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The role of the patent system in the transfer of technology to developing countries



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The role of the patent system in the transfer of technology to developing countries

*Report prepared jointly by the United Nations Department
of Economic and Social Affairs,
the UNCTAD secretariat and the International Bureau
of the World Intellectual Property Organization*



UNITED NATIONS

New York, 1975

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* * *

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FOREWORD

Resolution 39 (III) on transfer of technology, adopted on 16 May 1972 at the third session of the United Nations Conference on Trade and Development, called in paragraph 10 for

“ . . . a study with a view to bringing up to date the report prepared by the Secretary-General of the United Nations on *The role of patents in the transfer of technology to the developing countries* * and to devote special consideration in this study to the role of the international patent system in such transfer, with a view to providing a better understanding of this role in the context of a future revision of the system ”.

In accordance with the resolution, this report has been prepared jointly by the United Nations Department of Economic and Social Affairs, the UNCTAD secretariat and the International Bureau of the World Intellectual Property Organization.

Part one of the report describes the salient characteristics of the patent system and part two is devoted to the international patent system and the economic advance of the developing countries. Some of the major elements which are relevant in the context of the future revision of the system are summarized in part three. A summary of the principal provisions of patent legislation in 73 countries, in view of their importance, is being issued as an addendum to this report.**

* United Nations publication, Sales No. 65.II.B.1.

** TD/B/AC.11/19/Add.1. Hereinafter referred to as “the addendum”.

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Part One

MAJOR CHARACTERISTICS OF THE PATENT SYSTEM

Chapter I

NATIONAL PATENT LEGISLATION

A. Introduction

1. Nearly all countries have industrial property laws for the protection of inventions;¹ with a few exceptions,² all differ from each other.

2. Nevertheless, a degree of generalization about industrial property laws is possible, for several concepts are common to all, or nearly all, national laws. The purpose of this chapter is to examine important features, both those which are common and those which differ from each other, in order to help to understand the nature of patents and of similar forms of legal protection of inventions and inventors.³ For this purpose a detailed comparative analysis is not required, and therefore as much generalization has been attempted as the subject permits.

3. The features selected for examination as "important" are mainly those which can have favourable or adverse effects on the acquisition and use of foreign technology; other features have been included only to the extent that they seem necessary for an understanding of the purposes and functions of patents and similar forms of legal protection of inventions and the operation of the patent system.

4. A country's industrial property law is territorially limited; it has effect only within the jurisdiction of the country. Therefore, a country's own law is the only law that has a direct effect on the transfer of technology to that country. Consequently, the industrial property laws of developing countries are the main objective of this chapter. Nevertheless, the laws of developed countries are also examined, particularly because they form

an important part of the international industrial property system.

B. Patents and inventors' certificates

5. The two main forms of industrial property protection for inventions are patents and inventors' certificates. The owner of a patent has the right to exclude others from using the patented invention (this right is in most countries subject to limitations imposed in the public interest); the owner of an inventor's certificate has the right to receive remuneration for the use of the invention while the exclusive right is transferred to the State. Other forms of protection of inventions (utility models, certificates of utility, patents of importation) are mentioned in paragraphs 36-41 below.

1. PATENTS

6. The following description of a patent has been drafted for the purposes of this study by WIPO:

a patent is 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.⁴

⁴ For the purposes of the report by the Secretary-General of the United Nations entitled *The Role of Patents in the Transfer of Technology to Developing Countries* (United Nations publication, Sales No. 65.II.B.1) a patent was defined (in paragraph 1) 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 time 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 Paris Convention for the Protection of Industrial Property of 1883—and as revised—lists patents as one of the means for the protection of industrial property but does not define what a patent is or the subject-matter that it encompasses. Bodenhausen describes, in the context of the Paris Convention and for that purpose, "a patent [...] as an exclusive right to apply an industrial invention". (G. H. C. Bodenhausen, *Guide to the Application of the Paris Convention for the Protection of Industrial Property* (Geneva, BIRPI, 1968), p. 22).

¹ The International Bureau of the World Intellectual Property Organization (WIPO) has a collection of laws relating to the protection of inventions in 119 countries, and collects and publishes statistics concerning industrial property rights in inventions applied for and granted in 113 countries.

² The four Nordic countries (Denmark, Finland, Norway and Sweden) and the thirteen member countries of the African and Malagasy Industrial Property Office (OAMPI) (Central African Republic, Chad, Congo, Dahomey, Gabon, Ivory Coast, Madagascar, Mauritania, Niger, Senegal, Togo, United Republic of Cameroon, Upper Volta) are exceptions; in these two groups of countries identical laws have been adopted by each member of the group.

³ Part two of this study considers the effects of the patent system in the economic advance of developing countries.

7. The excluded acts are usually manufacturing, using and selling a patented product, and using a patented process. Certain acts related to selling, such as importing and stocking, may also be explicitly or implicitly excluded.

8. The person entitled to apply for a patent is usually the inventor or a person (including a legal entity) who has acquired the inventor's 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.

9. Although patent laws are enacted partly as a recognition of the concept of a natural right in inventions,⁵ the purpose of providing a deliberate incentive for the encouragement of invention and the promotion of economic development is widely regarded as the principal purpose of patent legislation, both in developing and in industrialized countries.

10. The principal functions of patents in this respect are:

(a) To provide a reasonable possibility of return on investments in research and development and in production by granting an exclusive position for a limited time;

(b) To encourage prompt and adequate public disclosure of new technology.

2. INVENTORS' CERTIFICATES

11. The main differences between a patent and an inventor's certificate are that the owner of the latter, 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 fees is required and that the right is not necessarily limited in time.

12. In practical terms, and as a 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.⁶ 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 effect of published inventors' certificates is the same as the information effect of published patents.

13. All countries in which inventors' certificates or their rough equivalent are granted (Algeria, Bulgaria, Czechoslovakia, the German Democratic Republic, Poland, Romania and the USSR) provide also for the grant of patents. The inventor—whether national or foreign (except in Algeria, where only foreigners may apply for patents)—has in principle a choice between the two forms of protection. However, there are important exceptions. In Poland and Romania, inventors who are employed in units of the national economy can obtain inventors' certificates only, and the patents are granted to the units themselves. In the USSR, inventors' certificates only are issued for inventions made in connexion with the inventors' work in state, co-operative or public enterprises, while the exclusive rights in such inventions are transferred to the State. A similar effect is achieved by the system of "economic patents" in the German Democratic Republic. All such countries restrict the availability of patents for certain categories of inventions, in particular food and drug substances, allowing for those inventions only inventors' certificates.⁷

C. Major provisions of national laws

14. The addendum to this document contains a summary of the principal provisions of industrial property legislation relating to inventions in selected countries. The summary provides most of the source material for this chapter and also illustrates the application of the principles examined in this chapter. It is not designed as a guide to the relevant law and practice of the selected countries; being based on statutory enactments only, without reference to decisions of the courts or administrative practices, and being limited to those provisions which are relevant to this report, it is necessarily incomplete. The summary does not include references to laws other than industrial property laws, with the result that the entries for two countries are not strictly comparable where, for example, restrictive business practices related to patents are governed by the patent law in one country and by other laws in the other.

15. The 73 countries⁸ whose laws have been summarized have been selected so as to present a reasonably balanced sample: they include developing countries, developed market-economy countries and socialist countries of Eastern Europe. A few very old laws that are still in force have been included, but the majority date

⁵ Cf. in modern times, article 27, paragraph 2, of the Universal Declaration of Human Rights, which provides that:

"Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author."

⁶ See para. 19 below.

⁷ As regards special considerations for food and drugs, see para. 47 below.

⁸ These include the Nordic countries and the OAMPI member countries (see foot-note 2 above), so that, in reality, only 58 different laws are summarized.

from after the Second World War; all laws known to have been enacted within the last ten years are included.

1. TERMINOLOGY

16. In the summary of principal provisions contained in the addendum and in the discussion in this chapter of major provisions of national laws, certain words are used with specialized meanings. The following description of the possible stages through which an application for protection may pass and of the results of the grant of a patent under typical legal systems is intended to illustrate and clarify those meanings for the purposes of this report, rather than to define them, for legal definitions necessarily vary from country to country. Terminology related to the limitation of the exercise of patents rights is dealt with in paragraphs 83-90.

17. The *applicant* for protection of an invention is the person who claims the right to obtain a patent by virtue of being the inventor or his successor in title. The applicant may be a national of the country in which he applies for protection or he may be a foreigner. If he is a foreigner his right to obtain a patent results from the application of the principle of *national treatment*: either the national law makes no distinction between nationals and foreigners, or a specific provision in the national law assimilates to nationals certain foreigners, normally those who are nationals of countries with which an agreement or convention to this effect has been concluded.

18. The applicant *files* his application with the competent *administration* (usually called "Patent Office", "Industrial Property Office" or "Office for Inventions" or the like) which, after satisfying itself that certain minimum requirements have been met, accords as the *filing date* the date of receipt of the application.

19. The applicant may be able to rely on a *right of priority* when he has filed an earlier application for 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) it is not invalidated by any acts accomplished during the same period, such as a filing by another person or the publication or exploitation of the invention. The right of priority is usually based upon provisions to this effect contained in an international convention to which the country is party, and usually applies only when the earlier application was filed in one of the other countries party to the convention.

20. The *application* must contain, among other things, a *description* of the invention, with any drawings referred to in the description, and one or more *claims*.

21. The *description* must *disclose* the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.⁹

22. The *claim* or *claims* must define the protection sought; when the patent is granted, the scope of the pro-

tection conferred by it will be determined by the terms of the claims; the claims are interpreted by use of the description and the drawings.

23. The application is *examined* by or on behalf of the competent administration. The purpose of this *examination* is to enable the competent administration to be satisfied that the application meets certain of the requirements of the law. The examination may be limited to an *examination as to form*, in which case the compliance with the minimum requirements for establishing a filing date, the presence of other necessary documents and information (such as the complete name and address of the applicant) and the payment of the prescribed *fee* are checked. The examination may proceed also to an *examination as to substance*, in which case the *patentability* of the invention, the adequacy of the description and the scope of the claims are checked.

24. The typical main *requirements of patentability* are *novelty*, *inventive step* and *industrial applicability*.

25. 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.

26. 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*).

27. Checking the patentability of the invention against the tests of world-wide or national novelty and non-obviousness requires a *search* of the state of the art, which results in the preparation of a *search report* containing references to the descriptive documents and 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 subdivision of the entire technology according to technical fields.

28. The application may be *published* or may be *laid open for public inspection* before a patent is granted, particularly when persons other than the applicant have an opportunity to *oppose* the grant of a patent. In some such cases the fact of the *acceptance of the application* is published for the purposes of opposition.

29. After the examination and any opposition, the competent administration decides whether to *grant* a patent for the invention.

30. The fact of the granting of the patent is published in an "official gazette" issued by the competent administration. The patent document—a document containing, among other things, the description, any drawings and the claims—is at least laid open for public inspection (in which event copies may be obtained on request) and may be the subject of *publication* in the sense that the competent administration makes copies in printed or

⁹ For a further analysis of disclosure see paras. 303-313 below.

other form, or arranges for such copies to be made, and the copies are generally available for purchase by the public.

31. The *patentee* is the person to whom the patent is granted by the competent administration. He is also called 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.

32. 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*.

33. The patentee may *license* 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.

34. The grant of a patent even after an examination as to substance by the competent administration is not a legal guarantee to the patentee or his successors in title that the patent is *valid* under the law. The validity of the patent may be attacked in the Courts or other competent bodies of the country in the course of an action for infringements or otherwise; a decision that a patent is *invalid* (or *null*) has effect from the date of the grant of the patent, whereas a decision to *revoke* a patent (for example, for inadequate disclosure in the description) has effect when it is made.

35. 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*.

2. NATURE OF TITLE(S) GRANTED

(Paragraph 2 of the summary contained in the addendum)

36. In addition to patents and inventors' certificates, other titles, or forms of industrial property protection for inventions, are provided for in some national laws. These may be grouped under two headings: "utility models" and "patents of importation". The system of "utility certificates" found in the law of France is included under the heading "utility models" in order to demonstrate the distinction between such certificates and patents, although, as is shown in paragraph 39, this distinction is more procedural than substantive.

(a) *Utility models*

37. Some of the countries listed in the addendum (Brazil, Federal Republic of Germany, Italy, Japan, Philippines, Poland, Portugal, Republic of Korea and Spain) have instituted, in addition to patents, a system of registration of 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. Often the subject matter for which utility model registrations may be obtained is limited to certain technical fields (mostly mechanical art).¹⁰

38. The main purpose of utility model protection is to make available, in addition to patents, a system of protection for inventions that 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 that is only slightly 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 the 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.

39. 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 art", 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. Though in most countries utility model registrations are granted only for the mechanical arts, the French system of utility certificates excludes only inventions relating to medicines.

40. 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 applications for utility models is filed by nationals or residents. This applies even to the countries that have a higher percentage of patent applications by foreigners. For example, in Spain about 80 per cent of all patent applications, but only about 10 per cent of all utility model applications, are filed by foreigners. At present, only very few developing countries provide for the protection of utility models; these include Brazil, the Philippines and the Republic of Korea. Some countries are considering the introduction of utility model protection (Australia, the OAMPI countries and the Arab countries, for which the Industrial Development Centre for Arab States is preparing a model law on inventions).

¹⁰ Inventions are, for the purposes of industrial property law, usually grouped in three major technical fields: (i) mechanical, (ii) chemical, (iii) electrical and electronic.

(b) *Patents of importation*

41. Some countries (Algeria, Argentina, Belgium, Chile, Iran, Spain, Uruguay and Venezuela) provide, in addition to ordinary patents, for the grant of patents of importation (also called patents of introduction, confirmation or revalidation). This special kind of patent, which in the last century existed also in some other countries,¹¹ is based on the condition that the invention has already been patented abroad and on the expectation that the patentee will exploit the patented invention in the country. Thus, a patent of importation may be granted despite the loss of novelty caused in particular through the publication and exploitation of the foreign patent. The term of protection of a patent of importation is normally limited to the term of the foreign patent. Among recent laws, only that of Algeria provides for the grant of such patents, but only with respect to inventions patented abroad before 1966 so that, because of the dependence of those titles on the foreign patents, the whole scheme has a transitional character. On the other hand, it is known that countries whose present law provides for patents of importation (e.g., Spain) are considering their abolition.

3. REQUIREMENTS OF PATENTABILITY

(Paragraph 3 of the summary contained in the addendum)

42. The requirements which an invention normally must meet in order to be patentable are a certain degree of novelty, industrial applicability, often also inventive step and sometimes "progress". Most laws, in particular most of the recently enacted laws, deal explicitly only with the requirement of novelty. Industrial applicability is normally required but not defined;¹² progress, if required, is rarely mentioned;¹³ and inventive step, if expressly mentioned, is in most cases defined simply by stating that the invention must not be obvious with respect to the state of the art.¹⁴

43. The test with respect to these requirements may not always be the same at the various possible stages at which the requirement may be applied (search, examination, opposition, invalidity invoked in infringement proceedings, action for invalidation or revocation). For instance, as regards novelty and inventive step the Indian law of 1970 makes distinctions between the various

¹¹ For instance, it was provided for by the first Patent Law of France of 1791 but abolished by the French Patent Law of 1844.

¹² Cf., however, the Colombian law of 1971, which prescribes that the subject of the invention must be capable of being manufactured or used in any kind of industry, including agriculture.

¹³ For instance, the law of Czechoslovakia of 1972 mentions and defines progress: an invention must evidence technical progress as shown by results quantitatively higher or qualitatively different from those obtained by technical means which are part of the world state of the art. Cf. also the Hungarian law, which provides that an invention represents progress in comparison with the given state of the art if it satisfies needs which remained unsatisfied before or if it satisfies needs more advantageously than before.

¹⁴ Sometimes it is made clear that non-obviousness must exist for an expert or—as stated in the Israeli law—for "an average man of the art".

stages. Where such distinctions are made, the most severe test is normally applied in the review of the validity of a patent granted, either in an infringement action or in a special action for nullity or revocation. The summary contained in the addendum indicates in paragraph 3 always the most severe test; if a less severe test is applied for search and examination this is indicated in paragraph 6 of the summary.

44. As regards the most important requirement of patentability, namely, *novelty* of the invention, the general test is that an invention is new if it does not form part of the state of the art. Some divergencies exist among laws with respect to the definition of the state of the art; limitations of the state of the art may exist regarding the *territory* to be considered (whether national or world-wide novelty is required), regarding the period of *time* to be considered (for instance, whether only documents having been published after a certain date are to be included in the state of the art) and regarding the *manner* in which knowledge of a previous invention has been made available to the public (only through publication, or also by any other form of communication or by public use). Even where a law does not provide for any such limitations—thus theoretically including, for instance, communications made a long time ago in a far away country—there are practical limitations since there is a presumption of validity for a patent granted until prior art that bars the novelty of an invention has been proved. If, as in most countries, the laws contain limitations regarding the time at which and the manner in which previous inventions were communicated, the legislators certainly took the difficulty of proof into account. The same consideration also plays a role with respect to limitations regarding the territory. A typical example of such a limitation is contained in the law of the United Kingdom, which takes into account for the state of the art only prior knowledge, whether documentary or otherwise, *in the United Kingdom* and prior use *in the United Kingdom*. Other countries (for instance, Federal Republic of Germany, France, the USSR and the United States of America) have for a long time applied the standard of world-wide novelty, thus rewarding only the inventor who contributes to the progress of technology on a world-wide scale. An official report on the British patent system published in 1970 recommends, taking into account in particular the Convention on the Unification of Certain Points of Substantive Law on Patents for Invention (Strasbourg, 1963)¹⁵ (not yet in force), the adoption of the standard of world-wide novelty. The same standard is also accepted in the Convention on the Grant of European Patents (European Patent Convention) (Munich, 1973).¹⁶

45. All recent patent laws have adopted the test of world-wide novelty, at least as regards prior art made available to the public through publications.¹⁷ The great

¹⁵ Council of Europe, *European Treaty Series*, No. 47.

¹⁶ WIPO, *Industrial Property*, 13th year, No. 2 (February 1974), p. 51.

¹⁷ As regards prior public use of an invention, there still exist territorial limitations, for instance in the law of the Federal Republic of Germany.

majority also does not apply any restriction as regards the period of time which is to be taken into consideration in the search of prior art. The law of the Federal Republic of Germany, however, has maintained a limitation to 100 years before the filing date, and the recent law of Iraq has introduced a limitation to 50 years before the filing date.

4. NON-PATENTABLE SUBJECT-MATTER

(Paragraph 4 of the summary contained in the addendum)

46. A comprehensive definition of the subject-matter that may be protected by patents or inventors' certificates has so far not been adopted in any national law. It is, however, generally accepted that the term "invention", when used in the context of granting titles to inventors, relates only to inventions of a technological nature. Thus, systems and programmes (possibly including computer programmes), plant varieties and animal breeds, surgical methods, and aesthetic creations are generally not considered to be "inventions". However, not all kinds of technological inventions are necessarily patentable. Some kinds, in some countries, are excluded from patentability when it is believed that such exclusion is in the public interest. Food and drugs, processes relating to their manufacture, chemical substances and technology relating to nuclear energy are some examples of such exclusions.

47. In the case of foods and drugs, exclusion from patentability is based on the consideration that the grant of patents could have adverse effects on the general availability or the price of these goods, which are of vital importance for the people of the country. In the case of technology relating to nuclear energy it is mainly the special importance of such technology to national defence (and possibly also to energy supply) that is considered as a reason for excluding it from patenting, whereas in the case of chemical substances the necessity of their unrestricted availability is considered as a reason for excluding them from patenting.

48. When considering exclusion from patentability for particular reasons of public interest one has to bear in mind that public interest is also the predominant motive for having a system of protection of inventions at all.¹⁸ Thus it appears that there are several different reasons of public interest that determine policy in patent matters and whose relative importance depends on the particular condition of each country at a given date.¹⁹ Part two of this report takes up the issue of subjects for patentability in connexion with developing countries.²⁰

5. SEARCH AND EXAMINATION

(Paragraph 6 of the summary contained in the addendum)

49. The grant of a patent by the competent administration does not amount to final proof of its validity. The

value of a patent depends to a large extent on the degree of the probability of its validity, that is to say on how far the requirements of patentability have been met. This is important for the use of patents as vehicles for trade in technology since the purchaser of technology covered fully or partly by patents is interested in obtaining a position that is not likely to be endangered by the invalidation of those patents. Moreover, the issue of invalid patents burdens the patent documentation and dilutes the information effect of the patent system.

50. Although the laws of many countries provide for examination as to substance, the question remains whether all those countries dispose of the means to carry out the necessary search effectively. It is obvious that developing countries in particular can only build up step by step the qualified staff and systematically arranged documentation which is necessary for a thorough examination of patent applications with respect to the requirements of patentability. In this context, world-wide work sharing—as under the Patent Co-operation Treaty (PCT)²¹—combined with regional concentration of efforts constitute methods of facilitating the solution of problems involved in search and examination.

51. Traditionally, most industrialized countries have for a long time practised a system of examination as to substance before the grant of protection. This is in particular the case in Australia, Austria, Canada, Czechoslovakia, the German Democratic Republic, Germany (Federal Republic of), Hungary, Ireland, Japan, the Netherlands, the Nordic countries, Poland, Romania, the USSR, the United Kingdom and the United States of America.

52. As regards recently adopted laws, a strong trend towards the introduction of examination as to substance can be observed. Only five of the 49 patent laws which have been adopted or revised as to substance during the last 15 years provide for simple registration after examination as to form of the patent application (Algeria, Iraq, Nigeria, member countries of OAMPI, Sudan). Among the other recent laws several categories have to be distinguished. Some countries (Colombia, France, Peru) have introduced a system which provides only for a search but not for an examination as to substance.

53. In Colombia and Peru a search report is issued by the competent administration only in case of opposition and such a report is limited to documents produced in evidence by the parties.

54. In France, however, a search report covering all prior art is established for all patents *ex officio* by the International Patent Institute in The Hague. In the procedure of establishing the search report the applicant has an opportunity to present observations on a provisional search report and to amend his claims; in a second stage of procedure the revised draft on the search report is published, giving an opportunity to third parties to present observations and to the applicant to reply to those observations; only then is the search report drawn up in its final form. After this procedure, the final search

¹⁸ Cf. para. 9 above.

¹⁹ The Nordic laws make this clear by using the expression "superior public interest" as a ground for a compulsory licence.

²⁰ See paras. 346-350 below.

²¹ See paras. 120-123 below.

report is likely to contain all relevant information on prior art permitting an expert in the technical field to evaluate whether the invention is novel and involves an inventive step. Although the competent administration does not draw any conclusions from the search report, the fact that the search report is published together with the patent helps to exclude the grant of invalid patents.

55. All the other countries which have recently adopted new patent laws (including in particular Brazil, India and Israel) provide for examination of the patent application as to substance.

56. The search normally covers in principle all publications likely to be relevant, including patent documents, regardless of where and when they were issued. However, in practice, that standard is frequently met incompletely, in particular because of language difficulties. In some countries the scope of novelty search is limited by the law. Among the countries that have recently adopted new laws, Australia and India, like the United Kingdom, limit the scope of search to patents and other publications issued in the country. However, the Indian law envisages the possibility of world-wide search and gives power to require it.

57. A special feature of the examination procedure recently introduced in several countries deserves particular attention, namely, the so-called "deferred examination". According to this system, a patent application is examined as to substance by the competent administration only on request by the applicant or a third party, which must be made, together with the payment of a special fee, within a certain time-limit; on the expiry of this time-limit the application lapses if no such request has been made. Thus inventions in which the applicant loses interest and in which nobody else is interested because they seem to be economically unimportant do not have to be examined as to substance by the competent administration. Such a system has been introduced by Australia (subject to particular conditions), the Federal Republic of Germany, the German Democratic Republic, Hungary, Japan and the Netherlands; the European Patent Convention has also adopted it, and it is under consideration in the United Kingdom. The time-limit for the request varies between 2 years (Brazil) and 7 years (Federal Republic of Germany, Japan, Netherlands); Australia (5 years) and Hungary (4 years) have adopted an intermediate position. The system of deferred examination is often coupled with a system of "early" publication of applications which have not been examined as to substance. This system prevents applications remaining for a long time inaccessible to the public.²² In addition, the Federal Republic of Germany and the Netherlands provide for the possibility of obtaining a search report before a request for examination has been made, so that preliminary information on the prior art with respect to the invention is available already at an earlier stage.

58. In Israel preference may be given to the processing of applications for the protection of inventions that have already been used without the owner's authorization

or where a patent grant is urgent because it is intended to exploit the invention in Israel under licence. Similar preferential treatment is provided for in Japan and the United States of America with respect to inventions relating, for example, to the protection of the environment.

6. SCOPE OF DISCLOSURE: PUBLICATION

(Paragraphs 5 and 7 of the summary contained in the addendum)

59. Publication of the description of the invention and the claims that 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 the contents of the patent are made available to the whole world. Therefore publication is an important factor in international co-operation in the patent field.

60. In the past, new inventions were frequently of a 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 "know-how", obtained from practical experience of manufacturing in general and from developing the invention to the stage of production.

61. Most laws require that the description be sufficiently clear and complete to permit others skilled in the art to use the invention; some laws, however, require in addition the disclosure by the applicant of the best method of putting the invention into practice. An example of the latter kind of provision is contained in the patent law of the United States of America, which requires that the application must contain a description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to make and use the invention, and that it must set forth the best mode contemplated by the inventor of carrying out the invention. Similar provisions are contained in the laws of the United Kingdom and countries with a similar legal tradition.

62. Most of the recently adopted laws require that the description be sufficiently clear and complete to permit others skilled in the art to use the invention (this is the sense of the laws of Algeria, Austria, Federal Republic of Germany, Hungary, Israel, the Netherlands, Nigeria, the USSR); some laws merely require a "description" (Brazil, Czechoslovakia, France) or a "clear description" (Peru). Other laws are more specific as regards the reference to the person skilled in the art. In Japan he must be "a person having ordinary skill in the art to which the invention pertains"; this makes it clear that

²² See para. 67 below.

the more limited the field, the more qualified the expert may have to be,²³ but also, by the use of the word "ordinary", that he need not necessarily be an outstanding expert.²⁴ The Indian law is even more specific: it requires, with the sanction of revocation if this requirement is not met, that the description must be sufficient to enable a person in India possessing average skill in, and average knowledge of, the art to which the invention relates to work the invention.

63. Disclosure of the methods, or the best method, of using the invention is required in the recently adopted laws of India, the member countries of OAMPI and Romania. While under the Romanian law at least one method of using the invention must be indicated, the Libreville Agreement establishing OAMPI stipulates that a patent granted is null if the description attached to the patent is not sufficient for carrying out the invention, or if it does not indicate fully and truly the real methods of the inventor. The Indian law requires that the application must fully and particularly describe the invention and its operation or use and the method by which it is to be performed and disclose the best method of performing the invention which is known to the applicant and for which he is entitled to claim protection. Part two of the present report analyses the impact of disclosure in developing countries.²⁵

64. As regards the form and time of publication by the competent administration of inventions for which a patent or inventor's certificate is requested or granted, several systems may be distinguished. Some competent administrations do not publish the full text of the patents granted but only notices of the grant of the patent with an indication of the name of the patentee, the title of the invention, the filing date, the date of grant and the reference number, such a system gives only limited publicity to patents granted, although they are laid open in the office of the competent administration for public inspection. Some administrations publish a notice of the grant of the patent and make copies of the patent available on request to interested persons. In other countries, however, the competent administration secures the full information effect of patents by publishing the text of the patent in the sense that copies, often printed copies, are made generally available for purchase by the public.

65. Among the countries that have recently adopted new laws, only a few do not prescribe publication of the full text of the patent; these include Colombia, India, Israel, Nigeria and Peru. In these countries, the fact of the grant of the patent or of the acceptance of the application is advertised in an official gazette, and from that time the application is laid open to public inspection and copies of the patent granted may be purchased from the competent administration; in Colombia and Peru the competent administration publishes shortly after the filing

of the application an abstract or summary of the invention, and in Israel the main features of the invention are described at the time of publication of the acceptance of the application.

66. All the other laws recently adopted provide for publication of the full text either of the patent after it has been granted or, if an opposition may be made, of the application after it has been accepted for this purpose; in the latter case the full text of the patent granted is normally not published but the fact of the grant is advertised with a reference to the application already published.

67. Some countries, most of which have adopted the system of deferred examination, provide for an early publication of the application even if the examination procedure has not yet started (Australia, Brazil, Federal Republic of Germany, France, Netherlands, Nordic countries). The purpose of this pre-grant publication is to give early notice to the public of an already pending application. The time of this early publication is in all the mentioned countries the same: 18 months after the priority date (the same applies also under the PCT and the European Patent Convention). Two countries of this group, the Federal Republic of Germany and the Netherlands, republish applications when they have been accepted for the purposes of opposition; however, not all applications reach that stage.

7. PRIOR USE OR MANUFACTURE

(Paragraph 8 of the summary contained in the addendum)

68. As was indicated in paragraph 44, public use of an invention before the priority date may be an obstacle to patentability because it may have the effect of including knowledge of the invention in the state of the art and may thus deprive the invention of novelty at that date. If, however, a person uses the invention in circumstances which cannot be considered as public, or if he intends to use the invention and has undertaken preparations for it but has not yet started the use, no bar to novelty exists. Thus, the filing of a patent application by another person may have the effect that the person who has made preparations to use the invention or has already started to use it may be barred from using the invention and thus may have made all his investments and preparations in vain. In order to avoid this result, some laws provide for a personal right to exemption from the effects of the grant of a patent, based on prior manufacture or use. The provision providing for such a personal right is typically drafted in the following way: any person who at filing date or the priority date of an application for a patent was, in good faith, manufacturing the article or using the process forming the subject of the invention protected may, despite the patent, continue to use the invention (cf., for instance, the new Algerian law). In some countries it is sufficient that serious preparations have been made for manufacture.

69. Such a provision was originally contained only in the patent laws of countries of the European continent. It has, however, been adopted by others and the number of countries providing for such a right is increasing.

²³ The Sudanese law contains a reference to "a person skilled in the relevant field".

²⁴ The same test is also applied in the Federal Republic of Germany.

²⁵ See paras. 303-313 below.

The following countries, in particular, have adopted such a provision: Algeria, Israel, Japan, Nigeria and the Sudan.

8. DURATION

(Paragraph 9 of the summary contained in the addendum)

70. Rights arising from the various kinds of patents and of utility models have a duration which is specifically limited by the national law. In practice the duration of rights in an invention of minor importance may also be limited by the amount of any periodic (e.g., annual) fees to be paid for their maintenance, particularly when such fees increase each year; for inventions of significant value, however, the maximum duration provided by the law constitutes the effective limitation. Rights arising from inventors' certificates have no time limitation.

71. The duration of patent rights commonly varies between 15 and 20 years from the filing date. In some countries, however, the duration is calculated from the date of grant or from the date of publication.²⁶

9. TREATMENT OF FOREIGN NATIONALS AND PRIORITY RIGHTS

(Paragraph 11 of the summary contained in the addendum)

72. A national law which provides for foreigners the same rights and other treatment as it provides for nationals is said to apply the principle of "national treatment". This principle is one of the basic requirements of the Paris Convention for the Protection of Industrial Property;²⁷ it is to be found also in the laws of countries not party to the Paris Convention.²⁸

73. The following countries listed in the addendum make no distinction in their relevant laws between nationals and foreigners: Argentina, Australia, Brazil, Canada, Cuba, Federal Republic of Germany, German Democratic Republic, Hungary, Ireland, Israel, Italy, Jordan, Kenya, Lebanon, Malawi, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Nordic countries, member countries of OAMPI, Philippines, Spain, Syrian Arab Republic, Tunisia, Turkey, Uganda, United Kingdom, United States of America, Uruguay, Yugoslavia, Zambia (all parties to the Paris Convention); Chile, Colombia, Ghana, Liberia, Peru, Sudan, United Republic of Tanzania, Venezuela (not parties to the Paris Convention).

74. The following countries listed in the addendum which are party to the Paris Convention grant national treatment subject to reciprocity; national treatment therefore extends to the nationals of some countries which are not party to the Convention, such as those listed in the preceding paragraph: Austria, Czechoslovakia,

Egypt, France, Iran, Japan, Poland, Romania, Sri Lanka, Switzerland, USSR.

75. The following countries listed in the addendum which are not party to the Paris Convention grant national treatment subject to reciprocity: India, Iraq, Kuwait, Pakistan, the Republic of Korea.

76. Many countries grant a right of priority to applications in respect of inventions for which applications were first filed, within a specified period of time, in another country. This right of priority is, like the principle of national treatment, one of the basic requirements of the Paris Convention, which provides a period of twelve months. It is to be found also in the laws of countries not party to the Paris Convention or to any convention requiring the grant of the right of priority.

