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Intellectual Property in the Twenty-First Century: Will Asia Lead or Follow?

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1. Introduction

The exact connection between intellectual property and economic development varies from country to country and region to region. For example, one cannot doubt that intellectual property laws played a role in United States development and economic growth. Yet, the moment we dig deeper, we discover that, until 1982, the United States had one of the world's most pro-competitive patent laws (i.e., least protective); until 1978, it had relatively weak copyright laws; and until the 1980s, it had one of the world's most interventionist competition laws. Somehow, the U.S. managed to survive and thrive in this relatively low protectionist, highly competitive environment. Similarly, Japan, India, China, Korea, Malaysia, and Brazil all managed to attain relatively high levels of economic growth without strong intellectual property rights. This reminds us that intellectual property rights are but one component of overall economic growth; that different states have different factor endowments; and that in many countries, especially those at an early stage of development, a sound agricultural policy or a sound industrial policy with a supportive political and legal infrastructure are more likely to stimulate economic growth than intellectual property laws.

At the same time, we can confidently say that, countries such as the United States, Japan, China, India, Brazil, Korea, Malaysia and others, will not reach their full economic potential without adequate intellectual property regimes. Indeed, this observation holds true for so many Asian countries that it makes our task easier today. The reason is that most Asian countries are committed to becoming players in what has been called the knowledge economy. These countries cannot reach the frontiers of the knowledge economy, and convert its intangible, nonrivalrous outputs into tradeable knowledge goods, without adequate intellectual property laws and policies, along with a whole set of interrelated economic and political foundations that are essential to maintaining a viable post-industrial economy.¹

The moment we look at Asia, as a regional group, from this perspective, we see how the IP scenario has changed over the past twenty-some years, i.e., since the OECD countries began to press for higher, harmonized worldwide IP standards under the aegis of what eventually became the TRIPS Agreement of 1994. As many critical thinkers have written, the TRIPS Agreement was a rigged regime that favored those OECD countries that had solid, developed national systems of innovation in place and plenty of patented high tech products to sell or manufacture around the world. There was a built in disposition to favor big companies seeking rents from existing innovations—or those in

¹ See, e.g., Daniel Gervais, *TRIPS and Development*, in INTELLECTUAL PROPERTY, TRADE AND DEVELOPMENT, 3-60 (D. Gervais, ed., Oxford U. Press, 2007) [hereinafter IP, TRADE AND DEVELOPMENT]; Peter Yu, *Intellectual Property, Economic Development, and the China Puzzle*, in IP, TRADE AND DEVELOPMENT, *supra*, 173-220.

the pipeline—at the cost of making future innovations more difficult, especially for less technically advanced countries. As Robert Ostergard recently put it, TRIPS embodied a “development dilemma” for poorer countries:

[I]f they open their domestic markets to trade, they face political and economic pressure to protect foreign IP; if they protect foreign IP, they create conditions that force them to abandon their goal to obtain IP as inexpensively as possible.²

Of course, these IP concessions were partly offset by trade concessions in other areas (side payments), such as textiles, agriculture, and traditionally manufactured goods, a calculus that worked differently for different countries.

As often happens in international law, efforts to rig a regime for short term advantages may turn out, in the medium and long term, to boomerang against those who pressed hardest for its adoption. In my very first article on this subject, I warned that, by reaching for high levels of international protection (that could not change in response to less favorable domestic circumstances), technology exporting countries risked fostering conditions that could erode their technological superiority and resulting balance of payment advantages over time. As other countries discovered and cultivated their own innovative strengths and capacities, they would benefit both from the worldwide system of incentives and protections that the TRIPS Agreement established, as well as from location and other endowment factors,³ at the expense of leading developed countries that took their own technical superiority for granted. In other words, given the incipient transnational system of innovation that had began to emerge from the TRIPS Agreement,⁴ there was every reason to expect that the Asian group as a whole would quickly become major competitors in the knowledge economy itself, with enormous potential to match and challenge the advanced OECD countries’ pre-existing comparative advantages in this area.

That this transformation has been occurring all around us is too solidly evidenced for us to review here, and the very title of this conference serves to remind us of Asia’s growing technological prowess. What I wish to focus on, instead, is how the Asian countries—given their growing technological prowess—should best seek to accommodate their own national systems of innovation to the worldwide intellectual property system emerging in the post-TRIPS period, with a view to maximizing world economic growth in the foreseeable future.

² Robert L. Osterard, Jr., *Economic Growth and Intellectual Property Protection: A Reassessment of the Conventional Wisdom*, in IP, TRADE AND DEVELOPMENT, *supra* note 1, 115, 155.

