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INTELLECTUAL PROPERTY RIGHTS: ASSESSMENT OF CURRENT POLICIES AND PRACTICES, AND OPTIONS FOR A.I.D. INITIATIVES

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Preface

The issue of intellectual property rights (IPR) has risen considerably on the international policy agenda over the past five years. In response to growing levels of infringement, owners of patents, trademarks and other forms of intellectual property have become increasingly vocal in pressing their demands for laws and enforcement structures which safeguard their rights. Conflicts over IPR protection have in some instances reached the top of bilateral policy discussions between the United States and individual developing countries. The General Agreement on Tariffs and Trade (GATT) is now considering including standards on intellectual property rights as part of its basic agreement.

This report presents a rationale for providing adequate protection of intellectual property rights (IPRs), reviews existing IPR policy structures in developing countries, and presents a comprehensive program for the U.S. Agency for International Development (AID) to extend IPR-related assistance to developing countries. The report was prepared by SRI International as the first policy analysis task under the Science and Technology Assessment Project (Contract No. PDC-0091-C-00-9092-00), sponsored by the Bureau for Program and Policy Coordination (PPC) of AID.

In preparing the report, the project team first conducted a review of literature on IPR protection policies, practices, and economic impacts. Information was then gathered from several government organizations, including AID, the Department of State, the Office of U.S. Trade Representative (USTR), the Patent and Trademark Office (PTO), the Library of Congress and the U.S. Customs Service. International organizations contacted include GATT, the World International Property Organization (WIPO), the Organization for Economic Cooperation and Development (OECD), and the International Organization of Consumers Unions (IOCU). Interviews were also conducted with a number of private organizations, including the U.S. Chamber of Commerce, ADAPSO, the Pharmaceutical Manufacturers' Association, the International Law Institute, and the Franklin Pierce Law Center.

It is the desire of the authors that the information presented in this report can play a useful role in assisting AID to formulate its IPR policies and programs, consistent with overall U.S. Government policy, while serving the long-term economic development interests of developing countries. The authors wish to express their appreciation for the inputs and assistance extended by individuals in each of the organizations noted above. However, the findings and recommendations presented in this report are solely those of the authors and not those of any individuals or organizations contacted during the course of the project.

EXECUTIVE SUMMARY

Technological innovation is playing a rapidly growing role in the international economy and in the U.S. economy. An increasing number of traded products are "technology intensive," in that they embody higher levels of technology which are invented and developed at the expense of producers.

Inasmuch as technology is valuable as an input, competitors have a strong incentive to acquire and use technologies "owned" by others. Unfortunately, an increasing number of producers have resorted to illegal means to obtain technologies, thereby infringing on the rights of intellectual property holders.

Growing concerns over the violation of patents, trademarks and copyrights have in turn led to substantially greater interest in the protection of intellectual property rights. U.S. corporations and policymakers alike are seeking new policy measures and approaches at the national, bilateral and multilateral levels to strengthen both intellectual property laws and the enforcement of those laws worldwide.

Business and government leaders in industrial nations argue that stronger intellectual property rights benefits are necessary to encourage innovation, upon which higher productivity and higher standards of living depend. Without intellectual property rights, which provide exclusive rights to individuals or firms as compensation for their efforts and the costs incurred in developing a new product or process, innovations would be reduced sharply to the detriment of all.

Although most developing nations have moderated their criticisms of the 1960s and 1970s, when they claimed that internationally acceptable standards of intellectual property rights constituted a system of unfair exchange, many developing countries still resist pressures to strengthen their intellectual property regimes. Developing-country leaderships argue that because their nations possess only limited research and development (R&D) capabilities, and because the costs of acquiring new technologies are too high, developing country users should be allowed "free access" to technologies, since knowledge is a common property to all and the economic development of poorer nations is of benefit to all nations.

While all developed countries now provide similar levels of intellectual property rights protection, practices among developing countries differ sharply. Domestic intellectual property rights protection has been closely scrutinized only in countries which have substantial markets for intellectual property.

Due to the threat of trade sanctions by the United States, and because of their increased capabilities to develop marketable innovations and technologies, the most advanced developing countries such as Singapore, Taiwan and Korea, have recently implemented IPR reforms which bring these nations close to the recommended standards advocated by developed nations. Other advanced developing nations, including Argentina, Brazil, Mexico, and India, continue to provide very weak patent protection, but adequate protection of copyrighted materials. Of countries with significant AID programs, only India, Thailand, Indonesia, and the Philippines are important IPR violators.

The economic literature on IPR provides clear evidence of the importance of innovation and the justification for market intervention in the form of IPR protection. Several studies, especially the seminal work of Edwin Mansfield, have demonstrated that the social returns to investments in innovation are high -- the median return of such investments in a variety of industries was 56 percent -- and almost double that of the private returns from investments in innovation. Accordingly, in order to encourage private investment in R&D, which allows society to reap more completely its development potential, it is necessary for governments to intervene in the market by providing intellectual property right protection.

While economic studies clearly demonstrate the long-run justification for intellectual property rights, it has been more difficult to quantify the net benefits, especially in the short run, of IPR protection. In the short run it is easy to show that developing nation consumers pay more for goods that enjoy IPR protection than for similar products which do not. The short-term benefits of IPR protection, however, are difficult to quantify. Because of these measurement problems and the natural desire of producers to minimize costs and maximize revenues, economic arguments alone will probably not be sufficiently persuasive to convince developing countries to reform their IPR regimes. Developed nations, including the United States, will probably have continue to use the threat of trade sanctions to encourage certain developing nations to improve their protection of intellectual property rights.

From the U.S. perspective, multilateral trade-linked negotiations in the current Uruguay Round will be the most effective mechanism to achieve wider acceptance of stronger IPR protection. Now that other industrial countries support the U.S. position in multilateral forums, which makes an acceptable international agreement more likely, bilateral negotiations are less desirable because they increase tensions and make it more difficult to introduce uniform international standards. In this less contentious bilateral environment, AID IPR assistance could contribute to overall U.S. government international IPR objectives.

Currently, AID has no formal policy or programs regarding intellectual property rights. For several reasons, it would be appropriate for the Agency to establish a program to assist developing nations with IPR reform and enforcement. An IPR Assistance Program would: (1) help to transfer technology and ideas through market-based mechanisms; (2) play a helpful role in supporting overall United States IPR policy; (3) provide an especially appropriate mechanism for assistance to Advanced Developing Countries; and (4) provide a vehicle to utilize the United States' recognized expertise on intellectual property rights enforcement and administration.

The IPR Assistance Program proposed in this report consists of a common set of technical and financial resources that would be made available to individual countries on the basis of their specific needs and requirements. The program includes the following components: Policy dialogue, training and technical assistance, and institutional development. Individualized activities would be tailored for nations in three categories of technology development -- advanced, middle level, and low level. Management oversight of the program would be provided by an interagency Steering Group. The initial cost estimate for the program amounts to approximately $6 million annually.

The following tables summarize the concept behind and activities proposed for the program. The first table presents a diagnosis of the status of IPR systems in three sets of countries. The second table offers prescriptions for improvements in different functional categories associated with IPR regimes. The third table sets forth proposed interventions under the IPR Assistance Program.

DIAGNOSIS OF IPR SYSTEMS

Level of Technology Development	Legal Regime	Enforcement	Institutional Capabilities	Human Resource Capabilities
Advanced Countries: Argentina, Brazil, Chile, Colombia, India, Malaysia, Mexico, South Korea, Singapore, Taiwan, Thailand, and Venezuela	Basic laws in place, but vary in strength and inclusiveness.	Moderate to poor. Numerous examples of loopholes and laxity.	Agencies established, but limited in advanced capabilities.	Competent senior officials. Technical personnel limited in experience and expertise.
Middle-Level Countries: China (PRC), Egypt, Indonesia, Jordan, Kenya, Pakistan, Philippines, Peru, Saudi Arabia, Turkey, and Other LAC Countries	Legal structures limited. Action beginning due to external pressures.	Limited and with large gaps.	Agencies at early stages of development.	Competence restricted to a few senior officials.
Low-Level Countries: Bangladesh, Burma, Morocco, Nepal, Oman, Sri Lanka, Tunisia, and Other AFR/ANE Countries	Legal treatment rare. Little acknowledgement of issue and needs.	Few laws to enforce.	Largely nonexistent.	Largely nonexistent.