77. The following countries listed in the addendum specifically limit priority rights to cases required by international conventions to which they are party, or, being party to such conventions providing for priority rights, may be assumed to grant such rights without a specific mention in the law: Algeria, Argentina, Australia, Austria, Brazil, Canada, Chile, Cuba, Czechoslovakia, Egypt, Federal Republic of Germany, France, German Democratic Republic, Hungary, Iran, Ireland, Israel, Italy, Japan, Jordan, Kenya, Lebanon, Malawi, Morocco, Netherlands, New Zealand, Nigeria, Nordic countries, member countries of OAMPI, Poland, Spain, Switzerland, Syrian Arab Republic, Tunisia, United Kingdom, United States of America, Uruguay, USSR, Yugoslavia, Zambia. The law of India makes provision for priority rights in cases required by international conventions.

78. The following countries listed in the addendum provide for priority rights without limitation to convention requirements: Colombia, Republic of Korea (on the basis of reciprocity), Kuwait (on the basis of reciprocity), Mexico (on the basis of reciprocity), Pakistan, Peru, Philippines (on the basis of reciprocity), Romania (on the basis of reciprocity), Sri Lanka, Turkey, Venezuela.

79. The laws of the following countries listed in the addendum which are not party to relevant international conventions, make no specific reference to priority rights: Ghana, Iraq, Liberia, Sudan, Uganda, United Republic of Tanzania.

10. LIMITATION OF THE EXERCISE OF PATENT RIGHTS IN THE PUBLIC INTEREST

*(Paragraphs 13 and 14 of the summary
contained in the addendum)*

80. The patent laws of most of the countries listed in the addendum provide for various measures for the limitation, in the public interest, of the exercise of the exclusive rights conferred by the grant of a patent.²⁹ These measures are described briefly in paragraphs 83-90, and the grounds upon which they become applicable,

²⁶ For a further analysis of duration, see paras. 351-359 below.

²⁷ See paras. 115-117 below.

²⁸ Part two of the report considers the relevance of this principle in connexion with the development strategies of developing countries (see paras. 320-324 below).

²⁹ The countries which do not make specific provision for any measures of this kind, at least in their patent laws, are Chile, Ghana, Kenya, Uganda and the United Republic of Tanzania.

together with examples from the laws included in this survey, are discussed in paragraphs 91-106.

81. In the addendum a distinction is made, in paragraphs 13 and 14, between measures applicable where the invention is not worked and those applicable upon grounds other than non-working of the invention. This distinction recognizes the importance attached to the working of an invention in the country.³⁰ Other grounds upon which measures may be taken include failure to grant licences upon reasonable terms, satisfaction of demand for a patented invention substantially by importation rather than by manufacture in the country, failure to satisfy a demand in the market, the impossibility of using a patented invention without using an earlier patented invention (interdependent patents), and the importance of the patented invention for the defence or the economy of the country, for public health or for some other aspect of public interest.

82. In recent patent legislation in many of the countries listed in the addendum, both the applicable measures to limit the exercise of patent rights and the grounds upon which the application of such measures are based have been increased and diversified.³¹

11. COMPULSORY LICENCES

83. A compulsory licence is an authorization by an authority designated for this purpose (usually the competent administration or a court) to a person other than the patentee to do, without authorization by the patentee, acts which would otherwise be excluded by the patent. The grounds upon which the compulsory licence may be granted are specified in the patent law; the designated authority first decides, on the basis of an application made by the person who seeks the compulsory licence, whether the specified grounds have been established. Frequently the law also requires that an application for a compulsory licence cannot be made before the expiration of a specified period from the filing date or the date of grant of the patent. The period most commonly adopted for this purpose is four years from the filing date or three years from the date of grant, whichever is the longer. This period is required by the Paris Convention when the application for a compulsory licence is made on the ground of failure to work or insufficient working of the patented invention; in many countries the same period is also specified in respect of grounds other than failure to work.

84. Compulsory licences are normally subject to conditions, of which some may be required by the law and others may be fixed, in the absence of agreement between the patentee and the applicant for the licence, by the designated authority. Typical examples of conditions required, explicitly or implicitly, by the law are that the licensee exploits the patented invention by manufacture in the country and that adequate compensation is paid

³⁰ See paras. 91-96 below.

³¹ For example, the patent laws of Algeria, Colombia, Cuba, Czechoslovakia, France, India, Israel, Italy and the Republic of Korea.

to the patentee, the actual amount being decided, in the absence of agreement, by the designated authority. Usually a compulsory licence is required by the law to be non-exclusive and subject to a provision that it is not transferable except with that part of the enterprise that exploits the licence. This again is in accordance with the requirements of the Paris Convention applicable in cases of failure to work or insufficient working.

12. LICENCES OF RIGHT

85. A patent may be marked "licences of right", and the effect of this marking is that any person is then entitled as of right to the grant of a licence. Marking the patent in this way is in effect an invitation to interested parties to seek licences under the patent. The conditions of the licence, including the amount of payment to the patentee, will be fixed, in the absence of agreement, by the designated authority. A patent may be marked "licences of right" upon a voluntary application to the competent administration (i.e. that which granted the patent) by the patentee,³² or upon an application by another interested party to the competent administration or other authority designated for this purpose, or *ex officio* by the designated authority.³³ The difference between compulsory licences and licences of right is that an applicant for a compulsory licence must justify the grant to him of a licence in the particular circumstances of the case, whereas any applicant for a licence of right once the patent has been so marked is entitled as of right to the grant of a licence.

13. AUTOMATIC LAPSE

86. A patent usually lapses automatically upon the expiration of the period of grace for paying any fee required to maintain its existence, when that fee has not been paid; automatic lapse may also result from provisions of the law concerned with the occurrence or non-occurrence of events other than payment of fees, in which case it is used as one of the applicable measures to limit the exercise of patent rights in the public interest. Eight of the countries listed in the addendum have laws containing such provisions.³⁴

14. REVOCATION

87. Revocation is a measure terminating a patent. Such a measure may be called forfeiture, repeal, or lapse,

³² Frequently, such an application is encouraged by a reduction of the renewal fees. A provision for the marking of patents with the words "licences of right" upon voluntary application by the patentee is contained in the patent laws of Algeria, Federal Republic of Germany, India, Ireland, Malawi, New Zealand, Nigeria, the United Kingdom and Zambia.

³³ A provision for the marking of patents with the words "licences of right" without an application by the patentee is contained in the patent laws of India, Ireland, New Zealand and the United Kingdom.

³⁴ Argentina, Cuba, Italy, Lebanon, Spain, Syrian Arab Republic, Turkey and Venezuela. In Colombia the initial term of protection of eight years cannot be extended without proof of working the invention in Colombia.

and it is distinguished from automatic lapse by the fact that it is not automatic but is the result of a judicial or administrative process when the grounds for applying the measure are found to exist. Provisions for revocation are contained in the patent laws of 27 of the 73 countries listed in the addendum.³⁵

88. In countries where compulsory licensing is available, revocation is frequently used as a supplementary measure, to be invoked only in cases where the grant of compulsory licences fails to achieve its intended purpose, and only after the expiration of a minimum period (normally two years) from the grant of the first compulsory licence.

15. USE AND EXPROPRIATION BY THE STATE

89. Most national laws provide for either use of patented inventions by the State or expropriation of patents by the State. Eleven of the countries listed in the addendum provide for both use and expropriation.³⁶ Compensation is normally payable to the patentee in either event; the basis of the assessment of compensation and the legal or administrative procedures required are provided for in the national laws. Recent changes in national laws indicate a general trend towards conferring upon the State more extensive powers with regard to use of patented inventions and expropriation of patents.

90. An example of wide powers provided for the State in the matter of use of patented inventions and expropriation of patents is found in the patent law of Australia, where both measures are available. With regard to use of inventions, the State or a person authorized in writing by the State may manufacture, use or sell the invention for the purposes of the State at any time after an application for a patent has been filed. The conditions, including compensation, for the use of the invention are fixed, in the absence of agreement, by the court. A patent or a patent application may also be compulsorily expropriated by the State, which is obliged to pay to interested parties an amount of compensation fixed, in the absence of agreement, by the court. These provisions are similar to those contained in the patent law of India, which gives to the State the right both to use patented inventions and to acquire patents in the public interest, subject to payment of compensation.

16. FAILURE TO WORK OR INSUFFICIENT WORKING

91. One of the major purposes of a patent law is to encourage to working of inventions in the country; in the words of section 83 of the Patents Act (1970) of India:

(a) patents are granted to encourage inventions and to secure that the inventions are worked in India on a commercial scale and to the fullest extent that is reasonably practicable without undue delay; and (b) they are not granted merely to enable patentees to enjoy a monopoly for the importation of the patented article.³⁷

Similarly the patent law of Israel provides that the public interest generally requires that inventions capable of exploitation in Israel by way of manufacture should be so exploited to the greatest extent possible under existing circumstances and without delay.

92. The Paris Convention gives failure to work as an example of an abuse which might result from the exercise of the exclusive rights conferred by a patent. No attempt is made in the Convention to define "working"; the definition will depend upon the relevant national law in each case, but normally the concept includes manufacture of the patented product or industrial application of a patented process. The tendency in recent patent laws is to specify a clear requirement for manufacture, so that importation or sale do not amount to "working" of the patented article. An example is the patent law of Israel, which provides that the exercise of the patent rights is regarded as an abuse if the product the subject of the patent is not manufactured in Israel. In the patent law of Brazil actual working is not considered to have taken place where production is replaced or substantially supplemented by importation; actual working must be proved by the patentee in the sense of proven continuous and regular working of the invention on an industrial scale through production by the patentee or under licence in Brazil.

93. Similarly, section 90 of the Patents Act of India³⁸ provides that after the expiration of three years from the date of the grant of a patent the competent administration may, upon application, grant a compulsory licence to exploit a patented invention if the invention is not available to the public at a reasonable price or if the reasonable requirements of the public with respect to the invention have not been satisfied. The reasonable requirements of the public are deemed not to have been satisfied if, *inter alia*:

(a) by reason of the default of the patentee to manufacture in India to an adequate extent and supply on reasonable terms the patented article or a part of the patented article which is necessary for its efficient working or if by reason of the refusal of the patentee to grant a licence or licences on reasonable terms: [39]

- (i) an existing trade or industry or the development thereof or the establishment of any new trade or industry in India or the trade or industry of any person or classes of persons trading or manufacturing in India is prejudiced; or
- (ii) the demand for the patented article is not being met to an adequate extent or on reasonable terms from manufacture in India; or
- (iii) a market for the export of the patented article manufactured in India is not being supplied or developed; or

³⁵ Australia, Austria, Brazil, Canada, Egypt, Federal Republic of Germany, German Democratic Republic, India, Iran, Iraq, Ireland, Israel, Malawi, Morocco, New Zealand, Pakistan, Peru, Poland, Republic of Korea, Sri Lanka, Switzerland, Tunisia, Uganda, United Kingdom, United Republic of Tanzania, Yugoslavia and Zambia.

³⁶ Australia, Colombia, France, India, Ireland, Israel, Netherlands, Republic of Korea, Spain, USSR and Yugoslavia.

³⁷ WIPO, *Industrial Property*, 11th year, No. 12 (December 1972), p. 304.

³⁸ See also the patent laws of the United Kingdom and of countries, such as Australia, Ireland, Malawi, New Zealand and Nigeria, which have a similar legal tradition.

³⁹ Such refusal is discussed in paragraphs 97-99 below.

(iv) the establishment or development of commercial activities in India is prejudiced; or

[...]

(c) the patented invention is not being worked in India on a commercial scale to an adequate extent or is not being so worked to the fullest extent that is reasonably practicable; or

[...]

(e) the working of the patented invention in India on a commercial scale is being prevented or hindered by the importation from abroad of the patented article. ... [40]

94. The patent laws of 55 of the 73 countries listed in the addendum provide for compulsory licences in the specific case of failure to work or insufficient working of a patented invention in the country. In 30 of these 55 countries⁴¹ compulsory licences (or licences of right) are the only measures provided for; in the other 25 countries,⁴² revocation or automatic lapse or an equivalent measure is also provided for, usually as a supplementary measure when compulsory licences fail to achieve their purpose. In 9 countries⁴³ revocation or lapse is the only measure provided for. In 8 of 73 countries⁴⁴ no measures are provided for in the specific case of failure to work in the country.

95. The need to apply measures of the kind referred to does not arise when an invention is covered by an inventor's certificate, in which case the rights in the invention are vested in the State or a state enterprise. Therefore, when such measures are found in the laws of countries where inventors' certificates are available, they relate to patents only. In such countries the number of patents granted is usually small in relation to the number of inventors' certificates issued (in 1972 in the USSR, 2,516 patents were granted and 38,632 inventors' certificates were issued).

96. Revision of the substantive patent law within the last 15 years has taken place in 49 of the 73 countries listed in the addendum. Of these 49 recent laws, three (German Democratic Republic, United States of America, USSR) make no specific reference to failure to work the patented invention in the country; one law (Argentina) provides for automatic lapse as the only measure applicable in that event; 29 of the recent laws provide for compulsory licences or licences of right as the applicable measures and 16 provide for revocation or similar measures in addition to or as measures supplementary to compulsory licences or licences of right.

⁴⁰ Importation is discussed in paragraphs 100-102 below.

⁴¹ Algeria, Czechoslovakia, France, Hungary, Japan, Jordan, Kuwait, Mexico, Netherlands, Nigeria, Nordic countries, OAMPI countries, Philippines, Romania, Sudan, Uruguay.

⁴² Australia, Austria, Brazil, Canada, Colombia, Cuba, Egypt, Federal Republic of Germany, German Democratic Republic, India, Iraq, Ireland, Israel, Italy, Malawi, New Zealand, Pakistan, Peru, Poland, Republic of Korea, Sri Lanka, Switzerland, United Kingdom, Yugoslavia, Zambia.

⁴³ Argentina, Iran, Lebanon, Morocco, Spain, Syrian Arab Republic, Tunisia, Turkey, Venezuela.

⁴⁴ Chile, Ghana, Kenya, Liberia, Uganda, United Republic of Tanzania, United States of America, USSR. These eight countries include the five countries in which no provision is made in the patent law any measures to limit the exercise of patent rights (see foot-note 29 above).

17. REFUSAL TO GRANT A LICENCE ON REASONABLE TERMS

97. Measures of the kind applicable in the case of failure to work (compulsory licences, licences of right and revocation) are, in a number of countries, also applicable in the case of refusal by the patentee to grant licences on reasonable terms. This case may arise in two ways: either no licence is granted because the unreasonable terms are not accepted by the persons who seek licences, or agreement is reached but the patentee imposes conditions that are unreasonable.⁴⁵

98. For example, section 110 of the Patents Act of Australia includes among the grounds for the grant of compulsory licences that:

(a) [...] by reason of the default of the patentee to grant licences on reasonable terms an existing trade or industry, or the establishment of a new trade or industry, in Australia is unfairly prejudiced, or the demand for the patented article, or the article produced by the patented process, is not reasonably met; [or that]

(b) [...] trade or industry in Australia is unfairly prejudiced by the conditions attached by the patentee [...] to the purchase, hire or use of the patented article, or to the using or working of the patented process.⁴⁶

99. In the patent law of Algeria compulsory licences may be granted if the patentee has refused to grant licences under reasonable conditions or if he has imposed conditions upon the grant of licences, or upon the purchase, hire or use of the invention, which substantially prejudice the manufacture, use or sale of the patented materials, or the establishment or development of commercial or industrial activities, in Algeria. A further example is to be found in the quotation from the law of India in paragraph 93 above.

18. IMPORTATION OF THE PATENTED ARTICLE

100. Some national laws provide as a ground for the grant of compulsory licences, licences of right or revocation that a demand for the patented article is being met to a substantial extent by importation, or that commercial working in the country is being prevented or hindered by the importation of the patented article.⁴⁷ This ground is related to that of failure to work the invention in the country and is based upon similar policy considerations. An example is the patent law of Nigeria, which provides that it is a ground for an application for a compulsory licence that the working of the invention in Nigeria is being hindered or prevented by the importation of the patented article. A further example is to be found in the quotation from the law of India in paragraph 93 above.

101. In the United Kingdom patent law it is a ground for an application for a compulsory licence and for the

⁴⁵ The following countries include one or both of these grounds in their patent laws: Algeria, Australia, Canada, Colombia, Federal Republic of Germany, Hungary, India, Ireland, Israel, Jordan, Malawi, New Zealand, Nigeria, Pakistan, Philippines, Republic of Korea, Sri Lanka, Sudan, United Kingdom and Zambia.

⁴⁶ WIPO, *Industrial Property*, 1st year, No. 5 (May 1962), p. 112.

⁴⁷ Algeria, Australia, Canada, India, Ireland, Israel, Malawi, New Zealand, Nigeria, Sudan, United Kingdom and Zambia.

marking of the patent "licences of right" (with provision for revocation if the purpose of the licences cannot otherwise be achieved) if:

(a) a demand for the patented article in the United Kingdom is being met to a substantial extent by importation; or

(b) the commercial working of the invention in the United Kingdom is being prevented or hindered by the importation of the patented article.

102. Revocation or automatic lapse of a patent following importation of the patented article is applied as a primary measure (i.e., not as a supplementary measure dependent upon the failure of compulsory licences to achieve their purpose) in the patent laws of Morocco, the Syrian Arab Republic, Tunisia and Turkey.

19. FAILURE TO SATISFY A DEMAND IN THE MARKET

103. A further ground for the application of such measures as compulsory licences and revocation is failure by the patentee to satisfy, or to satisfy on reasonable terms, a demand in the national market.⁴⁸ An example is to be found in the quotation from the law of Australia in paragraph 98 above.

104. Some national laws further provide that it is a ground for the application of measures limiting the exercise of patent rights if a possible export market for the patented article is not being supplied. An example is the patent law of Algeria, which provides that compulsory licences may be granted where a substantial export market for the patented article manufactured within the country is not being supplied. A similar provision is contained in the patent law of India which provides that compulsory licences may be granted if, by reason of the failure of the patentee to manufacture the patented article in India to an adequate extent and supply it on reasonable terms, a market for the export of the patented article manufactured in India is not being supplied or developed.⁴⁹

20. INTERDEPENDENCE OF PATENTS

105. Where a patented invention cannot be worked without also using another invention for which a patent

⁴⁸ Algeria, Australia, Brazil, Colombia, Cuba, India, Ireland, Israel, Malawi, New Zealand, Nigeria, Pakistan, Peru, Philippines, Republic of Korea, Sri Lanka, Switzerland, United Kingdom and Zambia.

⁴⁹ Cf. also the patent laws of Ireland, Israel, New Zealand and the United Kingdom.

has been granted to another person on the basis of an earlier application (for instance, the later invention constitutes an improvement of the earlier invention), many countries give to the owner of the later patent the right to apply for a compulsory licence under the earlier patent to enable the later patent to be worked.⁵⁰ Such a compulsory licence is granted not only in the public interest but also in the private interest of the owner of the later patent. Some countries provide also for compulsory licences under the later patent in favour of the owner of the earlier patent.⁵¹

21. NEEDS OF NATIONAL DEFENCE, PUBLIC HEALTH, NATIONAL ECONOMY, ETC.

106. Independently of the attitude of the patentee (whether he uses the patent by manufacture in the country or not, whether he grants licences or refuses them, etc.), overriding grounds of public interest may require measures to be taken in order to ensure a particular exploitation of a patented invention. The needs of national defence,⁵² public health⁵³ and national economy⁵⁴ are, in particular, recognized as such grounds in many patent laws. Some laws speak simply of "public interest" without specifying any particular aspect.⁵⁵ These grounds normally permit government use and expropriation; they may also justify such measures as compulsory licences, licences of right and revocation.

⁵⁰ For example, Algeria, Austria, Egypt, Hungary, Iraq, Israel, Mexico, Netherlands, New Zealand, Nigeria (but only where the later invention constitutes substantial technical progress or serves purposes different from those of the earlier invention), Nordic countries, Peru, Switzerland, United Kingdom, USSR.

⁵¹ Argentina, France, Iraq, Italy, Mexico, Sudan.

⁵² Cf. the patent laws of Austria, Colombia, Czechoslovakia, Egypt, France, Hungary, Iraq, Israel, Italy, Kuwait, Mexico, The Netherlands, Nigeria, Poland, the Republic of Korea, Romania, the Sudan, Tunisia, the United States of America and Yugoslavia.

⁵³ This ground typically concerns pharmaceutical patents and is not always expressly mentioned where such patents are subject to special treatment. Cf. the patent laws of Canada, Colombia, France, India, Ireland, Israel, Nigeria, the Philippines and the Sudan.

⁵⁴ Cf. the patent laws of Colombia, Cuba, France, Nigeria, Poland, the Sudan, and Yugoslavia.

⁵⁵ Cf. the patent laws of Australia, Austria, Brazil, Cuba, Czechoslovakia, Federal Republic of Germany, German Democratic Republic, India, Iraq, Italy, Japan, Kuwait, Malawi, New Zealand, Nigeria, the Nordic countries, Pakistan, the Philippines, Spain, Sri Lanka, Switzerland, the United Kingdom, Uruguay, the USSR, Venezuela and Zambia.

Chapter II

THE INTERNATIONAL PATENT SYSTEM

107. The terms of reference of this report call for special consideration to be devoted to the role of the international patent system in the transfer of technology to developing countries, with a view to providing a better understanding of this role in the context of a future revision of the system. It is necessary, therefore, first to consider what constitutes "the international patent system" and what means exist for its revision.

108. In the context of the transfer of technology to developing countries, or the acquisition by such countries of technology originating abroad, the relevant aspects of the international system are those which have effect in a developing country or in its relations with other countries and may thus influence that transfer or acquisition. Therefore, for example, although international arrangements of a procedural nature between developed countries (such as are planned, *inter alia*, in the proposed European Patent Convention) form part of "the international patent system", they are directly relevant to this report only to the extent that they affect the interests of developing countries, for example, by permitting access from countries other than contracting States and by virtue of improved methods of public disclosure—matters dealt with in this report. The establishment and revision of such arrangements may also have an indirect relevance to the problems of developing countries in the acquisition of technology, in so far as they may provide examples of experience in this field.

109. For the direct purposes of this report, therefore, the international patent system may be regarded as that system for the legal protection of inventions which affects developing countries in their international transactions.

110. The rights deriving from patents and inventors' certificates are not effective outside the jurisdiction of the country under whose laws they are granted. In the case of one agreement already in operation (the Libre-ville Agreement of 1962 between member States of OCAM⁵⁶) and two draft conventions currently in negotiation (conventions for a European system for the grant of patents and for a European patent for the Common Market⁵⁷) patents granted by a single international authority have or are planned to have effect in more than one country. But these examples of advanced international co-operation do not constitute true exceptions to the general principle of the territoriality of patents: States retain the sovereign power to legislate on the

existence and nature of industrial property rights in their own territories and so far have accepted limitations on that power only in the context of wider arrangements for economic co-operation or integration with neighbouring countries at a comparable stage of development. The examples cited above may be regarded for the purposes of this report as extensions of legislative activity at the national level, included in the concept of "the international patent system" by virtue of their impact on the rights of foreigners, rather than as international treaty-making in a world-wide sense.

111. The "international patent system" is in fact a system of accumulated practices rather than a set of fixed rules. It is the practice of international relations in the matter of the legal protection of inventions, resulting from and governed by both national legislation defining the treatment to be granted to foreigners and international treaties concerning such treatment. It should be emphasized that a country's laws defining the rights of foreigners form part of the international system even when, as in the case of several developing countries, the country is one of those which are party to no international treaty on the subject, for such laws form the basis upon which in practice inventions are protected in more than one country.

112. The protection of the same invention in more than one country gives rise to substantial administrative and practical problems for the governmental authorities concerned and for the public; for example, the determination of the novelty of an invention requires recourse to a documentary base extending, by and large, some 50 years into the past and increasing at a current rate of over 900,000 patent documents a year in numerous languages. Finding solutions to these problems, by harmonization, standardization and the elimination of duplication of work, constitutes a major effort towards the improvement of the international system and has occupied the attention of the governments of industrialized countries in technical co-operation at world-wide and regional levels, with particular emphasis upon effective access to and utilization of the technological information disclosed by the system.

113. The foregoing approach to a description of the international patent system for the purposes of this study indicates also the possible means of its revision.⁵⁸ Revision of the system is in fact a continuing process: each modification of national industrial property law affecting the inventions of foreigners, each negotiation leading

⁵⁶ See paras. 132-137 below.

⁵⁷ See paras. 138-141 below.

⁵⁸ See part three below.

towards new treaty relations or the improvement of existing ones and each activity of technical co-operation constitutes a step in the process of revision of the international system.

114. This chapter will review the following elements: (a) international treaties, of world-wide application, concerning the protection of foreign inventors; (b) regional agreements, including regional administrative arrangements; and (c) intergovernmental co-operation in technical matters relating to the protection of inventions, and in the use of patent documentation as a source of technological information.

A. International treaties of world-wide application

1. THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY

115. The Paris Convention for the Protection of Industrial Property⁵⁹ was adopted in 1883 and has been revised on several occasions, the latest revision having taken place at Stockholm in 1967. The Paris Convention establishes an International Union for the Protection of Industrial Property (Paris Union) of which, at the present time, 80 countries are members. The Paris Convention states that the protection of industrial property has as its object patents, utility models, industrial designs, trade-marks, service marks, trade names, indications of source or appellations of origin and the repression of unfair competition, specific reference being made, in the text revised at Stockholm, to inventors' certificates in the context of claiming priority.⁶⁰

116. Membership of the Paris Union is shown in annex I below. The substantive provisions of the Paris Convention are examined in paragraphs 292 and 293.

117. The Paris Convention created an International Bureau, with tasks including liaison between the patent administrations of the countries of the Paris Union, the study of questions relating to industrial property, the preparation of revision conferences and the publication of documents and other information. Since the Stockholm revision of 1967, the International Bureau is provided by WIPO.

2. THE CONVENTION ESTABLISHING THE WORLD INTELLECTUAL PROPERTY ORGANIZATION

118. The Convention Establishing the World Intellectual Property Organization⁶¹ was adopted at Stockholm in 1967 by the same diplomatic conference as that by which the Paris Convention was most recently revised. The two objectives of the WIPO Convention are (a) to

promote the protection of intellectual property (including industrial property) throughout the world, and (b) to ensure administrative co-operation among the inter-governmental Unions established by international agreements for the promotion of intellectual property (including the Paris Union and, for example, the Berne Union for the Protection of Literary and Artistic Works). The WIPO Convention contains no substantive treaty obligations concerning the national laws of member States in the field of intellectual property and is open to States that are not members of any of the Unions which WIPO administers.

119. The new organization is responsible, by virtue of its own Convention and of the revised Paris Convention, for the performance of the administrative tasks of the Paris Union; its secretariat is provided by its International Bureau, which acts as the successor to the previously separate International Bureau of the Paris Union. The Convention includes provision for a programme of legal-technical assistance to developing countries, within which the member States have established the "WIPO permanent legal-technical programme for the acquisition by developing countries of technology related to industrial property", supervised by an inter-governmental Permanent Committee; the means of action concentrate on licensing, patent documentation and model provisions for national industrial property laws.

3. THE PATENT CO-OPERATION TREATY

120. The Patent Co-operation Treaty⁶² was signed at Washington in June 1970 by 35 States. It will enter into force three months after the deposit of instruments of ratification or accession by at least eight States, provided that at least four of those States satisfy certain conditions relating to the level of their patenting activity. By 1 April 1974, six States had deposited their instruments of ratification or accession. The Treaty is open only to States which are members of the Paris Union.

121. The Treaty provides for the filing of an "international application" where protection is sought for an invention in several countries. The formalities of the international application are regulated in detail. Filing of such applications has the same effect as if applications had been filed separately in each of the countries in which protection is desired.

122. The international application is then subjected to a search to discover "prior art" and also, if specially requested by the applicant, to a preliminary examination to find out whether the invention seems to be new, non-obvious, and industrially applicable.

123. Once the relevant reports are established the application is processed separately in the various countries, each of which will then grant or refuse protection.

⁵⁹ Hereinafter referred to as the Paris Convention. For the text of the Paris Convention and the subsequent revisions, see WIPO, *Manual of Industrial Property Conventions*, first volume.

⁶⁰ See para. 19 above.

⁶¹ For the text of the Convention, see *Convention Establishing the World Intellectual Property Organization*, WIPO publication 251 (E) (Geneva, 1970).

⁶² For the text of the Treaty, see *Patent Co-operation Treaty (PCT)*, Done at Washington, June 19, 1970, WIPO publication 274 (E) (Geneva, 1970).

4. THE STRASBOURG AGREEMENT CONCERNING THE INTERNATIONAL PATENT CLASSIFICATION

124. The Strasbourg Agreement concerning the International Patent Classification was concluded in March 1971,⁶³ as a special agreement within the framework of the Paris Convention. It will place the International Patent Classification (IPC) under the administration of the International Bureau of WIPO.

125. The IPC itself has been in force between certain States since 1968, by virtue of a Convention of the Council of Europe. It is already used by the patent offices of some 40 countries.

126. The Strasbourg Agreement has been signed by 33 States and will enter into force after ratification or accession by 10 countries party to the Council of Europe Convention and three other countries, including at least one at a defined level of patenting activity.

127. The IPC divides technology into eight main sections and the number of the finest subdivisions is approximately 51,000. The symbols of the classification appear on patent documents (published patent applications and granted patents), of which almost one million are issued each year. These symbols are allotted by the issuing authorities, usually the national patent offices. Classification is indispensable for the retrieval of patent documents in the search for "prior art". Such retrieval is needed by patent issuing authorities, potential inventors, research and development units and others concerned with the application or development of technology.

128. Pending the entry into force of the Strasbourg Agreement, the periodic updating and amendment of the IPC, which will be entrusted to a committee of experts of the member States once the Agreement has entered into force, is dealt with by a joint *ad hoc* committee of the Council of Europe and WIPO.

B. Regional agreements

129. There have been several inter-American conventions in the field of industrial property. These conventions relate not only to patents, but to other forms of industrial property, such as trade marks and industrial designs. One significant convention on patents was signed in Buenos Aires in 1910. This convention adopts the principles of the Paris Convention respecting national treatment, rights of priority and independence of patents. It is in effect between 14 States. A prior convention, the Convention of Montevideo of 1889,⁶⁴ is still in force between five

⁶³ For the text of the Strasbourg Agreement, see WIPO, *Manual of Industrial Property Conventions* (Geneva), third volume (loose-leaf).

⁶⁴ For the Buenos Aires Convention, see *Convention on Inventions, Patents, Designs and Industrial Models* (Buenos Aires, 1910) (*International Conferences of American States, 1889-1928* (New York, Oxford University Press, 1931), p. 191).

For the Montevideo Convention, see *Tratado sobre patentes de invención* (Montevideo, 1889). (Argentina, Ministerio de Relaciones Exteriores y Culto, *Tratados y Convenciones Vigentes en la Nación Argentina*, vol. II, *Acuerdos Plurilaterales* (Buenos Aires, 1926), p. 284.)

States. This convention assures reciprocal national treatment and a right of priority of application of one year. A further convention was signed at Caracas in 1911,⁶⁵ which is also in effect between five States only.

130. Within the framework of OAS, discussions are proceeding at the level of governmental experts concerning the possibilities of future revision of the inter-American conventions.⁶⁶

131. The trend towards regional economic integration and related efforts to unify or harmonize substantive laws have had a direct impact upon discussions and agreements among developing countries, with a view to the possible harmonization and unification of patent systems and, more significantly, the establishment of a regional patent office that would have the resources of trained personnel and finance that are necessary for successful patent administration but are not readily within the resources of most individual developing countries. Consequently, the potentialities of a central patent office serving the needs of an entire region are of considerable interest.

132. This idea has been implemented by the African and Malagasy Organization for Economic Co-operation. The member States of the Organization have established in Africa and Industrial Property Office and have subscribed to a Common Patent, Trademarks and Designs Act. The Libreville Agreement (1962)⁶⁷ is administered by a single central office located in Yaoundé (United Republic of Cameroon). Thirteen countries have ratified the Agreement.

133. The Libreville Agreement provides for a common system for obtaining and maintaining industrial property rights, including patents. The aim of the Agreement is to provide for uniform national legislation, a system of single filing, and a centralization of administrative procedure in the African and Malagasy Industrial Property Office (OAMPI). The annexes to the Agreement set forth uniform industrial property legislation to apply to each member State. Under article 3 (1) of the Agreement, when the patent applicant is domiciled in a member State, application may be made either with the national patent administration or with the Central Regional Office, according to the legal provisions in force in the

⁶⁵ Acuerdo sobre patentes y privilegios de invención (Caracas, 1911). See Venezuela, Ministerio de Relaciones Exteriores, *Tratados Públicos y Acuerdos Internacionales de Venezuela*, vol. II, 1900-1920 (Caracas, 1925), p. 441.

⁶⁶ The Specialized Conference on the Application of Science and Technology to Latin American Agreement (CACTAL), held in Brasilia in May 1972, adopted the Consensus of Brasilia on the Application of Science and Technology to Latin American Development. In connexion with patents the Consensus stated:

"Industrial property systems in Latin American countries should serve the socio-economic development objectives in each, within a framework contemplating common Latin American interests. To this end, the countries, of the region should carry out individual or, when appropriate, joint studies on patent and trademark legislation in force in Latin America and elsewhere, in order to adjust such legislation to development objectives." General Secretariat of OAS, *Science, Technology and Development: The Consensus of Brasilia* (Washington, D.C., 1972).

