

# I

## GLOBAL INSTITUTIONAL ISSUES

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*Part One provides an overview of the nature and significance of intellectual property rights (IPRs) and their evolution over time. It goes on to present the key features of the framework of the global intellectual property regulatory system and the international institutions that form its core. The most important of these institutions are the World Trade Organization (WTO) and the World Intellectual Property Organization (WIPO). The TRIPS Agreement is of special importance in that it seeks to establish enforceable universal standards of protection and enforcement for virtually all of the most important IPRs such as patents, copyrights and trademarks.*



## 1

## Introduction

*The first chapter provides a general background to the understanding of intellectual property rights by considering, among others, what purpose they serve, their rationale and justification, a brief review of the past and present rights regimes, and, finally, the relevance of IPRs to commerce.*

## What are intellectual property rights and what purpose do they serve?

Intellectual property rights (IPRs) are legal and institutional devices to protect creations of the mind such as inventions, works of art and literature, and designs. They protect products by differentiating them from similar ones sold by competitors through the use of distinguishing marks. Over the years, the rather elastic concept of IPRs has been stretched to include not only patents, copyright, industrial designs and trademarks, but also trade secrets, plant

breeders' rights, geographical indications, and rights to layout-designs of integrated circuits. (Box 1.1 describes the main categories of IPRs). Of these, patents, copyright and trademarks are arguably the most significant in terms of their economic importance, their historical role in the industrialization of Europe and North America, and their current standing as major pillars of the international law on intellectual property rights.

*Intellectual property rights are legal and institutional devices to protect creations of the mind*

### *Box 1.1: Main categories of IPRs*

**Patents** provide inventors with the right to prevent others from using, selling or importing their inventions for a fixed period (minimum of 20 years under TRIPS). They do not, however, replace marketing approvals that may be required under national law. Applicants for a patent must satisfy a national patent-issuing authority that the invention described in the application is new, susceptible to industrial application (or merely 'useful' in the United States), and that its creation involved an inventive step or would not be obvious to someone skilled in the art represented by the claimed invention.

**Copyright** gives authors legal protection for various kinds of literary and artistic work. Copyright law protects authors by granting them exclusive rights<sup>1</sup> to sell copies of their work in whatever tangible form (e.g. printed publication, sound recording and/or film) is being used to convey their creative expressions to the public. In theory, legal protection covers the expression of the ideas contained, not the ideas themselves. In practice, information may also be protected, as when copyright is extended to cover new types of work such as software programs and databases. The right usually lasts for the life of the author plus 50 years, though in some jurisdictions, such as the European Union (EU) member countries and the United States, this has been extended to 70 years.

**Trademarks** are marketing tools used to support a company's claim that its products or services are authentic or distinctive compared with similar products or services of competitors. They usually consist of a distinctive design, word, or series of words placed on a product label. In some jurisdictions, sounds, shapes and smells can also be protected as trademarks. Normally trademarks can be renewed indefinitely, though this is likely to be subject to continued use. The trademark owner has the exclusive right to prevent third parties from using identical or similar marks in the sale of identical or similar classes of goods or services that might confuse customers.

**Utility models** are a form of patent protection for minor or incremental inventions. Though novelty and inventiveness are required, the criteria for conferring protection are generally less strict than for patents, and the term of protection is also shorter. The rationale behind utility models is to encourage and protect inventions that do not meet the stricter requirements of patent protection, but that are nevertheless considered beneficial to the society. Utility models protect the *functional* aspect of a product, generally in the mechanical field, and not its outward appearance (as in industrial designs). There is no universal consensus as to what constitutes a utility model, and the lack of international harmonization means that most countries refer to such protection under different names: petty patents, small patents, utility certificates, innovation certificates and utility innovations.

**Industrial designs** concern the protection of the *outer appearance* of a product. A "design" connotes an element or characteristic completely separate from the object it enhances or to which it is applied. As with utility models, there are no international common standards for design protection. States are therefore free to protect designs under copyright law or under *sui generis* design law. Most *sui generis*- design laws in the world are fashioned upon patent law. Usually, the design is registered (or deposited) and thereby granted protection, if it meets a novelty criterion (ranging from domestic novelty to universal novelty). The proprietor of the design thus has the right to prevent any third person from producing an identical or similar design, even if the latter design arises from an independent creation. The term of protection is usually shorter than under patent law (minimum of 10 years under TRIPS). Under an unregistered *sui generis* design right, protection is conferred automatically.

**Geographical indications (GIs)** are indications which identify a good as originating in the territory of a WTO Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin (Article 22.1 TRIPS Agreement). GIs confer upon right holders the right to prevent third parties from using the protected indication, if such use misleads the public as to the geographical origin of the good or if such use constitutes an act of unfair competition. In case of wines and spirits, the right holder is conferred the same right if the respective good does not originate in the place indicated by the geographical indication in question, even if there is no consumer confusion or act of unfair competition. WTO Members are free as to make available the legal means for such protection. Some Members provide for a *sui generis* form of protection, while others apply their domestic rules on collective marks or certification marks.

**Collective marks** belong to an association or group whose members are entitled to use that mark to indicate the origin (possibly including a geographic name) of a product. There are substantial differences in the way that collective marks are regulated by national law. Thus each country may determine the particular conditions under which a collective mark shall be protected, and may refuse protection if the mark is contrary to the public interest (see Article 7.2 *bis* of the Paris Convention).

**Certification marks** belong to a certifying person or body which, by affixing or allowing the affixing of the mark, would provide assurance with a set of rules or qualifications. The rationale behind this is the maintenance of a certain quality of the certified products. As with collective marks, countries are free as to determine the conditions of protection.

