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**Harmonisation or Differentiation in Intellectual Property Protection?
The Lessons of History**

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Harmonisation or Differentiation in Intellectual Property Protection?

The Lessons of History

Graham Dutfield and Uma Suthersanen¹

Introduction

Should the national and regional intellectual property (IP) systems of the world be harmonised so that the rules governing IP protection standards and enforcement are identical everywhere? Or should differentiation be the norm so that each jurisdiction tailors its IP systems according to its perceived economic and social welfare interests however far these systems may differ from those of, say, the United States or the European Community? This paper does not attempt to answer the question of whether strong,² medium or weak IP standards of protection and enforcement are best for countries at particular levels of economic and social advancement. Several other studies have sought to deal with this matter.³ The question this paper does seek to address is that of how much IP protection developing countries should provide *relative* to other countries, particularly those that are wealthier.

History does not *prove* that differentiation is better than harmonisation. Indeed, it is probably erroneous to expect the past to tell us anything conclusive about the present, let alone predict the future. Neither does this paper claim that strong IP protection is necessarily bad for poor countries, nor that weak protection or even no protection is bound to be better.⁴ In any case, the geography of innovation and creativity does not fit at all well into the North-South separation of the world that is typically employed to differentiate the developed regions from the developing ones. In fact, even in the same country, one creative industry sector such as music or feature film production may thrive while another, such as pharmaceuticals, may lag far behind.⁵ However, on the basis of the historical record, this paper casts doubt on the idea that harmonising patent and copyright systems is a good thing in terms of narrowing the wealth gap between rich and poor countries.

Part One of the paper explains how the priority of achieving minimum standards of protection and enforcement of existing IPRs has been superseded by that of global IP harmonisation for patents and what may be referred to as *dynamic responsiveness* for copyright. It also identifies the strategies being adopted to accelerate and deepen these processes. Part Two aims to demonstrate that this is very important and raises very high economic stakes. Developing countries' options to tailor their IP rules to their development needs are being *rapidly* reduced if not eliminated, a

¹ The authors are grateful to Geoff Tansey for helpful comments on an earlier draft and participants at an informal seminar hosted by the Quaker United Nations Office, Geneva, in April 2004.

² 'Strong' is meant to refer to the extent of enforceability of the rights and to indicate the absence - or at least relative lack - of exceptions to patentability by subject matter or technological field.

³ See Commission on Intellectual Property Rights (2002) *Integrating Intellectual Property Rights and Development Policy. Report of the Commission on Intellectual Property Rights*. London; Dutfield, G. [lead author] (2003) *Intellectual Property Rights: Implications for Development*. UNCTAD and ICTSD. Both documents can be taken as supporting the view that the international IP rules are too inflexible to accommodate the development needs of each country. For an alternative view see Sherwood, R. (1993) 'Why a uniform intellectual property system makes sense for the world', in: Wallerstein, M.B., M.E. Mogege and R.A. Schoen, *Global Dimensions of Intellectual Property Rights in Science and Technology*. National Academy Press, Washington DC.

⁴ It is worth mentioning here that India's film industry does not appear to have been disadvantaged by the fact that she had a copyright regime which was Berne Convention-compliant for much of the twentieth century.

⁵ One could also mention here that many developing countries are well-endowed in terms of traditional knowledge, innovations, technologies and cultural works and expressions.

situation which ought to be seen as extremely worrisome if not alarming. Part Three provides numerous instances of how today's developed countries often ensured they had weaker IP regimes than those of the technologically more advanced countries they were seeking to catch up with and benefited from doing so. In doing so it highlights the significance of difference in terms of national IP regulation. Part Four considers the contemporary relevance of what we learned in Part Three for policy making, bilateral negotiations, and intergovernmental deliberations on IP.

1. Harmonisation and “dynamic responsiveness”

The international law of IP is complex, evolutionary and highly dynamic, never more so than today. Businesses that operate across national boundaries are never satisfied with the current IP rules, at least not for long. Since certain governments are structured in ways that allow the interests of such businesses headquartered within their jurisdictions (or even sometimes outside them) to convert rapidly to national trade policies and negotiating strategies that align closely to these interests, the pressure for change can become irresistible.

Until recently, the World Trade Organization-administered Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) seemed to be the most important element of the effort to pull up developing countries' IP standards to the level of the developed countries and to modernise IP protection so as to accommodate rapid advances in emerging fields like biotechnology and the digital technologies. But now, the drivers of change are beginning to see TRIPS and the WTO forum as at least as much a brake as an accelerator. Indeed, TRIPS may be outliving its purpose for those corporations that successfully lobbied for an IP agreement in the Uruguay Round and the governments that took up their demands.

To understand what is going on, it is important to be clear about the problems that TRIPS was intended to solve. These are copyright piracy, unauthorised use of trade marks, and unwelcome competition from generic drug firms able to take advantage of patent regimes excluding drugs from protection. TRIPS has failed to solve these problems completely, and in consequence, other solutions have been employed. These include the use of (i) propaganda and “missionary work”; (ii) technical assistance; (iii) latent or overt trade threats and intimidation by rich countries towards poor countries; (iv) divide and rule tactics in multilateral negotiations; (v) the use of WIPO to introduce “TRIPS-plus” standards through new conventions, such as the WIPO Copyright Treaty, the WIPO Performances and Phonograms Treaty and the Substantive Patent Law Treaty (SPLT), and the revision of existing ones; and (vi) bilateral and regional free trade agreements (FTAs) and investment agreements.