³ See esp. Yu, *supra* note

⁴ See Keith E. Maskus & Jerome H. Reichman, *The Globalization of Private Knowledge Goods and the Privatization of Global Public Goods*, in INTERNATIONAL PUBLIC GOODS AND TRANSFER OF TECHNOLOGY UNDER A GLOBALIZED INTELLECTUAL PROPERTY REGIME 3, 33-41 (K.E. Maskus & J.H. Reichman eds., Cambridge, 2005) [hereinafter INTERNATIONAL PUBLIC GOODS AND IP]

2. Avoiding Protectionist Excesses

Intellectual property has become a kind of latter day religion in certain corporate cultures that have dominated the political scene in the U.S., EU and Japan. Accordingly, my advice to the Asian countries as a group is to inoculate themselves against succumbing to these same high-protectionist illusions while there is still time. If it is true, as Prof. Gervais says, that you cannot play in the knowledge economy without IPRs,⁵ experience in many OECD countries is demonstrating that badly configured, unbalanced, over-protectionist IP regimes gradually stifle innovation by making inputs to future innovation too costly and too cumbersome.⁶ Such regimes also enable very large corporations that are sometime slothful innovators to accumulate pools of cross-licensed patents that create barriers to entry for truly innovative small and medium-sized firms.⁷

It is well known that the patent system in the United States has entered a period of crisis. Among other problems, the cumulative costs of litigation generated largely by a plethora of incautiously granted patents that increasingly pervade the upstream research dimension now threaten to exceed the aggregate returns from patented innovation as such.⁸ There is no consensus about how to reform the system, despite a broad agreement that it has broken down, and as time passes, the demands of different industries—particularly the information technology and biotechnology sectors—become more contradictory and conflictual.⁹ The European Patent Office has expressed similar concerns about the uncertain future of the world patent system.¹⁰

None of these domestic tensions has deterred USTR and USPTO from demanding that the rest of the world should quickly adopt a Substantive Patent Law Treaty that, at the international level, would lock in place most of the very unsolved problems that confront the domestic system of innovation in the U.S. While we are accustomed to the antics of regulatory agencies captured by special interests, it was nonetheless surprising to hear certain Asian patent offices blandly supporting these same proposals for a further upward ratcheting of international patent norms along the lines of the American model. It was as if these Asian governments were saying, please give us all your insoluble problems and contradictions as soon as possible, so we can undermine our own national systems of innovation, too.

Logically, of course, the more that Asian countries become players in the knowledge economy, the more they share some of the fears and risks that usually underlie the demand for higher levels of protection by powerful sectors in advanced technology-exporting countries. Asian entrepreneurs want their own exports of knowledge goods protected in the developing countries whose markets they increasingly penetrate through FDI, licensing, or sales of high tech products. They also want to maintain inward flows

⁵ See Gervais, *supra* note

⁶ See Jerome H. Reichman and Rochelle Cooper Dreyfuss, *Harmonization without Consensus: Critical Reflections on Drafting a Substantive Patent Law Treaty*, 57 *Duke L.J.* 85, 102-08 (2007).

⁷ Karl Shapiro, *Navigating the Patent Thicket*

⁸ See Bessen & Meurer (2008); Jaffe & Lerner (2004).

⁹ Reichman & Cooper Dreyfuss, *supra* note

¹⁰ See EPO Report (2007).

of FDI and market-driven technology transfer into their own countries, in order to bolster their own growing technological capacities. Yet, such concerns do not necessarily add up to a compelling case for higher levels of international intellectual property protection. On the contrary, the TRIPS Agreement itself provided an unprecedented platform of IP protection for exports after 1995, and there is little evidence that this platform remains inherently insufficient for the needs of Asian exporters in the foreseeable future. Meanwhile, there is mounting evidence of an ambiguous relation between FDI and IPRs, rooted in the fact that OECD technology exporters need entry into Asian markets as much as the latter countries need FDI and market driven technology transfer from the OECD countries.¹¹

In China and India, moreover, knowledge economy skills and capacities have reached the point where the stimulating effects of IPRs can influence different sectors and stakeholders quite differently, depending on the extent to which they are still driven by imitation-related innovation or investments in basic, or at least relatively original, R&D. Increasingly, we see tensions between those who demand broad and strong patent protection for, say, research-driven pharmaceuticals, and those who demand a more forgiving, pro-competitive approach favoring generic pharmaceutical producers and exporters. In either case, how to protect cumulative and sequential innovation—as distinct from path-breaking innovation—becomes an ever more pressing problem as an ever growing number of firms acquire a taste and capacity for such innovation.

A parallel set of problems that the BRIC countries, and other middle-income countries, increasingly face is how to adjust the shifting relations between private and public goods. Education, public health, agricultural improvement, scientific research and other important areas are still heavily dependent on the public sector in many of these countries. Yet, international intellectual property rights throw up roadblocks to the acquisition of needed scientific¹² and educational materials,¹³ essential medicines,¹⁴ and both seeds, stocks, and fertilizers needed for economic growth.¹⁵ Even with regard to technological innovation as such, where the role of public sector investment in basic research has been crucial in the most advanced countries, there remains great uncertainty

¹¹ See Yu, *supra* note

¹² See, e.g., J.H. Reichman & Paul F. Uhlir, A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment, 77 *L. & Contemp. Probs.* 315 (2003).