**Trade secrets** provide for another form of protection for commercially valuable information such as production methods or business plans. They are protected from disclosure by dishonest means but, once they are learned through legitimate means, they enter the public domain.

Source: UNCTAD-ICTSD, *Resource Book*

*Intellectual property rights have never been as much in the news as they are today*

Several IPR-related issues have caused controversy. For example, drug companies have been accused of taking advantage of their patent rights by charging exorbitant prices for life-saving medicines such as AIDS drugs. Indigenous peoples, and advocacy groups that support their rights, condemn corporate “biopirates” for making money out of their knowledge and claiming patent rights for ‘inventions’ essentially identical to knowledge acquired from tribal healers. Concerns are raised that patenting plants, animals, genes and gene fragments is not only unethical but may also be stifling innovation. Many developing countries complain about the pressure they feel from being made to introduce Western-style IPR regimes before they feel ready for them, and worry

that this places them at a serious disadvantage in an era of rapid technological change. And while the global trend is towards ever-stronger enforcement of intellectual property rights, increasingly determined efforts are being made to oppose this process.

Thus there are far-reaching potential economic and social implications of IPRs, and the stakes have never been higher than they are today. Increasing numbers of people have begun to recognise this. Consequently, despite their long history, public interest in IPRs worldwide has reached unprecedented levels, and views on their effects differ quite radically.<sup>2</sup>

*Box 1.2: The Commission on Intellectual Property Rights*

In September 2002, the Commission on Intellectual Property Rights, established by DFID and chaired by Professor John Barton, published a report entitled, *Integrating Intellectual Property Rights and Development Policy*. The Commission was mandated to look at how IPRs might work better for poor people and developing countries by providing balanced, evidence-based policy recommendations. The document contains some fairly far-reaching recommendations directed at the global IPR system and the institutions within it, as well as national IPR policy-making. It covers the following six areas: intellectual property and development; health; agriculture and genetic resources; traditional knowledge, access and benefit sharing, and geographical indications; copyright, software and the Internet; and patent reform.

Overall, the Commission made an overwhelming case that a one-size-fits-all approach to IPR protection simply does not work, especially when the required levels of protection are as high as they are today or are likely to become in the near future. At certain stages of development, weak levels of IPR protection are more likely to stimulate economic development and poverty alleviation than strong levels. The Commission presents well-documented historical evidence to support this view. Available empirical data is, as the Commission reveals, somewhat lacking at present; but what exists points to the same conclusion.

The Commissioners presented strong evidence for their critical stance with respect to the international IPR regime, but at the same time avoided the error of treating developing countries as a homogeneous group of countries. Rather they argued that due to their different scientific and technological capacities and social and economic structures, an optimal IPR system is bound to vary widely from one country to another. For example, developing countries that have relatively advanced scientific and technological capacities, such as China and India, may well benefit from high levels of IPR protection in some areas, whereas the least-developed countries almost certainly will not.

Among the recommendations relating to particularly controversial matters are that developing countries should establish workable laws and procedures to allow them to use compulsory licensing and, in some cases, to provide for government use in order to improve, for example, access to urgently needed medicines. As for the patenting of life, the Commission recommended that developing countries should not provide patent protection for plants and animals and should be permitted to develop *sui generis* systems for plant varieties that suit their agricultural systems. With respect to traditional knowledge and genetic resources, the Commission recommended that all countries should provide in their legislation for the obligatory disclosure in patent applications of the geographic source of genetic resources from which the invention is derived. One important recommendation, related specifically to least developed countries, is that they should be granted an extended transition period for implementation of all TRIPS obligations until at least 2016.

IPRs have been created primarily to benefit society. A major IPRs policy issue today is what levels of IPR protection bring benefits, to whom and in which societies, and also whether current pressures on developing countries to adopt higher standards are appropriate for their development needs.

One could argue - as many do - that the recent trends in IPR protection, as discussed here, are necessary responses to technological change. While there is probably much truth in this, technological changes are so varied in nature, depending on the

industrial sector, that a uniform and general strengthening of IPRs is not necessarily the appropriate response. More fundamentally, it is far from self-evident that the existence of strong IPR protection is a precondition for the transformation of developing country economies into developed ones. The Commission on Intellectual Property Rights established by the United Kingdom's Department for International Development (DFID), which produced its final report in September 2002, has provided important evidence in this respect (box 1.2).<sup>3</sup>

### *What are the justifications for the granting of exclusive rights?*

Traditionally, IPRs - especially patents and copyright - have been justified on both consequentialist and rights-based grounds. These are not mutually exclusive, since some arguments contain elements of both.<sup>4</sup>

The consequentialist justification is that when inventors, authors or artists have an exclusive right to prevent others from reproducing and selling their works, society benefits. This proposition is based on two assumptions. First, it assumes that such a right encourages inventors to invent, authors to write and artists to paint. Second, it presupposes that the greater the quantity of inventions and creative works eventually released into the public domain, the more the public benefits through economic or cultural enrichment, or enhanced quality of life. Thus advocates of this justification tend to argue that IPRs are *incentives* that encourage creative endeavour.

According to rights-based justifications for IPRs, property in intellectual works is primarily a matter of justice rather than of public policy. IPR laws exist to define and enforce the property rights but are not the source of these rights, since to enjoy a property right over one's creative work is a natural right and, arguably, also a human right. According to such a view unauthorized use of somebody's invention or creative work is an unfair - and therefore illegal - intrusion on the creator-proprietor's freedom to benefit from its use without interference. This justification does not of course easily apply to the many cases where IPRs are owned by companies and not individuals.

