Journal of Intellectual Property Rights
Vol 13, September 2008, pp 414-423

Indian Patent Law in the post-TRIPS Decade: S&T Policy Appraisal

A D Damodaran†
Sudharma, 9, Mangalam Lane, Sasthamangalam, Trivandrum 695 010, India

Received 17 June 2008

The basic objectives within which patent laws are enacted in any country are: (a) promotion of 'R&D of possible industrial use' through rigorous legal definition of inventions and their associated attributes in terms of patents and providing them limited monopoly in the form of intangible intellectual property rights through law (b) encouragement of national techno-economic advance by making such rights conditional upon local manufacture, thereby leading to rapid techno-economic development of the country and (c) controlling potential misuse of the limited monopoly rights through compulsory licensing measures serving ultimate societal progress. To quote from the US Trade Commission itself, the basic objective is 'to promote innovation through proper balance of competition and patent law and policy' ('To promote Innovation: The Proper Balance of Competition and Patent Law Policy', A report by the Federal Trade Commission, October 2003). In essence, contents of a patent law are 'not created (*per se)* in the interest of the inventor, but in the interest of national economy. The rules and regulations of the patent system are not governed by the civil or common law but by political economy', to quote the well-known Patent Attorney and scholar, P J Michel, a point substantiated later also by the Lord Swan Committee (1948).

In fact, the Indian Patents and Designs Act, 1911 enacted under the erstwhile colonial regime basically served to protect imported machineries and technologies against possible indigenous reverse engineering by Indians or other foreign trade/manufacturing agencies working in India. The First Patent Enquiry Committee Report (1949) and subsequently the 1970 Patents Act meticulously formulated through the Justice Rajagopal Ayyangar Committee Report (1959), however, reversed this process thereby giving rise to development of India as an 'advanced developing country'. Consequent to India joining the WTO in 1995, the Act has now been made TRIPS compliant. A first level S&T appraisal of the post-TRIPS decade seems to indicate that major policy initiatives are needed to retain the past gains and to put the nation-building process truly on the forward path, failing which the existing 'knowledge barriers' may become even wider beyond our scientific-technological capabilities.

Keywords : Indian Patents law, Post-2005 appraisal, S&T policies

An objective appraisal of any national patents law regime is multidisciplinary in content, complex in nature and of far-reaching techno-developmental significance. To quote the late Justice Rajagopal Ayyangar from his celebrated report of 1959 from the well-acclaimed Swan Committee Report of 1948:

> 'The theory upon which the patent system is based is that the opportunity of acquiring exclusive rights in an invention stimulates technical progress in four ways: first, it encourages research and invention; second, it induces an inventor to disclose his inventions instead of keeping them as a trade secret; third, it offers a reward for developing inventions to the stage at which they are commercially practicable; and fourth, it provides an inducement to invest capital in new lines of production which might not appear profitable if many competing producers embarked on them simultaneously. Manufacturers would not be prepared to develop and produce important machinery if others could get the result of their work with impunity'.

To quote him again, " It would not be an exaggeration to say that the industrial progress of a country is considerably stimulated or retarded by its patent system whether the system is suited to it or not". In other words, any S&T appraisal of a country's patent regime must *ipso facto* not be divorced from its techno-industrial-

†Dr A D Damodaran is a Senior Materials Science & Technology specialist having worked at the Bhabha Atomic Research Centre (BARC) for over 25 years. Later he was the Director of the CSIR laboratory, the now National Institute of Interdisciplinary Science & Technology (NIIST), Thiruvanthapuram. Post retirement, he was BRNS Visiting Scientist, advising BARC and Department of Atomic Energy (DAE) and Nuclear Fuel Complex at Hyderabad on IPR and also in a similar capacity to Vikram Sarabhai Space Centre of ISRO. An authority on S&T Policy issues related to IPR, Dr Damodaran runs a widely read educational website 'Patentmatics.org' and is a highly respected and sought after professional on IPR matters.
Email: alathurdamodaran@yahoo.co.in

developmental policy framework. Hence, the need to examine issue from a somewhat wider canvas.

Patent Law, Evolution of its Role as an Instrument of Techno-Industrial Development

The legendary French chemist and microbiologist, Louis Pasteur always maintained that there was nothing like 'basic' and 'applied' science but only 'science and applications of science'. As someone who understood the essentials of patents and patenting practices, he refused to patent his well-documented process of destroying pathogenic bacteria and moulds in milk and other liquids (what became known as 'pasteurization') in the interests of humanity. But at the same time, he had no difficulty in patenting a process of brewing beer and ale. Again, according to the well-known Fontana History of Technology, origin of 'Industrial R&D' is attributed to the invention of mauveine (aniline purple) dye by the English chemist, William Henry Perkin in 1856. The true beginning of patents and patenting practices can also be traced to the period when modern industries post the industrial revolution started engaging 'science in its service'. In other words, patent law must be considered as perhaps the most versatile legal framework 'invented' by the post-industrial revolution capitalist nation-states for promoting 'R&D of possible industrial use' and it is obviously not surprising, in turn, that the United Kingdom became the first to regulate the rights for the above as an intangible property protected through limited monopoly so that the fruits of such R&D would lead ultimately to societal progress!