¹³ Ruth L. Okedigi, Sustainable Access to Copyrighted Digital Information Works in Developing Countries, in *International Public Goods and IP*, *supra* note , 142; Margaret Chon, *supra* note , at .

¹⁴ Frederick M. Abbott & Jerome H. Reichman, The Doha Round's Public Health Legacy: Strategies for the Production and Diffusion of Patented Medicines under the Amended TRIPS Provisions, 10 *JIEL* 921-87 (2007).

¹⁵ Michael Blakeney, Stimulating Agricultural Innovation, in *International Public Goods and IP*, *supra* note , 367; Robert E. Evenson, Agricultural Research and Intellectual Property Rights, in *International Public Goods and IP*, *supra* note , 188; Timothy Swanson & Timu Goeschl, Diffusion and Distribution: The Impact on Poor Countries of Technological Enforcement within the Biotechnology Sector, in *International Public Goods and IP*, *supra* note , 669.

about the kind of regulatory regimes that should be adopted to ensure an appropriate social return from publicly funded or publicly generated research initiatives.¹⁶

As the Asian countries seek to strengthen their own national systems of innovation, they must decide how to address the challenges posed by a now highly articulated worldwide intellectual property system. At the moment, there are two different approaches on the table. One is to play it safe by sticking to time tested IP solutions implemented in OECD countries, with perhaps a relatively greater emphasis on the flexibilities still permitted under TRIPS (and not overridden by relevant FTAs).¹⁷ The other is to embark upon a more innovative and even experimental approach, with a view to addressing and perhaps solving the very problems that the advanced technology exporting countries currently find so daunting.¹⁸

3. Designing Intellectual Property Laws for the Twenty-First Century

Most technical assistance experts and many academics take the view that developing countries should stick to time tested IP solutions while exploiting all available exceptions and limitations recognized by developed countries. This approach affords the advantages of requiring relatively modest lawyering inputs (although it still requires more lawyering than one might think¹⁹); it may reduce internal debate about appropriate solutions; and it may deflect political and economic pressures from powerful countries whose own prior practices cast a comforting shadow. While this strategy may thus appear politically expedient, Professor Dreyfuss and I remain skeptical for one main reason. At the end of the day, discreetly following in the technology-exporting countries' IP footsteps will merely bring the BRIC players, and other middle income countries, face to face with the very serious problems that the OECD countries have themselves failed to solve. It will put everyone in an equally unsatisfactory position, without having enhanced the governance skills of developing countries and without enriching the incipient transnational system of innovation with much needed empirical evidence about alternative IP solutions to an array of apparently intractable problems.²⁰

Consider, for example, the choking and blocking effects that a proliferation of patents rooted in low nonobviousness standards increasingly produce for the software and biotech industries in the United States and elsewhere.²¹ This phenomenon elicits pressures for so-called “quality patents” that would supposedly result from higher nonobviousness standards,²² and the U.S. Supreme Court has recently taken a first step in

¹⁶ Arti K. Rai & Rebecca S. Eisenberg, *Bayh-Dole Reform and the Progress of Biomedicine*, 66 *L. & Contemp. Probs.* 289 (2003).

¹⁷ See, e.g., Gervais, *supra* note __; Gervais, *Epilogue—TRIPS: An Implementation Tool Box*, in *IP, Trade and Development*, *supra* note __, 527-46.

¹⁸ See Jerome H. Reichman and Rochelle Cooper Dreyfuss, *Harmonization without Consensus: Critical Reflections on Drafting a Substantive Patent Law Treaty*, 57 *Duke L.J.* 85, 102-08 (2007). See also Duffy,

¹⁹ See, e.g., Gervais, *Epilogue—TRIPS*, *supra* note __; Carlos Correa, *TRIPS and TRIPS-plus Protection and Impacts in Latin America*, in *IP, Trade and Development*, *supra* note __, 221-58.

²⁰ See Reichman & Cooper Dreyfus, *supra* note __, at __.