Consequentialist justifications have inspired national IPR laws and policy-making far more than rights-based ones.<sup>5</sup> For example, the original role of the United States patent and copyright systems was to implement Article 1 Section 8 of the United States Constitution, which empowers Congress "to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." Thus United States IPR law was not founded on a natural-rights justification of intellectual property ownership. Rather, the granting of exclusive rights *for limited times* was regarded as being beneficial to the country in terms of scientific and cultural progress.

But the consequentialist approach that IPRs exist to bring benefits to society does not tell us much about the ends that IPRs are meant to serve nor how those ends ought to be achieved. In general terms, IPRs - especially patents - are tools for economic advancement that should contribute to the enrichment of society through:

- (i) the widest possible availability of new and useful goods, services and technical information that derive from inventive activity; and
- (ii) the highest possible level of economic activity based on the production, circulation and further development of such goods, services and information.

In pursuit of these aims, inventors are able to protect their inventions through a system of property

*IPRs are tools for economic advancement that should contribute to the enrichment of society*

rights – the patent system. Once acquired, the owners then seek to exploit their rights in the marketplace. The possibility of attaining commercial benefits, it is believed, encourages invention and innovation (see chapter 3 below). But after a certain period of time, these rights are terminated and the resulting unprotected inventions are freely available for others to use and improve upon. Enhancing the society's capacity to generate such useful goods, services and information is itself a means for achieving such ends (and may, it could be argued, be a sufficient end in itself). But it is not the only means. After all, these could also be imported, and legal incentives could be created for such imports, as they were in the past.

Philosophy is not enough to explain why we have IPRs, except in general terms. Economics too is helpful, not only for identifying the specific problems that IPRs are meant to solve, but also for helping policy makers design IPR systems to fulfil their intended objectives. In economic terms, patents and copyright are primarily intended to resolve market failure. The main issue is that economically useful knowledge or culturally enriching works are likely to be expensive to produce and market as well as difficult to control in a competitive market. Therefore, in the absence of any regulations to prevent "free-riding", those capable of providing such knowledge or works are likely to be discouraged not only from investing in its production, but also from publicly disclosing it. This is why economists often portray intellectual property rights, especially patents, as a kind of regulatory response to the failure of the free market to achieve optimal resource allocation for inventions. According to such a perspective, "patents are designed to create a market for knowledge by assigning proprietary rights to innovators which enable them to overcome the problem of non-excludability while, at the same time, encouraging the maximum diffusion of knowledge by making it public."<sup>6</sup> This explanation for patents assumes that knowledge is a public good (box 1.3).

Patents are temporary exclusionary rights. Such rights can be converted into market monopolies if the invention so protected results in a commercial product or process. The public goods explanation for patents posits that the possibility of acquiring such rights encourages both investment in invention and the R&D needed to turn inventions into marketable

innovations. Information about the invention as revealed in the patent and by the invention itself is, in the bargain, diffused throughout the economy. In this context, it is helpful to conceive of a patent as a contract between the holder and the government on behalf of the citizenry. The holder receives an exclusive right over his or her invention in exchange for the payment of fees and, more importantly, for disclosing the invention for others to learn from. Without a patent, the inventor would have no incentive to disclose it, resulting in a loss to society if such lack of protection left the inventor with no alternative but to keep it secret.

*Box 1.3: Knowledge as a public good*

The notion that knowledge is a public good was nicely articulated by Thomas Jefferson who wrote in a letter that the "peculiar character" of an idea is that "the moment it is divulged, it forces itself into the possession of everyone, and the receiver cannot dispossess himself of it", and also that "no one possesses the less, because every other possesses the whole of it". He then went on to explain that "he who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine receives light without darkening me".

Why create markets for knowledge? Why are they considered to be beneficial, and how are patents supposed to create them? Often, patent holders are poorly placed to exploit their invention in the marketplace. For example, a creative but small company might lack the funds to develop and commercialise new products based upon its inventions. If such products were desirable for consumers, failure to commercialise would be a loss to society. But if the company owned a patent, a wealthier company might wish to license or buy the patent, secure in the knowledge that the invention was legally protected. And if the invention were kept secret, how would bigger companies know about it? The disclosure of patent information makes it possible for prospective users to find inventions of interest and then to approach their owners.

However, several studies<sup>7</sup> caution against assuming that inventions are necessarily discrete and independent. In reality, they tend to be cumulative and dependent.<sup>8</sup> Moreover, reproducing them may

*Patents and copyright are primarily intended to resolve market failure*

*IP incentive functions by restricting use by others of the protected invention for a certain period*

depend on tacit knowledge, which cannot easily be documented in written form, such as in a patent specification, and is therefore available only to the inventor. Also, as is sometimes pointed out, in some cases, other means of appropriation are not only possible, but may actually be more effective than IPRs. These include marketing, customer-support services, goodwill, and the advantage that comes with being first to bring inventions to market.<sup>9</sup> The fact that intellectual works are not necessarily public goods makes it extremely difficult, if not

*Why are patents controversial?*

One of the reasons that patents are controversial is that the IP incentive - as far as it actually works - functions by restricting use by others of the protected invention for a certain period. Yet follow-on innovation by others is more likely to happen if use is not restricted. Thus a balance needs to be struck between private control over the use of technical information and its diffusion. Where the line - in terms of the length, breadth and strength of protection - should be drawn is difficult to determine, but will vary widely from one country to another. In countries where little inventive activity takes place, free access to technical information may well do more to foster technological capacity building than providing strong private rights over such information. In fact, technological capacity building may, at certain stages of national development, be best achieved by requiring foreign technology holders to transfer their technologies on generous terms, rather than by trying to encourage domestic innovation by making strong legal rights available to all.<sup>11</sup> This suggests that some developing countries should be careful not to make the rights too strong until their economies are more advanced. Historical evidence suggests that several of today's