Among the most effective of these solutions appears now to be the bilateral and regional free trade and investment agreement approach. These agreements have proved to be a useful way to get individual, or sometimes groups of, developing countries to introduce provisions that go beyond what TRIPS requires such as: (i) extending patents and copyright to new kinds of subject matter; (ii) eliminating or narrowing permitted exceptions; (iii) extending protection terms; (iv) introducing new TRIPS-mandated IP rules earlier than the transition periods allowed by TRIPS; and (v) ratifying new WIPO treaties containing TRIPS plus measures. The United States and the European Community both use this strategy, but the USA has been the more aggressive. The US interest in bilateralism and regionalism does not mean abandoning the multilateral approach. According to the United States Trade Representative, Robert Zoellick, the idea is not to put all America's eggs in one basket:⁶

⁶ Letter from Robert Zoellick to David Walker, Comptroller of the United States, December 2003: <http://www.ustr.gov/releases/2003/12/2003-12-03-letter-gao.pdf>

“When the Bush Administration set out to revitalize America’s trade agenda almost three years ago, we outlined our plans clearly and openly: We would pursue a strategy of “competitive liberalization” to advance free trade globally, regionally, and bilaterally... At its most basic level, the competitive liberalization strategy simply means that America expands and strengthens its options. If free trade progress becomes stalled globally – where any one of 148 economies in the World Trade Organization has veto power – then we can move ahead regionally and bilaterally. If our hemispheric talks are progressing stage-by-stage, we can point to more ambitious possibilities through FTAs with individual countries and sub-regions. Having a strong bilateral or sub-regional option helps spur progress in the larger negotiations.”

What does transnational industry actually want? In the area of patents, the priority is global harmonisation pitched at a level such that TRIPS is the floor; the absolute minimum that is acceptable.⁷ Initial demands for international harmonisation were directed mainly at procedural matters and aimed to reduce the uncertainty and duplication of effort caused by different patent offices examining applications for the same invention and to reduce costs for the applicants. The US, European and Japanese patent offices have been in close contact since 1983 and are cooperating in a number of areas to coordinate their approaches to searches, examinations and other procedures.

Moves are afoot at the World Intellectual Property Organization (WIPO) to go much further than TRIPS by intensifying substantive patent law harmonisation in the interests, it appears, of helping well-resourced companies to acquire geographically more extensive and secure protection of their inventions at minimized cost.^{8 9} Substantive harmonisation is more than just making the patent systems of countries more like each other in terms of enforcement standards and administrative rules and procedures. It means that the actual substance of the patent standards will be exactly the same to the extent, for example, of having identical definitions of novelty, inventive step and industrial application.¹⁰ Given the rich countries’ interests in harmonisation, it is likely to result in common (and tightly drawn) rules governing exceptions to patent rights, and the universal removal of any options to exclude types of subject matter or fields of technology from patentability on grounds of public policy or national interest.

Harmonisation is important with copyright too, especially in such areas as term of protection and subject matter; for example, the developed countries are encouraging the developing countries to extend the term of copyright protection beyond that required by TRIPS to life of the author plus seventy years, as in Europe and the USA. But the situation is a little different. One reason is that the complex array of stakeholders¹¹ whose economic and moral interests are affected by copyright makes harmonisation much more difficult to achieve. Another is that rapid technological developments have made the transnational copyright industries determined to achieve an international regime that is sufficiently dynamic to respond speedily to the massive opportunities and vulnerabilities afforded by technological advances that: (a) provide new means for copyright owners to disseminate their works to the public; but that also (b) threaten to

⁷ This is not to say that the IP regimes of the developed countries are necessarily TRIPS compatible in their entirety.

⁸ Musungu, F.S. and Dutfield, G. (2003) *Multilateral Agreement and a TRIPS Plus World: The World Intellectual Property Organization*. TRIPS Issues Paper no. 3, QUNO & QIAP.

⁹ One of the earliest calls for the harmonisation of substantive patent law came from the USA in 1966, where the President’s Commission on the Patent System declared: “the ultimate goal in the protection of inventions should be the establishment of a universal patent, respected throughout the world, issued in the light of, and inventive over, all of the prior art of the world, and obtained quickly and inexpensively on a single application, but only in return for a genuine contribution to the progress of the useful arts.” Quoted in Rogan, J.E. (2002) “The global recognition of patents: an agenda for the 21st century”. Prepared for the WIPO Conference on the International Patent System, Geneva, 25-27 March (<http://www.us-mission.ch/press2002/0326rogan.htm>).

¹⁰ In United States patent law, the terms “non-obvious” and “useful” are used instead of “inventive step” and “capable of industrial application”.

¹¹ These include authors, publishers, performers, film production companies, phonogram producers, internet service providers and broadcasters.

undermine the control over markets in these works by enabling copiers to flood markets with unauthorised versions of these works and by allowing potential consumers to copy them. While new technologies also present challenges to the patent system, the traditional criteria for protection and well established legal doctrines have managed to accommodate them (albeit with some real difficulties with respect to certain new categories of subject matter).

2. The stakes

It is not self-evident that harmonising the international IP rules and making them as responsive as possible to technological evolution is bad for developing countries just because they further the interests of transnational corporations. But making the rules identical and legally binding whether you are a very rich country with enormous balance of payments surpluses in IP-protected goods, services and technologies, or a poor country with highly burdensome trade deficits seems to be tremendously expensive and risky for the latter type of country.

If we consider the expense of it all, while it is impossible to reliably calculate the long-term economic impacts of TRIPS on developing countries and their populations, we can be certain that they will incur short-term costs in such forms as rent transfers and administration and enforcement outlays, and that these will outweigh the initial benefits.¹² The cost-benefit balance will vary widely from one country to another, but in many cases the costs will be extremely burdensome. According to a recent World Bank publication, TRIPS represents a yearly \$20 billion plus transfer of wealth from the technology importing nations, many of which are developing countries, to the technology exporters, few if any of which are developing countries.¹³ This suggests that “a country would have little or no interest in protecting intellectual property rights in products of which it is solely an imitator and intends to remain so – here the national interest is above all consumer welfare, i.e. sourcing the product as cheaply as possible”.¹⁴ Such is the case for many poor countries. One might add that such products include not just software programs and music CDs, but also life-saving medicines and educational materials.