⁶⁷ Accord relatif à la création d'un Office africain et malgache de la propriété industrielle (Libreville, 13 September 1962). OAMPI, *Recueil de textes*.

State concerned. Under article 3 (2), applicants domiciled outside member States file their applications directly with the Central Office; such applicants must, however, appoint an agent in one of the member States.

134. The Central Office has the duty of registering the filing of applications, applying the administrative procedure and issuing certificates that are effective in each member State.

135. The uniform national laws contained in the annexes are based substantially on corresponding French legislation. The signatory parties undertake to adhere to the Paris Union. Any non-signatory African State which is a member of the Paris Union may apply to adhere to the Agreement.

136. OAMPI began its operations in 1964 and shortly thereafter achieved, from the standpoint of savings, the benefits expected in the Libreville Agreement from the institution of a regional system and a single office. Fees received for the protection of rights have financed the operation of a joint administration without need for recourse to national budgets and with a minimum of staff drawn from the administrations of member States.

137. In accordance with decisions of its Administrative Council, which is composed of representatives of the member States, OAMPI is currently planning the adjustment of its regional procedures to fit the machinery of the Patent Co-operation Treaty and is exploring the possibility of establishing a patent documentation centre and of extending its operations into further fields of intellectual property, such as copyright.

138. A number of European conventions on aspects of patent law and procedure have been concluded or are in course of negotiation under the auspices of the Council of Europe or on the basis of work begun among member States of the European Economic Community. Among these, the European Convention on the International Classification of Patents for Invention (Paris, 19 December 1954)⁶⁸ has been transformed into an Agreement under the Paris Convention; it is referred to in paragraphs 124 to 128 above.

139. The European Convention Relating to the Formalities Required for Patent Applications, signed at Paris in 1953,⁶⁹ is in force between European States. The European Convention on the Unification of Certain Points of Substantive Law on Patents for Invention, signed at Strasbourg in 1963, has not yet entered into force, but certain of its provisions have formed the basis for the Convention for the Setting Up of a European System for the Grant of Patents.

140. The latter Convention was signed at Munich in 1973, and will enter into force after ratification or accession by six States at a defined level of patenting activity. It provides for the establishment of a European Patent Office which, after applications have been processed by means of a standard procedure, issues patents which have national effect in those of the contracting

States that have been designated for this purpose. In addition to its procedural provisions, the Convention provides for certain substantive elements such as the duration of the patent and the criteria of patentability.

141. The draft of a second convention, for the European patent for EEC, is expected to be adopted in 1974. This will provide for the issue, by the European Patent Office, of a single unitary patent for the EEC countries. In effect, therefore, the patents issued under this second convention will constitute the first example of rights governed by the provisions of an international convention rather than of domestic legislation.

142. Preparations are also being undertaken by the Andean Group of countries under the Cartagena Agreement for the establishment of common rules for industrial property, and similar plans are under consideration by the Permanent Secretariat of the General Treaty on Central American Economic Integration (SIECA).

C. Intergovernmental co-operation in technical matters

143. Within the framework of the Paris Union Committee for International Co-operation in Information Retrieval among Patent Offices (ICIREPAT), 22 countries participate in efforts to promote international co-operation in the field of storage and retrieval of technical information needed in connexion with the processing of patent applications, including the standardization and computerization of patent documents.

144. The Agreement concerning the establishment of an International Patents Bureau was signed on 6 June 1947.⁷⁰ The Bureau is available for examining patent applications submitted by the patent administrations of the member States and giving opinions on novelty of inventions to private persons. It is thus a service to national patent offices and private individuals and does not deal with the legal rights of individual patent applicants or with the grant of patents.

145. The agreement is open to accession only by countries that are members of the Paris Union; at present there are nine member States.

146. The Conference of heads of patent services of the CMEA member countries was set up as a special CMEA body and began functioning in September 1971, as part of the Comprehensive Programme for the Further Extension and Improvement of Co-operation and the Development of Socialist Economic Integration. The Conference promotes the objectives of the Comprehensive Programme through examination, elaboration, and successive solution of problems concerning legal protection and the use of scientific breakthroughs, inventions, realization proposals, trademarks, industrial designs and appellations of origin. It seeks to elaborate unified legal rules, as well as methodological principles and concepts needed to harmonize the legislations of the CMEA member countries.

⁶⁸ For the text of the Convention, see United Nations, *Treaty Series*, vol. 218, p. 52.

⁶⁹ For the text of the Convention, *ibid.*, p. 28.

⁷⁰ For the text of the Agreement, see United Nations, *Treaty Series*, vol. 46, p. 258.

D. The role of UNCTAD in technical assistance

147. At its third session (Santiago, 1972) the United Nations Conference on Trade and Development decided to include in its resolution 39 (III) on transfer of technology certain provisions relating to the continuing programme of work of the UNCTAD secretariat in this field. In particular, the secretariat was requested, in paragraph 7, to:

(b) Provide advice through UNCTAD's own services, to be financed through the United Nations Development Programme within the framework of specific projects and/or any voluntary contributions, in co-operation, as appropriate, with other bodies, with a view to making available at the request of the developing countries, especially the least developed among them, experienced personnel to assist, within UNCTAD's competence, in the transfer of technology to developing countries;

(c) Initiate, and participate in, through the United Nations Development Programme, and in accordance with its procedures, and in co-operation with other competent bodies within the United Nations system and with the World Intellectual Property Organization, training programmes concerning transfer of technology for personnel from developing countries, especially from the least developed among them.

E. Information and documentation arising from the international patent system

1. PATENT INFORMATION

148. An essential feature of the protection of inventions by way of patents or inventors' certificates is the disclosure of inventions. Patent applications and granted patents are documents which, under the laws of most countries, must contain "claims" stating the new matter for which protection is sought, and a "description" (including drawings where appropriate) explaining the invention in relation to the existing state of the art.

149. It is generally required that the specification of the invention contained in patent documents be so clear and so complete that any person specialized in the field of industry to which the document relates should be able, on the basis of that document, to execute the invention. This aim of "sufficient disclosure" therefore goes beyond the obvious practical requirement that a granted patent, to be effective, must indicate clearly to the public the nature and extent of the protected invention; it is part of the consideration required by the law in exchange for the rights granted.

150. In many cases, particularly where the technology is highly sophisticated, the invention, although sufficiently disclosed, may be difficult to execute quickly and economically, and therefore competitively. In such cases it is more desirable in practice to execute the invention with the practical co-operation of the inventor (for example, by acquiring his related know-how) than on the basis of the patent documents alone.

151. The practical functions of disclosure, taking into account difficulties of the sort described in the preceding paragraph, are:

(a) To supply the general public with a complete and exact survey of the most recent state of technological development;

(b) To provide the necessary information and stimulation for continuing development on the basis of patented inventions; and

(c) To direct those interested in the exploitation of an invention to the relevant source of technology.

152. In this sense the disclosure function of the patent system constitutes an essential component of modern systems of technological information. For many purposes for which such information systems are created, the value of an orderly arrangement of patent documentation, viewed as a whole in relation to each field of technology, is at least as high as the value of access to individual patent documents relating to specific inventions.

2. PATENT DOCUMENTATION SYSTEMS

153. In principle it is not necessary for a country to have a national patent law and patent office or to subscribe to any international convention in order to establish and maintain a collection of patent documents. Such documents, by their nature, are available to the public. In practice, however, it is usually the national patent office that organizes the necessary systems, and membership of the Paris Union facilitates the acquisition, on an exchange basis, of patent documents which are published in other Paris Convention countries.

154. "Publication" of a patent document is generally understood to mean that the industrial property office issuing the document makes copies thereof and sells them to any person wishing to buy them. "Publication" is sometimes used in the sense of including the act of laying open a document for public inspection; that is, allowing any person to go to the industrial property office and read the document there, with or without the possibility of obtaining a copy; in this report, the mere laying open of a document for public inspection is not considered to be publication.

155. In some countries (for example, the Federal Republic of Germany and Japan), applications are published, usually within 18 months of their filing (or, if applications for the same invention have been filed earlier in other countries, within 18 months from the earliest of such filings). In other countries (for example, the United States of America and the USSR), applications are not published.

156. Patents are the subject of publication in many countries but by no means in all of them. For example, in the Latin American countries, patents are not published, although in almost all of them copies can be obtained if specifically ordered. In some countries, patents are published by simply reproducing the relevant parts of the corresponding type-written applications (for example, Belgium, France and the Scandinavian countries). In others, patents are published in printed form, that is, by setting the text in type and reproducing it by printing processes (for example, the Federal Republic of Germany, the United Kingdom, the United States of America and the USSR).

157. For the year 1972, it is estimated that about 930,000 patent documents were published, of which about 580,000 or 62 per cent were applications and about

350,000 or 38 per cent were patents. For the ten countries that publish the highest numbers of patent documents, and which account for 83 per cent of all published patent documents in the world, the numbers published were as follows:

Country	Applications	Patents	Total
(1) Japan	300,000	—	300,000 ^a
(2) Federal Republic of Germany	97,000	39,000	136,000 ^b
(3) United States of America	—	75,000	75,000
(4) France	30,000	42,000	72,000
(5) United Kingdom	42,000	—	42,000
(6) USSR	—	36,000	36,000
(7) Italy	—	34,000	34,000 ^c
(8) Canada	—	30,000	30,000
(9) Netherlands	22,000	4,000	26,000
(10) Switzerland	500	17,000	17,500

^a Includes 155,000 utility models.

^b Includes 21,000 utility models.

^c Includes 4,000 utility models.

158. The languages in which the highest numbers of patent documents are published are:

Language	Number of published patent document estimated for 1972
Japanese	300,000 (includes 155,000 utility models)
German	174,000 (includes 21,000 utility models)
English	171,000
French	100,000
Russian	36,000

159. There are insufficient statistics to state exactly the number of patent documents that have been published since the publication of patent documents started (more than 100 years ago). It may be estimated in the neighbourhood of 14 million. The number of patents under legal protection today may be estimated at around 3.5 million.

160. The same invention by the same inventor is frequently included in several patent documents since he has to file a separate application (except in the case of OAMPI) in each country in which he desires protection and each such country, if it complies with the applicant's wish, will issue a separate patent.

161. Patents relating to the same invention and granted in different countries are sometimes referred to as a "patent family" whose "members" are the individual patents issued in the various countries. The contents of the patent members of the family frequently show some differences since the scope of protection granted may be narrower in some countries than in others (mainly as a result of the examination process and for other reasons). Generally, members of the same family are identified merely on the basis of the fact that they relate to the same "parent" application by invoking its "priority". The "priority" or "parent" application is the application that has been filed earliest. The other applications may refer to it and, if they were filed within one year from date of the "parent" application, then, under the Paris Convention and under the national laws of some countries not party to the Paris Convention, they are, roughly stated, considered as if they had been filed on the same date as the "parent" application. The "parent" application itself is, of course, also a member of the family.

162. If at least one of the members of a patent family is a patent issued in a country whose law requires a thorough preliminary examination of novelty—for example, a patent issued by the German Patent Office (Munich) or the United States Patent Office (Washington)—the presumption of substantive novelty attached to such patents may generally be extended to the other members of the same patent family, even if such other members are patents issued in a country having no examination for novelty. This may be quite important in connexion with the language problem: for example, if a person can read only Spanish and reads a patent issued in a Spanish-speaking country, he has more reason to believe that the invention claimed therein is really novel if another member of the family was granted in a country having novelty examination than if there is no such other member of the family.

163. The patents issued by some 40 countries—among them most of those which carry out a novelty examination—bear a classification symbol according to the International Patent Classification. This symbol is allotted by the issuing office. It constitutes a first step in the direction of identifying patents belonging to any given branch of technology.

164. In view of the very great and ever-growing volume of patent documents and the cost of their acquisition and filing in such a way as to be readily accessible, it is very important that the size and coverage of any collection of patent documents be carefully defined in the light of the purpose it is intended to serve, the amount of the funds available for its maintenance, and the technical and language capabilities of its users.

165. The fact that a high percentage of the important inventions are described in several patent documents (members of the same family), and that a high proportion of such inventions appear among the patent documents of the industrially most developed countries, allows a high degree of selection among languages and countries. In other words, a sufficient degree of coverage can be achieved by collecting the patent documents of only a very few countries; and, even among these countries, a limitation to documents in a very few languages is possible without impairing the desired coverage to too great an extent. Also, because of the volume and cost involved, a careful assessment is needed in deciding from what point in time any collection should include patent documents.

166. The identification of the patent documents belonging to a given field of technology in a given language, as well as the identification of the members of patent families, will be greatly facilitated when the "identification of patent documents through the International Patent Classification" and the "identification of patent families" services of the International Patent Documentation Centre (INPADOC) become operational—probably in 1974. INPADOC is an organization financed entirely by the Government of Austria, established in implementation of an agreement with WIPO. These two services will be made possible by a computerized data bank, which will contain the bibliographic data of most of the published patent documents in the world.

Chapter III

SAFEGUARDS AGAINST ABUSES OF THE PATENT MONOPOLY IN LICENSING AGREEMENTS

167. Patent laws generally confer the right to exclude third parties from making, using, exercising, selling and distributing the patented product or the process protected by the patent, without the consent of the patent owner.⁷¹

168. A patentee himself may exploit a patent; he may decide not to use the patent; or he may license to a third party some or all of the rights conferred by virtue of the patent grant through a licence agreement. Whichever alternative is selected, regulations reflecting the public interest of the country granting the patent normally condition the exercise of that alternative. This chapter discusses the extent of prevalence of abusive practices in licensing arrangements,⁷² instrumentalities generally used to safeguard the public interest and the range of abuses or restrictions that are found in licensing arrangements⁷³ involving patented and non-patented technology.

A. The extent of prevalence of abusive practices

169. In any assessment of the extent of prevalence of abusive practices, it is important to keep in mind that licensing arrangements are rarely exclusively limited to patents. They usually include also trade marks, industrial designs, utility models, know-how, technical training and other items concerning transfer of technology. A recent study undertaken by the UNCTAD secretariat shows that in Spain 50 per cent of a sample of 101 contracts for the transfer of technology consisted of a combination of two items, patents and know-how, and that 90 per cent of them contained at least three items.⁷⁴ Of the 399 contractual agreements covering about 80 per cent of the valid contracts in Chile in 1971, most were found to contain a similar overlapping of items. Over 60 per cent of them had at least two or three of these items included in the same agreement.⁷⁵ A similar pattern was found to

prevail in studies undertaken in the Andean Group countries.⁷⁶ In the Philippines 26 per cent of a total of 254 agreements analysed involved a combination of patents, trade names and know-how.⁷⁷ In a survey of 32 cases in the Indian pharmaceutical industry, it was found that only four were exclusively for patents and trade marks, and 27 dealt with unpatented process know-how.⁷⁸ Quite clearly, it is not possible to separate, for analytical purposes, licensing agreements dealing with patents alone from those combining patents with other items.⁷⁹ Until more specific information is available, licensing agreements dealing with all these items will have to be considered for the light they may throw on abusive practices.⁸⁰

170. There is another important point that needs to be made at the outset. The studies from which information is summarized in this chapter were not carried out with a view to establishing a comprehensive list of abusive practices for each country, nor were they intended to determine with precision the degree of prevalence of such practices. Consequently the lack of reference to any particular practice in one country does not necessarily mean that the practice in question has not occurred in the contractual arrangements undertaken by enterprises of that country.

171. It is only recently that a systematic inquiry on this subject, particularly concerning developing countries, has been made.⁸¹ Some of the pertinent information is

⁷⁶ See OAS, *La transferencia de tecnología hacia los países del grupo Andino*, División de Planificación y Estudios, AC/PE-46, April 1972, pp. 53-56.

⁷⁷ See *Restrictions on exports in foreign collaboration agreements in the Republic of the Philippines* (United Nations publication, Sales No. E.72.II.D.8), para. 37.

⁷⁸ See P. K. Ramachandran and B. V. Rangarao, "The Pharmaceutical industry in India", *The Economic and Political Weekly* (Bombay), vol. II, No. 9 (26 February 1972), p. M-33.

⁷⁹ See *The role of patents in the Transfer of Technology to the Developing Countries* (op. cit.), para. 177.

⁸⁰ For purposes of this study the expression "licensing agreement" is used to cover both patent licence agreements in the strict sense and "know-how" agreements. See in this connexion the Anti-monopoly Act Guidelines for International Licensing Agreements of the Government of Japan, which applies to both patent licensing and know-how agreements.

⁸¹ For data on the countries of the Andean Pact, see "Policies relating to technology of the countries of the Andean Pact: their foundations—a study by the Board of the Cartagena Agreement" (document TD/107), in *Proceedings of the United Nations Conference on Trade and Development, Third Session*, vol. III, *Financing and Invisibles* (United Nations publication, Sales No. E.73.II.D.6); see also *Major issues arising from the transfer of technology to developing countries: report by the UNCTAD secretariat* (United Nations publication, Sales No. E.75.II.D.2), in particular chapter V.

⁷¹ See para. 6 above for a definition of patents.

⁷² For a discussion of abuse of patent monopoly, see paras. 367-378 below and of non-use paras. 273-280.

⁷³ For a definition, see *Guidelines for the Acquisition of Foreign technology in developing countries, with special reference to technology licence agreements* (United Nations publication, Sales No. E.73.II.B.1), p. 2, and for what is meant to cover a licence arrangement, see articles 2 and 6 of the Mexican Law on the Registration of the Transfer of Technology and the Use and Working of Patents and Trademarks (December, 1972) (see WIPO, *Industrial Property*, 12th year, No. 5 (May 1973), p. 147) and article 140 (2) of the Indian Patents Act (see foot-note 37 above).

⁷⁴ See "Major issues arising from the transfer of technology: a case study of Spain" (TD/B/AC.11/17).

⁷⁵ See "Major issues arising from the transfer of technology: a case study of Chile" (TD/B/AC.11/20), table 5.

summarized, under broad headings of abusive practices, in table 1. It covers 2,640 contracts in 11 developing countries (Argentina, Bolivia, Chile, Colombia, Ecuador, Ethiopia, India, Israel, Mexico, Peru and the Philippines) and Spain. The developing countries covered in the table are among the relatively industrially advanced ones, accounting for about three-quarters of the manufacturing output of all the developing countries. Moreover, the contracts from which information is gathered include most of the important enterprises in these countries. As a result, the picture presented in the table can be taken as a reflection of the situation prevailing in developing countries as a group.

172. Table 1 shows how widespread these practices are. Among the different types, territorial restrictions and limitations on purchase (tied purchase), output and sale are the most common. The range of prevalence of territorial restrictions varies from a low of 6 per cent in Israel to a high point of 99 per cent in Peru. The range of prevalence of limitations on purchase, output and sale is broadly similar—from 5 per cent in India to 86 per cent in Ethiopia.

173. Inter-country comparisons of this type should, however, be interpreted with some caution since neither the coverage nor the representativeness of the different

samples is known. But the data in the table do give the impression that the proportions are generally lower in those countries—Argentina, India, Israel and Spain—where a somewhat more active policy is pursued to safeguard the public interest against the incorporation in contractual arrangements of abuses which monopolistic control in the possession of patented and non-patented technology might give rise to.

174. It may be noted that prevalence of such practices is not confined to developing countries. They also exist in developed market-economy countries.⁸²

B. Instrumentalities employed for dealing with abuses

175. The laws and regulations of various countries have employed chiefly three types of instrumentalities for safeguarding against abuses in licensing arrangements. These are: patent legislation, anti-trust laws and, more recently, the laws of some of the developing countries specifically

⁸² For information on Japan, see *Restrictive Business Practices: Interim Report by the UNCTAD secretariat* (United Nations publication, Sales No. E.72.II.D.10), para. 153, and for the United Kingdom, see C. T. Taylor, *Do we still need a patent system?*, The Chartered Institute of Patent Agents (London, 1973), p. 9.

TABLE I
Extent of prevalence of abusive practices in licensing agreements in selected countries

Country	Total number of contracts analysed	Contracts containing abusive practices *					Effects on economy in general (dynamic effects)	Other limitations
		Territorial restrictions	Limitations on purchase output and sale	Financial provisions	Post-expiration effects			
(As a percentage of total contracts)								
Argentina	60	28	..	..	..	..	..
Bolivia	35	83	83	..	45	..	48	
Chile	175	90	14	..	31	33	40	
Colombia	117	79	77	..	..	..	..
Ecuador	12	75	67	..	..	..	..
Ethiopia	7	71	86	71	..	..	43
India								
Approved to March 1964	1,051	43	15	..	..	..	..
Approved April 1964 to March 1969	342	47	5	..	..	..	..
Israel								
1961-1963	144	11	..	..	..	..	..
1964-1965	150	6	..	..	..	..	..
Mexico	109	97	..	..	..	..	..
Peru	83	99	62	..	69	..	37	
Philippines	251	32	26	71	..	6	..	
Spain	101	38	5	18	..	..	37
TOTAL	2,640							

Sources: *Major Issues arising from the transfer of technology to developing countries (op. cit.)*; "Major issues arising from the transfer of technology: a case study of Chile" (TD/B/AC.11/20); "Idem: a case study of Ethiopia" (TD/B/AC.11/21); "Idem: Case study of Spain" (TD/B/AC.11/17); *Restrictions on Exports in Foreign Collaboration Agreements in the Republic of the Philippines* (United Nations publication, Sales No. E.72.II.D.8); *Restrictions on Exports in Foreign Collaboration Agreements in India* (United Nations publication, Sales No. E.72.II.D.7); OAS, *La transferencia de tecnología hacia los países del grupo Andino* (AC/PE-46, April 1972).

* See table 3 for details of abusive practices, limitations or restrictive practice included under each of these subheadings.

dealing with transfer of technology agreements and establishing registration and screening procedures for these agreements. Table 2 shows, for selected countries, the use of these instrumentalities. Each of them is briefly described below.

176. In evaluating the instrumentalities for controlling the abuses, it must be borne in mind that most of these are of comparatively recent origin. With the exception of those in the United States of America and Canada, the legal developments at the national level have all taken place since the Second World War. The years of initiation of two regional programmes for the control of restrictive business practice—those of the European Coal and Steel Community and of EEC—were 1952 and 1957, respectively. Because of this lack of historical background and the complex nature of the problem, and for other reasons, it is not possible to say how effective the enforcement of the policies against monopoly and restrictive practices laid down in the various national and international measures has been.

1. PATENT LEGISLATION

177. As seen in table 2, two approaches have been followed in this area. Some patent laws describe specific practices considered unlawful and not acceptable in licensing arrangements. They refer mainly to tie-in clauses deemed to be void when included in a licence; sometimes, a few other clauses are also considered to be void.

178. Other laws have taken a more general approach and have set a standard under which, as in the case of the patent law of Nigeria

any clause in a contract for a licence . . . is null in so far as it imposes on the licensee in the industrial or commercial field restrictions which do not derive from the rights conferred by the

relevant patent or design or are unnecessary for the safeguarding of these rights.⁸³

179. Section 33 of BIRPI's Model Law on Inventions, proposed in 1964, deals with the subject in the following terms:

(1) Clauses in licence contracts or relating to such contracts are null and void in so far as they impose upon the licensee in the industrial or commercial field, restrictions not deriving from the rights conferred by the patent.

(2) The following in particular shall be deemed not to constitute such restrictions:

- (a) limitations concerning the degree, extent, quantity, territory or duration of exploitation of the subject of the patent;
- (b) limitations justified by the interest of the licensor in the technical flawless exploitation of the subject of the patent;
- (c) the obligation imposed upon the licensee to abstain from all acts capable of impeding or preventing the grant of the patent or prejudicing its validity.

2. ANTI-TRUST LEGISLATION

180. Anti-trust legislation is the common legal instrument for dealing with abusive practices in developed market-economy countries, particularly in the United States of America. Direct control of patents under restrictive business practices legislation is at present apparently exercised only in the United States:

While it is recognized as a "sound rule that monopoly power individually acquired solely through a basic patent, or aggregation of patent grants, should not by itself constitute monopolization in violation of section 2" [of the Sherman Act], the use of patents is open to anti-trust attack, if the patent was obtained by fraud from the Patent Office or where it was used for monopolization purposes.⁸⁴

⁸³ See Nigerian Patents and Designs Decree of 1970, section 23 (3) (WIPO, *Industrial property*, 12th year, No. 5 (May 1973), p. 147).

⁸⁴ OECD, *Market Power and the Law* (Paris, 1970), p. 177.

TABLE 2

Instrumentalities to deal with abusive practices in patent licence agreements in selected countries

<i>Legal instruments</i>	<i>Countries</i>
1. Patent laws describing specific practices	Australia, Austria, Brazil, India, Ireland, Malawi, New Zealand, United Kingdom, Zambia
2. Patent laws with a general statement making null and void clauses imposing on licensee restrictions not deriving from the rights conferred by the patent	Colombia, Nigeria, Sudan
3. Anti-trust legislation	Belgium, Canada, Denmark, Federal Republic of Germany, France, Israel, Japan, Netherlands, United States of America
4. Screening procedures or registration of agreements	Argentina, Brazil, France, India, Israel, Japan, Mexico, Pakistan, Spain, Yugoslavia
5. Special laws on transfer of technology	Andean Group countries, Argentina, Mexico, Spain

NOTE. One legal instrument does not exclude others.

181. Developed market-economy countries other than the United States of America, the Federal Republic of Germany and Japan have limited experience in this field. OECD reports⁸⁵ that in Belgium only one case has arisen under the Act of 1960 on protection against abuse of economic power in its relationship with industrial property rights. In Denmark, the Monopolies Control Act, which has no special provisions on patents and licences, has been applied only very rarely to cases involving patents. In France, only two cases have been brought regarding patent licences. No case is reported in Ireland, where the Fair Trade Commission may open an inquiry into the conditions that obtain in regard to the supply and distribution of any kind of goods, with a view to determining whether there exists any interference with competition which is unfair or which operates against the public interest. In the Netherlands, the Economic Competition Act has never in practice been applied to restrictions resulting from the use of patents.

182. Under the anti-trust provisions of EEC (articles 85 and 86 of the Treaty of Rome) limitations contained in licensing agreements may be considered to be incompatible with the EEC competition policies. The Court of Justice of the European Communities has proposed some criteria on the subject of licensing agreements related to protected rights. The Court has been concerned with the possible conflict between intellectual property rights in general and the main goal of the Treaty: to merge the national markets into a single market. In one of the recent cases decided by the Court it was held that though the Treaty of Rome does not affect the existence of the protective rights conferred by the national legislation of the member State concerned,

the exercise of these rights may fall under the prohibition of the treaty. If a right akin to copyright is used to prohibit the distribution of goods which have been marketed by the owner of the right, or with his consent, on the territory of another State, solely on the ground that such marketing did not take place within the original State, such a prohibition, maintaining as it does the separation of national markets, offends against the fundamental objective of the Treaty, *viz.*, the amalgamation of national markets into one uniform market.⁸⁶

3. SPECIAL LAWS ON TRANSFER OF TECHNOLOGY AND REGISTRATION AND SCREENING PROCEDURES

183. Table 2 shows that a number of developing countries have adopted policies establishing screening procedures or registration requirements for licensing agreements. These procedures had their early origin in the need for controlling remittances of foreign exchange.⁸⁷

⁸⁵ See OECD, *Restrictive Business Practices Relating to Patents and Licences: Report by the Committee of Experts on Restrictive Business Practices* (Paris, 1972).

⁸⁶ See *Deutsche Grammophon Gesellschaft mbH v. Metro—SB—Grossmärkte GmbH and Co. KG*, Case 78/70. Decision of June 8, 1971, reproduced in *Common Market Law Review*, vol. 9, No. 1 (February 1972), p. 92.

⁸⁷ This was noted in section 32 of BIRPI's Model Law for developing countries on Inventions:

"The Minister responsible for industrial property may, by order, provide that, on pain of invalidity, licence contracts or certain categories of them, and amendments or renewals of such

More recently, as the awareness of the importance of adopting an integrated approach to foreign exchange constraints has grown among these countries, the scope of such controls has been enlarged. Registration of foreign collaboration agreements began to be subjected to an evaluation of their technological contribution, as well as of the possible abuses that might be incorporated in them.

184. More recently, particularly following discussions in UNCTAD, special laws on the transfer of technology in Argentina, the Andean Group countries, Mexico and Spain, have marked an important departure from earlier practices of dealing with these complicated problems in a piecemeal and unco-ordinated fashion. These laws have set up special machinery to deal with transfer of technology contracts, and some of the more common abuses in licensing arrangements have been declared unlawful or otherwise controlled (see table 3 for details). The transitional articles in these laws also provide for ensuring that contracts or agreements undertaken prior to the date these laws went into effect shall be revised so as to comply with the provisions of these laws and then registered in the national registry within two years.⁸⁸

185. Thus, a new body of special laws on the transfer of technology and administrative machinery to implement them have begun to take shape.⁸⁹

C. Types of abuse in the patent licensing agreements and regulatory practices in selected countries

186. In view of the significant extent to which abuses or restrictive practices are to be found in licensing agreements, and in view of the instrumentalities which have been developed to safeguard public interest, considerable importance attaches to having a fairly comprehensive list of these practices, so that the main lines of action for dealing with them can be determined. The degree of prevalence, as well as the relevance of each of these practices will, of course, vary from case to case. An attempt has been made here, based on published materials and replies from 43 countries to UNCTAD questionnaires on transfer of technology (sent on 29 April 1971 and 15 June 1973), to present such a list in table 3 and to show the countries where the given practice is controlled. Since systematic work of this type has just begun,⁹⁰ it must be stressed that the listing of the countries and items is to be treated as provisional only.

contracts, which involve the payment of royalties abroad, shall require the approval of . . . taking into account the needs of the country and its economic development."

⁸⁸ See article 2 of the transitory article of the Mexican law on the transfer of technology (cf. foot-note 73 above).

⁸⁹ For recommendations on the detailed functions of this machinery, see Conference resolution 39 (III), para. 3, and resolution 1 (II) of the Intergovernmental Group on Transfer of Technology.

⁹⁰ For details, see *Major issues arising from the transfer of technology to developing countries* (*op. cit.*); "Major issues arising from the transfer of technology: a case study of Chile" (TD/B/AC.11/20); *Idem*: a case study of Ethiopia (TD/B/AC.11/21); *Idem*: a case study of Spain (TD/B/AC.11/17); *Restrictive Business Practices* (*op. cit.*); *Restrictions on exports in foreign collaboration agreements* (*op. cit.*);

(Continued on next page.)

1. TERRITORIAL RESTRICTIONS ON EXPORTS

187. The following territorial restrictions on exports are frequently included in agreements involving licensees of developing countries: (a) total ban on exports; (b) prior approval by the licensor required before exports can take place; (c) prohibition of exports to certain countries; (d) exports allowed only to certain countries; and (e) requirements to channel exports through the licensor's agents.⁹¹ As already indicated, export restrictions are the most common limitations imposed on licensees (see table 1).

188. Agreements involving restriction of exports affect directly and indirectly the export potential of technology-receiving countries. They are particularly relevant in view of the importance of raising the exports of manufactures from developing countries. Moreover, restrictive clauses in contractual arrangements limit the benefits that may be derived by developing countries from the generalized system of preferences and their own efforts at regional integration and economic co-operation.⁹²

189. The new laws of transfer on technology in Argentina, Mexico, Spain and the Andean Group countries, as well as the patent law of Brazil, forbid the inclusion in licensing agreements of export restrictions. Decision 24 of the Commission of the Cartagena Agreement permits some flexibility in this area of the law but states that in no case shall clauses of this kind be accepted in respect of subregional trade or the export of similar products to third countries.

190. In the United States of America it has been held that the purchaser of a patented article in one part of the United States may resell it anywhere in the country, despite any territorial restrictions in a licence agreement. Moreover, patent rights, because they are co-extensive with the geographical limits of the country, do not themselves justify agreements by licensees not to export the patented product from the country, according to decisions in Japan and the United States of America.

191. National attempts to prohibit contractual restrictions on exports would not automatically make it possible for the licensee to export the patented goods. Patent validity extends solely within the boundaries of the granting country. If the licensor has obtained a patent for the same invention in the country where the

(Foot-note 90 continued.)

in the *Republic of the Philippines* (op. cit.); *Restrictions on exports in foreign collaboration agreements in India* (op. cit.); *Restrictive Business Practices: Studies on the United Kingdom of Great Britain and Northern Ireland, the United States of America and Japan* (United Nations publication, Sales No. E.73.II.D.8); *Restrictive Business Practices in Relation to the Trade and Development of Developing Countries: Report by the Ad Hoc Group of Experts* (United Nations publication, Sales No. E.74.II.D.11); OECD, *Restrictive Business Practices Relating to Patents and Licences...* (op. cit.).

⁹¹ Not all export restrictions take the form of territorial constraints. Their purpose can also be achieved through other practices, or through a combination of some of the practices listed in table 3. For other practices directed to the same objective, see *Restrictive Business Practices: Interim Report by the UNCTAD Secretariat* (United Nations publication, Sales No. E.72.II.D.10), para. 92.

