CHAPTER I

INTRODUCTION

THE CONTEMPORARY CONTEXT

The problem of protection of intellectual property rights (IPRs) especially patents, has become one of the contentious issues between the developed and developing countries and has been the focus of recent discussions at various international fora. IPRs refer to the creations of the human intellect; hence they are the legal expression of the privileges granted by the state (and the obligations imposed by it) for the use, frequently exclusive, of the creations. The conferment of IPRs is a means by which the state grants protection under varying conditions and periods of time to the creators of new knowledge and information of practical application (technology) in exchange for the complete disclosure of the new finding and/or diffusion of the information. The reasons for which so much attention is being paid to the patent system needs to be explored at the outset, keeping in view the fact that patenting of invention and innovation is not a new business activity on the part of inventors.

1 Hereafter, unless the context otherwise indicates, the term patents will be used interchangeably with IPRs.


3 Ibid, p. 147.
and innovators, who have always taken out patents to protect their inventions in order to reap the rewards.

A number of recent trends have lent scope and intensity to the problem of IPRs: a wave of new technological and industrial developments in the fields of electronics, computer technology, biotechnology, materials technology, agriculture and expanding industrial use of robots is creating huge increases in productivity and new products. It may be easy for some countries to accept such a technological change than others which could result in markedly different growth rates for Japan, the United States, Europe and the Third World raising new problems for international relations. The introduction of new products being a form of technological innovation can play an important role so as to determine the pattern of international trade between developed and less developed countries. Moreover, globalisation of markets has been caused by remarkable improvements in transport and communication along with production systems. This increasing global interaction and economic interdependence has again a profound impact on the entire


5 The increase in the range of products produced shows an improvement in the regions terms of trade (e.g. Japan and Taiwan), David Dollar, "Innovation, Capital Mobility, and the Product Cycle in North South Trade", American Economic Review (Nashville), vol. 76, no. 1, March 1986, p. 177.

6 United Nations Conference on Trade and Development (UNCTAD), Historical Trends in Protection of Technology in Developed Countries and Their Relevance for Developing Countries, UNCTAD/ITP/TEC/18, 26 December 1990, p. 10.
The increasing corporatism in modern business organisation explains the increase in the significance of research and development (R & D) for competition and the ascendancy of enterprise-based R & D activity which now accounts for not only most of the inventions and innovations, but also most of the world's patent grants. It also explains the move towards strongly international character of patenting by firms from the leading industrialised countries. This has led to (a) alarmingly increasing twentieth century institutionalisation of the patenting of invention and hence patent ownership by displacing the individual as the main source of patent application; and (b) internationalisation of markets by firms which have become multinational on account of a tendency for collaboration

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8 Data for 1985 from the European Patent Office show that the United States, Japan and the erstwhile Federal Republic of Germany accounted for the clear majority of patent applications in electronics, computing, telecommunications and biotechnology. Specifically, their joint share was almost 59 percent in the machine tool and metal working area, more than three quarters in biochemistry and genetic engineering, a similar proportion for computing and data processing, and about 71 percent for electronic circuits. The patent data also reveal that patenting in the above-mentioned four-high technology areas accounted for 13.6 percent of all applications in the European Patent Office in 1986. See UNCTAD, Technology-Related Policies and Legislation in a Changing Economic and Technological Environment, TD/B/C 6/146, 8 August 1988, p. 8.

among enterprises to share both R & D and the allocation of production. Lastly, the changing competitive structure of international trade and the emergence of multipolarity in global technological leadership has been the result of the spread of industrialisation to new parts of the world. The developing countries play a role of growing importance in the world economy. Many of them have now established a strong productive base and have entered the world market as major sellers and buyers of a wide range of goods. The process will continue as countries move up the development ladder.

The industrialised countries have come to regard technological innovation as the centerpiece of their efforts to deal with market losses, trade imbalances and structural adjustment problems generated by increased competition on world markets. At the same time, technological research is becoming more expensive and its results, once made public, are disseminated very rapidly throughout the world. The following three important consequences

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10 According to a recent survey by the United Nations Centre on Transnational Corporations (UNCTC) there was in the period 1982-85 a pronounced tendency among the largest transnational firms to engage, in co-operation agreements, more than 97 percent of which were concentrated in five high technology activities. UNCTC, Transnational Corporations in World Development (New York, 1988), See also TD/B/C6/146, n.8, p. 8.

11 See n.8, p. 7.

12 See n.4, p. 15 and 723 respectively.

13 TD/B/C6/146, n.8, p. 7.
have been reported to follow from these developments.\textsuperscript{14}

a) research can be cost-effective only if its results are exploited at the international level;

b) the only way to make that exploitation profitable is to make it exclusive, which means that patents are needed since, without them, the new technologies, in view of their rapid dissemination, can be copied;

c) account must be taken of the fact that the pursuit of profitability will generally preclude exploitation of the technology at the production level from taking place in all the countries where it is planned to market the products obtained.

Therefore, increased importance has been assigned to and the consequent allocation of growing resources to innovation in the major countries of the Organization for Economic Cooperation and Development (OECD) during the present decade.\textsuperscript{15} Constant innovation has become the hallmark of these economies and the

\begin{itemize}
\item \textsuperscript{14} UNCTAD/IIP/TEC/18, n.6, p. 10.
\item \textsuperscript{15} The following 24 countries are members of OECD: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States (Yugoslavia has special status).
\item \textsuperscript{16} Data for the period 1981-86 indicate that gross expenditure on R & D, measured as a proportion of GDP, have been rising rapidly in all the main OECD countries (Australia, Canada, Denmark, European Community, France, Germany, Greece, Japan, Netherlands, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States). The data also show that efforts are increasing exceptionally quickly in these countries in high-technology areas which are viewed as critical to future international competitiveness in goods and services. OECD, Main Science and Technology Indicators 1981-1987 (Paris, 1988) quoted in TD/B/C 6/146, n.8, p. 8.
\end{itemize}

Thus, in the semi-conductor industry in the United States expenditure on R & D as a proportion of sales rose from 7.4 percent in 1980 to nearly 14 percent in 1986. In the same period, R & D expenditure on computers reached 10 percent in 1986, while in the field of bio-technology the ratio of R & D to sales increased from 12 percent at the beginning

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technology/innovation component of exports—both tangible and intangible—has become a major factor in international competition. Importance of technology as a "component of national wealth" and "global protection of technological assets" have come to be perceived as crucial issues for technology producers in the race for a rapid commercialization of technology and new technological products. In the words of Paolo Bifani, technology is considered

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of the decade to 15 percent in 1987. Since the areas mentioned are the ones in which sales have been rising faster than the overall industry average, the greater share of R & D is a strong indicator of the focus on innovation. Within the OECD countries, total expenditures on R & D are estimated to have increased from approximately $154 billion in 1981 to $226 billion in 1985, a rate of expansion well ahead of that of both GDP and manufacturing output in these countries. A disaggregation of the OECD total shows, as may be expected a very pronounced concentration in just a few countries. Thus, in 1985, the United States, Japan, the erstwhile Federal Republic of Germany, the United Kingdom and France accounted for more than 86 percent of the total, moreover, the United States and Japan alone spent almost two-thirds of the OECD total. Since the OECD countries account for roughly three quarters of the world expenditures on R & D, the figures imply that the United States and Japan together now account for almost one-half of the world total. Moreover, the extent of concentration of R & D in the leading OECD countries has increased during the present decade. Thus in 1981 the five OECD countries mentioned above accounted for 83.5 percent of the total as against the 86 percent mentioned for 1985, while the United States and Japan together accounted for just over 60 percent of the aggregate in 1981 as against about 67 percent by the middle of the decade. TD/B/C6/146, n.8, p. 12.


now a days:

Not only in the national context of industrialization or the modernization of agriculture but also, and mainly, as the strategic factor in creating comparative advantage and acquiring competitiveness in international market. In consequence, technology which during the 1960s and 1970s was considered a strategic factor for national development has now become a strategic element for achieving control of international markets.\(^{19}\)

One finds a reflection of these trends in recent international discussions and in the trade policy of industrialised countries wherein protection of IPRs have become a crucial element. The industrialised countries of the North whose nationals file the largest number of patents every year have realised the importance of uniform global IPR system; it is viewed by them as an instrument for technological competitiveness at a world level. More recently, an emphasis towards universalisation of rules suitable to the developed countries at the current stage of their development got approval in the Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations of 15 December 1993, which was formally signed on 15 April 1994, more particularly in its Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS).\(^{21}\) Importance has been attached to intellectual property as a component of national wealth and article of international trade which according to the industrialised countries was properly a subject of trade

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protection to be dealt with by the General Agreement on Tariffs and Trade (GATT). The aim of the Agreement on TRIPS is to reduce distortions and impediments to international trade; taking into account the need to promote effective and adequate protection of IPRs; and to ensure that measures and procedures to enforce IPRs do not themselves become barriers to legitimate trade. It also recognises IPRs as "private rights".