Turning to risk, agreeing to restrict one’s freedom to tailor national or regional IP regulations to specific needs and conditions in exchange for market access commitments from the developed countries could turn out to be extremely damaging. At worst, it could place a serious block, perhaps insurmountable, on development. Drahos suggests a worst-case scenario: “if it turns out that the global market in scientific and technological information becomes concentrated in terms of the ownership of that information it might also be true that the developmental paths of individual states become more and more dependent upon the permission of those intellectual property owners who together own most of the important scientific and technological knowledge.”¹⁵

As for patent harmonisation, if taken to its logical conclusion of a world patent system, Genetic Resources Action International has warned that it could conceivably “mean the end of patent policy as a tool for national development strategies”.¹⁶ Not only this, but it would represent a radical departure from most of the nineteenth and twentieth centuries, when many countries took advantage of their freedom (pre-TRIPS) to provide statutory subject matter bars on such grounds as infant industry protectionism and the prevention of corporate monopolies on important

¹² Dutfield, G. (2003) *Intellectual Property Rights Implications for Development*, Geneva: UNCTAD & ICTSD, at 49.

¹³ World Bank (2001) *Global Economic Prospects & the Developing Countries 2002*, Washington DC: World Bank.

¹⁴ Trebilcock, M.J. and Howse, R. (1999) *The Regulation of International Trade* (2nd ed.), London: Routledge, at 314.

¹⁵ Drahos, P. (1997) ‘States and intellectual property: the past, the present and the future’, in D. Saunders and B. Sherman (eds.) *From Berne to Geneva: Recent Developments in Copyright and Neighbouring Rights*, Brisbane: Australian Key Centre for Cultural and Media Policy and Impart Corporation, 47-70.

¹⁶ GRAIN (2002) ‘WIPO moves toward ‘world’ patent system’ (<http://www.grain.org/publications/wipo-patent-2002-en.cfm>).

products like foods and drugs. For example, France only allowed pharmaceuticals to be patented in 1960, Ireland in 1964, Germany in 1968, Japan in 1976, Switzerland in 1977, Italy and Sweden both in 1978, and Spain in 1992. And around the same time, Brazil and India passed laws to exclude pharmaceuticals as such from patentability (as well as processes to manufacture them in Brazil's case).

3. Don't do what I did ...

Historical evidence strongly suggests that by depriving developing countries of the freedom to design IP systems as they see fit, the rich countries are, to use the title of a recent book by Ha-Joon Chang, "kicking away the ladder"¹⁷ after they have scaled it themselves. Let us consider a few examples of how differentiation worked well in the past to enable some of today's developed countries to catch up with the technology leaders in the past.

3.1 Lessons from business history

Over the years, Royal Philips Electronics has been responsible for an impressive series of breakthrough inventions, such as compact audio cassettes and compact discs. What is less well-known is that the company was set up in 1891 to commercially exploit somebody else's invention, Thomas Edison's and Joseph Swan's carbon filament lamp. Commercial success generated considerable revenues that enabled the firm to produce its own inventions and eventually become one of the world's most innovative corporations. How was Philips able to get such a good head start? From 1869 until 1912, Holland had no patent law. This meant that local entrepreneurs could copy foreign inventions and put them to work for their own profit, at least as long as they could figure out how they worked.

The well-known Swedish mobile phone company, Ericsson, was formed in 1876, the same year as Alexander Graham Bell made his first phone call. Sent some of these new devices to repair, the company worked out how to make them, and by 1878 was selling its own phones to the Swedish public. Bell had neglected to file patents on his invention in Sweden and the rest, as they say, is business history.

In 1960, Texas Instruments filed a patent in Japan on the integrated circuit, arguably one of the most important inventions of the second half of the twentieth century. The Japan Patent Office allowed itself 29 years to grant the patent. By that time Japanese companies, free to read the patent specification 18 months after filing, acquired the technology, improved upon it, and controlled 80 percent of the US market for computer semiconductors.¹⁸

Richard Arkwright's cotton spinning machine, patented in England a few years before America's independence, was copied by entrepreneurs in the latter country who did not have to worry about patents since there was no patent law until 1790. Intriguingly, the machine's obvious lack of novelty by 1791 did not stop a businessman from receiving a US patent for it.¹⁹ Once again, in a world of highly varied national patent laws – or no laws at all in some cases – one country's invention was also another country's economic gain.

Setting to one side the rights and wrongs of such "borrowings", and one should add here that many other examples could be given, the point is that such behaviour broke no international

¹⁷ See Chang, H.-J. (2002) *Kicking Away the Ladder: Development Strategy in Historical Perspective*, London: Anthem Press. The expression was coined by the nineteenth century German economist Friedrich List.

¹⁸ Johnson, C. (1995) *Japan: Who Governs? The Rise of the Developmental State*, New York and London: W.W. Norton & Co., at 74-5.

¹⁹ Wallace, A.F.C. & Jeremy, D.J. (1977) 'William Pollard and the Arkwright patents', *William and Mary Quarterly* 34: 404-25.

rules of the day. Furthermore, freedom to use such technologies was often beneficial not only to the imitator companies but also to the national economies in which they were based. Indeed, none of the recipient countries remained copiers for long; eventually they became among the world's most technologically advanced.

3.2 Differentiation: some examples from the past

3.2.1 Germany²⁰

In 1862 August Hofmann, a London-based German scientist, expressed firm confidence that Britain would be the leading synthetic dyestuff producer for many years to come because of its coal reserves, its huge production of coal tar, and its enormous market for textiles.²¹ He was wrong. By 1913 German companies had captured 85 per cent of the global market for dyestuffs. Switzerland, the only other major exporter was in second place albeit with a mere 10 per cent. Germany was equally dominant in the pharmaceutical sector.

