given what may be irrational assumptions and requirements of venture capitalists, there will continue to be a need (and probably an increasing need) for the patenting, licensing, and litigation strategies that Lane discusses. Given the existing and anticipated expansion of clean technologies and services and of the businesses that will supply them, the same is true for the importance of developing and regulating eco-marks, certification marks, and other branding strategies.

Before getting to the meat of those discussions, it bears noting that although Lane's initial focus on terminology may seem somewhat defensive for a book published in 2011, when clean tech and intellectual property measures relating to them are actually well established, his purpose in doing so is highly salutary. Many (particularly the business and general public audience that his book appears directed at) may not understand what these categories cover. Further, because Lane's basic premise is that clean tech IP is different from other IP areas, definition is critical. Lane apparently believes clean tech IP is different because of three central features: (1) the diversity of technologies; (2) its reliance on R&D developed from prior green technology research and computers and semiconductors; and, particularly, (3) its "moral underpinning as a vehicle for the greater good" (pp.2-3). Given this premise, Lane argues that "green IP issues pose unique challenges and raise profound legal and moral questions about the nature of innovation, the best way to facilitate transfer and deployment of clean technologies, and how to protect green consumers" (p.3).

At one level, I doubt the validity of Lane's premise regarding the difference of clean tech IP from other IP as it is stated. Although clean tech IP does address a wide variety of technologies and relies on prior R&D, many complex and complementary fields of technology in history have been charged with social development and other moral premises, particularly development of medicines and other treatments for neglected diseases. However, I ultimately agree with Lane that the magnitude of the current technology needs and nature of the climate concerns add a unique layer of moral imperative to the category of "clean tech" that may not have existed with the development of many earlier technologies, such as steam engines, railroads, computers, or biotechnology. Given that moral imperative, the book not only is timely but also is very much welcome as a practical guide to developing and managing the technologies that are needed. This is particularly important in light of the debatable choice made in the context of international climate change negotiations to rely on the patent system and private markets to develop and disseminate the needed mitigation and adaptation technologies.³ And if the book also helps to promote his legal practice, Lane will have earned it.

As Lane notes, “many of today’s green tech inventions are derivative and incremental improvements upon prior developments in clean tech or borrow from other industries” (p.15), which raises questions about their patentability under traditional criteria of novelty (including inherency) and non-obviousness, which Lane briefly reviews (pp.15-20). This assumption of incremental innovation is important to beliefs that the patent system is well suited to assuring access to climate change technologies. For incremental innovations, existing non-patented technologies may be substitutes that impose price constraints. In contrast, for breakthrough technologies, such as a major development in carbon capture from coal-fired electric utilities, worldwide pressures to override patent rights will likely arise for measures such as outright exclusion from patentable subject matter, compulsory licensing, or competition law-based remedies.⁴ Lane then describes numerous patent drafting strategies to match the doctrinal concerns, providing a concrete example of silent, swift wind turbine technology (pp.20-29). These strategies, of course, are also technology and business development strategies, as a “creative patent attorney will work with inventors to tease out” whatever may be patentable (p.21) and thus whatever may be worth patenting because it presents a useful product or process that a patent owner would seek to license.

Similarly, Lane describes the development of patent portfolios for wind-turbine and municipal waste, biomass, or coal gasification technologies (pp.30-57), noting that the size and components of a successful portfolio will depend on the innovation space and on capturing the “key innovations that support a company’s business strategy, which often are those that differentiate the company from its competitors” (p.57). While no doubt accurate at this level of generality, Lane both highlights the importance of those features and fails to supply useful guidance for how business people or lawyers can effectively identify those features for themselves. However, it would be unfair to expect this from a book pitched for general interest, and even a treatise may not be sufficient to convey the practical knowledge required to make such judgments. But it emphasizes that the book is (and perhaps only could be) a basic introduction to the subject.

To conclude this section of his book, Lane discusses the important topic of technology transfer and licensing. He focuses on intellectual property licensing as both an out-licensing strategy that can overcome barriers to entry in product markets, create business efficiencies, and allow rapid scaling up of production and market access (or facilitate joint marketing arrangements), or that may avoid production entirely by becoming a non-practicing entity licensor in all or only in secondary markets (pp.59-67, 70-

80). Lane also discusses an in-licensing strategy (pp.68-70) that can avoid the need “to develop products from scratch” (p.58).

