Chapter VI
Conclusion and Suggestions

6.1. Introduction:

"If the reasons for domestic intellectual property protection are principally economic, the same is true for international protection. Software protection has both direct and indirect effects on trade and competitiveness."\(^1\)

Generally speaking, intimate relationship exists between intellectual property and the legal mechanisms offered to protect it from competitors.\(^2\) Also, IP protection is an important element positively affecting economic performance and competitive abilities.\(^3\) Understanding, auditing and valuating the Intellectual Property is critical for the any businesses development, protection and growth.\(^4\) The IPR strategies for any commercial enterprise generally is based upon identifying their intellectual property assets, protect, and strategically exploit them.\(^5\) In other words, it is based upon acquisition, maintenance and exploitation of legally enforceable and codified intellectual property rights.\(^6\) However, this ability to get utmost returns depends upon factors such as the limits of the IPR to

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3 "In a special 1998 report on IPRs the European Commission argued that (IPRs) is no longer regarded as just a complex area reserved for experts alone, but as a strategic issue of importance to growth in the community." See, Pugatch, M. P., "The International Political Economy of Intellectual Property Rights", Cheltenham, UK: Edward Elgar Publishing Limited, 2004 at p. 170
4 Sople, V. V., "Managing Intellectual Property: The Strategic Imperative", New Delhi, India: PHI Learning PVT. Ltd., 2006 at p. 43
be exploited, the whole gamut of parallel legal, regulatory commercial constraints and rules.\textsuperscript{7} Software industry, a knowledge-intensive industry, is not an exception to this. The inputs and much of the output i.e. information, the coded instructions guiding the operations of a computer or a network of computers, consist of intangibles.\textsuperscript{8} Creation and ownership of such intangibles by intellectual property powers the proceeds to innovators' investments, and market structure.\textsuperscript{9}

The nature and subject matter of computer programs plays a significant role in distinguishing which form of intellectual property protection is appropriate. Software is different to other inventions because it is a functional hybrid, which is legible by computers and by humans in different forms and has a unique mathematical structure and above that can be duplicated at no cost.\textsuperscript{10} Further it is the functionality of the computer programme and not the mode of expression, which makes it valuable.\textsuperscript{11} Also, some aspects of computer program such as menu command hierarchies in the user interface have sufficient novelty and inventiveness to qualify for patent protection.\textsuperscript{12} Thus, whatever protection is developed, in case

\textsuperscript{7} Sampson, T., "Strategic Legal Thinking For IPR Dependent Enterprise- the "Five Rings" Method", European Intellectual Property Review, Vol. 31, No. 8, 2009 at p. 411
\textsuperscript{9} Ibid
\textsuperscript{10} Klemens, B., "Math You Can't Use: Patents, Copyright and Software", Washington D.C., USA: Brookings Institution Press, 2005 at p. 11
\textsuperscript{11} "...there is a software requirements value chain in which users add functionality to software to meet their own needs. Users engage in co-inventive activity to translate general purpose software into a specific application. Such co-inventive activity may include modifications to packaged software applications or development of new application. However, in business software it also involves changes to business processes or organization design." See, Macher, J. T., & Mowery, D. C., "Innovation in Global Industries: U. S. Firms Competing in New World", at Washington D.C., USA: National Academies Press, 2008 at p. 55
\textsuperscript{12} "The fundamental difference between traditional patent and copyright subject matter is best captured by the term 'functionality'. Patents protect creative,
of software, cannot ignore the distinctive character of software programs.\textsuperscript{13}

Traditionally, computer programs were protected by copyright and not by patents. Elements such as screen displays of the user interface are graphic works, thus fall under copyright\textsuperscript{14} whereas elements like the menu command hierarchies in the user interface are methods of operation that may fall within the domain of patent law.\textsuperscript{15} The conventional wisdom did not allow application of patent law to computer related inventions.\textsuperscript{16} It was controversial even in USA.\textsuperscript{17} However now it has become a mainstream view that

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\textsuperscript{13} Rowland, D., "Information Technology Law", London, UK: Routledge Cavendish, 3\textsuperscript{rd} Edn, 2005 at p. 10
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\textsuperscript{17} "After a period of hesitation, the U.S. Supreme Court gave its blessing to the absorption of software in Diamond v. Diehr, stating in effect that software is accounted for by the patent paradigm." See, Nichols, K., "Inventing Software:
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computer-related inventions are valuable tools the patenting of which does not inherently pre-empt abstract ideas, mental operations or mathematics.\textsuperscript{18} It is rather consented that technical progress, the promotion of which is the direct purpose of the patent system, has probably been the major determinant behind economic progress. \textsuperscript{19} This does not mean that the trouble is over. In the global debate whether the software patents are useful or harmful for the growth of software industry, different view have emerged. Software industry advocates for prevention of rapid imitation of software, better protection to the aspects of computer programs which make it valuable but not protected by copyright, which in turn would promote innovations by assuring the investors of their proceeds and ensuring economic growth. On the other hand, organisations like Free Software Foundations (FSF) and League for Programming Freedom (LPF) have raised their voice against software patents. This necessitates the need to weight the views for and against patenting computer related inventions, which are summarised below.