PRESCRIPTION FOR IPR IMPROVEMENT

Level of Technology Development	Legal Regime	Enforcement	Institutional Capabilities	Human Resource Capabilities
Advanced Countries: Argentina, Brazil, Chile, Colombia, India, Malaysia, Mexico, South Korea, Singapore, Taiwan, Thailand, and Venezuela	Strengthen and expand scope of laws.	Increase commitment. Employ effective enforcement techniques.	Introduce advanced systems (e.g., computerized MIS).	Undertake advanced, specialized overseas training.
Middle-Level Countries: China (PRC), Egypt, Indonesia, Jordan, Kenya, Pakistan, Philippines, Peru, Saudi Arabia, Turkey, and Other LAC Countries	Introduce sound basic laws.	Establish framework for effective enforcement.	Develop primary operational capacities.	Focus on core staff training and development.
Low-Level Countries: Bangladesh, Burma, Morocco, Nepal, Oman, Sri Lanka, Tunisia, and Other AFR/ANE Countries	Develop attitudes and commitment in favor of IPR protection.	Explore long-term strategies.	Initiate discussions on institutional arrangements.	Await future requirements.

IPR ASSISTANCE PROGRAM ACTIVITIES

Level of Technology Development	Policy Dialogue	Training and Technical Assistance	Institutional Development
Advanced Countries: Argentina, Brazil, Chile, Colombia, India, Malaysia, Mexico, South Korea, Singapore, Taiwan, Thailand, and Venezuela	Policy workshops Research and monitoring IPR components in AID projects	U.S.-based, skill specific training Turnkey in-country training Advanced system technical assistance	Short-term advisors Equipment and software Public outreach
Middle-Level Countries: China (PRC), Egypt, Indonesia, Jordan, Kenya, Pakistan, Philippines, Peru, Saudi Arabia, Turkey, and Other LAC Countries	Policy workshops Policy model discussions Research and monitoring IPR components in AID projects	U.S.-based, general training Exposure tours General technical assistance	Equipment and software Comprehensive training Public outreach
Low-Level Countries: Bangladesh, Burma, Morocco, Nepal, Oman, Sri Lanka, Tunisia, and Other AFR/ANE Countries	Policy workshops	Exposure tours	Await future requirements

I. THE RATIONALE FOR INTELLECTUAL PROPERTY PROTECTION

Introduction

The pace and volume of world trade have surged in recent decades, opening up a truly global marketplace for goods and services. In modern manufacturing, major assembly line changes that once took weeks can now be accomplished in a matter of hours. In the service sector, high technology communication systems have enabled firms to break out of their domestic markets and compete worldwide.

The rapid rise of world trade and the internationalization it has spawned can be attributed in large part to the stunning pace of technological development in industrialized countries, combined with the labor and resource base of developing countries. Computer microchips and software programming, considered "esoteric" as late as the 1970s, are now multi-billion dollar industries. A growing number of advanced technologies such as microelectronics, information technology, optoelectronics, computer-aided design and manufacturing (CADCAM), biotechnology and new materials technology have come to dominate their industry sectors.

In short, the production of increasingly sophisticated consumer goods requires increasingly sophisticated machinery, formulas, designs and other inputs, many of which are technology intensive. High technology is no longer a narrowly defined industrial sector, but rather has become an integral part of much of world commerce. Accordingly, technology has also become the subject of heated trade disputes, as companies and nations attempt to protect whatever technological edge they have gained over their competitors. Commercial success in the 1990s will hinge more on the development and application of knowledge than on raw industrial production.

For decades, patents, trademarks and copyrights have been considered a necessary but essentially peripheral aspect of commerce. Policymakers concentrated their attention on policies affecting outputs (tariffs, quotas, subsidies, dumping, etc.) rather than inputs. In recent years, however, the issue of IPR has become increasingly prominent in the minds of corporate and government leaders, as trade in knowledge-based goods and services has grown.

The most significant IPR problem facing policymakers in the United States and other industrialized countries is the persistence of so-called piracy of intellectual property. This practice is exacerbated and sometimes actually abetted by inadequate IPR protection, most often in developing countries and especially in several newly industrializing countries.

According to executives in U.S. industries that are heavily dependent upon intellectual property, such as computer chip and software producers and film makers, the unauthorized use of designs, ideas and trademarks has had a serious negative impact on these companies in recent years. Such firms have long suffered losses at the hands of overseas "pirates," but the damage has expanded as the technological content of products has grown and as costs of research and development have risen.

While adversely affecting producers in industrial nations, inadequate IPR protection has also impeded indigenous technological advancement and created disincentives for new foreign investment in developing countries. While both producers and consumers of counterfeit goods reap short-term gains, since costs of production are reduced, widespread violation of IPRs decrease the incentive for inventors and investors to carry out their respective roles, both of which are central to technology and ultimately to economic development.

What follows in this section is the presentation of three separate but inter-related grounds which individually and particularly collectively form a strong rationale for adequate IPR protection:

- The first argument rests on the importance of intellectual property rights to technological innovation and advancement.
- The second justification focuses on the legal and commercial grounds for IPR protection.
- The third basis looks toward the impact of IPR protection and infringement on a nation's long-term economic development prospects.

Technology Innovation and Advancement

The overwhelming preponderance of worldwide public opinion and legal practice supports the assertion that ideas "belong" to their creators, and hence can be considered "intellectual property." A major motivation of inventors, scientists, writers and tinkerers has been to achieve monetary rewards for their efforts.

Countless fortunes have been made from inventions ranging from such simple devices as clothes fasteners (Robert Brookings, who founded The Brookings Institution) to agricultural combines (Cyrus McCormick), light bulbs (Thomas Edison), and computer software (William Gates). At the levels of the individual and the firm, innovation is driven by the incentive of financial returns. If the prospects for profit were removed, then it would be difficult to

imagine that many of the inventions that have reshaped society would have been introduced.

Moving to the level of entire societies, economic historians closely tie economic progress and turning points to technological advances. In combination with educational gains, technological improvements are largely responsible for increases in productivity -- the generation of increasing output with constant or decreasing inputs. Technology plays the key role in eras of accelerated economic development identified as the "industrial revolution," the "green revolution" in agriculture, and the "information age." Those nations in which technological innovation has been most actively promoted and rewarded have consistently achieved the highest rates of economic growth and progress.

For centuries, societies have recognized the importance of providing incentives to innovative activities by allowing inventors and authors to earn a return from their ideas. To ensure adequate returns, innovators have been granted exclusive rights to discoveries and ideas. A grant of monopoly to encourage artistic activities was made by Sybaris around 500 B.C. In 1443, Antonius Marini received the first patent of invention, and for twenty years no one else in Venice, Italy was allowed to build a flour mill that operated without water.[1]

The only practical means to reward innovators is to grant them exclusive or partial rights over their inventions. This allows creators of new ideas to attain profits by teaming with entrepreneurs, selling their inventions to others, or themselves bringing their innovations to commercial markets. If the profit incentive is removed or diluted due to violation of IPRs, then the motivation for personal or corporate research and development is diminished or eliminated altogether. All society suffers as a result.

The implication of this argument is that IPR protection serves the critically important purpose of stimulating technological advancement which ultimately benefits society as a whole. The "sponsorship" of creativity has over the centuries shifted from a patronage system to a market system. The ability of inventors to market their ideas is directly dependent on the rights and control they retain over their intellectual property.

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[1]See R.A. Klitzke, "History of Patents Abroad," in Encyclopedia of Patent Practice and Invention Management, ed. R. Calvert (New York: Reinhold, 1964).