Indian Patent System, a Pre-TRIPS Evaluation

India was the first country outside of the West to have a patent law as early as 1857. It was obviously enacted by the erstwhile colonial rulers with a view to protect imported technologies from 'copying and reverse engineering'. India also has the distinction of being perhaps the first to review and revise it within a couple of years after achieving political independence. The 216-pages-long report of the Patent Enquiry Committee (1948-50)[1] and the 397-pages-long report on the revision of the patents law by Justice N Rajagopala Ayyangar Committee[2] speak eloquently of the 'patent literacy' of experts available for guidance and advice to the newly independent nation. The Indian Patents Act 1970 was the product of such eminent minds working behind the scenes and getting it passed through Parliament by a determined ruling leadership even in the face of protests from predictable quarters. If over the next few decades India rose to the status of an 'advanced developing country', due credit should go to those techno-political visionaries and stalwarts working in tandem for evolving a relevant national law facilitating large scale application of S&T through indigenous 'R&D of possible industrial use'.

The major achievement that accrued from application of the 1970 Act was that based on the process-only patent framework, products developed by advanced nations with their legacy of outstanding S&T caliber and financial resources could be indigenized and produced locally to meet India's needs both on the strategic (e.g. specialty chemicals including polymers and propellants, advanced materials and metal alloys) as well on the civilian (drugs and pharmaceuticals, agrochemicals, catalysts and so on) side. These enabled the nation over the years to develop credible capacities in space, nuclear and defense technologies, on the one hand, and also on health care and food security front at reasonable cost. But at the same time, in the absence of a truly forward-looking and self-reliant S&T-cum-industrial policy approach, the 'permissive' IPR policy did not promote innovation through original patentable inventions of consequence: no *new* material, alloy, polymer, drug, catalyst, and so on; not even any *new* competitive technology! With the number of patents filed annually remaining stagnant at around 3500, it steadily lost even adequate professional recognition in the research community. In other words, the 1970 Act gave the nation 'a quick and assisted take off' but over the years 'incapable of independent flight… powered by engines of our own', to use the inimitable phraseology of Homi Bhabha.[3]

This major malady was reflected in all sectors of industry. Promotion of indigenous in-house industrial R&D was, unlike in strategic sectors, never a serious policy factor in the framework of the Government of India/Reserve Bank of India's approved guidelines for import of technology. Without giving specific examples, one may note that the GOI/RBI have invariably been approving technology transfer (T/T) agreements, though with very crucial and far-reaching conditionality clauses. Typically, in these approvals (a) all patents in support of the transferred technology will be licensed to the licensee for use only during the licensing period; (b) any improvements during the

licensing period will normally be the property of the technology provider, (c) technology and also use of the labels produced under collaboration will be subject to the condition that products are manufactured and supplied exactly as per T/T specifications and also to specified territorial limits.

In other words, in-house R&D and steady increase in one's ability for 'autonomous working', to use the description of the economist, Ashok Desai, was never a requirement of the GOI/RBI-approved T/T framework. To put it differently, import of technology became a strategy for only an 'assisted take off', but got steadily reduced to one of 'diminishing returns' unless the same unit repeatedly upgraded its technology by continued import and that too again under similar conditionality clauses. In other words, our industrial policy continued to be a total failure in this aspect, with even the so-called 'screw driver technology' losing steadily its shine! With T/T continuing by and large, the major accepted strategy of public and private sectors for industrial development, patents never got to be a true instrument of techno-industrial modernization. Nevertheless, this aspect got reflected through relevant international trade forums like UNCTAD; according to statistics compiled by them, the developing nations such as India were, in practice, shelling out huge amounts to the technology providers of developed countries as part of the T/T fees. These were reinforced by other restrictive clauses that ended up enforcing intellectual property (IP) protection through the backdoor.