6.2. Against Software Patenting:

"A law of nature is a wild animal that can never be caught. Push an anvil off a cliff, and it falls, irreversibly. You control the push; gravity does the rest."\(^{20}\)

6.2.1. Long and Expensive Process

Patent require an examination to determine if the invention is novel, non obvious and useful.\(^{21}\) The Patent preparation requires careful, specific claim wording to obtain protection and survive later challenges. Meaning thereby that the requirement of 'originality' in copyright is easy to achieve than the stringent requirement of 'novelty' and 'non-obviousness' in case of patents.\(^{22}\) Robert Plotkin tried to assess this situation regarding drafting software patents as follows:

"A software patent claim refers to actions performed on numbers, data, records, fields, and other objects that could either physical or abstract entities. Although when a computer performs such operations it does in fact performs physical actions by manipulating electrical signals within its processor and memory such physical actions are only implicit in the language of many software patent claims. These features of software patent claims make the process of writing such claims, and the skills needed to do so, as different from writing claims for mechanical devices..."\(^{23}\)

\(^{22}\) Millard, C. J., "Legal Protection of Computer Programs and Data", New York, USA: Carswell Co., 1985 at p. 86
However, one must understand that the patent process is long and expensive, requiring a letter of grant will ever be awarded to the patent owner requiring very precise wording. Assuming that the program satisfies the ingredients necessary to secure a grant of patent, the gaining of that grant is a long and expensive process. However, once the owner lodges the application the owner will secure a priority date ahead of other claimants and the owner will only have an infringement claim for any offending conduct after the date of publication by the Patents Office.

6.6.2. Dual Protection is Over Protection

Copyright rather than patenting of computer programs as a part of intellectual property protection is widely accepted. How far we should allow overlapping of intellectual property protection is a difficult question. As copyright is already available for software, patent protection, amounting to over protection, is not necessary as long as copyrights are enforced. David Waver puts his opposition to dual protection to computer programs as: “[Dual protection] seems a dubious policy, for multiple protections is usually over...”

protection...If dual protection, such as copyright and patent, is available, why should the copyright not be forfeited on the voluntary acquisition of a patent?"30

6.2.3. Difficulty in Searching for Prior Art

To determine the prior art and obviousness in respect of software inventions is problematic.31 A large piece of source code can easily run to 10,000 pages. The experience in the United States has not been good and even where the USPTO has been able to find prior art, there are claims that it has not applied the tests of novelty and inventive step correctly.32 There are about two million unexpired patents in the United States (Maybe half of them have lapsed for failure to pay maintenance fees, but that still leaves a million patents, plus patents in other countries), to search for relevant patents for just the United States, one would have to search a million patents and repeat the search on the 2,600 or so new patents that are issued every Tuesday.33

The situation becomes even more complex in the case of patented combinations of algorithms and techniques.34 Programmers often publish new algorithms and techniques but they almost never publish new ways of combining old ones. Although individual algorithms and techniques have been combined in many different ways in the past, there is no good way to establish that history. This

32 Ibid
is likely to make prior art an impossible task. Gleick aptly put it in the following words "...in the US, the patent office has grown entangled in philosophical confusion of its own making; it has become a ferocious generator of litigation; and many technologists believe that it has begun to choke the very innovation it was meant to nourish".35

6.2.4. Rapid Evolution of Software Products: Patent is no Match

The state-of-art in computers and computer programs changes at an increasingly rapid pace.36 Software products evolve very fast and with microprocessors speed doubling in every two years or even in lesser time. Thus the concept of 20 years protection is at odds with the conduct of the industry.

As Software evolves incrementally over time, and it is likely that many competent programmers might be able to invent or reinvent software routines, which will make such programmes obvious, in return the criterion of non-obviousness will not be satisfied.37 Further, since the average time to obtain a patent is just less than 2 years, it is important to consider that some programs come and go within that time.38 In fact, some software becomes obsolete before a patent application can be decided.39 This system of patents may

be all right for conventional industries, which typically produce a new generation of products every ten to twenty years. The existence of patents on software for such a long period might make it difficult to develop new products, which in turn may retard the rate of growth of software industry as a whole.40