*What about other IPRs?*

The discussion so far has focused on the economics of the patent and copyright system. Other IPRs, such as trademarks, can also be justified on economic grounds, but in different ways. Trademarks make products identifiable from similar products available in the market, and encourage producers to strive to maintain the value of their marks. According to Maskus, "trademark protection may be expected

impossible, to determine an optimal level of protection for achieving an optimal allocation of resources for inventive activities. The difficulty for policy makers is compounded by the task of ensuring that protection is effective, but not so strong as to unduly restrict the freedoms of follow-on innovators. It has also been suggested that while patents encourage disclosure of an invention, they may, paradoxically, also encourage secrecy.<sup>10</sup> (This is discussed further in chapter 4.)

developed countries, rightly or wrongly, took such a policy decision in the past.<sup>12</sup>

The task of designing IPR systems to stimulate the development and dissemination of new technologies would be much easier if policy makers could predict the trajectory of their future development, especially in an era of rapid technological advances such as the present one. This is always difficult, but especially for developing countries, which lack the data necessary for designing patent systems that most efficiently stimulate the *long-term* development and dissemination of new welfare-enhancing products and technologies.

In short, patents and other IPRs are intended to balance different aims and interests in order to most effectively achieve certain public policy goals. Striking an optimum balance is extremely difficult. IPRs may not be sufficiently protective, but they could also be over-protective. However, it is important to understand that balancing the interests of present and future creators, users of intellectual property and the public is not just a matter of economic calculation; it is an inherently political exercise.

both to raise the average quality of products on the market and to generate further product differentiation" (see chapter 4 for further discussion).<sup>13</sup> Thus consumers and producers stand to benefit. But this view is not universally held. Concerns have been raised about trademarks (as with other IPRs) being used in ways that intrude on the legitimate freedoms of others. For example, companies sometimes

protect fundamental market tools, such as shapes or descriptive words, that might be vital for competitors; or drug companies sometimes seek to combine trademark protection with the filing of large numbers of patents to extend the monopoly, or at least the market dominance, of a drug well beyond

the life of the original patent protecting it. In other words, a mixture of different types of IPRs can be, and are, used as part of the strategy firms adopt to develop and maintain market power or market dominance.

## Intellectual property rights: past and present

Like many other systems of economic regulation, intellectual property rights have a history going back centuries.<sup>14</sup> But the main IPRs, such as patents and copyright, took their modern forms in the nineteenth century at a time when Europe and North America were in the midst of rapid industrialization.

Over the years, patents have been granted for a variety of public policy purposes such as to encourage the immigration of craftsmen, to reward importers of foreign technologies, to reward inventors in general, to create incentives for further inventive activity, to encourage the dissemination of new knowledge<sup>15</sup>, and to allow corporations to recoup their investments in R&D. From a public policy perspective, each of these justifications is as legiti-

mate as the others. Which of these is most appropriate for a country depends largely on its economic circumstances. Historically, and even today, the way patents have been justified in different countries has depended on the level of industrial development – and also to whom one speaks. Nonetheless, as with other forms of intellectual property (especially copyright), justice-based arguments for stronger and better enforced rights are also frequently deployed, and such claims can carry strong moral force. After all, many people would consider it just as immoral for somebody to copy an inventor's useful new gadget and claim it as his or her own as to similarly misappropriate somebody's new novel, song or painting.

### *The first IP statutes*

The first patent law for the protection of inventions was passed by the Venetians during the Renaissance. Another early patent law was the English Statute of Monopolies of 1624. Its true purpose was to prohibit monopolies rather than to promote invention, and the government intended the law to encourage foreign craftsmen to settle in the country.<sup>16</sup> Monopoly grants were banned, *except* for “the true and first inventor or inventors” of “any manner of new manufactures within this realm” as long as “they be not contrary to the law, nor mischievous to the state, by raising prices of commodities at home, or hurt of trade, or generally inconvenient.” Such inventors could acquire up to 14 years' monopoly protection. Strict novelty was not required, since courts interpreted the purpose of granting patents as being to introduce new trades to England whether or not they were “novel” elsewhere in the world.<sup>17</sup> It should be noted in this context that at this time England was less advanced technologically than both

France and the Netherlands.<sup>18</sup> The Statute was amended several times, but remained in force until 1977, when Britain adopted the standards of the European Patent Convention, including its requirement of absolute (i.e. global) novelty.<sup>19</sup>

The 1836 United States Patent Act<sup>20</sup> was arguably the first modern patent law. It required all applications to be examined by the government patent office for novelty and usefulness. Although this law did not discriminate between United States and foreign inventors with respect to the examination or the extent of rights granted, foreign applicants had to pay much higher fees, especially if they were British. Such discrimination was abolished in 1861 for nationals of countries whose laws were non-discriminatory towards Americans.