²¹ *Cites.*

²² See, e.g., *FTC Report* (2003); *NAS Report*.

this direction,²³ pending further legislative reforms on the table.²⁴ But all this hue and cry disregards the fact that higher nonobviousness standards, without more, will simply expose large quantities of costly cumulative and sequential innovation to free-riding forms of market failure, which was the phenomenon that induced the Federal Circuit to lower its nonobviousness standard in the first place.²⁵

From this perspective, the U.S. experience reveals a cyclical, pendular shifting between states of under and over protection, without policymakers ever having seriously addressed the underlying question of how appropriately to protect cumulative and sequential innovation at the core of present day technological progress.²⁶ This same question has now begun to surface in countries such as India and China. For example, efforts to codify a relatively stiff standard of nonobviousness in the new Indian patent law were self-consciously aimed at freeing up space for India's thriving generic pharmaceutical industry. But these same efforts elicited explicit complaints that India's stiff eligibility standards would deprive the more research-driven pharmaceutical sector of sufficient incentives to invest in derivative applications of medicines initially developed abroad.²⁷ Besides an appropriately selective nonobviousness standard, in other words, what India and similarly situated countries really need is an appropriately designed domestic regime that stimulates investment in cumulative and sequential innovation without creating barriers to entry and without unduly hindering the transformation of today's technological outputs into inputs for tomorrow's follow-on applications.²⁸

Of course, the traditionalists will respond by recommending greater use of utility model laws,²⁹ and there is a trend towards enacting these laws in the developing countries. But the limits and weaknesses of patent-like utility model laws have been well documented since the 1970s at least, and their inherent logical contradictions are matched by equally daunting economic contradictions, even if such regimes may often prove better than nothing.³⁰ Moreover, the Japanese experience demonstrates that advantages accruing from the use of utility models to surround foreign patents with tripwires of small-scale blocking effects tend to peter out once the country relying on this tactic shifts its own domestic emphasis to relatively basic research. Sooner or later, moreover, utility model laws simply re-propose the same fundamental tensions that arise when too many patents cluster around the same rapidly developing technologies, each of which is dependent on preceding innovation and will likely stimulate equally dependent successive applications.

²³ KRS decision (US 2007)

²⁴ Senate and House Bills. However, legislative efforts to further refine the nonobviousness standard are no longer apparent in the pending bills, after the Supreme Court's decision in KRS. See Bruce (Duke Conference). See generally Jay Thomas (Duke Conference).

²⁵ See, e.g. Jerome H. Reichman, *Of Green Tulips and Legal Kudzu: Repackaging Rights in Subpatentable Innovation*, *Vand L. Rev.* (2001).

²⁶ See *id.*; Jerome H. Reichman, *Saving the Patent Law from Itself*

²⁷ Janice Mueller (1) and (2); Mashekar Report. For China, see Yu, *supra*

²⁸ See Reichman, *Green Tulips*, *supra*

²⁹ See J.H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, *Colum.L.Rev.* (1994).

³⁰ See, e.g., Reichman, *Green Tulips* (citing authorities); see also 1974 Swiss study.

In other words, the clear boundaries between property rights that are a presupposed necessary condition for efficient trading of knowledge goods have become inherently blurred and overlapping as a consequence of the patent law's struggle to keep abreast of the changing conditions of technological progress.³¹ Why should the BRIC countries not address this and other related problems head on, instead of falling into the same old traps and pitfalls that undermine obsolete systems of innovation in the most developed countries?

That the traditionally structured OECD innovation framework has become increasingly obsolete over time appears from even a quick review of its three main premises:

- (1) Upstream scientific research, primarily theoretical in nature, was to remain immune from IPRs and regulated by the sharing norms of Mertonian science;³²
- (2) Routine innovation (largely cumulative and sequential in nature) was primarily protected as know-how by trade secret laws, which established a vast semi-commons accessible to all routine engineers willing to reverse-engineer by honest means; it therefore provided investors with natural lead time;³³
- (3) Legal monopolies were to be bestowed only on path breaking inventions, beyond the reach of routine engineers, while competition rooted in legally protected lead time and other comparative advantages drove the innovation process.³⁴

Today, instead, universities aggressively patent government-funded research results,³⁵ some countries protect even scientific databases as such,³⁶ and there is no clear line between theoretical and applied research. The sharing norms of science have broken down to the point where they can only be maintained by carefully constructed scientific commons that artfully manage legal, economic and technical restrictions on data, materials and information.³⁷ At the same time, the technical know-how underlying cumulative and sequential innovation can seldom be kept secret for very long. Hence, trade secret protection also breaks down, and investors faced with mounting front end costs suffer from a chronic shortage of natural lead time.³⁸ In response, patents, copyrights and sui generis laws expand in all directions to absorb cumulative and sequential innovations that lack other refuges from free-riding appropriators and the risk of market failure.³⁹ This trend, in turn, produces mounting thickets of rights that impede both technological progress and research, while the risk of endless litigation over

³¹ Bessen & Meurere (2008); Reichman & Cooper Dreyfuss

³² Eisenberg; Rai, *Northwestern L.Rev.*

³³ Reichman, *Saving the Patent Law from Itself*; Reichman, *Legal Hybrids*, *supra note*

³⁴ See *supra note 33*.

³⁵ Nelson et al, *Ivory Tower*

³⁶ See, e.g., Paul A. David, *Kyanisquatsi in Cyberspace: The Economics of an "Out-of-Balance" Regime of Private Property Rights in Data and Information*, in *International Public Goods and IP*, *supra note* , 81; J.H. Reichman & Pamela Samuelson, *Intellectual Property Rights in Data?* 50 *Vand. L. Rev.* 51 (1997). See generally Derclay, *Book*.