6.2.5. Anti Innovation

In Software industry “doing it right” rather than “doing it” first or “doing it” differently achieves success. It is the better implementation of already existing ideas, which makes a product unique and useful. Borland did not invent compilers. Microsoft did not invent operating systems. Novell did not invent networking. Sun did not invent UNIX. Apple did not invent the graphical user interface. Oracle did not invent the database. All of these represent successful companies in their respective fields.41 Software patenting may allow companies to monopolise new technologies that may pose a danger to the very essence of the software industry’s business philosophy.42 Who benefits from this? Certainly not the creator!43 It was claimed that the well-known Amazon '1-click' patent could be used to stop consumers making purchases online with a single click, although most of the 1-click claims were not, granted.44

41 Ibid
42 Ibid
6.2.6. Being Against Small and Medium Sized Industry

Software patents would hurt small and medium-sized enterprises and generally newcomers in the market, who have been the chief source of inspiration for software industry.\textsuperscript{45} Free from years from the limitations of intellectual property, the industry flourished, becoming by all accounts one of the most creative of environments in the modern world. With the recent introduction of patent law into computing, however, many individual programmers live in fear of lawsuits from large corporations who claim “ownership” of techniques such as the idea of “public key encryption”. Until its expiry in 1997, it largely blocked the use of public key encryption in the US. A number of software’s, which people started to develop, got crushed—they were never available because the patent holders threatened the programmers who tried to develop software based on public key encryption.\textsuperscript{46}

6.2.7. Against Open Software Movement\textsuperscript{47}

Open software or free software program means “one whose source code is both accessible and freely reusable by the public, unlike proprietary software sold by computer companies whose source code is closed and protected by IP.”\textsuperscript{48} The commercial software


companies keep the source code of their products under tight secrecy and control, thereby maintaining a monopoly on improving their software by adding features or fixing bugs. The upgradation of the software increases the cost for the customer. In case of open source software, the human readable source code of the software is distributed along with the software product. User can customise this to the local needs. Linux stands for the success of the open software movement. Success of open software movement has posed a credible challenge to commercial software vendors. Increasingly, they tend to use their patent portfolios as a competitive weapon, specifically, to keep new competitors out of market. Even the news of it deters the Open software movement. For e.g. Recently the City of Munich stalled plans to put Linux on thousands of desktops early this month, citing fears that a forthcoming European Directive on the patentability of computer-implemented inventions could leave it exposed to litigation. Although the rollout is back on track, this was just the latest attack on one of Europe's most controversial Directives.49

6.3. In support of Patenting:

6.3.1. Effective Process

Virtually all innovations are highly cumulative processes.50 Patent system has been putting great efforts to tackle trade-offs that implies for a long time. The questions shouldn't be how hard,

difficult, time consuming the process of software patenting is, but should be whether a properly administered system of software patents nurture innovation.\textsuperscript{51} Also, one mustn’t forget that proprietary technology results from long and expensive research and development, for example, a successful drug patent.\textsuperscript{52} Further, there is distinction between establishing and enforcing intellectual property.\textsuperscript{53} It is the duty of the claimant to prove all the essentials of patenting regarding software in the prescribed duration and obtain the patent protection for software.

Further, this is an argument against the wrongful award of software patents, not their availability. Indeed, many inventions in other fields for which patents are available cannot meet the non-obvious requirement and thus should not be granted patent protection.\textsuperscript{54}

Further, the extension of patent law to software is still legally questionable\textsuperscript{55} which led to rejection of some unjustified patents. In \textit{British Telecommunications Plc v. Prodigy Communications Corp},\textsuperscript{56} the court dealt with such unjustified patent. In 1989 the USPTO granted British Telecom a patent (4873662) for hyperlinks. When it demanded in June 2000 from Prodigy and 16 other ISP’s to buy a hyperlink license, they all refused. British Telecom took them to the Court. The U S District Judge Colleen McMahon ruled that the

\textsuperscript{52} Smith, G. V., and Parr, R. L., "Intellectual Property: Valuation, Exploitation, and Infringement Damages", Hoboken (NJ), USA: John Wiley & Sons, 2005, 4\textsuperscript{th} Edn, at p.26
\textsuperscript{53} Png, I., "Managerial Economics", USA: Wiley-Blackwell Publishing, 2002 at p. 411
\textsuperscript{56} British Telecommunications Plc v. Prodigy Communications Corp, 217 F. Supp. 2d 399 (2002) (SD NY (US))
patent didn’t apply to hyperlinks. He said: “BT cannot claim that Prodigy infringes its patent, or induces others to infringe its patent, if it must invent the infringing device.” This ruling freed all Internet service providers from the threat of having to pay a license fee to British Telecom for hosting pages that sue hyperlinks. If BT would have won the ISP should have certainly passed the buck on to customer. According to Financial Times Newspaper, BT spent several million pounds in this case hoping that it would ultimately give a lucrative return in license royalties. In addition, three patents covering client/server computing as a whole were ruled invalid by the courts in mid-2002 because the technology described was in public use before the patent application was filed.