As Lane notes, because of the high costs of patent litigation, clean tech court disputes involve multiple technologies (from wind power to efficient light emitting diodes, LEDs, to Toyota Prius hybrids) that have been scaled, are widely commercialized, and are profitable (pp.83-85). He provides detailed descriptions of three such disputes (involving wind, LEDs, and biofuels), and notes some of the differences between litigating in federal district court and in the International Trade Commission, the strategic use of reexamination, and the frequent goal of litigating to promote licensing rather than to protect market share (which is sometimes done even though it may not make economic sense given the high costs of litigation) (pp.86-115). Lane then turns to litigation by non-practicing entities (NPEs), this time noting limits on injunctive relief (and consequent resort again to the ITC) and provision of ongoing royalties (which effectively impose a compulsory patent license at the royalty amounts set by the judge), and notes the development of patent licensing companies that bring suit as NPEs, by inventors of important patents to new technology sectors—such as the smart grid (pp.116-146).

In concluding this section, Lane extrapolates from these discussions to predict future patent litigation in the clean-tech area. Unsurprisingly, he focuses on wind power, LEDs, and hybrid electric (and plug-in and fully electric) vehicles. He also notes, based on market penetration, that solar thermal (solar cell and solar photovoltaic (PV)) technologies are likely to be litigated, as may additional biofuels technologies (e.g., cellulosic ethanol from sources that do not compete with food supplies) (pp.147-150). Although Lane’s predictions are no doubt likely to be correct, they are also obvious. They are also limited to the areas that he focuses on; many other climate-related or otherwise green technologies will achieve scalable results and market sizes and profits that will make patent litigation attractive to existing and entering market participants and NPEs. Thus, other than very well written and documented anecdotes about patent litigation in the sectors described, which may help to educate an audience that does not already know much about patent litigation, it is not clear what value these discussions bring.

Lane opens this section of the book by proclaiming that, “[i]ndeed, we stand at the dawn of the Eco-mark Era—a period in which green branding, advertising environmentally friendly products and services, and touting sustainable business practices will be pervasive and profitable” (p.151). I wholeheartedly agree with this conclusion, but again (at least to me) it

seems obvious. Lane then suggests what may be the value of this section—a discussion not of whether firms will (with increasing frequency) highlight their eco-friendly practices but “how they will do so” (p.151). Accordingly, the first chapter of this section discusses protection of eco-marks, the legal problem of descriptiveness as a barrier to registration, and strategies for overcoming that problem. Lane follows with a discussion of “greenwashing,” which he defines as “making false or misleading claims regarding purportedly environmentally friendly products, services, or practices,” and then concludes the section with a discussion of protection and enforcement of eco-marks, focusing on litigation and its effects on consumers (p.152).

Notably missing from his summary—although not from his actual discussion, which notes in the discussion of green mark registration the example of certification by the US Green Building Council, (p.156) and discusses certification marks explicitly as a good strategy: “[i]f a firm’s core business is affected by green characteristics” (p.162)—is the use of certification marks that identify not the source or origin of goods or services but their purported compliance with certification standards that may help the public to identify eco-friendly goods and services (pp.153-67). Unlike for the earlier patent sections, Lane uses his examples in this section to offer some concrete advice regarding branding strategies to avoid descriptiveness rejections (i.e., adding non-descriptive or arbitrary elements to the mark, disclaiming green terminology and separate use, as required by the registering authority, combining incongruous but related elements, avoiding eco-references in descriptions of goods and services, and (if all else fails) relying on acquired distinctiveness (secondary meaning) or registering on the Supplemental Register until acquired distinctiveness can be shown (pp.156-62).

When discussing greenwashing, Lane delicately notes the market incentives for brand owners to be “tempted to make lazy, unsubstantiated green claims [or even] worse, [for] some businesses [to] try to deceive green-leaning consumers or engage in other forms of eco-mark abuse. . .” (p.168). Since greenwashing, false environmental claims, and inadequate (or inadequate policing of compliance with) certification standards apparently are an endemic and growing problem, Lane himself notes this “disturbing trend,” citing to a study conducted by a marketing organization,⁵ which found all but one of over 1000 self-declared green products to have “displayed some form of greenwash by committing at least one of the [seven] sins” of greenwashing: (1) hidden harmful trade-offs associated with the environmental benefits claimed; (2) lack of proof or substantiation; (3) vague or otherwise unintelligible claims; (4) false labeling (to provide the

impression of a third-party environmental endorsement); (5) environmentally irrelevant claims; (6) the lesser of two evils (when the claim is comparatively true but the overall impact of the product is harmful); and (7) outright fibbing (pp.168-171). In response to perceived widespread greenwashing, public and private responses have emerged (pp.171-73), including the Federal Trade Commission's guidelines for environmental marketing claims,⁶ and various websites that rate the claims and overall environmental records of particular companies.⁷ Of perhaps greater interest, Lane notes actions taken by a public certifying entity (the Department of Energy for the "EnergyStar" program) and by private individuals to seek to impose liability and corrective actions on companies falsely obtaining certifications or making false (or at least deceptive) claims—although he also notes the uncertain ability to successfully litigate such cases and the questionable effectiveness of settlements that so far have been achieved, achieving "mixed results" (pp.176-185). This is perhaps the strongest of Lane's chapters, as its descriptions highlight the tawdry reality and the undeveloped state of the law, although it still leaves the reader wondering how to effectively navigate the field (e.g., describing what will meet the FTC marketing requirements, much less how to effectively avoid—or, for those less morally inclined, skate close to without committing—the seven sins). The reader is left with the impression (which I believe is correct) that law reform is badly needed to make private litigation more effective, to encourage public action to more aggressively police greenwashing (which Lane recommends, p.199), and to adopt laws that will more effectively deter such conduct in the first instance.