The rise of Germany from the 1870s as a major industrial power with its dominant chemical and pharmaceutical industries can be attributed to at least three main factors. These are government investment in education and training, in-house research and development and company/academic collaborations, and government industrial and trade policy. From the start, the German patent law was an essential component of this policy. The German Chemical Association strongly advocated for a patent law. Within German industry as a whole there were a number of conflicting views. While the Society of German Engineers lobbied in favour of a patent law, there were still differences about the kind of patent law needed. Werner Siemens, one of the most powerful industrialists of the time and head of the German Society for Patent Protection, was gravely concerned that rival British and American firms would take out many patents for inventions that they would not work in Germany, and which would severely restrict the research and commercial opportunities of German companies.²² The chemical industry was also divided. Some firms (for example, BASF) favoured a patent law which protected processes but not products, and were thus unhappy that the first draft of the patent law would have provided protection of chemical products as such. They argued that this created no incentive to improve production processes.²³ On the other hand, Hoechst wanted the chemical industry to be completely excluded from the patent system. Although the synthetic dyestuff firms had not completely reached a consensus, the board of the Chemical Association submitted a petition to the Reichstag which argued in favour of patents for methods of manufacturing chemical products but not the products themselves. The stated grounds were that "a chemical product can be obtained by various methods and from different starting materials; the grant of a patent for the product itself would prevent better processes discovered subsequently from being brought into effect in the interest of the public and of the inventors".²⁴ In the event, the Chemical Association's position was heeded and adopted by virtue of Section 1 of the 1877 Patent Law, according to which

²⁰ The Germany and Switzerland cases are based on Dutfield, G. (2003) *Intellectual Property Rights and the Life Science Industries: A Twentieth Century History*, Aldershot & Burlington: Ashgate.

²¹ Murmann, J.P., and R. Landau (1998) 'On the making of competitive advantage: the development of the chemical industries of Britain and Germany since 1850', in A. Arora, R. Landau and N. Rosenberg (eds), *Chemicals and Long-term Economic Growth: Insights from the Chemical Industry*, New York: John Wiley & Sons, 30.

²² Kronstein, H., and I. Till (1947) 'A reevaluation of the international patent convention', *Law and Contemporary Problems* 12: 765-781, 773-4.

²³ Johnson, J.A. (1992) 'Hofmann's role in reshaping the academic-industrial alliance in German chemistry', in C. Meinel and H. Scholz (eds), *Die Allianz von Wissenschaft und Industrie August Wilhelm Hofmann (1818-1892)*, Weinheim, New York, Cambridge & Basel: VCH, 175.

²⁴ Bercovitz-Rodriguez, A. (1990) 'Historical trends in protection of technology in developed countries and their relevance for developing countries', Geneva: UNCTAD, 6.

“Patents are granted for new inventions which permit of an industrial realization. The exceptions are: ... 2. Inventions of articles of food, drinks and medicine as well as of substances manufactured by a chemical process in so far as the inventions do not relate to a certain process for manufacturing such articles.”

This implied that while processes alone could be patented, chemical products could only be protected if manufactured by a specific process and by no other. Since the interpretation of the courts (until 1888) was that sale of a chemical made through a patented process did not constitute infringement,²⁵ chemical products were effectively excluded. While this provision encouraged chemists to be creative and devise original processes, it also encouraged anti-competitive “blocking patents” intended to close off broad areas of research from competitors.²⁶ Another noteworthy provision, which also appears to have reflected the interests of many German firms, was Section 11, according to which a patent could be withdrawn after three years, either

“if the patentee neglects to work his invention in the Country to an adequate extent or to do all that was requisite for securing the said working; [or] when it appears conducive to the public interest that permission to use the invention be granted to others and the patentee refuses to grant such permission for a suitable compensation and on good security.”

It seems likely that the 1877 patent law had a positive effect overall, encouraging the establishment of research and development departments in all the major firms. The availability of protection for chemical processes but not products reflected the prevalent commercial and research strategies of the German firms at that time. They soon realized that chemical dyes were not only products, but were also likely to be intermediates for other products. Therefore patenting dyes directly could have inhibited the kinds of innovation that allowed German firms to compete with their British counterparts. Process innovation was all-important for them because, whereas British firms with the advantage of a huge market for textiles were mostly interested in creating as many new products as possible, the concern of German firms was to develop processes enabling them to improve efficiency and cut costs while also meeting the requirements of the dyers for the widest possible range of colours for all fabrics. But they soon found they could achieve cost efficiencies best by putting on the market a massive range of colours for all fabrics, using the same production equipment to create them. Emphasizing process innovation as a research strategy and product diversity as a marketing strategy resulted in the cost-effective generation of an extraordinarily large range of new and relatively inexpensive products. On the eve of the First World War, Bayer had 2000 different dyestuffs, while Hoechst made as many as 10,000.²⁷ The development of such huge product portfolios was not demand driven, but with them the big three German firms “had a firm grip on every conceivable composition of hydrocarbons, firmly shielded by a wall of patents and tacit knowledge”.²⁸

Despite this, the availability of stronger patent protection in other countries was a big advantage. The German companies’ attempts to use patents to exclude competitors in foreign markets were assisted greatly if they could acquire protection of chemical substances, and not just of processes. So their control was particularly strong in Britain and the USA, where both kinds of protection were available. A 1912 US Tariff Board study found that as many as “98 per cent of applications for patents in the chemical field had been assigned to German firms and were never worked in the United States”.²⁹

²⁵ Grubb, P.W. (1999) *Patents for Chemicals, Pharmaceuticals and Biotechnology*, Oxford: Clarendon Press, 23.

²⁶ Haber *op cit*, 203.

²⁷ Murmann and Landau *op cit*, 31.

²⁸ Wengenroth, U. (1997) ‘Germany: competition abroad - cooperation at home, 1870-1900’, in A.D. Chandler, F. Amatori and T. Hikino (eds), *Big Business and the Wealth of Nations*, Cambridge: Cambridge University Press, 144.

²⁹ Quoted in Noble, D.F. (1977) *America by Design: Science, Technology, and the Rise of Corporate Capitalism*, New York: Knopf, 16.

3.2.2 Switzerland

Switzerland, like Germany, experienced rapid growth in its chemicals sector during the late nineteenth century. Many of the first synthetic dye chemists in Switzerland were actually French chemists and entrepreneurs who had relocated to Basle, a city with long established textile and dye-making industries.³⁰ Like Germany, academy-industry collaborations encouraged by government were crucial to the enhancement of scientific and technological capabilities, while close relationships between companies and financial institutions allowed businesses to secure credit necessary to expand their research and development capabilities. The Swiss firms began by manufacturing such bulk dye products as fuchsine and alizarin but soon found themselves unable to compete with the German firms, which were the main suppliers of their intermediates and base products.³¹ In response, firms like Ciba, Geigy and Sandoz shifted their production to high quality dyes and pharmaceuticals mostly for export. This strategy was so successful that, by the 1890s, Switzerland was already the world's second biggest dyestuff producer.

