

Singapore

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Introduction

For a project that seeks to identify the factors that impact the status of intellectual property in Asia’s emerging markets, Singapore is a very interesting case study. For one thing, Singapore’s experience appears to be a textbook example of the theory that advocates that a strong IP infrastructure promotes economic growth. When Singapore became an independent nation in 1965, her GNI per capita of US\$529 was mainly derived from a colonial economy that was highly dependent on *entrepôt* trade² and the British Army. This Third World economy did not have a very good physical infrastructure, much less a strong IP infrastructure. Today, the scene is very different. Singapore is a highly industrialised country whose GNI per capita of US\$33,919³ qualifies her as a “high income country” in the books of the World Bank, placing her with developed/First World countries.⁴ On the IP front, her legal regime of protection is “TRIPS-plus,” and recently she even emerged as one of only three Asian countries (the others being Japan and Taiwan) on the list of the top twenty-five countries in the world with the lowest software piracy rates.⁵

¹ I would like to thank Ms. Rose Hanna Ramli and Ms. Juay Puay Yong from the Intellectual Property Office of Singapore for their help in collating statistical data on the filing of patent and trademark applications.

² “*Entrepôt* trade” refers to the business of importing goods into a port or trading post (Singapore, in this case) and selling them to another trader who would then re-export these goods to other countries. In short, the traders in the trading post act as middlemen.

³ This is the GNI per capita for 2007, available from the Singapore Department of Statistics web-site, <http://www.singstat.gov.sg>. In the World Bank ranking of countries based on their GNI per capita for 2006 (atlas methodology), Singapore came in 31st (US\$29,320).

⁴ According to the World Bank’s classification by 2006 GNI per capita, the economy of a country qualifies as “high income” if its GNI per capita is US\$11,116 or more.

⁵ See FIFTH ANNUAL BSA AND IDC SOFTWARE PIRACY STUDY (2007), available at http://global.bsa.org/idcglobalstudy2007/studies/2007_global_piracy_study.pdf.

As this paper will show, there is a co-relationship between the degree of maturity of the IP infrastructure in Singapore and that of her economy: the growth of her IP infrastructure is in fact the result of concerted efforts of her policy-makers to nurture it, to use it as a tool to achieve economic goals. This paper first tracks the evolution of the IP laws of Singapore, as well as the policy reasons underlying the changes made during the following three stages of her economic development: (1) 1965-1989 (Towards an Industrialised Economy) (2) 1990-1999 (Towards a Globalised Economy); and (3) 2000 and Beyond (Towards a Knowledge-Based Economy). Next it looks closely at enforcement of IP rights, noting the extent to which IP laws in Singapore are more than just laws on the books. To provide a gauge of the growth of IP practice from one stage to the next, statistical data relating to the filing of trademark and patent applications and to infringement actions are also given. The paper then provides a brief overview of the cultural, political, education, and scientific factors that contribute to Singapore's IP infrastructure.

Another reason why Singapore is interesting to this project is that, unlike the other East Asian "Tigers," South Korea and Taiwan, Singapore's rapid technological development and industrialisation programme is heavily dependent on MNCs rather than on indigenous firms.⁶ The Conclusion briefly examines whether the strong IP infrastructure has any adverse effects on innovation amongst indigenous firms. It also offers some thoughts on the use of a strong IP infrastructure to attract foreign direct investment (FDI) into a country.

1. IP and Economic Development

1.1. 1965-1989: Towards an Industrialised Economy

A glimpse of the bleak economic landscape in Singapore at the start of its nationhood is given by Lee Kuan Yew, the country's founding Prime Minister, in his memoirs, *From Third World to First: The Singapore Story, 1965-2000*: a small island with no natural resources, apart from her deep-water harbour, and whose only valuable asset was her two million people (described by Mr. Lee as "hard-working, thrifty, eager to learn"⁷); the end of her *entrepôt* trade (as her immediate neighbour and former political partner, Malaysia,⁸ worked to bypass Singapore and deal directly with its trading partners through its own ports); the loss of a vast hinterland and domestic market to absorb Singapore-made goods (also as a result of her political fall-out with Malaysia); and the impending withdrawal of the British Army,⁹ and with it, the loss of some 20% to GDP and over 70,000 jobs in

⁶ Wong P.K., *From Leveraging Multinational Corporations to Fostering Technopreneurship: The Changing Role of S&T Policy in Singapore*, 22 INT'L J. TECH. MGMT. 539 (2001).

⁷ LEE KUAN YEW, *FROM THIRD WORLD TO FIRST: THE SINGAPORE STORY, 1965-2000*, at 24 (2000).

⁸ Singapore was part of the Federation of Malaysia from 1963 to 1965. In 1965, Singapore was expelled from the Federation.

⁹ This withdrawal took place between 1968 and 1971.

direct and support services. Unemployment in Singapore then was high (at 14%) and rising.

The strategy was to embark on an industrialisation programme that was export-oriented. Foreign investors were actively wooed¹⁰ to develop their manufacturing operations in Singapore for export to world markets—both in low-technology, labour-intensive industries (e.g., textile, garment, and toy factories were set up by Hong Kong and Taiwanese businesses) and in higher-technology industries. The electronics sector began during these early years with American MNCs setting up in Singapore: Texas Instruments in 1968, National Semiconductor in 1969, Hewlett-Packard in 1970, etc. From the outset, the political leaders were not suspicious of MNCs; they did not believe that MNCs would exploit Singapore. In the words of Mr. Lee, “If MNCs could give our workers employment and teach them technical and engineering skills and management knowhow, we should bring in the MNCs.”¹¹

By the late 1970s, Singapore had solved its unemployment problem.¹² In fact, its economic planning succeeded so well that it was facing a new problem: a tight labour market and upward pressure on wages, which made Singapore a less attractive place for MNCs relative to the emerging low-cost countries in the region. The 1980s, therefore, saw Singapore embark on what the Government called the “Second Industrial Revolution,”¹³ wherein her investment policy shifted toward promoting higher value-added and skills-intensive activities such as engineering design and computer services.

During the first phase of industrial revolution in Singapore from 1965 to the late 1970s, IP barely featured. This is hardly surprising, given that, apart from trademarks, IP was not really an issue in low-technology manufacturing industries—except phonograms, a case which I will return to shortly. Further, the MNCs who brought in the higher technology had not begun to see the value of IP and seemed satisfied, if they thought about IP at all, with the existing system of IP protection. This system, inherited from the British, comprised the following:

¹⁰ The Economic Development Board was the lead agency in Singapore tasked with courting and convincing foreign investors that Singapore was a good place to invest in, a role it still plays today.

¹¹ LEE, *supra* note 7, at 76. Further on in his memoirs, Mr. Lee elaborated on the decision to bring in the MNCs: “We did not have a group of ready-made entrepreneurs such as Hong Kong gained in the Chinese industrialists and bankers who came fleeing from Shanghai, Canton and other cities when the communists took over [China]. Had we waited for our traders to learn to be industrialists we would have starved. It is absurd for critics to suggest in the 1990s that had we grown our own entrepreneurs we would have been less at the mercy of the rootless MNCs.” *Id.* at 85-86.

¹² The unemployment rate in 1978 had fallen to 3.6%.

¹³ References to this “Second Industrial Revolution” as the aim for the 1980s may be found in speeches made during Parliament sittings. *See, e.g.*, Debate on the President’s Address, HANSARD vol. 63, col. 82 (Feb. 17, 1981); Budget Debates, HANSARD vol. 39, col. 1134 (Mar. 19, 1980).

- Copyright protection under the U.K. Copyright Act 1911, a piece of imperial legislation decreed by King George V for “His Majesty’s dominions,” modified by the Copyright Act 1914 for application to Singapore,¹⁴ and supplemented by the Copyright (Gramophone Records and Government Broadcasting) Act 1968.
- Patent protection under the Registration of U.K. Patent Act 1937, for U.K. patents which had been re-registered with the Registry of Patents in Singapore, supplemented by the Patents (Compulsory Licensing) Act 1969.
- Design protection under the Registration of U.K. Designs Act 1938, for U.K.-registered designs (without any need of re-registration in Singapore).
- Trademark protection under the Trade Marks Act 1939 (almost identical to the U.K. Trade Marks Act 1938), for trademarks registered with the Registry of Trade Marks in Singapore.
- Trademark protection in an action for passing off,¹⁵ for unregistered trademarks.
- Common-law action for breach of confidence to protect trade secrets.