⁹² See *Major issues arising from the transfer of technology to developing countries* (op. cit.), para. 67.

licensee intends to export, the licensor may resort to the local courts for legal remedies against the licensee for infringement. This point is taken up in BIRPI's Model Law on Inventions: section 33 of the Model Law provides that clauses which impose on the licensee restrictions that are outside the scope of the patent are null and void. The official commentary on this section states that an example of such restrictions may consist in "stipulating that the licensee will not export to certain foreign countries when exportation is not already limited because of patents existing in such countries".⁹³

2. RESTRICTIONS ON OUTPUT, SALES OR PURCHASES

192. The following restrictions have been included under this subheading: limitations (i) on sources of supply of raw materials, spare parts, intermediate products, capital goods and/or competing technologies (generally called "tie-in" clauses); (ii) on the pattern of production and on sales and/or distribution.

193. The question of the adverse effects of "tie-in" clauses has been widely discussed in the literature on transfer of technology. Some of the points in this discussion may be briefly summarized here. There are at least three reasons why technology suppliers insist on tied-purchase provisions. First, where the plant in the developing country carries out mainly assembly operations, the foreign enterprise may wish to preserve an exclusive right to supply the necessary processed and semi-processed inputs. Secondly, the tied-purchase clauses may be connected with the need for guaranteeing the quality of the product through the utilization of specific inputs, particularly in cases where foreign brand names and trade marks are involved. Thirdly, the foreign enterprise may also use such provisions as a means of enlarging its profit margin. While there may, in some cases, be a justification on technical grounds for the first two kinds of tying, no such justification exists for the third kind. As discussed in the following paragraph, the adverse effects of the third kind are so important that the "tie-in" provisions of the first two types should be examined very carefully to ensure their legitimate justification. And even then the necessary justification and the quantities and amounts involved should be specifically stated in the contracts.

194. Most of the goods that are currently produced or planned for production in the developing countries are available on the world market from several sources, and potential purchasers of these products in the developing countries can buy them at world market prices. But when contractual agreements tie part or all of the inputs to a single source of supply, developing countries are deprived of the possibility of exploiting market opportunities and are faced with a price structure determined by the unique supplier. Tied-purchase provisions thus result in a monopoly control of the supply of equipment and other inputs by foreign enterprises, leading to what has come to be known as "transfer pricing", "transfer accounting" or "uneconomic output".

⁹³ *Model Law for Developing Countries on Inventions* (BIRPI publication No. 801 (E)), Geneva, 1965, p. 56.

TABLE 3

**Countries where certain practices in patent licence agreements
are considered as abuses or otherwise controlled**

<i>Types of abusive practice</i>	<i>Countries exercising control</i>
<i>Territorial restrictions on exports</i>	
1. Territorial restrictions on exports	Andean Group countries, Argentina, Brazil, Japan, Mexico, Spain
<i>Restrictions on purchases, output or sales</i>	
2. On sources of supply of raw materials, spare parts, intermediate products, capital goods, and/or competing technologies	Andean Group countries, Argentina, Australia, Brazil, EEC, India, Ireland, Japan, Malawi, Mexico, New Zealand, Spain, United Kingdom, United States of America, Zambia
3. On pattern of production	Andean Group countries, Japan, Mexico, Spain
4. On sales and/or distribution	Andean Group countries, Brazil, Japan, Mexico, Spain, United States of America
<i>Financial provisions</i>	
5. Payments for unused patents	Andean Group countries
6. Package licensing	Spain, United States of America
7. Payment of royalties during the entire duration of manufacture of a product, or the application of the process involved without any specification of time, or excessively long terms of enforcement	Mexico, Spain
8. Price fixing	Andean Group countries, Argentina, Japan, Mexico, Spain, United States of America
9. Excessive prices	Argentina, Mexico, Spain
10. Improper or discriminatory royalties	United States of America
11. To transform royalties or fees into capital stock	Andean Group countries
<i>Post-expiration effects</i>	
12. Limitations on use of patented inventions or related know-how once patent has expired or after termination of agreement and/or charging royalties	India, Malawi, New Zealand, Spain, United Kingdom, United States of America, Zambia
<i>Limitations affecting the economy in general (dynamic effects of the transfer)</i>	
13. Limitations on field of use	United States of America
14. To use staff designated by licensor	Andean Group countries, Mexico
15. Absence of provisions regarding training of national personnel	
16. Grant-back provisions	Andean Group countries, Argentina, Brazil, Japan, Mexico, Spain, United States of America
17. Limitations on the research or technological development of licensee	Mexico, Spain
18. Limitations imposed on the management of the licensee	Mexico, Spain
<i>Other practices</i>	
19. Not to contest validity of patents	United States of America
20. Authentic text of contract in foreign language	Argentina, Spain
21. Foreign law governing agreement	Mexico
22. Foreign jurisdiction in settlement of disputes arising from agreement	Andean Group countries, Argentina, Mexico

Source: National legislation as indicated in replies to the UNCTAD secretariat's questionnaires (cf. para. 186 above).

195. By reason of his exclusive position, the supplier is able to charge higher prices⁹⁴ than for comparable equipment and other inputs that could otherwise be obtained elsewhere. Overpricing of inputs in this way constitutes a "hidden cost" of the transfer of technology which is much the same as that of aid-tying.

196. Tied-purchase clauses connected with the transfer of technology not only affect production costs through the overpricing of inputs but may have important indirect effects on the import substitution, export diversification and growth efforts of developing countries. When the source of supply is determined by the supplier, rather than by the receiver, of technology, a bias in favour of imports is only to be expected. Furthermore, since the imported technology itself originates in a developed country it is usually ill adapted to factor endowments and the availability of domestic resources in developing countries. Both these factors contribute to raising costs of production in developing countries and rendering the resulting product less competitive in world markets. The high cost of imported technology and inputs imposes a heavy burden on the balance of payments of developing countries. Together with reduced export possibilities, this affects adversely the rate of growth of the economy by preventing backward and forward linkages.⁹⁵

3. ABUSES RELATED TO FINANCIAL PROVISIONS

(a) *Payments for unused patents*

197. Article 20 of decision 24 of the Commission of the Cartagena Agreement considers that clauses requiring the payment of royalties to patentees in respect of unexploited patents are of an abusive nature. In order to receive governmental approval for patent licence agreements, it is necessary, in Brazil, to prove that the licensee is, in fact, exploiting the patented invention, and that the patent is not a mere fiction in the contract, designed to justify the payment of royalties.⁹⁶

198. In Japan, the Federal Republic of Germany and the United States of America, the requirements of the payment of royalties by a licensee covering patents which he is not using is not in itself objectionable. However, where a patentee coerces a licensee to accept a licence under one patent on condition that the licensee accept licences under another patent or a whole package of patents, the scheme may be attacked as beyond the grant of the patent monopoly and as a violation of the anti-trust law.⁹⁷

⁹⁴ For an analysis on costs and overpricing, see paragraphs 370-378. Tying of aid has a similar effect on raising the cost of items and services imported for the project.

⁹⁵ For further analysis of these effects, see *Major issues arising from the transfer of technology to developing countries (op. cit.)*, paras. 44-52.

⁹⁶ See *The role of patents in the transfer of technology to developing countries (op. cit.)*, paras. 163 and 224.

⁹⁷ *Ibid.*, para. 162.

(b) *Package licences*

199. Package licensing, that is, the licensing of several of the licensor's patents or subjects of know-how imposed upon the licensee as a condition for obtaining the licence, is a common practice in international licensing. Recent legislation in Spain regards package licences as an abuse not to be permitted in licensing agreements. In the United States of America package licences may constitute an anti-trust violation where the package is coercively imposed by the licensor on the licensee, rather than freely embraced by both parties for purposes of convenience.⁹⁸

(c) *Long terms of enforcement*

200. The practice through which royalty payments have to be paid during the entire duration of the manufacture of a patented product or the application of a patented process involved in a patent licence without any specification of time is unlawful *per se*, being against the nature of the patent grant. Patent grants are basically temporal, and the corresponding licence agreement cannot extend beyond the temporal constraints of the patent. However, it is necessary to bear in mind that where a patent is linked to know-how the patent constraints do not apply automatically to the know-how. Under the Mexican law, an agreement containing an excessively long term of enforcement is not accepted. The law states that in no case may these terms exceed a ten-year obligation on the importer company.⁹⁹ The recent Spanish legislation adopts a similar position against long-term undertakings.¹⁰⁰ In India, according to the "Guidelines: policies and procedures concerning foreign collaboration agreements" (January, 1969), royalty payments should normally be restricted to a period of five years from the date of commencement of production, provided production is not delayed beyond two years from the signing of the agreements (i.e. a maximum period of seven years from signing of agreement).

(d) *Price fixing and excessive prices*

201. Price fixing, as shown in table 3, has been considered by all recent laws as an unlawful practice. Some of these laws also control practices by which excessive prices are charged for the technology transferred. The Mexican law provides that a contract shall not be registered "when the price or counter-service is out of proportion to the technology acquired or constitutes an unwarranted or excessive burden on the country's economy".¹⁰¹

202. The United States of America's position on the subject is that the fixing of prices within the United States by agreement generally constitutes a *per se* violation of

⁹⁸ See M. R. Joelson, "International technology transfer and the United States antitrust laws", *The Journal of International Law and Economics*, vol. VIII, No. 2 (June 1973), pp. 102-103.

⁹⁹ See the Mexican law on the transfer of technology (cf. footnote 73 above).

¹⁰⁰ See TD/B/AC.11/17, annex I.

¹⁰¹ Cf. article 7 of the Mexican law (cf. footnote 73 above).

the anti-trust laws.¹⁰² Under the Japanese law, clauses restricting resale prices of patented goods in Japan may be treated as unfair business practices.¹⁰³

(e) *Improper or discriminatory royalties*

203. Improper or discriminatory royalties or prices may constitute an abuse of patent rights. Under the United States law, the improper formulation or imposition of royalties in a licence agreement is a ground for application of the patent misuse doctrine and a possible violation of anti-trust legislation. The reasoning is that a patent cannot be used to exercise leverage on a licensee so as to extract compensation from him in areas outside the licensed subject-matters.¹⁰⁴

4. LIMITATIONS AFFECTING THE ECONOMY IN GENERAL (THE DYNAMIC EFFECTS OF THE TRANSFER)

(a) *Limitations on the field of use of the technology*

204. Limitations on the field of use take place when a licensor grants a licence for a limited or restricted use of the patented subject-matter, declining to license all the other uses of the invention and reserving some uses of the invention for self-exploitation, or exploitation by other licensees. These restrictions may be considered as within the rights conferred by the law on the patent holder. Section 33 (2) of the BIRPI Model Law considers limitations concerning the degree of exploitation of the subject of the patent as within such rights. The Japanese Guidelines also adopt a similar position.¹⁰⁵ Under the United States law, restrictions of this kind placed on a purchasing licensee are illegal *per se*; however, restrictions placed on manufacturing licensees are sometimes considered legal.¹⁰⁶

(b) *Grant-back provisions*

205. Grant-back provisions are inadmissible when they in practice establish a unilateral flow of knowledge and innovations for the sole benefit of the licensor. Section 29 of the Brazilian law provides that "all rights to improvements made by the licensee to the product or process shall belong to him".¹⁰⁷ Under the EEC rules, a grant-back clause is not considered a restrictive practice, provided the undertakings are not exclusive and the licensor has entered into similar undertakings.¹⁰⁸

¹⁰² See M. R. Joelson, *loc. cit.*, p. 96.

¹⁰³ See "Antimonopoly Act Guidelines for International Licensing Agreement of Government of Japan.", Staff Office of the Fair Trade Commission of the Government of Japan, reproduced in *Restrictive Business Practices (op. cit.)*, p. 49, annex II.

¹⁰⁴ See M. R. Joelson, *loc. cit.*, p. 105.

¹⁰⁵ See foot-note 103.

¹⁰⁶ See M. R. Joelson, *loc. cit.*

¹⁰⁷ Brazil, Industrial Property Code (Decree Law No. 1005 of 21 October 1969). See WIPO, *Industrial Property*, 9th year, No. 7 (July 1970), p. 221.

¹⁰⁸ EEC, "Notice on patent licensing agreements", *Official Journal of the European Communities* No. 139 (27 December 1962),

206. Under the antimonopoly laws of the United States of America, grant-back arrangements are not necessarily invalid but depend on the mode of operation, the importance of the improvements and the effect on competition. Since improvements come later, it is difficult to know at the inception of the agreement whether these problems will arise later or not. The rule is that grant-back provisions are not invalid if they operate to encourage invention and ensure that any improvements are made available without discrimination and on reasonable terms. Schemes intended to result in putting the patentee in a dominant position and which are used to lessen competition are, however, considered invalid.¹⁰⁹

207. Collaboration agreements on the exchange of information and new improvements related to the subject of the agreement make sense between equal parties. Where these agreements are entered into by enterprises from developing countries, grant-back provisions should be evaluated from the standpoint of improving the technological capabilities of these countries and avoiding the perpetuation of technological dependence.

(c) *Other limitations*

208. Other limitations on the dynamic effects of the transfer of technology may include, as shown in table 3: designation by the licensor of staff to be used by the licensee; limitations on research by the licensee; and limitations on management by the licensee. These three limitations are considered invalid in the recent laws of Mexico, the Andean Group countries, and Spain.

5. POST-EXPIRATION EFFECTS

209. A patent licence cannot survive the life of the patent¹¹⁰ covered by the agreement. The expiration of the patent on an invention means that the invention falls into the public domain and no legal basis remains for the patent licensing agreement. However, clauses are often included in licence agreements by which the contract continues to be effective after its expiration or after the patent has expired. Clauses of this type that are abusive include:

(a) Limitations on or payment for the use of a patented invention even after the patent has expired;

(b) Achieving the same result by means of limitations on or payment for the use of related know-how included in the license agreement even after the agreement has ended.¹¹¹

p. 2922, reproduced in *Competition Law in the European Economic Community and in the European Coal and Steel Community*, published by the European Communities, Brussels-Luxembourg, 1972.

¹⁰⁹ See L. W. Melville, *Precedents on Intellectual Property and International Licensing* (London, Sweet and Maxwell, 1972), p. 21.

¹¹⁰ See paras. 358-359, on extension of the patent duration.

¹¹¹ However, restrictions in know-how agreements on the use of the know-how after the agreement has ended are normally regarded as valid, particularly in the case of the early termination of the agreement by reason of the default of one party.

210. In the United States of America, the Supreme Court has held that the imposition of a royalty obligation for post-expiration use of a machine covered by a patent was an unlawful effort by the patentee to extend the terms of his monopoly beyond that granted by the law.¹¹² The patent statutes of New Zealand and South Africa also provide that any contract for the payment of royalties after the term of the patent expires can be rendered void at the option of either party. "The justification advanced for this legislative provision is that such a contractual arrangement is not within the boundaries of the monopoly granted by the patent."¹¹³ In the United Kingdom, section 58 (1) of the Patent Act provides that when all original patents have ceased to be in force, the licensee may terminate the licence notwithstanding anything in the licence to the contrary.

6. OTHER PRACTICES

211. Table 3 lists under this heading the following practices: (a) provisions not to contest the validity of patents; (b) imposing as the authentic text of the agreement one in a different language from that of the licensee's country—a practice deemed to be unlawful under the Spanish law; (c) provisions that a law or a jurisdiction chosen by the licensor should govern the agreement and decide disputes arising from its interpretation or implementation.

212. In a recent decision of the Supreme Court of the United States of America it was held that the licensee is not prevented from contesting the validity of the patent and that while challenging such validity he is not required to continue to pay royalties.¹¹⁴

D. CONCLUSIONS

213. The preceding description of abuses of patent monopoly in licensing agreements has drawn attention to the variety of practices that are followed and to the wide extent to which they are included in contractual arrangements, particularly ones with enterprises in the developing countries. A number of studies at the national, regional and international levels have underlined the need for instituting safeguards against such abuses.

214. The legal and regulatory instrumentalities employed to counteract or prohibit such abuses are different from country to country; and interpretation of anti-monopoly laws has a complex and not always clear history, particularly in the United States of America. But the underlying intent of these instrumentalities, whether earlier laws in the developed countries or more recent integrated approaches in some of the developing countries, has a great deal of similarity in that they all aim at safeguarding public interest against monopolistic

practices through control or elimination of these abuses.

215. The Paris Convention for the Protection of Industrial Property from its very inception was concerned with "the repression of unfair competition" (article 1 (2)).

216. It is against this background that the need for urgent action expressed in paragraph 37 of the International Development Strategy for the Second United Nations Development Decade¹¹⁵—coming 87 years after the adoption of the Paris Convention—has to be appreciated. The paragraph states:

Restrictive business practices particularly affecting the trade and development of the developing countries will be identified with a view to the consideration of appropriate remedial measures, the aim being to reach concrete and significant results early in the Decade. Efforts will be made with a view to achieving these results before 31 December 1972.

217. Since the adoption of the Strategy on 24 October 1970—commemorating the twenty-fifth anniversary of the United Nations—it has not yet proved possible for the international community to achieve "concrete and significant results".

218. Two subsequent developments have served to underline the importance of initiating the necessary action. In March 1973, a Group of Experts convened by UNCTAD¹¹⁶ considered and identified some restrictive business practices which adversely affect the trade and development of developing countries. The Group adopted a twofold classification of practices: category A, where the restrictions, on the basis of knowledge and past experience, are likely to have significantly adverse effects, whether in developed or developing countries; and category B, where the adverse effects are less clear and may be offset by corresponding advantages and where, therefore, more complete analysis is required.

219. The second development concerns a recommendation of the Council of OECD, adopted on 22 January 1974. This recommendation concerns action against restrictive business practices relating to the use of patents and is very relevant to the present stage of discussion of the subject; its operative paragraphs may be quoted in full:

Recommends to the Governments of member countries:

1. That they should be particularly alert to harmful effects on national and international trade which may result from abusive practices in which patentees and their licensees may engage, and in particular, from the following:

(a) when negotiating or operating patent pools or cross-licensing agreements, unjustifiably imposing territorial, quantity or price restrictions or attempting to dominate an industry, market or new industrial process;

(b) by means of territorial restrictions in patent licences affecting international trade, unjustifiably prohibiting exports of patented products or unjustifiably restricting trade in or exports of the patented products to specified areas;

¹¹² See M. R. Joelson, *loc. cit.*, p. 105.

¹¹³ See *The role of patents in the transfer of technology to the developing countries (op. cit.)*; para. 130.

¹¹⁴ See *Lear, Incorporated v. Adkins*, No. 56, Decided by the Supreme Court on 16 June 1969, 162 USPQ 1.

¹¹⁵ The text of the International Development Strategy is contained in General Assembly, resolution 2626 (XXV).

¹¹⁶ See *Restrictive Business Practices in Relation to the Trade and Development of Developing Countries: Report by the Ad Hoc Group of Experts* (United Nations publication, Sales No. E.74.II.D.11).

(c) by means of clauses concerning tied sales, obliging the licensee to obtain goods from the licensor or his designated sources, when the tied sales are not justified, for instance, by technical reasons concerning the quality of the goods manufactured under the licence;

(d) by means of grant-back clauses, unjustifiably requiring the licensee to assign or grant back to the licensor exclusively all improvements discovered in working the patents when the effect of this practice is to reinforce the dominant position of the licensor or to stifle the licensee's incentive to invent;

(e) by means of clauses unjustifiably limiting competition, preventing one or more parties to the patent licensing contract from competing with others parties to the contract, or with third persons, in other industrial fields not covered by the licensed patent;

(f) arbitrary grouping and licensing all patents in a particular field and refusing to grant licences for only some of the patents or using other forms of package licensing when these practices are coercive in character and when the selection of the patents is not negotiated for the convenience of the parties;

(g) contrary to national law, fixing the prices of patented products by means of patent licences.

2. That they should give consideration to the desirability and feasibility of compulsory licensing of patents and, where possible, related know-how as a remedy to restore competition where such patents have been misused contrary to their restrictive business practice laws, when such a remedy is not already provided for in their legislation.

3. That they should give consideration to the desirability and feasibility of making available to the competent authorities procedures for the registration of international licensing agreements, when such procedures are not already provided for in their legislation.

220. With the developments summarized above, the stage is now plainly set for moving rapidly towards evolving an internationally acceptable set of standards for safeguarding the public interest against the abusive practices discussed in this chapter.

Part Two

THE INTERNATIONAL PATENT SYSTEM AND THE ECONOMIC ADVANCE OF DEVELOPING COUNTRIES

Chapter IV

DEVELOPING COUNTRIES AND THE PATENT SYSTEM

A. Technical knowledge and the advance of developing countries

221. A vast accumulation of technical knowledge has taken place in the two centuries since the beginning of the industrial revolution. The additions to the stock of this knowledge have been cumulative in character and have occurred with increasing frequency.¹¹⁷ Geographical and cultural boundaries have in modern times ceased to be obstacles to the flow of technology. Moreover, no matter what the cost of its development, its use by others does not diminish the supply of technology to its originator or to anybody else.¹¹⁸ Its present stock is sufficient to solve mankind's most pressing problems.¹¹⁹

222. Application of this knowledge has succeeded in raising substantially living standards in industrialized countries. Income per head in these countries is now at least ten times that in the developing countries, where some three fourths of the world population lives. The lower incomes of the latter in part reflect their insulation from the technological changes that have transformed the developed countries. Easier access to technical knowledge and more selective use of it have come to be regarded as important ways of improving living standards in developing countries. The exploration of better methods of employing modern technology for the benefit of devel-

oping countries constitutes a significant part of the efforts of the international community to create more effective co-operation among its members.

223. Various factors are responsible for the limited utilization within developing countries of existing technical knowledge.¹²⁰ Among them, the difficulties imposed by the manifold imperfections of the technology market are perhaps among the most serious. Within the developing countries themselves, there is an acute lack of essential information regarding alternative types of and sources for technology, while the supply of manpower qualified to examine alternatives and choose among them is severely limited. Technology from enterprises based in developed countries is supplied on terms and conditions that are often onerous. In addition to these problems, the legislative and administrative context—both national and international—frequently fails to encourage suitable transfers of technology to developing countries.

224. Apart from the freely available and usually older technologies, one of the important determinants of the conditions governing access to technical knowledge is the nature, extent and functioning of patent regulations at both national and international levels. Not all modern technology, of course, is covered by patents. An important part of the technology that is not so protected is mainly secret and for this reason, among others, the relative roles of patent and non-patented technology cannot be ascertained with any confidence. Nevertheless, even technologies or products that are not themselves protected often embody inputs or elements of processes that are patented. Hence an analysis of the role of patents in the developing countries is of crucial significance to an assessment of the possibilities for improved access of the developing countries to modern technology.

225. The focus of the present examination of the patent system, both in its principles and in its operation, is the relationship of the system to the attainment of the

¹¹⁷ "Two centuries elapsed between the age of Copernicus and that of James Watt; one century between Watt and Michael Faraday; half a century between Faraday and the Wright Brothers; a quarter of a century between the Wright Brothers and Einstein. Since then, the intervals between major landmarks have grown even shorter." See R. Mayne, *The Recovery of Europe: from Devastation to Unity* (London, Weidenfeld and Nicolson, 1970), p. 4.

¹¹⁸ Use by others, however, does tend to reduce the returns accruing to any one user. The economic significance of schemes (for example, the patent system) designed to guarantee exclusivity in production and/or distribution of products and processes is to increase possibilities of profits earned by the person having the exclusive rights.

¹¹⁹ C. P. Snow has emphasized that solution of the problems "does not require one additional scientific discovery, though new scientific discoveries must help us. It depends on the spread of the scientific revolution over the world. There is no other way", C. P. Snow, *The Two Cultures: And a Second Look* (New York, New American Library, 1963), p. 67.

¹²⁰ These have been explored in studies prepared by the UNCTAD secretariat. For a list of these studies covering the period up to the end of 1972, see: *Guidelines for the study of the transfer of technology to developing countries: A study by the UNCTAD secretariat* (United Nations publication, Sales No. E.72.II.D.19), annex II.

economic development objectives of the developing countries. This focus is relatively new and implies a reappraisal of several aspects of the patent system which have hitherto attracted little attention. This chapter describes three aspects of the development of the patent system, namely, the origin and spread of national patent laws (section B), the establishment of a set of minimum standards acceptable to several countries in the form of an international convention for the protection of industrial property (section C), and some statistical features of the number, ownership, utilization and sectoral distribution of patent grants (section D).

B. The origin and spread of national patent laws

226. In contrast to the extensive data available on foreign trade, national income and numerous other economic variables, information on patents is limited. With the exception of some economic studies, the discussion of patents has been conducted almost entirely in philosophical and legal terms.¹²¹ But these studies, mainly theoretical, do not appear to have exercised a significant influence on the evolution of policy. More surprisingly, they do not seem to have had any appreciable effect on the collection, classification and analysis of the data required for assessing the operation of the international patent system as a whole, or of national laws in particular. Patents must be registered, and the process generates some elementary information regarding numbers of applications filed and patents granted, national or foreign origin of patent holders, subject classification of patents, etc. But such information has not been classified

to serve analytical purposes. This study attempts to systematize the existing data.

1. EARLY PATENT LAWS

227. The first patent statute containing the major characteristics of contemporary patent laws is considered to have been enacted by the City State of Venice in 1474.¹²² The next landmark was article 6 of the English Statute of Monopolies (1623). However, it was not until the advent of the Industrial Revolution that national patent laws became more widespread.

228. In the United States of America, a patent law was enacted in 1790 (revised in 1793); France promulgated a patent law in 1791. Both of these laws made reference to the position of the individual inventor¹²³ and to his right to secure a financial reward for his efforts. The laws also stressed the requirements of promoting the progress of science and useful arts,¹²⁴ and thus industrialization in these countries. Of particular interest are three motives for the patent law which were set out in a report supporting the French patent bill. These motives were the backwardness of French industry, the threats posed to the French economy by the penetration of English products, and the desire of the French Government to ameliorate the situation of the French industrial worker.¹²⁵

229. During the period from 1800 to 1870, patent laws were introduced by the Netherlands (1809), Austria (1810), Russia (1812), Sweden (1819), Spain (1826), Brazil (1859), Italy (1859), Argentina (1864) and Canada (1869).

2. NINETEENTH-CENTURY CONTROVERSY ON PATENTS

230. The liberalization of international trade which was gathering momentum under the banner of "free trade" in the middle of the nineteenth century provoked considerable criticism of patent laws. Some critics asserted that national patent laws, by granting temporary monopolies, acted in the same way as prohibitive tariffs. In two European countries, discussions led to the repeal (in the Netherlands) and rejection (in Switzerland) of national patent laws. The majority of the members of the Parliament in the Netherlands, citing as authority classical economists, accepted that a "good law of patents is an impossibility",¹²⁶ and in 1869 the existing patent law was repealed. The controversy raged vehemently in Switzerland where, under the constitution, the Federal Government could not establish a general patent law

¹²¹ See F. L. Vaughan, *The United States Patent System* (New York, 1925); A. Plant, "The economic theory concerning patents for inventions", *Economica* (London), New Series, vol. I, Nos. 1-4, 1934; E. Penrose, *The Economics of the International Patent System* (Baltimore, John Hopkins Press, 1951), reprinted by Greenwood Press, Conn., 1973; R. Vernon, *The International Patent Systems and Foreign Policy*, Study No. 5 of the United States Senate Subcommittee on Patents, Trademarks and Copyrights (Washington, D.C., United States Government Printing Office, 1957); and F. Machlup, *An Economic Review of the Patent System*, Study No. 15 of the United States Senate Subcommittee on Patents, Trademarks and Copyrights (Washington, D.C., United States Government Printing Office, 1958), various issues of "The Patent, Trademark and Copyright Journal of Research and Education" (*IDEA*), published by the Patent, Trademark and Copyright Foundation of the George Washington University (Washington, D.C.), vol. 1 (June 1957) to vol. 15 (1971); Economic Council of Canada, *Report on Intellectual and Industrial Property* (Ottawa, January 1971); United Kingdom, *The British Patent System: Report of the Committee to Examine the Patent System and Patent Law*, Cmnd. 4407 (London, H. M. Stationery Office, July 1970); O. J. Firestone, *Economic Implications of Patents*, Social Science Series No. 1 (University of Ottawa Press, 1972); CONICYT, "Patentes de Invención: estudio estadístico preliminar y proposiciones de trabajo", Departamento de Estudios, Dirección de Planificación, Santiago-Chile, 1971 (mimeographed); J. M. Katz, "Patentes, corporaciones multinacionales y tecnología: un examen crítico de la legislación internacional", *Desarrollo Económico: Revista de Ciencias Sociales* (Buenos Aires), vol. 12, No. 45 (April-June 1972), p. 105; C. V. Vaitos, "Patents revisited: their function in developing countries", *The Journal of Development Studies*, October 1972, No. 1, pp. 71-96; C. T. Taylor and Z. A. Silberston, *The Economic Impact of the Patent System: a Study of the British Experiment* (Cambridge University Press, 1973).

¹²² Details cited here are summarized from F. Machlup, *op. cit.* pp. 2-6, and E. Penrose, *op. cit.*, chap. 1.

¹²³ In the French law, importers of foreign inventions had rights equivalent to those of the inventor.

¹²⁴ See the Constitution of the United States of America, article 1, section 8.

¹²⁵ For details, see U. Anderfeldt, *International Patent Legislation and Developing Countries* (The Hague, Martinus Nijhoff, 1971), pp. 15-16.

¹²⁶ See F. Machlup, *op. cit.*, p. 4, and E. Schiff, *Industrialization without National Patents: the Netherlands, 1869-1912; Switzerland, 1850-1907* (Princeton University Press, 1971).

directly, as a popular referendum endorsing a constitutional amendment was first necessary. Calls for the referendum were rejected in 1849, 1851, 1854 and twice in 1863. When the referendum stage was reached, the people on two occasions, in 1866 and 1882, defeated a proposal giving the Federal Legislature the authority to pass laws to protect industrial property; not till 1887 was the proposal finally accepted.¹²⁷ In the Netherlands, a patent law was not reintroduced until 1912.

231. The concern about the limitation of competition following the introduction of national tariffs and of a national patent system appears to have lost force in the early 1870s. With the onset of the gravest economic crisis of that century,¹²⁸ pressures for protection of national interests—"infant" industries and national inventiveness—proved far stronger than the abstract arguments in favour of free trade and competition.

3. THE SPREAD OF NATIONAL PATENT LAWS

232. Although the patent controversy was never resolved, in the sense of providing clear evidence for or against patents, the number of countries that have adopted patent laws has slowly but steadily increased (see table 4). By the end of the nineteenth century, the establishment of national patent laws in nearly all of what are now the developed market-economy, the socialist and the southern European countries was already virtually complete.

¹²⁷ See F. Machlup, *op. cit.*, p. 4, E. Penrose, *op. cit.*, pp. 15-16.

¹²⁸ The Great Depression in the interwar period had a similar effect on economic thinking and policy. Post-war discussion on the development of developing countries has in the same manner reinforced the importance of policies for promoting national inventiveness and protecting infant industries.

233. In sharp contrast, the extension since 1873 of national patent legislation in the developing countries has been recent and very rapid indeed—from 10 countries in 1873 to 84 in 1973. The rise in numbers is explained mainly by the fact that former territories and colonial dependencies, whose legal codes included some form of patent system during their dependence, came to be shown later as independent countries with national legal codes. There are still 18 developing countries, so regarded within UNCTAD, which do not have their own national patent laws¹²⁹ though some of these countries grant protection through systems of registration of patents granted abroad.¹³⁰

C. The emergence of a multilateral set of rules

234. With the widespread acceptance of national patent laws in Europe and North America, consideration started to be given to formulation of minimum rules which were to be observed by different countries. The initiative for the establishment of such norms appears to have had as its strongest supporter the United States of America.¹³¹

¹²⁹ Afghanistan, Bangladesh (laws existing on the date of independence are still applicable), Bhutan, Democratic People's Republic of Korea, Equatorial Guinea, Ethiopia, Guinea, Indonesia, Maldives, Mali, Mongolia, Oman, Qatar, Saudi Arabia, Thailand, United Arab Emirates, Western Samoa and Yemen.

¹³⁰ See M. Hiance and Y. Plasseraud, *Brevets et sous-développement: la protection des inventions dans le Tiers-monde* (Paris, Librairies techniques, 1972), p. 110.

¹³¹ The initial invitation for an international conference on patent rights came from the Austrian Government in 1872; but it specifically stated: "following a suggestion of the Government of the United States of America, the General Direction of the Universal

(Continued on next page.)

TABLE 4

The spread of national patent legislation, 1873 to 1973:
number of countries having patent laws in given years^a

Groups of countries	1873	1884	1900	1911	1925	1934	1958	1967	1973
Developed market-economy countries	9	11	16	17	19	20	20	20	20
Socialist countries of Eastern Europe	1	2	3	4	7	7	8	8	8
Southern European countries	2	3	3	3	4	4	4	4	4
Developing countries	10	13	23	28	42	44	60	83	85
<i>of which:</i>									
Africa	1	2	4	4	10	11	16	35	37
Asia	1	1	2	3	7	8	16	19	19
Latin America	8	9	15	19	22	22	24	25	25
Others	0	1	2	2	3	3	4	4	4
Other States ^b	0	0	0	1	1	2	3	3	3
TOTAL WORLD	22	29	45	53	73	77	95	118	120

NOTE. For source and country coverage, see annex II below.

^a Data given for years relating to the evolution of the Paris Convention: 1873, the Vienna Exhibition; 1884, entry into force of the Convention; 1900, 1911, 1925, 1934, 1958, 1967, revisions of the Convention; 1973, present status.