The Swiss chemical industry was at least to some extent a child of the French patent law. To explain why, it is necessary to digress slightly with an explanation of the situation in France. The French patent system allowed patent scope to be extended very broadly so that process patents included the resulting product and a patented product would embrace all possible methods of manufacturing it. In addition, the law required patented inventions to be worked. Both features turned out to have perverse consequences.

Soon after the Renard Frères company patented fuchsine, one of the very first synthetic dyes, in 1859, the firm asserted its monopoly position by taking alleged infringers to court. In 1863, Renard Frères successfully sued a rival firm, Monnet et Dury, which was making fuchsine by a different process. With such a strong monopoly position over what was not only a product but a key intermediate for other dyes, the firm transformed itself into a much larger company, the Société la Fuchsine. Instead of diversifying its product range and improving its manufacturing processes it concentrated on asserting its monopoly position by charging high prices and suing infringers.³² The result was that many dye chemists and even some dyestuff firms relocated abroad, some of those that remained reverted to production of natural dyes, and smuggling of dyes from Germany and Switzerland increased.³³ The Société, which evidently had no incentive to be innovative, declined and went bankrupt in 1868.

The French patent law cannot be blamed for the demise of the French dyestuff industry, which did not completely disappear anyway. But the patent law did not reflect the fact that rapid innovation during these early stages in the development of the industry meant that enabling strong monopoly protection did not only discourage innovation, at least within the country; such monopolies could never be secure for any length of time anyway if neighbouring countries did not have patent laws. "Verguin and Renard's patent on magenta ... did not prevent the Gerbers of Mulhouse from developing a cheaper process... they simply emigrated to Basel in order to be able to exploit it freely".³⁴ Or as one Swiss scholar put it, "the first men to bring their expertise in the manufacture of synthetic dyes to Basel were French. They carried their knowledge into

³⁰ Simon, C. (1998) 'The rise of the Swiss chemical industry reconsidered', in E. Homburg, A. S. Travis and H. G. Schröter (eds), *The Chemical Industry in Europe, 1850-1914: Industrial Growth, Pollution, and Professionalization*, Dordrecht & Norwell: Kluwer Academic, 17-18.

³¹ Haber, L.F. (1958) *The Chemical Industry during the Nineteenth Century: A Study of the Economic Aspect of Applied Chemistry in Europe and North America*, Oxford: Clarendon Press, 119-20.

³² Aftalion, F. (1991) *A History of the Chemical Industry*, Philadelphia: University of Pennsylvania Press, 39.

³³ Belt, H. van den (1992) 'Why monopoly failed: the rise and fall of Société La Fuschine', *British Journal for the History of Science* 25: 45-63.

³⁴ Bensaude-Vincent, B., and I. Stengers (1996) *A History of Chemistry*, Cambridge and London: Harvard University Press, 184.

neighbouring countries. They soon arrived in large numbers, fleeing the unusual situation in France. Their contemporaries compared this to the Revocation of the Edict of Nantes as if they were fleeing religious persecution, escaping the orthodox religion ordered by the government. The knowledge those Huguenots imported proved to be of economic advantage to the adjacent countries; this time, however, the refugees were fleeing the dictates of the French patent law.”³⁵ While such a dramatic statement may overstate the case, the combination of the French patent law and the absence of a domestic one undoubtedly provided a huge impetus to the incipient Swiss dyestuff industry from which the country’s chemical and pharmaceutical sectors have benefited to this day.

The Swiss chemical industry first opposed the patent system, but when it became inevitable that there would be one, it demanded to be kept outside the system.³⁶ The companies justified this position with the argument that patent law cannot accommodate the complexities of innovation in the field of chemistry and is therefore inappropriate. But they were mainly concerned that they would be left vulnerable to their German competitors. While the second concern was understandable, the first was somewhat hypocritical given that some Swiss chemical firms were becoming very active users of other countries’ patent systems. In consequence of such opposition, the 1888 patent law required inventions to be demonstrated by a model, thus effectively excluding chemical substances and processes from patentability. It also provided compulsory working and licensing. This prohibition on chemical process patents continued until 1907, when Switzerland finally bowed to German pressure. Such pressure was effective owing to the dependence of natural resource-poor Switzerland’s chemical industry on the German market (which was its biggest) and on German chemical firms for supplies of coal tar distillates and other chemicals needed to produce the dyes. However, the ban on product protection continued until as late as 1978, an interesting phenomenon when we consider that by that decade Swiss drug firms were among the world’s largest.

3.2.3 India³⁷

At the time the Uruguay Round was concluded, the patent law in force was the 1970 Indian Patents Act. It remains in force today with some amendments. Although the Patents Act replaced the colonial-era Patent Act of 1911, the new law in certain respects had more in common with early twentieth century European practice in its public policy-inspired³⁸ limitations both on what could be patented and on patent holders’ rights.

The earlier law was considered too favourable to right holders who, in the case of chemicals, foods and drugs, were most likely to be transnational corporations. In contrast, the 1970 Act includes in the list of what are *not* inventions “methods of agriculture or horticulture”. And with respect to inventions “claiming substances intended for use, or capable of being used, as food or as medicine or drug, or relating to substances prepared or produced by chemical processes”, only the methods or processes of manufacture can be patented, not the substances themselves. The term “medicine or drug” includes *inter alia* agrochemicals (i.e. “insecticides, germicides, fungicides, weedicides and all other substances intended to be used for the protection or preservation of plants”).

For inventions claiming methods or processes of manufacturing substances intended for use, or

³⁵ Simon *op cit*, 17.

³⁶ Penrose, E.T. (1951) *The Economics of the International Patent System*, Baltimore: Johns Hopkins University Press, 17.