These problems, as summarized in the study called UNCTAD Resolution 39(III), became a point of serious contention in international trade negotiations. Whereas the developing countries wanted that the international patents and trademarks regime be reviewed and revised to meet their special needs and thereby aid T/T, technology providers were in the opposing camps. Things, however, changed in the late 1970s to the disadvantage of the developing nations. Surendra J Patel, the acclaimed UNCTAD expert, has summarized these in his presentation 'Indian Patent Act 1970 and the Revision of the World Patent System and the Paris Convention' in a conference organized by the National Research and Development Corporation (NRDC) on Patents and Trade Marks, New Delhi, February 1987. To quote him, 'The negotiations on UNCTAD Code were stalled, those on the Revision of Paris Convention were blocked. Global Round was abandoned. Confrontation replaced cooperation. Despite this deadlock, the developed countries went ahead and presented their proposals on Trade-Related Aspects of Intellectual Property (TRIPS). Instead of extending the scope of exclusions, they ask for reduction. Instead of reducing the duration, they want extension. Instead of opening wide the window of opportunities for new technologies, they want it to be closed. Instead of putting more teeth into compulsory licensing, they want to weaken, even abolish it. Instead of prohibiting abusive practices, they want to provide grounds for perpetuating them. Instead of expanding flexibility of national laws in the Third World, they want these laws to be carbon copy of their laws….. It is a reversal of past commitments by the developed countries to assist in promoting the development of the Third World. The clock is to be made to move only backwards…its acceptance would severely inhibit technical change and act as a major barrier to the development of the Third World'.

Prof Patel accepted that 'the reversal of the past by the developed nations is in part a reflection of several major technological breakthroughs…particularly pharmaceuticals, electronics, informatics and biotechnology. They are skill intensive…easier to be mastered for use in production through reverse engineering. Once the skill level in any country has reached a critical mass, the opportunities for benefiting from them are considerable…short-circuiting the development process, of leap-frogging over several phases of technological evolution. In a sense, they weaken the very foundations of maintaining patent monopolies.'

GATT leading to WTO and in turn to TRIPS

With countries such as India, China and Brazil emerging as 'advanced developing nations' in a few fields, a dominant issue seriously exercising the advanced nations was to provide a legal framework to circumvent this process. These efforts were orchestrated secretly among themselves outside the UNCTAD and other such UN mediated international trade bodies.[4] The strategic aim was to define a set of regulations to be valid at a global level so as to prevent what they defined as 'counterfeit goods and services' entering into trade. The G-7 countries themselves worked them out over a roughly 15-year period and away from GATT/Uruguay Round negotiations.[4] It led to a document almost ditto becoming the TRIPS Chapter of the WTO Treaty. With India opting to become a member of WTO, implementation of TRIPS became sue motto obligatory.

When details of the WTO Treaty became public and the same was taken up for ratification (incidentally, GOI entered into WTO Treaty without involvement of Parliament under the premise that 'treaty-making powers rest only with the executive, an issue which over the years has become contentious) by the Parliamentary Standing Committee on Commerce headed by Dr Ashok Mitra, a hue and cry was raised by many regarding implications of the Treaty. The following submission was made on TRIPS by the author to the Committee after taking a holistic view of the issue: '(a) The need to amend the 1970 Act can *per se* be accepted since, though it has given us great opportunities 'in transition', it will not serve our long term interests, (b) Product patenting can be accepted matching with the contemporary global situation and India's role as an 'advanced developing country', (c) compulsory licensing powers and allied anti-competitive powers of the government must be retained so that our immediate needs are not jeopardized and our interests are protected as and when needed.

In essence, one could accept TRIPS only through proper balance of competition and patent law policy to match our national needs and political economy. In spite of similar and added depositions by many including the National Working Group on Patent Law before the relevant government bodies including Parliamentary Committees, the 1970 Act was amended in three stages to make it TRIPS compliant within the WTO-stipulated time frame of 1 January 2005; the second amendment was only processed through a Select Committee and the last crucial one even bypassing it! No 1958 Ayyangar-like Expert Committee to study the issues in any depth! In essence, India has since then become fully TRIPS compliant and the new IPR regime is now applicable to all fields of technology including agriculture and services with uniform patent validity of 20 years.

India in the New Patent Regime

After a three-stage amendment process since entry to WTO in 1995, India entered into TRIPS compliant new patents regime with effect from 1 January 2005.The main aspects of the new regime are:

- Product patenting permitted on all items valid for 20 years, circumvention of process patents made difficult, with no exception for drugs and food articles, including the new genetically modified (GM) items.
- Special powers of government are subject to 'emergency' reasons only for all areas, except those covered under Indian Atomic Energy Act, 1962.
- Patent validity not conditional to working of patents.
- Breeders' rights guaranteed for new plant varieties.
- Paris Convention, with facilities under the Patent Cooperation Treaty, made applicable to all member countries.
- Services sector also to be subject to similar IPR conditionality, be they land/space telecommunications, satellite imagery, banking and consultancy services, and so on.

In sum, India is, by and large, now subject to the new IPR regime, with relevant laws almost on par with those prevailing in the advanced OECD nations. Obviously, all R&D and industrial commercial activities in our country are obliged to become compatible to the dictates of new laws. And this can be enforced only through bench-level practice of rigorous intellectual property management (IPM) integral to 'corporate governance', whether this be applicable to publicly funded R&D organizations such as CSIR, ISRO, DRDO, etc or in-house R&D units of forward-looking corporate bodies on the other.