6.3.2. Adequate Protection and Not Over Protection

Historically copyright was believed to be the protection for software as it was written in code. The mental and financial effort required to produce software and the functional uses of software more closely resemble inventive activity rather than artistic creation. It

62 Bidgoli, H., "The Internet Encyclopedia (Volume 3)", Hoboken (NJ), USA: John Wiley & Sons, 2004 at p. 229
cannot just be said to be "another form of writing brought about by technical change, as were sound recordings and motion pictures". Undoubtedly computer programs are technological in nature. Though the process of writing a program entails a degree of personal expression, its end goal is to control the process of a physical machine.

Copyright protects the 'expression of an idea', not the idea itself. This has been described as "probably the most difficult concept in the law of copyright" as it leaves the basic idea to be used freely by anyone. It is only available to the objectified, expressed, specific form of a piece of computer software and prohibits the unauthorised imitation of the program. This turns copyright into a "malleable tool" as it does not protect the "look and feel" or the "idea" behind the program.

Patents are more difficult to obtain but they give the users an effective monopoly over the idea. The patent system seeks to

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69 "Copyright law...[does] not protect ideas, concepts, methods of operation as well as mathematical concepts, patent law protects an invention that gives a new and inventive way of doing something, or provides a new technical solution to
encourage innovation i.e. the development and commercial exploitation of a technical invention i.e. a concept or idea for a product or a process, by the grant of exclusive rights to inventors for a specified period over their inventions.\textsuperscript{70} Thus, Patents provide for a broader coverage than the copyrights because they provide for ownership of the concept, not just an expression of the concept.\textsuperscript{71} Grant of software patents would give rise to better variety of categories and features.\textsuperscript{72} In absence of it, developers will avoid the risk of researching new ideas and settle for improving existing ideas.\textsuperscript{73}

Some analysts also suggest that, if both patents and copyrights are used to protect computer programs then it is difficult to draw a meaningful boundary line between these two protections.\textsuperscript{74} One must not forget the basic difference between protection awarded by copyright and patents, former protects “expression” and the latter protects “idea". David A. Burge calls need of offering such dual protection to computer programs as "to cycle into and out of favourability".\textsuperscript{75} Even this confusion was rejected by a joint report

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\item[\textsuperscript{70}] Noel, B., "Legal Protection for Inventions, Designs and Other Information", \textit{Journal of Commercial Biotechnology}, Vol. 8, No. 2, 2001 at p.124
\item[\textsuperscript{72}] "A patent may issue on the program’s innovative approach to solving a particular problem or producing a particular result in a computer or other type of machine, such as a robot or remote vehicle." See, Stim, R., "\textit{Patent, Copyright & Trademark}", California, USA: Nolo, 2009, 10\textsuperscript{th} Edn, at p. 223
\item[\textsuperscript{75}] Burge, D. A., "\textit{Patent and Trademark Tactics and Practice}", New York, USA: John Wiley and Sons, 1999, 3\textsuperscript{rd} Edn, at p. 242
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of the U.S. PTO and the Copyright Office.\textsuperscript{76} In 1976, the National Commission on New Technological Uses of Copyrighted Works, USA which was constituted to evaluate the adequacy of copyright law regarding computer based information systems and photocopying technology identified the difference between copyright and patent on the basis of quality and utility as follows: “Copyright law gives moderate protection to the original writings of authors for an extended period of time without regard to the quality of work. Patent law, on the other hand, gives stronger protection to certain discoveries of inventors for a much shorter period of time if and only if the federal government is satisfied that the work is useful, novel and non-obvious to those familiar with the related technology.”\textsuperscript{77}

Also, it is believed by many that trade secret is the most secure and least troublesome. Trade secret is believed to protect the business’s ownership or proprietary interests in information, data, or processes.\textsuperscript{78} Unlike patents or copyrights, trade secrets have no restrictions like time limit or registration.\textsuperscript{79} However, it also has practical limitations. First, it is vulnerable to reverse engineering. Second, it has value while remains secret. It remains secret only

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\textsuperscript{77} Stobbs, G., “Software Patents”, New York, USA: Aspen Publishers Online, 2000, 2\textsuperscript{nd} Edn., at pp 27-28
\textsuperscript{78} Bosworth, S., & Kabay, M., “Computer Security Handbook”, New York, USA: John Wiley and Sons, 4\textsuperscript{th} Edn, 2002at p. 1202: “The class of intangible assets referred [here] ...represents value attributable to proprietary knowledge and processes that have been developed or purchased by a company and are recognised as actually providing, or having the potential to provide, significant competitive advantages or product differentiation.” See, Reilly, R. F., & Schweih, “Valuing Intangible Assets”, USA: McGraw-Hill Professional, 1999 at p. 322
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when the confidentiality clause in the franchise licensing agreement is strictly observed and enforced, in case demanded. ⁸⁰