Legal and Commercial Bases

Individuals and governments in market-based economies have long embraced the concept of private property. The concept allows for private property to be owned, bought and sold. No one disputes the fact that one's economic assets -- land and home, financial resources and even labor -- rightfully belongs to the individual and hence can be disposed of by the individual.

Over time, legal rights have been developed and assigned to holders of private property. Property law has evolved to identify the rights and responsibilities of property owners, ranging from landlords to bank depositors. Legal systems impose penalties upon individuals or corporations found to have stolen someone else's property.

Innovations and creative works such as inventions, formulas, processes, or manuscripts are deemed to be private property from a legal standpoint. As such, their unauthorized use is considered to be theft of intellectual property, fully comparable to the theft of real property. In short, the legal grounds for IPR protection have been clearly articulated and been supported by a wide body of international legal findings.

Intellectual property rights play a critically important role in commercial transactions. The competitiveness of goods and services in terms of quality and price is based increasingly on technological inputs broadly defined to include basic concepts, engineering designs, formulas, advanced materials, component tolerances, manufacturing processes, and so forth. It is usually possible to point to one or more technical advantages that distinguish superior from inferior products.

The importance of technological innovation is reflected in the amount of corporate competitive intelligence gathering and espionage that takes place. Firms, industries and nations that acquire new technologies through whatever means possible (internal development, purchases, licenses, joint ventures, counterfeiting, etc.) create advantages over competitors. Over time, this competitive edge can grow to the point of being irreversible and driving rival firms out of business.

The technological content of traded goods has risen consistently, particularly for the exports of industrial countries. For example, most growth in U.S. exports has been in products utilizing sophisticated technologies (e.g., aircraft and other transport equipment, computer mainframes and software, telecommunications equipment, chemicals, machinery, etc.). In addition, the United States is a major exporters of goods and services such as motion picture rentals, audio and video tapes, and published materials, all of which result from artistic works.

If intellectual property is used on an unauthorized basis in overseas markets, producer firms lose revenues in those markets. According to one estimate, the worldwide sales of "pirated" products amount to as much as $60 billion annually. Losses in revenues by U.S. firms have been estimated at $25 billion per year.[2] Revenue losses of anywhere near these thresholds constitute major leakages and significant damage to firms affected.

Through both common practice and legal agreements, participants in international trade agree to abide by certain standards of behavior, some of which are codified in bilateral or multilateral agreements such as the GATT. This behavior is intended to provide a "level playing field" for participants in commercial markets. The theft of intellectual property constitutes a violation of accepted commercial behavior. Accordingly, IPR violations should be treated as inadmissible by firms and nations engaging in international commercial transactions.

The Economic Development Basis

Economic theory and practice confirm that countries in which innovation flourishes outperform those in which little technological advancement is achieved. The direct logic behind this argument is that increases in level and spread of technology applications lead directly to productivity gains, additional employment and income in emerging industries, the introduction of new products, infusions of investment and the diffusion of increasingly advanced economic processes. One need only examine the impacts of such products as the personal computer, the videocassette player or the telefax machine in recent years to view the sometimes enormous economic consequences of new technologies.

The economic rationale for IPR protection can be disaggregated into a number of areas. The principal arguments are summarized below:

Stimulating economic growth. The main economic benefits of IPR protection can be ascribed to additional output derived from innovation. Innovative output initially consists of newly introduced products, processes and artistic works. Eventually, the impacts of innovations spread throughout the economy. Direct employment and investment benefits accrue from R&D activities, new manufacturing plants and distribution networks. Indirect benefits are also achieved from increases in local market activity.

As presented in detail in Annex 4, the economic literature is replete with analyses which correlate technological innovation with

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[2] Edward A. Finn, "That's the $60 Billion Question," Forbes, November 7, 1986, p. 40.

economic growth. For example, technological advances are estimated to account for about 40 percent of total increases in U.S. national income over the 1929-1957 period. It is not a coincidence that all advanced industrial nations operate legal and enforcement systems to protect IPRs. In each of these countries it has been recognized that IPR protection fosters the innovation that feeds long-term economic growth.

Promoting private investment and technology transfers. IPR protection provides additional incentives for domestic entrepreneurs to invest more resources in technological advancements. Such investments are inherently risky due to uncertainties associated with new activities. Only about 10 percent of R&D ventures lead to commercially viable projects. Investment decisions are based on calculations relating rates of return to risks encountered, and investors in higher risk ventures must be compensated with higher returns.

Ventures involving new technologies typically face a long lead time from initial inception to commercial viability, and require considerable amounts of funding to develop inventions into final products. Without adequate IPR protection, returns will be depleted by violations, thereby reducing income streams needed to support research and development.

International corporations, especially those whose profitability depends on proprietary information which is easily replicable, are loathe to enter markets characterized by widespread IPR violations. It is not possible to isolate IPR protection as a determinant of foreign investment, due to the importance of other variables such as market size, the general policy environment and business operating conditions. However, investor surveys indicate that IPR protection plays a significant role in investment decisions by some firms.

For example, the results of an OECD survey indicated that 75 percent of respondents viewed inadequate IPR protection as a significant disincentive to investment and technology licensing in developing countries. Therefore, developing nations should seek to improve their IPR regimes if they wish to promote increased volumes of investment inflows and to improve the quality of incoming investments, i.e., ventures utilizing advanced technologies.

Achieving high social returns from innovation. Considerable evidence shows that the returns on innovation to society (or social returns) are quite high. A high social rate of return suggests that society's resources are being used effectively and that more resources should be devoted to those activities if the rate of return remains high.

In one of the first studies to measure the social return, Mansfield and others examined social and private rates of return for innovations from a variety of industries. The results (Table 1 below) showed that the median social rate of return from the investments in these innovations was high -- 56 percent. The private returns, however, were not as high; the median private return was only 25 percent. One of the major reasons why the private rate of return from innovative activity is so much lower than the social rate of return is that the innovator frequently finds it difficult to capture (appropriate) the returns from the innovation. Many of the social returns accrue to imitators,[3] who frequently obtain information quickly concerning the detailed nature and operation of new products and processes.

According to a study of 100 American firms, detailed information is in the hands of at least some of the innovators' rivals within a year, on average, after a new product is developed.[4] For over one third of the firms, this information is diffused within six months. There are many channels by which information on innovation is leaked -- informal communication networks between scientists and engineers working at various firms, the movement of personnel from one firm to another, "building around" patents, corporate espionage, etc. In some industries the diffusion process is accelerated by the fact that firms do not take strong steps to keep such information secret, partly because they believe it would be futile.

Given the high social rates of return to innovation, policymakers have provided intellectual property protection to innovators to encourage more of their activities which are believed to have high social value. All legal means to protect intellectual property constitute an intervention by the government in the free market. These systems grant exclusive rights or monopoly protection to individuals or firms as compensation for their efforts and costs incurred in developing a new product or process.

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[3]In the long run, benefits also accrue to consumers in the form of lower priced products. These consumer benefits plus the producer benefits to imitators account for the high social benefits compared with the private benefits to the innovating firm.

[4]See "E. Mansfield Intellectual Property, Technology, and Economic Growth" in Intellectual Property Rights in Science, Technology, and Economic Performance: International Comparisons, pp. 22-23, ed. F. Rushing and C.G. Brown (Boulder: Westview, 1990).

Table 1

SOCIAL AND PRIVATE RATES OF RETURN FROM INVESTMENT IN INNOVATION

Innovation	Rate of Return (in percent) Social	Private
Primary Metals Innovation	17	18
Machine Tool	83	35
Component for Control System	29	7
Construction Material	96	9
Drilling Material	54	16
Drafting Innovation	92	47
Paper Innovation	82	42
Thread Innovation	307	27
Door Control Innovation	27	37
New Electronic Device	neg.	neg.
Chemical Product	71	9
Chemical Process	32	25
Chemical Process	13	4
Major Chemical Process	56	31
Household Cleaning Device	209	214
Stain Remover	116	4
Dishwashing Liquid	45	46
MEDIAN	56	25

SOURCE: Edwin Mansfield and others, "Social and Private Rates of Return from Industrial Innovations," Quarterly Journal of Economics, May 1977.