Barring perhaps a few exceptions in the drugs sector, IPM is yet to develop as a serious activity in our country among all R&D groups except of course those run by foreign MNCs. Inadequate awareness of the crucial need to enforce appropriate IPM practices integral to organizing R&D 'of possible industrial use' forms perhaps the most serious challenge facing all S&T related activities in our country, this malady in turn leading to continuing massive patent illiteracy at working bench levels, that too, even after more than a decade since the country becoming formal signatory to WTO/TRIPS. In other words, invention-seeking R&D (used in the IPR terminology) is still at a very low level, posing great threat to the future of the nation itself. The situation is briefly summarized as applicable to a few major areas.

Materials

By definition, 'all chemical aggregates which are of potential practical use' are included in the category of materials, be they ceramic, metallic, organic or inorganic in nature. Drugs, agrochemicals etc., can also be classified under 'materials', though their public security and agriculture-related uses merit separate

classification. Accordingly, materials research involves refining/processing of naturally occurring resources through new techniques and synthesizing new materials (alloys and inter-metallics, ceramics and glasses, semi-conductors) with new properties. On a rough reckoning, over 1500 new engineering materials have been/are in use around the world and newer ones are systematically invented to meet new requirements, nano-materials perhaps being one among the latest. These materials are the fruits of years-long, systematic, knowledge-intensive and high cost R&D, and amenable to product and/or process patenting; there is hardly any which is not so. Whereas half a dozen or so companies monopolize super alloys, another group likewise control polymers, third one industrial catalysts, and so on. According to one report of the US Committee on Science, Engineering and Public Policy (COSEPUP) Panel of the US National Academy of Science, 70% of material researchers work for industry, 10% in academic fields and the rest in other areas such as federal jobs and private employment. Further, 30-40% of patents granted in US belonged to materials related areas.

Bench-marked against such a global trend for decades, it is no surprise that Indian R&D is nowhere in a position to squarely face it. While on the one hand, major departments like DAE, DRDO and ISRO have built up a substantial core of materials researchers in indigenous production of high-tech materials in all categories (e.g. zirzaloy, maraging steel, shape memory alloys, special steels, solid propellants, specialty polymers, etc) for their even commercial operations like nuclear power plants, launch vehicles and satellites, guided missiles and so on, (only a sample of these otherwise massive achievements are cited here – *Author*), the nation on a wider scale is yet to claim a new engineering material of proven practical use even for the above strategic uses. Whereas the earlier patent regime did not explicitly expose this major malady, the new regime will certainly pose great challenges to Indian S&T, including strategic sectors, thanks to the steadily increasing international pressures on the IPR front. These challenges will have to be faced either through continuing to use only the old-generation 'generic' versions or alternately in essential cases to make use of compulsory licensing/technology licensing provisions of the prevalent patent law as applicable under the new regime. In essence, 'With the process-only changeover to the product-and-process system and reversal of the onus of proof for violation of process patents, materials research in India would necessarily have to undergo a total structural transformation, seeking new processes and new materials and protecting the proprietary rights through legally valid patents on the one hand, and seeking the well-known licensing procedures for technology transfer, on the other, if so available at affordable costs and required time frames or seeking CL through approved procedures'.[5]

In the drug sector, malady is perhaps worse in the absence of any large-scale R&D investments in both public and private sectors and continued government apathy to provide long-term promotional support schemes. On the one hand, thanks to the Indian private sector, pharmaceutical companies are breaking out of their traditional reputation of being generic copycats by moving upstream in the value chain and increasing focus on new drug discovery. A new breed of service providers with specialized skills across different research verticals is emerging very fast. These players offer high-end, high quality, cost effective services across various research segments. With outsourcing and off-shoring becoming buzz words, pharmaceutical firms across the globe are increasingly showing interest in these service providers and transferring large part of their discovery research to them. A substantial rise in the R&D budget of companies has been noticed over the years towards this endeavour. With the product patent regime in operation, this offers a great opportunity for Indian drug research companies who can now play a vital role in creating IP for big multinational due to India advantage.

It is now admitted that Indian pharmaceutical firms did not gear themselves sufficiently for the post-TRIPS scenario, due to which they have to now depend on working with big multinationals to fill their bottom-lines by using their intellectual power and cheap manpower. Dr Reddy's Laboratories (DRL) was one exception that had the vision of starting a Discovery Research lab in New Chemical Entities (NCE) at the start of 1990s. DRL has as a result now carved out a niche for itself in the new drug discovery arena, rather than becoming as in many cases a mere service provider to big companies in the western world.[6]

After years of wavering, the Union Government has now come with a scheme involving a Gold Standard Certification (This would entitle them to claim a 200 per cent Maximum Allowable Post-

Manufacturing Expense (MAPE) component while fixing the product prices in respect of 354 life saving drugs proposed to be brought under the control regime. The 'regular' companies not eligible for the Gold Standard Certification will be able to avail themselves of only 150 per cent MAPE over and above their production cost. To be eligible for the Gold Standard, the companies are required to meet certain specified criteria on R&D activities and they must also have internationally approved production facilities and the company will have to spend five per cent of its turnover, subject to a minimum of Rs 50 crore a year, on R&D. The company will also need to have a minimum of 200 scientists on its rolls). Whether industry will respond and the nation will have in the coming years many more DRLs to compensate for the time loss, through the newly proposed scheme, remains to be seen!