This leads Lane to the chapter on enforcement of eco-marks themselves. Here, even when describing standard trademark litigation, Lane fails to provide the general reader with the basic standards (typically, an eight-factor balancing test) for establishing trademark infringement. He jumps instead to the most salient (and typical) factors that result in preliminary injunctions being issued (pp.187-88). Interestingly, Lane also notes one case where the defendant ignored the preliminary injunction and defaulted on appearing to contest the case, resulting in a permanent injunction. This example raises the issue as to whether trademark law is also ineffective in stopping infringing sales of mass produced products from foreign jurisdictions. His other litigation example, as it had not concluded, similarly fails to provide an adequate assessment of "the actual impact on green consumers" (p.191). In contrast, Lane provides an optimistic example of a successful injunction against a false use of a certification mark on biodegradable bags and food containers (pp.192-93). Lane also notes concerns about litigation that, because of failure to reject marks for

descriptiveness, may preclude other companies from using consumer-friendly descriptive terms in their marks, as well as litigation that threatens the use of common, environmentally friendly symbols (like the apple) (pp.194-98).

Lane's final set of chapters address: (1) measures to promote development and diffusion of clean tech by sharing and pooling clean-tech patents (such as GreenXchange and the Eco-Patent Commons), by providing access to green-patent data (such as Europe's Green Patent Database and the Clean Energy Patent Growth Index), and by accelerating green patent applications in the UK, Korea, the US, and other countries (pp.200-226); (2) differing views within the context of the UN Framework Convention on Climate Change (UNFCCC) expressed (largely) by developing countries and the UN Secretariat on the one hand and developed countries on the other over whether the patent system hinders (or helps) clean tech development and diffusion, and (ultimately rejected) proposals to weaken patent rights in regard to climate change technologies (pp.227-236); and (3) examples of significant technology transfer deals (pp.237-48) that "may represent the beginning of a major global diffusion and deployment of clean technologies" (p.202) and which "recognize that green patents are not a problem in addressing climate change, but part of the solution." Again, Lane's descriptions are rich, balanced and accurate, and clearly presented, and he has fairly presented differing views on the benefits or detriments of relying on the patent system to develop and disseminate needed climate change mitigation and adaptation technologies.

Nevertheless, I differ substantively from Lane regarding what appears to be his optimistic view of these developments and of the potential for "clean tech transfer [to] happen irrespective of IP rights" (p.202), at least to the extent that I believe is necessary to adequately address climate change and other pressing environmental concerns. For one thing, he quotes to a study⁸ that concludes that patent rights "cannot possibly be an obstacle for the transfer of climate change technologies" to the poorest countries because they lack patent rights at all (p.248). But this simply disregards the problem that the World Trade Organization Agreement on Trade Related Aspects of Intellectual Property Rights (the "TRIPS Agreement") restricts compulsory licensing for export to other countries.⁹ That restriction, widely recognized to prevent low-cost generic production of medicines for transfer to the poorest countries, was overridden as a result of international pressures,¹⁰ but only for medicines and not in regard to climate change technologies.

Nor does the fact that "global deployment of clean technologies is happening on an ever-increasing scale" or the existence of major deals

between developed countries and business partners “in emerging markets such as Brazil, India, and China” (p.249) indicate that IP rights do not hinder technology transfer. We lack any counterfactual world or good natural examples to prove these claims or to test the alternatives. Even Lane acknowledges that, given the lack of attractive markets and profits, “neither technology sharing mechanisms based on donating or pooling patents nor green patent databases are going to spur diffusion of clean technologies to the poorest nations” (p.216). Nor is it clear that rich countries will willingly pay the high prices to purchase and transfer patented technologies without imposing price constraints through compulsory licensing or government procurement or third-party production authorizations (or take the other actions purportedly required by their international commitments under the UNFCCC and other treaties) to meet the rapidly increasing mitigation and adaptation needs.¹¹

However, I candidly admit that I lack the ability to disprove Lane’s optimism. I agree with Lane’s observation that a comprehensive study to determine if IP rights are more of an incentive or an obstacle to technology transfer may be impossible and would require “empirical patent data, global trade statistics, economic analysis, and scores of interviews with representative from clean tech companies” that currently do not exist (p.236). Further, I believe that these disputes reflect common (and highly polarized) politico-philosophical differences that ultimately are based on fundamental faith in or skepticism towards markets or towards government intervention in them.¹² So although I beg to differ, I offer this alternative perspective not as a criticism of Lane’s optimism but as a caution against un-critical acceptance of it. And we both agree that “[u]ndoubtedly, IP rights will continue to be debated as the UNFCCC talks continue in the years to come” (p.236).