The granting of such monopolies is usually recognized as imposing costs on society as the holder of monopoly rights will presumably charge more for the protected product than would be charged if competitors were free to produce similar items. These costs to society are generally deemed worthwhile because the prospects of monopoly profits are believed to stimulate activities of high social value.

If prospective inventors are assured of monopoly profits from their inventions under patent laws, they are more likely to spend money and effort on invention than if they were to face immediate competition from imitators. Similarly, potential monopoly profits from copyrights might stimulate people to write books and articles that otherwise would not be written if others could copy and sell them without benefit to the authors. Thus intellectual property laws are a form of government regulation like antitrust and anti-pollution laws designed to create social benefit where the free market mechanism might fail.

II. INTELLECTUAL PROPERTY RIGHT PROTECTION IN PRACTICE

Current Levels of Protection

Standards for intellectual property protection have been proposed by U.S. industry groups. These consist of the Guidelines for Intellectual Property Rights developed by the U.S. Chamber of Commerce[5] and the draft "Fundamental Principles of Intellectual Property Protection"[6] by the Intellectual Property Committee (an ad hoc industry group). These two sets of minimum standards, though slightly different, reflect the same substantive principles of protection. The U.S. government uses these standards as a basis for the standards proposed in the ongoing Uruguay Round.

These standards propose minimum levels of protection for copyrights, patents, trademarks, trade secrets, and semiconductor chip designs. They propose minimum standards regarding products covered, length of term of protection, equal treatment between nationals and foreigners, non-compulsory licensing,[7] and remedies for infringement.

Legal Regimes

Conformance by a cross-section of study countries with minimum standards for intellectual property is summarized in Table 2 below. As is evident from the table, levels of intellectual property protection vary from country to country. The first seven countries in the table are "core countries" which have been designated as having the weakest intellectual property laws in the past. The other countries listed are a cross-section of AID recipient countries which were also considered for the sake of comparison.

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[5]U.S. Chamber of Commerce, "Guidelines for the Protection and Enforcement of Intellectual Property Rights," Washington, D.C., March 31, 1987.

[6]Intellectual Property Committee, "Basic Framework of a GATT Arrangement on Intellectual Property," Washington, D.C., 28 January, 1987, Tab. C.

[7]A compulsory license is a license granted by a government which permits a party other than the original owner the rights to use a patent, trademark, or copyright.

Table 2

CURRENT LEVELS OF INTELLECTUAL PROPERTY PROTECTION IN STUDY COUNTRIES

	Copyrights	Patents	Trademarks	Semiconductor Chip Designs	Trade Secrets
Argentina	4	1	3	0	1
Brazil	2	1	2	0	1
India	3	1	2	0	2
Mexico	4	2	2	0	1
South Korea	3	3	3	0	2
Singapore	4	4	4	*	3
Taiwan	3	3	3	0	1
Thailand	3	4	3	0	3
Philippines	3	3	3	*	3
Indonesia	2	4	3	0	3
Kenya	4	4	4	*	*
Egypt	4	4	3	*	*
Peru	4	3	3	*	*

0 = Most serious infringement threat; no law prohibiting infringement.

1 = Serious infringement threat; seriously flawed laws.

2 = Inadequate law.

3 = Flaws in law.

4 = Generally good law.

5 = Protection fully consistent with minimum standards.

* = No information available on existence or adequacy of law.

NOTE: Assessments are for 1987.

SOURCES: R. Gadbaw and T. Richards, Intellectual Property Rights Global Consensus, Global Conflict? (Boulder: Westview Press, 1988) and United States International Trade Commission, "Foreign Protection of Intellectual Property Rights and the Effect on U.S. Industry and Trade" (USITC Publication 2065, Washington, D.C., 1988).

The primary conclusions about the levels of protection provided in the countries studied are as follows:

- Singapore, as a result of recent improvements in its copyright laws, provides a level of intellectual property protection which is close to the minimum standards for intellectual property proposed by U.S. industry groups. Singapore's level of conformance is the highest of the "core countries."

- The Republic of Korea and Taiwan, as a result of recent introduction of new intellectual property laws, offer protection which is nearly consistent with the recommended standards, but slightly below the degree of protection afforded by Singapore.

- Levels of protection in Argentina, Brazil, Mexico and India are much less consistent with the recommended minimum standards. In each of these countries legal standards of copyright are well developed[8] but patent protection is weak.

- Levels of patent protection vary considerably among the nations studied from a virtual lack of protection in Argentina to fairly effective protection in Singapore.

- Levels of trademark protection among countries' foreign trademarks do, however, receive some level of protection in all countries studied.

- Of the countries studied, few provide effective trade secret or semiconductor chip design protection.

- Of the "non-core countries," Thailand, Indonesia, and the Philippines have some flaws in their laws, though generally not as serious as the "core countries."

- Kenya, Egypt and Peru appear to have generally acceptable laws. However, any conclusions about the laws in these three countries should be interpreted with considerable caution because their laws have been scrutinized much less carefully than the other countries which have been identified as significant IPR violators.

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[8]In Latin American countries, the long and highly valued tradition of literary, musical and artistic creativity has led to the introduction of copyright laws which protect these creative works from misappropriation. In India, the film industry has lobbied strongly for copyright protection.

Actual Practices and Enforcement

Reports of intellectual property rights violations are usually, though not always, highest in the countries with weak intellectual property laws. It is important, however, to differentiate between levels of protection offered by IPR law and the actual practices and enforcement of laws in these countries. In several cases (e.g., Korea, Singapore, and Taiwan), recent IPR laws have been introduced (1986 and 1987), but it is not yet known how effective the enforcement of the new laws will be.

It is also important to differentiate to the extent possible between "source countries" (i.e., countries that are the source of shipments or actions that infringe intellectual property rights) and "market countries" (i.e., countries in which inadequate protection and violations are occurring as a result of imported goods or processes).

It is sometimes difficult to determine whether the source of counterfeit goods is within the country or supplied by a third country. Certain generalizations can be made, however. First, most source countries are also market countries for counterfeits, pirates, and other infringing goods, both from domestically sourced goods and imports. Second, the countries that are most often cited for intellectual property inadequacies are also major sources of infringing goods. Third, with the exception of certain audio and video piracy, the production of infringing goods is heavily concentrated in those countries that can produce a wide range of goods, particularly the newly industrialized countries. As a result, African, Middle Eastern and Central American countries are more likely to be markets, but not sources of infringing goods. Furthermore, with the exception of certain kinds of software and video piracy, most developed countries are not major sources of infringing goods.[9]

The enforcement of IPR is often reported to be slow in violating countries or biased against foreigners. Table 3 below provides a rating of the speed of enforcement process for IPR violations for the set of study countries. The slowest enforcement according to a survey of 736 U.S. firms conducted by the U.S. International Trade Commission[10] was in Brazil, followed by India, Mexico, and South Korea. The enforcement process was reported to be more efficient in Singapore. In the non-core countries, it is not clear from the available information whether enforcement is more efficient or whether there were simply few complaints of inefficiency by U.S. firms since there were very few actions against infringements in the first place.

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[9]U.S. International Trade Commission, op. cit., Chapter 3.

[10]U.S. International Trade Commission, op. cit.

Table 3

SPEED OF ENFORCEMENT PROCESS FOR
INTELLECTUAL PROPERTY RIGHTS VIOLATIONS

	Copyrights	Patents	Trademarks	Semiconductor Chip Designs	Trade Secrets
Argentina	2	3	3	*	3
Brazil	2	0	1	*	2
India	2	1	2	*	2
Mexico	3	0	0	2	2
South Korea	1	1	1	2	2
Singapore	2	4	4	*	4
Taiwan	1	1	1	2	3
Thailand	3	4	3	*	4
Philippines	2	2	3	*	4
Indonesia	2	4	3	*	3
Kenya	*	*	*	*	*
Egypt	4	3	4	*	4
Peru	3	3	4	*	*

0 = Slowest Enforcement

5 = Fastest and efficient enforcement

* = No information available

NOTE: Survey undertaken for 1986; therefore, does not apply to the new laws and enforcement in Taiwan, Singapore, and Korea.