Systems Including Related Technologies

Even a cursory perusal of the list of patent applications submitted to the Indian Patents Office highlights the fact that the number for electronics/control instrumentation/mechatronics systems emanating from foreign companies far exceed those from their Indian counterparts. Whereas the strategic departments have again gone for their own designs taking advantage of their protective umbrella (certainly not adequately cleared through any systematic IP audit), the civilian units have invariably resorted to technology collaboration with well-known foreign suppliers like Hitachi, Siemens, General Electric, and so on. In the area of semiconductors, ICs, VLSIs, etc, the situation is even worse. Unfortunately enough, IPR literacy is also the least in this sector.

The above apprehensions are substantiated by a recent study report of TIFAC.[7] Its major findings are the following: (i) A country like US filed nearly 45,000 patent applications in 2006; India's contributions being 650, (ii) No Indian company is included among the top ten; the top most being IBM with also 3,300 PCT applications, (iii) the PCT route is gathering steady momentum with the applications covering almost all fields of technology and also identifying India as a possible destination. The increase of PCT-mediated filing of patents in India by agencies from abroad could certainly pose far greater challenges for even the strategic sectors, which are simultaneously subject to various embargo regimes.[8] A case in point is a PCT application by General Electric Co for 'A fail-safe actuating system for aircraft turbine engine axis symmetric vectoring exhaust nozzle'. Filed in US pot No. under PCT in 1996 with India also as a possible destination, the patent was granted by USPTO as US Pat No 5,740,988 in 1998. The chance of getting it rejected in India is very remote, thanks to the highly inadequate patent literacy in the respective user departments. Once that happens, the R&D claims covered under its scope including 'what are obvious to experts' will not be available for Indian use. In this specific case, the problem is even more serious because while such items are under 'embargo', our patent law is inadequate to handle the patent monopoly issue for possible 'indigenization'. One has to then rely on general provisions of 'anti-competitive practice'! (iv) There has been an overemphasizing concern in India about patents in the area of drugs and chemicals, even as the bulk of leading companies have their major innovations in the area of electronics including software. Is that the real trend? Perhaps, that is the global wisdom. There is a need to revisit our perception that accords disproportionate and exclusive importance to drugs and chemicals.

Agriculture (including GM Crops)

Under TRIPS, 'Members may exclude from patentability plants…and essentially biological processes for plants. However members shall provide for protection of plant varieties either by patents or by an effective *sui generis* system or by a combination thereof'. India has enacted a Breeders' Rights Act applicable equally to all crops — whether food, industrial raw material (e.g. rubber) or even ornamental plants. The only leeway given is for farmers to retain seeds for their own use and not for commercial sale — something obviously possible even under a fair use doctrine! In a similar manner, the potential benefits of the gene revolution have been ignored. The world's top six science academies, including those of the US and UK, had strongly recommended that if the IPRs of genetically modified (GM) technologies were made extensive, it would seriously affect the future of developing countries. In other words, India should have incorporated special anti-monopoly measures such as compulsory licensing powers useable unilaterally to meet special requirements such as food security, livelihood security, etc. Thanks to its ambiguous laws, the country's cotton farmers are already in distress, paying exorbitant prices for Bt seeds, the cost in

China being almost one-tenth! In fact, the ill effects of the new regime in the field of biotechnology are yet to be even seriously assessed.[9]

Increasing FDI in the R&D Sector, Pattern in 1998-2003: Developed Nations — the True Beneficiaries?

A recent exhaustive study for TIFAC by Academy of Business Studies, New Delhi[10], has summarized its report as follows:

(i) India has emerged as a global R&D hub, with investment worth $1.13 billion planned to be raised to 4.65, with US being the first followed by Germany, employing nearly 23,000 persons – a scientist in India costing $10,000 an year compared to 100,000 for the US counterpart.

(ii) Computer based R&D predominates while drugs, auto, chemicals and agro too among the rest. They have filed at least 415 patents in US.

(iii) Partnership with local companies is good at the start, but not forever. 56% prefers to work alone in India with 100% foreign equity.