During the course of the negotiations of the TRIPS Agreement the developing countries voiced their concern that a global IPR system was not suited to states at different levels of socio-economic development. It is important to clarify that not all developing countries think alike and that most countries did not oppose developed countries' interest in IPRs. The opposition was from major developing country exporters of manufactures. Perhaps the one common feature of cases as diverse as those of Brazil, Hong Kong, Republic of Korea, Mexico, Singapore and Taiwan, Province of China has been their ability as late-comers to direct their energies and catch up and improve their

22 Ibid, p. 2. The imposition of one set of uniform laws for the protection of IPRs on the part of the industrialised countries becomes clear from a provision dealing with nature and scope of obligations as contained in Article 1, paragraph 1 of Agreement on TRIPS. It provides:

 Members shall give effect to the provisions of this Agreement. Members may, but shall not be obliged to, implement in their domestic law more extensive protection than is required by the Agreement, provided that such protection does not contravene the provisions of this Agreement. Members shall be free to determine the appropriate method of implementing the provisions of this Agreement within their own legal system and practice.
competitiveness on the basis of company-specific and country specific learning and organisational change. It needs to be noted that the competitive success of these exporters and the emergence of a number of other exporting countries such as China, Colombia, Indonesia, Malaysia and Thailand is not founded simply on concentration in high R & D intensive items but on the ability of their firms to rationalise production methods, raise product quality and reduce production costs in medium and low R & D intensive industries such as less sophisticated electrical and non-electrical machinery, metals, ship-building, textiles, clothing and softwear, and miscellaneous food products. This is due both to the development and the application of indigenous engineering and design capabilities and to the accelerated acquisition of machinery, components and various technical inputs from foreign suppliers in the higher R & D intensive industries.23 At the same time, there are, however, significant differences among these countries. While Brazil, Mexico and India are developing broadly diversified economic activities and have potentially large domestic markets; Hong Kong, the Republic of Korea, Taiwan, Province of China and Singapore have specialised in exporting specific high technology products. Thus, the large potential national markets of the first group of countries make them very attractive for high technologies.24


24 Bifani, n. 19, p. 165.
Through the operation of mechanisms of innovation and diffusion (imitation plus transfer of technology) some developing countries have achieved competitive success in some products. Most of the developing countries have not been so successful. The trade performance of a relatively small number of higher income, rapidly growing countries has outplaced that of the remaining developing countries. Low-income and particularly least developed countries representing African countries have experienced export growth rates of manufacture during this decade that were below the world average. Thus in terms of export performance, their benefits from participation in the international trading system have not been significant. Various factors are responsible for this. Their exports of manufacture have been confined to traditional light manufactures and processed and semi-processed items facing slow growth of demand; their lack of combination of technical skills, manufacturing expertise, organisational and marketing capabilities needed to be able to make and fully exploit cost-reducing process innovations and quality improvements in their traditional areas of specialisation. Their inability on account of lack of skills and capabilities to shift their export portfolios into new product lines and market niches where demand is growing than average; their shrinkage of savings on account of debt crisis and general deterioration of economic environment since 1980s has also put a constraint on related investment in higher education, research and the building of technological infrastructure generally in these countries. 25

25 UNCTAD Secretariat, n. 23, pp. 103-04.
However, the developing countries were left with no option but to sign the Final Agreement, among the developed countries, on TRIPS without even any reservations being put forward by them. This was in spite of the rigid stand taken earlier by some of the developing countries like India and Brazil. The reasons for their being left with no alternative seem to be their desire to get concession in other areas of textile exports, farm commodities and a share in the export of agricultural commodities and their failure to take a clear-cut, definitive and collective stand on issues of their concern was perhaps on account of unilateral threats by the United States against these different developing countries.

The Agreement on TRIPS stipulates the present position by "recognising also the special needs of the least developed country Members in respect of maximum flexibility in the domestic implementation of laws and regulations in order to enable them to create a sound and viable technological base"; provides for a transitional period of ten years from the date of application (the expiry of a general period of one year following the date of entry into force of the Agreement Establishing the WTO).

27 MTN/FA II - AIC, p. 2.
28 Ibid, Articles 65(1) and 66(1), p. 28. For the text of Agreement Establishing the World Trade Organization, see Part II of the Final Act Embodying the Results of the Uruguay Round, n. 20, pp. 1-14.
of the fact of participation of developing countries in the rights and obligations under GATT, the only concession granted to them under the TRIPS Agreement is again that of "transitional arrangements" by which any developing country member is entitled to delay for a further period of four years, the date of application of the provisions of this Agreement other than Articles 3, 4 and 5 of Part I. The excluded three provisions deal respectively with national treatment, most-favoured nation treatment and multilateral agreements on acquisition or maintenance of protection. No preferential/differential/special and more favourable treatment for developing countries has been provided for; the only way to reduce the technological gap between the industrialised and developing countries. In other words, in order to bring the national laws of developing countries in line with this Agreement, only a time bound mechanism has been provided for. Moreover, while laying the legal basis for greater or extensive protection in paragraph 1 of Article 1, the developed countries deny developing countries any right to derogate from the Agreement even in public interest as becomes clear from the principle stated in Article 8 paragraph 1 which reads:

Members may, in formulating or amending their national laws and regulations, adopt measures necessary to protect public health and nutrition, and to promote the public interest in sectors of vital importance to their socio-economic and technological development, provided that such measures are consistent with the provisions of this Agreement.

29 Ibid, Article 65(1) and (2).
Whereas the developed countries view the patents system as an instrument for technological competitiveness at a world-wide level, the developing countries assign to them the same objectives as did the developed countries themselves at a prior stage in their national development, namely, the stimulation of national technological and industrial progress of the state granting IFRS, with economic self-sufficiency in view. Thus, while the developed countries are seeking to universalize rules specific to their own patent law at the current stage of development, developing countries are trying to maintain the same rules that were in force in the developed countries at earlier stages. 30

From this appears "the growing tension between two different concepts of the function of patents which represents two different phases in the evolution of the patent laws", to be discussed later in this study. In short, there has been a change in trend from that of patent legislation devised for and suited to the strictly national market towards legislation which will facilitate the exploitation of the protected inventions on the international market.

The situation has been described as "one of conflict between the producers/owners of new knowledge and the followers." 32

30 UNCTAD/ITP/TEC/18, n. 6, p. 11.
32 Bifani, n. 2, p. 165.
The former want it to capture global oligopolistic benefits putting emphasis on competitiveness maintaining that competition promotes economic growth. The former consequently favour a more stringent international proprietary regime for knowledge. On the other hand, the followers need it for national development and their insertion into the international trading system. They need to speed up their efforts to absorb technology for development purposes. The latter, therefore, desire a system that accelerates its diffusion.

Moreover, it is not only a conflict between innovators and followers, but also among innovators as a whole, for the dominance of global markets - which has been called as a "new form of protectionism", being confronted by the world.\textsuperscript{33} Protectionism has been viewed in the past in the context of a national economy which sought to preserve the domestic market for its infant industries. Today the objective is to protect global markets for the owners of high technology innovations.

Intensive discussions of the last few years as regards technological change and industrial property have centered on a number of issues: norms and standards of patents relating to national treatment, coverage, duration, compulsory licensing; patent protection to be given to new technologies especially biotechnological inventions affecting living matter; nature and extent of patent rights to be granted.

\textsuperscript{33} Ibid, p. 177.
OBJECTIVE AND SCOPE

The objective of the present study is to identify and highlight in detail those aspects in the field of patents which have become the most controversial issues between the developing and the developed countries. The changing attitudes of both the groups of countries as reflected from time to time in their domestic patent legislations, in framing and revising Paris Convention for the Protection of Industrial Property, in Diplomatic Conferences for the Revision of the Paris Convention under the auspices of the World Intellectual Property Organisation (WIPO), and in the GATT Uruguay Round of Trade Negotiations have been taken into account towards the identification and analysis of different issues.

This study has been divided into nine chapters of which chapters III to VIII cover different issues of patent controversy and chapter IX represents "Summary and Conclusions". The discussion of the different issues, however, has been preceded by an attempt in chapter II to trace the early history of the international patent system; some aspects of the evolution of patent law as regards the shift in the rationale of patents and the controversy in the nineteenth century on patents; and evolution of multilateral mechanisms for patent protection. Chapter III deals with "Norms and Standards of Patent Protection under the Paris Convention" and focuses on rules concerning national treatment, right of priority, independence of patents, and period
of grace for the payment of fees. Matters such as patentability of inventions, duration of the patent protection, and procedures for checking the patentability of inventions have also been dealt with in this chapter.

Chapter IV entitled "The Patent System and Developing Countries: A Critique of the Paris Convention" has been devoted to an analysis and critical examination of various aspects of the controversy over the usefulness of the international patent system to the developing countries. It attempts to trace different aspects of the controversy which include some striking features of patents as indicators of the differences in developing and developed countries; objections of the developing countries to the Paris Convention; and their initiatives towards its revision.

Chapter V on "Uruguay Round of Multilateral Trade Negotiations: Applicability of GATT Standards to IPRs" is an attempt to highlight, analyse and compare the GATT standards with the Paris Convention and examine its implications for developing countries in the light of the provisions of the Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations.

"Subject Matter of Patent Protection" is the focus of Chapter VI which is an attempt to discuss the positions of the developed and developing countries before the TRIPS Text and the implications of the latter for the developing countries.
In this direction, the chapter examines *inter alia* issues such as the definition of subject matter; the need to exclude certain inventions from patentability; the different implications of product and process patents. Patentability of microorganisms, plant varieties, animal varieties and protection of new technologies like computer software and mask works are some of the issues dealt with in these contexts.

Chapter VII deals with "Working of Patents and Safeguards against their non-Working" and attempts (a) to examine the various reasons for non-working of patents and the need for reinforcement of working through legal reforms in the direction of elaborating the meaning of working; (b) to determine whether importation amounts to working or not; (c) to clarify the obligations of the patent holder to work the patent; and (d) to examine the various remedies against non-working of patents with emphasis on compulsory licences. The chapter examines the position in these regards both before as well as after the TRIPS Agreement.

Chapter VIII entitled "India's Patent Regime - An Evaluation in the context of GATT TRIPS Text" is devoted to examining the importance of the Indian Patent Act, 1970 for achieving the goal of technological self-reliance, especially in the fields of pharmaceuticals, chemicals and pesticides. The chapter also seeks to evaluate the Indian Patent Act in the context of the Agreement on TRIPS and show the incompatibility between the two and the possible impact of the changes to be brought about.
on the Indian economy.

The final chapter contains the summary and conclusions of this study.

In order to give the necessary background to the subject, the rest of this chapter focuses on the concept and nature of intellectual property; the different forms of industrial property protection for inventions; and lastly the rationale behind the grant of patents.