SOURCE: International Trade Commission, "Foreign Protection of Intellectual Property Rights," op. cit.

One of the biggest criticisms of IPR enforcement in developing countries is that the enforcement process is biased against foreigners. U.S. firms[11] are of the opinion that the enforcement process discriminates the most against foreigners in Mexico and South Korea, followed by Brazil. (See Table 4 below). There were no major complaints of discrimination against foreigners in the non-core countries.

Types of IPR Violations

The most common categories of IPR regime inadequacies as reported by U.S. firms are trademark counterfeiting, followed by patent infringement and trade secret misappropriation. (See Table 5 below). Few firms report inadequacies in semiconductor chip design legislation. This can be explained more by the small number of firms in the sample which would be affected by weak semiconductor chip protection laws than by the level of protection offered to chip manufacturers. In fact, the only study country which currently has any legislation protecting semiconductor chip designs is Singapore.[12]

Conclusions

The countries reported to have the weakest IPR regimes and the most inadequate enforcement are Brazil, Mexico, India, and Argentina. Taiwan, Singapore, and Korea were important violators in the past, but they all introduced stronger IPR legislation in 1986 and 1987 which could substantially increase the levels of IPR protection provided in those countries. Weak intellectual property rights and enforcement also exist in Thailand, the Philippines, China, Indonesia, and Hong Kong -- although there are considerably fewer reports of inadequacies in these "second tier countries" compared with the "first tier" or "core countries."

Certain broad generalizations can be made about countries with reported inadequacies and violations:

- The countries most cited for intellectual property inadequacies are also major sources of infringing goods.
- With the exception of certain audio and video piracy, the production of most infringing goods is concentrated in middle-income developing countries which can produce a wide range of goods, and which frequently have large domestic markets. (See Figure 1 below).

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[11]U.S. International Trade Commission, op. cit.

[12]R. Gadbaw and T. Richards, Intellectual Property Rights Global Consensus, Global Conflict, Westview Press, 1988, p. 61.

Table 4

ENFORCEMENT PROCESS BIASED AGAINST FOREIGNERS

	Copyrights	Patents	Trademarks	Semiconductor Chip Designs	Trade Secrets
Argentina	2	3	2	*	3
Brazil	2	1	1	*	1
India	3	2	2	*	3
Mexico	2	0	0	*	1
South Korea	1	0	1	*	1
Singapore	2	3	4	*	3
Taiwan	2	2	1	*	2
Thailand	4	4	2	*	4
Philippines	3	3	2	*	4
Indonesia	2	3	2	*	3
Kenya	3	3	*	*	*
Egypt	4	4	4	*	4
Peru	3	3	4	*	*

0 = Most biased

5 = Least biased

* = No information available

NOTE: Survey undertaken for 1985.

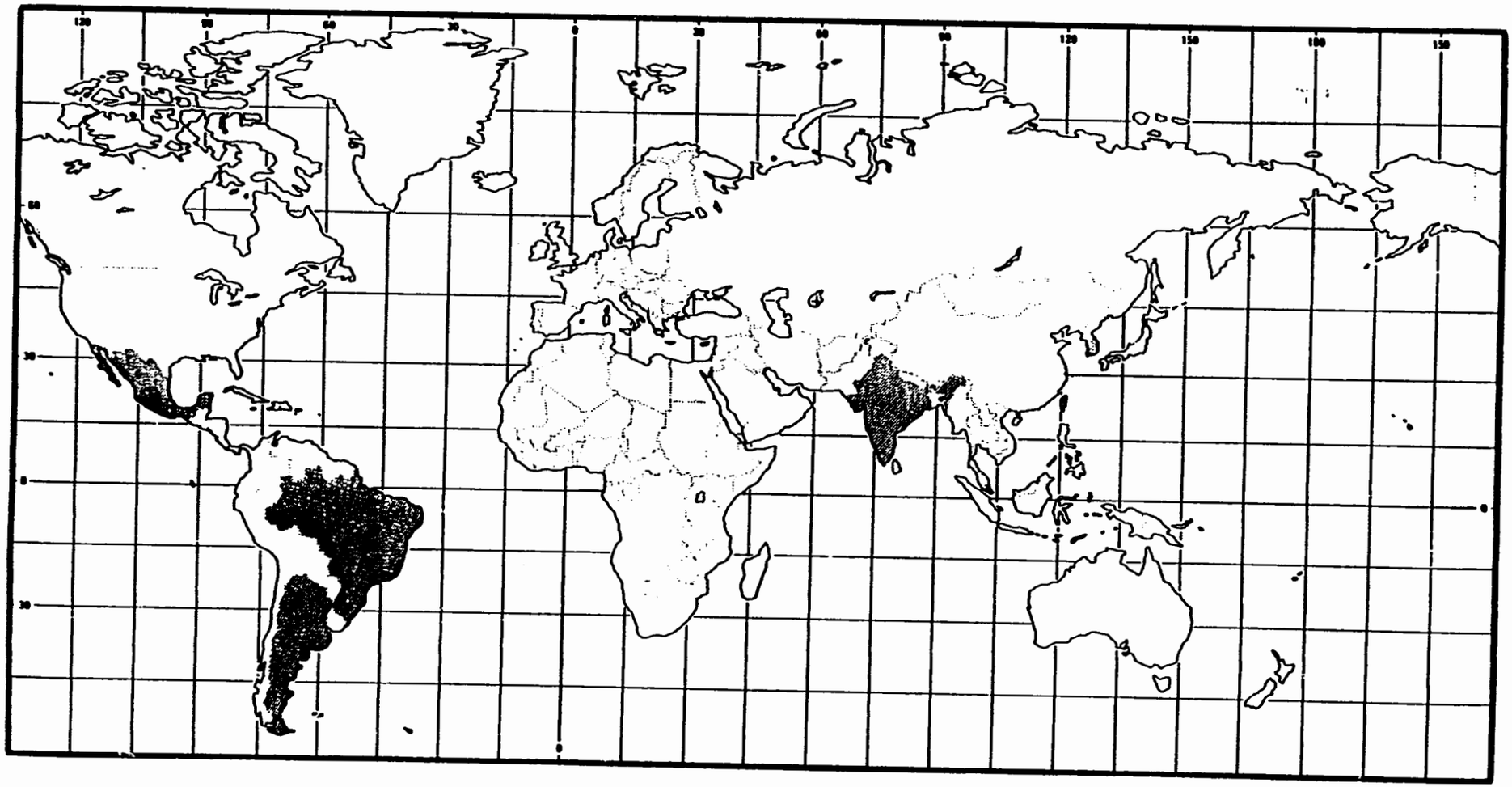
SOURCE: International Trade Commission, "Foreign Protection of Intellectual Property Rights," op. cit.

Table 5

REPORTS OF IPR REGIME INADEQUACIES
BY U.S. FIRMS

Type of Protection	Number of Companies Reporting Inadequacies
Trademark	133
Patent	122
Trade Secret	94
Copyright	84
Proprietary Technical Data	57
Mask Works	14

SOURCE: U.S. International Trade Commission, op. cit.



KEY:

"First Tier" violators

Figure 1: CORE IPR VIOLATOR COUNTRIES

- Middle Eastern and Central American countries are likely to be markets but not sources for violating goods and processes and are not likely to be targeted as big IPR violators.

- The main U.S. aid-recipient countries which are reported IPR violators are India, Thailand, Indonesia, and the Philippines. All of these countries are located in Asia. There are no countries which are both U.S. aid recipients and are major IPR violators in Latin America, Africa, or the Middle East. (See Figure 2).