The German Patent Act<sup>21</sup> of 1877 was also an examination system.<sup>22</sup> In common with many countries

*The way patents have been justified in different countries has depended on the level of industrial development*

today, it did not cover inventions deemed contrary to public order or morality. Patenting of inventions regarding luxuries, medicines, articles of food, or chemical products was also prohibited. Some other European countries managed without a patent law for much of the nineteenth century. Switzerland had a patent system only from 1799 to 1802,<sup>23</sup> not re-establishing it until 1888, and the Netherlands prohibited patents from 1869 until 1912.<sup>24</sup>

As with patents, the origin of copyright can be traced to Renaissance Italy, although the most famous early copyright law is probably the English Statute of Anne of 1710.<sup>25</sup> Early copyright law was associated with the interests of domestic printers rather than authors. While its intent was both to prevent unauthorized printing, reprinting and publishing of books and writings and to encourage “learned men to compose and write useful books”,

*It is not until the nineteenth century that copyright law took its modern form*

#### *Emergence of modern IP statutes*

As with patent law, it is not until the nineteenth century that copyright law took its modern form. During this century, the protection term increased, the law began to accumulate a wider range of subject matters and international agreements began to proliferate, with the result that national standards became more harmonized and opportunities to secure stronger protection of creative works in more countries were greatly enhanced. These trends have continued. With respect to subject matters, for example, United Kingdom copyright law had, by 1988,<sup>29</sup> been stretched to include literary and dramatic works (including computer programs), musical works, artistic works, sound recordings, films, broadcasts, cable programmes, typographical arrangements, and computer-generated works. And protection was not only economic in nature, but, following continental tradition and the requirements of the Berne Convention for the Protection of Literary and Artistic Works, also included authors’ moral rights. Moral rights include the right of authors to be identified as such (the “right of paternity”), and to object to having their works altered in ways that would prejudice their reputation (“the right of integrity”).

Historically, national copyright laws have generally been less friendly towards the interests of foreigners

the Statute of Anne was primarily the outcome of a campaign by an association of printers (the Company of Stationers) to reassert its control over the English book trade, rather than a law to uphold the rights of authors. Nonetheless, for the first time, this statute did recognize that authors could be proprietors of their works.<sup>26</sup> It provided a time-limited right to print and reprint books whose titles were entered in the register book of the Company of Stationers. According to the economic historian, Paul David,<sup>27</sup> “copyright law, from the beginning, has been shaped more by the economics of publication than by the economics of authorship.” Nevertheless, copyright law in continental Europe displayed much more concern for the artistic integrity of authors than did the Anglo-American copyright regulations.<sup>28</sup> The time limitation, as with patents, reflects the need to balance the rights of publishers and authors with the interests of the community.

than have patent laws. This is because, while granting rights to foreigners has sometimes been considered beneficial to the country by encouraging the introduction of protected technologies, allowing foreigners to protect their literary and artistic works does not provide such obvious economic advantages.<sup>30</sup> For example, for many years United States copyright law contained a so-called “manufacturing clause”, which originally required all copyrighted literary works to be printed in the country. This was a protectionist measure intended to benefit American printers. Although the clause was weakened over the years, it remained on the statute books until as late as 1986.

Most countries that experienced industrial revolutions during the nineteenth century had patent systems. But, as pointed out above, Switzerland and the Netherlands were exceptions to this general rule. What can be concluded from this? While it is probably true that patent systems did indeed stimulate the development and diffusion of new technologies that were the foundation for rapid industrial development,<sup>31</sup> it does not prove that they were indispensable. Since we cannot turn the clock back and re-run the nineteenth or twentieth centuries without a patent system there is much that we will never be sure of. But few if any of these early

patent systems would come close to compatibility with the World Trade Organization's TRIPS Agreement, which seeks to establish enforceable universal minimum (and high) standards of protection and enforcement for virtually all of the most important IPRs.<sup>32</sup> For one thing, those earlier agreements tended to be biased towards domestic inventors and users of foreign technologies. And for another, the rights given to holders were generally quite weak by modern standards. Regardless of the relevance of

historical experience, it is necessary to recognize that the world has changed considerably in the last 100 years, particularly with respect to the emergence of new technologies and a more integrated and open trading system. However, under these circumstances, developing countries today no longer have the policy options and flexibilities developed countries had in using IPRs to support their national development.

*Developing countries no longer have the policy options and flexibilities developed countries had*

### *The international system and the evolution of IPR regimes*

While national IPR regulations (in some countries) have existed for two or more centuries, the history of intellectual property at the international level really began in the late nineteenth century, with the formation in the 1880s of unions, mostly in European countries, for the protection of industrial property and literary and artistic works. Previously the only instruments for international protection had been based on bilateral commercial agreements involving mainly European countries.<sup>33</sup> The process of expanding international IPR regulation has continued since then, to the extent that most countries of the world are now involved. In recent decades, the evolution of developed-country IPR regimes has been characterized by three phenomena:

#### *1. The extending of protectable subject matter*

The parameters of protectable subject matter have been widened, and there has been a growing tendency to reduce or eliminate exceptions. Examples include the extension of copyright and patent protection to computer programs, the application of patent protection to cover business methods, life-forms, cell lines and DNA sequences, the removal of

exclusions on product patents for drugs, and the extension of trademark protection in some countries to include sounds and smells.

#### *2. The creation of new rights*

Examples of new systems of rights, created mostly during the second half of the twentieth century, include plant breeders' rights, rights to layout-designs of integrated circuits, rights related to copyright such as performers' rights, and, most recently, Internet communication access rights.

#### *3. The progressive standardization of the basic features of IPRs*

For instance, patent regulations provide 20-year protection terms under TRIPS; require examinations for novelty, inventive step or non-obviousness, and industrial applications;<sup>34</sup> assign rights to the first applicant rather than the first inventor;<sup>35</sup> and provide protection for inventions in all industries and fields of technology. Also, the duration of rights related to performances and sound recordings has been set by TRIPS at 50 years for performers and 20 years for broadcasting organizations.

### *International extension and gradualism*

These developments in IPR law, all of which began in Europe or North America, are spreading to the rest of the world, and at an accelerating pace. Two of the major driving forces have been the Paris and Berne Conventions. During the 1960s and 1970s, 33 developing countries joined the Paris Convention for the Protection of Industrial Property, and 25 joined the Berne Convention for the Protection of Literary and Artistic Works. Consequently, national IPR regimes throughout the world are increasingly

required to harmonize minimum standards of protection. These, however, remain a long way from uniform law.