Of the above laws, only two were enacted after independence: the Copyright (Gramophone Records and Government Broadcasting) Act 1968 and the Patents (Compulsory Licensing) Act 1969. The purpose of the second is self-evident. The first deserves special mention because the parliamentary debates generated during the enactment of this Act provide insight into the attitude of the policy-makers towards IP at that time.

The Copyright (Gramophone Records and Government Broadcasting) Act 1968 was introduced into Parliament with two specific aims. First, it was to deal with the increase in the importation and sale of pirated records of copyrighted musical works. This problem, according to the Minister of Law and National Development at that time, threatened the livelihood of local artists, composers, and musicians, as well as the subsistence of three newly established sound recording companies in the Jurong Industrial Park. The proposed law therefore imposed penalties (fine and/or imprisonment) for the manufacture or commercial exploitation of pirated gramophone records. The second purpose of the Act was to exempt Government broadcasting from infringement of copyright in musical works and in gramophone records, in order to stop payment of royalties to the Performing Rights Society (PRS) and International Federation of Phonographic Industry (IFPI). Under colo-

¹⁴ The Copyright Act 1914 was enacted for the Straits Settlement (comprising the British Empire’s three colonies: Singapore, Penang, and Malacca). It provided, for example, that, in relation to infringing copies imported into the colony, the Registrar of Imports and Exports of the colony shall assume the duties and powers of the U.K. Commissioner of Customs and Excise conferred under the U.K. Copyright Act 1911.

¹⁵ This “passing off” action has its origins in English common law, which was received into Singapore via the Second Charter of Justice 1826 (an Act passed by the British Parliament for the Straits Settlements). As early as the late 1880s, courts in Singapore were hearing disputes brought by traders seeking common law protection for their unregistered trademarks. *See, e.g., Fraser & Co. v. Nethersole*, 4 KY 269 (1885-1890); *Seah Lee v. Kiam Guan*, 4 KY 403 (1885-1890); *Katz Bros. Ltd. v Kim Hin & Co.*, 6 SSLR 1 (1900-1901).

nial rule, the Governor of Singapore had issued a directive to make the payments to these U.K.-based organisations. The new political leaders of Singapore did not agree that such payments were due, since broadcasting in Singapore was a non-profit activity undertaken by the Government and had an educational component. The exemption proposed by the new bill would dispense with further payments to PRS and IPFI, thereby keeping the cost of broadcasting as low as possible for the benefit of the people.

In the course of persuading his colleagues to accept the proposed law, the Minister assured them that, although Singapore had attended many international conferences on the protection of copyright, designs, and patents:

. . . we are not a member of international conventions and we have no intention of becoming a signatory to these conventions. The reason, I repeat, is that these conventions are for the benefit of the developed countries who refuse to share their knowledge with us. It is for this reason that a Bill of this nature was not passed before. I have mentioned that three industries have been set up in Jurong producing musical records and it is for the protection of these industries that this Bill is introduced.¹⁶

This renunciation of IP, one might say, epitomises the attitude of a Third World country towards IP. (Indeed, even the United States, in its early days as a net-importer of copyright works, did not exactly give priority to the protection of foreigners' works under its copyright law (the 1790 Act), thereby allowing piracy in the United States of books by British authors such as Charles Dickens.¹⁷) The Minister's speech is also interesting for another reason: it demonstrates how focused policy-makers in Singapore can be, how willing they can be to toughen up IP laws in order to achieve a particular economic goal—in this case, the survival of the three sound recording companies in the Jurong Industrial Park.

The change in Singapore's attitude towards IP started in the mid-1980s,¹⁸ corresponding to the shift in the country's focus towards higher-technology industries such as the software industry. By March 1985, the Minister of Trade and Industry

¹⁶ The Second Reading of the Copyright (Gramophone Records and Government Broadcasting) Bill, HANSARD vol. 28, col. 823 (Nov. 23, 1968).

¹⁷ See Daniel Burkitt, *Copyrighting Culture: The History and Cultural Specificity of the Western Model of Copyright*, 2 INTELL. PROP. Q. 146 (2001) (arguing that the early history of American copyright law—when piracy of British books was condoned because of the greater good of having cheap books in America—shows that copyright protection in the United States is not based on the natural justice theory, but is extremely utilitarian in its approach); see also Graeme W. Austin, *Does the Copyright Clause Mandate Isolationism?* 26 COLUM J.L. & ARTS 17, 40 (2002) (attributing the failed attempts to protect foreign authors under the 1790 Act to lobbying by American publishers).

¹⁸ Even in the earlier half of the 1980s, Singapore was still ambivalent about IP. For example, when the Minister of Law was asked during a Parliamentary sitting how the Government intended to deal with the unhappiness of writers at the lack of protection for literary works they published, the Minister responded that a committee had been set up to examine the implications and impact, both economic and social, of revising the copyright law, and the costs and long-term disadvantages of the reform. HANSARD vol. 42, col. 734-36 (Mar. 14, 1983). It was definitely a non-committal reply. A similarly non-committal reply was made to a question asking if Singapore was going to amend her patent law. HANSARD, vol. 41, col. 22-24 (June 15, 1981).

spoke in Parliament of the importance of having stronger, better copyright laws if Singapore wanted to “foster an environment of creativity, and to encourage the development of our software industry.”¹⁹ A revamp of copyright law was proposed in 1986. When introducing this new law in Parliament, the Minister of Law also repeated the need for Singapore to update its copyright law to keep abreast of developments in the field of computer science, sound and video recording, cable television, satellite broadcasting, and photocopying. Some emphasis was given to the software industry—the need to provide the legal framework necessary for the development of a strong software industry in Singapore, so that major international computer companies and software houses planning to set up software development centres in Singapore could be assured that their products would be adequately protected.²⁰

There was another reason for Singapore’s decision in 1985-1986 to improve its copyright law. The 1980s was the era when developed countries started linking international trade with IP protection. In particular, the United States had passed the Trade & Tariff Act in 1984, tying the trading benefits of the Generalized System of Preferences (GSP) granted to developing countries, to their respect and protection of U.S.-origin IP. The United States exerted pressure on Singapore to enact a new copyright law before the completion of the U.S. GSP Review at the end of January 1987, or face the consequences of losing her GSP status, that is, higher cost for Singapore goods imported into the United States because of the tariffs payable on these imports, making them less competitive vis-à-vis imports from other developing countries. In fact, Singapore was promised a better GSP package if the timing and quality of her new copyright law satisfied the United States.²¹ The U.S. influence on the enactment of the Copyright Act is not groundless speculation. The Minister of Law himself candidly acknowledged this, when he introduced the Copyright Bill in Parliament in 1986:

Beyond our own requirements, I should also mention that in recent years one significant source of friction with our trading partners, particularly the United States, has been the inadequacy of our existing copyright laws. ... I hope that the introduction of this Bill will remove one contentious issue and so improve our relations with these partners.²²

But, the Minister emphasised, this external consideration coincided with Singapore’s national interest in updating its copyright law (e.g., the growth the software industry, development of Singapore as an information centre, greater incentives to foreign investors to come to Singapore).²³ His message was for Singapore to focus

¹⁹ Budget Debates in Parliament, HANSARD vol. 45, col. 1709 (Mar. 29, 1985).

²⁰ The Second Reading of the Copyright Bill, HANSARD vol. 48, col. 11-12 (May 5, 1986).

²¹ To ensure that the quality of the new copyright law would satisfy the United States, the draft of Singapore’s copyright bill was shown to the U.S. delegation, and when the U.S. delegation requested changes to specific provisions, these were incorporated into the bill. This revelation was made during debates in Parliament when questions were asked relating to the U.S. decision to withdraw the GSP status of Singapore. HANSARD vol. 50, col. 596-600 (Feb. 25, 1988).

²² The Second Reading of the Copyright Bill, HANSARD, vol. 48, col. 12 (May 5, 1986).

²³ The Third Reading of the Copyright Bill, HANSARD vol. 48, col. 986 (Jan. 26, 1987).

not on the “stick,” but on the “carrots” of having a modern copyright law. As events would show later, this proved to be the right attitude to adopt.

Parliament passed the Copyright Act on January 26, 1987, meeting the deadline set by the United States. The Copyright Act 1987 is still the governing copyright legislation today. By and large, it embodies the standards of copyright protection found in developed countries; it is modelled on Australia’s copyright law, but there are also British and American influences.²⁴ At the same time, there are home-grown provisions catering to Singapore’s particular needs. For example, a provision was crafted to allow parallel imports into the market so that the public in Singapore would not be denied the opportunity to purchase lower-priced but legitimate editions of books originating from some other country.²⁵ As for the *raison d’être* of the new law, the Copyright Act 1987 expressly gave protection to computer programs as a type of literary work. Regulations were also immediately enacted to extend copyright protection to American works.²⁶ As *quid pro quo*, the United States accorded Singapore an enhanced GSP package.