³⁷ This text is based on Dutfield, G. (2004) *Intellectual Property Rights, Biogenetic Resources and Traditional Knowledge: A Guide to the Issues*, London: Earthscan Books.

³⁸ This is not to suggest that interest group politics was never a major factor involved in decisions to exclude fields of technology from the patent system.

capable of being used, as food or as a medicine or drug, the term of the patent is the shorter of five years from the date of granting the patent, or seven years from the date of submitting the application and complete specification. For any other invention, the term is fourteen years from the date of application.

To encourage the production of goods in India and to prevent importers from monopolising their supply, the Act allows for the possibility of revocation on the grounds of non-working. Merely importing patented products and products made by a patented process does not constitute working of the patent. The Act also allows greater possibilities to acquire a compulsory license than does TRIPS. Even so, this provision has only rarely been exploited.³⁹ In addition, all process patents relating to drugs, foods and agrochemicals are endorsed with the words “licenses of right” from three years after the patent has been sealed (i.e. granted). This means that “any person who is interested in working the patented invention in India may require the patentee to grant him a licence for the purpose on such terms as may be mutually agreed upon”. If such agreement cannot be reached, either party may request the Controller of Patents to determine the terms upon which the license may be granted. It is also possible for the applicant to request permission from the Controller to work the patent on such terms as the Controller of Patents may think fit to impose.

The Act reflected a conscious attempt at consistency with constitutional provisions concerning the fair distribution of wealth, resources and means of production.⁴⁰ It was intended to achieve greater self-reliance, and reduce dependency on foreign companies for the supply of strategic products and medicines in line with other government policies.⁴¹ In this objective, the legislation was quite successful. According to Ganguli:⁴² “a key factor that was considered while framing the Indian Patents Act 1970 was socio-economic and science and technology status of India in the year 1947 when she came off British Rule. The emphasis was on self reliance, capability building and a drive to meet the daily needs of the Indian people in a cost effective and affordable manner.”

The present patent system, however well or badly it functions in practice, definitely serves the interests of the domestic industry much more than of the transnational corporations. This is not because it allows local firms to patent processes for making drugs and agrochemicals developed by foreign companies, but because the local drug and agrochemical firms can copy freely, sell for a profit at low prices (by international standards), and export to other countries where patents on the same products do not exist. Given the short period of protection, most domestic firms did not find it worthwhile to apply for patents on their processes. It takes anything from 5 to 8 years to acquire a patent,⁴³ and in early 2000 the 30 examiners of the Indian Patent Office had to contend with a backlog of 33,000 applications going back to 1994, a year when the number of applications began to increase significantly. Given the exceptions to patentability, the huge backlogs, and the limitations on the rights once they are granted, the sharp fall in the number of patents in force in India between the early 1970s and the mid-1990s, from over 30,000 to less than 10,000 seems entirely understandable.

Measured against the objectives of the Act, though, a strong case can be made that it has been successful. According to Ganguli:⁴⁴ “this protected patent regime provided a safe platform on which pharmaceutical and chemical industries could strike roots and grow in India and also meet

³⁹ Ganguli, P (1998a) India. In: Erbisch, F H and Maredia, K M (eds) *Intellectual Property Rights in Agricultural Biotechnology*, CAB International: Wallingford & London, 138.

⁴⁰ Keayla, B K (1999) *Conquest by Patents. TRIPs Agreement on Patent Laws: Impact on Pharmaceuticals and Health for All*, Centre for Study of Global Trade System and Development: New Delhi, 29.

⁴¹ A number of developing countries (e.g. Egypt and Brazil) introduced patent legislation motivated by similar concerns.

⁴² Personal communication, 2000.

⁴³ Ganguli, P (1998b) *Gearing Up for Patents: The Indian Scenario*, Hyderabad: Universities Press (India), 56-7.

⁴⁴ Ganguli *op cit*, note 33, 131.

the need to increase production rather than relying on imports, which was critical for the national economy. For example, pesticide imports were reduced from around 12,000 tonnes in 1965-66 to a mere 1100 tonnes in 1992-93.”

Moreover, the share of Indian firms in the supply of bulk drugs and formulations for the domestic market has significantly increased since the Act came into force in 1972, as has the number of people employed in the pharmaceutical industry. Both were a result of the Patents Act and related measures introduced around the same time (such as import restrictions and price controls) to enhance self-sufficiency.⁴⁵

Almost certainly the incentive for agrochemical and drug firms to come up with new processes was driven less by the possibility that they could patent these processes than by the freedom they had to copy in the absence of product patent protection. Like Germany and Switzerland in the late nineteenth century, India had deliberately excluded product patents to exploit and further develop its capabilities in organic chemistry. And like these two countries the strategy was a success.

The private sector consists of 20,000 registered pharmaceutical firms,⁴⁶ of which 7-8,000 are actively manufacturing drugs and drug formulations. The top five companies make up about 20 percent of the domestic market in sales. Investment in R&D is low by developed country standards but has increased, especially among larger firms. Total R&D expenditure for the industry increased 73-fold between the periods 1965-66 and 1997-98, though this still averages only 2 percent of total turnover as compared to 16 percent among US firms.⁴⁷ Several of these companies are quietly building up their patent portfolios in overseas markets. These are minuscule compared to giants like Merck and GlaxoSmithKline. But considering that all the patents held by the main Indian firms like Ranbaxy and Dr Reddy's Lab (DRL) that one of the present authors identified have been granted since 1990, the trend is clearly for a steady increase. Although they are mostly for processes of manufacturing drugs rather than for new chemical entities, both Ranbaxy and DRL have discovered several new chemical entities that are undergoing clinical trials.

The Indian market is large in terms of volume but small in sales due to the extremely low prices. Consequently the more ambitious Indian firms are turning their attention to overseas markets where the returns are higher. According to Prakash:⁴⁸ “Indian firms have established an international niche. Ranbaxy is already the world's second largest manufacturer of cefaclor (the world's largest selling antibiotic at US\$1 billion a year). Similarly, Lupin is the world's largest producer of ethambutol, anti TB drug and DRL is the second largest producer of ranitidine, an anti-ulcerant.”