Trade secret also can oppose or block research. One mustn’t forget that if the software code is kept secret by complex scrambling then the compatibility with other products, hardware and software, will become difficult. However, if the software code is patented, you just have to look it up in a database. ⁸¹ Thus the patent has social advantages over trade secret alternatives. ⁸²

6.3.3. Prior Art: Requirement Not a Bar to Innovation

There is no law that requires inventors to conduct a prior art search but it is advisable to avoid wasteful effort and money later on. ⁸³ Even if the inventor wants to do it, he can seek the assistance of patent attorneys (experts in their field) who may conduct a prior art search to determine prior inventions in related fields. ⁸⁴ The best strategy is to petition to re-examine the patent at issue before an infringement claim is raised wherein it can be reconsidered the patentability of the invention in the light of prior art not revealed in the original examination process. ⁸⁵

Some unjustified patents have been thrown out. For example, British Telecom claimed every organisation using Web hyperlinks would need to licence a patent the USPTO issued it in 1989. Last

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⁸⁵ Saunders, Kurt M., "Practical Internet Law for Business", Norwood, MA- USA, Artech House, 2001 at p. 124
year, it lost its test lawsuit against Prodigy Communications when U.S. District Judge Colleen McMahon ruled that the patent didn’t apply to hyperlinks. In addition, three patents covering client/server computing as a whole were ruled invalid by the courts in mid-2002 because the technology described was in public use before the patent application was filed.  

6.3.4. Patent is Technology Specific

Question such as 'does the software do what I wanted it to do' decides the quality of the software. It means consumer, the ultimate beneficiary, quantifies the quality of the software by its suitability to his needs in the form of requirements such as the software functional and performance requirements, and also other requirements such as maintainability, portability, and interoperability. Also, consumers or end users are, in turn, relate with the latest version. To meet these needs, the software industry requires making investments in new tools and technologies and tries to get new tools out. It also requires a constant development of the technical staff's competence and qualification. One who invents an idea which suits such needs of consumer should also be aptly benefited.

Patent is a contract between the public (i.e. State) and the inventor. As per Carpmael, patent is "a great incentive to the exertion of

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ingenuity; as the...[patentee] found themselves rewarded of their labour...and the public were ultimately benefited by being made acquainted with the means of producing the invention, which became public property at the expiration of the term of the grant, or earlier".90

Also, Patent protection lasts for 20 years whereas copyright protection is very long "...compared to the expected economic or technical lifetimes of computer programs".91 A patent holder, in addition, has the choice to continue patent protection for the full 20 years term, or to discontinue paying the patent maintenance fees if the software becomes obsolete and thus release the invention from patent protection.92 There is no reason to deny patent protection for software to those who want it for the full 20 years term just because some software patent holders would discontinue protection before the term expired. Further, the focus of developer is greatly on convalescing the existing technology and tweaking its application and not on inquiring it in favour of newer technology.93

6.3.5. Stimulate Research

Technical progress, invention and patent system are complimentary to each other. In the words of Mathew Fisher, "technical progress was good for the country, invention was necessary for technical

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progress, and the patent system existed to encourage, promote, and reward.  

The purpose of the patent system is to promote the progress of science and useful arts, which is envisaged by granting an inventor the reward of exclusive rights in the invention in exchange for the public disclosure of an invention in a published patent. Appropriate protection for inventors innovation will assure him of his work and give credit to which in turn would arise for further investments in the development of high performance software. Disclosure makes the invention available to those who may use, improve upon and the result would be greater diversity of categories and features. Without patents, developers would settle for improving existing ideas and would avoid researching new ideas. One must be rest assured that in case granting of patent amounts to blocking further research, Articles 30 and 32 of the TRIPs provide a way out.


"Like any other types of patents, software patenting aims at promoting innovation and knowledge disclosure by granting exclusivity over inventions to their creators, "fencing off" new algorithms and techniques from public domain". See, Harison, E., "Intellectual Property Rights, Innovation and Software Technologies: The Economics of Monopoly Rights and Knowledge Disclosure ", Cheltenham, UK: Edward Elgar Publishing Ltd., 2008 at p. 78  
99 For a detailed count of explicit and non explicit exceptions under Patent and Copyright Law in the comparative context refer to Yu, P. K., "Intellectual Property...
Article 30 provides that 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. In other words, non-commercial use of a patented product or process for research and experimental purpose would be permitted. Article 31 goes a step forward and vest WTO members with the power to authorise third parties by compulsory licensing to use the patented invention even against the will of the patent owner subject to conditions. In Microsoft Corp v Commission of the European Communities, the philosophy of compulsory licensing in the contest of Articles 81 and 82 of EC Treaty was evaluated to achieve “making markets work better for consumers” as follows: “...the Community judicature considers that the fact that the holder of an intellectual property can exploit that right solely for his own benefit constitutes the very substance of his exclusive right...when [refusal to grant license] is accompanied by exceptional circumstances such as those as those
hereto envisaged...as abusive and that accordingly, it is permissible, in the public interest in maintaining effective competition on the market, to encroach upon the exclusive right of the holder of the intellectual property right by requiring him to grant licenses to third parties seeking to enter or remain on that market".\textsuperscript{106} In this case, Microsoft planned to unbundle sales of its Internet Explorer and Windows 7 software in EEA. The European Commission charged Microsoft with abusing its dominant position in the computer software market in contravention of Art. 82 of EC Treaty and thereon compelled it to provide interoperability information to other developers of business software.\textsuperscript{107} In addition to these protections, there is virtually no evidence which shows or proves that patenting of software has proven harmful to innovation.\textsuperscript{108}