Eric Lane has made a very valuable, extremely readable, and thoroughly enjoyable contribution to the field of clean technology and intellectual property that will help readers who are not already familiar with the topics to understand why these issues matter and to get a very good feel for patent and trademark issues that are raised. Lane’s ability to give the reader practical insights gained from actual experience is the book’s strength, and his clear and accessible discussions make the book very well designed for what appears to be his intended audience—business people, the general public, and non-IP lawyers who may need to know something about the IP law issues. Given that audience, it would be unfair to criticize him for not developing the book further to provide the strategic insights that would benefit the IP lawyers who will actually provide their clients with advice. But I hope he will do so in some format, and thereby supply what seems

most missing from the present book. To do so will likely require developing a treatise rather than a 250-page paperback. But it should pay off even more handsomely both in royalties from grateful IP lawyers and in client development opportunities.

ENDNOTES

¹ See, e.g., RESEARCH HANDBOOK ON INTELLECTUAL PROPERTY AND CLIMATE CHANGE (ed. Joshua D. Sarnoff (Edward Elgar Press, forthcoming 2012) (hereinafter “Research Handbook”).

² See Stuart J.H. Graham, et al., High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey, 24 Berkeley Tech. L.J. 1255, 1285 (2009); Joshua D. Sarnoff, The Patent System and Climate Change, 16 Va. J. L. & Tech. 301, 314-16 (2011) (discussing Graham, et al.).

³ See Sarnoff, *supra* note 3, at 307.

⁴ See, e.g., Sarnoff, *supra* note 3, at 303 & n.5.

⁵ TerraChoice Environmental Marketing, The Seven Sins of Greenwashing: Environmental Claims in Consumer Markets (Apr. 2009), available at <http://sinsofgreewashing.org/findings/greenwashing-report-2009/>.

⁶ See 16 C.F.R. Part 260)

⁷ See, e.g., Greenwashing Index, at www.greenwashingindex.com; Greenwashing the facts, at www.greenwashingthefacts.org/main.asp?page=1184.

⁸ See Copenhagen Economics A/S & The IPR Company ApS, Are IPRs a Barrier to the Transfer of Climate Change Technology? 5 (2009), available at http://trade.ec.europa.eu/doclib/docs/2009/february/tradoc_142371.pdf.

⁹ Agreement on Trade-Related Aspects of Intellectual Property Rights, Art. 31(f), Apr. 15, 1994, 33 I.L.M. 81 (December 1993 text).

¹⁰ World Trade Organization, Ministerial Declaration of 14 November 2001, WT/MIN(01)/DEC/2, 41 I.L.M. 746 (2001), available at www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_trips_e.htm; World Trade Organization, General Council Decision: Implementation of

paragraph 6 of the Doha Declaration on the TRIPS Agreement and public health, WT/L/540 and Corr. 1 (Sept. 1, 2003), available at www.wto.org/english/tratop_e/trips_e/implem_para6_e.htm; World Trade Organization, Amendment of the TRIPS Agreement: Decision of 6 December 2005, WT/L/641 (Dec. 8, 2005), available at www.wto.org/english/tratop_e/trips_e/wtl641_e.htm.

¹¹ See, e.g., Sarnoff, *supra* note 3, at 327-28 (discussing failures of technology transfer obligations under the Montreal Protocol and likely future failures for the UNFCCC) (citing Jayashree Watal, India: The Issue of Technology Transfer in the Context of the Montreal Protocol, in *ACHIEVING OBJECTIVES OF MULTILATERAL ENVIRONMENTAL AGREEMENTS: A PACKAGE OF TRADE MEASURES AND POSITIVE MEASURES*, UNCTAD/ITCD/TED/6, at 45-55 (Jha, Veena and Ulrich Hoffman eds., United Nations 2000)); Surie Moon, Does TRIPS Art. 66.2 Encourage Technology Transfer to the LDCs?: An Analysis of Country Submissions to the TRIPS Council (1999-2007), Policy Brief No.2 December 2008, ICTSD, Geneva, Switzerland, available at <http://ictsd.org/i/publications/37159/> (discussing failures of developed countries to meet technology transfer obligations under the TRIPS Agreement); Overview of IPR Practices for Publicly-funded Technologies, Informal paper, Expert Group on Technology Transfer (2005) (discussing transfer of publicly funded inventions to private entities and reluctance of developing countries to exert leverage over such entities), available at <http://unfccc.int/tteclear/pdf/EGTT/11%20Bonn%202005/IPRandOtherIssuesAssociatedwithPublicly-FundedTech.pdf>.