According to a very recent report of the financial daily, *LiveMint*[11], 'As India becomes an important centre of innovation, Indian and global technology firms are increasing efforts to spread the message of need to protect and patent the intellectual property developed locally. The effort seems to be paying off as multinationals such as TI, Cisco, and NXP Semiconductors of Eindhoven, the Netherlands, see a surge in patent applications, both local and US, being filed from their research units in the country. The trend is, in part, driven by the more complex and critical R&D assignments being taken on by the Indian units and cash incentives offered to encourage employees to create IP. TI has seen an increase in patents being filed from India in recent years, with around 70 applications for US patents filed in 2007. The Bangalore unit has filed more than 500 applications from Indians in the US since 1985, when it became the first multinational technology firm to set up a development centre in the southern city. TI's competitor NXP Semiconductors, a spin-off from Royal Philips Electronics NV of the Netherlands, also has a similar story to share. The company has seen a spurt in patent applications after it started encouraging innovation among its employees here with a fourfold rise in patent applications filed by its employees in India—to around 20 Indian and US ones a year, up from about less than five—some three years ago. Patent applications filed by firms in India grew annually by around 20% to 35,000 in 2007-08, according to the Indian Patent Office. Details of the number of US patent applications being filed for work done locally were not available. Cisco Development Organization, the Indian R&D outfit of the San Jose, California-based company, has been granted 110 US patents for 450 applications filed so far from India. 'The Microsoft India Development Centre (MSIDC) in Hyderabad, the largest product development centre outside Redmond for the world's largest software firm, has contributed to generating 180 US patents for Microsoft in India in the last three years. Philips Electronics has filed about 130 US and Indian patent applications from India over the last six years, which accounts for 10-15% of the total patents filed by the parent company globally on an annual basis, up from 4-5% five years ago, and so on.

In filing patent applications, the local subsidiaries of large multinationals such as International Business Machines Corp, Microsoft Corp, Qualcomm Inc, and Samsung Electronics are ahead of the Indian services firms such as Tata Consultancy Services Ltd, or TCS, Infosys Technologies Ltd and Wipro Ltd. TCS, India's largest software services firm, was granted 17 US and Indian patents in the financial year 2007-2008 fiscal year against 26 applications. The company has a total of 37 US and Indian patents to its credit and about 100 are in the process, said a company spokesperson. Infosys, which has filed an aggregate of 119 US patent applications till date, was recently granted two patents by USPTO in areas of holography and mobile communications. Much of the business of Indian software services firms is linear, meaning that a growth in revenues is accompanied by a corresponding growth in number of employees. Wipro Technologies, the technology services arm of Wipro, has filed more than 100 US and Indian patent applications till date—the majority in the past few years—of which 38 have been approved, mainly in the US. The company has been filing 25-30 patents a year in information technology and the firm's IP-led licensing revenue accounts for between 3% and 4% of the total earnings from technology business.

The TIFAC report had recommended that FDI in R&D sector should be encouraged; it also added that 'the reporting system for FDI companies should be designed to promote transfer of technology to the public domain after a reasonable time period in the private domain under patent protection or otherwise.(as envisaged in) TRIPS Agreement

Articles 7 and 8 on T/T'. The big question is: With patent validity being made not conditional to local manufacture, will this recommendation ever be put to practice except as dictated by market demand and will not the foreign companies alone be the true beneficiaries under our existing patent regime? Only future will be the true arbiter!

Continuing 'Patent illiteracy' in India

Even though this weakness needs very in-depth study, perhaps a look at the Japanese experience will shed some meaningful light. How is it that the country has remained by and large 'patent illiterate' in terms of concrete outputs? Whereas prior to independence, any R&D of 'possible industrial use' was materially absent, the contemporary situation of large-scale patent illiteracy would be understood only if one subjects the country's post-independence scientific-technological-industrial policies to deeper scrutiny. A quick comparison between the policies of post-war Japan and post-independent India will be in order. In a recent study on 'How Technology got a boost from the Japanese Patent Office', Christine A, McDaniel and Keith E Maskus have highlighted the following aspects[12]:

(i) In addition to patents, the JPO awarded utility model protection, which required lower levels of inventiveness, scope and duration of protection than patents. This allowed firms in Japan to receive utility model protection and design patents on technologies that were only slightly modified from the original invention.

(ii) A single claim requirement allowed firms in Japan to invent around the original patent easily and provided an incentive for 'cluster filing' of patent applications, in turn leading to easier, even forced, cross-licensing.

(iii) Pre-grant disclosure 18 months after filing allowed Japanese firms to prevent duplicate investments in particular.

The authors conclude: "Japanese patent system effectively encouraged incremental innovation as a mechanism of technology diffusion. The emphasis on follow-on innovations through the patent system was important part of post-war Japanese technology policy. The success of technology diffusion and incremental innovation sheds light on the net effects of early disclosure rules. The findings presented here are consistent with the observation that Japan was in a technological 'catch-up' phase during the period (1960-95) studied. Diffusion and imitation were more important than pure invention. The diffusion-promoting features of the Japanese patent system contributed positively to Japanese technological progress".