It should not be assumed, though, that the developments referred to above were introduced gradually over time, even in the developed world. In fact, many of the examples cited above were introduced into national IPR regimes from the 1960s onwards. For example, until the 1960s several West European

countries, including France, Belgium and Italy, still granted patents on the basis of registration.<sup>36</sup> Moreover, the bar to patentability of pharmaceutical products in several developed countries was lifted only in the 1960s or 1970s.<sup>37</sup> And other important extensions of protectable subject matter are even more recent, such as the patenting of animals and

DNA sequences, and the sui generis protection of integrated circuit layout-designs. At the same time, a few developing countries have moved in the reverse direction. For example, in the late 1960s and early 1970s Brazil and India passed laws to exclude pharmaceuticals as such from patentability (as well as processes to manufacture them in Brazil's case).

*Technological change creates new opportunities for private appropriation, but also poses new challenges*

### Why intellectual property is important to international trade

The commercial importance of IPRs has grown considerably, especially since the 1970s. Those national economies in which most IPR-holding corporations are concentrated have experienced a transformation in the composition of their exports in manufactures. Since 1970, for most developed countries, the contribution of advanced technologies to economic performance in terms of manufacturing value-added and exports has increased substantially (table 1.1).

One reason for this situation is the incessant and increasing pressure on businesses and national economies to be competitive. This puts a premium on innovation and creativity, aimed at developing new products and services and at differentiating existing ones from those of competitors. Perhaps the most important of these advanced technologies are information and communications technology (ICT) and those based upon the applied life sciences (see chapter 4, below). Both have multiple industrial applications, and are of interest to companies operating in a wide range of product and service markets. Thus, in addition to the commercial interests responsible for innovating in such fields as software, telecommunications, pharmaceutical and biotechnology companies, many other business sectors deploy these technologies including producers and providers of computers and other electronic goods, music, television programmes, films, printed works and financial services, to name a few.

Technological change creates new opportunities for private appropriation, but also poses new challenges. One of these challenges is the threat of "free-riding", which certain new technologies may facilitate. IP protection helps to maximize these opportunities for private appropriation while mini-

mizing the risks of potential "free-riding". Thus many companies operating in all the above sectors hold large intellectual property portfolios to protect products and services developed with these technologies. Indeed, for these businesses, the high market value of their goods and services may be due largely to such IPR-protectable, intangible inputs as technical knowledge and artistic creativity, or attributes such as reputation and distinctiveness. Such businesses assert these rights with great determination. After all, developing, applying and benefiting commercially from such inputs and attributes can involve enormous expenditures on R&D and marketing. Moreover, despite the market dominance of knowledge-rich corporations, they are also highly vulnerable. While the marginal cost of manufacturing such goods as software packages, compact discs and videos is extremely low, so is the marginal and fixed cost of copying them. Multiple reproduction of similar quality of these goods is now possible with low-cost equipment and minimal (if any) technical know-how. In countries where IPRs such as patents, copyrights and trademarks are unavailable or enforcement is weak, imitators can quickly and inexpensively copy these products and sell them domestically and in other countries where IPR protection is also weak. Similarly plant breeding companies can find their non-hybrid plant varieties being sold without their consent. Even though entry barriers for generic drug firms are higher in that they require competent chemists and more expensive equipment for bulk production than, for example, software and compact disc piracy, the free-riding problem that research-based drug companies face is also potentially serious. However, while IP protection is important for minimizing potential free-riding, it could also reinforce economic concentration and market power and

create opportunities for anti-competitive behaviour, whether by individual firms or by concerted practices or agreements among firms. For these reasons, a number of industrialized countries have legislated antitrust rules concerning the use of IPRs.<sup>38</sup>

In addition to their possible effect on competition, IPRs may also have important repercussions on the international flow of protected goods and services. The protection in a given country of a company's

R&D investments through IPRs may induce that company to export its products to that country, thereby increasing the international flow of trade. In this respect, there is a positive link between IPR protection and trade. On the other hand, IPR-holders may block imports if those infringe upon their domestic exclusive rights.<sup>39</sup> In that sense, there is a negative link between IPR protection and trade, with IPRs acting as trade barriers.

*Table 1.1: Share of high-technology goods in manufacturing value-added and exports in selected high-income economies*

	<i>Value-added</i>		<i>Exports</i>	
	1970	1994	1970	1993
Australia	8.9	12.2	2.8	10.3
Canada	10.2	12.6	9.0	13.4
France	12.8	18.7	14.0	24.2
Germany	15.3	20.1	15.8	21.4
Italy	13.3	12.9	12.7	15.3
Japan	16.4	22.2	20.2	36.7
United Kingdom	16.6	22.2	17.1	32.6
United States	18.2	24.2	25.9	37.3

Source: World Bank, *World Development Report: Knowledge for Development, 1998/99*, Washington, DC: World Bank, 1999:24.

As for technology ownership, a similar story of developed country - especially United States - interest in high levels of IPR protection can be inferred from the relevant statistics. It is not only IPR-protected *products, technologies* and *services* that are major exports of developed countries such as the United States, but also the *rights* themselves, in the form of licences to use patented processes, techniques and designs, copyrights, trademarks and franchises. According to Ryan,<sup>40</sup> "U.S. multinational manufacturing enterprises increasingly transfer intellectual property internationally through the industrial processes that they sell abroad. Exports, as measured by royalties and licensing fees, amounted to about U.S.\$27 billion in 1995, while imports amounted to only U.S.\$6.3 billion. At least U.S.\$20 billion of the exports are transactions between U.S. firms and their foreign affiliates."<sup>41</sup> This balance-of-payments surplus is far higher than for any other country.