³⁷ See, e.g., Reichman & Uhlir, *supra note* ; *Science Commons*, *supra note* .

³⁸ Reichman, *Legal Hybrids*, *supra note* .

³⁹ Reichman, *Saving the Patent System from Itself*, *supra note* ; Reichman & Cooper Dreyfuss, *supra note* (citing authorities).

uncertain legal boundaries leads to daunting litigation costs and anticompetitive defensive patent pools held by big but often slothful technology distributors.⁴⁰

4. Where Asia's Leadership Could Make a Difference

The incipient transnational system of innovation emerging from the TRIPS Agreement will simply reproduce these same unpropitious conditions if the BRIC countries and their allies discreetly follow the models embedded in the most developed economies. What we need instead are new models experimentally derived from bold new attempts to deal directly with these and other unsolved problems.

I cannot, within the confines of this short paper, explore these problems in depth, although more and more academic attention is being focused upon them.⁴¹ Let me instead conclude with a partial list of initiatives that the BRIC countries, working perhaps within the framework of a WIPO Development Agenda, could consider. The list is not meant to be exhaustive, only suggestive, but it does give an idea of the kind of initiatives that are badly needed.

To begin with, while it seems clear that the Asian group as a whole should maintain relatively pro-competitive markets for innovation vis-à-vis the high protectionist regimes in the U.S. and the EU, this does not require the former countries to sacrifice their own domestic innovators to free-riding appropriators. Rather the Asian group needs to outsmart the high-protectionists by fashioning intellectual property regimes that match their own needs and capacities without violating international IP norms. In particular, they could take the lead in making sensible uses of liability rules to stimulate rapid exchanges of cumulative and sequential innovation, while reserving strong exclusive rights for a relatively restricted class of truly path breaking inventions. Today, there are many ways to achieve this different kind of balance: for example, by enacting and implementing compulsory licenses for dependent improvements;⁴² by limiting injunctions to cases that demonstrably serve the public interest, now once again a characteristic of United States law and practice;⁴³ or by developing an *ex ante* regime of compensatory liability rules that I have elsewhere described.⁴⁴

Of course, in devising their own experimental responses to the real IP problems that challenge technology markets today, the Asian countries need to avoid the failed experiments that some OECD countries have recently undertaken. For example, the Asian countries should not enact database protection laws like those in the EU, particularly at a time when they need access to worldwide flows of scientific and technical data as never before.⁴⁵ It can, indeed, be shown that the U.S. database industry

⁴⁰ See, e.g., Bessen & Meurer, *supra* note ; Karl Shapiro, *supra* note ;

⁴¹ See e.g., Patent Pools and Other Clearing House Models, G. Vanderwolle ed. (Cambridge U. Press, forthcoming 2008). See also EPO Report; James Boyle (work in progress).

⁴² See TRIPS Agreement, art. 31(l).

⁴³ Cite E-Bay Decision

⁴⁴ See Reichman, Green Tulips, *supra* note .

⁴⁵ See Japanese conference.

has grown faster without this form of protection than its counterpart industries in Europe, whose relative market share has shrunk.⁴⁶

The Asian countries could also formulate their own approach to regulating the patenting of government-funded research results, particularly those obtained by universities and other public research centers. While the benefits of the U.S. Bayh-Dole Act are well known, the unresolved problems it creates are also increasingly well documented, as are a growing list of needed reforms, which will be hard to enact in the U.S.⁴⁷ Instead of simply imitating the U.S. model, the Asian countries should take the lead in formulating improved versions of the Bayh-Dole principle, which would better address the need to ensure access to research tools for the research community and that would also address questions of abusive pricing of products whose R&D costs were essentially borne by taxpayers in the first instance. At the same time, Asian countries need to devise their own public-private initiatives to endow venture capital funds (and, perhaps related research prize contests) that could improve upon even the successful models currently deployed in some OECD countries.

Another area badly in need of innovative solutions is the quest for sensible laws and policies to implement exceptions to, and limitations on, intellectual property rights otherwise governed by the TRIPS Agreement and the under-theorized “three-step tests” it generated.⁴⁸ Here major efforts are underway in both academic and government circles to rethink the question of exceptions and limitations from a more public interest perspective than was possible in the immediate aftermath of TRIPS.⁴⁹ As these proposals emerge to light, it behooves the Asian countries—both at the domestic and regional levels—to play a leadership role in vetting and experimenting with them, especially with a view to benefiting their own research and educational communities. In other words, the Asian countries should evaluate the extent to which their own needs for access to knowledge should lead them to support WIPO Development goals consonant with those needs, in opposition to the high-protectionist policies favored by what I have elsewhere deemed a “knowledge cartel.”⁵⁰ Bold legislative initiatives in Asia on these matters could help set and define the international IP agenda for the next several decades.