¹² See *id.* at 306-07, 324.

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COMPLEX COPYRIGHT: MAPPING THE INFORMATION ECOSYSTEM, by **Deborah Tussey**. Ashgate, 2012. 156 pp. Hardback \$104.95

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Why should things be simple? Or put another way, why should we ignore the complexity of things? Professor Tussey, in her engaging and thought-provoking new book, **COMPLEX COPYRIGHT: MAPPING THE INFORMATION ECOSYSTEM**, effectively raises this question about copyright. She argues that copyright policy makers should recognize how copyright operates as a complex adaptive system. As a result, copyright law will be more responsive to the needs of creative individuals and the promotion of creativity. She states her objectives clearly in her introduction. “[A]n ideal copyright law would create a self-regulating, homeostatic system in which market demand would create a feedback loop driving the creation of culture” (p.11). With that goal in mind, Professor Tussey weaves an argument that shows how copyright is akin to a prairie ecosystem and how sometimes more flexible copyright law can lead to more copyrighted works.

With all her references to systems, Professor Tussey may be labeled a structuralist, someone who thinks that there are hidden structures that define social relationships and our understanding of the world. But she makes clear at the start of her argument that her concern is with behavior, not just structures. What makes a system complex is different from what might make it simply complicated, with lots of bells and whistles and moving parts. A complicated system is at some level predictable, once the connections among the parts are identified. A complex system, however, has a degree of unpredictability as the remotest change might have unforeseen consequences. To manage complex systems, one has to be flexible and attuned to behavior. One has to take a bottom-up approach, starting from experience and ending with rules and principles, which in turn

shape experiences. Feedback and learning define complex adaptive systems. They should also define copyright law and policy.

Professor Tussey makes her case for copyright as a complex adaptive system carefully and meticulously. She starts from examining the legislative institutions which give rise to copyright law. She accurately portrays these institutions as a set of competing and deliberating economic interests that guide the drafting of laws. As I read her description, such a system is a closed one, seemingly impervious to outside influence, particularly that of deeper or long term consequences beyond the narrow interests of certain groups. How to break this closed system of law making?

Professor Tussey asks lawmakers, presumably with the aid of law professors and other advocates, towards a more empirical understanding of copyright law. Like the little boy who points out the emperor's nakedness, we need to confront the empirical reality that more copyright law does not necessarily lead to more works or to innovation. Professor Tussey does a nice job in collecting and summarizing the works of several scholars who have taken on such an obvious, yet protean, task. In fact, Professor Tussey argues that the scholarly literature supports the proposition that more copyright might lead to fewer works. Empiricism breaks the closed loop of copyright law making and adds a point of intervention. Copyright law must be held to the standard of empirically verifiable consequences. Copyright law must interact with the facts to reshape and reform in response to the effects on creative output. This loop is one type of complex adaptive system that Professor Tussey seeks to effectuate in her rendering of complex copyright.

Another system is that of creativity itself, which needs to respond to the changing environment of technology and social values. The Internet is the most obvious and salient example of the changing environment. Changing norms that push towards group creation or audience participation (and user generated content more broadly) are other examples. Copyright law can be a tool to prevent such shifts in creativity. For example, incumbent copyright owners use copyright law to fight technological change, such as the VCR, or file sharing, or Internet fora, like YouTube. These legal battles are ones over conflicting business models or ones over how to acquire the surplus created by new markets, media, and technologies. Nonetheless, within complex adaptive systems, creative practices and copyright law need to adapt to changes in the environment, instead of reacting to preserve obsolete forms of creating and distributing information. A dynamic copyright law that learns to adapt would be one that is, as she describes,

self-regulating and homeostatic, one that evolves in a self-directed and stable manner.

Professor Tussey does offer some specifics in designing and implementing her ideal copyright system. Drawing on the work of Elinor Ostrom, Professor Tussey asks how to more carefully consider the actual design of institutions that demonstrate how people actually do manage resources. A clear directive for her book is a more engaged empiricism. In addition, her book asks us to think of the law in dynamic terms, as opposed to a set of static rules and doctrines that are tailored to various facts. Law does not simply act on facts, but is shaped by them. Professor Tussey is urging us to move in that direction of thinking as well.