Interestingly, most of the major industrialized countries do not have a similar balance-of-payments surplus for royalties and licence fees. According to figures from the International Monetary Fund (IMF) for 1995,<sup>42</sup> the United Kingdom is one of the few which also enjoyed a surplus, but it was far smaller than that of the United States (\$1.71 billion compared with \$20.66 billion). Countries with sizeable deficits included not only large developing countries such as India (\$68 million in 1992) and Brazil (\$497 million), but also major economic and technological powers such as Japan (\$3.35 billion) and Germany (\$2.66 billion). The explanation for this is that "German and Japanese firms exploit their technological advantage mainly through exports, whilst U.S. and U.K. firms rely much more on direct foreign investment, which results in a higher volume of measured royalty income."<sup>43</sup> Thus Germany and Japan have just as much - if not identical - reason as the United States and the United Kingdom to favour strong and enforceable IPR protection in overseas markets.

***Most of the major industrialized countries do not have a similar balance-of-payments surplus for royalties and licence fees***

*The implications  
of IP protection  
go well beyond  
commerce*

Such figures give an idea of the static gains and losses to different countries of IP protection, and of the extent to which their interests are likely to vary. But clearly they do not tell the whole story; more work is needed, to estimate not only static gains (and possible losses), but also the projected dynamic efficiency gains of stronger IP protection, especially for developing countries (see further discussion in chapter 5 on transfer of technology).

Finally, it should be noted that despite the existing links between IPRs and trade, the implications of IP protection go well beyond commerce. IPRs equally affect a number of social and cultural areas that are of considerable importance to developing countries. An in-depth analysis of these challenges is presented in Part Three of this paper.

## CHAPTER 1: END NOTES

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- <sup>1</sup> Though in some cases the rights may be restricted by statutory licences.
- <sup>2</sup> For some examples of such differing views, see, on the one hand, Kumar, N, "Intellectual Property Rights, Technology and Economic Development. Experiences of Asian Countries", in *Economic and Political Weekly*, Vol. XXXVIII, No. 3, January 18, 2003; and Médecins Sans Frontières/Drugs for the Neglected Diseases Working Group, "Fatal Imbalance. The Crisis in Research and Development for Drugs for Neglected Diseases", Geneva, 2001; on the other hand: International Federation of Pharmaceutical Manufacturers Associations, "Encouraging Pharmaceutical R&D in Developing Countries", Geneva, 2003.
- <sup>3</sup> Report of the Commission on Intellectual Property Rights, "Integrating Intellectual Property Rights and Development Policy", London, September 2002 [hereinafter Report of the IPR Commission]. Available at: [http://www.iprcommission.org/graphic/documents/final\\_report.htm](http://www.iprcommission.org/graphic/documents/final_report.htm).
- <sup>4</sup> For example, the view that IPRs are *rewards* for inventors and artists for their contribution to the public good.
- <sup>5</sup> This generalization holds in spite of the tradition in much of continental Europe of "authors' rights" (as opposed to Anglo-American copyright), which suggests the predominance of natural rights over utilitarianism.
- <sup>6</sup> Geroski, P, "Markets for technology: knowledge, innovation and appropriability", in Stoneman, P (ed.), *Handbook of the Economics of Innovation and Technological Change*, Oxford and Malden: Blackwell, 1995: 97.
- <sup>7</sup> For example, Merges, RP, and Nelson, RR, "On the complex economics of patent scope", *Columbia Law Review*, 90, 1990: 839-916; Scotchmer, S, "Standing on the shoulders of giants: cumulative research and the patent law", *Journal of Economic Perspectives*, 5 (1), 1991: 29-41.
- <sup>8</sup> Menell, PS, "The challenges of reforming intellectual property protection for computer software", *Columbia Law Review*, 94 (8), 1994: 2644-2654.
- <sup>9</sup> See Levin, RC, Klevorick, AK, Nelson, RR and Winter, SG, "Appropriating the returns from industrial research and development", *Brookings Papers on Economic Activity*, 1987: 783-820.
- <sup>10</sup> According to David (2002), "although the disclosure of codified information is augmented by patent systems, so is the inducement to curtail the transmission of tacit knowledge that might reduce the commercial value of the patents that have been issued". David, PA, "The political economy of public science", Lawton-Smith H (ed.), *The Regulation of Science and Technology*, Basingstoke and New York: Palgrave, 2002.
- <sup>11</sup> This point applies to those developing countries that have attained a reasonable capacity to adopt and benefit from such technologies. Countries with very limited capacity have little to gain from free access to advanced technologies.
- <sup>12</sup> See Lall, S, with Albaladejo, M., "Indicators of the relevant importance of IPRs in developing countries", 2002; and Kim L, "Technology Transfer and Intellectual Property Rights: Lessons from Korea's Experience", 2002, part of the UNCTAD/ICTSD Capacity Building Project on IPRs and Sustainable Development. Both papers are available at <http://www.ictsd.org/iprsonline/unctadictsd/projectoutputs.htm#casestudies>.
- <sup>13</sup> Maskus, K, "Intellectual Property Rights in the Global Economy", Washington DC: Institute for International Economics, 2000.
- <sup>14</sup> See Braithwaite, J and Drahos P, "Global Business Regulation", Cambridge: Cambridge University Press, 2000.
- <sup>15</sup> The idea that patent applicants should disclose their inventions and that the dissemination of technical information, and not the finished product alone, is the inventor's part of the "bargain" was introduced into patent law from the late eighteenth century following an English legal decision (see Merges, RP, "Patent Law and Policy: Cases and Materials" (second edition), Charlottesville: Michie Law Publishers, 1997: 657).
- <sup>16</sup> MacLeod, C, "The paradoxes of patenting: invention and its diffusion in 18th and 19th century Britain, France, and North America", *Technology and Culture* 32 (4), 1991: 885-911.
- <sup>17</sup> Webster, T, "Reports and Notes of Cases on Letters Patent for Inventions", London: Thomas Blenkarn, 1844: 756-757.