Projected Trends in Protection

In an effort to measure the trend in intellectual property losses to U.S. firms, the ITC[13] asked firms to identify trends in their intellectual property losses over the last 15 years (See Table 6 below). Forty-one percent of the respondents answered that losses had grown moderately or greatly. Only two percent of the firms responded that losses had declined. These results reflect two factors: (i) the intellectual content of trade has risen dramatically; and (ii) production capabilities in countries with less than adequate protection have increased markedly. This is especially true for audio and video tapes and radio and television broadcasts, where inexpensive technologies for reproduction have been developed.

A second and different trend is also emerging. Several newly industrializing countries have strengthened their intellectual property laws in recent years. Taiwan, Korea, Singapore, and Indonesia all enhanced their laws, partly in response to pressures from the United States and Europe, but also as a result of lobbying from domestic firms which now have technologies of their own to protect. Because the laws in these countries have been modified only recently, little information is available on how effectively the new codes are being enforced. Enforcement of the laws will be a key issue which the United States and other developed countries will be monitoring closely over the next few years.

On balance, however, the trend of rising intellectual property violations is likely to continue unless stronger multilateral and bilateral incentives are introduced to provide adequate and effective protection. Political pressures are strong in several

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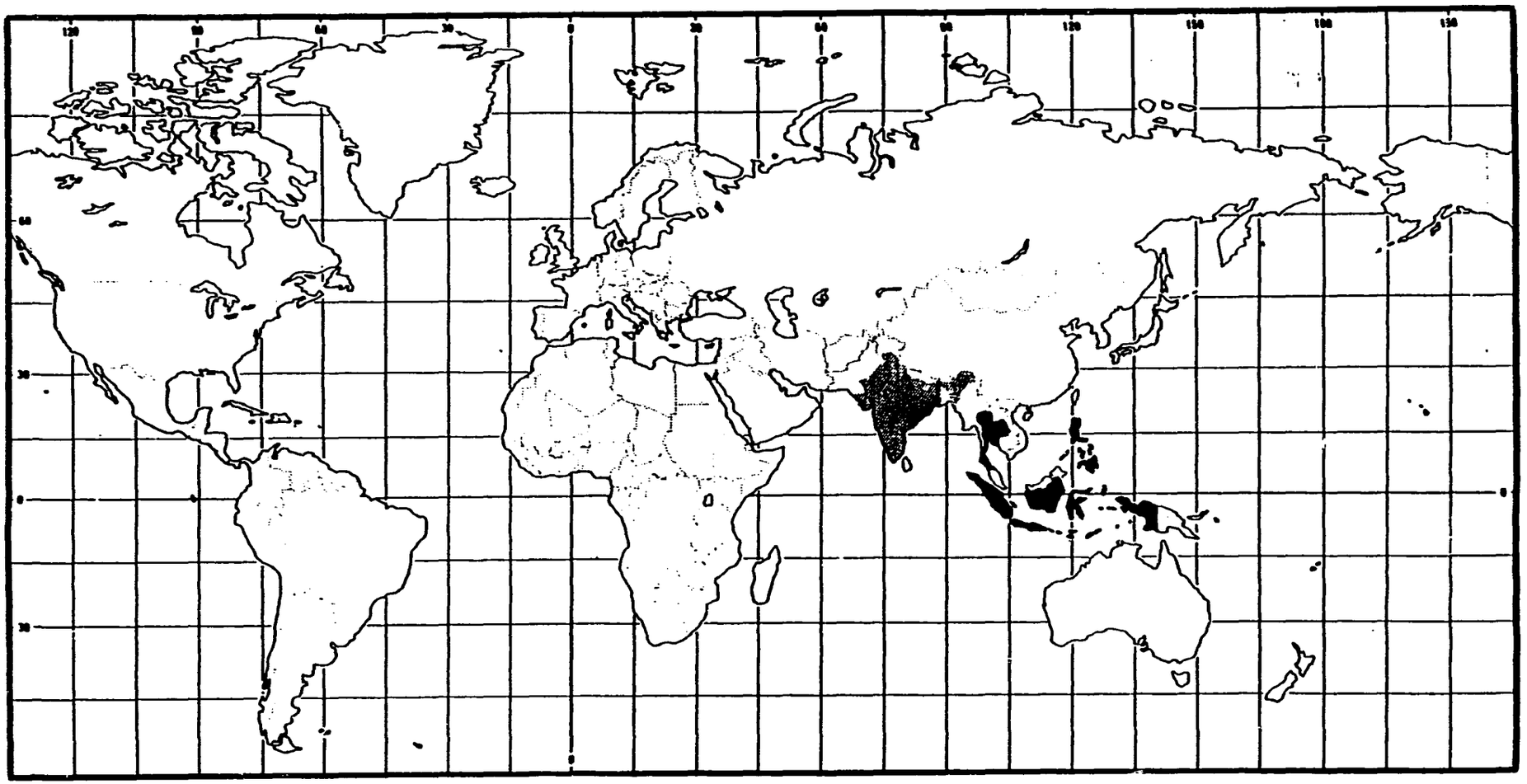
[13]"Foreign Protection of Intellectual Property Rights and the Effect on U.S. Industry and Trade," op. cit. p. 25.



KEY:

"First Tier" violators

"Second Tier" violators

Figure 2: USAID RECIEPIENT IPR VIOLATORS

Table 6

THE TREND IN LOSSES RESULTING FROM
INTELLECTUAL PROPERTY INADEQUACIES
DURING THE PAST 15 YEARS

Trend of Loss	Firms Responding (%)	Weighted (%)*
Grown greatly	20	30
Grown moderately	21	54
Grown slightly	17	2
Stayed more or less constant	39	13
Declined slightly	2	**
Declined moderately	0	0
Declined greatly	**	**

* Weighted by allocating the worldwide aggregate losses reported by each company to the appropriate rating.

** Less than 0.5 percent.

SOURCE: ITC, op. cit., Chapter 5.

of the major violator countries to maintain weak IPR regimes. In several Latin American countries, for instance, political leaders are reluctant to respond positively to pressures from the United States. In another example, India, as a leader of the non-aligned movement, has a strong inclination to develop positions independent of the United States and other OECD countries.

The violators of intellectual property rights are usually well organized and influential in the political process in their countries. For instance, the pharmaceutical industries in Argentina and India and the publishing industry in South Korea are all dedicated in their cause and politically influential. These groups will make it difficult to introduce improved IPR protection.

In an attempt to predict future trends in IPR violations, the ITC[14] asked a sample of firms to forecast trends in their intellectual property losses over the next five years (See Table 7 below). Thirty-eight percent of the firms felt that their losses would grow moderately to greatly over this period. Only two percent of the respondents expected losses to decline. Therefore, it appears likely that in the absence major interventions, the current trend of increasing pirate activities will continue.

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[14]"Foreign Protection of Intellectual Property Rights and the Effect on U.S. Industry and Trade." op. cit.

Table 7

THE TREND IN LOSSES RESULTING FROM
INTELLECTUAL PROPERTY INADEQUACIES
DURING THE NEXT 5 YEARS

Trend of Loss	Firms Responding (%)	Weighted (%)*
Grown greatly	12	12
Grown moderately	26	60
Grown slightly	23	15
Stayed more or less constant	38	13
Declined slightly	1	**
Declined moderately	1	**
Declined greatly	0	0

* Weighted by allocating the worldwide aggregate losses reported by each company to the appropriate rating.

** Less than 0.5 percent.

SOURCE: ITC, op. cit., Chapter 5.

III. STRATEGIC OPTIONS FOR IMPROVING IPR PROTECTION

The previous sections of this report presented the rationales for implementing and maintaining adequate IPR regimes, and reviewed the current and projected levels of protection in developing countries. A strong case was made for initiatives to improve IPR systems. The next logical question is to identify and assess alternative options for pursuing a major IPR initiative. On the basis of this assessment, a comprehensive IPR strategy and program can be developed.