Barely six months after Singapore started enjoying an enhanced GSP package, the United States informed Singapore that it would be “graduated” from its GSP status in 1989. While stung by the United States’ decision,²⁷ Singapore’s stoical response was to “not cry over split milk” but “to work hard to make good by being more competitive, by diversifying our markets, by moving into more sophisticated products, where the GSP makes less difference.”²⁸ After all, the domestic conditions in Singapore alone justified the promulgation of a stronger copyright regime.²⁹

Figures 1 and 2 (Appendix) set out the statistical data relating to patent and trademark filings in Singapore. During the 25-year period of industrialisation in Singapore, there were in total 14,596 patent applications and 107,289 trademark

²⁴ A classic example would be Section 35, providing for the defence of “fair dealing” for the purpose of “research or private study.” This provision was a medley of sub-sections originating from the copyright laws of Australia, the United Kingdom, and the United States. Note that this provision has since been amended, particularly in 2005. Today, the “fair dealing” defence in Singapore is much closer to the American model of “fair use.” See also *infra* note 70 and accompanying text.

²⁵ See Sec. 25(2); see also the discussion on parallel imports during the Third Reading of the Copyright Bill, HANSARD vol. 48, col. 970-71 (Jan. 26, 1987); *infra* notes 46-48 and accompanying text.

²⁶ See Copyright (International Protection) Regulations 1987. This came into force at the same time as the Copyright Act, on April 10, 1987. In addition to American works, copyright protection under the Copyright Act 1987 was also extended to British works in the same year (with effect from Apr. 16, 1987). In subsequent years, copyright protection was extended to Australian works (in 1990, pursuant to a bilateral agreement between the two countries), then to other WTO member countries (in 1996, pursuant to the implementation of the provisions of the TRIPS Agreement), and finally to Berne Union member countries (in 1998, when Singapore acceded to the Berne Convention).

²⁷ See the outcry of some of the Members of Parliament at what they perceived to be a “breach of faith” by the United States during a Parliamentary sitting in 1988. HANSARD vol. 50, col. 589-600 (Feb. 25, 1988).

²⁸ This response was given by the Minister of Trade and Industry in Parliament. HANSARD vol. 50, col. 1444 (Mar. 25, 1988).

applications filed. The majority of this—59% of the patent applications and 56% of the trademark applications—was filed during the 10-year phase of the Second Industrial Revolution (1980-1989), when the economy in Singapore was more mature.

1.2. 1990-1999: Towards a Globalised Economy

The late 1980s saw intensifying competition from neighbouring developing countries. By 1992, for example, China had become the largest recipient of FDI in Asia, exceeding ASEAN's share in total.³⁰ To meet these challenges, Singapore's economic planning for the 1990s included strategies to promote the service sector together with manufacturing, to deepen the technology base, and to create an "external" economy through globalisation.

The idea behind the strategy to deepen the technology base in Singapore was to move Singapore up the value-chain in manufacturing, especially in emerging fields such as biotechnology, and to attract research and development (R&D) activities. The policy-makers firmly believed that a solid IP infrastructure, particularly a sound patent system, was needed to achieve this goal.³¹ The patent regime in Singapore dated back to the Registration of U.K. Patent Act 1937, a piece of colonial legislation which set up a system of re-registering a patent granted in the United Kingdom.³² It was a costly, cumbersome, and time-consuming process. The Ministry of Law acted, announcing plans in 1990 for the review of this patent registration system.³³ Singapore became a contracting party to the WIPO Convention in December 1990, and the review of its patent law was done with the advice of WIPO.³⁴ In 1994, the Patents Act was passed.

²⁹ Singapore's experience supports Professor John Barton's view that IP rights are most likely to have a positive impact in developing countries when they are at "middle-income" level, with nations generally adopting stronger IP rights on their own at about US\$8,000 per capita income level. See John Barton, *Patents and the Transfer of Technology to Developing Countries*, in PATENTS, INNOVATION AND ECONOMIC PERFORMANCE 322 (OECD 2004). Singapore reached this level in 1988 when her GNI per capita was US\$9,068.

³⁰ See REPORT OF THE ECONOMIC REVIEW COMMITTEE OF SINGAPORE 16, chart 2.2 (2003).

³¹ See, for example, the speech of the Minister of Law during the second reading of the new patent law on March 21, 1994. HANSARD vol. 62, col. 1445 (Mar. 21, 1994) ("[W]e live in a global economy where trade is driven by desire, potential for profit, which in turn is determined by the element of competitiveness. Inventions and innovations sharpen this competitive edge. More countries are therefore improving their industrial property systems, particularly their patent systems, to encourage invention and innovation, and to assist in the recoupment of continuing investment costs for development of products and services. The proposed new patent system will create such a favourable climate for innovation, for developing research and innovative capabilities, and advance technological innovation in industry.").

³² This patent granted in the United Kingdom must be registered in Singapore within three years of the date of issue of the patent. After the United Kingdom joined the European Patent Convention, and its Patents Act 1997 was in force, the registration system in Singapore included registration of patents granted by the European Patent Office designating the United Kingdom as the country of protection.

³³ See the addenda of the Ministry of Law to the President's Address. HANSARD vol. 56, col. 31-32 (June 7, 1990).

The new Patents Act 1994 (still in force today) is modelled on the U.K. Patents Act 1977, but a few material differences exist. For example, the Singapore law expressly allows parallel imports,³⁵ and there is no prohibition against the patenting of animal or plant varieties or essentially biological processes for the production of animals or plants (other than microbiological processes or their products thereof).³⁶ This prohibition was considered and specifically rejected by the Select Committee set up to scrutinise the Patents Bill. The Select Committee took the view that allowing patents on varieties of plant and animal (non-human species) was necessary in order to encourage research into horticulture, agriculture, and biotechnology.³⁷ The difficult moral and ethical issues involved in such research did not appear to faze the policy-makers. However, it would not be fair to say that Singapore's utilitarian approach to IP completely ignores morality and ethics. In fact, unlike the United States, the new Patents Act has a provision prohibiting the patenting of an invention the publication or exploitation of which would generally be expected to encourage offensive, immoral, or anti-social behaviour.³⁸ Thus, any attempt to patent human beings and the related biological processes could be resolved by reference to this *ordre public* provision.³⁹

One other feature of the new patent regime should be highlighted. Given its relatively small economy and limited human resources, Singapore decided to avoid the substantial investment that would be needed to build up full-fledged search and examination capabilities in Singapore. Hence, patent registration in Singapore is a "self-examination" system, that is, there is no substantive examination of patent applications by the Singapore Registry of Patents. Instead, patent grants are made

³⁴ See the speech of the Minister of Law during the budget debates in Parliament. HANSARD vol. 59, col. 889-90 (Mar. 12, 1992).

³⁵ Sec. 66(2)(g); see also REPORT OF THE SELECT COMMITTEE ON THE PATENTS BILL vi ("Representations were made that parallel importation of medicinal, curative and surgical products should not be allowed for various reasons, including the safety and efficacy of non-patented sources and the prejudicial effect of parallel imports on the interests of authorised licensors, importers and distributors. The Committee was not persuaded by the representations to make an exception to the Government's policy of allowing parallel imports of genuine products."). In 2005, pursuant to the U.S.-Singapore FTA, amendments were made to restrict parallel importation of pharmaceutical products. See also *infra* note 68 and accompanying text.

³⁶ See U.K. Patents Act 1977, c. 37, Sec. 76A, sched. A2, 3(f) (formerly Sec. 1(3)(b)) (Biotechnological Inventions). See also European Patent Convention, Art. 53(b); E.U. Directive on the Legal Protection of Biotechnological Inventions 1998, Art. 4.

³⁷ REPORT OF THE SELECT COMMITTEE ON THE PATENTS BILL vi. Singapore did not have any *sui generis* protection for plant varieties at that time. Only in 2004 was her Plant Protection Varieties Act passed when she became a member of the International Convention for the Protection of New Varieties of Plants (UPOV Convention). Today, it is possible to get protection for plant varieties under this new Act and under the patent regime.