As patent rewards the investment of time; money and efforts put in by the researcher in his endeavours, it stimulate further research by encouraging the competition as the rivals try to invent alternatives to the patented inventions. Patenting system allows companies to recover their research and development cost during the period of exclusive rights so that they can further invest in research. As per IBM’s annual report in 2003 the company’s intellectual property


portfolio generated US$2.1 billion in licensing royalties. The company awarded a record 3,415 patents in the year 2003 by the United States Patents and Trade Marks Office. Nick Donofrio, IBM senior vice president asserted: "...we consider patents a starting point on the path of true innovation. What differences IBM from other companies is our ability to rapidly apply these inventions to new products and offerings that solve the most pressing business challenges..." If we talk from the point of view of a state economy then, illustratively in 2001, the value of U.S. exports in royalties and license fees alone was $38.8 billion.

6.3.6. For Small and Medium Sized Industry

Possession of patent will help any small company or individual independent software developer to raise finance to develop and market such inventions, and/or to license competitors and/or to sell or license his or her innovation to a major player. It can provide a level playing field to small and medium enterprises against larger software firms in the global software market by protecting their intellectual property. In 1994, Microsoft was asked by California Court to pay $120 million to Stac Electronics for allegedly using its data compression program (US 4701745). Stac's use of this...
patent showed how a smaller company could employ patent law to prevent its being trampled over by a very much larger competitor.\textsuperscript{115} Stac Electronics' case proves that patent law can accord much better profit to a software inventor than copyright law.\textsuperscript{116} Also, in \textit{Uniloc USA Inc v. Microsoft Corp},\textsuperscript{117} a Rhode Island Jury awarded Uniloc $ 388 million in damages against Microsoft Corp’s Windows XP Activation scheme which wilfully infringed Uniloc USA Inc’s patent on software copy protection technology.\textsuperscript{118}

Victor Sibel, counsel for IBM, sums up protection offered by Patents in the following words: “As competition increases from overseas, patents will be the most important tool to protect original software innovation in the US.... Without patents, we’d be unilaterally disarmed relative to our competitors in Europe and Japan”.\textsuperscript{119}

\textbf{6.3.7. Not against Open Source Movement}

Open Source movement is not about competing or fighting with techno giants such as Microsoft but about code sharing\textsuperscript{120}, reducing costs and have greater cooperation for the development of new

\begin{itemize}
\item $30$ million in the fourth quarter and a net pre-tax charge of $90$ million for the year. Available online at http://www.edgaronline.com/bin/edgardoc/glimpse2.pl?doc=A-789019-0000891020-94-000175&glm=1 (Last accessed on 20 October 2007)
\item Uniloc USA Inc v. Microsoft Corp, 290 Fed. Appx. 337 (Fed. Cir. Aug. 7, 2008)
\end{itemize}
Though it is expressed that patenting is against open source development, there is "no broadly based investigations...which validly quantify the economic significance of the open source movement."\textsuperscript{122} Agreements can be reached between patent holders and open source advocates deploying and increasing the interoperability of software developed through OSS and Other providers.\textsuperscript{123} Illustratively, in 2007, Microsoft and Novell entered such agreement to "provide each other’s customers with patent coverage for their respective products."\textsuperscript{124} For the internal or private research purposes, developers are in principle free to reverse engineer a computer programs for purposes of interoperability and no law prohibits this form of research.\textsuperscript{125} Also, it encourages an atmosphere of secrecy firmware designers.\textsuperscript{126} Though open source movement looks at reducing cost, there is no good reason for enforcing patents against it.\textsuperscript{127} Such risk is not just coming from Patents, but might also come from copyright owners who have not accepted the open source model.\textsuperscript{128} In \textbf{SCO Group v. IBM},\textsuperscript{129} IBM developed and marketed its own version of Unix, dubbed AIX Unix, since the mid 1989's. SCO claimed that IBM had