Mechanisms for Encouraging Reforms

Four main mechanisms are available to those seeking to achieve enhanced levels of intellectual property protection in developing countries:

1. Persuasion based on economic arguments;

2. Bilateral initiatives:

   a. Trade pressures
   b. Provision of direct assistance and benefits

3. Private legal action; and

4. Multilateral negotiations.

Persuasion based on Economic Arguments

As discussed above, nations can obtain several economic benefits by introducing an effective intellectual property regime. Specifically, intellectual property protection (i) provides incentives for firms to undertake R&D activities which generally have a high economic rate of return; (ii) enhances commercial transactions on a solid legal footing; and (iii) promotes long-term economic development by stimulating investment and technology transfers and providing consumers with the fruits of invention through the production of higher performance goods.

However, it is sometimes difficult to demonstrate quantitatively the short-run correlation between strong IPR protection and key economic variables such as economic growth, levels of investment, and R&D activity. Intellectual property protection is just one variable among many influencing economic development and growth. Consequently, some developing nations are not persuaded by economic arguments alone to reform their IPR systems.

Economic arguments can be effective, however, when used in conjunction with other forms of persuasion. For example, when the U.S. Government entered into bilateral negotiations with the governments of Singapore, the Republic of China (Taiwan) and South Korea over improved intellectual property protection, economic arguments were used along with threats of trade sanctions. The reforms introduced were made more palatable through the emphasis on positive economic benefits.

Bilateral Initiatives

Trade Pressure. The United States has used bilateral trade leverage to influence the treatment of intellectual property in countries whose IPR laws or enforcement are weak. Under Section 301 of the U.S. Trade Act of 1974, the President has the authority to impose trade restrictions on imports in retaliation against unjustifiable or unreasonable foreign trade practices which restrict U.S. commerce. This clause applies to intellectual property treatment which restricts U.S. exports. Private firms can also initiate action under this provision.

The Section 301 provision has been resorted to several times in response to weak IPR policies in foreign countries. In 1988, the Pharmaceutical Manufacturers' Association (PMA) filed a complaint with the USTR against pharmaceutical patent violations in Brazil. Retaliatory duties of $70 million were levied against Brazilian exports under Section 301.

The PMA also filed cases against Chile and Argentina in 1988. The threats of retaliatory duties led to changes in the patent laws of those countries.

In a separate case in 1988, ADAPSO, the U.S. software and services association, filed a claim with USTR arguing that Brazilian copyright law restricted U.S. software producers' access to the Brazilian market. The case resulted in threats by the U.S. Government to levy retaliatory duties against Brazilian exports. The duties were not actually imposed because the U.S. action succeeded in obtaining some legislative concessions by the Brazilian government. However, Brazil's computer and software markets remained all but symbolically closed to foreign competitors by the end of 1989 because of pirate activity in Brazil.

The United States can also resort to removing a country's privileges under the Generalized System of Preferences (GSP)[15] if that country's intellectual property laws are perceived to be inadequate. The U.S. Government successfully used threats of GSP

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[15]GSP is a system of tariff preferences given by developed countries to developing countries under the GATT.

removal against Taiwan, Korea, Singapore and Indonesia in persuading them to modify their treatment of intellectual property.

With Thailand, however, trade sanctions have not been as successful in achieving IPR policy reform. Threats and eventual removal of GSP benefits by the United States have not led to any noticeable improvement in intellectual property protection in Thailand. The trade pressures have created tensions in the bilateral relationship, however, as the threat of GSP removal from the United States helped lead to the fall of one Thai government.[16]

Other recent U.S. trade legislation provides additional weapons against inadequate IPR protection. For example, under the Omnibus Trade and Competitiveness Act of 1988 it is now easier for U.S. firms to challenge the importation of pirate and counterfeit goods. Under Section 337 of this Act, a U.S. firm seeking a ban on imports only needs to show that an import infringes intellectual property laws. Previously, the challenger also had to show "injury."

Under the Omnibus and Trade Act, the USTR is given the mandate to analyze foreign countries' intellectual property laws and initiate accelerated investigations of countries without "adequate and effective" protection. Accordingly, in May 1989 the USTR placed Brazil, China, India, Mexico, Saudi Arabia, South Korea, Taiwan, and Thailand on its "priority watch list" (See Annex 8). In November 1989, the U.S. Administration moved South Korea, Taiwan, and Saudi Arabia to "watch list" status due to significant progress in their intellectual property protection reform. The others remained on the "priority watch list" (See Annex 8).

The United States and other developed countries incur both benefits and costs in applying bilateral trade pressures to achieve IPR policy reform. On the one hand, such pressure may lead countries to introduce stronger IPR systems. Exports to the United States from the violating countries are generally substantial -- usually several times greater than estimated pirate sales in those countries. Therefore, the threats of restricting access to the U.S. market can be powerful incentives. In addition, claims by the United States about losses in U.S. export markets because of inadequate IPR protection are difficult to refute. Threats of trade sanctions have been successful in persuading South Korea, Singapore, Taiwan, and Indonesia to modify their laws.

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[16]See Louis Wells, "Intellectual Property and Developing Countries: Options for U.S. Policy," Overseas Development Council,

Table 8

SELECTED DEVELOPING COUNTRY PIRATE SALES
AND EXPORTS TO THE U.S.

Country	Pirate Sales ($M)	1988 Exports to U.S. ($M)
Argentina	250	1,570
Brazil	750	9,450
India	950	3,170
Mexico	250	23,330
R.O. Korea	500	20,150
Singapore	100	7,940
Taiwan	600	24,860

SOURCE: Export data to the United States from IMF, Directions of Trade Yearbook 1989, and U.S. Department of Commerce, Survey of Current Business, Vol. 69, no. 9, September 1989. Pirate sales estimates from Gadbaw and Richards, op. cit.

On the other hand, bilateral trade pressures are highly visible, are often resented abroad and can push the IPR issue up a bilateral agenda to the detriment of other issues. For example, a recent Bangkok newspaper article described conflicts over intellectual property as "determining Thailand-U.S. relations for years to come."

Provision of Direct Assistance and Benefits. Some observers have argued that the U.S. Government and other developed country governments should offer direct assistance or concessions to developing countries as an alternative means of encouraging IPR policy reform. Thus far the United States has generally resisted the concession approach, however, based on the premise that piracy is illegal and that making concessions would legitimize illegal behavior.

In most instances, the nations involved conduct major commercial transactions with the United States. As a result, their governments are prepared, in principle, to recognize the legitimacy of intellectual property, but face a practical economic problem. They are not prepared to take any actions which could de-stabilize their economies or impose short-term economic hardship on their citizens for what they consider to be long-term economic benefits. In many cases, the governments believe that the economic losses from eschewing pirate sales would exceed the short-run gains from increased investment or increased R&D.

To offset some of the "costs of adjustment," governments and private firms could offer some positive incentives, in conjunction with the use of trade measures and economic arguments, to create a strong negotiating package. Incentives proposed by innovation-based private firms include offers of increased investment and R&D in those countries which agree to provide adequate intellectual property protection. To supplement private sector commitments, AID and other development agencies could agree to support R&D programs if the innovations which result will receive adequate intellectual property protection.

Private Legal Action

Impatient with the slow pace of government-to-government negotiations, some private sector industry groups have begun to take unilateral legal actions. For example, ADAPSO, the software and services association, has created a task force to monitor, gather evidence, and when necessary prosecute software pirates through their host country legal systems.

This approach has been only moderately successful to date, however, as it relies on the cooperation of legal authorities in countries where the laws or enforcement processes are often biased. Private foreign firms which have tried prosecuting in host countries have often found inadequate civil or criminal penalties,

a slow enforcement process and a court system which is biased against foreigners.[17]

Multilateral Negotiations

Two main international agreements govern intellectual property protection: The Paris Convention and the Berne Convention. The Paris Convention has jurisdiction over industrial property (patents and trademarks). It has 91 member states of which 51 are developing countries. Under the Paris Convention, the innovators of one member state are guaranteed "national treatment"; that is, a foreign patent holder would receive the same treatment as nationals would receive. The convention lays down few standards for what treatment would be. It also allows for compulsory licensing, to which the United States is opposed.