CONCEPT AND NATURE OF INTELLECTUAL PROPERTY (IP)

Meaning

The expression intellectual property consists of two words, "intellectual" and "property". The objects of IP are the creations of the human mind, the human intellect. That is why, this kind of property is called "intellectual property". A particular unique feature is that intellectual property is inherently intangible. It relates to items of knowledge and to information which can eventually be incorporated or embodied in an unlimited number of copies of tangible things, machines, artifacts or goods, at the same time in different geographical places all over the world. However, the relevant aspect is that

the property is not in those tangible things but in the knowledge and information embodied in them or associated with their production.\textsuperscript{35} Thus, the most significant and distinctive feature of IP is its ability to transcend geographical and national boundaries in a way that is simply not possible with tangible things.\textsuperscript{36}

**Kinds**

Intellectual property is usually divided into two categories, namely "industrial property" and "copyright" depending upon the objects covered by it. The object of copyright is artistic works. Copyright is called author's rights which refers to the person who is the creator of the artistic work. It is the exclusive privilege to make copies or to reproduce a particular tangible expression of information. It refers to the use and flow of information, information-based products and services. The objects of industrial property are inventions and industrial designs, trademarks, service marks, commercial names and designations, including appellations of origin. The Convention Establishing the World Intellectual Property Organization (WIPO), concluded in Stockholm on July 14, 1967 provides that "intellectual property

\begin{itemize}
\item \textsuperscript{35} Bifani, n. 2, p. 146.
\item \textsuperscript{36} V.M. Sathish, "Trade related aspects of intellectual property rights and Indian Pharmaceutical Industry : An Assessment", \textit{Radical Humanist} (New Delhi), April 1992, p. 53.
\item \textsuperscript{37} Bifani, n. 19, p. 144 and n. 2, pp. 146-7.
\end{itemize}
shall include rights relating to

(1) literary, artistic and scientific works;
(2) performances of performing artists, phonograms and broadcasts;
(3) inventions in all fields of human endeavour;
(4) scientific discoveries;
(5) industrial designs;
(6) trademarks, service marks and commercial names and designations;
(7) protection against unfair competition;

and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields."\(^{38}\)

The objects mentioned under (1) belong to the copyright branch of IP. Those mentioned in (2) are usually called "neighbouring rights" that is rights neighbouring on copyright which concern the protection of performing artists, phonograph producers and broadcasting organisations. The objects mentioned in (3), (5), (6) and (7) constitute the industrial property branch of IP. Under Article 1(2) of the Paris Convention for the Protection of Industrial Property "the protection of industrial property has as its object patents, utility models, industrial designs, trademarks, service marks, trade names, indications of source or appellations of origin, and the repression of unfair competition." However, the object of scientific discoveries mentioned in (4) belongs to none of the two branches of IP.\(^{39}\)

\(^{38}\) Article 2 (viii), WIPO Publication, Background Reading Material on Intellectual Property (Geneva, 1988), p. 3.

\(^{39}\) Kadirkamar, n. 34, p. 27.
A scientific discovery has been defined as "the recognition of phenomena, properties or laws of the material universe not hitherto recognised and capable of verification." It can be argued that scientific discoveries should not have been mentioned among the various forms of IP since no national law or international treaty gives any property right in scientific discoveries. Moreover, as has been discussed later, scientific discoveries and inventions cannot be regarded as the same. The Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations in its part II containing the Agreement on Trade-Related Aspects of Intellectual Property Rights, including Trade in Counterfeit Goods apart from covering under Section I copyright and related rights (including computer programs as literary works, protection of performers, producers of phonograms (sound recordings) and broadcasts) speaks for trademarks (Section 2); geographical indications (Section 3); industrial designs (Section 4); patents (Section 5); layout designs (topographies) of integrated circuits (Section 6); and control of anti-competitive practices (Section 8).

41 See n. 20.
42 For the text of the Agreement on TRIPS, see n. 21.
The term "industrial" property is not entirely logical in the sense that it only appears to cover inventions that are related to industry. The significance of inventions to one segment of economy, i.e., industry lies in that the inventions are exploited in industrial plants. But trademark, service marks, commercial names and commercial designations are of interest not only to industry but also, and mainly, to commerce. Notwithstanding this lack of logic, the term has acquired, at least in the European languages, a meaning which covers not only inventions but also the other objects. 43 Even under the Paris Convention for the Protection of Industrial Property, it has been stated in Article 1(3) that "industrial property shall be understood in the broadest sense and shall apply not only to industry and commerce proper, but likewise to agricultural and extractive industries and to all manufactured or natural products for example, wines, grain, tobacco leaf, fruit, cattle, minerals, waters, beer, flowers and flour."

As the scope of the present study is confined only to patents - which is a form of industrial property protection for inventions, the other objects of industrial property except inventions are of limited concern. In simple words inventions are

43 Kadirgamar, n. 34, p. 16.
44 For a description of these objects see ibid, pp. 20-22.
new solutions to technical problems. The term as such has not been defined in most of the laws dealing with the protection of inventions. Patent legislation of Japan and India, however, contain a definition. Under the new law of Japan an "invention is a highly advanced creation of technical ideas by which a law of nature is utilized." 45 Under the Indian Patents Act, 1970 "invention means any new and useful - (i) art, process, method or manner of manufacture; (ii) machine, apparatus or other article; (iii) substance produced by manufacture; and includes any new and useful improvement of any of them, and an alleged invention." 46 A non-binding definition is also contained in the WIPO Model Law for Developing Countries on Inventions of 1979 which reads as follows: "Invention means an idea of an inventor which permits in practice the solution to a specific problem in the field of technology." 47

Once the invention moves from the laboratory to the market place, it is called an "innovation". Sometimes a great length of time passes before an invention becomes an innovation. 48

45 Japanese Patent Law No. 121 of 1959, Article 2 (1).
46 Act No. 39 of 1970, Section 2(1 (i).
47 Kadirgamar, n. 34, p. 17. On the same lines is definition provided in Section 51 of Sri Lankan Code of Intellectual Property Act, 1979 and Section 12(1) of Malaysian Patents Act, 1983.
48 Development history of few highly popular major inventions shows the lag-time between their invention and innovation. For instance, Fluorescent Lamp (product) was invented by Becquerel in 1859. It became innovation when it was brought to the market in 1938 by General Electric Co., Westinghouse Corp.; Television (product), invented by Zworykin in 1919, and innovated in 1941 by Westinghouse, Slide fastener (zipper, product), invented by Judson in 1891 and innovated in 1918 by Automatic Hook and Eye Co. See N. Rosenberg, Perspectives on

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Innovation includes not only the development and introduction on the market of new products and processes (along with their supporting machinery and manufacturing techniques) but also covers whatever improvements in the organization, training and motivation schemes of workers lead to higher productivity and job satisfaction. So innovation implies management and marketing techniques as well as improved product design and engineering. Innovation capability has been used to cover everything from invention (the conception of a new device, product, process or system) to innovation (the first commercial use) and includes improvement in existing technology. There can be a "major innovation" at the world frontier or a "minor innovation". A major innovation is "the development of a radically new technology from breakthroughs in basic research for which market is subsequently found, or from the identification of a need for which research and development are allocated to find a technical solution that can be taken to economic practice." A minor

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*Technology* (Cambridge, 1976).

It was not until 1900 that ball-bearings and roller bearings commonly appeared in machines - a gestation period of 400 years. It took the bicycle industry's demand for a vehicle with less friction and easier pedalling than before, along with the advent of precision machine tools, to achieve the innovation of bearing manufacture. James E. Clayson, "Local Innovation : A Neglected Source of Economic Self-Sufficiency", in NPG Regional Directorate, *Selected Documentation of Seminar on Transfer of Technology and Patent Systems* (Banglore, 1979), p. 18.4

49 Clayson, ibid, p. 18.1

innovation is "a modification or improvement of existing technology which involves more narrowly focused applied research and development as well as trial and error experimentation."\(^51\) Most innovation activity in developing countries is of this type.

**SYSTEM OF INTELLECTUAL PROPERTY RIGHTS**

An IPRs system has been defined as "the interrelationship between a set of incentives and rewards designed to stimulate the creative, inventive activity of people and institutions for the achievement of specific goals and the mechanisms that regulate and permit the enforcement of the exclusive rights granted."\(^52\) It is a means for enabling an inventor, author or manufacturer to derive financial rewards from his inventiveness, skill, imagination or ingenuity, and ensure that he is associated with the fruits of his labours. The legal machinery which directs any such rewards to the right person is the monopoly— the right to sole and exclusive exploitation or the right to receive royalties from others who wish to exploit the protected interest.\(^53\) IPRs have a direct bearing and symbiosis with invention and technology.\(^54\) As mentioned earlier, inventions are new solutions

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51 Ibid.
52 Bifani, n. 2, pp. 143-4.
to technical problems. Technology has been defined by WIPO\textsuperscript{55} as "systematic knowledge for the manufacture of a product or of rendering of a service in industry, agriculture or commerce whether that knowledge be reflected in an invention, a utility model, an industrial design, a plant variety, or in technical information in the form of documentation or in skills or experience of experts in the design, installation, operation or maintenance of an industrial plant and its equipment or for the management of an industrial or commercial enterprise or its activities." The term technology is by no means limited to the designation of improved production processes or high technology products. Rather it refers to all the knowledge and information resulting from R & D efforts and protected by IPRs. As such it refers to protected processes, products or services which can relate either to high-technology or the technology-based consumer products, according to the degree of development of the market concerned.\textsuperscript{56}

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\item \textsuperscript{55} See n. 38, p. 3.
\item \textsuperscript{56} Inge Govaere, "The Impact of Intellectual Property Protection in Technology Transfer between the EC and the Central and Eastern European Countries", \textit{Journal of World Trade} (Geneva), vol. 25, no. 5, October 1991, p. 57.
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FORMS OF INDUSTRIAL PROPERTY PROTECTION FOR INVENTIONS

There are mainly three forms of industrial property protection for inventions. Those cover patents, inventors' certificates and utility models. A brief discussion of these three means by which inventions are protected follows.