Professor Tussey gives us much to think about in understanding copyright law and policy. My first thought was to her reference to a copyright system. This reference is to the set of doctrines and policies that describe the ecosystem of copyright law. I wonder if this is the right system with which to begin the analysis of complex adaptive systems. More relevant in my opinion is the ecosystem of authors, artists, publishers, distributors, readers, consumers, and entrepreneurs that interact in the realm of creation, production, and distribution. The question is how to design a copyright regime to effectively and appropriately govern this complex ecosystem. In other words, the law is the means, and not the ends. The complexity of the copyright system is the tail that is wagged by the needs and wants of the various constituencies and interests that constitute the creativity ecosystem. The distinction I make is a relevant one. The complexity of copyright law may reflect and suit the needs of these constituencies. But the relevant landscape is not the legal one. While ultimately the copyright system is what we must design, we need to understand the complex relationships and behavior that copyright law has to serve.

In thinking of the creativity ecosystem, I was struck by Professor Tussey's reference to "market demand" which she describes as creating a feedback loop driving the creation of culture. If market demand is the keystone for copyright, there are two striking problems. First, why should consumer needs be the ones that drive creativity, and not the needs and desires of creative people? Steve Jobs famously stated that he viewed innovators as leaders, not followers. Henry Ford said that if he asked consumers what they wanted, they would have asked for a faster horse. Ford did something better. Analogously, consumers of culture may simply want more action movies, more explicit pornography, and more filling beer. *De gustibus non disputandum*, but at the same time, creative artists more often than not fill a need that many consumers never knew they had. It is not completely clear

how non-consumer interests would figure into Professor Tussey's identified ecosystem.

Even more vexing is the emphasis on market demand. I assume by her reference to a market, Professor Tussey means a price mediated institution that allows consumers to express a willingness to pay which serves a signal for how creative people should guide their creative energies. As a matter of reality, perhaps market demand is the correct way to frame the problem. But Professor Tussey should be more explicit in depicting this market. Is it price-mediated? Is there a dimension of non-price or quality-based competition? Is it a completely free market or does government regulation figure in somehow? Is there a market for speech and ideas as well as one for goods and services? If so, how are all of these to be recognized? These questions are not meant to be pedantic ones. If the goal is to address the ecosystem of creativity and if the market is to somehow figure into that ecosystem, then we need some account of what this market looks like and how it functions.

Professor Tussey's reference to market demand is even more telling in light of her appeal to complex adaptive systems. One example of a complex adaptive system is the economic vision of markets. A general equilibrium view of markets is a type of complex system, entailing the interaction of many demanders and many suppliers coordinated through the working of price mechanisms. There is no doubt that it is a complex system. It is also one that adapts, and its adaptation can be simulated through changes in the economic environment of technologies and preferences. But it is also a description of a complex environment that elevates the values of wealth maximization and efficiency over those of distribution and fairness.

My point is that referring to creativity and copyright as parts of a complex adaptive system requires more detail in order to have traction for law and policy. On this point, I think Professor Tussey offers a nice starting point, but more work has to be done to flesh out the institutional details of the complex system that she imagines. Despite her appeal to market demand, I think she does mean something more than the economic general equilibrium model of markets. New institutional theorists, following from Coase, and economic and legal historians of widely diverging stripes (North, Hurst, Grief) offer contrasting frameworks for addressing complex systems. Each bases the representation of the complex system on different assumptions and empirical understandings. In subsequent work, it would be interesting to see how Professor Tussey fleshes out the complexity of creativity and copyright based on her own understandings. The additional details will make her arguments stronger and more convincing.

I also wanted to see more discussion of the normative framework for assessing copyright law and the complex ecosystems. Is the concern with freedom to create? Or is there also a concern with the distributional consequences of such freedom? The normative framework can make a difference for assessing copyright policy as it shapes the ecosystem of creativity. The normative framework would also affect how we understand the big question raised by Professor Tussey's book. Even if an ecosystem is a complex one, does the law that governs a complex ecosystem also have to be complex? The copyright system may rest on simple principles that can effectively guide an adaptive creativity ecosystem. How about a rule like: transformative authors always win? Such a rule would support the creator of a movie against an unauthorized copier of a DVD. Such a rule would support the unauthorized creator of a funny YouTube parody against the author of the source work. I am not advocating such a rule, but I could see how such a simple rule could have traction in organizing and governing the complex ecosystem of creativity. I did not get a sense from Professor Tussey's book on how to choose among different institutional arrangements for copyright. If the sole criterion is one of creativity and the generation of more works, then simple rules like that one I propose would be quite appropriate.

In conclusion, Professor Tussey has written a thought-provoking book and is in good company with many recent books that address intellectual property reform. I recommend reading and thinking about her arguments, and I look forward to see how she builds on her important and provocative ideas.