³⁸ See Section 13(2), which is derived from Section 1(3) of the U.K. Patents Act 1977. See also European Patents Convention, Art. 53(a); E.U. Directive on the Legal Protection of Biotechnological Inventions 1998, Art. 6(1).

³⁹ The Select Committee, when rejecting the ban on the patenting of plant and animal varieties, also pointed to the power of the Minister under the new law (Sec. 13(5)) to order the prohibition of a patent of certain subject matter for the purposes of maintaining conformity with developments in science and technology. Note that Section 13(5) was repealed in 1995.

based on search and examination reports furnished by designated foreign patent offices or the International Search and Preliminary Examinations Authorities under the Patent Cooperation Treaty (PCT). Thus, at the same time as the Patents Act 1994 came into force in February 1995, Singapore acceded to the PCT, as well as to the Budapest Treaty and the Paris Convention. Plugging herself into the international patent registration system also accorded with Singapore's strategy to globalise.⁴⁰

For Singapore and her plans to globalise in the 1990s, the conclusion of the General Agreement on Tariffs and Trade (GATT) negotiations could not have been more timely. Singapore was all poised to enter the WTO on January 1, 1995, and to implement the minimum standards of IP protection recognised by the international community as set out in the TRIPS Agreement. The following are the more significant revisions made to her IP laws between 1995 and 2000 to comply with the TRIPS obligations:⁴¹

- Patent law: the prohibition on the patenting of certain matters (e.g., mathematical methods, computer programs) was removed⁴²; the scope of the provisions allowing compulsory licensing and Government use was narrowed.⁴³
- Trademark law: a new Trade Marks Act 1998 and a Geographical Indications Act 1998 were enacted.
- Copyright law: copyright protection was extended to works originating from any WTO or Berne Union member country⁴⁴; a commercial rental right was created for software⁴⁵; performers' rights and border enforcement measures were introduced.
- Layout-design law: a new Layout Designs of Integrated Circuits Act 1999 was enacted.

⁴⁰ On the trademarks front, Singapore's globalisation strategy was affected by becoming a party to the Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks in October 2000.

⁴¹ See Article 65(2) of the TRIPS Agreement, which provided a five-year transition period for developing countries, so that the deadline for implementation of the provisions therein for such countries was 2000. Singapore's status as a developing country is recognised by international agencies such as the World Bank and the Asian Development Bank.

⁴² This prohibition is the same as the notorious "as such" provision in Section 1(2) of the U.K. Patents Act 1977. *See also* European Patent Convention, Art. 52(2)-(3). Singapore took the position that this prohibition is inconsistent with Article 27(1) of the TRIPS Agreement, which requires WTO members to make available patents for "any inventions, whether products or processes, *in all fields of technology*, provided that they are new, involve an inventive step and are capable of industrial application" (emphasis added).

⁴³ This was to bring the compulsory licensing provisions in the Patents Act 1994 in line with what is allowed in Article 31 of the TRIPS Agreement.

⁴⁴ Singapore acceded to the Berne Convention in 1998.

⁴⁵ *See* TRIPS Agreement, Art. 11. Singapore did not introduce this right for cinematographic films, presumably relying on the exception allowed in Article 11, that is, rental of cinematographic films in Singapore has not led to widespread copying of such works, which is materially impairing the exclusive right of reproduction of the authors.

There were other changes to Singapore's IP laws during the 1990s, which were not TRIPS-related; rather, they were part of the Government's efforts to adjust the IP laws to meet the needs of the public and the industries in Singapore, and/or to update the laws to keep abreast of the developments of new technology. Four sets of amendments will be mentioned as examples to illustrate this.

First, an amendment to the copyright law was made in 1994 to ensure that copyright owners would not be able to exercise their monopoly to repel parallel imports. It has been mentioned earlier that the Copyright Act 1987 contains a provision specifically aimed at legitimising parallel imports.⁴⁶ The provision proved to fall somewhat short of this aim, a shortfall which became apparent in the litigation in *Public Prosecutor v. Teoh Ai Nee*.⁴⁷ Within one year after this case was decided in September 1993, the Government moved to amend the Copyright Act 1987 to plug the identified lacuna.⁴⁸

Second, an amendment to the copyright law was made in 1998 to delete a provision that excluded commercial entities from the "fair dealing" defence for the purpose of "research or private study."⁴⁹ The existence of this provision had compelled the Court of Appeal to find, in *Creative Technology Ltd. v. Aztech Systems Pte. Ltd.*,⁵⁰ that reverse engineering of software (by decompilation) for commercial purposes was prohibited by the Copyright Act 1987. There was no leeway for any consideration of the fairness or otherwise of the activity.⁵¹ The difficulties posed by such a provision to R&D work in Singapore are obvious. About

⁴⁶ *Supra* note 25, and accompanying text.

⁴⁷ 1 SLR 452 (1994). This case held that the importation of a copyright product and its distribution in Singapore would be unlawful if the imported article was manufactured abroad without the consent of the local owner in Singapore. Although the effect of the decision would still allow for parallel imports, for example, when the local and foreign owners are identical, one class of genuine imports—those manufactured in countries whose copyright owner is different from that in Singapore and where the Singapore copyright owner has not given his consent to the manufacture of the product—would be barred.

⁴⁸ See Copyright (Amendment) Act 1994 (Aug. 25, 1994) (introducing new subsections 25(3)-(4)).

⁴⁹ See the repealed Section 35(5), providing that, for the purpose of the fair dealing defence for "research or private study," "'research' shall not include industrial research or research carried out by corporate entities (not being bodies corporate owned or controlled by the Government), companies, associations or bodies of persons carrying on business."

⁵⁰ 1 SLR 621 (1997). The litigants, Creative Technology Ltd. and Aztech Systems Pte. Ltd., are Singapore companies and rivals in the sound card industry. Creative Technology Ltd. is the market leader, where its famous "Sound Blaster" sound card sets some of the industry standards. In order to develop a sound card that is compatible with the sound standards existing in the industry, Aztech reverse engineered (by decompiling) the software in the "SoundBlaster" sound card. The parties had also started litigation in the United States. When the action was brought in Singapore, the U.S. action was then dismissed on the basis of *forum non conveniens*. See *Creative Technology, Ltd. v. Aztech System Pte., Ltd.*, 61 F.3d 696 (9th Cir. 1995).

⁵¹ Compare the U.S. situation, as exemplified by *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992), a case also involving reverse engineering of software by decompilation, where the legitimacy of this reverse engineering was assessed by reference to the list of factors set out in the American "fair use" defence.

sixteen months after the Court of Appeal's judgment was delivered, this provision was repealed.⁵²

Third, a new Registered Designs Act 2000 was enacted. This discontinued the protection of designs registered in the United Kingdom and put in place a registration system, thereby making it an easier for businesses to obtain protection for their product designs in Singapore.

Fourth, major amendments were made to the copyright law in 1999 to "address the more urgent needs of copyright owners and users of copyright materials in the on-line environment."⁵³ This set of amendments, *inter alia*, introduced a "user caching" defence permitting the making of a transient or electronic copy of copyrighted material in the user's computer from an electronic copy of the material made available on a network; introduced civil remedies to protect rights management information; and created certain exemptions from copyright liability for network service providers.

Compared to the first twenty-five years, IP practice in Singapore in the 1990s grew by leaps and bounds, as can be seen from the statistical data on patent and trademark filings set out in Figures 1 and 2 (Appendix). For example, the average number of patent applications filed per year in 1990-1999 (4,786) represents a 720% increase over the average number of patent applications filed per year in 1965-1989 (584).

1.3. 2000 and Beyond: Towards a Knowledge-Based Economy

In 1995, with a GNI per capita of US\$24,520, Singapore made it to the World Bank's list of "high income countries." The strategies adopted in the 1990s to move Singapore's manufacturing sector up the value chain bore fruit: for example, chemicals-related products accounted for 17% of this sector in 2001 compared to 8% in 1985, and R&D had grown in traditional areas like electronics but also in new areas like biomedical sciences.⁵⁴

But countries in the region were also fast catching up. For example, in 1996 when Singapore launched the "Singapore ONE" project to develop a nationwide multimedia broadband network, Malaysia established its "Multimedia Super Corridor" in the same year. To maintain Singapore's competitiveness in this new millennium, the current phase of economic planning is to work towards graduating Singapore into a "knowledge-based, innovation-driven economy."⁵⁵ This means, *inter alia*, moving its manufacturing sector even further up the value chain to become more knowledge- and research-intensive; shifting R&D from applied and

⁵² See Copyright (Amendment) Act 1998 (Feb. 19, 1998).