Patents

Inventions are characteristically protected by patents, also called "Patents for invention". The owner of a patent has the right to exclude others from using the patented invention. However, this right is in most countries subject to limitations imposed in the public interest. A patent is granted by most countries to a novel invention, a product or a process development which can give rise to industrial production. Thus the level of a patenting activity by a company, or a country, is often treated as an index of its industrial production. The patent provides a patentee exclusive rights over the industrial application of the information available in the patent. The patentee is given these rights in lieu of freely making available the technical details of the patented invention. This information is also considered useful in many ways in the advancement of science and technology. 57

Although patents are one of the most important IPRs in existence and has been listed as one of the objects of the protection of industrial property under the Paris Convention

and as revised—it nowhere defines what a patent is or the subject matter covered by it. In the context of that Convention a patent has been defined "as an exclusive right to apply an industrial invention". In a study by the United Nations Conference on Trade and Development (UNCTAD), a patent has been described as

a statutory privilege granted by the Government to inventors, and to other persons deriving their rights from the inventor, for a fixed period of years, to exclude other persons from manufacturing, using or selling a patented product or from utilizing a patented method or process. At the expiration of the date for which the privilege is granted, the patented invention is available to the general public or, as it is sometimes put falls into the public domain.

The person entitled to apply for a patent is usually the inventor or a person (including a legal entity) who has acquired the inventors' right to apply, the prescribed conditions usually include the payment of fees and requirements concerning the extent to which the inventions must be described; this description is at a certain stage of the procedure, disclosed to the public. If

59 UNCTAD, The Role of the Patents in the Transfer of Technology to Developing Countries (New York, 1964), p. 1. United Nations Publication, Sales No. 65 II. 8.I. The WIPO has made use of the term "as a legally enforceable right granted by virtue of a law to a person to exclude, for a limited time, others from certain acts in relation to a described new invention; the privilege is granted by a government authority as a matter of right to the person who is entitled to apply for it and who fulfils the prescribed conditions," See UNCTAD, The Role of the Patent System in the Transfer of Technology to Developing Countries (New York, 1975), p. 1. United Nations Publication, Sales No. E.75.II. D.6 & Doc. TD/B/AC II/19 Rev. 1.
a person makes what he thinks is an invention, he, or if he works for an entity, that entity, asks the government by filing an application with the competent administration (usually called "Patent Office", Industrial Property Office or "Office for Inventions" of the like) - to give him or it a document in which it is stated what the invention is and that he or it is the owner of the patent. In other words, invention needs to be disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. However, in the field of biotechnological inventions - concerning naturally occurring substances like microorganisms, plasmids and other biological materials like viruses cultures, the deposit of the sample microorganism with the authorized depository authority supplements the description of the microorganism so that a person skilled in the act is able to identify the type of microorganism involved. After examination by the competent administration, the document if issued, is called a patent or patent for invention.

A person to whom the patent is granted by the competent administration is called the "patentee" or the "owner" of the patent. The patent may be assigned to another person; the assignment is registered by the competent administration, and the assignee, as the "successor in title" to the first patentee, becomes the new owner of the patent or patentee.

It is customary to distinguish between inventions that consist of products and inventions that consist of processes. An invention that consists of a new alloy is an example of a
product invention. An invention that consists of a new method or process of making a known or new alloy is a process invention. The corresponding patents are usually referred to as "product patent for inventions" and "process patent for inventions". The patentee has the right to exclude other persons from manufacturing, using and selling a patented product (in the case of a product patent) and from using a patented process (in the case of a process patent). A person who does an excluded act without the consent of the patentee may be sued by the latter for infringement. The patentee may "licence" other persons to do acts which, but for the licence, would be excluded, such a licence may be exclusive or non-exclusive, depending on whether the patentee contracts not to grant other licences and to abstain himself from doing the licensed acts.

The protection that a patent for invention confers, thus, means that anyone who wants to exploit the invention must obtain the authorisation of the person who received the patent to exploit the invention. Anyone exploiting the patented invention without such authorisation commits an illegal act. Focus is on protection because patentee or the owner of the patent is protected against unauthorised exploitation of the invention. However, such a

61 Kadirgamar, n. 34, p. 18.
62 UNCTAD Doc. TD/B/AC II/19, n. 60, p. 9 and TD/B/AC II/19/Rev. I, n. 59, p. 4.
63 Kadirgamar, n. 34, p. 18.
protection has been limited in time, generally to a period 14 to 20 years. In the laws of some countries, there are exceptions to the principle of protection against unauthorised exploitation of the invention, thus not amounting to illegal act or infringement, in the form of "compulsory licences" where the authorisation to exploit the invention is not given by the patentee but by the governmental authority. The conditions for grant of compulsory licences are regulated in detail in laws which provide for them.

The rights protected are not described in the patent document as such, but in the patent law of the country in which the patent for invention is granted. The rights, usually called "exclusive rights of exploitation", generally consist of in the case of product patents for invention, the right to make, use, sell and import the product that includes the invention, and in the case of process patents for invention, the right to use the process that includes the invention as well as the right to make, use, sell and import products which were made by the process that includes the invention.

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64 For example in India it is 14 years; in China, Malaysia, Sri Lanka, Japan it is 15 years; in Pakistan 16 years; in Philippines and United States it is 17 years which however can be extended from 5 to 10 years in the former case and for 5 additional years in the latter; in Canada, it is 20 years.

65 Kadirgamar, n. 34, p. 18.
The term of protection of the patent is the duration of the rights granted by virtue of the patent. At the end of the term provided by the law, the patent expires.

**Inventors' Certificates**

The other mean for protecting inventions is known as "inventor's certificate". The requirements that an invention has to fulfil in order to qualify for an inventor's certificate are generally the same as for an invention for which a patent for invention is available. The main differences between a patent and an inventor's certificate are that the owner of the later, by which exclusive rights in the invention are transferred to the State, has the right to receive remuneration when savings are made through the use of the invention, rather than a right to exclude others from that use, that no payment of fee is required and that the right is not necessarily limited in time. The differences between the two lie in the fact that whereas in the case of a patent for invention the beneficiary is the patentee, in the case of an inventor's certificate there are two beneficiaries: State and the inventor. The State has an exclusive right of exploitation of the invention; the inventor has a right to fixed remuneration. 66

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66 See UNCTAD Docs., n. 62, pp. 4-5 and 2 respectively. See also Kadirgamar, n. 34, p. 19.
In practical terms, and as means of stimulating technical progress, patents and inventors' certificates have much in common. In both cases the invention in respect of which the reward is given must be novel, so that, in countries in which examination of applications as to substance is carried out, the competent administration must maintain search files containing documentation concerning the existing state of the art in relation to which novelty is to be checked. In both cases the benefits provided for are normally available under the law to foreigners as well as to nationals of the country concerned and in both cases the first application filed in one country may form the basis of a right of priority in others. Like the granting of patents, the issuing of inventors' certificates is intended to stimulate research and the development of an invention to the stage of industrial applicability, and to encourage public disclosure. Inventors' certificates are, therefore, regarded as one of the forms of industrial property protection and of the international industrial property system. Moreover, the information is the same as the information effect of published inventors' certificates is the same as the information effect of published patents. 67

Inventors' certificates are basically designed for countries where private enterprise plays a minor role in the industrial sector of the economy. Thus, they are part of the system of

67 See UNCTAD Docs., ibid.
protection of inventors in the socialist countries and exist along with patents. The inventor—whether national or foreign (except in Algeria, where only foreigners may apply for patents) has in principle a choice between these two forms of protection. All such countries restrict the availability of patents for certain categories of inventions, in particular food and drug substance, allowing for those inventions only inventors' certificates. 69 Essentially, they are certificates of authorship granted to the authors of inventions, and must fulfil the same conditions as are required for patents. The inventor obtains no right to exploit the invention or to licence it to others, these rights belong to the State, which, however, has an obligation to exploit it so far as it is economically practicable to do so. The inventor receives compensation in proportion to the value obtained from its exploitation. Because of the obligation on the Government to use the invention, the system of inventors' certificates is practical only in countries where the Government is both able and willing to engage extensively in industrial

68 For example, Algeria, Bulgaria, Czechoslovakia, Poland, Romania. It had its origin in the erstwhile USSR by Soviet legislation the Lenin 'Decree on Inventions' of 30 June 1919 by which such certificates were only issued for inventions made in connection with inventor's work in State, co-operative or public enterprise, while the exclusive rights in such inventions were transferred to the State. A similar effect was achieved by the system under another name Wirtschafts patent, meaning "economic patent" in the law of the erstwhile German Democratic Republic. Ibid, p. 5 and 2 respectively; see also Kadirgamar, n. 34, p. 19.

69 UNCTAD Docs., ibid.
activity. The decision whether or not the use of the invention is economically practical is entirely at the discretion of the Government, and whether or not the inventor receives any compensation depends not only on this decision, but on the efficiency with which the State exploits his invention. Thus in economies where the private sector plays an important role it is likely that an inventor will often prefer a patent to a certificate, in spite of the apparent advantages to him of the fact that the State has an obligation to work his invention if practical.  

The Model Law for Developing Countries, also makes provision for inventors' certificates. The Intergovernmental Committee on the Revision of the Paris Convention, on the basis of the proposals submitted by its working group on inventors' certificates, has proposed the inclusion of "inventors' certificates" in the categories of industrial property contained in Article 1(2)(b) which are protected by the Convention. There are two types of inventors' certificates, which are defined in the proposed new text as follows:

Article 1(2)(b) For the purposes of this Convention, patents are titles by virtue of which their holders have, depending on the national law,

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either the exclusive right, for a limited period of time, to exploit the inventions patented or the right to prevent others, for a limited period of time, from the exploitation of the inventions patented, whereas inventors' certificates are

(i) titles by virtue of which their holders have the right to compensation and other rights and privileges as provided in the national law of the country having granted them and by virtue of which the right to exploit the invention belongs to the State or the exploitation of the invention by others requires the authorization of a State authority, or

(ii) titles by virtue of which the holder retains the right to exploit the inventions and to receive remuneration from others for their use of the inventions, approved by the national authority, but receives no right to exclude use of the inventions by others.