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IMITATION TO INNOVATION IN CHINA: THE ROLE OF PATENTS IN BIOTECHNOLOGY AND PHARMACEUTICAL INDUSTRIES, by **Yahong Li**. Edward Elgar, 2010. 189 pp. Hardback \$112

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IMITATION TO INNOVATION IN CHINA heralds a new generation of English monographs that examines the Chinese intellectual property regime for its own sake. Yahong Li delves into the challenges of innovation and patent protection in China's rapidly evolving biotechnology sector, and those who join her foray are rewarded with a new appreciation of how the patent system relates to its traditional promise of spurring innovation. Her study of China's patent system avoids the narratives of counterfeit and piracy that came to dominate so much of the writing on Chinese IP protection in the last decade.

This reorientation could not have come too soon. Even as of 2011, the Chinese IP headlines that captured public attention worldwide were the case of the fake Apple Store in the city of Kunming and the alleged misappropriation of high speed rail technology by the Chinese government. To the extent that China's IP developments are recognized in the legal literature, they are tempered with anxieties about "indigenous innovation" and "junk patents", both negatively connoted. The emphasis is distinctly exogenous and mercantilist—China's IP practices are only interesting, it would seem, to the extent that they are shown to have effects on the West and vice versa. Li's study is refreshing because it examines patent law in light of its original function of promoting domestic welfare.

It is precisely in her frank and relentless investigation of the link between Chinese patent and pharmaceutical innovation that the book finds resonance outside the immediate circle of Chinese IP scholarship. Stripped to its core,

her subject is the relationship between patents and innovation—the perennial debate at the center of the patent field. Those who have read Christine MacLeod’s analysis of the English patent system during the industrial revolution know that in order to understand the strengths and weaknesses of ones’ own system, it is sometimes necessary to observe its operation from the outside and subject it to conditions far from one’s own.¹

This time Li takes us to China, and with higher stakes: her subject is the present, and her audience includes policymakers and entrepreneurs who are in a position to influence economic development and medical welfare in the most populous country in the world.

Chapter one situates the readers in the current split in the literature regarding the role of patents vis-à-vis innovation in developing countries; that is, do patents help or hurt development? (pp.14-16). Chapter two surveys a dense array of statistics characterizing the growth of China’s biotech and pharmaceutical sector, and chapter three enlists detailed case studies showcasing the variation of R&D capacity, collaboration models, and government support across technology subfields. Together, these two descriptive chapters introduce the state of the Chinese biotech and pharmaceutical sector at the start of the century: China is strong in genomics, transgenic organisms, cloning, and biopharmaceuticals but weaker in chemical drug discovery and stem cell research (pp.30-38); a great majority of the support comes from the government, alongside foreign investments and collaborators drawn by China’s market, low cost, talent pool, and R&D infrastructure (pp.42-43).

Chapter four begins the theoretical inquiry with a study of China’s R&D models, which Li divides into four categories from the least to the most innovative: imitation, “me-too” innovation, “me-better” innovation and “me-first” innovation (pp.52-59). For the first category, studies of pervasive copying are duly cited: 97% of synthetic drugs are copies of others products, 99% of all companies involved in anti-cancer drugs produce imitation drugs, generics make up 90% of the biologics drug market (pp.52-53). But on balance, pure copying is no longer a viable business model due to low prices, fierce competition, infringement risk and diminishing returns on further copying since “there are not many new drugs left to be imitated” (p.53). Meanwhile, breakthrough innovations are “practically impossible” for China’s current scientific and financial strength (p.65). The only path left open, she reluctantly acknowledges, is that of incremental innovation based on variations of the existing state of the art, which in turn depends on “sophisticated legal and technical expertise to find the patent loopholes of pioneer inventions ...” (p.65). Chapter five

examines biotech and pharmaceutical patenting trends and further reveals that the better IP assets and stronger patents are still in the hands of multinational corporations, despite increasing patent filings from domestic companies, which in turn leads to increasing patent litigation.

So how should China formulate its patent system to enable an incremental innovation strategy when the sector is dominated by the IP of multinational pharmaceutical corporations? To answer this question, Li examines Chinese patent law as it applies to this sector. She addresses issues of patentable subject matter (Chapter 6), conditions of patentability (Chapter 7) and the treatment of patent rights (Chapter 8). The Chinese government appears to have responded to foreign patents by trimming back protection in the latest round of patent amendments in 2008 (p.169). Li instead prescribes a stronger patent system and more patenting as the solution (pp.157, 161). This central policy claim is based on the balance of the patent's dynamic incentives versus the static welfare loss particular to China.

On the positive side, Li observes substantial prospect interest and signaling effects at work:

...Patents do promote innovation in the biotechnology and pharmaceutical industries to the extent that they boost incentives for investment from domestic private sector and foreign investors, foster an innovative spirit and culture among research institutions, and help to identify national strategic areas for S&T development (p.157).