^b Holy See, Liechtenstein, Monaco, San Marino and South Africa.

TABLE 5

Increase of Paris Union membership by groups of countries: number of members in given years ^a

Group of countries	1884	1900	1911	1925	1934	1958	1967	1973
Developed market-economy countries . .	6	11	13	18	19	19	20	20
Socialist countries of Eastern Europe . .			2	6	6	6	7	7
Southern European countries	2	2	2	4	4	4	4	4
Developing countries	5	3	5	9	9	15	42	44
<i>of which:</i>								
Africa	1	1	1	2	2	3	23	23
Asia				2	2	6	8	9
Latin America	4 ^b	2	4	4	4	5	8	9
Others				1	1	1	3	3
Other States ^c					1	3	5	5
TOTAL WORLD	13	16	22	37	39	47	78	80

NOTE. For source and country coverage, see annex II below.

^a Data given for years relating to the evolution of the Paris Convention: 1884, entry in force of the Convention; 1900, 1911, 1925, 1934, 1958, 1967, revisions of the Convention; 1973, present status.^b See para. 236 above.^c Holy See, Liechtenstein, Monaco, San Marino and South Africa.

1. THE ESTABLISHMENT OF THE PARIS CONVENTION

235. The preparatory work towards a multilateral arrangement for patent protection began with the international conference held at Vienna in 1873. Subsequent to the Vienna meeting further conferences were held in Paris in 1878 and 1880 and finally, in 1883, the International Union for the Protection of Industrial Property was established by an intergovernmental convention (usually called the Paris Convention). Among the signatories to the Convention were Belgium, France, Great Britain, Italy, the Netherlands, Portugal, Serbia, Spain and Switzerland (from Europe); Brazil, Ecuador, Guatemala and El Salvador (from Latin America); and Tunisia (from north Africa). The United States of America acceded in 1887.

236. There are several interesting features about the 14 original signatories of the Paris Convention. Tunisia became a member of the International Union through adherence, on her behalf, by France; Serbia had no national patent law up to 1918; and Ecuador, El Salvador and Guatemala withdrew from the International Union, respectively in 1886, 1887 and 1895. Brazil therefore is the only country from the third world as now defined which has been in the Union from the beginning.

(Foot-note 131 continued.)

Exposition intends to unite with the Exposition and International Congress, which shall discuss the question of patent right: should this discussion, as may be foreseen, induce a vote in favour of Patent protection, it will then be the task of this Congress on the basis of the experience of various countries and the materials collected, to proceed to a declaration of fundamental principles for an International Reform of Patent Legislation". See H. Kronstein and I. Till, "A re-evaluation of the International Patent Convention", *Law and Contemporary Problems*, vol. XII, No. 4 (August 1947), p. 766.

2. SPREAD OF THE MEMBERSHIP OF THE PARIS UNION

237. Table 5 shows the cumulative membership of the Paris Union according to economic groupings. The dates according to which the table is constructed are the years corresponding to the entry into force of the Paris Convention and the six revisions of that Convention—Brussels (1900), Washington (1911), The Hague (1925), London (1934), Lisbon (1958) and Stockholm (1967)—and 1973.

238. The Convention, subject to the periodic revisions, has been in force for 90 years; currently there are 80 members of the Union. The details concerning the years when individual countries joined the Union are shown in annex I below. Among the 80 members in 1973, there are 20 developed market-economy countries, plus seven socialist countries of Eastern Europe and four southern European countries. Taken together, these countries account for 31 of the member States. Five other States are also members of the Union.¹³² Only 44 developing countries are parties to the Paris Convention.

239. There are several interesting features about the increase of the number of developing countries in the membership of the Paris Union. Up to 1900, only three countries had joined. The number had risen to 9 by 1934 and 15 by 1958. With the accession to independence of many African countries, there were 42 developing countries in the Union by 1967.

240. Though the developing countries members of the Union constitute a majority within the Union, their number is smaller than that of developing countries that

¹³² Holy See, Liechtenstein, Monaco, San Marino and South Africa.

remain outside the Union. There are 62 countries¹³³ which are regarded as developing countries within UNCTAD but which are not members of the Union.

241. There are two considerations that suggest that the role of developing countries in shaping the Paris Convention has been limited. First, 20 African countries have become the parties to Convention within the last decade and a half, during which time 10 other developing countries have become parties.¹³⁴ Thus, almost two thirds of the developing country membership is of very recent origin; these countries have acceded or succeeded to the Convention only after all its main principles were firmly established. Secondly, some of the largest developing countries have not joined the Union—for example, Bangladesh, Burma, China, Ethiopia, India, Malaysia, Pakistan, Thailand and the six countries of the Andean Pact.¹³⁵ The 62 developing countries that are not members together account for nearly 80 per cent of the population of all developing countries, and over one half of the population of the world.

3. INITIATIVES OF DEVELOPING COUNTRIES FOR REVISION OF THE INTERNATIONAL SYSTEM

242. In 1961 the Government of Brazil, the only developing country which had remained within the International Union since its inception, raised the question of the effects of patents on the economies of developing countries at the General Assembly of the United Nations. Subsequent to the discussion of the question, General Assembly resolution 1713 (XVI) of 19 December 1961 was passed. It requested the Secretary-General of the United Nations, in consultation with appropriate international and national institutions, to prepare a report containing:

(a) A study of the effects of patents on the economy of under-developed countries;

(b) A survey of patent legislation in selected developed and under-developed countries, with primary emphasis on the treatment given to foreign patents;

(c) An analysis of the characteristics of the patent legislation of under-developed countries in the light of economic development objectives, taking into account the need for the rapid absorption of new products and technology, and the rise in the productivity level of their economies;

(d) A recommendation on the advisability of holding an international conference in order to examine the problems regarding the granting, protection and use of patents, taking into consideration

the provisions of existing international conventions and the special needs of developing countries, and utilizing the existing machinery of the International Union for the Protection of Industrial Property.

243. Following the adoption of this resolution, and subsequent to later discussions in the Economic and Social Council, the requested report was published by the Department of Economic and Social Affairs of the United Nations in 1964 under the title *The Role of Patents in the Transfer of Technology to Developing Countries*.¹³⁶ The main body of the report did not discuss the relevant issues concerning the advisability of holding an international conference, with or without utilizing the existing machinery of the International Union for the Protection of Industrial Property. Nor was this point included in the questionnaire circulated to Governments, inter-governmental bodies and non-governmental organizations. In the last paragraph of the summary and conclusions of the report it was stated that since the problems connected with transfer of technology went much beyond the operation of patent systems, more could be done through action at national level than by calling such a conference, which could only deal with the limited aspects of granting, protection and use of patents.¹³⁷

244. After the deliberations of the first half of the 1960s, the developing countries took up the question of the revision of the international patent system while discussing the International Development Strategy for the Second United Nations Development Decade. Upon their initiative, paragraph 64 of the Strategy called for "the review of international conventions on patents". A step of major significance in this direction was later taken at the third session of the United Nations Conference on Trade and Development. The Conference unanimously adopted resolution 39 (III) on transfer of technology, which in paragraph 10 asked for a study with a view to bringing up to date the 1964 United Nations study¹³⁸ and invited the Secretary-General "to devote special consideration in this study to the role of the international patent system in such transfer, with a view to providing a better understanding of this role in the context of a future revision of the system".

245. The concern expressed by the developing countries regarding the functioning of the international patent system is in line with concerns they have expressed with regard to other aspects of international economic relations. In the field of commercial policy considerable efforts have been made in recent years towards the creation and

¹³⁶ United Nations publication, Sales No. 65.II.B.1.

¹³³ Afghanistan, Bahrain, Bangladesh, Barbados, Bhutan, Bolivia, Botswana, Burma, Burundi, Chile, China, Colombia, Costa Rica, Democratic People's Republic of Korea, Democratic Yemen, Ecuador, El Salvador, Equatorial Guinea, Ethiopia, Fiji, Gambia, Ghana, Guatemala, Guinea, Guyana, Honduras, India, Iraq, Jamaica, Khmer Republic, Kuwait, Laos, Lesotho, Liberia, Libyan Arab Republic, Malaysia, Maldives, Mali, Mauritius, Mongolia, Nepal, Nicaragua, Oman, Pakistan, Panama, Paraguay, Peru, Qatar, Republic of Korea, Rwanda, Saudi Arabia, Sierra Leone, Singapore, Somalia, Sudan, Swaziland, Thailand, United Arab Emirates, Venezuela, Western Samoa, Yemen and Zaire.

¹³⁴ Argentina, Bahamas, Cyprus, Haiti, Iran, Jordan, Malta, Philippines, Trinidad and Tobago, and Uruguay.

¹³⁵ Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela.

¹³⁷ "No views on this question have been expressed by any Governments in their replies to the Secretary-General's inquiry. In fact, as pointed out in the report, the problems arising in connexion with the transfer of technology to developing countries go much beyond the operation of national patent systems or the conduct of international patent relations, so that a Conference such as that contemplated in the resolution could only deal with part of the issues. More could be done through the combination of appropriate legislative and administrative measures at the national level with action to curb restrictive business practices in international licensing agreements, and the provision of technical and financial assistance to developing countries along the lines discussed in the report." *The Role of Patents in the Transfer of Technology to Developing Countries*, p. 7.

¹³⁸ See foot-note 136 above.

operation of a generalized system of preferences whose purpose is to improve conditions of access for developing countries in the import markets of developed countries. Thus in the realm of commercial policy there has been a clear evolution from the nineteenth century emphasis on free trade through the first half of the present century with its recurring manifestations of protective policies at the national level, to the idea of preferential treatment for developing countries.

246. It is of interest to note that in the field of commercial policy the General Agreement on Tariffs and Trade (GATT) has performed a somewhat similar function, but through different methods, to that of the Paris Convention in the field of patents—i.e. the establishment of a set of minimum rules which must be observed by all member countries, but subject to which each country preserves freedom to organize its policies and legislation in the manner which it considers appropriate.¹³⁹

D. Some basic characteristics of patent grants

247. WIPO (and its predecessor BIRPI) has published some statistical information pertaining to patents for more than 50 years; in 1965 the scope of the published statistics was considerably expanded. On the basis of the WIPO statistics for 1972, it is estimated that over 500,000 patents were granted in that year and that about 3.5 million patents were currently in force.

248. In this section a preliminary analysis is made of some of the available statistics. The section begins with an explanation of one of the basic features of industrial property statistics. After that, it takes up the following characteristics of patent grants: world distribution of patents granted; structure of ownership (nationals and foreigners, country of origin, individuals and corporations); extent of working of patents; and the distribution of patents by technological fields.

249. The first point of explanation is that the number of patent applications made or patents granted in the world does not provide an immediate indication of the number of applicants or the number of inventions. According to the Paris Convention, an applicant for a patent in one country of the International Union may apply for patents for the same invention in as many other countries of the Union as he chooses, within the 12 months' period of priority. In each country a patent has an independent life, governed in its duration and nature by the specific conditions of the national patent law. Patents relating to the same invention and granted in different countries are referred to as a "patent family" whose "members" are the individual patents issued in the various countries.¹⁴⁰

250. Estimates based partly on published patent statistics, partly on responses to questionnaires and partly on the experience of patent office staff in the handling of

documents suggest that in recent years the number of patents granted in the world has been a little more than three times the number of separate inventions, and that slightly more than one fourth of the total number of inventions are protected in more than one country, the average number of countries being about seven.

251. The second point of explanation is one that is also pertinent to foreign investment legislation: the published statistics distinguish between patents granted to nationals and patents granted to foreigners, but the definition of nationals and foreigners may not be standard. Patents may be held by private individuals or corporations, or by public authorities of one kind or another. A problem arises in so far as the definition of what constitutes a national person, whether physical or juridical, usually depends on some kind of consideration relating to the residence of an individual or to the place of legal establishment of a corporation. It is well known that a corporation that is effectively in the control of foreign groups may, under such legislation, be treated for legal purposes as a national corporation. Thus, for example, a corporation which is established in a developing country may have the majority of its shares owned by foreign interests, yet it is regarded, for legal purposes, as a national entity. Under these circumstances the patents granted to that corporation will be treated as national patents in a developing country, even though the effective control and ownership of those patents is in foreign hands. This situation implies that current statistics on the distribution of patent ownership between nationals and foreigners may tend to underestimate the proportion of patents held by foreigners. However, they statistics probably reflect reasonably accurately the proportions of patents which are based on national and foreign inventive activity; foreign applicants have no need to adopt a national personality artificially, for they receive, in nearly all countries, the same treatment regardless of nationality; the fact of claiming the priority of an earlier application abroad clearly indicates the foreign origin of an application, and the laws of some of the countries from which a large number of applications originate (for example, the United States of America) prevent their nationals from filing first abroad.

252. Other features of the patent system, including differences of law or practice between countries, may need to be taken into account in assessing the available statistics. For example, the number of patent grants in relation to the number of patent applications will probably be lower in countries which practice examination as to substance than in countries which examine applications only as to formal requirements; the lowest number will be found in the countries which practice deferred examination as to substance. The same invention may be the subject of a patent in one country and of a utility model or an inventor's certificate in another.

253. These conceptual issues should be borne in mind when considering the basic data presented in the following paragraphs.

254. In this section the word "patents" is used to include inventors' certificates but not utility models or other forms of industrial property.

¹³⁹ GATT has 83 members, as compared with 80 parties to the Paris Convention, but there are only 15 developing countries which are signatories to both GATT and the Paris Convention.

¹⁴⁰ See para. 161 above.

TABLE 6
Distribution of patents granted—1920, 1940, 1950, 1960 and 1970

<i>Group of countries</i>	1920	1940	1950	1960	1970
<i>(In thousands)</i>					
Developed market-economy countries	119.6	114.6	131.01	221.4	313.6
Socialist countries of Eastern Europe ^a	5.1	4.2	0.3	20.6	51.01
Southern European countries	5.8	0.2	5.6	9.3	12.7
Selected developing countries ^b	2.5	2.1	2.5	11.6	15.1
TOTAL	133.0	121.1	139.4	262.9	392.4
<i>(As a percentage of total)</i>					
Developed market-economy countries	89.9	94.6	94.2	84.5	80.2
Socialist countries of Eastern Europe	3.8	3.5	0.2	7.9	13.01
Southern European countries	4.4	0.2	4.0	3.2	3.2
Selected developing countries	1.9	1.7	1.8	4.4	3.9
TOTAL	100.0	100.0	100.0	100.0	100.0

NOTE. For source, country coverage and notes, see annex II below.

^a Including patents and inventors' certificates.

^b Brazil, Cuba, India, Israel, Mexico, Morocco, Tunisia and Yugoslavia.

1. DISTRIBUTION OF PATENT HOLDINGS IN MAJOR ECONOMIC REGIONS

255. Table 6 presents data on annual grants of patents by the major economic regions over the period 1920 to 1970. These figures indicate no more than broad orders of magnitude and must be interpreted with caution with regard both to totals and the distribution between regions.

256. To begin with, a major factor influencing the increase in the number of patents granted is the increase in the average number of countries in which applications are made in respect of the same invention; the latter increase is caused partly by the increased number of independent countries with national patent laws (see table 4). In addition, the quality and the coverage of the data have improved during the period examined in the table: at the beginning of the period, many countries were not included in data collection and some of those which were still did not have reliable reporting systems. A major change occurred after 1960, when BIRPI (and later WIPO) extended the scope of data collection very considerably. This change is the principal factor responsible for the large increases in the recorded share of world patents of the socialist countries of Eastern Europe and the developing countries between 1960 and 1970.

257. These qualifications have to be kept in mind while interpreting the data in table 6. As shown therein, the annual grant of patents in the selected countries had reached some 391,000 by 1970. Of these, 80 per cent were accounted for by developed market-economy countries: 13 per cent by socialist countries of eastern Europe; 3 per cent by southern European countries and less than 4 per cent by eight developing countries (Brazil, Cuba, India, Israel, Mexico, Morocco, Tunisia and

Yugoslavia) for which longer term data are available. These eight countries were responsible for around three fifths of the manufacturing output of the developing countries which have national patent laws. Assuming that the ratio between patent grants and their manufacturing output also applied to other developing countries, it may be estimated that the developing countries as a group accounted for about 6 per cent of world patent grants.

2. STRUCTURE OF OWNERSHIP OF PATENTS

258. A certain amount of information is available with which to examine the ownership structure of patents. This includes: (a) distribution between nationals and foreigners; (b) country of origin of patents granted to foreigners; (c) country of origin of patents granted to foreigners by developing countries; and (d) distribution between corporations and individuals. Each of these characteristics, with the changes in them over time, is taken up for discussion below.

(a) *Distribution between nationals and foreigners of granted patents*

259. Table 7 presents the share of nationals in the ownership of patents granted in the years 1964 and 1972.

260. The socialist countries of Eastern Europe are shown to be the only group with a high degree of national ownership of patents and inventors' certificates; the average for the group as a whole was 84 per cent of the total number of patents and inventors' certificates granted in 1972. This figure indicates very limited ownership by persons, whether physical or juridical, outside the group.

261. For the developed market-economy countries the average percentage of national ownership of granted patents was very much lower: it was 43 in 1964 and 36 in 1972.¹⁴¹ Most of these countries both received many patent applications from abroad and made many foreign applications themselves.

TABLE 7

Share of nationals in patents granted in major economic regions in recent years

Groups of countries	Total patents granted		Share of nationals in total	
	1964	1972	1964	1972
	(In thousands)		(Percentage)	
Developed market economy countries	174	365	43	36
Socialist countries of Eastern Europe	17	63	94	84
Southern European countries	2	14	8	28
Developing countries	12	20	12	16
TOTAL WORLD	205	462	45	41

NOTE. The data are for selected countries for which such information is available. World total, rounded to the nearest thousand, is approximate, owing to inadequate data for a number of countries. For source, and further notes on methodology, see annex II below.

262. The position of the developing countries is different again from either of the other two groups. The degree of ownership by nationals is much smaller. For the group as a whole, only 16 per cent of the patents granted in 1971 were in the hands of the nationals of the developing country granting the patent.¹⁴²

263. Patents granted by developing countries were estimated, in paragraph 257, at 6 per cent of the total of patents granted in the world. This percentage applied to the estimates made in paragraph 247 of 500,000 patents granted and 3.5 million patents in force in 1972 gives figures of 30,000 patents granted and 200,000 patents in force in developing countries. But of this share only one sixth is held by the nationals of those countries. This would imply that their nationals hold in their own countries no more than about 1 per cent of the world stock of patents—or about 5,000 of the patents granted and 30,000 of the patents in force in 1972. Their share of patents granted abroad is examined in paragraph 266 below.

¹⁴¹ The average percentage of national ownership would be even lower than 36 if high percentages for two countries (about 70 per cent for the United States of America and Japan) were disregarded; 11 of the countries in this group for which 1972 figures are available had percentages below 15 per cent (Canada had 5.5 per cent); Finland, France, Italy, Sweden, Switzerland and the United Kingdom had percentages in the range of 20 to 26 per cent.

¹⁴² According to a recent report, only 5 per cent of patents granted by Latin American countries were owned by nationals of those countries. See Comité Jurídico Interamericano, *Informe Relativo a la Revisión, Actualización y Evolución de las Convenciones Interamericanas sobre Propiedad Industrial*, 1213/1971, sect. IV.

264. Information regarding the economic and technical importance of the 30,000 patents held by nationals of developing countries is sparse. Replying in 1962 to the questionnaire on patents sent by the United Nations, the Government of India stated that the patents owned by Indian nationals were concerned “mostly with cottage and small-scale industries”.¹⁴³ A study of a few Latin American countries came to a similar conclusion.¹⁴⁴

(b) *Ownership of patents granted to foreigners*

265. Some further light on the question of the ownership of patents abroad is shed by the distribution by country of ownership of patents granted to foreigners. Figures for the years 1964 and 1972 are given in table 8.

TABLE 8

Origin of patents granted to foreigners: 1964 and 1972

Group and country of origin	1964	1972
	(Percentage of total)	
Developed market-economy countries	96.9	95.6
Socialist countries of Eastern Europe	2.3	3.4
Southern European countries	0.4	0.4
Developing countries	0.4	0.6
United States of America	37.0	33.5
Federal Republic of Germany	19.3	20.6
United Kingdom	10.1	7.8
USSR	0.4	1.2
Spain	0.3	0.3
Argentina	0.1	0.1

NOTE. For sources and coverage, see annex II below.

266. Table 8 indicates the highly skewed nature of ownership as between countries and groups of countries. Thus in 1972 developed market-economy countries owned 95.6 per cent of all patents granted to foreigners, whereas the developing countries owned about two thirds of 1 per cent. The United States of America alone held nearly 50 times, and the Federal Republic of Germany alone about 30 times, all such patents owned by the whole of the developing world. On the basis of estimates for 1972 of the world total of patents granted to foreigners, it appears that nationals of developing countries owned no more than about 2,000 such patents.

¹⁴³ See *The role of patents in the transfer of technology to developing countries (op. cit.)*, p. 57.

¹⁴⁴ See C. Vaitos, *op. cit.* Katz indicates that an examination of a list of inventions produced in Argentina showed that only 6 to 8 per cent of them had any significance and “technological importance”. See J. Katz, “Patents, the Paris Convention and Less Developed Countries (Yale University, Economic Growth Centre), Discussion paper No. 190, November 1973, p. 44.

(c) *Country of origin of patents granted to foreigners by developing countries*

267. Table 9 sets out the principal countries owning patents granted by the developing countries to foreigners in the years 1964 and 1972. It shows that more than 40 per cent of such foreign patents were granted to patent holders from the United States of America and another 40 per cent to those from four other countries—the Federal Republic of Germany, Switzerland, the United Kingdom and France. These five countries thus accounted for 80 per cent of the total. The socialist countries of Eastern Europe accounted for only about 2 per cent of the patents granted to foreigners in developing countries.

TABLE 9

National origin of patents granted to foreigners in developing countries in 1964 and 1972

(Percentage share of patents granted to foreigners)

Country of origin	1964	1972
United States of America	39.1	40.6
Federal Republic of Germany	9.8	11.5
Switzerland	13.9	9.6
United Kingdom	8.4	8.9
France	7.0	7.3
Italy	1.8	3.4
Japan	3.5	3.3
Netherlands	6.0	2.3
Canada	1.9	1.8
Belgium	1.2	1.5
Sweden	0.6	1.0
German Democratic Republic	0.6	0.8
USSR	0.3	0.7
Czechoslovakia	0.5	0.3
Number of patents granted to national of above countries	9,565	15,454
Total of patents granted to foreigners by developing countries considered in sample	10,093	16,610
Number of developing countries considered in the sample	22	50 *

NOTE. Countries have been arranged in descending order of percentages in 1972. For sources and methodological notes, see annex II below.

* OAMPI countries (see foot-notes 2 above) are included in the sample as one unit.

(d) *Distribution of patent ownership between corporations and individuals*

268. Long-term historical data are not available to see clearly the evolution of patent ownership between individuals and corporations. The available indicators for a few countries (France, the United States of America, Canada, Argentina and Chile) are summarized in table 10.

269. In the United States of America some 81 per cent of the patents granted in 1908 were to individuals; and the figure for Canada for the same year was as high as 97 per cent.

TABLE 10

Share of corporations and individuals in patent grants in selected countries

(As percentage of total)

Country and year	Individuals	Corporations		
		Total	National	Foreign
<i>France</i>				
1964	23	73	18	55
1968	20	77	17	60
<i>United States of America</i>				
1908	81	19	..	..
1955	39	59	53	6
<i>Canada</i>				
1908	97	3	..	..
1968	37	63	..	..
<i>Chile</i>				
1937	50	49	4	45
1967	13	80	2	78
<i>Argentina</i>				
1949	55	45	..	..
1967	23	77	..	..

Sources: (a) For France, M. Pinson, "Etude sectorielle des statistiques de brevets de l'Institut national de la Propriété industrielle", *Economies et sociétés*, Cahiers de l'I.S.E.A., Geneva, tome V, No. 2, (February 1971), pp. 361-397.

(b) For the United States of America, *Distribution of Patents Issued to Corporations, 1939-1955*; Study No. 3 of the Sub-Committee on Patents, Trademarks and Copyrights of the Committee on the Judiciary of the United States Senate (Washington D.C., U.S. Government Printing Office, 1967); and J. Schmookler, *Invention and Economic Growth*, (Cambridge, Mass., Harvard University Press, 1966), p. 26.

(c) For Canada, *Report on Intellectual and Industrial Property* (Ottawa, Economic Council of Canada, 1971).

(d) For Chile, CONICYT, "Patentes de Invencción..." (*loc. cit.*).

(e) For Argentina, J. Katz, "Patentes, corporaciones multinacionales y tecnología" (*loc. cit.*).

NOTE. The shares of patents owned by individuals and corporations do not necessarily add to 100 because of the exclusion of some patents held by research organizations and other non-profit-making bodies.

270. With the emergence of the corporate form of commercial and industrial enterprise, the role of the corporations in organized research and hence in obtaining patents grants has grown. In the period for which data have been given here, a reversal of the relative roles of individual and corporate entities in the grant of patents took place. In the United States of America, for instance, the grants to individuals fell from 81 per cent in 1908 to 39 per cent in 1955. For Canada the decline was from 97 per cent in 1908 to 37 per cent in 1967. The share of the corporations rose correspondingly. In France, nearly four fifths of all recent patent grants were owned by corporations, with the share of foreign corporations being about three times as high as that of national corporations.

271. The limited evidence available for two developing countries—Chile and Argentina—shows the same trend. The data for Chile and the United States of America also give an additional indication of the distribution of corporate patent holdings between national and foreign corporations. In the case of Chile, in 1967, 90 per cent of the patent grants held by corporations were in the hands of foreign domiciled corporations, whereas the cor-

responding figure for the United States was exactly the reverse—that is, only 10 per cent.

272. The individual as the holder of patent grants thus appears to have been mainly displaced by the corporations. It appears that the degree of such displacement is at least as high in the developing countries as in the developed ones.

3. USE OF PATENTS

273. In some cases the invention contained in a registered patent is not of sufficient economic significance to be used for any practical purposes. Such a patent is, in the strictly economic sense, a useless one and presumably lapses at the time when its holder becomes unable or considers it inadvisable to continue paying the annual patent fees. Other patents, though of potential economic significance to the country concerned, may remain unworked owing to the inadequate level of economic and technological development of the patent-granting country. Still other patents are taken out so that goods produced elsewhere, but protected under the patent grant, may be imported. In this case the purpose of taking out the patent is the prevention of its use for productive purposes and the reservation of the market of the patent-granting country for the benefit of the patent-holder.

274. There appears to be limited information available concerning the utilization of patents and the diverse reasons that may lead to non-utilization. The following paragraphs describe some pieces of illustrative information for a few countries.

275. In the United States of America, the Patent, Trade Mark and Copyright Foundation of the George Washington University undertook some research studies on the subject of patent utilization. Use in production was defined as: "making or selling the patented invention, or using the patented invention in the production of goods or services."¹⁴⁵ The studies were based on statistical analysis of a 2 per cent sampling of all patents issued in 1938, 1948 and 1952. It appeared that from 50 to 60 per cent of patents granted at some time or other were utilized during their life.¹⁴⁶ In the United Kingdom, the report on the British patent system (1970), on the basis of replies to a questionnaire sent to individual companies, concluded that some 30 per cent of the patents were in commercial use. The report, however, qualified its conclusion by stating that the questionnaire was not intended to produce precise statistical results.¹⁴⁷

276. According to the Economic Council of Canada, only 15 per cent of the patents issued in three separate years, 1957, 1960 and 1963, had been worked in industries in Canada, while 48 per cent of the same patents had been

so worked in other countries.¹⁴⁸ It may be noted that the figures given in paragraph 275 for the United States of America and the United Kingdom refer to commercial use and are therefore not comparable with the data on Canada.

277. An examination of 3,513 patented processes or products for Colombia showed that 2,534 of them belonged to the pharmaceutical industry and the rest mainly to the textile and chemical industries. Of these, only 10—or 0.3 per cent of the total—were actually used in the production process in the country in 1970. From a sample of 4,872 patents granted between 1960 and 1970 in major industrial sectors in Peru, only 54 were reported to have been exploited—that is, only 1.1 per cent of the total.¹⁴⁹ In Argentina, patent utilization by the affiliates of foreign companies did not exceed 5 per cent throughout the period 1957-1967.¹⁵⁰ A similar percentage to that of Argentina was indicated for Chile.¹⁵¹ An analysis of patent grants in Mexico suggests the rate of use to be between 5 and 10 per cent.¹⁵² A study on the United Republic of Tanzania placed the utilization of externally held patents at below 1 per cent of patent grants.¹⁵³

278. In their replies to a United Nations questionnaire sent in 1962, Cuba, India and Lebanon stated that foreign patents were obtained to protect, or monopolize, the flow of imports to those countries.¹⁵⁴

279. These indicators for nine developing countries, which account for about two thirds of the patents held by foreigners in the developing countries granting patents, show an extremely low level of utilization of patents generally and of patents owned by foreigners in particular. If they hold broadly true for other developing countries, the use in production of patents held by foreigners in developing countries could hardly be above 5 or 10 per cent of the total.

280. From the information presented here, the phenomenon of non-use of patents appears to exist in both the developed and the developing countries; although statistics permitting a strict comparison are not available,

¹⁴⁸ Economic Council of Canada, *Report on Intellectual and Industrial Property* (Ottawa, 1971), p. 62. See also O. J. Firestone, *op. cit.*, pp. 91-124.

¹⁴⁹ See *Proceedings of the United Nations Conference on Trade and Development, Third Session*, vol. III, *Financing and Invisibles* (United Nations publication, Sales No. E.73.II.D.6), document TD/107, para. 50; and C. V. Vaitsos, *op. cit.*, p. 78.

¹⁵⁰ See J. Katz, "Patentes, corporaciones multinacionales y tecnología...", *loc. cit.*, pp. 142-143.

¹⁵¹ See J. M. Vacchino, "Contribución del régimen de patentes de invención al desarrollo independiente de América Latina", *Comercio Exterior*, vol. XXII, No. 12 (December 1972), p. 1156.

¹⁵² See P. J. Barrett, "The role of patents in the sale of technology in Mexico", *The American Journal of Comparative Law*, vol. XXII, No. 2 (Spring 1974), p. 230.

¹⁵³ See M. E. Grundmann, "What kind of patent law does Tanzania need?", in Economic Research Bureau Paper 68.15, University of Dar es Salaam (September 1968), cited by O. C. Eze, "The legal status of foreign investment in the East African Common Market", Thèse de doctorat en science politique (Institut universitaire des hautes études internationales, Genève), 1973 (mimeographed).

¹⁵⁴ See *The role of patents in the transfer of technology to developing countries (op. cit.)*, paras. 77-80 and pp. 56-58.

¹⁴⁵ J. Rossman and B. S. Sanders, "Patent utilization" (Project 1a), IDEA, *op. cit.*, vol. 1, No. 1, June 1957, p. 108.

¹⁴⁶ See "Panel discussion of research findings, patent utilization", IDEA, *op. cit.*, vol. 4, 1960, Conference Number, p. 14.

¹⁴⁷ See United Kingdom, *The British Patent System: Report of the Committee to Examine the Patent System and Patent Law*, Cmnd. 4407 (London, H. M. Stationery Office, July 1970), p. 14 and appendix G (b).

it is evident that in the latter group of countries the degree of non-use must be much greater, if only because of their comparative lack of technological and industrial capacity. Similarly, the underlying reasons for obtaining patents which are not used in production are likely to be very different in the two groups of countries. In developed countries a large extent of non-use is likely to be due to realization that the patented inventions are not, or are no longer, of commercial interest. In developing countries, however, this factor probably plays a smaller part, and the percentage of foreign-held patents worked successfully abroad is likely to be higher. The non-use must therefore be connected with business interests and commercial strategies of maximizing the profits of the foreign patent owners—interests and strategies unrelated to the requirements of economic advance of the countries concerned. This point is further examined in chapter V.

4. DISTRIBUTION OF PATENTS BY FIELDS OF TECHNOLOGY

281. The International Patent Classification, as revised in 1973,¹⁵⁵ contains some 51,000 subdivisions.¹⁵⁶ For comparison, the Standard International Trade Classification contains, at the five-digit level, 1,312 items. The

TABLE 11
Distribution of patent grants by sectors in 1971
(in percentages)

Sectors	Developed market-economy countries	Socialist countries of Eastern Europe	Developing countries
Chemistry	19.7	15.5	34.4
Agriculture; foodstuffs and tobacco; personal and domestic articles; health and amusement	9.6	7.3	20.0
Separating and mixing; shaping; printing; transporting	23.4	25.0	13.8
Textiles and flexible materials not otherwise provided for; paper; building; and mining	9.2	8.4	8.5
Engines and pumps; engineering in general; sighting and heating; and weapons and blastings	11.7	9.1	8.2
Instruments and nucleonics	11.5	18.5	5.9
Electricity	12.4	12.6	5.7
Metallurgy	2.4	3.7	3.0
Others	—	—	0.5
TOTAL	100	100	100

NOTE. Economic sectors follow the International Patent Classification and have been arranged in descending order of importance in developing countries. Sectors have been grouped to facilitate the presentation of the data.

For source, country coverage and notes on methodology, see annex II below.