There is however an important principle dealt with in paragraph (5) (a) of Article 1, that countries are not permitted to provide for the protection of inventors by way of inventors' certificates only in any field of technology. The basic provision reads as follows:

Each country of the Union shall protect inventions by the grant of patents or by the grant of patents and inventors' certificates in the same fields of technology. 72

In other words, any country which grants inventors' certificates in any field of technology must also grant patents in that field of technology, and, if a country grants inventors' certificates in all fields of technology, it must also grant patents in all fields of technology. 73

72 WIPO Doc. PR/DC/3, ibid, p. 28.
73 Ibid, p. 29.
To this however there are to be exceptions, but the three groups of countries operating under the United Nations group system, where the industrialised countries constitute Group B, the socialist countries Group D, and the developing countries the Group of 77, have put forward differing proposals. The socialist countries have proposed a clause, whereby any country already having legislation to protect inventions by inventors' certificates only or having specific conditions for the protection of patents at the time of joining the Convention should be entitled to continue its system, and also be entitled to establish inventors' certificates or specific conditions for patents in the fields of public health, manufacturing of foodstuffs and protection of the environment, as well as other fields of technology where no protection was provided by national legislation. According to the proposal of the developing countries any country whose national law provides only for the grant of inventors' certificates in certain fields shall be entitled to continue to do so (without granting patents in these fields), and that any developing country that has no legislation for the grant of inventors' certificates shall be entitled to introduce them and to grant them exclusively for certain fields of technology. The industrialised countries propose that where

74 See Alternative A for Draft Article 1(5)(b). For the text, see ibid, p. 28.

75 See Alternative B as an exception to the rule contained in Article 1(5)(a), in the form of a separate Draft Article 22 bis entitled "Reservations". For the text, see ibid, pp. 28-29.
a country grants inventors' certificates in certain fields of technology, it may continue to grant its own nationals inventors' certificates only, and is not bound to grant patents for inventions in the same fields of technology to nationals of other countries which for those fields do not grant patents. 76

Sub-paragraph (d) of Article 1(5) establishes the "equality of conditions" principle, whereby the conditions - "grounds" or time-limits for grants shall be the same both for patents and inventors' certificates. These would include the substantive grounds for grant, the substantive grounds for any opposition to the grant, the substantive grounds for annulment. The substantive grounds for grant include novelty, inventive step and industrial applicability, and substantive grounds for opposition or annulment include the absence of any of the substantive grounds for grant. The time limits for presenting opposition to the grant or requesting annulment of a granted title must also be the same for both titles of protection. 77 The only outstanding issue on time limits is whether the limits for the term of protection, as the Group B countries propose, should be the same for both titles of protection. On this it would appear that there may be agreement that inventors' certificates should be granted for a

76 See Alternative C. For the text, see ibid, p. 28.
77 For the text of Article 1(5)(d), see ibid, p. 34.
limited period, but only the developing countries and Group B agree that this period should be the same in the respective countries as the period granted for patents.

A final clause declares that "the provisions of this Convention which concern patents shall be equally applicable to inventors' certificates." This, however, may not be easy to apply as some provisions of the Convention may suit only patents.

**Utility Models**

The exclusive right granted by a utility model registration is in principle the same as the patent right, however, in most cases, it is of considerably shorter duration. The expression "utility model", in essence is merely a name given to certain inventions in the mechanical field. Thus the subject matter for which utility model registrations may be obtained is limited to mostly technical fields of mechanical art. This is why the

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78 For details see "WIPO: Revision of the Paris Convention", n.71, p. 568 and WIPO Doc. PR/DC/3, n. 71, p. 35.
79 Draft Article 1(5)(e). See WIPO Doc., ibid, p. 36.
80 See n. 71, p. 37 and 569 respectively.
81 Industrial property statistics show that the number of applications for utility model registrations sometimes reaches the number of patent applications and that in all countries providing for the protection of utility models the great majority of application for utility models is filed by nationals or resident. This applies even for the countries which have a higher percentage of patent applications by foreigners. For example, in Spain about 80 percent of all patent applications, but only about 10 percent of all utility model applications, are filed by foreigners. See n. 62, p. 10 and 4 respectively.
82 Inventions for the purposes of industrial property law, are usually grouped in three major technical fields: (i) mechanical; (ii) chemical; and (iii) electrical and electronics. See ibid, p. 9 and 4 respectively.
objects of utility models are sometimes described as devices or useful objects. Utility models differ from inventions for which patents for invention are available mainly in two respects: first, in the case of an invention called "utility model", the technological progress required is smaller than the technological progress ("inventive step") required in the case of an invention for which a patent for invention is available, second, the maximum term of protection provided in the law for a utility model is generally much shorter than the maximum term of protection provided in the law for an invention for which a patent for invention is available. The document that the inventor receives in the case of a utility model may be called, and in several countries is called, a patent. If it is called a patent, one must, in order to distinguish it from the patents for invention, always specify that it is a "patent for utility model". 83

The main purpose of utility model protection is to make available, in addition to patents, a system of protection for invention which do not necessarily fulfil all the requirements of patentability, such inventions are protected more easily but to a lesser extent. Such an additional system can be placed at a relatively high level as regards the conditions and term of protection, providing for examination by the competent administration as to substance and a term which is only slightly

83 Kadirgamar, n. 34, p. 19.
less than the term of patents (as, for instance, in Japan and
the Republic of Korea), or at a considerably lower level,
without the requirement of an inventive step, without examination
as to substance and with a short term of protection (for instance,
three years, with the possibility of extension for one further
period of three years, as in the case of erstwhile Federal Republic
of Germany). It can also be combined with the patent in such a
way that for one invention a patent application and an application
for a utility model registration are filed, the applicant
expressing the wish to obtain a utility model registration only if
the patent application is not successful. 84

In France, "certificates of utility" are governed by the
same requirements as patents, in particular, the requirement of
an inventive step must be fulfilled in the same way as in the
case of a patent. The only difference is in procedural
requirements and concerns the search report or "documentary
report on prior act", which is prepared before the grant of a
patent but is not necessary for the registration of a utility
certificate. The term of protection is much shorter than in the
case of a patent, namely six instead of twenty years, while in
most countries utility model registration are granted only for
the mechanical arts, the French system of utility certificates
excludes only inventions relating to medicines. In United

84 See n. 62, p. 10 and 4 respectively.
85 Ibid.
Republic of Tanzania, an invention is eligible for a utility certificate if it is new and industrially applicable. Utility certificates may be granted even if the invention falls short of novelty. An examination as to substance need not be carried out before a utility certificate is issued. 86

At present, only very few developing countries provide for the protection of utility models, these include Brazil, Philippines, Republic of Korea, Peoples' Republic of China and Malaysia. Some countries are considering the introduction of utility models for instance Australia, the OAMPI, African and Malagasy Industrial Property Office countries and the Arab countries for which the Industrial Development Centre for Arab States (IDCAS) is preparing a model law on inventions. Among the countries whose industrial property laws do not include this concept of utility models are the United Kingdom and the United States.

The scope of the present research being confined to patents, the related aspects of requirements of patentability and object of granting patents form the basis of discussion in the ensuing pages.


87 See n. 62, p. 10 and 4 respectively.
CRITERIA FOR PATENTING

Not all inventions are patentable. The typical main requirements or conditions of patentability are:

- novelty
- inventive step and
- industrial applicability

An invention is "patentable" if it is new, involves an inventive step (i.e., it is not obvious) and is industrially applicable. 88

An invention is new if it does not form part of the state of the art. The state of the art is constituted by everything made available to the public anywhere (the test of world-wide novelty) or in the country (the test of national novelty) at any time before the filing date or, where applicable, the priority date, by means of a written or oral disclosure, by use or in any other way. An invention involves an inventive step if it does not obviously follow from the state of the art in the sense that it would not have occurred to any person skilled in the particular technical field who happened to be asked to find a solution to the particular problem (the test of non-obviousness). Checking the patentability of the invention against the tests of world-wide or national novelty and non-obviousness requires a search of the

88 WIPO Doc. PR/GE/11/2, 5 September 1975, paragraph II (1).
state of the art, which results in the preparation of a search report containing references to the documents describing or other sources of the relevant prior art. A competent administration which carries out examinations as to substance maintains a search file in which documents relating to the state of the art are arranged in accordance with a classification system providing for a fine sub-division of the entire technology according to technical fields. 89

The conditions of novelty and inventive step must exist on a certain date i.e. the date on which the application is filed. However, the case of non-existence of conditions on that date has been regulated under the "right of priority" rule by which the applicant may be able to rely on a right of priority when he has filed an earlier application for the protection of the same invention in another country, if the later application is made within the "priority period" (normally 12 months from the "priority date"), that is to say, the filing date of the earliest application filed abroad and it is not invalidated by any acts accomplished during the same period such as filing by another person or the publication or exploitation of the invention. Thus in such a case, it will be sufficient if the requirements of novelty and inventive step exist on the date on

89 See UNCTAD Docs., n. 62, pp. 7-8 and 3 respectively.
which the first application was filed. This right of priority rule has been laid down under the Paris Convention for the Protection of Industrial Property the details of which have been mentioned in chapter entitled "Norms and Standards of Patent Protection under the Paris Convention*.

RATIONALE BEHIND GRANT OF PATENTS

The patent system is an important instrument in a country's macro-economic policy for its technological and industrial development. The modernisation of agriculture, industry and national defence depends to a large extent on the level of science and technology which provide the new inventions. As inventions are made by scientists, by applying and improving technology, as a consequence the patent system stimulates inventiveness.