The Asian countries should also take the lead in revamping increasingly obsolete approaches to the use of IPRs in the field of medicine. In no other area is there a greater

⁴⁶ See EC Report. However, nothing prevents the Asian countries from experimenting with a low-protectionist database regime, built around liability rules rather than exclusive property rights that could allow second comers freely to use data for follow-on commercial applications, after a relatively short period of time in return for reasonable royalties under an automatic license. See, e.g., J.H. Reichman, Database Protection in a Global Economy 2002 *Revue Internationale de Droit économique* 457, 479-80.

⁴⁷ Rai & Eisenberg, *supra* note ____

⁴⁸ See TRIPS Agreement, arts. ____.

⁴⁹ See, e.g., Hugenholtz & Okediji; Kur & Levine; Max Planck Initiative; see also Rochelle Cooper Dreyfuss, Should Users Strike Back?; Jerome H. Reichman, Graeme B. Dinwoodie & Pamela Samuelson, A Reverse Notice and Takedown Regime to Enable Public Interest Uses of Technically Protected Copyrighted Work, 22 *Berkeley Tech. L.J.* 981 (2007); Proposed Access to Knowledge Treaty.

⁵⁰ See Maskus & Reichman, *supra* note ____.

need for innovative approaches, and there is an ever growing list of potential tools that could be used to increase research outputs and to achieve better distributional outcomes as well. These include:

- Proposals for pre-competitive pooling of privately owned small molecule libraries, with a view to facilitating the upstream identification of promising target molecules through university-generated assay designs;⁵¹
- Proposals for public-private technology pools that would undo patent thickets and stimulate investment, while preserving revenues from downstream applications for single depositors;⁵²
- Proposals for government funding of clinical trial studies, with corresponding buy-ins at the international level and release of results to the worldwide scientific community.⁵³
- Proposals for buy-outs and humanitarian licensing,⁵⁴ as well as for pooled procurement strategies under the Amended TRIPS provisions, with a view to encouraging the distribution of essential medicines on a “high-volume, low-margin” marketing strategy.⁵⁵
- Proposals for prizes and other novel research inducements that would help to separate the research and marketing functions in the medical sector.⁵⁶

Were the Asian countries to pursue their own pro-active policies in this area, precisely at a time when their medical research capacity is growing, it could lead to novel and perhaps breakthrough solutions of benefit to the rest of the world.

Another area ripe for potential Asian leadership is that of “green technologies.” Here recent studies suggest that IPRs have so far been playing an appropriately stimulatory role and that the problems elsewhere observed in regard to information technology and biotechnology have not yet appeared in this sector,⁵⁷ perhaps because it is still at an incipient stage, with many small players and without large-scale capital investments. Precisely because Asian industry could participate on the ground floor of future developments in environmental technologies, it behooves these governments to devise

⁵¹ See Arti K. Rai, Jerome H. Reichman, Paul F. Uhlir & Colin Crossman, *Pathways Across the Valley of Death: Novel Intellectual Property Strategies for Accelerated Drug Discovery*, Yale J. Health Law, Policy and Ethics (forthcoming 2008).

⁵² See, e.g., Anthony So; Duke Conference; SARS initiative; Dindi initiative; Roy Widdus, *Product Development Partnerships on ‘Neglected Diseases’: Intellectual Property and Improving Access to Pharmaceuticals for HIV/AIDS, Tuberculosis and Malaria*, in *Negotiating Health—Intellectual Property and Access to Medicines 205-27* (P. Roffe, G. Tansey & D. Vivas-Engui eds., Earthscan, 2006) [hereinafter *Negotiating Health*].

⁵³ See Tracy R. Lewis, Jerome H. Reichman, & Anthony So, *The Case for Public Funding and Public Oversight of Clinical Trials*, *Economists’ Voice*, www.bepress.com/ev (Jan 2007); Jerome H. Reichman, *The International Legal Status of Undisclosed Clinical Trial Data: From Private to Public Goods?*, in *Negotiating Health*, supra note , 133-50.

⁵⁴ K. Outserson I & II; Kapczynski & ; James Love, *Four Practical Measures to Enhance Access to Medical Technologies*, in *Negotiating Health*, supra note , 241-56.

⁵⁵ Abbott & Reichman, supra note

⁵⁶ James Love, supra note .

⁵⁷ See, e.g., John Barton I & II.

collaborative strategies in a way to foster maximum growth and participation without the impediments that excessive protection has caused in other sectors.⁵⁸

Looking beyond these individual sectors, there is growing interest in new ways to develop the so-called “sharing economy,” which has produced such successes as the open-source operating system and the Wikipedia.⁵⁹ Considerable efforts are also underway to devise new forms of scientific cooperation that could cut through legal, technical and economic barriers to the Mertonian sharing ethos, could help to establish worldwide scientific networks and commons on an unprecedented scale, and extend “open source” methodologies to new areas of study.⁶⁰ Here, again, the Asian group should be at the center of these initiatives, and not on the sidelines waiting for others to succeed.