¹⁵⁵ WIPO, *International Patent Classification*, 2nd ed., 1974.

¹⁵⁶ See para. 127 above.

former classifies inventions according to fields of technology, while the latter classifies sectors of economic activity.

282. By far the greatest concentration of patents in developing countries is in the chemical sector, which is a field that has attracted considerable interest in recent studies of problems concerning the transfer of technology. This is especially true for the pharmaceutical branch of the chemical sector (see table 11), which in its turn has been the subject of some detailed analysis.¹⁵⁷ Developing countries as a whole have also granted a relatively large proportion of patents in the agriculture and foodstuffs sectors; only the countries of southern Europe have a proportion of patents at all comparable to the developing countries in this sector.

283. In other sectors, the distribution across groups of countries does not vary greatly except for the general feature that patents in the developed market-economy countries and the socialist countries of Eastern Europe tend to concentrate relatively more on such modern sectors as electrical equipment, precision instruments and nuclear technology.

E. Summary and conclusions

284. It may be convenient to summarize here briefly some of the main findings of the discussion in this chapter. They are, of course, subject to the qualifications made in the text, but it is clear that patent statistics

TABLE 12

Patent holdings in developing countries by ownership and use, 1972

Item	Number of patents held (in thousands)	Percentage distribution
<i>World distribution:</i>		
Developed countries	3,300	94
Developing countries	200	6
TOTAL	3,500	100
<i>Distribution in developing countries:</i>		
Held by nationals	30	16
Held by foreigners	170	84
<i>of which:</i>		
used	10-20	5-10
not used	150-160	90-95

Sources and methods: Based on data in tables 6 and 7 and information described in chapter IV, section D, particularly paragraphs 247, 257, 263, 267, 277 and 279.

NOTE. Estimates of patent holdings, in view of their approximate nature, are rounded to the nearest ten thousand. The figures for distribution by use are even less precise and should be treated as a broad order of magnitude only.

¹⁵⁷ See, for example, "Policies relating to technology of the countries of the Andean Pact: their foundations" (document TD/107), in *Proceedings of the United Nations Conference on Trade and Development, Third Session*, vol. III, *Financing and Invisibles* (United Nations publication, Sales No. E.73.II.D.6), and "Major issues in the transfer of technology: a case study of Spain" (TD/B/AC.11/17), chap. VI.

constitute one of the means of measuring the degree of technological dependence of developing countries.

285. From the establishment of the Paris Union in 1883 its membership has spread from a handful of countries to 80 at present. A little more than one half of the present members are developing countries. Two thirds of these have joined the Union within the past 15 years—that is, after its principles had become firmly established. Several major developing countries accounting for 80 per cent of the population of the third world are not parties to the Convention.¹⁵⁸

286. Patents granted by developing countries were an insignificant share of the world total up to about 1950. For the recent period, they have formed about 6 per cent of the world patent stock of some 3.5 million (see table 12). An overwhelming majority (84 per cent) of the patents in developing countries is owned by foreigners, mainly multinational corporations of five developed market-economy countries. Some 90 to 95 per cent of them are

¹⁵⁸ See paras. 237-241 above.

almost entirely unused in production in developing countries. The nationals of developing countries hold in their own countries no more than 1 per cent of the world stock of patents, and in other countries, no more than about two thirds of 1 per cent of foreign-owned patents.¹⁵⁹ These countries have plainly been on the periphery of the patent system.

287. The significance of the participation of developing countries in the patent system may be better appreciated when it is compared, in round figures, with some other magnitudes. Thus, for instance, the developing countries' share in world population was around 75 per cent; of world enrolment in third level of education (university equivalent), over 30 per cent; in world income, 20 to 25 per cent (depending upon how net material product concept in socialist countries is converted into Western concepts); in world trade, 20 per cent; in world manufacturing output, about 15 per cent; in patent granting, 6 per cent; and in patent holding by their nationals in the world total, 1 per cent.

¹⁵⁹ See paras. 247, 257, 263, 267, 277 and 279.

Chapter V

MAIN FEATURES OF THE PATENT SYSTEM

288. Many of the major characteristics of the patent system and its spread have already been described. Behind the system is a body of laws, principles, regulations and practices which have grown and changed over time. The present chapter takes up the analysis of some selected features and principles of the patent system, namely, the changing basis of patent grant; equality of treatment to nationals and foreigners; failure to work, compulsory licensing and revocation; subjects for patentability; and duration of the patent grant.

A. The changing basis of patent grants

1. RIGHTS UNDER THE PATENT GRANT

289. At the core of the patent system lies the fact that exclusive rights related to protected inventions are granted by national laws and administered through special machinery established for the purpose. The scope of the monopoly rights granted by patents comprises rights to make, use, exercise, sell and distribute the patented invention. While national laws contain some differences of detail, they are in their substance in line with the provisions contained in the Model Law for Developing Countries on Inventions, prepared by BIRPI in 1964.¹⁶⁰ The Model Law provides, in section 21:

The patent shall confer upon its registered owner the right to preclude third parties from the following acts:

- (a) when the patent has been granted in respect of a product:
 - (i) making, importing, offering for sale, selling, and using, the product,
 - (ii) stocking such product for the purposes of offering for sale, selling, or using;
- (b) when the patent has been granted in respect of a process:
 - (i) applying the process,
 - (ii) doing any of the acts referred to in (a) above in respect to a product obtained directly by means of the process.

290. In the balance between monopoly rights of patentees and consideration of other elements of public interest, there has been a certain shift over time in favour of a greater recognition of public interest. For instance, the Economic Council of Canada has stated that:

the patent right should be so defined that neither the holder of a Canadian patent nor any licensee thereunder should have the

right to prevent the importation into Canada by any person of the patented article, or an article made by the patented process from other countries where the article or process enjoys patent protection.¹⁶¹

291. The secretariat of the Andean Group put forward in December 1971, in accordance with decision 24, a series of proposals concerning the regulation of the application of rules on industrial property, which goes much further than the Canadian recommendations described above. Article 26 of section V dealing with "rights conferred by patent" proposes to exclude specifically the exclusive right of importing the patented product or the product obtained through the patented process.¹⁶² Recent decisions of the Court of Justice of the European Communities on the possible conflicts between competition principles and copyright and trademark laws indicate that importation from a foreign country where protection exists is ceasing to be regarded as necessarily an infringement of intellectual property rights.¹⁶³

2. INTERNATIONAL STANDARDS AND THEIR FLEXIBILITY

292. National law differ from country to country in various specific provisions concerning the granting of patents. The members of the Paris Union have undertaken to adopt certain minimum standards of protection applicable to patentees generally, but particularly to foreign patentees.¹⁶⁴ According to the Paris Convention,¹⁶⁵ a country is to give effect through its national laws to certain standards, which include the following:

- (a) *Equality of treatment.* Nationals of any country of the Union enjoy in all the other countries of the Union the advantages and the same protection granted to nationals;

¹⁶¹ See Economic Council of Canada, *op. cit.*, p. 90.

¹⁶² See "Reglamento para la aplicación de las normas sobre propiedad industrial" (decision 85 of the Commission of the Cartagena Agreement, adopted at the 13th special session, 27 May-5 June 1974).

¹⁶³ For a discussion on this subject, see OECD, *Restrictive Business Practices Relating to Patents and Licences: Report by the Committee of Experts on Restrictive Business Practices* (Paris, 1972), paras. 87-89; also *Restrictive Business Practices: An Analysis of the World Intellectual Property Organization Model Laws for the Developing Countries from the Point of View of the Export Interests of the Developing Countries* (United Nations publication, Sales No. E.73.II.D.1), paras. 92-95.

¹⁶⁴ See *The role of patents in the transfer of technology to developing countries* (*op. cit.*), para. 37.

¹⁶⁵ See article 25 of the Paris Convention.

¹⁶⁰ *Model Law for Developing Countries on Inventions* (BIRPI publication No. 801 (E)), Geneva, 1965, p. 102.

(b) *Right of priority.* Any person who has duly filed an application for a patent in one of the countries of the Union enjoys a right of priority of 12 months for claiming similar rights in the other countries;

(c) *Independence of patents.* Patents applied for in the various countries of the Union shall be independent of patents obtained for the same invention in other countries, whether members of the Union or not, as regards the grounds for nullity and forfeiture, and as regards their normal duration;

(d) *Importation of articles.* Importation by the patentee of goods produced in any of the countries of the Union shall not entail forfeiture of the patent protection for these goods;

(e) *Compulsory licensing and revocation.* (i) Each country may take legislative measures providing for the grant of compulsory licences to prevent the abuses that might result from the exercise of the exclusive rights conferred by the patent, for example, failure to work; (ii) revocation of the patent shall not be provided for except in cases where the grant of compulsory licences would not have been sufficient to prevent the said abuses; (iii) no proceeding for the revocation of a patent may be instituted before the expiration of two years from the grant of the first compulsory licence; (iv) a compulsory licence may not be applied for on the ground of failure to work or insufficient working before the expiration of a period of four years from the date of the application or three years from the date of the grant of the patent, whichever period expires last; (v) the request for a compulsory licence shall be refused if the patentee justifies his inaction by legitimate reasons; (vi) such compulsory licence shall be non-exclusive and shall not be transferable, even in the form of the grant of a sub-licence, except with that part of the enterprise or goodwill which exploits such licence;

(f) *Period of grace for the payment of fees.* A period of grace of not less than six months shall be allowed for the payment of the fees prescribed for the maintenance of patents, subject, if the domestic legislation so provides, to the payment of a surcharge.

293. Although the Paris Convention sets these general standards, it also fully recognizes the basic freedom of member States to legislate according to their national interests. As G. H. C. Bodenhausen, Director-General of BIRPI (later WIPO) from 1963-1973, emphasizes:

In the field of patents, for example, the Convention leaves the member States entirely free to establish the criteria of patentability, to decide whether patent applications should or should not be examined in order to determine, before a patent is granted, whether these criteria have been met, whether the patent should be granted to the first inventor or to the first applicant for a patent, or whether patents should be granted for products only, for processes only, or for both, and in which fields of industry and for what term.¹⁶⁶

3. THE SHIFT IN THE RATIONALE OF PATENTS

294. Any grant of a monopoly right involves taking into account various parties and interests that may be

directly or indirectly concerned—for instance, the national patent holder, the patent granting country, the foreign patent holder, his country and the international community. A brief history of some patent laws may help to identify the evolution of the influence of some of these interests, which at times may be in conflict.

295. In its patents statute, the City State of Venice distinguished four motives for the grant of a patent, namely, the utility to society, the encouragement of inventive activity, the refund of costs incurred by the inventor, and the inventor's rights to the fruits of his mind. The law explicitly provided that it was within the power and discretion of the government of Venice to use any patented invention subject to the provision that the patentee should be the person who had the right to work the patent on behalf of the government.¹⁶⁷

296. The French patent law of 1791 placed strong emphasis on the concept that an inventor has the exclusive right in his invention and that the grant of a patent is nothing more than the recognition of that right by the State. Thus, the preamble to the 1791 law says:

Every novel idea whose realization or development can become useful to society belongs primarily to him who conceived it, and it would be a violation of the rights of man in their very essence if an industrial invention were not regarded as the property of its creator.¹⁶⁸

297. The Austrian patent law in 1810 took quite the contrary view, at a philosophical level, from the French law. It stated "that inventors had neither any property rights in their invention, nor any rights to patents". The Government reserved its prerogative to grant privileges to restrict what was called their subjects' "natural right to imitate" an inventor's idea.¹⁶⁹ Rejecting firmly the idea of natural rights of an inventor in his invention, the Austrian law focussed itself on the "natural right to imitate". Since so much of technological knowledge has now been accumulated and since the developing countries can accelerate their industrialization by "learning-by-doing"—including cracking of patents, reverse engineering, slight modification of existing processes, etc.—this emphasis of the Austrian law in the very early phase of the country's development has considerable significance today.

298. With the heated discussion on patents that took place in the period 1850-1873 and that resulted in the effective success of the patent advocates and the initiation at the Vienna Conference of 1873 of schemes to develop an international convention for patents, the

¹⁶⁷ For a discussion of the Venetian Law, see U. Anderfeldt, *op. cit.*, pp. 3-7; and G. Mandich, "Venetian Patents (1450-1550)", in *Journal of the Patent Office Society*, vol. XXX, No. 3 (March 1948), p. 172. From the patents examined by Mandich it appears that a condition was inserted in many Venetian patent grants, owing to the insufficiency of preliminary investigation, that a further test of the practical success of the invention be made within a fixed period. If the patentee failed to submit his invention to the test, his rights were revoked. In one of the cases referred to by Mandich, a new application by others for the same invention was successful, after the patentee had failed to proceed to a test.

¹⁶⁸ Cited in *The role of patents in the transfer of technology to developing countries (op. cit.)*, para. 3.

¹⁶⁹ See F. Machlup, *op. cit.*, p. 3.

¹⁶⁶ See G. H. C. Bodenhausen, *op. cit.*, p. 15.

emphasis of arguments switched markedly from philosophical concepts to economic ones. In particular, justification for the grant of patent monopolies was offered on three grounds: (a) providing by various alternative means, a fair and just reward to the inventor; (b) encouraging individual inventive activity; and (c) giving an inducement to inventors to disclose their secrets to society so that there would be an increase in the stock of knowledge publicly available though not publicly usable. Each of these three arguments was discussed at great length during the patent controversy but unfortunately neither then nor since has any conclusive empirical evidence been provided for or against any of these propositions.

299. The first of the three propositions, referring to the adequacy of monopoly privileges as a mechanism for providing rewards to the inventor, is still of considerable importance. Rewards to inventors could be given in many ways and the patent system is only one of them. There are alternative ideas, such as the grant of inventors' certificates and the payment of sums of money in return for the invention; these are widely used in socialist countries and in large industries. Furthermore, when an ever-increasing proportion of organized 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 smaller economic significance. A study of the United States of America's experience concludes that one half of the patents acquired by individual contractors from publicly financed research and development are owned by only 20 large corporations, and that these 20 corporations undertake two thirds of the research and development carried on in industry for the Federal Government.¹⁷⁰

300. The second proposition, concerning the incentive to inventive activity provided by the grant of patents, is difficult to subject to empirical examination. In his study of the patent system, Sir Arnold Plant emphasized:

Economics, in short, 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.¹⁷¹

301. In a study for the United States Senate Subcommittee 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 resources, 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.¹⁷²

302. The report of the British Committee (1970) to examine the patent system and patent law recognized that

inventive activity and the development of new ideas was 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".¹⁷³

4. DISCLOSURE OF INVENTIONS

303. The third of the propositions referred to in paragraph 298, that patents encourage the disclosure of inventions, has been the subject of considerable debate, centred on the question of the adequacy of the disclosure achieved by the patent system. The subject of disclosure is discussed also in paragraphs 59 to 67.

304. As noted in part one of this report, the standard requirement of most patent laws is that the patent description must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the relevant art; some laws go further and require also that the best mode known to the inventor of carrying out the invention must be described. The Indian patent law adds a further refinement: the description of the method or the instructions for the working of the invention must be by themselves sufficient to enable a person in India possessing average skill in, and average knowledge of, the art to work the invention.

305. 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. In part, 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 least alleviated by stronger legal requirements and stricter administration. For example, a proposal to amend the patent law of the United States of America would require the disclosure of the best mode of practising the invention "in trade and industry" (i.e. commercially and therefore competitively).¹⁷⁴ 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

¹⁷⁰ D. S. Watson, and M. A. Holman "Concentration of patents from government financed research in industry", in *The Review of Economics and Statistics*, vol. XLIX, 1967, pp. 375-381.

¹⁷¹ A. Plant, *loc. cit.*, p. 43.

¹⁷² S. Melman, *The Impact of the Patent System on Research*, Study No. 11 of the United States Senate Sub-Committee on Patents, Trademarks and Copyrights (Washington D.C., U.S. Government Printing Office, 1958), p. 62.

¹⁷³ United Kingdom, *The British Patent System... (op. cit.)*, para. 56.

¹⁷⁴ Bill for the general reform and modernization of the patent laws, S. 2504, United States Senate, 1973.

his patent claims while leaving it to the reader to discover which one is the commercial winner.¹⁷⁵

306. 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 specification", 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 operates or the purpose for which it is used. They quote a remark made by a patent specialist in a pharmaceutical firm:

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 three or four years, and in the pharmaceutical field often five to ten years later.¹⁷⁶

307. The extent to which necessary manufacturing "know-how" is not disclosed by patents varies from one field of technology to another; it 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"¹⁷⁷ (presumably the reference is to patents for chemical products rather than processes).

308. Taking into account the above-mentioned problems relating to patent disclosure in technological fields where additional know-how is important, the modern 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 and stimulation 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.¹⁷⁸

309. 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

¹⁷⁵ G. A. Bloxam, *Licensing Rights in Technology: A Legal Guide for Managers in Negotiation* (London, Gower Press, 1972), p. 17.

¹⁷⁶ C. T. Taylor and Z. A. Silberston, *op. cit.*, p. 95.

¹⁷⁷ C. T. Taylor, *Do we still need a patent system?* (London, Chartered Institute of Patent Agents, 1973).

¹⁷⁸ F. K. Beier, "Future problems of patent law", *International Review of Industrial Property and Copyright Law*, vol. 3, No. 4 (1972), p. 448.

countries concerned, provided that access to such documentation can be facilitated.

310. 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 and will be discussed further in the section on failure to work.¹⁷⁹

311. The three nineteenth-century propositions in favour of patents referred to in paragraph 298 (rewards, incentives, public disclosure) are not now the only arguments advanced; the most important additional arguments are that the grant or licensing of exclusive rights for a limited period assists the patentee or licensee to undertake new production and to find the financial and other resources necessary, and that the patent system provides the legal basis on which technological information is bought and sold.

312. The first of these arguments is not entirely new, for many of the earlier patent laws treated an importer of technology in the same way as an inventor, giving him the advantage of exclusive rights to assist in the establishment of his business and thus encouraging the national production of inventions that might not be novel in a world-wide sense but that were new to the country. Particularly in view of the fact that not all technologies appropriate to the present needs of particular developing countries are the newest technologies, the reintroduction of patents based on national production of technology that does necessarily pass the test of world-wide novelty might merit consideration in developing countries.

313. The second argument is related to the commercialization of technology and to the need to have a basis of trade law for the regulation and, where appropriate, the control of transactions in technology. There is a widespread conviction among industrialists that the existence of patents greatly facilitates licensing, because, although "pure" know-how agreements are possible without patents, there is very little legal basis for them or legal security for the parties to them.¹⁸⁰

5. PUBLIC INTEREST AND THE USE AND NON-USE OF PATENTS

314. Even before the emergence of the corporate age, national laws had been concerned with the non-use of patents. Revocation was provided as a remedial measure in the very early legislation on the subject, for instance, the Venetian law of 1474, the French law of 1844, the Belgian law of 1854 and the Argentinian law of 1864.¹⁸¹ In the patent laws of a number of countries, statutory provisions exist for revocation of a patent where it has

¹⁷⁹ See paras. 325-345 below.

¹⁸⁰ C. T. Taylor and Z. A. Silberston, *op. cit.*, pp. 214, 215.

¹⁸¹ See *The role of patents in the transfer of technology (op. cit.)*, paras. 112-113.

not been exploited within a given number of years of its issuance or where its use has been discontinued for a certain period of time.

315. The concern for non-use is a legitimate one. It springs from fears that nationals of more advanced countries may, using their superior research and development resources and under the protection of the provision of equality of treatment to nationals and foreigners, take out patents merely to secure markets for their exports. Such action not only thwarts national inventive activities but also imposes severe burdens, through higher prices for imported products, on the foreign exchange balance of the developing countries.¹⁸² Its encouragement of inventive activity solely in a few advanced countries can hardly be considered a sufficient justification for allowing non-use in developing countries on such a scale.

316. Recent revisions of national patent laws, both in developed and developing countries, have taken these issues into account. For instance, the report of the Committee on the British patent system (1970) recognized that "the basic aim of a patent system, and indeed its effect, is to encourage the successful industrial application of inventions".¹⁸³ Canada, which also experienced considerable non-use of foreign-held patents, has in section 67 (3) of the recent amendment (1972) to the *Canadian Patent Act* (1952) specifically provided "that patents for new inventions are granted not only to encourage invention but to secure that new inventions shall so far as possible be worked on a commercial scale in Canada without undue delay". The Indian Patents Act of 1970 goes a step further when, in section 83 (b), it provides that patents "are not granted merely to enable patentees to enjoy a monopoly for the importation of the patented article". The same underlying considerations, with perhaps a still wider interpretation, are reflected in Peru's "General Law relating to Industry". Section 46 (legislative decree No. 18350 of 27 July 1970) provides that patents are protected provided that they contribute to permanent and self-sustaining industrial development and are in the social interest.

B. Equality of treatment of nationals and foreigners

1. SCOPE OF APPLICATION OF EQUAL TREATMENT

317. National treatment for nationals of the countries of the Union is a fundamental principle of the Paris Convention. It is embodied in articles 2 and 3 of the Convention. The principle of national treatment provides that nationals of countries of the Paris Union or others who are domiciled or have effective industrial or commercial establishments therein are guaranteed equality of treatment with nationals in the country granting the patent.¹⁸⁴ This principle is followed also by most coun-

¹⁸² Paradoxically, this is made possible by the existing national patent legislation of the countries adversely affected, while it is within their power to prevent it.

¹⁸³ United Kingdom, *The British Patent System...* (*op. cit.*), para. 56.

¹⁸⁴ See *The role of patents in the transfer of technology*, *op. cit.*, paras. 37-38 and 96-99.

tries which are not members of the Union. The principle of equal treatment covers all aspects of patent laws and consists, according to Bodenhausen, "in the application, without any discrimination, of the national law as applied to nationals of the country itself".¹⁸⁵ Reciprocity in the treatment of foreigners is therefore excluded between members of the Union.

318. Some countries that are members of the Union (Czechoslovakia, Egypt, Iran, Japan, Morocco, Poland and Spain) qualify the principle of equal national treatment. They grant unqualified patent protection to members of the Union; but to non-members of the Union, it is granted only on a reciprocal basis. Some countries that are not members of the Union also use this approach; with few exceptions, non-member countries have also incorporated this standard in their national patent laws.¹⁸⁶ All the national statutes described in the addendum grant equal treatment, except five, which confer such treatment on the basis of reciprocity.¹⁸⁷

319. In the Paris Convention the principle of national treatment is closely related to the requirement of minimum standards of protection which apply to all members of the Union, regardless of their state of development. Thus membership of the Convention requires not only the application of national standards of protection to nationals of other countries of the Union but that those national standards should conform with the common standards established by the Convention.

2. DEVELOPING COUNTRIES AND THE RELEVANCE OF THE PRINCIPLE OF NATIONAL TREATMENT

320. The application by developing countries of the principle of equal treatment and common standards to nationals and foreigners raises several issues. These countries are economically poor and scientifically far behind the advanced countries. It has been argued that equality of treatment only makes sense when the parties involved are in a general way equal; when they are not, equality of treatment simply gives the stronger party unlimited freedom to utilize his power at the expense of the weaker party.¹⁸⁸

321. It is important to know what effect the application of the ideals implicit in the equality principle of the patent system has had on the developing countries.¹⁸⁹

¹⁸⁵ See G. H. C. Bodenhausen, *op. cit.*, p. 29, where it is also stated that: "At the Revision Conference of the Hague in 1925, it was pointed out by the United States delegation that this system might lead to inequality of protection under the Convention, since, for example, the United States grants patents of a comparatively long duration, without annual maintenance fees and without an obligation to exploit a patent, whereas other member States have more restrictive rules."

¹⁸⁶ See also sections 6 and 7 of the BIRPI Model Law for Developing Countries on Inventions (*op. cit.*).

¹⁸⁷ India, Iraq, Kuwait, Pakistan and Republic of Korea.

¹⁸⁸ See G. Myrdal, *An International Economy: Problems and Prospects* (London, Routledge and Kegan Paul, 1956).

¹⁸⁹ For the views of India, Lebanon and Cuba, expressed as early as 1963 when the critical examination by the developing countries of the international patent system was just beginning,

(Continued on next page.)

The evidence, with all its weaknesses, shows that (a) nationals of the developing countries hold a bare 1 per cent of the world total of patent grants; (b) foreigners own in the developing countries six times more patents than the nationals of these countries; and (c) over 90 per cent of the patents so owned by foreigners are never used in production processes in these countries. Developing countries by their own laws have permitted these developments. In consequence, it could be said that the patent system has come to act as a reverses system of preferences in the markets of developing countries granted to foreign patent holders.

322. The situation described above calls into serious question the role played by the application by developing countries of the principle of treatment of nationals and foreigners according to common standards. The grant of such equality in practice serves to strengthen the already strong position of foreign patent holders. Any future revision of the patent system should take into consideration the need for strengthening the weak bargaining position of developing countries through the introduction of a preferential system in their favour.

323. In this connexion, it is relevant to note the recent developments negotiated in the framework of a sister convention to the Paris Convention—the Berne Convention for the Protection of Literary and Artistic Works. The Berne Convention was revised in 1971 so as to incorporate preferential provisions, on a non-reciprocal basis, in favour of developing countries; these new provisions reflect the needs of developing countries and their bargaining weakness by enabling a system of compulsory licensing to be substituted, in such countries only, for the system of exclusive rights of translation and reproduction of works protected by copyright.

324. Finally, it should perhaps be pointed out that the national treatment principle does not prevent the Governments of the member States of the Paris Union from providing financial, fiscal or other support for their

(Foot-note 189 continued.)

see *The role of patents in the transfer of technology (op. cit.)*, paras. 77-79. In a recent report prepared by ECAFE for a seminar organized by WIPO on the role of patents in industrial development, it was stated:

“The patent system itself which was adopted internationally in 1883 by the Paris Convention for the Protection of Industrial Property and which has been in existence unchanged up to now is based on the assumption that there would be reciprocity and mutual benefits in exchange of patents and licences between member States. Unfortunately, the vast differences which exist in levels of industrialization between regions and within the regions themselves contribute to the working of this system in a manner which cannot guarantee such equity. It has been observed that ‘under-developed countries who are parties to the Paris Union find themselves in a position where they have to protect processes originating from highly industrialized countries, without themselves having in fact any processes to protect in those same highly industrialized countries. This is one characteristic example, among many, of abstract equality breeding factual inequality.’ Although the patent system itself has much to commend it, a great deal of careful thought has to be given to ascertaining ways and means of safeguarding the needs and vital interests of developing countries.”

The role of patents and trade marks in industrial development with particular reference to the transfer of technology (WIPO document BS/5), 18 September 1973, p. 10.

national inventors, to the exclusion of foreign inventors. Such policies, including preferential policies in relation to the administrative procedures of the patent system (as is envisaged in article 2, paragraph 3, of the Paris Convention), are practised in some countries.

C. Failure to work, compulsory licensing and revocation of patents

325. When the Paris Union was established, great importance attached to the idea that patents should be worked by the patentee or, if they were not worked by him, that there should be the possibility for others to obtain licences to work the patent or for the government to revoke the patent grant if there was clear evidence that neither working by the patentee nor licensing to others was taking place.

1. BASIC PROVISIONS

326. The subject of obligation to work and compulsory licensing has been the most debated issue in the whole history of the Paris Convention. Article 5 of the Convention sets the minimum standards that member countries have to comply with.¹⁹⁰

327. Article 5 constituted a compromise¹⁹¹ among the different interests involved in the grant of patents.

¹⁹⁰ Article 5 (A), paragraphs 1-4, of the Paris Convention reads as follows:

“(1) Importation by the patentee into the country where the patent has been granted of articles manufactured in any of the countries of the Union shall not entail forfeiture of the patent.

“(2) Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licences to prevent the abuses which might result from the exercise of the exclusive rights conferred by the patent, for example, failure to work.

“(3) Forfeiture of the patent shall not be provided for except in cases where the grant of compulsory licences would not have been sufficient to prevent the said abuses. No proceedings for the forfeiture or revocation of a patent may be instituted before the expiration of two years from the grant of the first compulsory licence.

“(4) A compulsory licence may not be applied for on the ground of failure to work or insufficient working before the expiration of a period of four years from the date of filing of the patent application or three years from the date of the grant of the patent, whichever period expires last; it shall be refused if the patentee justifies his inaction by legitimate reasons. Such a compulsory licence shall be non-exclusive and shall not be transferable, even in the form of the grant of a sub-licence, except with that part of the enterprise or goodwill which exploits such licence.”

¹⁹¹ In a recent decision of the Israeli Commissioner of Patents, it was held that:

“a compulsory licence is granted, in order to find the optimum compromise between the need for upholding the patent system whose object it is, *inter alia*, to confer monopolistic rights upon the inventor and to encourage investments in research and industrial development, and the need to apply the invention, subject to the patent, within the State in ways recognized by the Legislator.”

See *Selected Decisions of the Commissioner of Patents, Designs and Trademarks during 1970* (Jerusalem, Patent Office, Ministry of Justice, 1971), p. 5, para. 14.

These provisions have had a turbulent history because they touch directly on the conflict between the interest of the national economy as a whole and the interest of the individual patentee in obtaining the maximum return from his patent.¹⁹²

The article does not refer to "compulsory working" of the patents, this being a subject left free to each country to legislate within the constraints set forth in the provision.¹⁹³ The compromise reflected in article 5 was not achieved without resistance by some participants who argued that the whole purpose of the Convention was to achieve an international legislation, and that this was the place to consider the frontiers of the agreeing States as non-existent, since all the States formed a single juridical unit within which the location of the actual working of an invention was a matter of indifference, provided that it was worked in the territory of one of the States.¹⁹⁴

328. Paragraphs 80 to 106 above show the means by which national laws of selected countries have dealt with compulsory licenses, revocation and use of patents by the government. A small group of countries do not provide at all for compulsory licensing but this is not equivalent to the absence of provisions on non-working because some of these countries do provide for revocation in the case of non-exploitation of patents.

2. DIFFERENT CRITERIA FOR NON-USE

329. The issue of patent working needs careful consideration, since there are various reasons why a patent may not be worked and it is essential to distinguish them. In addition to the points made in paragraphs 273 to 280, it is important here to draw a distinction between the reasons which may guide a transnational corporation as compared with a national producer in deciding whether a particular patented technology can be economically used in the country.

330. A transnational corporation, whose geographic horizons encompass many countries of the world and whose time horizons for calculating and collecting profits may be quite different from those of producers located within one country, may hold patents for the same item in many different countries. The corporation's decisions on where to locate production, however, will be determined by considerations of profitability and efficiency of supply; it is extremely unlikely that all markets would appear to be equally good from this point of view. Moreover,

¹⁹² E. Penrose, *op. cit.*, p. 78.

¹⁹³ Paragraph 1 of article 5 (A) was introduced into the original text of the Paris Convention, which also contained a provision stating that in the case of importation of patented articles the patentee remained under the obligation to exploit the patent in accordance with the law of the country into which he introduced the patented article. The Revision of 1900 added a more general provision concerning the non-working of a patent. This regulation was elaborated further by the Revision Conferences of 1911, 1925, 1934 and 1958. At The Hague Conference (1925) the provision was enlarged to include measures to prevent abuses resulting from the exclusive rights conferred by patents. See, for further details G. H. C. Bodenhausen, *op. cit.*, pp. 67-69.

¹⁹⁴ See E. Penrose, *op. cit.*, p. 79, and M. Hiance and Y. Plasse-raud, *op. cit.*, pp. 230-232.

if there are economies of scale in production and management which outweigh economies in transport costs the same corporation would likewise have sound economic reasons for confining the locations of its production of the patented items to only one or two of the places where the patent has been obtained. In this case the global holding of the patent serves to prevent potential competition in all markets, and thereby secures those markets for the production of the company, without forcing the company to engage in what would, from its point of view, be relatively uneconomic locations of production.

331. An example of such policies on the part of transnational corporations may be found in the comments of Irving B. Shapiro, Vice-Chairman of the Board of Dupont, who described the importance of international control over use as follows:

the worldwide patent system is sometimes criticized because it grants the inventing organization the exclusive use of its invention for a period of time. From our viewpoint, it is precisely the proprietary rights granted by the patent system that make research and development worth doing. There is little practical incentive to incur the costs of invention, if its commercial fruits are to go to competitors.¹⁹⁵

332. These policies suggest that some patentees today wish to act as if the compromise referred to in paragraph 327 had not been achieved, and therefore as if, for patent purposes, national boundaries and interests did not exist.

333. A private enterprise in a developing country could arrive at quite different conclusions with respect to the profitability of local production from those of the transnational corporations. Moreover, if the decision were to be made at a public level, considerations of social costs and benefits could also have a significant bearing on it.

334. A second problem with the non-use of patents is the "suppression" of patented inventions for the purpose of limiting competition. *Prima facie* evidence of "suppression" would exist in cases where the patentee is not working the patent himself and is known to have rejected applications for the licence of the patents that were based on the offer of reasonable terms and conditions for the licence.¹⁹⁶ In the absence of any applications for licences, however, it is not easy to prove whether inventions have been or are being suppressed. Such proof would require a demonstration that the use of the inventions would be economically practicable; although this might be possible in the case of cost-saving inventions, it would seem an extremely complex task for inventions whose function would be to introduce new products to the market.