Regarding stimulation of technical progress and hence economic development, the Ayyanger Committee Report noted that the opportunity of acquiring exclusive rights in an invention stimulates technical progress mainly in four ways. First, 

90 Ibid, p. 7 and 3 respectively.

91 UNIDO, Guidelines for the Acquisition of Foreign Technology in Developing Countries with Special Reference to Technology Licence Agreements (New York, 1973), p. 25.

that it encourages research and invention; second, that it
induces an inventor to disclose his discoveries instead of
keeping them as a trade secret; third that it offers a reward for
the expenses of developing inventions to the stage to which they
are commercially practicable; and fourth, that 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. Herein follows an examination of
each of these justifications of the patent system.

Encouragement of Research and Invention

Such an encouragement is being given through (a) moral
and (b) material benefits to the inventor or other patentee.

(a) Moral Benefit

The moral benefit lies in the fact that a patent is a
document issued by the state associating the name of the inventor
to his invention after examining the merits of the invention.
Depending on the merits of the invention, the inventor and
entity (if the invention is made by a worker in the performance
of his assigned tasks in the entity to which he belongs, patent
laws usually give the right to the patent to the entity) will
acquire reputation and esteem in the scientific and business
community, in their country and even abroad.
(b) **Material Benefit**

There is also material satisfaction because a patented invention should mean more income for the inventor and, where the patent belongs to the entity in which the invention has been made, for that entity. In such a case, the degree of the encouragement may depend on the amount of the remuneration. Therefore, it becomes necessary to establish a relation, on the one hand, between the significance of the invention and the economic value of the invention and on the other hand, the amount of the remuneration.

The economic value may be measured in different ways: frequency of the use of the patented invention, volume of manufacture or sale of products embodying the patented invention, economies realized through the use of the patented invention, etc. The significance of an invention is more difficult to evaluate, at least by objective standards. What is important is that the patent laws and/or implementing texts of the patent law should establish not only the principles but also some clear rules on the way the remuneration must be computed. It should fix the scale of the remuneration high enough to mean a real benefit for the inventor. Only if it is done in this way will the remuneration cause in him the feeling that the amount he receives is just because it is commensurate with the value that the invention has for the entity and the national economy. If the rules are too vague or unclear so that the inventor cannot estimate how much he may expect to receive as remuneration, or if the scale of
the remuneration is meagre, the material satisfaction as an incentive to invent, will be missing. 93

In case of invention being made by a person belonging to an entity in the performance of his assigned tasks - the solution found in most patent laws is that the patent for invention is the property of the entity. The material benefit to be derived by that entity from patented invention would depend on the amount of the payment or payments received by it from other entities for allowing them to use the invention or that received from the buyer in case of sale of the patent. The amount is fixed in a contract which is called a "licensing" contract in the former case, and a "sale"'s contract in the latter case. The amount actually fixed in the contract will depend not only on the expected value of the invention for the licensee or buyer. It will also depend on the right that the patent for invention entails and the duration of those rights. 94 Both the rights and their duration are fixed in the patent law. In the case of inventions made by a person outside his assigned duties, the preceding considerations also apply. The solution generally adopted by the patents laws is that the patent for invention granted for such inventions belong to the person who made the invention.

93 Kadirgamar, n. 34, pp. 2243.
94 Ibid.
But the proposition that patents encourage invention has always been questioned. Sir Arnold Plant in his study of the patent system has emphasized that Economics... has not yet evolved any apparatus of analysis which would enable us to pronounce upon the relative productivity of this particular infant industry - the production of inventions; nor does it provide any criteria for the approval of this method of special encouragement.95

In a study for the United States Senate Sub-Committee on Patents, Seymour Melman concluded that "with or without a patent system, the efficient pursuit of knowledge in the universities and other non-profit institutions will continue, within the limits of available sources, so long as the production of knowledge is treated as a sufficient end in itself. Industrial firms will continue to enlarge their research in the useful arts as dictated by competitive needs with or without patent privileges".96 In connection with the patent as an incentive to invent, it has also been submitted in a recent study by Jeremy Phillips and Alison Firth that "there is not one shred of evidence that any patent system has provided an incentive which leads an otherwise un inventive person to perform acts of invention. It is an inescapable fact of the human condition that not every person possesses the necessary mental ability to originate a scientific solution to a problem by intellectual creation, or by reordering

95 Quoted in TD/B/AC 11/19, n. 60, p. 99.
96 Ibid.
existing knowledge in a new and hitherto unappreciated manner. There is no doubt that one can make a person want to invent, even if he has no inventive capacity at all, but by doing so one merely stimulates a yearning for a desired end, without reference to the means by which it may be achieved."

Thus there is little evidence for sustaining the claim that individuals can invent in response to incentives and rewards. On the other hand, according to another critic, "there is sufficient evidence that hitherto the inventive individual has been spurred on by the challenge to solve particular problems and the desire to benefit mankind rather than by the objective of taking out patents. The history of science and technology are full of examples to support this view. Individual and university research has for centuries yielded major results without the incentive of patents and it continues to do so." It has also been pointed out that "recent attempts to encourage researchers to take out patents are directed less towards promoting inventions and more towards ensuring the monopoly rights of private corporations. The patent system at best plays a marginal role in encouraging inventions. But there is no underestimating its negative impact on the goals and values of the scientific community." 99

99 Ibid, p. 235
The report of the British Committee (1970) to examine the patent system and patent law recognised that inventive activity and the development of new ideas is inherent in the human mind and would continue without any legal protection for the results. But it concluded that "a patent system increases the possibility of reward for the successful exploitation of invention" and "there can be little doubt that it does play a part in encouraging individuals to invent and organizations to create conditions in which inventions can be made. Even if it were to be conceded that incentives encourage invention one must be careful not to "confl at e the created object which makes the person deserving of a reward with what the reward should be". Rewards to inventors could be given in many ways and the patent system is only one of them. There are alternative ways such as the grant of inventors certificates and the payment of sums of money in return for the invention, which were widely used in the former socialist countries. Michael Planyi, for instance, would "supplement licences of right by government rewards to patentees on a level ample enough to give general satisfaction to inventors."

100 Quoted in TD/B/AC 11/19, n. 60, p. 99.
101 Chimni, n. 98, p. 235.
102 Quoted in Chimni, n. 98, p. 235.
Furthermore, when an ever increasing proportion of organised research is being financed by corporations and/or the state in many countries, the question of a just reward for a lone inventor is of small economic significance. A study of the United States of America's experience concluded that one-half of the patents acquired by individual contractors from publicly financed research and development was owned by only 20 large corporations, and that these 20 corporations undertook two-thirds of the research and development carried on in industry for the Federal Government. The existence of a patent system does not in general seem to be a crucial factor in enhancing an individual's determination to invent. In an estimated 90 percent of granted patents the inventor is employed to make the invention and the resulting patent will belong to his employer. "To say that, in such cases, the potential availability of a patent actually stimulates invention is a bit like saying that you can spur the donkey on by offering a carrot to his rider"; prospective employees are usually required to give the right of their inventions to their employers as a condition of their employment.


104 Phillips and Firth, n. 97, p. 92.

105 Chimni, n. 98, p. 235.
It is also pertinent to mention here that intellectual property is not created \textit{ex nihilo}. As has been explained by Goldman often inventors themselves depend on prior basic research although the rewards from patents are not shared with those who provided the necessary background knowledge.

\textbf{Disclosure of the Invention}

Publication of the description of the invention and the claims which define the scope of the protection is an essential function of the patent system: a patent can fulfil its purposes only if it makes the knowledge of new technology available to the public, and the protection cannot be enforced unless its scope is known. The informational effect of publication is not limited to the country in which the new invention is published since it makes the contents of the patent available to the whole world. Therefore, publication is an important factor in international co-operation in the patent field. In the past new inventions were frequently of relatively simple nature so that they could be easily understood by anybody having average general technical knowledge. Progress in technology has made it more and more difficult to describe an invention sufficiently to enable others to use it. Nowadays, use of an invention frequently requires knowledge of the state of the art, and an economically reasonable use of the invention may require additional knowledge, or

\begin{footnotesize}
\begin{enumerate}
\item[Ibid.]
\item Quoted in Chimni, n. 98, p. 235.
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\end{footnotesize}
"know-how" obtained from practical experience of manufacturing in general and from developing the invention to the stage of production. 108

It is a standard requirement of most patent laws that the patent description must disclose the invention in a manner sufficiently clear and complete for it to be carried out by another person skilled in the relevant art. Full disclosure is so important that in countries like the United States it is generally held that the raison d'être of a patent system is to secure an exchange or deal between the patentee and the public; the patentee receives protection (patent protection) for the invention because he or it discloses the invention. The following two main reasons have been assigned for the importance of knowing the invention on the part of any member of the public:

Knowledge of the invention is one of the conditions of using it.
Knowledge of the invention helps in making still further inventions. 109

Any person wishing to improve a product or process should know what other persons specialists in that product or process, know. The latest knowledge, the advance over the previous knowledge is frequently contained in patent applications and