Finally, there is universal recognition of the need to redefine the border between intellectual property rights and competition law in a manner conducive to promoting worldwide markets for technology.⁶¹ Here the middle-income developing countries need to formulate competition law rules and policies (hopefully coordinated) to ensure that foreign technologies and know-how flow to local markets under reasonable terms and conditions and at prices local entrepreneurs can afford.⁶² In so doing, they should fully exploit the competition law exceptions available under the TRIPS Agreement,⁶³ and they should draw upon solutions and proposals emanating from both past and present practices all over the world, given the political will and skill to do so. That the Asian group continues to play virtually no formative role in this area at all must surely amount to one of the biggest paradoxes in contemporary intellectual property affairs.

5. Concluding Observations

Much of the recent literature has successfully countered two fundamental tenets of the high-protectionist rhetoric, namely that stronger IPRs necessarily lead to more innovation⁶⁴ and that they are essential for attracting FDI.⁶⁵ Studies by the Federal Trade Commission, the National Academy of Sciences, and leading economists have

⁵⁸ See Chatham House EU-China Project in this regard.

⁵⁹ See, e.g., James Boyle (book); Yale Book, Rai article.

⁶⁰ See *supra* note . See also Jerome H. Reichman, Paul F. Uhlir & Tom Daederwerdere, *Designing the Microbial Commons*.

⁶¹ See, e.g., Josef Drexler, *The Critical Role of Competition Law in Preserving Public Goods in Conflict with Intellectual Property Rights*, in *International Public Goods and IP*, *supra* note , 709-25; Eleanor Fox, *Can Antitrust Policy Protect the Global Commons from the Excesses of IPRs?*, in *International Public Goods and IP*, *supra* note , 758-79.

⁶² J. H. Reichman, *Nurturing a Transnational System of Innovation*, 16 *J. Transnat. L. & P.* 143, 161 (2007).

⁶³ See, e.g., Hanns Ullrich, *Expansionist Intellectual Property Protection and Reductionist Competition Rules: A TRIPS Perspective*, in *International Public Goods and IP*, *supra* note , 720-57; Mark D. Janis, “Minimal” Standards for Patent-Related Antitrust Law under TRIPS, in *International Public Goods and IP*, *supra* note , 774-92; Shubha Ghosh, *Competitive Baselines for Intellectual Property*, in *International Public Goods and IP*, *supra* note , 793-814.

⁶⁴ See *supra* notes and accompanying text.

⁶⁵ See, e.g., Gervais, *supra* note ; Yu, *supra* note (citing authorities).

increasingly confirmed the diminishing returns that an unbalanced patent system has been producing in the United States, and the resulting pressures for reform have resulted in major Supreme Court decisions as well as far-reaching legislative proposals pending before Congress. Other studies have demonstrated that technology exporters need access to Asian markets as much as these countries need FDI, licensing and up to date high-tech goods.⁶⁶ So long as the general level of IP protection affords technology exporters to Asia the minimum standards and entrepreneurial options available under the TRIPS Agreement, these exporters will find ways to reach attractive markets, and would-be purchasers in Asia can usually meet their needs through sound procurement strategies. Specific bottlenecks are more likely to arise from refusals to deal and other restrictive business practices that suitable competition laws and policies could help to resolve than from gaps or inadequacies in local intellectual property laws, although the weak enforcement of IP laws may still have detrimental affects.⁶⁷ Meanwhile, innovative Asian firms operating in a pro-competitive environment at home can always profit from high-protectionist IP regimes abroad—under the independence of patents doctrine⁶⁸—without aping the protectionist excesses of those regimes.

As Maskus has explained, IP regimes are but one component of a healthy development-oriented economy. Without an appropriate infrastructure that includes corporate law, bankruptcy law, and a solid educational system, among other variables, IP protection may add little to either FDI or economic growth in its own right.⁶⁹ Moreover, as the relations between IPRs and innovation in knowledge economies become better understood, the proper role of innovation as such in overall development policies remains far less clear and more complex than the IP literature normally recognizes.⁷⁰ Unless countries actively seek to maximize the benefits and minimize the social costs of the TRIPS harmonization standards,⁷¹ there is a risk that they may end up “financing not just or even primarily their own growth, but promoting the economic growth of developed countries, possibly to the detriment of their own economic development.”⁷²

Against this background, I contend that the Asian countries, as a group, are well-positioned to undertake a leadership role in adapting traditional intellectual property law to the new technological conditions and challenges that the OECD countries have failed to solve. To the extent that Asia avoids the pitfalls that have begun to undermine markets for technology in the U.S. and EU, fashioning a more flexible, balanced and modern approach could in fact enable them to boost their growing comparative advantages in cutting-edge technologies well beyond current levels. To achieve this result, however,

⁶⁶ See Yu, *supra* note 1; Dan Chow, .