\textsuperscript{123} "Microsoft released its Windows Installer XML (WiX) technology under the Common Public License (CPL), an Open Source Initiative-approved license." See, Laurent, A. M., "Understanding Open Source and Free Software Licensing", California, USA: O’Reilly Media, 2004 at p. 155
\textsuperscript{126} Fogel, K., "Producing Open Source Software: How to Run a Successful Free Software Project", CA, USA: O’Reilly Press, 2005 at p. 244
\textsuperscript{127} Supra note 122 at p. 187
\textsuperscript{129} SCO Group v. IBM, (Docket No. 2: 03CV00294 (D. Utah))
handed to the GNU/Linux project several source code portions belonging to Unix, an operating system program that now happens to be owned by SCO, hence infringing SCO's copyrights. ¹³⁰

6.4. Conclusion and Suggestions:

"Consumers and innovators win when patents and competition policy are aligned in the proper balance. Although questionable patents can harm competition and innovation, valid patents work well with competition to promote innovation" - Timothy J. Muris, Chairman, Federal Trade Commission, USA. ¹³¹

IT/ICT technologies are more internationalised than other technologies which is evident from the patent data from the Organisation for Economic Co-operation and Development,¹³² the European Patent Office and the World Intellectual Property Organisation¹³³. Also, though IPRs are based on the principle of national territoriality, decision making in the IP field to great extent is based upon global processes¹³⁴ which is evident from the World Trade Organisation Agreement on Trade Related Aspects of Intellectual Property Rights, Conventions of the World Intellectual Property Organisation which lay down a minimal requirement to be satisfied by a signatory nation. Also, process of globalisation

¹³⁰ For arguments for and against, refer to Woods, D., & Guliani, G., "Open Source For The Enterprise: Managing Risks, Reaping Rewards", California, USA: O'Reilly Media, 2005, pp. 128-129
changed the attitude of nations from developing IP policy for satisfying its needs to the needs of other nations, or organisations.\textsuperscript{135}

The promotion of a strong software industry will or rather have given formidable competitive advantage to developing countries including India.\textsuperscript{136} The Software industry and the resultant generation and circulation of intellectual capital in India in Information Communication Technology have facilitated the economic development in India. India provides at extremely competitive rates vast intellectual capital based services which is the key to its competitiveness in the global arena. As a result, it drew not only the attention of most industrialized nations but also foreign direct investment in India, especially in Software Industry.

Globalization helps Indian IT companies to grow,\textsuperscript{137} while Indian IT is becoming a digital foundation for many globalizing firms.\textsuperscript{138} As the Indian economy becomes more integrated into the global economy, there is another two way effect- more opportunity for global IT firms to sell to Indian clients. And, of course, more opportunity for Indian IT firms to sell globally.\textsuperscript{139}

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\textsuperscript{135} Ibid
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Though Indian software industry has captured a significant portion of the world trade in software services, yet no Indian software firm has introduced a significant software product. The reason is that unlike Israeli industry, it was built around customized software services rather than products. Due to the shift from a material manufacturing economy to an information processing economy, technological innovations have become the key determinant of total factor productivity and long-term growth. This widened the gap between developed and developing countries. Prior to this transformation, developing countries instead of developing technology were greatly relied on developed countries for their technology. One of the reason for this was rightly pointed by Demirguc-Kunt and Maksimovic that "firms in developing have higher proportions of fixed assets to total assets and less intangible assets than firms in developed countries", which as such 'would make it more difficult to finance fixed assets'. Further, India's weak record on protection and enforcement of intellectual property

140 "India has 16% of the global market in customized software, and that more than 100 of the Fortune 500 firms had outsourced to India." See, Dataquest, 31 July 1996 at pp.43-44
143 Lalkaka, R., "Is the United States Losing Technological Influence in the Developing Countries?" Annals of the American Academy of Political and Social Science, Vol. 500, Nov. 1988 at p. 34
rights has produced major strife with the industrialised nations, in particular USA and Europe.\textsuperscript{147} As a result, these countries have much at stake to ensure protection of these goods of the mind in international trade.\textsuperscript{148} Chris de Villiers while discussing the relationship between patent and economic development aptly observed “The patent systems has been an engine for economic development worldwide. Restrictions on the patentability of technology...may now no longer be appropriate.”\textsuperscript{149}