108 See UNCTAD Docs., n. 62, p. 17 and 7 respectively.
109 Kadirgamar, n. 34, p. 24.
their patents for invention, which can be obtained by reading the descriptions mentioned in the published patent application or patents for invention and so can be evaluated by such person who will be able to decide whether the invention so described is susceptible to contribute towards the improvement which he wishes and if it does, he will be in a position to contact the patentee and negotiate with the latter about the conditions of price or payment under which he can be authorized by the patentee to use the invention. Without the publication of the patent applications this would not be possible: in the absence of public disclosure, the inventor's knowledge could remain secret and, in order to achieve same advance in technology that the invention represents, the invention would have to be invented separately by each entity that wishes to have such an improvement applied in its entity. Even where this could happen and happens, it would entail a wasteful duplication of effort and the multiplication of the cost that any research aimed at finding new solutions always entails. The other reason for which it is important that all inventions should become known to any member of the public is that the idea which every invention contains stimulates new ideas, further refinements of the invention disclosed, or entirely new inventions. Thus the disclosed invention works as an inspiration or a catalyst of further new ideas in the minds of people other than those whose invention has been disclosed. In other words, inventions usually
stimulate the making of further inventions, and further inventions contribute to the advance of science and technology. Regarding the function of patents as an incentive to disclose it has been however stated that "the evidence is not supportive of this conclusion. A perusal reveals that on the individual plane inventions are disclosed irrespective of the availability of patents. And this notwithstanding the fact that scientists are working within corporations. Thus, for example, scientists working at IBM on superconductivity published their paper four months before filing the application in Europe in the process almost jeopardising the grant of a patent. On the other hand, a regime dominated by patents threatens the scientific venture which views knowledge as a public consumption good. Patent disclosure requirements, even when the best mode known to the applicant of carrying out the invention must be described, may not fully succeed in their aim when inventions, particularly inventions in fields where the technology is sophisticated, are difficult to execute quickly and economically and therefore competitively. Part of this problem arises from the endeavour of applicants to disclose as little as possible while still obtaining a patent; to this extent the problem may be at

110 Ibid, pp. 24-25.
111 Chimni, n. 98, p. 236.
least alleviated by stronger legal requirements and stricter administration. 112

There are, however, certain difficulties inherent in the nature and the timing of patent disclosure which probably cannot be removed by amending the patent law or improving its administration. Taylor and Silberston commenting that "it happens quite frequently that technical information which is essential to the most efficient operation of an invention on a large industrial scale is not divulged in a patent specifications", suggest that this may reflect the fact that the information is not known when the time for putting the specification into order is reached, or that the information is, in some cases too cumbersome to put into a specification, as for instance, when the details of a process vary greatly with the local conditions under which it

112 For example, a proposal to amend the patent law of the United States would require the disclosure of the best mode of practising the invention "in trade and industry" (i.e. commercially and therefore competitively). Bill for the general reform and modernization of the patent laws, S. 2504, United States Senate, 1973 quoted in Doc. TD/B/AC 11/19, n. 60, p. 100.

This proposal may be designed partly to meet a difficulty referred to by one patent practitioner in an industrialized country who, having noted that there can be a big gap between a description which is regarded as sufficient to support a patent and the drawings and process details necessary to put a works manager in business, comments:

It is possible for a patentee to obscure the issue by the very wealth of information he supplies. Although he must describe the best method, he does not have to identify it. For example, in a chemical case he may at the same time strengthen his legal and his commercial position by giving a wealth of experimental examples to support his patent claims while leaving it to the reader to discover which one is the commercial winner.


operates or the purpose for which it is used. A remark made by a patent specialist in a pharmaceutical firm has been quoted by them: "it is rare for the complete (specification) to contain a really full and adequate disclosure for commercial operations, but this is not because of secretiveness, Rather it is an inevitable result of the "first to file" system; under this it is essential to obtain an early priority date, and invariably commercial exploitation will not take place for 3 or 4 years, and in the pharmaceutical field often 5 to 10 years later." The extent to which necessary manufacturing "know-how" is not disclosed by patents varies from one field of technology to another; which may be estimated from the proportion of patent licences in which it is common to include also know-how provisions. According to Taylor, this proportion is high in mechanical engineering and electrical machinery and equipment; but low in electronics and in "finished and speciality chemicals" - referring to patents for chemical products rather than processes. Taking into account the above-mentioned problems relating to patent disclosure in technological fields where additional know-how is important, the modern

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114 Ibid.

function of disclosure has been described as follows:

...its purpose is no longer to allow the exploitation of an invention by others or, as the economists say, to permit its imitation. Rather, today, it is the primary function of disclosure to supply the general public with a complete and exact survey of the most recent state of technological development, to provide the necessary information for continuing developments on the basis of the patented invention, and to direct those interested in the exploitation of an invention to the relevant source of technology. 116

It is clear that, even at the level described above, the disclosure contained in patent documentation systems provides a tool for research and development and for the evaluation of new technologies, and valuable experience for the enterprises and government officials of the countries concerned, provided that access to such documentation can be facilitated. It is also clear that in the large number of cases in which necessary manufacturing know-how is not disclosed by patents, effective transfer of technology can take place only with the voluntary co-operation of the patentee. This obviously diminishes the effectiveness of compulsory licensing as a means of encouraging use in production of patented inventions in the country granting the patent.

Profit Incentives to Produce Inventions

As mentioned earlier patent systems were developed so as to provide an incentive to inventive and innovative activity by granting inventors exclusive rights over the use of their inventions for a particular period. The legal protection thus afforded is aimed at enabling the innovator to appropriate and capture a larger share of the innovation profit potential, by precluding or slowing down outright imitation. Therefore, the incentive potential of patent protection largely depends on the extent to which patents help further the appropriation of the benefits of innovative activity. The patent system thus gives the individual inventor something to sell, possibly at a higher price than he would get for a trade secret. So a primary reason for providing patent protection is to permit inventors to earn

A recent survey of 100 transnational corporations (TNCs) in the United States, Europe and Japan on the role of patents and patenting policies in the promotion of innovation, has found that this role is not only sector-specific, but also country and technology specific. There are differences between firms operating in different sectors and originating in different countries in the extent to which patents are used as method of protecting technology. Differences between sectors seem to be, to a large extent, dictated by the conditions of protection, for example, the possibility of protection being enforceable and the expected lifetime of the invention to be patented. Thus chemicals and pharmaceutical firms are major users of patents, whereas electronics, mechanical engineering and resource-based firms rely on secret know-how to a greater extent. Differences also appear to be related to the type of technological innovations. An array of incentive schemes and promotion instruments has been established which include tax incentives, financial assistance schemes, innovation-oriented procurement policies and government-led programmes on the development of new technologies. UNCTAD, Promotion and Encouragement of Technological Innovation: A Selective Review of Policies and Instruments, Doc. TD/B/C.6/139, p. 15, iv-vii.
a return on their inventions, and therefore, to provide an incentive for technology to advance. The cost of providing patent protection, however, is that it permits the patent-holder to exercise monopoly power over the market for the new product, and this prevents the benefits of the new product from being enjoyed optionally, by consumers. It is for this reason, patent protection is granted only for a limited time, so as to achieve a durable balance between incentive to invent and gains, to consumers from products after they have been invented.

The Patent Law ensures that "those who incur the cost of inventing will reap its reward if users find the result worth paying for. This cannot occur if others reap where the inventor has sown. The patent system is designed to stop the "free riding" by non-patentees so that the profit incentives system may operate in the interest of the patentee and in the interest of consumers." Therefore, the basic goal of patent law is efficient


119 For example, the international Rectifier Corporation and its subsidiary Rachele Laboratories in 1980 had infringed Pfizer's valid patent covering anti-biotic doxycyline. This product was and is marketed by Pfizer under the brand name of Vibromycin. The USA District Court decision of Los Angeles was upheld by 9th Circuit Court of Appeals in 1982. The Court awarded Pfizer damages of 55.8 million dollars. Without patent-protection, secrecy provides the principal means by which "free riding" can be avoided. In such circumstances, inventive resources would be directed towards inventions having higher secrecy potential. See H.M. Jhala, *Intellectual Property and Competition Law in India: With Special Reference to Patents, Trademarks, Copyright and Know-how Contracts* (Bombay, 1985), p. 5.
allocation of scarce resources for those products and services which consumers value.

In any case without the monopoly, there would be insufficient profits incentives to produce an invention and because an invention is profitable only if consumers are willing to pay what the patentee charges, the consumers are better off, than they would be without the invention even if they are charged "monopoly" prices. The trade-off (some monopoly restraint for greater output in the long run) is in the interest of socially desirable resources allocation. The patent law in so far as it is directed towards achieving community welfare through allocative process beneficial to consumers, seek this end by making profit system work better. Profits provide motivation both for social efficiency of resources allocation (output expansion) and for social inefficiency (output restriction) under monopoly. A central goal of any patent law is to resolve this efficiency/trade restraint, trade-off. A consumer welfare test constitutes a central criterion for making decisions and appraising them. To admit the central importance of resources allocation/what consumers want at the lowest cost is to recognize that analysis of competition under patent law is mean and not end. The productive and allocative efficiency associated with particular industry structures or particular trade, practices should be exposed and given their appropriate weight. The knowledge to be produced is not itself ultimate objective but is rather "intermediate input". It must be incorporated into a "total innovative process" and utilised as technical information in
order that out of the succession of research, development, invention, pilot plant, etc. comes out a new or improved product or process capable of benefitting society. The state creates an incentive for individuals and firms to do more of certain things.

The primary incentive effect of the patent system goes to the inventors and their associates in the innovative process, having been offered larger price for success than they might obtain if their newly developed knowledge was easily appropriable by others without payment. They are thereby induced to commit more sources to innovative activities. In addition some secondary incentive effects of knowledge production and innovation often attributed to the patent system principally include (a) provision for market place for new technology; (b) provision for medium for dissemination of technical knowledge; and (c) provision of a basis for the development of export markets and expansion of country's business into foreign countries. It has also been observed that "the innovation will be most rapid, if the entire markets of many nations are available to reward innovators, and if the technologies of many nations are available as building blocks".

120 Ibid, pp. 8-9.
121 Ibid, p. 16.
Thus, has been pointed out by Justice Ayyengar, "the consideration justifying the grant of a monopoly for a new invention is not only the disclosure to the public of information which they can use when the period of monopoly expires but the benefit to trade by the new invention being brought into commercial use during that period. The advantages accruing to a nation's economy from rewarding inventors with the grant of exclusive privileges for a limited time are dependent on two main factors: (1) the country must be technologically advanced to maintain the rate of invention which is brought forth by the promise of the reward. This in turn would be dependent upon -

(a) the degree of diffusion of scientific and technological education and the number of persons reaching high proficiency by such education;

(b) a massive industrial production which could absorb the products of the education and develop the instinct for research and direct it to useful and productive channels;

(c) the amount of speculative capital which is forthcoming for being risked in investment in new ventures and for profitable utilisation in such industries.