3.2.4 Japan and the Asian Tigers

It is somewhat ironic that Japan is probably the most ambitious proponent of substantive patent harmonisation given that only a few decades ago, the government's technology licensing policy was quite aggressive and foreign companies often felt discriminated against by the country's nationalistic trade and industry policy, of which the patent law was an essential component. For example, post-war Japan adopted a policy of aggressively pressuring foreign high technology

⁴⁵ Lanjouw, J (1998) *The Introduction of Pharmaceutical Product Patents in India: 'Heartless Exploitation of the Poor and Suffering'?* NBER Working Paper No. 6366, National Bureau of Economic Research, Cambridge, 4.

⁴⁶ Abraham, B.P. (2000) 'The emerging patents and intellectual property rights regime: implications for Indian industry'. In: Bhattacharya, P. and Chaudhuri, A.R. (eds) *Globalisation and India: a Multi-dimensional Perspective*, New Delhi: Lancer's Books, 98.

⁴⁷ Prakash, S (1998) India. Part 2: Agriculture (Trade and Development Case Studies). Trade and Development Centre (WTO and World Bank), Geneva. (<http://www.itd.org/issues/india2.htm>).

⁴⁸ Ibid.

firms to make their technologies available to domestic industries. In the late 1950s, a Vice-Minister at the Ministry of International Trade and Industry allegedly warned IBM that “We will take every measure possible to obstruct the success of your business unless you license IBM patents to Japanese firms and charge them no more than a 5 percent royalty”. IBM had little choice but to comply.⁴⁹

Research by the late Linsu Kim on the experience of South Korea led him to find that “strong IPR protection will hinder rather than facilitate technology transfer to and indigenous learning activities in the early stage of industrialisation when learning takes place through reverse engineering and duplicative imitation of mature foreign products”. He also concluded that “only after countries have accumulated sufficient indigenous capabilities with extensive science and technology infrastructure to undertake creative imitation in the later stage that IPR protection becomes an important element in technology transfer and industrial activities”.⁵⁰ Similarly, Nagesh Kumar found that in the East Asian countries he studied (i.e. Japan, South Korea and Taiwan), a combination of relatively weak patent protection and the availability of other IP rights such as industrial designs and utility models encouraged technological learning. The weak patent regimes helped by allowing for local absorption of foreign innovations. Industrial designs and utility models encouraged minor adaptations and inventions by local firms. Later on, the patent systems became stronger partly because local technological capacity was sufficiently advanced to generate a significant amount of domestic innovation, and also as a result of international pressure.

3.2.5 The United States

Despite the national treatment rules under the 1886 Berne Convention, nineteenth century national copyright laws tended to be less friendly towards the interests of foreigners than patent laws. Several reasons can be offered. First, prior to the nineteenth century, copyright manifested itself in the form of book privileges or permits. Printing privileges or “patents” were accorded to a variety of people - printers mostly, but sometimes authors, editors, translators and book publishers. Secondly, these privileges tended, according to the religious climate of the day, not to act as economic or incentive creating tools but rather as censorship tools offering protection to the State (and the citizenry) against seditious or blasphemous literature.⁵¹ Thirdly, while granting patent-type rights to foreigners was sometimes considered to benefit the country by encouraging the introduction of protected technologies, allowing foreigners to protect their literary and artistic works did not provide such obvious economic advantages to net importers of creative works.⁵² For example, for most of the nineteenth century, the United States refused to extend copyright protection to the works of foreigners at all.⁵³ “Meanness, we think, can hardly go farther, or sink deeper”: thus begins the description of the fact that works were republished instantaneously in America without royalty payments to the copyright owners.⁵⁴ A similar thorn in the side was the

⁴⁹ Quoted in Johnson, C. (1982) *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975*, Stanford: Stanford University Press, at 247.

⁵⁰ Kim, L. (2003) *Technology Transfer and Intellectual Property Rights: The Experience of Korea*. Issues Paper no. 2, UNCTAD-ICTSD Project on Intellectual Property Rights and Sustainable Development, at 5.

⁵¹ Rose, M. (1994) *Authors and Owners: The Invention of Copyright*, Cambridge: Harvard University Press, 10-11, 15.

⁵² Cornish, W.R. (1993) ‘The international relations of intellectual property’, *Cambridge Law Journal* 52 (1): 46-63, 48, 50.

⁵³ In 1837, ‘Henry Clay, a Senator from Kentucky, presented a petition by 56 British authors arguing for recognition of their literary property rights. The petition, which alleged that authors had “suffered from injury in their reputation and property”, was met by stern defence of America’s utilitarian approach to copyright.’ Claims that the widespread copying of foreign works ‘furthered dissemination of the Enlightenment often appeared alongside less principled arguments that the American publishing industry, which employed an estimated 200,000 people, would lose a significant amount of business if foreign books were granted copyright protection’. Burkitt, D. (2001) ‘Copyrighting culture - the history and cultural specificity of the western model of copyright’, *Intellectual Property Quarterly* (2): 146-186, 156-157.

⁵⁴ *Musical Opinion & Music Trade Review*, February 1883, pp. 75-76, as reprinted in Coover, J. (1985) *Music Publishing, Copyright and Piracy in Victorian England*, London and New York: Mansell Publishing, 9.

stance of the USA in refusing to join the Berne Convention. Indeed, nineteenth century British music publishers were desperate in their attempts to intercept pirate copies of song sheets produced in the USA from entering the UK, and even resorted to trying to stop postal communications of the pirated material.⁵⁵ This saga is reminiscent of the current anguish by US music publishers in relation to Internet copying and parallel imports. Nonetheless, despite the highly TRIPS-incompatible US copyright regime of the day, a detailed economic study of the nineteenth century book trade by Zorina Khan showed that publishers, printers and the reading public all benefited. This led her to conclude that “the US experience during the nineteenth century suggests that appropriate intellectual property institutions are not independent of the level of economic and social development”.⁵⁶