- <sup>18</sup> Cornish, WR, "Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights" (fourth edition), London: Sweet and Maxwell, 1999: 111.
- <sup>19</sup> See Bercovitz-Rodriguez, A, "Historical Trends in Protection of Technology in Developed Countries and their Relevance for Developing Countries", Geneva: United Nations Conference on Trade and Development, 1990: 2-3.
- <sup>20</sup> Officially titled "An act to promote the progress of useful arts, and to repeal all acts and parts of acts heretofore made for that purpose".
- <sup>21</sup> In German, "Reichspatentgesetz".
- <sup>22</sup> As opposed to a registration system.
- <sup>23</sup> Dessementet, F, "Intellectual Property Law in Switzerland", The Hague, London and Bern: Kluwer Law International and Stämpfli, 2000:23.
- <sup>24</sup> Schiff, E, "Industrialization Without Patents: The Netherlands, 1869-1912, Switzerland, 1850-1907", Princeton: Princeton University Press, 1971.
- <sup>25</sup> Officially, "An act for the encouragement of learning, by vesting the copies of printed books in the author's or purchaser of such copies, during the times therein mentioned".
- <sup>26</sup> Rose, M, "Authors and Owners: The Invention of Copyright", Cambridge and London: Harvard University Press, 1993:4; Sherman, B, and Bentley L, "The Making of Modern Intellectual Property Law: The British Experience, 1760-1911", Cambridge: Cambridge University Press, 1999: 11-12.
- <sup>27</sup> David, P, "Intellectual property institutions and the panda's thumb: patents, copyrights, and trade secrets in economic theory and history", in Wallerstein, MB, Schoen, RA and Mogee ME (eds), *Global Dimensions of Intellectual Property Rights in Science and Technology*, Washington, DC: National Academy Press, 1993.
- <sup>28</sup> Cornish op cit: 343.
- <sup>29</sup> By virtue of the Copyright, Designs and Patents Act 1988.
- <sup>30</sup> Cornish op cit: 48, 50.
- <sup>31</sup> For well-researched and convincing evidence to support this view in the United Kingdom context, see Dutton, HI, "The Patent System and Inventive Activity during the Industrial Revolution, 1750-1852", Manchester: Manchester University Press, 1984.
- <sup>32</sup> These are: copyright and related rights; trademarks; geographical indications; industrial designs; patents; layout-designs of integrated circuits; and protection of undisclosed information (trade secrets). Among the few IPRs excluded from TRIPS are utility models and plant breeders' rights (although plant varieties must be protected, whether through patents or an alternative system such as UPOV-style plant breeders' rights or a combination thereof).
- <sup>33</sup> 69 bilateral industrial property-related conventions to protect the rights of foreigners were signed between 1859 and 1883 (Ladas, S. (1930), "The International Protection of Industrial Property". Volume 1, Cambridge: Harvard University Press:54-57). All parties to these conventions were either European, North American or Latin American, but the vast majority were European countries.
- <sup>34</sup> Albeit with some exceptions, even in Europe. The Netherlands and Switzerland do not require prior art searches. In France, novelty examinations were introduced only in 1960 for pharmaceutical patents, and gradually since 1968 with respect to other inventions.
- <sup>35</sup> The United States is the only country still to have a first-to-invent system (as opposed to first-to-file).
- <sup>36</sup> Robbins, LJ, "The proposed new European patent", *The Patent, Trademark, and Copyright Journal of Research and Education* 5 (3), 1961: 217-232. In France pharmaceutical patents were examined for novelty from 1960, and novelty examinations for other types of invention were phased in from 1968 (Lynfield, HG, "The new French patent law", *IDEA* 13 (2), 1969: 201-210).
- <sup>37</sup> For example, France in 1960, Germany in 1968, Japan in 1976, Switzerland in 1977, Italy and Sweden in 1978, and Spain in 1992.

- <sup>38</sup> See Part Three of the UNCTAD-ICTSD “Resource Book on TRIPS and Development” (2003), under preparation [hereinafter *Resource Book*].
- <sup>39</sup> For instance, the importation of generic drugs from countries that do not yet recognize drug patents may be prevented by the holder of a corresponding drug patent in a country recognizing such patents.
- <sup>40</sup> Ryan, MP, “Knowledge Diplomacy: Global Competition and the Politics of Intellectual Property”, Washington DC: Brookings Institution Press, 1998: 2.
- <sup>41</sup> According to UNCTAD, if data for the United States and Germany are indicative, some four-fifths of technology payments take place between parent firms and their affiliates. See *World Investment Report 1997*: 21.
- <sup>42</sup> In Maskus, K, “The role of intellectual property rights in encouraging foreign direct investment and technology transfer”, *Duke Journal of Comparative and International Law* 9 (1), 1998: 109-161.
- <sup>43</sup> Patel, P, and Pavitt, K, “Patterns of technological activity: their measurement and interpretation”, in Stoneman, P (ed.), *Handbook of the Economics of Innovation and Technological Change*, Oxford and Malden: Blackwell, 1995: 24.