(2) The working of the invention within the country which grants the patents so as to result in the establishment in the country of a new industry or an improvement of an existing industry which would profitably employ the labour and capital of the country and thus increase the national wealth."

123 See n. 92, para 38, pp. 17-18.
Justifying the grant of patent Robert P. Benko also observed that "the patent grants the inventor a temporary monopoly over the use of his invention and prevent competitors from sharing the knowledge without payments. Thus the patents compensate for market failure and thereby solve the problem of appropriability. Monopoly profits or more accurately, quasi-rents enable inventors to secure their economic interests to cover costs and to make a profit. Therefore, patents restore economic incentives for the production of inventions. Consequently, the patent facilitate dynamic economic efficiency or efficiency associated with technological inventions."

At this juncture it becomes pertinent to mention that there is again little evidence for sustaining the claim that patents provide profit incentives to produce inventions. According to critics, "where the inventor has both the faculty of invention and the desire to become incredibly rich, one suspects that the lure of a patent will provide a measure of encouragement... The cost of obtaining a patent is high: patent agents, the Patent Office, industrial and commercial advisers and makers of prototypes will all want to be paid whether the invention is successful or not; even if the invention is successful, the patentee will usually have to pay his patenting and related costs before he sees so much as a penny in return for his effort, and,

at the end of the day, most patents are not profitably exploitable and would not be worth holding even if they were given away.\footnote{125}

In connection with commercialisation of university research, it has been pointed out that "the profit motive even when exerted indirectly by connection with a foundation, can slant the direction of research toward those areas in which it can be fulfilled."\footnote{126}

**Inducement to the Introduction of Foreign Technology and Capital**

Patent grants to foreigners by non-industrial countries on inventions developed and worked abroad is an inducement which provides for the transfer of technology and the accompanying investment. Foreign patenting helps to transfer technology, thus assisting economic development. Much of the technology required for industrial development is patented, and the patents are owned by business corporations in the industrial countries. The disclosure of the technology which is contained in the patent grant and is public knowledge is rarely sufficient to permit its full application without the know-how and the technical help of the patentee. The business firms will not give this know-how and this help in conditions which might rob them of the protection their patents provide and in circumstances where it would be difficult to prove ownership and where consequently any one could use the technology made available. Moreover, "embodied technology", that is patented machinery, is often obtainable

\footnote{125} Phillips and Firth, n. 97, p. 92.

\footnote{126} Chimni, n. 98, p. 235.
only from firms holding the patents, who may refuse to sell in the absence of patent protection. Thus, the patent becomes a necessary condition for the transfer of technology.\textsuperscript{127}

Every country which desires to benefit from new inventions will, to a large extent, have to rely on foreign technology. The acquisition of foreign technology or, briefly, transfer of technology is usually effected on a contractual basis: the foreign holder of technology will sell or license (that is, give the authorization the "license" to use) his technology to the domestic enterprise or entity. In order to create such a favourable climate it is argued that it becomes necessary to create the possibility of obtaining strong patent protection to increase confidence in negotiations with foreign partners (technology holders of industrialised nations); it creates a sense of security and stability for the transfer if the technology is protected through law and the courts in case of unauthorised use of technology.

Justifying patents role as an inducement to the introduction of foreign technology is based on the assumption that there is a positive relationship between a strong patent regime and transfer


\textsuperscript{128} Kadirgamar, n. 34, pp. 25-26.
of technology, which assumption is again a questionable one. As the UNCTAD Trade and Development Report, 1991 has noted:

The exact relation between a strong system of intellectual property protection and transfer of technology remains uncertain. In other words, more legal protection will not automatically lead to an enhanced process of technology transfer. 129

The following reasons have been advanced in support of this:

1. Technology transfer will not occur despite stronger protection if other conditions pertaining, for example, to market size and expected growth, or to the competitive ability of potential licences are not met. Licensing decisions are generally based on a multiplicity of factors among which intellectual property is not necessarily decisive. It may be argued, for instance, that the decision to licence depends upon more on the solidity of a particular licensing agreement than on the degree of legal protection itself. 130

2. The availability of stronger protection will go to enhance the bargaining position of the technology holders. This strength is likely to manifest itself in higher royalty rates and restrictive clauses. In other words, "if legal protection arguably increases the willingness of innovators to licence their technology, it thus also augments the possibility of inhibiting access to this same technology in terms of price and other considerations." 131

130 Ibid.
131 Ibid, p. 192; See also Chimni, n. 98, p. 237.
3. Without the commercial working of the patent, there can hardly be any transfer of technology to the country nor will there be any contribution to investment, production and employment within the country. Experience of developing countries would show that a patent can seldom be worked unless the associated know-how is also transferred. Without commercial working on an adequate scale, the patent protection system would be converted into a mere monopoly for the importation of the patented products and the reservation of the host country market for the patentee.

The patent licences are only one of the means of transfer of technology among firms and countries and not necessarily the most important one. It has been pointed out that unpatented know-how has been the single most important asset transferred through foreign collaboration with only technical arrangements. The fact that know-how is more important than patent licences implies that without the working of the patent within the country there can hardly be any transfer or diffusion of technology.\(^{133}\)

However, with regard to the arguable function of patents as a stimulus to investment in the development of a new product or process, it has further been stated that "in reality the grant of patent is not the commercial attraction which it might seem to be,\(^{132}\)

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132 A.V. Ganesan, Key Note Address at the National Conference of Scientists on Science, Technology and Patents organised by the National Working Group on Patent Laws, at New Delhi, 4-5 December 1989 reproduced in Monthly Commentary on Indian Economic Conditions (New Delhi), vol. XXXI, no. 5, December 1989, p. 53.

133 Chimni, n. 98, p. 238.
for at least the following reasons: (i) the grant of a patent is no guarantee of its continued validity, since lack of novelty or inventive step may give rise to the revocation of patent any time; (ii) even the cast iron validity of a patent would provide no guarantee of its commercial viability. In many cases the patent covers an invention for which there is no ready market, or for which the market is already satisfied by an inferior product which could not be displaced on account of the great expense of developing the new product; (iii) the mere fact that a patent has been applied for and its specification published will alert market rivals and may thus rob the patentee of the valuable assets of surprise and being first on the market; (iv) the risk of the patented invention being superseded by the subsequent art cannot be ignored; and (v) failure to exploit a patent swiftly and successfully may lead to compulsory licence proceedings being instituted and to the critical division of a potentially monopolistic market. 134

Easier Access to Technological Information

A patent system, it is said, provides a window to technological knowledge and innovations as a result of large number of applications being filed thus providing improved possibilities especially for developing countries to have access to the information patented. The duration of patents being limited, the technological knowledge of which the patent system

134 Phillips and Firth, n. 97, pp. 98-99
is a carrier ultimately falls into the public domain; and becomes accessible to anyone of right. The significance of allowing foreigners to file patents lies the flow of technological knowledge into the country. The magnitude of the technical knowledge available through patents can be indicated by the fact that within Europe, thousands of patents are filed every year and all the specifications given in such patent are a matter of public record.

A system of patent grants to foreigners speed up and make it easier for domestic industry and R & D institutions to get information about the most recent and most important inventions made abroad. There will be an increase in flow of information since the foreign application has to file his application within one year from the date he filed an application for the same invention abroad and the information will be easier to understand and digest for the majority of the people of the country as it will be in the language of the country. At the same time, the information conveyed by patent application filed in a country by foreigners would also be a valuable indicator of which enterprises in which foreign countries show interest in the economy of the country concerned. Thus,


patents for invention granted to foreigners makes the technological information contained in patent applications accessible in the language of the country promptly.

SUMMATION

In the contemporary context, the protection of IPRs, especially patents, has become a crucial element in the trade policy of industrialised countries. The industrialised countries whose nationals file the largest number of patents every year have realised the importance of a uniform global IPR system; it is viewed by them as an instrument for technological competitiveness at a world level. On the other hand, the developing countries of the South, whose practices would be most immediately effected, have opposed their stand on the grounds that there would be an increase in the profits of monopolistic foreign firms at the expense of domestic consumers. The developing countries assign to patents the same objectives as did the developed countries themselves at a prior stage in their national technological and industrial progress, that is, technological self-reliance. The developing countries tried to maintain the same rules that were in force in the developed countries at earlier stages. This was a situation of conflict between the producers or owners of new technology and the followers. The producers, the developed countries, therefore,
favoured a more strict international patent system so as to capture global oligopolistic benefits maintaining that competition promotes economic growth. On the other side, the followers, the developing countries wanted such a patent system for their national development and were keen to absorb technology for development purposes thus desiring for a system to accelerate the diffusion of technology.

The discussion also reveals that there is little evidence in favour of introducing a strong patent system in developing countries whatever be the arguments in favour of retaining the institution of patents. It also suggests the answer to alternative ways of encouraging innovation such as inventors' certificates of the type suggested by the Inter-governmental Committee on the Revision of the Paris Convention or supplementing licences of right by government rewards to patentee so as to satisfy inventors. Increased government funding of the intellectual labour can be another way of promoting innovation as it may also help in the achievement of the goal of quick diffusion.

It was also seen that the assumption of positive connection of strong patent protection to the inducement of transfer of technology is uncertain. With regard to disclosure function even if it is conceded that absence of disclosure entails easy imitation, there is, however, an undeniable fact that copying is not easy as it requires the use of vast resources. All this goes against the case for a hard patent regime made out by the developed countries.
This brings us to the question of historical evolution of international patent system. A study of genesis and growth of such a system has been made in the ensuing chapter.