⁵³ See Second Reading of the Copyright (Amendment) Bill 1999, HANSARD vol. 70, col. 2069 (Aug. 17, 1999).

⁵⁴ REPORT OF THE ECONOMIC REVIEW COMMITTEE, *supra* note 30, at 23.

⁵⁵ *Id.* at 65.

downstream research to basic and IP-creating research; and promoting the digital media sector.⁵⁶

It is also important for Singapore to further expand external ties. On the latter, it was observed that:

We [Singapore] will continue to support the World Trade Organisation (WTO) as it remains the foundation for world trade, and protects small countries like Singapore against unfair unilateral trade policies. However, a purely multilateral approach has its limitations. We are therefore supplementing it with bilateral FTAs with key trading partners.⁵⁷

Of the few FTAs which Singapore has signed, the most significant (from the IP perspective) is the one with the United States. The U.S.-Singapore FTA, signed in May 2003, has an IP Chapter mandating the adoption of standards of IP protection which go beyond the minimum standards laid down in the TRIPS Agreement. Some of them even go beyond the standards set out in the more recent international IP treaties, namely, the WCT 1996 and the WPPT 1996. A few examples on copyright and patent will illustrate the “TRIPS-plus” and “WCT/WPPT-plus” nature of the U.S.-Singapore FTA:

- While the TRIPS Agreement leaves the issue of parallel importation (exhaustion of IP rights) to be decided by the individual WTO country,⁵⁸ the FTA provides certain restrictions on parallel importation of pharmaceutical products.⁵⁹

⁵⁶ The digital media sector is part of the “creative cluster” (arts and culture, design, media) identified by the *Report of the Economic Review Committee* (2003) as one of the three promising growth areas for Singapore in the New Millennium (the other two being healthcare and education). The creative industries already account for about 3% of GDP in Singapore. See Toh M.H. et al., Ministry of Trade and Industry, *Economic Contributions of Singapore’s Creative Industries*, <http://www.mica.gov.sg> (estimating that the creative industries’ contribution to GDP was 2.8% in 2000); see also Chow K.B. et al., *The Economic Contribution of Copyright Based Industries in Singapore*, 2 REV. ECON. RES. ON COPYRIGHT ISSUES 127 (2005) (estimating that core-copyright industries’ contribution to Singapore’s GDP in 2001 was 2.9%). The target is to develop the creative cluster so that its contribution to GDP will double to 6% by 2012. See the recommendation of the Economic Review Committee, Subcommittee on Service Industries, Working Group on Creative Industries, available at <http://app.mti.gov.sg/default.asp?id=507#4>.
⁵⁷ REPORT OF THE ECONOMIC REVIEW COMMITTEE, *supra* note 30, at 52.

⁵⁸ TRIPS Agreement, Art. 6 (“For the purposes of dispute settlement under this Agreement, subject to the provisions of Articles 3 and 4 nothing in this Agreement shall be used to address the issue of the exhaustion of intellectual property rights.”).

⁵⁹ For example, Article 16.7.2 of the U.S.-Singapore FTA obliges parties to provide “a cause of action to prevent or redress the procurement of a patented pharmaceutical product, without the authorization of the patent owner, by a party who knows or has reason to know that such product is or has been distributed in breach of a contract between the right holder and a licensee, regardless of whether such breach occurs in or outside its territory. Each Party shall provide that in such a cause of action, notice shall constitute constructive knowledge.” This is subject to the following proviso: “A Party may limit such cause of action to cases where the product has been sold or distributed only outside the Party’s territory before its procurement inside the Party’s territory.”

- While the TRIPS Agreement’s provision on permissible exceptions to the patent monopoly is general in nature,⁶⁰ the FTA introduces a specific “Bolar” exception, which allows generic drug manufacturers to conduct tests on a patented drug during the patent term, limited to testing to meet the requirements for marketing approval in the United States and Singapore. In other words, the testing cannot be done for the purpose of meeting the requirements for marketing approval outside the country.⁶¹
- While the TRIPS Agreement provides for a minimum patent term of twenty years, the FTA requires parties to provide for the extension of this twenty-year patent term in two cases: (a) to compensate for unreasonable delays that occur in granting the patent, and (b) with respect to any patented pharmaceutical product, to compensate for unreasonable curtailment of the patent term as a result of the marketing approval process.⁶²
- While the TRIPS Agreement provides for a minimum copyright term of “life plus fifty years,” the FTA extends this duration by an extra twenty years.
- While the WCT/WPPT’s provision on anti-circumvention measures is general in nature,⁶³ the FTA contains very specific provisions which are fashioned very closely after those in the U.S. Digital Millennium Copyright Act of 1998.⁶⁴
- While the WCT/WPPT’s provision on enforcement is general in nature,⁶⁵ the FTA’s provision on enforcement has twenty-one paragraphs. One of the key provisions here relates to the requirement to criminalize “wilful copyright or related rights piracy on a commercial scale,” which includes (i) significant wilful

⁶⁰ TRIPS Agreement, Art. 30 (“Members may provide limited exceptions to the exclusive rights conferred by a patent, provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties.”).

⁶¹ Compare Australia and Canada, where the patent law provides for a “Bolar” exception that allows testing of a patented drug for the purpose of obtaining marketing approval in foreign countries. In the case of Canada, the validity of its “Bolar” exception was challenged by the European Community (E.C.) on the basis that it contravened the provisions of the TRIPS Agreement. The WTO Dispute Panel resolved this dispute in Canada’s favour, holding that the Canadian “Bolar” exception was permitted by Article 30 of the TRIPS Agreement. Panel Report, *Canada—Pharmaceutical Patents*, WT/DS114/R (Mar. 17, 2000).

⁶² U.S.-Singapore FTA Arts. 16.7.7, 16.8.2.

⁶³ WIPO Copyright Treaty, Art. 11 (“Contracting Parties shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorized by the authors concerned or permitted by law.”). See also WIPO Performances and Phonograms Treaty, Art. 18.

⁶⁴ Compare U.S.-Singapore FTA, Art. 16.4.7 with U.S. Digital Millennium Copyright Act, Sec. 1201.

⁶⁵ WIPO Copyright Treaty, Art. 14 (“(1) Contracting Parties undertake to adopt, in accordance with their legal systems, the measures necessary to ensure the application of this Treaty. (2) Contracting Parties shall ensure that enforcement procedures are available under their law so as to permit effective action against any act of infringement of rights covered by this Treaty, including expeditious remedies to prevent infringements and remedies which constitute a deterrent to further infringements.”)

infringements of copyright or related rights that have no direct or indirect motivation of financial gains, as well as (ii) wilful infringement for purposes of commercial advantage or financial gain.⁶⁶ This is targeted at businesses using pirated or unlicensed software and downloading and distribution of copyrighted works on the Internet. Previously, such infringing activities attracted civil liability only.

The United States has come under fire for its use of bilateralism to “ratchet up” the level of IP protection around the world.⁶⁷ In the case of Singapore, it should be pointed out that Singapore was hardly a “victim.” Her agreement to the higher level of IP protection under the U.S.-Singapore FTA appears to be within the Government’s agenda. This is evident from the concluding remarks made by the Minister for Law during the last set of copyright amendments made in the 1990s:

Sir, in closing, let me say that this [1999 Amendment] Bill reinforces Singapore’s commitment to provide a strong intellectual property rights regime to encourage the growth of a knowledge-based or information economy and to promote e-commerce and creative innovation. As technologies are ever evolving and as new issues surface as a result of the constantly changing environment, I must say that this Bill is by no means the last word on the subject. We will continue to monitor international developments and we may have to propose further refinements to our copyright regime to cope with the technological developments as and when the need arises. We are committed to ensuring that our copyright law will be responsive to the changing needs of industries and we will continue to evolve to take into account new developments.

Even in the case of Singapore’s agreement to accept a restriction to allow parallel imports in her patent law where pharmaceutical drugs are concerned, it should be understood within the wider context of the international debate on access to cheaper medicine in the Least Developed Countries⁶⁸: Singapore’s pro-parallel importation policy discourages drug companies from selling essential drugs cheaply in these poor countries because these drugs could leak into the higher-priced markets such as Singapore.

After the signing of the U.S.-Singapore FTA in May 2003, in 2004-2005 Singapore went about making the necessary changes to her IP laws to implement her obligations under the FTA. During this period, there were changes made which were unrelated to the FTA, many of which were to take into account further changes in

⁶⁶ U.S.-Singapore FTA, Art. 16.9.21.