Patent system is seen as well believed to be ‘a spur to innovation’\textsuperscript{150} as well as becoming “key edge in software race.”\textsuperscript{151} Does it also create wealth and employment and stimulate innovation and competition? It necessitates quantifying the impact of patent on

\begin{itemize}
\item \textsuperscript{147} Tikku, A., “Indian Inflow: the Interplay of Foreign Investment and Intellectual Property”, \textit{Third World Quarterly}, Vol. 19, No. 1, Mar. 1998 at p.87
\item \textsuperscript{149} De Villiers, C., “Software Patents May be Valid”, \textit{Fineweek}, 26-4-2007 at p.62 Also see, Yager, T., “Software Patents Set Sail”, \textit{InfoWorld}, 10-6-2003, Vol. 25, No. 39 at p. 70;
\item \textsuperscript{151} Morrissey, J., “Patents Become Key Edge in Software Race”, \textit{PC Week}, 29-11-93, Vol. 10, No. 47, pp. 129-130
\end{itemize}
economic development or trade; we must learn the opinions of both Patent attorneys and economists. Patent attorneys will testify about the economic benefits of patents based on personal experiences.\textsuperscript{152} In a study\textsuperscript{153}, on data from West Germany, respect to the quantitative estimates of the magnitude and the distribution of the private value of the protection received by inventors it was proven that “the owners of patents applied for in 1975 received a stream of returns from protection with a discounted present value of over one billion 1975 DM”. However, economists’ views are more modulated and nuanced.\textsuperscript{154} Prof. Josh Lerner of Harvard Business Law School observed, after the introduction of patenting of business methods,\textsuperscript{155} speculated that “in the financial services industry, patents are more likely to help consolidate the position of established firms than to invite new market entrants”.\textsuperscript{156} Commenting on whether patents are a boon or bane for financial services innovation, Prof. Robert P. Merges of the University of California at Berkeley School of Law responded that “...codification of innovation in the form of patents is likely to formalize a previously less formal interchange of innovative ideas...this codification will not diminish the beneficial exchange of ideas in the long run and thus will not harm innovation.”\textsuperscript{157} Even the lawmakers from different jurisdictions who carry opposite views on matters of international importance also hold same opinion regard to software

\textsuperscript{153} Supra Note 151  
\textsuperscript{154} Supra Note 153  
\textsuperscript{155} “Business method patent applications soared to around 7,500 last year, up more than 700% from the 925 applications made in 1997. Of those applications, the Patent and Trade Office (PTO) granted some 1,000 patents last year, compared to 205 in 1997...The PTO argues a long history for business method patents, but it was the 1998 decision [State Street Bank & Trust Co. v. Signature Financial Group Inc.] that opened the floodgates.” See, Hackett, John, “Software Patent Evolution”, Bank Technology News, Vol.14, No. 3, Mar2001 at p.25  
\textsuperscript{157} Ibid
patenting, for e.g. Tony Blair, Prime Minister- UK (as he then was) and Jacques Chirac, President-France (as he then was) also signed the declaration at the EU summit in Brussels on March 21, 2003 which called on EU governments “to improve exploitation of intellectual property rights by taking forward measures against counterfeiting and piracy, which discourages the development of a market for digital goods and services, and to protect patents on computer-implemented inventions.”

Even the Department of Trade & Industry of USA advices that patents, which protect code, give stronger protection than copyright, do not stop others from developing their own software to achieve the same effect. In other words, patent protection aims at protection of innovation than as a block to economic development as understood by many. However, other study shows that “...there is weak evidence that firms without patents became less likely to go public if they operated in a market characterized by patent thickets. Firms with patents are more likely to be funded or experience a liquidity event. However, the application for a patent appears to matter more than its grant.”

In the global economy, China is way ahead than India when it comes to intellectual property system i.e. amongst the top three of PCT filing countries. Sophisticated laws and constant government encouragement are cited as two prime reasons for this.

What does India lack? From the earlier discussion we have seen that policies of the Indian Government are improving and bringing in desired results. However we still sound stagnant when it comes to patenting of computer programs. India’s software companies trying to make the transition from providing services to delivering innovative solutions themselves strongly feel that restriction on registration of software and business method patents is a huge obstacle.

According to the legal tradition, the scope and use of intellectual property rights is justified because they encourage democratic principles promoting the diffusion of individual expressive works, preventing a monopoly and offering a defence against piracy. It is high time that Indian policy makers understand the dynamics of this complex innovation system, the quicker they can harness the system to promote the country’s economic development. If appropriate and adequate protections are made available then the software industry, a major force in our economy, will shape its future otherwise it will cease to exist. Fritz Machlup, while presenting his study on the efficacy of patent system assessed the importance not only of patent system but of the protection it guarantees to economic development as: - “If one does not know whether a system “as a whole” (in contrast to certain features of) is good or bad, the safety “policy conclusion” is to “muddle

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163 Ibid

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If we did not have a patent system, it would be irresponsible to recommend insisting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it. The researcher hereby strongly put forward that awarding of patent protection to computer programs will serve all interests, i.e. individual interest that of a programmer, social interest involved in getting access to new innovative programmes at lesser rate and state interest in the form of solid support to the economic growth and development by ensuring more investments in research and development, thus promoting innovation.


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