On the issue of the welfare loss due to a possible patent thicket or limited medical access, she finds the effect less serious than some have assumed. To the former, she notes that "the obstacle for technology access was not caused mainly by patents but rather by the MPC patent holders, who account for about a third of total patent holders in China" (p.177). This obstacle is surmountable because historically MPCs have not obtained extensive patent coverage and now face successful patent challenges. For example, out of eleven Chinese patent applications that were filed for the transgenic "Golden Rice", only two were granted, and even those two were ultimately invalidated (p.170). Moreover, the industry has a successful track record of licensing or inventing around patented technology and Chinese companies can reverse their fortunes by patenting more innovations of their own. On the balance, it is better to maintain strong incentives to promote innovation and let time fix the uneven distribution of patents than to reduce the desire for innovation overall. As for public medical welfare,

she ascribes access problems to the profit motives of hospitals and generics companies themselves rather than to patent exclusivity (p.171).

Scholars of Chinese IP law or technology development will benefit from Li's extensive collection of references and the synthesis of Chinese language materials. These, especially the analysis of legal disputes and government support programs, are rarely in one place and accessible to the English-speaking community, although the majority of the data and cited studies predate 2008 and reflect a historical snapshot from half a decade prior. For example, the study reports that only 15.4 percent of domestic patents were granted for inventions as opposed to utility models or industrial designs in 2008 (p.70). The latest figure from SIPO for 2011 suggests the mix of invention patents has increased to 25.4% a mere three years later, which appears to confirm Li's endorsement of China's technical capacity.² To be sure, all studies have to cut off at some point, and these historical figures represent a testament to the rapid changes going on in China. They also provide a baseline matrix for future comparisons.

Those interested in broader IP and development issues will relate to "the context of China's transitional economy and its place as the world's largest developing country with a relatively high technological capacity" (p.157) but "low capacity in commercialization" (p.161) and draw immediate comparisons to the other BRIC countries facing a similar confluence of foreign patent ownership and domestic needs. Li's approval of a strong patent regime seems to contradict the path taken by other developing countries such as India, Brazil and Thailand, but China is simply at a different point along the trajectory of economic transformation. Whether one agrees with Li's ultimate conclusion that China is ready for a strong patent system, policymakers can look to the technological conditions examined in this study to evaluate when and whether a national patent system should switch from low protection to higher protection.

Developed countries boasting a higher level of innovative capacity may also take heed, notwithstanding Li's prescription targeting "incremental innovation". The division of innovative capacity into pure imitation, "me-too" imitation, "me-better" and pure invention may be more suited to catalogue inventiveness *ex post* rather than serving as *ex ante* policy guideposts. It can provide a useful descriptive framework to consider the effects of patent law on countries at varying stages of development. But attention to detail is crucial to the categorization project: to illustrate the concept of "me-too" innovation, for example, Li cited Cialis and Levitra as analogues of Viagra, even though these chemical analogues are new chemical entities with improved therapeutic profiles and developed by

recognized innovators like Bayer (p.54). Li also includes in the example of incremental innovation three Chinese-developed cancer treatment products, Gendicine, Oncorine, and Endostar, which are no less than the first, second, and third commercially available gene therapy products anywhere in the world (pp.34, 55). If all that Chinese firms can manage are incremental innovations of such caliber, they would have done very well in terms of profitability, patient welfare, and contribution to the store of knowledge. It is unclear that we would want to provide less of a reward to beneficial improvements merely because they are incremental, nor should we presume to know what policy choice promotes disruptive technology over incremental improvements. Thus, Li's advice for China is equally relevant to countries that have embraced a notion of innovation broader than a "flash of creative genius".³

IMITATION TO INNOVATION IN CHINA is an endorsement of the patent system based on a look from the inside, making it far more credible than a call for higher IP protection during bilateral trade talks. However, the endorsement is clearly situational: the perceived benefits are reserved for those countries having significant technical capacity but relatively fewer blocking patent rights. The ironic lesson of the China case is that the benefits of a stronger patent system may depend on a prior period of lesser protection. Interestingly, this suggests that perhaps there is no optimal national patent system but only an optimal cycle of patent systems that waxes and wanes in counter step to the level of patenting.

¹ Christine MacLeod, *INVENTING THE INDUSTRIAL REVOLUTION: THE ENGLISH PATENT SYSTEM, 1660-1800* (Cambridge University Press, 2002).

² State Intellectual Property Office, "National Patent Application Received Exceeded 1.63 million", available at www.sipo.gov.cn/yw/2011/201201/t20120106_640395.html.

³ *Cuno Engineering Corporation v. Automatic Device Corporation*, 314 U.S. 84 (1941).

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