⁶⁷ See, e.g., Frederick M. Abbott, *Toward a New Era of Objective Assessment in the Field of TRIPS and Variable Geometry for the Preservation of Multilateralism*, 8 J. INT’L ECON. L. 77 (2005); N. Gallus, *Parallel Policies on Pharmaceutical Parallel Trade*, 11 INT’L TRADE L. & REG. 77 (2005); Duncan Matthews, *TRIPS Flexibilities and Access to Medicines in Developing Countries: The Problem with Technical Assistance and Free Trade Agreements*, 11 EUR. INTELL. PROP. REV. 420 (2005). The author’s earlier writings on this subject matter also contain some tinges of indignation. See, e.g., Ng-Loy Wee Loon, *The IP Chapter in the US-Singapore FTA*, 17 SINGAPORE ACAD. L.J. 24 (2004).

⁶⁸ For further discussion of this issue, see Ng-Loy Wee Loon, *Parallel Importation of Pharmaceuticals: DOHA vs. Free Trade Agreements*, in INTELLECTUAL PROPERTY & FREE TRADE AGREEMENTS (Christopher Heath & Anselm Kamperman Sanders eds., Hart 2007).

technology (e.g., an exemption to allow the making of a copyrighted work for the purpose of simulcasting⁶⁹). Then, there were a few changes which were made to ensure that the expansion of copyright has not tilted too much in favour of copyright owners. In particular, Singapore jettisoned the British model of “fair dealing,” which is a narrower defence tied to specific purposes (research or private study; criticism or review; reporting of current events) in favour of a wider, “open-ended” model that resembles the American “fair use” defence.⁷⁰

Figures 1 and 2 (Appendix) show that the number of patent and trademark applications filed in the first six years of the new millennium has already outstripped the number filed in the preceding 10-year period.

2. Enforcement Infrastructure

A thorny issue in the U.S.-Singapore IP relationship used to be what the United States perceived to be a lack of enforcement against IP piracy by the Singapore authorities. Thus, for example, the decision of the Office of the U.S. Trade Representative (USTR) to have Singapore remain on its Special 301 Watch List in 2000 cited the following reasons⁷¹: (i) the growing problem of optical disk piracy which resulted in open retail availability of pirated CDs, VCDs, and CD-ROMs in Singapore;⁷² (ii) the “self-help” approach to IP enforcement adopted by the Singapore Government, which shifted the primary burden and expense of the investigating and prosecuting infringement to the IP right owners; and (iii) insufficient efforts at the borders to stop the in-flow and transshipment of infringing articles through Singapore.

In 2000, a unit called the IP Rights Branch was set up within the Specialised Crime Division in the Criminal Investigation to conduct raids against retail vendors of pirated works. In 2001, the Intellectual Property Office of Singapore (IPOS) was converted into a statutory board. Beyond performing the traditional regulatory functions of registering patents and trademarks etc., IPOS also plays a critical role in policy development, law reform, and educational activities (especially to raise

⁶⁹ See Copyright Act 1987, Sec. 43A, 107A (introduced in 2004).

⁷⁰ See *id.* at Sec. 35. This “open-end” model of fair dealing raises issues as to whether its scope is wider than that allowed by the “three-step” test in Article 13 of the TRIPS Agreement (requiring WTO members to “confine limitations or exceptions to exclusive rights to certain special cases which do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the right holder”). This issue is further discussed in Ng-Loy Wee Loon, *Restoring the Balance in IP Law*, in DEVELOPMENTS IN SINGAPORE LAW BETWEEN 2001 AND 2005 (Teo K.S. ed., Singapore Academy of Law 2006).

⁷¹ See UNITED STATES TRADE REPRESENTATIVE (USTR), 2000 SPECIAL 301 REPORT 28 (2000).

⁷² To deal with this problem, Singapore invoked its Manufacture of Control Act in 1998 to regulate the manufacturing of optical discs, such as CDs and VCDs. In 2004, as part of her obligations under the U.S.-Singapore FTA, Singapore passed a new Manufacture of Optical Discs Act to enhance this regulatory regime.

public awareness of IP rights). In 2002, the Supreme Court announced the creation of an IP Court.⁷³

The establishment of the IP Rights Branch within the police force and its efforts in conducting raids against retail vendors of pirated works were noted in the 2001 USTR Special 301 Report.⁷⁴ This, as well as the ongoing U.S.-Singapore FTA negotiations at that time, accounted for the United States taking Singapore off the Special 301 lists for the first time in 2001. Figure 3 (Appendix) shows the statistics relating to IP enforcement by the police and the Department of Customs and Excise in the years 2000-2007.

The IP enforcement efforts by the police are complemented by a stiff sentencing policy from the courts. In *Ong Ah Tong v. Public Prosecutor*, the former Chief Justice Yong Yung How (who retired in April 2006) heard an appeal from an accused who had been sentenced by the District Judge to thirty-two months' imprisonment on three counts of trademark infringement. The District Judge had adopted two principles in coming to this sentence: first, custodial sentences for IP counterfeiting offences are the norm unless the quantity of infringing articles is quite small; and second, the starting tariff for offences involving 1,000 infringing articles or more would be a sentence of twelve months' imprisonment and upwards. In upholding this sentence, the Chief Justice expressed his approbation for such a stiff sentencing policy. In his view, this would be consistent with the Government's "strong efforts to promote Singapore as a regional intellectual property centre and the concomitant need to clamp down on piracy of intellectual property."⁷⁵

The new law criminalising "significant and wilful" infringements of copyright, which came into force on January 1, 2005, has already been invoked to prosecute businesses for using unlicensed software,⁷⁶ and individuals for distributing hundreds of pirated digital music files via the Internet.⁷⁷ As mentioned in the Introduction, Singapore is now amongst the top twenty-five countries in the world with the lowest software piracy rates.⁷⁸

Enforcement of IP rights via civil litigation is not very prevalent in Singapore, as the small numbers of reported judgments set out in the Figure 4 (Appendix) show. These numbers reflect in part the smallness of Singapore; even today, she only has a population of 4.6 million. Further, some cases alleging infringement of IP rights are resolved by mediation or arbitration. For example, a high-profile IP dispute that erupted in 1999 between Singapore Airlines (SIA) and British Airways (BA), in which BA alleged that SIA's first-class seat-beds infringed patents held by BA, was amicably settled after two days of settlement talks mediated by a retired judge at the Singapore Mediation Centre.⁷⁹ Settling disputes via alternative dispute resolution

⁷³ *Special Court to Settle Intellectual Property Disputes*, STRAITS TIMES, Sept. 20, 2002.

⁷⁴ USTR, 2001 SPECIAL 301 REPORT 390 (2001).

⁷⁵ 1 SLR 587, 593-94 (2004).

⁷⁶ *Firm with Unauthorized Software Fined \$30,000*, STRAITS TIMES, Apr. 28, 2006.

⁷⁷ *Two Jailed for Sharing Pirated Music Online*, STRAITS TIMES, Feb. 18, 2006.

⁷⁸ *Supra* note 5.

⁷⁹ *SIA, BA Drop Lawsuits Over Seats*, STRAITS TIMES, Feb. 19, 2000.

(ADR) is a reflection of the Asian values still held within Singapore, in spite of her highly industrialised economy.⁸⁰

Although the number of IP cases may not be large, as the IP infrastructure of Singapore has become more sophisticated, so has the nature of these cases. In the first years of the new millennium, the IP cases involved more complicated facts and issues. For example, there was a case involving a patent relating to the HIV-2 virus,⁸¹ and another involving a patent relating to the “ThumbDrive”—a unitary storage device that is inserted into any universal serial bus (USB) socket, thereby becoming fully integrated with a PC or laptop.⁸² Many would be familiar with the “ThumbDrive,” but few would know that it is the subject matter of a patent registered by a Singapore company.

3. Cultural and Political Infrastructure

Singapore’s ability to successfully implement IP protection is tied to Singapore’s unique cultural and political landscape. The country enjoys a high level of respect for the rule of law and low rates of corruption. The public perception towards IP is generally favourable. This could in part be due to Government’s promotion of IP as essential to economic survival. For example, according to a recent study of the Singapore consumer’s piracy-related behaviour (e.g., in downloading pirated music or movies), 57% of the respondents believe that Singapore’s economy would suffer if everyone continued to buy pirated CDs or download illegally.⁸³ This could also be due to the public’s respect for IP based on the “just rewards” theory. Thus, in the study just mentioned, 82% of the respondents agreed that “people deserve to have their creations protected by intellectual property rights.”