It is unfortunate that such possible choices were not seriously considered by any expert committee prior to the three amendments that were passed through Parliament — the avowed objective being 'to meet the WTO/TRIPS time schedule'! The widely prevalent patent illiteracy among the S&T-cum-industry community has not presented many opportunities for emergence of significant IP case judgments as well, unlike in advanced countries. As a result, India has suffered from not being able to work out an appropriate balance between patent law and anti-competitive practices. The case law as applied to Glivec/Novartis[13] has happily enough bridged this gap as a significant beginning.

Conclusion

In a forward to the celebrated Commonwealth Commission Report on Intellectual Property Rights and Development Policy to study how national IPR regimes could best be designed to benefit the developing countries within the context of international agreements, including TRIPS, Sir Hugh Laddie, the learned UK High Court Patent Judge says:

"Whether the intellectual property rights are good or bad thing, the developed world has come to an accommodation with them. Even if their disadvantages sometimes outweigh their advantages, by and large the developed world has the necessary strength and established legal procedures to overcome the problems so caused. In so far as their benefits outweigh their disadvantages, the developed world would have the wealth and infrastructure to take advantage of the opportunities provided. It is likely that neither of these holds true for the developing and least developed countries"[14]

Indian laws are known for their 'delightful vagueness', as a senior lawyer had jokingly put it, apparently to give enormous opportunities for the learned Judges to use their discretionary powers in arriving at the best possible judgments. But whether such 'delightful vagueness' as embodied in Indian Patents Act is compatible with a complex techno-legal legislation is a different matter. Undoubtedly, the historic judgment of the Chennai High Court in the latest Glivec case will serve as a precedent in future rulings and building case laws. Still, the observations of the late Rajagopal Ayyangar describing Indian

legal system as complex and unwieldy (and hence his recommendation for the licenses of rights for patents of drugs and food articles) will continue to haunt the nation, even when its S&T capabilities have matured to that of an 'advanced developing country'. The brilliant piece on 'Taming of the Flu: Working through the Tamiflu Patents in India' by Shamnad Basheer in the March 2006 issue of *JIPR* makes our fears only true!

Secondly, with FDI permissible in almost all sectors and technology imports becoming increasingly difficult for Indian companies (unless they are willing to part with majority stake!), Indian industry could in the foreseeable future be sucked into a 'technology trap', unless the policymakers and captains of industry see the dangers and conduct a re-appraisal of the existing policies. And for such a policy re-appraisal, the patents data could serve as a crucial and reliable monitoring indicators, the way it is practiced in all advanced countries (for example, the TR Score Index of MIT and accepted by US S&T agencies). It is in this context that the findings of the Finish economist-technology policy researcher 'Dr Petri Niininen of VTT Group for Technology Policy, Finland, are very instructive. To quote his study of eleven Finish manufacturing industries in 1975-1993.[15]

"The purpose of this empirical study was to analyse the part of the output growth which cannot be attributed to traditional inputs, labour and capital. This is the definition of total factor productivity, which is consistent with the theoretical framework of the new growth theory. We broke down the total factor productivity rate of growth into seven components. The estimated shares of the components are First, industrial R&D accounts on average for 9% of the TFP rate of growth…the effect of exogenous demand covers nearly one third of the TFP. This leaves the disembodied technical change component an average share of about 26%. The mark-up and factor price components had a negligible effect. The share of the total R&D is one fourth of the residual technical change and the R&D components. These figures are in line with Denison's (1985) notion of R&D representing around 20% of technical progress". According to Dr Niininin, 'Product market conditions combined with technology push are the most important factors for companies in Finland to innovate, we could see that market-related issues are very important and customers' demands help initiate projects. Market niche recognition, customer feedback and collaboration, consumer knowledge and commercialization are highly critical factors on technology and marketing innovations'.

To repeat, markets provide the pull, but only technology can give the push. For the first time since 1947, India seems to have gone for an industrial policy essentially not in consonance with its patent policy. The much-maligned 'Screw Driver Technology' is steadily dwindling to 'Plug-in Technology'!

A decade ago, the distinguished patent policy expert, NS Gopalakrishnan had warned of possible consequences of the proposed new regime in his excellent paper, 'The Patents (Second Amendment) Bill 1999 – An Analysis'. To quote him, "Historically patent legislation of countries particularly that of the developed countries underwent changes on the demands from the domestic industries. It is the competitive position of the industries that forces them to go for better protection to safeguard their investments. In the context of globalization, the TRIPS Agreement forces these changes even if there is no demand for such a change from the domestic industries. The above analysis of the proposed amendments to the Indian Patent Act makes it clear that the amendments are introduced mainly to satisfy the obligations under WTO and has strengthened the position of the patent owner sacrificing the public interest provisions in the Act. The new Act will surely benefit the owners of patent whether Indian or foreigner. Considering the fact that majority of the patents taken in India are by foreigners, the immediate benefit will surely be for them. The benefit will reach the Indian society only if we improve our rate of invention increasing the investment in R&D. There is no evidence to show that the R&D investment has considerably gone up after the liberalization of the economy either by Indian or by foreign investors. The foreign direct investment for manufacture has also not substantially increased in core sectors where we need investment for industrial growth. In this context, the new amendments will be used as an effective instrument to create monopoly in the market to sell patented products manufactured abroad. The increase in import in the recent years is a clear indication in this direction. Liberalization of our economy coupled with the amended Patent Act will adversely affect our industrial growth unless we boost up investment in R&D and increase our inventions with potential for global commerce. This seems to be a remote possibility given the present status of our industries.'[16]