¹⁹⁵ *Dupont Management Europe*, vol. 1, No. 2 (November 1973), p. 2.

¹⁹⁶ According to some national patent laws the patentee is under an obligation to inform the patent authority as to the extent to which the patented invention has been worked on a commercial scale in the country. Cf. the patents laws of India, Israel, Peru and the Industrial Property Regulations of the Commission of the Cartagena Agreement (see foot-note 162 above).

3. LIMITED USEFULNESS OF COMPULSORY LICENSING AS A REMEDIAL MEASURE FOR FAILURE TO WORK

335. The non-use of patents is properly a subject of serious concern to the developing countries, especially in view of the fact that most foreign-owned patents are not worked. Table 13 cites some evidence on the total number of compulsory licences which have been granted in various countries, both developed and developing, in recent years. It is apparent at once that there are very few instances in any country of implementation of compulsory licensing provisions.

336. The limited evidence furnished in table 13 shows that, with the exception of Canada, where the coverage comprises 35 years, the remedial system has hardly been put into operation. And even in the case of Canada, the total grant of licences is not very impressive; it represents an average of 2.3 licences per year or only 0.01 per cent of the average grant of patents in one year.

337. The evidence in table 13 relates to compulsory licensing for production in the country. In Canada a change of the patent law in 1969 led to a very sharp increase in the number of compulsory licences applied for and granted; it is significant that the change permitted

compulsory licences for medicines to be granted either for manufacturing or for importing the product.¹⁹⁷

4. GROUNDS FOR COMPULSORY LICENSING AND ITS LIMITED USE

338. In any analysis of the subject it has to be borne in mind that compulsory licences might be granted on various grounds and not exclusively because of the failure to work the patent. As explained above, countries members of the Paris Union have freedom to legislate on compulsory licences to prevent abuses or in other cases where the public interest is deemed to require such measures.¹⁹⁸ The only limitations concern the period required to initiate and carry out these remedies when the ground is failure to work.¹⁹⁹ A wide variety of grounds are provided in national statutes.²⁰⁰ Compulsory licensing on grounds of public interest depends on a wide range of

¹⁹⁷ In a little over a year, 90 applications were made, of which 46 were granted and 25 were still pending as of October 1970 (see Economic Council of Canada, *op. cit.*, pp. 69 and 70).

¹⁹⁸ See G. H. C. Bodenhausen, *op. cit.*, p. 70.

¹⁹⁹ See para. 339.

²⁰⁰ See paras. 80-106 above.

TABLE 13
Number of compulsory licences granted in selected countries

Countries	Period covered	Number of applications for compulsory licences			
		Filed ^a	Refused	Abandoned	Granted
<i>Developed market-economy countries</i>					
Australia	1958-1963	None	..	..	None
Canada	1935-1970	192	14	72	79
Denmark	^b	7	..	1	3
Ireland	^b	1	..	..	None
Japan	1958-1963	None	..	..	None
Netherlands	1958-1963	None	..	..	None
New Zealand	1955-1963	None	..	..	None
Norway	1910-1963	27	2	11	11
Switzerland	1952-1963	None	..	..	None
United Kingdom	1959-1968	57	..	..	6
<i>Developing countries</i>					
Cuba	1958-1963	None	..	..	None
India	^b	4	..	..	1
Israel	^b	3	..	..	None
Morocco	1958-1963	None	..	..	None
Philippines	^b	8	..	..	None
Republic of Korea	^b	1	..	..	1
<i>Socialist country</i>					
Poland	^b	7	..	..	None

Sources: *The role of patents in the transfer of technology to developing countries (op. cit.)*, para. 117; Economic Council of Canada, *op. cit.*; United Kingdom, *The British Patent System...*, *op. cit.*

^a Including applications pending at the end of the period covered.

^b Based on paragraph 117 of *The role of patents in the transfer of technology to developing countries (op. cit.)*, where the precise period is not stated, but reference is made to "over a recent five-year period".

alternatives and causes that are specifically defined by each patent law. They vary from preventing exploitation by importing the patented product²⁰¹ to preventing or adversely affecting an export market for the patented invention.²⁰² The concept of non-exploitation of patents varies from country to country,²⁰³ ranging from the absolute non-utilization of patents to not meeting the demand of the internal market.²⁰⁴ The variety of provisions is great and the borderline between public interest in general and non-exploitation of patent in particular is not a clear-cut one.

339. Some reasons for the ineffective or, in many cases, non-applicable compulsory licensing provisions could be the following. First, both the Paris Convention and the WIPO Model Law for Developing Countries on Inventions indicate that the procedures for compulsory licensing on the ground of failure to work or insufficient working should begin three years after the granting of the patents or four years after the application for a patent has been submitted, whichever period expires last.²⁰⁵ This provision permits the time period between application for patent and the grant of a compulsory licence to be much longer than four years, especially if prior examination of patents is required before their grant or if patent offices are themselves backlogged; the patent applicant maintains priority rights for the exclusive use of the patent, if it is finally granted, throughout this period. Hence, it may well be that compulsory licensing procedures may not even commence until some years after the initial application for the patent grant and it is clear that in these circumstances the usefulness of obtaining compulsory licences is likely to be drastically reduced. Secondly, the actual granting of a compulsory licence, as opposed to commencement of the procedures of such a licence, can itself be a troublesome and expensive matter; existing legislation in developing countries normally provides that compulsory licence applications should be handled in one way or another by the courts rather than exclusively by administrative process.²⁰⁶ Judicial procedures of this kind, given their length and costs, clearly tend to favour transnational corporations as against local producers.²⁰⁷ Thirdly, there are other difficulties in obtaining a compulsory licence, deriving from the quite common provision in patent laws that a compulsory licence will not be granted if the patent holder can present "legitimate reasons" for his inaction.

²⁰¹ Cf. the Peruvian Law, section 74 (a).

²⁰² Cf. the Indian Patents Act, section 90 (a) and Israeli Patents Law, section 119 (5) (a).

²⁰³ Member States of the Paris Union are also free to define what they understand by "failure to work" under the provisions of article 5 (A).

²⁰⁴ Cf. the Brazilian Code, section 33 (1).

²⁰⁵ See art. 5 (A) (4) of the Paris Convention, and Section 34 (1) of the WIPO Model Law (*op. cit.*).

²⁰⁶ Section 44 (1) of the WIPO Model Law (*op. cit.*) provides that any application for a compulsory licence shall be made to the court.

²⁰⁷ In the recent Regulations on Industrial Property of the Commission of the Cartagena Agreement (see foot-note 162 above) it is provided that compulsory licences are granted by an administrative decision which will not be delayed by judicial appeals against that decision (see article 36 of the Regulations).

Where such reasons can be shown—for example, by evidence of mere advertisement in a local newspaper of licensing opportunities under a patent—the applicant for a compulsory licence may be confronted with serious problems in producing evidence in rebuttal.

340. Perhaps the most important reason why few applications are made for compulsory licences is the one already suggested in paragraph 313 above. Where the voluntary co-operation of the patentee is necessary for the effective utilization of the patented invention, a compulsory licence clearly has little value. This is normally the case when the patent disclosure is inadequate in that it does not include necessary manufacturing processes or know-how; as has been shown in paragraph 307, the number of such patents is high in many important fields of technology.

5. SOME ALTERNATIVE SOLUTIONS

341. Some of the procedural difficulties that may be met by applicants for compulsory licences are alleviated under the system of compulsory "licences of right". When a patent (or a group of patents) has been declared by the appropriate authority or in the law itself to be subject to licences of right, no fixed periods of time need to elapse, no grounds for the grant of a licence need to be proved and no requirements as to the qualifications of an applicant need to be satisfied.²⁰⁸ Provisions enabling the application of this compulsory system are to be found in the laws of India, Ireland, New Zealand and the United Kingdom. In the Indian law the system applies automatically three years after the grant of patents for food, medicines or chemical processes. The law also sets a maximum royalty of 4 per cent of the net ex-factory sale price in bulk.

342. A system which appears to fall between the normal system of compulsory licences and the system of compulsory licences of right is that of "*licences d'office*", which is to be found in the laws of France and Colombia, and which has much the same effect as section 35 of the BIRPI Model Law on Inventions. Under this system, no time limits apply and the applicant need not establish that the statutory grounds for compulsory licence exist, because the patent (or group of patents) has been declared subject to the system by the appropriate authority. However, a procedure is still required, since licences are granted to individual applicants who justify the grant to them, rather than to any person, as in the case of licences of right. The BIRPI Model Law suggests that the licences to be granted under this procedure should extend to importation alone without the requirement of production in the country; a similar provision in the case of medicines is to be found in the Indian law on licences of right.

343. A further remedy for failure to work the patent in the country is revocation. In those countries in which it can be used only as a measure supplementary to and later than compulsory licensing, revocation probably exerts little additional pressure on the patentee. However,

²⁰⁸ See para. 85 above.

where revocation can be used independently of compulsory licensing, it is of value either in clearing the way for production in the country where the necessary know-how can be supplied without the help of the patentee, or in putting the patentee's control of imports at risk and thus encouraging him to find a national licencee.

6. SOME CONCLUDING REMARKS

344. Given the situation described, there seem to be several considerations which need to be taken into account while examining compulsory licensing (or licence of right) and revocation procedures. First, patents should be viewed in terms of public interest not only in the theoretical sense but in the practical judgement of what are likely to be the consequences of specific legal provisions for the national economy and its future development. In a situation where by far the majority of patents in developing countries are held by foreigners, where most of them are in the hands of corporations, and where nearly all of them are not used, it seems very likely that the principal reasons for non-use of patents arises from the strategic considerations of foreign enterprises. Secondly, these strategic considerations acquire added strength since the patent laws of many developing countries do not allow their national markets even to be opened to imports from external producers, let alone competition through production by domestic producers. Thirdly, the legal processes for compulsory licensing are slow and costly given the judicial route for arriving at the results; these procedures, by their very nature, favour the foreign enterprises still more. Fourthly, the revocation procedures often depend upon the prior completion of the compulsory licensing procedures, and thus add little additional strength.

345. In view of the foregoing considerations, the entire subject of compulsory licensing and related provisions requires a thorough examination to enable provisions compatible with the development objectives of developing countries to be worked out. Such re-examination will obviously have to aim at devising quick and efficient ways of enabling patents to be worked by the patentee or under licence in the countries which grant them.

D. Subjects for patentability

346. A central feature of any patent law must be the specification of those items that are eligible to be patented or the exclusion of those that are not. Table 14 summarizes the regulations governing patentability for the 73 countries listed in the addendum. The table is divided into nine rows, placing in the first row the countries that do not exclude any specific products or processes from the possibility of being given patent protection. Countries in the remaining rows are arranged according to fields in which exclusions from patentability are found.

347. Besides these specific exclusions, basic contributions to inventive activity in "pure" research are left outside the scope of the system. The whole field of principles and scientific discoveries is precluded from

patentability,²⁰⁹ although—as one economist states—"inventors and manufacturers may owe the fortunes they have made from patented products in the main to the workers in pure science whose discoveries they have applied".²¹⁰ For an invention to be patentable, it must be applicable in industry.

348. The principal features of table 14 may be summarized as follows. First, fourteen of the selected countries do not specifically exclude from patentability any inventive activity in the fields listed in the table; among these countries there are eight developing countries. Secondly, the main sector that is excluded from patentability by many countries is that of pharmaceuticals; in this sector, the general provision appears to be that processes of production are patentable but the products manufactured are not. Thirdly, there are two countries (Brazil and Italy) that exclude medicines and one (Brazil) that excludes nutritive or chemico-pharmaceutical products and processes from patentability and various others also exclude plant varieties or kinds of animals from patentability.²¹¹ Fourthly, there are three countries (Ghana, Iran and Peru) which have a specific provision for the exclusion of items which are considered to be contrary to the public or social interest in general.²¹² This provision may be of interest to other developing countries also, since it may permit a selective consideration of applications for patents in the light of the objectives which the government considers relevant to the public interest.

349. Table 14 shows that many countries, both developed and developing, have recognized the need to discriminate between sectors in their patent policy. It also shows the fairly wide range of exceptions to patentability which have been introduced into patent legislation. Most countries with patent legislation seem to have accepted the idea that, in the public interest, patent policy can discriminate between technological fields. This discrimination, however, generally takes the form of either accepting patents as a whole or rejecting them as a whole in various fields.

350. A more detailed application of a selective approach towards patentability would require more flexibility than is provided by an all or nothing rule in the statute law. Developing countries might examine their policies on patentability specifically in terms of their economic development objectives and might consider not only which sectors should be included or excluded on this criterion but also whether there should be discrimination within sectors according to, for example, the kinds of technology which are being introduced. Article 26 of Decision 24 of the Cartagena Agreement Commission on the common treatment for foreign capital, trademarks, patents, licensing agreements and royalties, for example, provides:

²⁰⁹ In some countries scientific discoveries are separately protected; table 14 refers only to laws for the protection of inventions.

²¹⁰ A. Plant, *op. cit.*, p. 45.

²¹¹ See table 14, note d.

²¹² Many countries exclude inventions which are contrary to law, morals or public order.

TABLE 14

Fields of exclusion from patentability in selected countries

<i>Field of exclusion</i>	<i>Countries</i>
1. No specific exclusions	Australia, ^a Federal Republic of Germany, Ireland, ^a Netherlands, New Zealand, ^a United Kingdom; ^a Cuba, Jordan, Liberia, Malawi, ^a Philippines, Sri Lanka, Sudan, Zambia ^a
2. Food products	Austria, Canada, Japan, Spain, Switzerland; Brazil, ^b Chile, Colombia, Egypt, India, Korea, Kuwait, Tunisia, Venezuela, Yugoslavia; Czechoslovakia, ^c German Democratic Republic, Hungary, Poland, ^c Romania, ^c USSR ^c
3. Plant varieties or kinds of animals, or essential processes for obtaining plants or animals ^d	Denmark, Finland, France, Norway, Sweden, United States of America; Poland, Romania, USSR; Algeria, Colombia, Israel, Nigeria
4. Pharmaceutical products	Austria, Canada, Italy, ^b Japan, ^b Spain, Switzerland, Turkey; Czechoslovakia, ^c German Democratic Republic, Hungary, Poland, ^c Romania, ^c USSR; ^c Argentina, Brazil, ^b Chile, Colombia, Egypt, Ghana, India, Iran, Iraq, Korea, ^b Kuwait, Lebanon, Morocco, OAMPI countries, Pakistan, Syrian Arab Republic, Tunisia, Uruguay, Venezuela, Yugoslavia
5. Chemical substances	Japan, Switzerland; USSR; Brazil, Chile, China, India, Korea, Mexico
6. Nuclear materials, atomic energy, atomic weapons	Japan, United States of America; Czechoslovakia, Poland, Romania; Brazil, India
7. Programmes for computer machines ^e	France; Poland
8. Inventions related to State monopolies	Austria
9. Items deemed contrary to public or social interest or economic development	Ghana, Iraq, Peru

Sources: Annex I below; also national laws.

^a "Mere mixtures of known ingredients..." in the case of food or medicines are not patentable.

^b Processes are also excluded.

^c Inventors' certificates are granted.

^d In many of these countries plant varieties, etc., are protected by laws other than the patent laws.

^e The laws of many other countries exclude accounting, etc., systems or programmes generally without specific reference to computers.

At the request of the Board, the Commission may specify the production processes, products or groups of products in respect of which patent privileges may not be granted in any member country. It may also decide on the treatment of existing privileges.²¹³

E. Duration of patent rights

351. Since of the aims of granting a patent is to provide an inventor with some returns on his investment,

²¹³ *Proceedings of the United Nations Conference on Trade and Development, Third Session, vol. III, Financing and Invisibles* (United Nations publication, Sales No. E.73.II.D.6), document TD/107, annex, p. 136. See also United Kingdom, *The British Patent System...* (*op. cit.*), p. 65, which concludes in this respect:

"The exclusions and inclusions could be modified from time to time, possibly by Statutory Instrument, to meet new developments, to remove uncertainties and to keep in line with international trends".

a relevant matter with regard to any patent is the duration for which the patentee can retain monopoly privileges. Yet, despite various comments in the patent literature on the question of the duration of patents, there has been no thorough economic analysis to determine an optimum duration. The determination of an optimum period would require not only detailed calculations of costs and returns over the period, but also a clear appreciation of the criteria by which the optimum was to be decided. The duration which has been at the back of many discussions on this question appears to follow from some concept of a period sufficient to guarantee the patentee a "fair return" on his efforts.²¹⁴ The notion of a fair return is a highly subjective one and its determination may vary from country to country, from sector to sector, and from time to time.

²¹⁴ See F. Machlup, *op. cit.*, p. 9.

352. According to Machlup, the duration of patent rights has been determined by historical precedent and political compromise. The 14-year term of the English patents after 1624 was based on the idea that two sets of apprentices should, in seven years each, be trained in the new techniques, though a prolongation by another seven years was to be allowed in exceptional cases.

353. The analytical work in the literature on patents has frequently failed to give detailed consideration to another aspect of the problem of optimum duration, namely whether optimum duration should be considered only in terms of the private interest of an inventor rather than the public interest of society. The fact that, as was

seen in section D above, most countries find it necessary to exclude at least one sector from patentability, implies that from the point of view of society as a whole the optimum duration of patents in the excluded sectors is considered to be zero. It is reasonable to conclude that, from the public interest point of view, the optimum duration of patents should not be regarded as being the same for all sectors and all patents within sectors and that instead some attempt to follow a rational policy of selection should be made.

354. Table 15 gives information on patent duration for selected countries divided according to stage of development. The table reveals that in the developed market-

TABLE 15
Duration of patents of inventions in selected countries

Group of countries	Years			
	1-5	6-10	11-15	16-20
Developed market-economy countries			Italy Japan	Australia Austria Canada ^a Denmark Federal Republic of Germany Finland France Norway Sweden Switzerland United Kingdom United States of America ^a
Socialist countries of Eastern Europe			Bulgaria Czechoslovakia Romania USSR	German Democratic Republic Hungary
Southern European countries	Turkey ^b	Spain ^c Turkey ^b	Greece Portugal ^a Spain ^a Turkey ^b	
Developing countries	Argentina ^b Chile ^{b,a} China ^{d,a} Iran Venezuela	Argentina ^b Chile ^{b,a} China ^{d,a} Colombia ^a Egypt ^e India ^f Iran ^b Peru Venezuela ^{b,a}	Argentina ^b Brazil Chile ^b China ^{d,a} Egypt India Iran ^b Iraq Korea (Republic of) ^a Mexico Sri Lanka Syrian Arab Republic Uruguay	Algeria Chile ^b Iran ^b Israel Liberia ^a Malawi OAMPI countries Pakistan Philippines ^a Sudan Tunisia

^a Duration runs from date of grant.

^b Duration of patents differs according to applicant's wish or merits of the invention.

^c Patent of importation.

^d Patents and certificates are granted for three to fifteen years according to the decision of the central authority.

^e Patents on chemical processes.

^f Food, medicines and drug patents.

economy countries patents are mainly granted for between 16 and 20 years and only Italy and Japan have a shorter patent duration of 15 years.²¹⁵ The socialist countries of eastern Europe all have patent laws which fix the duration at between 10 and 20 years. In most countries the duration of a patent is counted from the date of application; in 12 of the countries shown in the table the duration is counted from the date of grant.

355. The data for the developing countries show a wide range of patent duration and indicate that in certain cases the duration of the patent is not always the same, irrespective of the nature of the invention or the sector in which it occurs. In Chile, for instance, patents may have a duration of 5, 10, 15 and exceptionally 20 years according to circumstances; similarly, in Argentina patents are granted for 5, 10 or 15 years, taking into consideration the merits of the invention and the wishes of the applicant. The duration in India is, in general, of 14 years from the date of the complete specification, and seven years from the date of the filing or five years from the date of sealing, whichever period is shorter, as regards food and drug patents. An example of a law under which the appropriate duration of a patent was subject to determination by the Government in each case was the Chinese law of 1950, published by BIRPI in 1952.²¹⁶

356. The evidence relating to developing countries in table 15 suggests strongly that certain countries recognize the possibility that patent duration may vary according to diverse circumstances. In some countries, the length of the patent grant depends upon the sector to which the patent refers. In other cases, the duration depends upon the type of patent. In still others, it may depend upon clear evidence that the patent is being worked.²¹⁷

357. There appears to be enough evidence in table 15 to suggest that practices as to patent duration differ considerably. The only conclusion that can be drawn, therefore, is that a developing country could determine the period of duration of a patent grant in accordance with its own specific requirements and policy considerations. It may well wish to take into account whether its national interest is well served by deciding in advance the duration of patent grants. Economic reasons then and the

course of technical advance, including considerations of rate of obsolescence, may indicate that such a *a priori* determination was not based on any informed consideration of future developments. Moreover, in the particular matter of prior determination of a fixed duration, patent policy is far out of line with most other aspects of national policies (taxation, tariffs, fees, investment priorities, etc.). By introducing necessary elements of flexibility, patent policy, like other policy instruments at the disposal of governments, could be directed towards specific objectives.

358. Legal provisions governing patent duration are not, by themselves, sufficient to state with any confidence what the actual duration of patents tends to be. This is because patent policies and practices in many developing countries permit various means of renewing or maintaining patents, which may lead to varying periods of actual patent life within the basic period fixed in the patent laws.

359. In addition, the effective economic life of an invention is not necessarily commensurate with the legal life of the patent. It may be shorter, and there are at least two reasons why it may be longer. One is that a company holding a patent may undertake other research and additional patenting to protect improvements on the original invention even after the life of its patent, in a legal sense, has ended. In this way the company can steadily extend the area and duration of its monopoly. The other reason for extension of the effective economic life of the invention beyond the legal life of the patent is that production and marketing of the product may, during the patent life, have developed on a large scale and the firm will have a considerable position in terms of market information and market contacts. Hence, the possibilities for new competitors to enter the market on the same terms of supply as the patent holder may be very limited; in these circumstances trademark rights may be more significant than patent rights. Machlup summarizes the question of prolonging the economic life of an invention as follows:

Patentees may succeed in extending the time period of control (a) through procedural devices, especially through delays in the pendency of the patent between application and issuance;²¹⁸ (b) through secret use of the invention prior to the application for a patent, or through incomplete disclosure, making it impossible for those without special "know-how" to use the invention even after expiration of the patent; (c) through the successive patenting of strategic improvements of the invention which make the unimproved invention commercially unusable after expiration of the original patent; (d) through creation of a monopolistic market position based on the goodwill of a trademark associated with the patented product or process, where the mark and the consumer loyalty continue after expiration of the patent; and (e) through licensing agreements which survive the original patent because they license a series of existing improvement patents and a possibly endless succession of future patents.²¹⁹

²¹⁵ There is a slight difference in the duration of patents in these two countries. In Italy, the 15 years' term is counted from the date of filing the application and in Japan from the date of publication of the application. In the latter country, the patent cannot exceed 20 years from the date of filing.

²¹⁶ BIRPI, *La propriété industrielle*, 67th year, No. 5 (May 1951), pp. 79-80.

²¹⁷ For instance, the 1971 Patent Law of Colombia has an interesting provision that patents are granted for eight years but that this may be extended by a further four years, if the patent authority is satisfied that adequate evidence of working has been provided. Article 29 of the Industrial Property Regulations of the Commission of the Cartagena Agreement (see foot-note 162 above) provides for a patent term of 10 years, but the grant is first given for five years which may be extended for another five if the patent is adequately worked.

²¹⁸ This can only apply when the duration of the patent rights runs from the date of the grant (e.g. in the United States of America).

²¹⁹ F. Machlup, *op. cit.*, pp. 10-11.

Chapter VI

IMPACT OF THE PATENT SYSTEM ON THE DEVELOPING COUNTRIES

360. The two preceding chapters have underlined two major features of patents in developing countries. First, about 84 per cent of all valid patents in developing countries are foreign-owned and most of them are in the hands of corporations based in five developed market-economy countries; and second, about 90 to 95 per cent of these foreign patents are unused.²²⁰ These two facts condition, to a considerable extent, the advantages and disadvantages affecting any developing country from its grant of patents. The purpose of the present chapter is to outline such advantages and disadvantages in the two alternative cases of use and non-use of a patent. The one element of benefit common to both cases—the receipt of patent fees by developing countries, is dealt with in section C below.

A. Benefits and costs of non-use of patents²²¹

361. A patent confers on its owner a monopoly of production and distribution of products in the specified territory for a given duration. Non-use of the patent is here understood to mean the absence of production within the country; importation and distribution of the patented product or process nevertheless may take place, effected either by the patentee himself or by a licensed distributor. Four aspects of this definition warrant mention; some or all of them might be relevant in specific instances and the broad analysis of benefits and costs would need to be modified accordingly. First, there could be several reasons why a patent is not used. It is assumed here that the absence of local production represents a deliberate choice by the foreign holder of a patent, taken as part of the implementation of an international production and marketing strategy.²²² Secondly, the

patent product or process is assumed to have some economic and social value to the developing country; if this were not true—as indeed might be the case for production of, say, synthetic products competing with a local raw material—the underlying rationale for the patent grant would require re-examination. Thirdly, a patent might be unused for only part of its life; calculations of benefits and costs may be adjusted to take this into account. Fourthly, in exceptional circumstances a foreign patent-owner might prevent imports as well as local production. In this situation the benefits and costs would need to be interpreted in terms of the non-consumption of the patented item in the developing country rather than simply its non-production there.

362. A patent, whether used or not, provides one tangible advantage to the country granting the patent—the fees paid by the applicants. They are discussed in section C below.

363. It might be considered that the mere grant of patents contributes towards the creation of a favourable climate for foreign investment and that, even if no production takes place in a developing country on the basis of most patents granted by it, the very fact of the grant may encourage some foreign investment. Statistical evidence on this subject is hard to find but various summaries of questionnaire enquiries are available: such summaries indicate that patents have little influence on the investment decision. Thus, writing in 1957, Vernon commented

investors contemplating overseas investment apparently are not influenced very much in their decisions by the nature of the patent protection available to them. Numerous surveys of the factors obstructing or encouraging overseas investment fail to turn up so much as serious mention of the question of patent protection.²²³

²²⁰ See para. 279 and table 12 above.

²²¹ For a study on cost-benefit, see R. F. Dale and J. K. Huntoon, "A cost-benefit study of the domestic and international patent systems", *IDEA (op. cit.)*, vol. 11, No. 3 (Fall 1967), pp. 351-406.

²²² Paragraph 273 above describes some possible reasons for non-use of patents. Paragraph 116 of *The role of patents in the transfer of technology (op. cit.)* mentions economic inefficiency, reduction of the value of patents as an incentive to invention and investment in expensive research facilities, and injury to small firms compelled to licence to larger competitors, as reasons against compulsory use of patents. In the same report there is the following comment on the interest of the foreign patentee in not producing within a developing country:

"This interest of the patentee will not be at variance with the interest of the under-developed countries in those situations where—and as long as—the under-developed country does not conceive it economically feasible to set up a manufacturing industry within its territory but wishes to take advantage of the

international division of labour and import its requirements of the patented product from abroad. On the other hand, the Government of an under-developed country, equally legitimately and using a set of cost and benefit calculations different from the private profit-cost calculation of the foreign patentee, may conclude that it would be desirable to have the patented product produced in the country rather than import it. The utilization of domestic materials, employment and training of domestic labour, saving in foreign exchange, etc., may all play a part in such calculations. The establishment of the industry making the patented product or using the patented process may, in fact, be an explicit part of the development plan of the under-developed country. Even where this is not so, its establishment may still be desired. It is this problem which is at the heart of the difficulty and controversy concerning the effect of a patent system on under-developed countries, as far as products or processes are concerned, which could be worked in these countries" (*ibid.*, para. 248).

²²³ R. Vernon, *The International Patent System and Foreign Policy (op. cit.)*, p. 16.

Bangs describes the finding of a recent enquiry as follows: "When asked whether industrial property considerations had been a determining factor in deciding whether or not to engage in joint ventures with foreign companies, the majority of companies, as in our earlier returns, said they had not."²²⁴ The replies to a questionnaire prepared by the Canadian Economic Council indicated that for 40 per cent of the companies concerned, the existence of patent protection was of little or no significance in deciding to embark upon production in Canada; 45 per cent replied that it was of "fair" significance.²²⁵ Penrose concludes a review of the evidence with the sentence:

the evidence does seem to support the proposition that in by far the greater number of cases the willingness of a country to grant patents on inventions already patented and worked abroad is of no great importance one way or another as an inducement or obstacle to foreign investment.²²⁶

364. The comments quoted in the preceding paragraph leave open the possibility that in some instances patent protection might have encouraged some foreign investment. Even in those cases, however, the benefits accruing to a developing country from the investment would still remain to be calculated and would, in general, be a function of the terms and conditions governing the investment. Moreover, adequate assessment of the impact of non-used patents on the economies of developing countries implies consideration of probable costs as well as benefits.

365. The existence of a patent which does not serve as the basis for domestic production implies either that the patented product or process must be imported or that domestic consumers must use whatever substitutes are available (either from local production or from abroad). Importation normally involves a foreign exchange outlay in excess of that incurred under domestic production, and the difference between foreign exchange payments in the two cases is a cost of non-utilization of the patent. The size of such a cost can obviously vary a great deal; it will tend to be low when domestic production would involve import of most raw materials, components and capital equipment with a low value-added element in production, and high when the converse is true.

366. The use of patents to cover imports in this way may be fairly important. In his discussion of some of the findings of a questionnaire addressed to transnational firms with systematic patenting activity in Argentina, Katz notes:

out of 102 patents for which we have detailed information, only 15 were actually under exploitation at the time of the survey (or had been exploited in the past); 29 covered current imports; and the remaining 58 patents were not under present exploitation, neither were they covering present imports.²²⁷

²²⁴ R. B. Bangs, "Use of Industrial Property in Foreign Countries: A Further Report", IDEA, vol. 13, No. 4 (1969-70), p. 557.

²²⁵ Economic Council of Canada, *op. cit.*, p. 75.

²²⁶ E. Penrose, "International patenting and the less-developed countries", *The Economic Journal*, vol. 83, No. 331 (September 1973), p. 775.

²²⁷ J. M. Katz, *Patents, the Paris Convention and Less Developed Countries (op. cit.)*, p. 67.

367. Besides the foreign-exchange cost of non-utilization of patents there are a series of other costs which, while difficult to assess precisely, nevertheless add up to a weakening of the bargaining situation of developing countries.²²⁸ These costs could be described as the costs of non-industrialization and include: (a) lowered capability to absorb surplus labour and create additional domestic income and employment; (b) inability to use indigenous materials and derive the benefits of horizontal and vertical integration; (c) forgoing development of by-products and thereby limiting the industrial diversification of the economy; (d) failure to make use of national scientific, technological and design-engineering capabilities; (e) limitation of the possibilities for "learning by doing" and consequent limitation of the prospect for raising the technical level of the work force.

B. Benefits and costs of use of patents

368. A small number of foreign patents are used in production in developing countries. These patents number from 10 to 20 thousand (see table 12) and are those which can be considered relevant to the transfer of technology to developing countries.

369. Apart from the possible benefits through receipt of patent fees and stimulus to foreign investment, all of which are discussed elsewhere in this chapter, local production on the basis of patents might generate four advantages for developing countries. These advantages are the domestic value added from production, tax revenue accruing to the government, the gains of "learning by doing", and the possibility that some of the local production might be exported and thereby earn foreign exchange which would not have been earned otherwise.

370. It must be emphasized that these advantages can only be attributed to patents in so far as patents are responsible for the decision to locate production in the country. If, for example, a foreign firm produced, exported and retained earnings in a developing country where it had patents on its production, yet had taken the decision on location of production in response to availability of raw materials and to other cost advantages in the country, it would be wrong to attribute the benefits gained to patents. In practice, there is often considerable difficulty in ascertaining to what extent the possession of patent rights can be treated as "responsible" for the advantages gained.

371. Production within a developing country may be undertaken by the patentee himself or by a producer who enters into a licence agreement with the patentee. In both cases the foreign influence over production and pricing decisions may lead to costs for the developing country, over and above the costs implied by production under monopolistic as opposed to competitive conditions.

372. When a foreign patent-holding company undertakes production on its own behalf, there are usually

²²⁸ Some of these costs were listed in N. Rajagopala Ayyangar's *Report on the Revision of the Patents Law* (New Delhi, Government of India Press, 1959), p. 14.

some imports from abroad, often from another branch of the same company. The prices recorded for these imports may differ drastically from prices for similar products elsewhere in the world and such "transfer-pricing" can lead to substantial outflows of foreign currency.