⁶⁷ See *id.*, at

⁶⁸ See Paris Convention for the Protection of Industrial Policy (1883), revised at Stockholm (1967), art. 4bis.

⁶⁹ Keith E. Maskus, *Intellectual Property Rights in the Global Economy* (Institute for Int’l Economics 2000)

⁷⁰ See, e.g., Margaret Chon, *Substantive Inequality in International Intellectual Property Norm Setting and Interpretation*, in *IP, Trade and Development*, *supra* note 1, 475-526. See also Joseph Stiglitz (Duke address).

⁷¹ See Reichman, *From Free Riders to Fair Followers*, *supra*

⁷² Robert L. Ostergard Jr., *supra* note 1 at

will require Asian governments to self-consciously adopt disciplined legal and political strategies that preserve the policy space in which to devise and test their own intellectual property institutions.⁷³

For example, legal circles in all the Asian countries will have to study and master the relevant WTO jurisprudence, as the Japanese have done,⁷⁴ in order to steer clear of obvious legal obstacles and defend national autonomy at the TRIPS Council and, when necessary, in actual dispute-settlement cases. These countries should also avoid further multilateral and bilateral standard-setting negotiations that can only limit their own autonomy and governance capacities, while at the same time seeking to forge regional understandings on these same issues that could attenuate the pressures from abroad.⁷⁵ The Asian countries would also be well advised to establish solid interagency review boards that can exercise oversight of their intellectual property bureaus and ensure that the latter properly implement national innovation policies established at the highest levels of government.⁷⁶

Any uniquely Asian effort to fashion appropriate intellectual property regimes for the twenty-first century will have to focus on finding a new equilibrium between public and private goods. Because the last half of the twentieth century was so consumed with tensions between public-centered and private-centered economies, insufficient thought has been given to operationalizing the proper and ever-evolving interrelationship between private and public goods, which the rise of knowledge economies has made so critically important.⁷⁷ In this context, Joseph Stiglitz' call to recognize the role of "knowledge as a global public good"⁷⁸ has generated an important literature whose practical implementation should become a primary goal of forward looking in Asian policy.⁷⁹

In this regard, the Asian countries should build ever stronger connections to the worldwide flow of scientific and technical information, a task that will require sharing locally generated scientific data with the rest of the world (as China has begun to do),⁸⁰ while resisting legal, economic and technological restraints on the dissemination of such data.⁸¹ A particularly forward looking policy would, for example, lead these countries to support open source and other sharing mechanisms at the level of scientific enquiry,⁸² while taking steps to better ensure downstream support for innovative applications flowing from cooperative public-private upstream research initiatives.

⁷³ See generally Reichman & Cooper Dreyfuss, *supra* note

⁷⁴ Remarks by [Visiting Professor from Japan] Duke Law School

⁷⁵ See Maskus & Reichman, *supra* note ; Reichman & Cooper Dreyfuss, *supra* note

⁷⁶ See Jerome H. Reichman, Bellagio talk. See also Rai

⁷⁷ See Maskus & Reichman, *supra* note . See generally Peter Drahos, *The Regulation of Public Goods*, in *International Public Goods and IP*, *supra* note , 46-64.

⁷⁸ Joseph Stiglitz, *Knowledge as a Global Public Good*, in

⁷⁹ See also UNESCO, *TOWARD A KNOWLEDGE SOCIETY*.

⁸⁰ See, e.g., NAS Publication re cooperation with China

⁸¹ See *supra* notes and accompanying text

⁸² See Yochai Benkler, (book); James Boyle (book); Science Commons.

If, at the end of the twentieth century, we learned that access to knowledge was as important for economic growth and human welfare as stimulating investment in the production of knowledge goods, it could be the Asian countries as a group that lead us out of certain blind alleys that currently pit these two essential policy goals against one another. It is, as Professor Cooper Dreyfuss and I have recently argued, precisely a time for experimentation, and not a time to copy or codify obsolete approaches that are likely to boomerang against the long-term interests of the very developed countries that are most avidly pushing the harmonization buttons at the international level.⁸³ To be sure, charting one's own course is never easy, especially when powerful countries and a knowledge cartel apply countervailing pressures at every step.

Nevertheless, I firmly believe that, with Asian leadership, buttressed by “skillful lawyering, political determination and coordinated planning,”⁸⁴ the IP system inherited from the Industrial Revolution⁸⁵ can be transformed into a worldwide system of innovation that will benefit countries at every stage of economic development.

⁸³ Reichman & Cooper Dreyfuss, *supra*

⁸⁴ Abbott & Reichman *supra* at

⁸⁵ See Susan Sells & _____, *Critical History of Intellectual Property*,