Another reason Singapore has been able to accomplish long-range objectives is Singapore’s exceptional political stability. The People’s Action Party (PAP) has been the ruling party since the beginning of nationhood (1965), and it enjoys an overwhelming majority: there are only two opposition members in the entire 84-member Parliament. This consistent majority means that legislators can take a long-term approach, and also that the process of lawmaking is relatively efficient.

⁸⁰ Another IP dispute which was started in court but was ultimately resolved through mediation is the copyright and trademark infringement case *Fragrance Foodstuffs Pte. Ltd. v. Bee Cheng Hiang Hup Chong Foodstuff Pte. Ltd.*, 1 SLR 305 (2003). See *Rival Companies Settle Trademark Dispute Out of Court*, STREETS, Apr. 17, 2003. It was reported that the settlement was achieved through the mediation of the president of the business association of which the plaintiff and the defendant were members. Another area of disputes which may involve an IP right (trademarks), namely, disputes relating to registration and use of “.sg” Internet domain names, is governed by the Singapore Domain Name Dispute Resolution Policy, which is modelled on the Internet Corporation for Assigned Names and Numbers’s (ICANN) Uniform Dispute Resolution Policy.

⁸¹ *Genelabs Diagnostics Pte. Ltd. v. Institut Pasteur*, 1 SLR 121 (2001).

⁸² *Trek Technology (Singapore) Pte. Ltd. v. Global Electronics Pte. Ltd. & Ors.*, 3 SLR 389 (2005).

⁸³ LIM S.S., *ILLEGAL DOWNLOADING & PIRATED MEDIA IN SINGAPORE: CONSUMER AWARENESS, MOTIVATION & ATTITUDES* (IP Academy 2006).

IP laws are made in one of two ways. Statute-based laws go through the relatively efficient legislative process: (1) the first reading of the bill (where the bill is just introduced in Parliament); (2) the second reading of the bill (where the debates on the bill take place); and (3) the third reading of the bill (where any amendments to the proposed bill are introduced, and the bill is passed). Some IP laws are common-law based (e.g., passing off, breach of confidence), and are developed by judges.

4. Educational and Scientific Infrastructure

As in many Asian cultures, education is highly valued in Singapore. Six years of primary education are mandatory. Primary schools are bilingual, in English and the child's native language (Chinese, Malay, or Tamil). 87% of these students go on to receive secondary education or higher. In lieu of higher education, students may enroll in an Institute of Technical Education to earn certificates in technical fields. Tertiary education is available at the National University of Singapore (NUS), the Nanyang Technological University (NTU), Singapore Management University several polytechnics (an American-style business management school), and the National Institute of Education. In 2006, universities graduated 10,428 students, polytechnics graduated 16,715 students, and the National Institute of Education 2,004 students.⁸⁴ The most popular fields by far were engineering, information technology, and business and administration.⁸⁵

Both NUS and NTU are research-intensive institutions. NUS contains dozens of research centres and has affiliations with many national centres as well. The "NUS Enterprise" program promotes industry engagement and entrepreneurship; it includes an Industry Liason Office specifically charged with protecting the university's IP and promoting collaboration between the university and industry.⁸⁶ NTU has six "clusters" of research centres in Intelligent Devices and System, Nano and Microfabrication, Biomedical and Pharmaceutical Engineering, Advanced Computing and Media, Information and Communications, and Environmental and Water Technologies. NTU also boasts "30 spin-off companies specialising in e-commerce, IT, electronics and manufacturing process."⁸⁷

The Agency for Science, Technology and Research (ASTAR) is the national research body that oversees public sector R&D activities in Singapore. It not only manages R&D activities, but contains education and commercialisation arms, as well. It also conducts and publishes an annual survey of R&D in Singapore. According to that survey, in 2004 R&D expenditures amounted to 2.25% of GDP,

⁸⁴ Singapore Department of Statistics, <http://www.singstat.gov.sg/pubn/reference/yos/statsT-education.pdf>.

⁸⁵ *Id.*

⁸⁶ <http://www.nus.edu.sg/enterprise/ilo/>.

⁸⁷ Singapore Department of Statistics, <http://www.singstat.gov.sg/pubn/reference/yos/statsT-education.pdf>.

nearly triple the level in 1990. Over half of R&D expenditures were in the private sector.⁸⁸

Conclusion

There is little doubt that a factor critical to the growth of IP in Singapore is the Government's firm belief that strong IP is very important—perhaps even necessary—in the plan to achieve the economic goals set for the country. Singapore's actual attainment of these goals certainly fuels this belief. From an economic perspective, the fruits of adopting a First World level of IP protection were almost immediate: soon after the signing of the U.S.-Singapore FTA, the big players who set up their development centres in Singapore in 2004-2005 included Lucasfilm (owned by George Lucas of *Star Wars* fame), Koei (a leading Japanese games company renowned for its Chinese and Japanese medieval action and strategy games), Motorola, Dell Computers, Novartis, Pfizer, and GlaxoSmithKline. It would be very naïve, though, to attribute Singapore's economic success solely (or even primarily) to a strong IP infrastructure. For example, when Lucasfilm announced its decision in 2004 to set up a digital animation studio in Singapore, while it cited Singapore's commitment to protect IP as a reason for choosing Singapore as its first place of venture outside of the United States, other reasons given were Singapore's education system, cosmopolitan environment, and pro-business policies.⁸⁹ In other words, a strong IP infrastructure is a very important factor but certainly not a sufficient factor to pull in FDI.⁹⁰

Externally, Singapore also gained some mileage in the international IP platform. In March 2006, the first WIPO diplomatic conference in Asia was held in Singapore, a conference which gave birth to the Singapore Treaty on the Law of Trademarks. The influence of Singapore in shaping IP law in the international arena may be seen from the fact that the judgment of a Singapore judge, Justice Andrew Phang (who is now a Justice of Appeal), in a trademark case involving shape marks was recently cited with approval and followed by the South African Supreme Court of Appeal.⁹¹

What, then, is the impact of a strong IP regime on innovation amongst indigenous firms? It is generally believed that strong IP rights favour the incumbent MNCs in a country and disfavour independent development of technology by indigenous firms. Interestingly enough, in the case of Singapore, her strong IP

⁸⁸ [Http://www.a-star.edu.sg/a_star/123-Statistics-on-R-D-in-Singapore](http://www.a-star.edu.sg/a_star/123-Statistics-on-R-D-in-Singapore).

⁸⁹ *The Force is with Singapore and Lucas Studio Soon*, STRAITS TIMES, Aug. 4, 2004.

⁹⁰ See, e.g., Keith E. Maskus, *The Role of IPR in encouraging FDI and Tech Transfer*, 9 DUKE J. COMP. & INT'L L. 109, 128-29 (1998) ("It must be emphasised that strong IPRs alone do not sufficiently generate strong incentives for firms to invest in a country. If that were the case, recent FDI flows to developing economies would have gone largely to sub-Saharan Africa and Eastern Europe. In contrast, China, Brazil, and other high-growth, large-market developing economies with weak IPRs would have attracted less FDI.").

⁹¹ *Nation Fittings (M) Sdn. Bhd. v. Oystertec Plc. & Anor.*, 1 SLR 712 (2006), cited in *Bergkelder Bpk. v. Vredendal Koöp Wynmakery*, SCA 8 (2006) (S. Africa).

regime does not appear to have stunted the development of technology by indigenous firms. In fact, a study which tracks the patenting trend in Singapore from 1976 to 2004 reveals a notable increase in the number of Singapore-related UPTO patents since 1996,⁹² which marks the start of Singapore's aggressive promulgation of IP laws. The relevant statistics are shown in Figure 5 (Appendix).

Singapore remains a net-importer of IP. For example, of the 9,955 total patents granted in 2007, 9,226 (93%) went to foreign entities.⁹³ Yet many in Singapore hope that one day Singapore will itself become a net exporter of IP. In a very short time, Singapore has transitioned from a developing to a developed economy, in part because of its savvy use of IP; its next transition will be "from a mentality of mere IP users to that of IP owners."⁹⁴

⁹² Wong P.K. and Ho Y.P., *Knowledge Sources of Innovation in a Small Open Economy: The Case of Singapore*, 70 SCIENTOMETRICS 223 (2007).