373. In his pioneering study of this subject Vaitos has shown that pharmaceutical companies examined in Colombia charged, on the average, prices some 155 per cent in excess of the world average. He estimated that if the same figure held true for all firms in the pharmaceutical industry, the balance-of-payments cost incurred in 1968 would have been in excess of \$20 million—in other words, overpricing in the pharmaceutical industry alone was of the same order of magnitude as all known and explicit annual payments for industrial technology made by the whole economy of Colombia.²²⁹

374. Lall has reported recently on the results of an analysis of overpricing in Colombia by 14 foreign firms during the period 1966-1970. He found that overpricing of imports was between 33 per cent and 314 per cent by foreign firms in the pharmaceutical sector, equalled 24 per cent and 81 per cent for the two electrical firms, and 40 per cent for the one firm in the rubber industry. In relation to profitability, Lall has showed that the difference due to "proved overpricing" ranged from 2 per cent to 112 per cent of net worth for the pharmaceutical firms and from 0.3 per cent to 6 per cent in the other two sectors; profits derived from the overpricing device exceeded the value of declared profits for 9 of the 14 firms.²³⁰

375. Katz has investigated the overpricing issue in the Argentinian pharmaceutical industry, where the activities of foreign firms rely heavily on the protection provided by patents. He analysed in depth the overpricing affecting one fifth of all imports by the pharmaceutical sector and estimated the weighted degree of overpricing at about 680 per cent. Generalization of results to cover the whole pharmaceutical sector implied consideration of the likely degree of overpricing of the remaining four fifths of pharmaceutical imports. On the most conservative assumption possible—i.e. of no overpricing whatsoever on the other four fifths—he computed the average degree of overpricing for the whole sector at 130 per cent. Given an alternative assumption of 25 per cent overpricing on the four fifths of imports not specifically examined—an assumption which was highly realistic in Katz's opinion—the degree of overpricing for the whole sector was calculated at more than 150 per cent. Even with the elimination of the most highly overpriced products, the average extent of overpricing was still computed at 50 per cent. Hence, for total imports by the

sector of some \$17 million, at the very least, \$5 million corresponded strictly to "transfers derived from the manipulation of prices".²³¹

376. The likely effect of overpricing in the import costs of pharmaceutical products to developing countries may be illustrated. Such imports from OECD countries totalled \$688 million in 1968. If overpricing (using Vaitos's figure) was of the order of 155 per cent, it would amount to \$415 million. If, on the other hand, the lower estimate of 50 per cent overpricing (indicated by Katz) is employed, overpricing would be of the order of \$138 million.

377. The degree of overpricing in the charges for these imports protected by patents from competition in the developing countries could be substantial. The level of overcharging by the Swiss pharmaceutical company of Hoffman-La Roche in its sales to the British National Health Service of the drugs Librium and Valium illustrates what can happen in a developed country—the much weaker technological status of developing countries might render them still more vulnerable to foreign exchange costs of this kind.²³²

378. In those cases where a patent is used as the basis for a licensing contract the empirical work conducted in various countries indicates that such contracts often contain restrictive clauses²³³ which themselves lead to a heavy burden of indirect costs. The existence of limiting clauses in such contracts may be summarized as follows. Export restrictions are a prominent feature of licensing arrangements. Given the international production and marketing strategies of the transnational corporations holding many patents, they wish to maximize their profits through appropriate control over the locations of their production and over the possibilities for inter-country sales of products. In those instances where such sales across national frontiers would create difficulties for the corporation, a limitation on exports is a logical concomitant of its over-all strategy.

379. Moreover, the licensing contracts usually include clauses referring to technical improvements made by the licensee in relation to the utilization of the patented

²²⁹ C. V. Vaitos, "Transferencia de recursos y preservación de rentas monopolísticas," *Revista de Planeación y Desarrollo*, Bogotá, Colombia, July 1971, pp. 56-57. Additional details are given in C. Vaitos, "Patents revisited..." (op. cit.), especially p. 86. For information on the same subject, see M. S. Wionczek, *La transferencia internacional de tecnología al nivel empresa: El caso de México*, document ESA/FF/AC.2/10.

²³⁰ S. Lall, "Transfer-pricing by multinational manufacturing firms", in *Oxford Bulletin of Economics and Statistics*, vol. 35, No. 3 (August 1973), pp. 186-187.

²³¹ J. M. Katz, *La Industria Farmacéutica Argentina, Estructura y Comportamiento*, Documento de Trabajo, Instituto Torcuato Di Tella, Centro de Investigaciones Económicas (Buenos Aires, July 1973), pp. 33-35.

²³² The British Government, following the advice of its Monopolies Commission, ordered Roche Products, a British subsidiary of the world's leading drug company, Hoffman-La Roche AG of Basel, to cut its selling prices for the tranquillizers by 60 to 75 per cent and to refund \$27.5 million for overcharging. The Monopolies Commission found that Roche Products was paying the parent company \$925 per kg for one substance that could be bought in Italy (where these products are not under patent protection) for \$22.5 per kg, and \$2,305 per kg for another substance which could be procured in Italy for \$50 per kg. The overcharging amounted to 41 times the cost of alternative supply in the former instance, and to 46 times in the latter. Official investigations are also taking place in Australia, Belgium, Federal Republic of Germany, Greece, the Netherlands, New Zealand, South Africa, Sweden, and before the EEC Commission. In self-defence, Hoffman-La Roche has cited Eastman Kodak, Kellogg, and Procter and Gamble as being open to attack on similar grounds. See *International Herald Tribune*, 28 August 1973, p. 9.

²³³ See chapter III above.

item. These clauses generally give the licensor property rights in the improvements so that even the technical changes made in a developing country do not result in substantial gains for that country. Finally, licensing contracts often contain clauses giving the licensor control over the management and marketing decisions of the enterprise of the licensee as well as over the equity capital of the licensee—areas over which enterprises in developing countries would prefer to retain some autonomy. Emphasis must also be given to the fact that licensing contracts based on patents effectively often extend beyond patent life, either because the contract itself has a duration greater than that of the patent or because use of the patented information is not permitted for the licensee until some years after the contract has formally finished. The net impact of restrictive clauses of this type is to place rather severe handicaps on the freedom of action of licensing enterprises in developing countries.

380. It must be emphasized that the costs discussed in the preceding paragraphs can only be attributed to patents in so far as patents are responsible for the decision to locate production in the developing country.

C. Basic and annual fees for patents

381. Table 16 gives some information about the fees charged by patent offices of selected countries. For the purpose of enabling a rough comparison to be made, the fees are shown under two headings only: "basic fees" and "annual fees". In fact, most national fee structures are considerably more complicated and, in particular, some of the various fees which are listed under the heading "basic fees" may increase in accordance with the length of the document containing the patent description and claims. Although in some cases an overlap is inevitable, because the fees payable on grant include some annual fees, the heading "basic fees" includes all fees normally payable up to and including the grant of a patent, and the heading "annual fees" includes only fees paid to maintain the patent in force.

382. Costs incurred by the patentee other than patent office fees, such as professional fees (including fees to local agents) and translators' fees, are not shown in table 16.

383. The figures in the table are approximate, and in some cases out of date. They are intended only to illustrate the different types of fee policy currently adopted. Some of the important features of these policies are discussed below.

1. RANGE OF BASIC FEES

384. A striking feature of table 16 is the wide variation in charges. Basic fees in developed market-economy countries range from \$8 in Italy to \$165 in the United States of America; in the socialist countries of Eastern Europe they range from \$38 in Czechoslovakia to \$151 in the USSR; in the southern European countries, from \$2 in Turkey to \$8 in Spain; in the developing countries

the lowest charge is \$1 in Venezuela and a maximum of \$62 in Colombia. All patents in a given country are subject to the same fee, without making any distinction²³⁴ on the basis of the differences in the economic significance of the invention covered by the patent, or of the value to the patentee of the national market concerned, a value which may vary from one class of patent to another.

2. ANNUAL FEES

385. One distinction between types of policy is immediately apparent: whereas most countries charge annual fees to maintain patents in force, a substantial group of countries (including Canada²³⁵ and the United States of America among developed countries and Burundi, Chile, Colombia, Cuba, Ghana, Peru, Rwanda and Singapore among developing countries) make no charge beyond the basic fees, so that patents remain in force in those countries until the expiration of the period of their maximum duration, whether patentees value them or not.

386. In most countries which charge annual maintenance fees the amount of such fees increases progressively from the initial fee to the final fee. In a few developed countries the fees increase very steeply—for instance in Italy from \$3 to \$254; and in some the final amount is substantial (the highest is \$1,404 in the German Democratic Republic).

387. In the selected developing countries for which information is available it is at once obvious that the broad level of annual fees is much lower than in the developed countries, and the progression in the increases of the fees over time is much less sharp. For example, the lowest is \$3 in Iran and the highest initial fee charged is \$15 in Algeria. (The corresponding range of initial fees in the developed countries is from \$3 in Italy to \$115 in Czechoslovakia.) Similarly, the level of final fees rises from a low of \$10 in Iran and Mexico to \$59 in Yugoslavia where it applies only to patents for luxury products.

388. The imposition of maintenance fees could be expected to have an impact on the number of patents remaining in force. For example, all granted patents may remain in force for their full life, subject to revocation or invalidation, in Canada or the United States of America. Statistics for the United Kingdom, where annual fees are not among the highest or the most steeply increasing, indicate that about 50 per cent of granted patents are not renewed beyond the tenth year from the date of application, and that only about 18 per cent survive for their full term.²³⁶

389. Available patent statistics do not allow a clear conclusion to be drawn on the question whether higher or more steeply increasing annual fees have a significantly greater impact on the life of patents, or whether such fees

²³⁴ Except Venezuela (see table 16, note *g*, above).

²³⁵ The Economic Council of Canada (*op. cit.*, p. 89) has recommended the introduction of five-yearly renewal fees.

²³⁶ C. T. Taylor and Z. A. Silberston, *op. cit.*, p. 97.

TABLE 16

Basic and annual patent fees in selected countries

Countries	Basic fees ^a	Year of beginning after registration	Annual fees	
			Range of fees	
			Initial	Final
<i>Developed market-economy countries:</i>				
United States of America	165	—	—	
Canada	130	—	—	
Federal Republic of Germany	123	3	18	599
Sweden	121	1	11	187
United Kingdom	77	5	32	100
Denmark	66	1	16	144
Australia	61	4	17	71
Netherlands	59	1	76	421
France	44	2	11	92
Japan	38	1	6	68
Switzerland	19	2	25	278 ^b
Austria	12	2	15	482
Italy	8	1	3	254
<i>Socialist countries of Eastern Europe:</i>				
USSR	151	1	74	184
German Democratic Republic	140	2	112	1 404 ^c
Bulgaria	106	2	32	239
Czechoslovakia	38	1	115	96
<i>Southern European countries:</i>				
Spain	8	1	0	8
Greece	3	2	5	12
Turkey	2	2	36 ^d	
<i>Developing countries:</i>				
Colombia	62	—	—	
Rwanda	60	—	—	
Ghana	48	—	—	
Cuba	46	—	—	
Burundi	38	—	—	
Algeria	37	2	15	37
Peru	35 ^e	—	—	
Mexico	30	4	5	10
Philippines	30	5	15 ^d	
Yugoslavia	19	1	5	59
Iran	19	2	3	10
Chile	17 ^f	—	—	
Israel	17	6	7	48
Singapore	16	—	—	
Guatemala	15	1	10 ^d	
Brazil	12 ^f	1	8 ^d	
Sri Lanka	10	5	8	22
India	7	5	7	20
Morocco	7	2	5	11
Venezuela	1	1	12	47 ^g

Sources: Octrooibureau Los En Stitger, *Manual for the Handling of Applications for Patents, Designs and Trade Marks throughout the World*, Amsterdam (loose-leaf edition); United Nations, *Monthly Bulletin of Statistics*, September 1973; and BIRPI, "Patent office fees: comparative tables as of June 1, 1970", PJ/81/Rev.1.

NOTE: Countries in each group are arranged in descending order of the amount to be paid for basic application and registration fees (excluding additional charges); figures are rounded to nearest dollar.

^a Not all data refer to the same year; where recent information is lacking, earlier years have been used for some countries.

^b On patents subject to novelty examination.

^c Fees for an "exclusive patent".

^d Fixed fee.

^e Fees to be paid by foreigners; nationals pay \$16.54.

^f Altered yearly.

^g The range covers three categories: (i) scientific discoveries conducive to special development of agriculture, stock-rearing or sanitation: \$11.63; (ii) the most usual: \$23.26; and (iii) luxury patents, relating to inventions of expensive luxury commodities: \$46.51.

merely have the effect of charging a relatively larger part of patent office costs to the most valuable patents. The deterrent effect of high annual national fees cannot be measured without, at least, some evaluation in comparative terms of the value to the patentee of the national market concerned. However, there are some indications that, as is to be expected, patentees are more selective in renewing patents in countries in which the annual fees increase to relatively high amounts.²³⁷

390. It appears that it is the policy of the patent offices of most developed market-economy countries that their fee-earning services should pay for themselves over a period (in the United States of America, however, the income from fees is substantially less than the patent office costs).²³⁸

²³⁷ A comparison of BIRPI/WIPO industrial property statistics for 1967 and 1972 indicates that, for most of the few countries for which comparable figures are available, the percentages of patents renewed by payment of renewal fees in the tenth year after the application date which are also so renewed in the fifteenth year generally approached 50 per cent, whereas for the Netherlands (where annual fees are relatively high) the percentage is only 32 per cent. The number of countries compared is too small, and the number of unknown quantities affecting the economic significance of given sizes of fees is too large, to permit safe conclusions to be drawn.

²³⁸ See United Kingdom, *The British Patent System... (op. cit.)*, p. 59 and *ibid.*, annex I.

3. CONSIDERATION OF PATENT FEE POLICY IN DEVELOPING COUNTRIES

391. The absence of any noticeable relationship between patent fees—whether basic or annual—and indicators of economic significance suggests that the idea of using patent fees as an instrument of economic policy in regard to patents is not yet current in developing countries.

392. Data available on the number of valid patents and on basic and annual patent fees charged by developing countries are not adequate for estimating precisely the total fees received by these countries. Even then, considering the very small numbers involved on both these counts (see tables 12 and 13), it is doubtful if the total amount could add up to much more than an annual round figure of \$5 million—a sum which is clearly insufficient to meet even the cost of running the national patent offices in 84 developing countries.

393. In any reconsideration of the bases of patent fees, several factors could be taken into account. Conditions vary from country to country, and each country will therefore have to establish its own criteria. The introduction of rational criteria in levying patent fees will also enable the national administrations to direct patent policies, as in the case of tariffs or income taxes, towards end-specific purposes, in accordance with national development objectives.

Part Three

A FRAMEWORK FOR REVISION OF THE PATENT SYSTEM

Chapter VII

GENERAL SUMMARY AND CONCLUSIONS

394. The preceding chapters have surveyed some of the main characteristics of national and international patent systems, abuses of patent monopolies and the impact of the patent systems on developing countries. Some of these findings may be briefly summarized here to serve as the context of a future revision of the system.

A. General summary

395. Since the first patent statute enacted by the City State of Venice 500 years ago, patent laws have now been established in 120 countries, including 84 developing countries. Many of these either were based on laws and practices of the developed countries or were inherited from the period of colonial dependence of some of these countries.

396. The Paris Convention for the Protection of Industrial Property, covering patents, inventors' certificates, utility models, industrial designs, trademarks, service marks, trade names, indications of source or appellations of origin and creating the Paris Union, was agreed to in 1883. It set certain standards for the protection of industrial property and for the repression of unfair competition. Chief among them were the following: national treatment for nationals of the countries of the Paris Union; right of priority for filing of applications with other countries of the Union; independence of patents obtained for the same invention in different countries; importation of articles; and the possibility of remedying non-working by compulsory licenses and forfeiture or revocation of the patents.

397. Membership of the Paris Union has increased from 14 at the time of its establishment to 80 in 1973. Virtually all the developed market-economy countries and socialist countries of eastern Europe are members. Among what are now considered developing countries, membership has risen from three at the end of the nineteenth century to 44 in 1973. Nevertheless, 62 developing countries, including some of the most populous ones, were outside the Union in 1973.

398. Since its adoption 90 years ago, the Paris Convention has been revised six times. But the main thrust

of its basic provisions (summarized above in para. 396) has remained more or less unchanged.²³⁹ The Convention recognizes the freedom of member States to legislate according to their national interests. It has exercised such profound influence on national legislation that, apart from differences in detail, most national laws have by and large incorporated its major provisions.

399. The participation of the developing countries in shaping as well as in the operation of the international patent system has remained minimal. Thus, for instance, of the 3.5 million patents currently in existence only about six per cent (200,000) are granted by developing countries. Of these, some five sixths are held by foreigners and only one sixth—or one per cent of the world total—by nationals of the developing countries. These countries have plainly been on the periphery of the patent system.

400. Of the patents granted by developing countries, about 84 per cent—or some 175,000—are owned by foreigners. Most of them are held by large corporations of five developed market-economy countries (the United States of America, the Federal Republic of Germany, the United Kingdom, Switzerland and France). About 90 to 95 per cent of the patents granted by developing countries to foreigners are not used at all in production processes in these countries.

401. The high proportion of patents granted by developing countries to nationals of developed countries reflects the unequal economic and technological strengths of developed and developing countries. The provisions on compulsory licensing and revocation have, in the absence of technological capacity in the developing countries, proved largely ineffective as remedial measures

²³⁹ Thus, for instance, Senator Joseph C. L. O'Mahoney, then Chairman of the United States Senate Sub-Committee on Patents, Trademarks and Copyrights, in his foreword to the study prepared for it by Raymond Vernon, noted with respect to the International Convention for the Protection of Industrial Property: "Over its span of 74 years, the Convention's basic framework has stood intact". See United States of America, Senate, *The International Patent System and Foreign Policy: Study of the Sub-Committee on Patents, Trademarks, and Copyrights of the Committee on the Judiciary* (Washington, 1957) (85th Congress, 1st session, Senate, document No. 63). See also foot-note 189 above.

against non-use. Instead of being used in production, an overwhelming majority of patents granted to foreigners through national laws of developing countries have been used to secure import monopolies.

402. Patent practices of developing countries, following international standards, have legalized this peculiar situation which has come to act as a reverse system of preferences granted to foreign patent holders in the markets of developing countries.

403. The small number of foreign patents which are actually used in production processes in developing countries represents a transfer of technology. Even in these cases, however, the agreements, entered into by developing countries, concerning use of patents through foreign investments or licensing arrangements frequently contain not only high royalty payments and charges for technical services raising the direct costs of obtaining the technology, but also restrictive practices and in some instances abuses of patent monopolies, either explicitly embodied in the contractual agreements or implicitly followed by subsidiaries and affiliates of transnational corporations, which impose heavy indirect or "hidden" costs through overcharging for imported inputs. The foreign exchange burden of these costs—much larger than direct costs—applies to all developing countries regardless of whether they have national patent laws, or whether they are members of the Paris Union.

404. This is the background for concerns recently expressed, particularly in developing countries, about the actual impact of the patent system. Some of these concerns have been reflected in recent new patent legislation by a few developing countries (for instance, Algeria, Brazil, Colombia, India, Iraq, Israel, Nigeria, Peru and the Sudan). Some developed countries (Australia, Canada and socialist countries of Eastern Europe), whose experience in important respects was not altogether different from that of the developing countries, have also carried out changes in their national patent legislation.

405. These changes include the following aspects: introduction of inventors' certificates, granted to applicants of any nationality as in socialist countries of Eastern Europe or in Algeria; exclusion of some products or processes from patentability; a limitation of the duration of patent grant for specific products or processes; in the balance between monopoly rights of patent holders and general public interest, a shift in favour of greater recognition of public interest; strengthening of disclosure requirements; stricter provisions for compulsory licensing and revocation as remedies for non-use; strong provisions against abuses in patent licensing agreements.

406. The direction of these changes has been a shift from primary concern with the protection of private interests of the patent holder (mostly a foreigner in the case of developing countries) towards safeguarding the general public interest and economic needs of the country concerned. Some of the changes are also intended to introduce somewhat greater administrative flexibility in the operation of the system. These changes indicate a forward movement in making the consideration of the interests of economic and social advance of the developing

countries the determinant of the efficiency of the operation of the patent system.

B. Conclusions

407. The set of practices of the international patent system and its specific impact on the developing countries are closely related phenomena. It is in this context that a future revision of the patent system will have to be considered.

408. Such a consideration would therefore require a revision of the current patent laws and administrative practices of the developing countries. The purpose of any such revision will have to be that of making patent laws and practices capable of effectively complementing other instruments of policy for national development. Of particular relevance in this connexion are, among others, the following aspects: treatment of nationals and foreigners; independence of patents; rights conferred by a patent; policies concerning subjects of patentability; duration of patent grants; adequate and effective provisions to prevent and correct the abuses resulting from the exercise of the rights conferred by the patent; using patent fees as a flexible instrument of patent policy; introduction of inventors' certificates, utility models and other relevant means for promoting national scientific and technological capabilities.

409. The issues involved in a future revision of the international patent system are complex and therefore need to be considered very carefully. It is important to ensure that the main lines of such a revision are pursued without creating a great deal of misunderstanding, confusion, uncertainty and possible major conflicts of interpretation of national laws and international standards—the very conditions which are highly prejudicial to an orderly acceleration of the transfer of technology from developed to developing countries.

410. The new departures in national patent practices as well as recent international discussions of the patent system are beginning to exercise an influence on clarifying the issues involved in the revision of the patent system, the general direction of the necessary changes and the instrumentalities through which such a revision could be brought about. The directives in paragraphs 37 and 64 of the International Development Strategy for the Second United Nations Development Decade²⁴⁰ and the inter-governmental agreement reflected in resolution 39 (III) of the third session of the United Nations Conference on Trade and Development, mark important steps in moving towards the revision of the system.

411. Further significance attaches in this connexion to the position now being clarified at the international level concerning the promotion of new international and national systems of intellectual property, especially oriented towards the interests of developing countries;

²⁴⁰ Adopted in General Assembly resolution 2626 (XXV) of 24 October 1970.

such systems could involve new international arrangements or substantial changes in the existing conventions.²⁴¹

²⁴¹ In its replies to questions put by members of the Committee on Negotiations with Intergovernmental Agencies of the Economic and Social Council of the United Nations, the International Bureau of WIPO defined in September 1973 its attitude as follows:

"In view of the requirement of unanimity for the revision of most existing conventions, it would probably be more practical to concentrate on new international instruments which could be better geared to the solution of some problems of transfer of technology, restrictive business practices, etc. However, if revision of existing conventions would appear more desirable, and feasible, such revision, even if substantial, would be possible."

412. These considerations provide the context for the revision of the international patent system at both the national and the international levels.

See WIPO, "Relations between the United Nations and WIPO: Report by the Director-General", AB/IV/12, annex VII, para. 43. The report added:

"The recent revision at Paris in 1971 of the Berne Convention for the Protection of Literary and Artistic Works offers an example: the Berne Convention was then revised by adding to it, as an integral part and not as an option, preferential provisions, on a non-reciprocal basis, in favour of developing countries for the purpose of translation and reproduction of works protected by copyright" (*ibid.*, para. 44).

ANNEXES

Annex I

YEARS OF ADOPTION OF NATIONAL PATENT LAWS AND ACCESSION TO THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY

Countries	Year of adoption of		Year of accession to Paris Convention	Countries	Year of adoption of		Year of accession to Paris Convention
	First patent law	Present law			First patent law	Present law	
<i>Developed market-economy countries:</i>				Chad	1963	1963 ^c	1963
Australia	1903	1952	1925	Congo	1963	1963 ^c	1963
Austria	1810	1970	1909	Dahomey	1963	1963 ^c	1967
Belgium	1854	1854 ^a	1884	Egypt	1949	1949 ^a	1951
Canada	1869	1952 ^a	1923	Equatorial Guinea . . . . .	..	..	..
Denmark	1894	1967	1894	Ethiopia . . . . .	..	..	..
Federal Republic of Germany	1877	1968	1903	Gabon	1963	1963 ^c	1964
Finland	1898	1967	1921	Gambia	1925 ^d	1925	.
France	1791	1968	1884	Ghana	1924 ^d	1924 ^a	.
Iceland . . . . .	..	1923 ^a	1962	Guinea . . . . .	..	..	.
Ireland	1927	1964 ^a	1925	Ivory Coast	1963	1963 ^c	1963
Italy	1864	1939 ^a	1884	Kenya	1964	1964	1965
Japan	1885	1959 ^a	1899	Lesotho	1919 ^d	1919	..
Luxembourg	1880	1880 ^a	1922	Liberia	1864	1864 ^a	..
Netherlands	1809 ^b	1963 ^a	1884	Libyan Arab Republic	1959	1959	..
New Zealand	1865	1953	1931	Madagascar	1963	1963 ^c	1963
Norway	1885	1967	1885	Malawi	1957 ^d	1957	1964
Sweden	1819	1967	1885	Mali . . . . .	..	..	..
Switzerland	1889	1954	1884	Mauritania	1963	1963 ^c	1965
United Kingdom	1852	1949 ^a	1884	Mauritius	1875 ^d	1875 ^a	..
United States of America	1790	1952 ^a	1887	Morocco	1916 ^d	1916 ^a	1917
<i>Southern European countries:</i>				Niger	1963	1963 ^c	1964
Greece	1920	1920 ^a	1924	Nigeria . . . . .	..	1970	1963
Portugal	1852	1940	1884	Rwanda	1963	1963	.
Spain	1826	1929 ^a	1884	Senegal	1963	1963 ^c	1963
Turkey	1880	1880	1925	Sierra Leone	1924 ^d	1924 ^a	..
<i>Socialist countries of Eastern Europe:</i>				Somalia	1955 ^d	1955	..
Albania . . . . .	..	1956	..	Sudan	1971	1971	..
Bulgaria	1921	1968	1921	Swaziland	1955 ^d	1955	..
Czechoslovakia	1919	1972	1919	Togo	1963	1963 ^c	1963
German Democratic Republic	1877	1950 ^a	1903	Tunisia	1888 ^d	1888 ^a	1884
Hungary	1894	1969	1909	Uganda	1939 ^d	1939	1965
Poland	1919	1972	1919	United Republic of Cameroon	1963	1963 ^c	1964
Romania	1906	1967	1920	United Republic of Tanzania	1931	1931 ^e	1963
USSR	1812	1959 ^a	1965	Upper Volta	1963	1963 ^c	1963
<i>Developing countries:</i>				Zaire	1886 ^d	1886	..
<i>Africa</i>				Zambia	1957 ^d	1957 ^a	1965
Algeria	1966	1966	1966	<i>Asia</i>			
Botswana	1920 ^a	1920	..	Afghanistan . . . . .	..	..	..
Burundi	1964	1964 ^a	..	Bahrain . . . . .	..	1955	..
Central African Republic	1963	1963 ^c	1963	Bangladesh . . . . .	..	..	..
				Bhutan . . . . .	..	..	..
				Burma . . . . .	..	..	..
				China	1950	1950	..

Countries	Year of adoption of		Year of accession to Paris Convention
	First patent law	Present law	
Democratic People's Republic of Korea	..	..	..
Democratic Yemen	1938 ^d	1945 ^a	..
India	1859 ^d	1970	..
Indonesia	..	..	1950
Iran	1930	1931	1959
Iraq	1935	1970	..
Israel	1924 ^f	1967	1950
Jordan	..	1953	1972
Khmer Republic	..	..	..
Kuwait	1962	1962	..
Laos	..	..	..
Lebanon	1924	1924	1924
Malaysia	1951 ^f	1951	..
Maldives	..	..	..
Mongolia	..	..	..
Nepal	..	1965	..
Oman	..	..	..
Pakistan	1911 ^d	1911	..
Philippines	1913 ^d	1947	1959
Qatar	..	..	..
Republic of Korea	..	1961 ^a	..
Republic of Viet-Nam	..	1957	1956
Saudi Arabia	..	..	..
Singapore	1937 ^d	1937 ^a	..
Sri Lanka	1892 ^d	1906 ^a	1952
Syrian Arab Republic	1924	1946	1924
Thailand	..	..	..
United Arab Emirates	..	..	..
Yemen	..	..	..

Latin America

Argentina	1864	1864 ^a	1967
Bahamas	..	1965	1963
Barbados	1903 ^d	1903 ^a	..
Bolivia	1858	1916 ^a	..
Brazil	1830	1971	1884
Chile	1840	1931	..
Colombia	1869	1971	..
Costa Rica	1896	1896	..
Cuba	1936	1936	1904
Dominican Republic	1911	1911 ^a	1890

Countries	Year of adoption of		Year of accession to Paris Convention
	First patent law	Present law	
Ecuador	1890	1928 ^a	.. ^g
El Salvador	1901	1913	.. ^g
Guatemala	1886	1937	.. ^g
Guyana	1937 ^d	1937	..
Haiti	1922	1922 ^a	..
Honduras	1919	1919	..
Jamaica	1857 ^d	1857 ^a	..
Mexico	1832	1942 ^a	1903
Nicaragua	1899	1899 ^a	..
Panama	1908	1939	..
Paraguay	1925	1925	..
Peru	1869	1971	..
Trinidad and Tobago	1900 ^d	1900 ^a	1964
Uruguay	1885	1941	1967
Venezuela	1878	1955	..
<i>Other developing countries:</i>			
Cyprus	1957 ^d	1957	1966
Fiji	1879 ^d	1879 ^a	..
Malta	1889 ^d	1899	1967
Western Samoa	..	..	..
Yugoslavia	1921	1960 ^a	1921
<i>Other states:</i>			
Holy See	..	..	1960
Liechtenstein	..	1928	1933
Monaco	..	1955 ^a	1956
San Marino	..	..	1960
South Africa	1910	1952 ^a	1947

Sources: "Major provisions of patent legislation in selected countries" (TD/B/AC.11/19/Add.1); P. J. Federico, "Historical patent statistics", *Journal of the Patent Office Society*, vol. XLVI, No. 2, February 1964, pp. 89-171; M. Hiance and Y. Plasseraud, *Brevets et sous-développement: la protection des inventions dans le tiers-monde* (Paris, Librairies techniques, 1972); Octrooibureau Los En Stigter, *Manual for the Handling of Application for Patents, Designs and Trade Marks throughout the World*, Amsterdam, (loose-leaf edition); W. M. Wallace White and B. G. Ravenscroft, *Patents Throughout the World* (New York, Trade Activities, Inc., 1971) (loose-leaf edition).

^a Present law amended by subsequent revisions.

^b In 1869 the patent law was repealed and reintroduced in 1912.

^c Member State of the Libreville Agreement of 13 September 1962 for the creation of an African and Malagasy Industrial Property Office (OAMPI).

^d Law existing at time of independence.

^e Law of Zanzibar.

^f Law existing at the time of the establishment of the State.

^g Ecuador, El Salvador and Guatemala were among the signatories of the Paris Convention but they left the Paris Union in 1886, 1887 and 1895, respectively.

Annex II

SOURCES, COUNTRY COVERAGE, AND METHODOLOGY FOR TABLES 4-9 AND 11

A. Sources

1. Annex I.
2. *The role of patents in the transfer of technology to developing countries* (United Nations publication, Sales No. 65.II.B.1).
3. BIRPI (WIPO), *La Propriété industrielle*, revue mensuelle de l'Organisation Mondiale de la Propriété Intellectuelle (OMPI) et des Bureaux internationaux, réunis pour la protection de la propriété intellectuelle (BIRPI), Genève.
4. BIRPI (WIPO), *Industrial Property*, monthly review of the World Intellectual Property Organization (WIPO) and the United International Bureaux for the Protection of Intellectual Property (BIRPI), Geneva.
5. "Major provisions of patent legislation in selected countries" (TD/B/AC.11/19/Add.1).
6. W. M. Wallace White and B. G. Ravenscroft, *Patents Throughout the World* (loose-leaf book), New York, Trade Activities, Inc., 1971.
7. *Patents and Trade Mark Review* (New York) published monthly, by Trade Activities, Inc.

B. Country coverage and methodology

Table 4: Source 1. For countries considered in each group, see the source.

Table 5: *Idem*.

Table 6: Source 1; source 2 (annex E); source 3 (vol. 39 (1923), p. 10; vol. 57 (1951), p. 194; vol. 67 (1951), p. 218; vol. 77 (1961), p. 298); source 4 (vol. 10, No. 12 (December 1971), annex).

For countries considered in each group, see source 1. As indicated in the text, in the case of the socialist countries of Eastern Europe figures include patents and inventors' certificates. With the exception of 1970, the data include patents and utility models.

Table 7: Source 4 (vol. 5, No. 12 (December 1966), annex; vol. 7, No. 12 (December 1968), annex; vol. 11, No. 12 (December 1972), annex).

For groups of countries, see source 1. The table covers only those countries that, according to the source, report patents granted in the given year broken down into "nationals" and "foreigners". Thus, the column "total patents granted" is not comparable with data in other tables (e.g. table 6) which cover more countries than table 7. According to the source, "differentiation between nationals and foreigners is, in general, based on the residence of the applicant rather than on nationality".

Table 8: Source 4 (vol. 5, No. 2 (February 1966), annex); source 4 (vol. 9, No. 12 (December 1970), annex; vol. 11, No. 12 (December 1972), annex). For countries considered in each group, see source 1.

Table 9: Source 4 (vol. 5, No. 2 (February 1966), annex); source 4 (vol. 6, No. 12 (December 1967), annex; vol. 11, No. 12 (December 1972), annex). Reporting countries give information regarding the country of origin of the patents granted to foreigners in a particular year. Table 9 considers a number of developing countries granting patents to nationals of the countries of origin included in the sample.

Table 11: Source 4 (vol. 11, No. 12 (December 1972), annex). For countries considered in each group, see source 1. WIPO publishes each year data showing the number of patents granted during a given year, broken down according to the International Patent Classification. The figures for 1971 cover 62 countries and are broken down into 8 classes and 23 sub-classes.

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