Many others like him also have been expressing repeatedly such fears. Even a first level S&T appraisal of the decade long new regime seems to be in agreement with the above. Obviously, Indian S&T needs a serious re-look, more so after a decade-long post TRIPS compliance, with a new science-technology-industry policy and a patent-cum-competition law to closely support and augment it. Daniel I Okimoto, in his excellent monograph 'Between MITI and the Market' (Stanford University Press), has described in great detail how MITI had played a historic role in transforming the war-torn Japan into a modern techno-industrial-economic power. To quote him, "Of the industrial countries that have relied heavily on industrial policy, it is hard to find one that has not had to pay the high price of economic inefficiency or trade tensions. Japan is cited as an unambiguous success story the effectiveness of industrial policy is revealed in the successful emergence of one industry after another as world-class competitors: steel, automobile, semiconductors", and so on. Lest we forget, Japan had a matching patent law and competition law as well to match the policy requisites, leave alone its unique development banking structures and other promotional features. The pioneering study by Sanjaya Lall ['Technological Capabilities and Industrialization", *World Development, 20(2) (1992*)] on Korea and other East Asian Economies also point out to only similar conclusions. The Growing Science Model of Homi Bhabha formulated in mid-sixties for India (implemented only in DAE and later in ISRO) has much in common with the former ones.

Perhaps Indian policies could be revisited on those models appropriately synergised with contemporary requirements. More on this is beyond the scope of this paper. A Faustian challenge, but then there is no alternative if Indian S&T and industry must be 'powered by engines of its own', in the wise description of Homi Bhabha.

Acknowledgement

The excellent support given by his erstwhile colleague at NIIST, KP Sadasivan, is gratefully acknowledged.

References

1 *Report of the Patents Enquiry Committee* (1948-50), Ministry of Industry and Supply, Government of India.

2 *Report on the Revision of the Patent Law*, Rajagopal Ayyangar Committee, September 1959.

3 H J Bhabha: Problems of Science Development, *International Council of Scientific Unions, Bombay*, Jan 1966.

4 Drahos Peter and Braithwaite John: *Information Feudalism: Who Owns the Knowledge Economy*? (Oxford University Press, New Delhi), reprint, 2003.

5 Damodaran A D : Materials Research and the New IPR Regime, *Indian Institute of Metals AGM* (1999), *IIT, Kanpur).*

6 Private communication from Javed Iqbal, Institute of Life Sciences, Hyderabad.

7 *IPR Bulletin* Vol 12, Jan-April 2006

8 Damodaran A D : PCT-mediated IPR Globalization: The head-on challenges for Indian industrial R&D, WTO Update, ASSOCHAM,7(3)(2004).

9 Damodaran A D : Agriculture in India – A Single Box Commodity?, ASSOCHAM *Bulletin* , 7(1) (2004).

10 FDI in the R&D Sector, Study for the Pattern in 1998-2003, *TIFAC Report* (TMS 179*), Academy of Business Studies, New Delhi.*

11 Kulkarni Viswanath, Foreign firms drive surge in tech patents, Trend reflects the more complex R&D work being done in India, MNCs outpace local peers, *Live Mint*, 9 June 2008.

12 McDaniel Christine A and Maskus Keith E, How Technology got a boost from the Japanese Patent Office, *Japan and the World Economy*, 11 (3) (1999) 1-17

13 Thomas Zakir: IP Case Law Developments, *Journal of Intellectual Property Rights*, 12 (5) (2007) 507-515.

14 Commonwealth Commission Report on Intellectual Property Rights and Development Policy, 2002

15 Niininen Petri, *Finish Economic Papers*, 13(1) (Spring 2000).

16 Gopalakrishnan N S, *www.patentmatics.org*, July 2001.

Other relevant articles by the author, reproduced and available at www.patentmatics.org for ready reference are:

(a) Patent law, a market economy-based instrument for techno-industrial modernization, *WTO Update, ASSOCHAM*, 7(1) (2004).

(b)Where is core competence of core sector industries? *WTO Update, ASSOCHAM, Bulletin*, 7(2) (2004)..

(c)Competition policy & intellectual property rights, *WTO Update, ASSOCHAM, Bulletin*, 6(5) 2003.

(d) Industrial R&D is no longer a cakewalk, Financial Express, 3 May 2004.