By the late nineteenth century, voices could be heard in literary circles supporting reform. The editors of the *Atlantic Monthly*, for example, noting that “the rapid increase in the value and importance of American books brings prudence to the aid of morality”, advocated that “on every ground it is important that the barbarous system of pillage should cease”, and supported an international copyright convention giving equal rights to domestic and foreign authors.⁵⁷ History, however, shows that the United States wisely held off granting copyright to foreigners as long as the country showed, in terms of balance of trade, a net loss on the import/export ratio of cultural products; it was not yet in the interest of the United States to embrace reciprocal arrangements with foreign publishers. US copyright law discriminated against foreign works from 1891 until 1986 with the “manufacturing clause”, a protectionist measure intended to benefit American printers. Originally, this required all copyrighted literary works to be printed in the country. Although the clause was weakened over the years, when President Reagan vetoed a four year extension in 1982 in the face of an unfavourable GATT panel ruling and complaints from Europe, Congress disregarded the ruling and overruled Reagan. The fact that the United States had by that time become by far the world’s biggest exporter of copyrighted works suggests that its creative industries were not exactly held back by a copyright system that appears initially to have been inspired by infant-industry protectionism. Significantly, the world’s leading producer of entertainment products did not sign the Berne Convention until 1989.

3.3 Conclusions

The German, Swiss and East Asian examples have two things in common. First, they are success stories (as are the US and Indian cases). Second, companies from those countries had no qualms about availing themselves of the stronger levels of IP protection available abroad in order to strengthen their control of overseas markets. So when companies in those countries lobbied for weak domestic IP protection for protectionist reasons, did they envisage still being able to benefit from the stronger rights available in the countries of their foreign rivals? If so, one may infer that the differentiation they achieved between the levels of domestic and overseas protection was deliberate. However, we can find no historical evidence of a policy of strategic differentiation by national governments or businesses as opposed to a less sophisticated strategy of providing weak protection as a defensive strategy to insulate emerging domestic firms from foreign competition. Nonetheless, *strategic differentiation* is a useful concept to describe a policy that can work and that in a fair world would be available to today’s developing countries. By strategic differentiation, then, we mean a policy of designing IP rules in such a way that local firms striving to become more innovative will benefit more than foreign ones at home with the expectation that these same

⁵⁵ Suthersanen, U. (2001/2) ‘Napster, DVD and All That: Developing a Coherent Copyright Grid for Internet Entertainment’, in *The Yearbook of Copyright and Media Law*, Barendt, E. and A. Firth (eds), Oxford: Oxford University Press, 210-211.

⁵⁶ Khan, B.Z. (2004) *Does Copyright Piracy Pay? The Effects of US International Copyright Laws on the Market for Books, 1790-1920*. National Bureau of Economic Research Working Paper W10271.

⁵⁷ The Atlantic Monthly Editors (1872) ‘Politics’, *Atlantic Monthly* 29(173): 387-8.

firms will be free to take maximum advantage of the different rules operating in overseas markets.

4. Implications for policymaking and diplomacy

There is ample historical evidence to indicate that freedom to imitate was an essential step towards learning how to innovate. In addition, numerous examples show that relatively unfettered access to goods, technologies and information from more advanced countries stimulated development in the less advanced ones. Support for both findings comes, as we saw, from the cases of Holland, Sweden, Japan, the United States and the Asian Tigers. It is difficult to see why they would not also be true for today's developing countries.

The purpose of this paper is not to advocate strategic differentiation, or any other national trade and industrial policy for that matter. As with any other area of economic regulation there is no certainty that it will work at all times and in all places. No doubt one could find examples of failures in addition to the success stories described earlier. The point is that despite the fact that it has worked extremely well in the distant and recent past, strategic differentiation is now more or less illegal. Moreover, loopholes that allow it to continue in restricted form are being rapidly closed. The SPLT is one of several ways this is being done; enough reason, perhaps, for developing countries to oppose the SPLT and request that WIPO, which after all consists largely of developing countries, reassess its patent and digital agendas.⁵⁸

In reflecting on the implications for policymaking and diplomacy, history would appear to indicate two things that are worthwhile considering. First, the developed countries can justifiably be accused of hypocrisy⁵⁹ when they demand that the rest of the world adopt their own patent and other IP standards before the developing countries feel, for very good reason, they are ready for them. Second, and this is much more important, in doing so they are preventing the developing countries from adopting appropriate patent and copyright standards for their levels of development, a freedom today's rich countries made sure not to deny themselves when they were developing countries themselves *and may well adopt again if they find themselves being overtaken in certain strategic business sectors*.⁶⁰

⁵⁸ For further information on WIPO's Patent and Digital Agendas, see the WIPO website (www.wipo.int). For a critical commentary see Musungu, S.F. and Dutfield, G. (2003) *Multilateral Agreements and a TRIPS-plus World: The World Intellectual Property Organization (WIPO)*. QUNO/QIAP TRIPS Issue Paper no. 3.

⁵⁹ One may of course reasonably counter that the current behaviour of the Americans and Europeans is not hypocrisy but reflects a genuine change of mind. But let us for a moment consider the response of the United States government to the recent anthrax biological warfare scare of two years ago. The government decided to stockpile vast quantities of Bayer's ciprofloxacin (Cipro) to ensure that up to 10 million people could receive immediate treatment should the need arise. The government was concerned not only about whether it was possible to acquire so much Cipro at short notice but about the cost of doing so. Tommy Thompson, the Secretary of Health and Human Services, threatened Bayer that if they did not halve the price he would simply acquire the drug from other sources. At one stage he even raised the possibility of asking Congress to pass legislation exempting the government from compensating Bayer for ignoring its patent. This tough approach worked. Thompson successfully negotiated a large discount. But, by threatening to override the patent, the US government, which was at the same time pressuring developing country governments not to issue compulsory licences to generic drug producers, looked hypocritical.

⁶⁰ In fact, it is conceivable that one reason for the continuing unpatentability of computer programs and business methods in Europe is the concern that US firms will file most of the patents. In the future, Europe and the United States may well feel the need to rethink their levels of protection if the proportion of new patents filed by Chinese and India firms increases markedly.