⁹³ Intellectual Property Office of Singapore (IPOS), <http://www.ipos.gov.sg/topNav/pub/sta/>.

⁹⁴ The Senior Minister of State for Law. See the Minister's speech made at the launch of the IP-CEP (Creation-Exploitation-Protection) Programme for local enterprises on November 8, 2002, available at the Intellectual Property Office of Singapore (IPOS) website, <http://www.ipos.gov.sg>.

Appendix

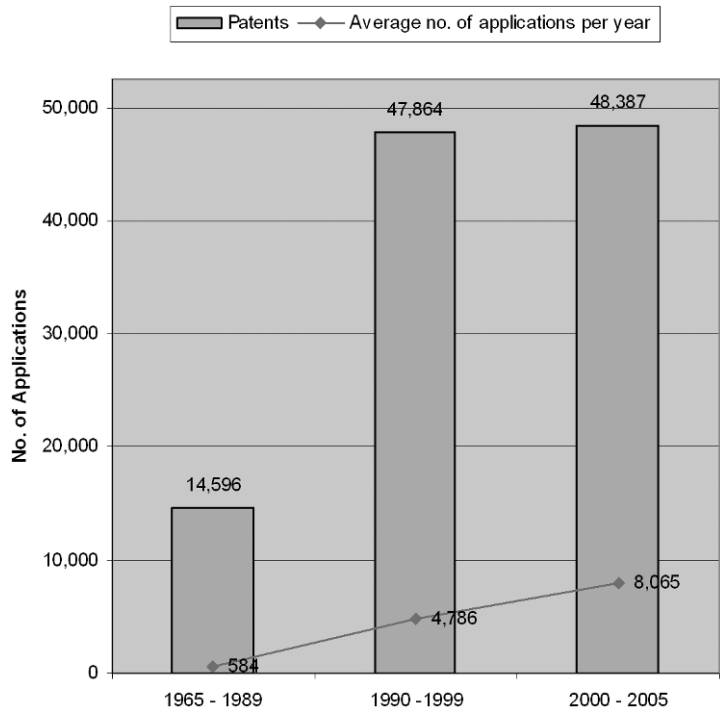


Figure 1: Statistics on Patent Filings 1965-2005
Data Source: The Intellectual Property Office of Singapore (IPOS). The statistical data for 1990-2004 are available on IPOS’s website, <http://www.ipos.gov.sg>. Data for the other years were kindly made available by IPOS to the author.

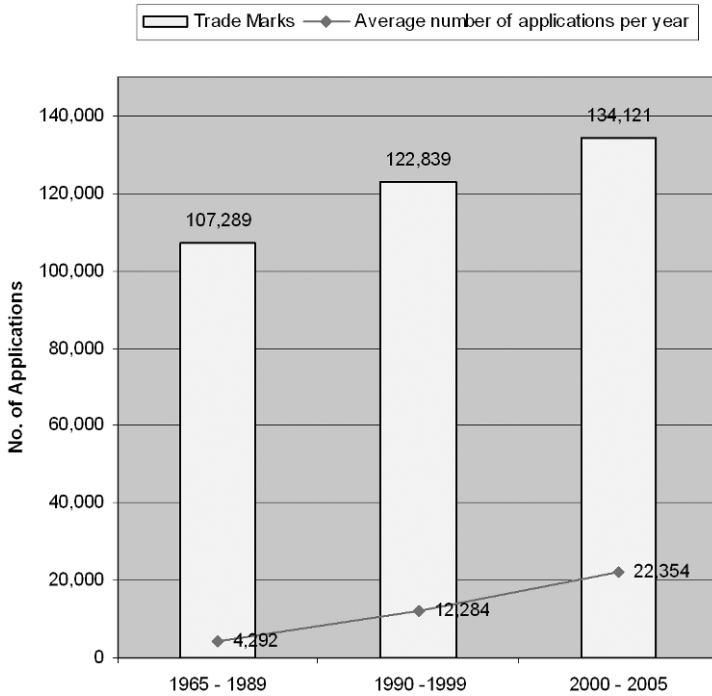


Figure 2: Statistics on Trademark Filings 1965-2005

Data Source: The Intellectual Property Office of Singapore (IPOS). The statistical data for 1990-2004 are available on IPOS's website, <http://www.ipos.gov.sg>. Data for the other years were kindly made available by IPOS to the author.

Year	Copyright Raids	Trademark Raids	Total Raids	Total Value Seized
2000	308	146	454	S\$16,310,436.28
2001	308	183	491	S\$15,553,324.95
2002	284	207	491	S\$9,415,266.00
2003	266	160	426	S\$33,185,092.00
2004	126	190	316	S\$12,665,969.00
2005	61	168	229	S\$19,774,083.00
2006	57	144	201	S\$9,952,296.00
2007	54	196	250	S\$3,385,269.00

Figure 3: Statistics on IP Enforcement 2000-2007

Data Source: Intellectual Property Office of Singapore (IPOS) website, <http://www.ipos.gov.sg>.

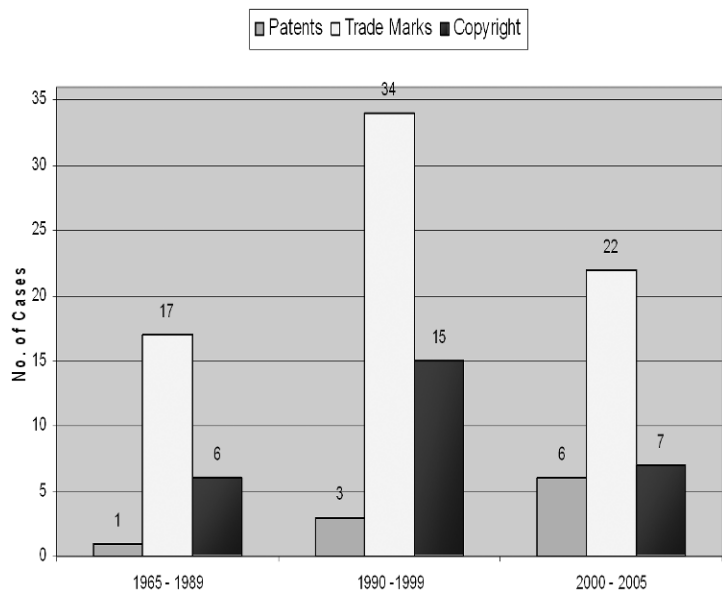


Figure 4: Statistics on IP Civil Cases* 1965-2005
Data Source: Singapore Law Reports.

*Civil cases relating to infringement and/or validity of the IP right. The statistical data shown in this Figure does not include unreported judgments from the Supreme Court or any judgment from the Subordinate Courts.

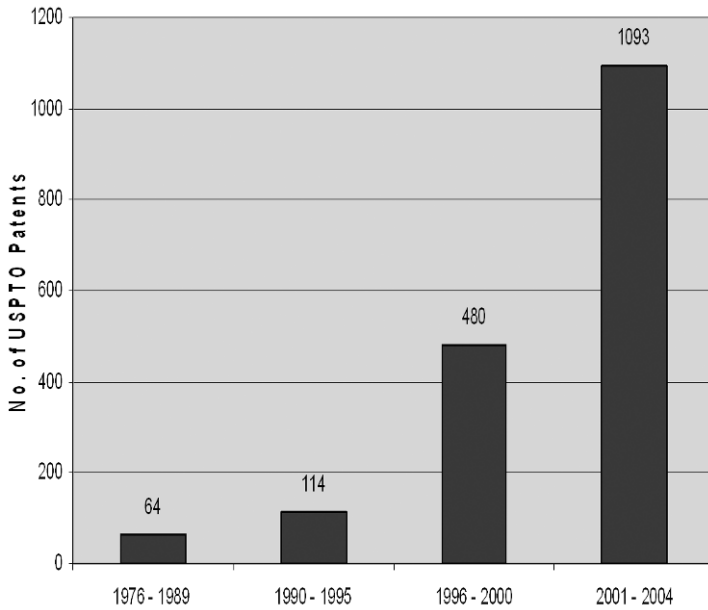


Figure 5: Statistics on Singapore-Related Patents** Granted by USPTO 1976-2004
Data Source: Wong P.K. and Ho Y.P., NUS Entrepreneurship Centre (2004).

**Where the patent is assigned to either: (a) a locally majority-owned Singapore firm; (b) a Singapore-based subsidiary of a foreign company or foreign-based company (usually a parent or headquarter company) that is known to have an operational presence in Singapore; or (c) a Singaporean tertiary institution or public research institute.