The Berne Convention is the widely accepted agreement on copyrights. It was first negotiated in 1886 and was revised in 1971. The Berne Convention is based on the principle of "national treatment" for works created by nationals of other member states. In contrast to the Paris Convention, the Berne Convention specifies certain standards, including minimum terms of protection for copyrights. Until 1989, the United States was not a member of the Berne Convention.

Both the Paris and the Berne Conventions have a long history of broad membership. Both are administered by the World Intellectual Property Organization (WIPO) -- a policy advisory body with no authority to enforce or to resolve disputes.

Although the United States belongs to both the Paris and the Berne Conventions, it has not viewed either as a likely mechanism for reform for the following reasons:

- The Paris Convention, built on the principle of national treatment and allowing compulsory licensing of patents, would need to be revised dramatically to satisfy U.S. firms' desire for "adequate and effective" protection.

- The Berne Convention, while offering some standards for protection, allows practices such as compulsory licensing of copyrights, which is opposed by the United States.

- Neither convention provides for enforcement or has dispute-settlement mechanisms.

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[17]ITC, op. cit.

- WIPO --which administers both conventions -- is run by a majority of its members, which means that it is controlled by developing countries, and therefore has not aggressively pressed for reforms advocated by developed countries.

- Many newly industrializing countries do not belong to the two conventions. For example, Singapore does not belong to either convention; South Korea, Taiwan and Indonesia do not belong to Berne; Thailand and Columbia are not members of Paris.

IPR in the New GATT Round

Dissatisfaction with the existing conventions has led the United States to turn to the trade-linked GATT as a mechanism for reform. At the start of the Uruguay Round of Multilateral Negotiations, the United States and other OECD countries proposed that intellectual property issues be introduced in the GATT. As a priority for the Uruguay Round, OECD countries pressed for three principal initiatives relating to IPRs:

(1) identification of internationally-recognized standards for intellectual property protection;

(2) development of consultation and dispute mechanisms; and

(3) recognition that inadequate treatment of intellectual property serves as important non-tariff trade barriers.

At first, the developed country proposal was met with considerable resistance within GATT from developing countries such as India, China, Brazil, Mexico, and Argentina. These countries maintained that WIPO is the organization which should have jurisdiction over intellectual property. Despite this resistance, the OECD-led proposal was accepted. In 1989, Trade-Related Intellectual Property (TRIPs) was approved as one of the negotiating committees for the Uruguay Round.

The approach proposed for negotiating IPRs under the GATT is different from the GATT approach for negotiating tariff levels. In negotiating tariff levels within the GATT, countries offer concessions in exchange for concessions from other nations. The proposal for intellectual property rights would require countries with weak intellectual property protection to raise their standards with no concessions offered.

Some GATT observers believe that the initial outcome of TRIPs is likely to take the form of a code -- much like the code on subsidies -- with initial membership smaller than GATT, and with its members only applying the rules to other code signatories.

Membership would then expand over time, especially if non-membership imposes penalties.

Conclusions

Multilateral, trade-linked negotiations will probably be the most effective mechanism for the United States to utilize in pursuit of intellectual property rights reform. Bilateral negotiations are less desirable because they increase tensions and also because they make it more difficult to introduce uniform standards. Economic arguments can be used to complement trade measures, but developing countries usually are more easily convinced of the negative impact of weak IPR regimes on developed country exports and hence the rationale for retaliatory measures (the trade-linked approach) than they are of the long-term effects of weak IPRs on their economies (economic arguments approach).

The U.S. Government is opposed in principle to the use of direct benefits or concessions as a "carrot" to encourage IPR policy reform. However, targeted R&D assistance could be considered for countries if there is new evidence and assurance that the innovations which result will receive adequate intellectual property protection.

A major challenge to the United States will be that of integrating bilateral and multilateral intellectual property initiatives. If the GATT proposals on IPR are accepted, the United States will probably shift much of its IPR efforts from a bilateral to a multilateral strategy.

The potential impact of GATT negotiations on WIPO is not clear, but it is possible that the United States will be able to use the negotiations to leverage some gains in WIPO. For example, discussions currently underway are considering giving WIPO authority to settle disputes. WIPO is also trying to develop a new IPR treaty for semiconductors. In any case, WIPO is likely to continue to play an advisory role on IPR and will coordinate much of the technical assistance programs to enhance IPR protection.

It is likely that all of the strategic options described above will be used in some form by the U.S. Government and private U.S. firms in efforts to effect desired IPR reforms. What has not been discussed is a productive role for AID. The following section delineates a program through which AID can serve as an effective catalyst in promoting the adoption of appropriate IPR systems in developing countries.

IV. PROPOSED AID PROGRAM ON IPR PROTECTION ASSISTANCE

Based on the foregoing analysis, the most effective course of action for AID to undertake is the development of a formal program to provide assistance to nations interested in improving their systems to protect intellectual property rights. The contours and specific approach of the proposed "IPR Assistance Program" are described below. The proposal is presented to include the key substantive sections of a Project Identification Document (PID), since it is likely that a PID (and subsequently a Project Paper) would be required to justify the authorization of a major new IPR initiative. Therefore, sections of the following material could be drawn upon and developed further in the preparation of a formal PID.

Program Factors: Relationship to AID Policies and Programs

The proposed IPR Assistance Program offers a unique opportunity to develop productive, operational linkages between two of AID's major program areas -- science and technology initiatives and private sector development initiatives. To date, each of these programs has with certain exceptions been designed and implemented in isolation from the other.

Spearheaded by the Bureau for Science and Technology (S&T), the Agency's S&T activities have traditionally fallen into two major categories, direct training programs and efforts to enhance developing countries' institutional capabilities for teaching and conducting research.[18] The former category has concentrated on exchange programs, fellowships and joint research efforts, all of which seek to increase the knowledge base of developing-country scientists, and most of which are carried out within the university community. The latter category seeks to strengthen the S&T institutional base of individual developing countries through the extension of cooperative grants and programs (such as those offered by the AID Science Advisor's Office), provision of equipment, assistance in research management and programming, and dissemination of research results. The vast majority of these initiatives have been conducted by and for the scientific community, with limited or no linkages to commercial issues.

AID's private sector initiative, led by the Bureau for Private Enterprise (PRE), seeks to promote private enterprise as the leading engine of economic growth and development. Activities to achieve this goal have included assistance to improve commercial

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[18] See "ANE: Program Options for Intellectual Property Improvements in Six Countries," Edgar C. Harrell and Judith Bello, International Technology Management and Finance, Inc., 1990.

policy environments, trade and investment promotion, the provision of finance and technical assistance to private ventures, privatization of state-owned enterprises, and development of focused private sector strategies in individual developing countries. With limited exceptions, once again, these programs have not taken S&T issues into explicit consideration.

The exceptions to the general rule of isolation noted above have usually been activities related to the "commercialization" or "transfer" of technology. For example, the Market and Technology Access Project (MTAP) sponsored by the S&T Bureau was designed to stimulate private sector conduits of productive U.S. technology to developing countries via commercial ventures. The PACT project in India aims to promote the commercialization of technologies through U.S.-Indian joint ventures.

The Science and Technology for Development Project (STDP) in Thailand includes a component in which applied research is conducted by universities and research centers on behalf of private companies. AID's grant to the International Executive Service Corps (IESC) funds direct technical and management assistance provided by retired volunteer executives to private firms in developing countries. The newly initiated Private Investment and Trade Opportunities (PITO) Project of AID/ASEAN includes a component to deliver technical information and assistance to private companies (and joint ventures with U.S. partners) operating in the ASEAN region.

Numerous AID programs and projects confront IPR issues and conceivably could include an IPR component, but have not yet addressed the issue frontally. Most USAID Missions operate policy dialogue programs aimed at removing policy-induced constraints to private sector development. In most cases, however, the subject of inadequate IPR protection has been deemed too sensitive to confront. Projects directed toward increasing bilateral commercial relations between the United States and recipient countries often encounter concerns by U.S. firms over the sanctity of their proprietary information. Initiatives involving technology transfers or cooperative R&D efforts could easily include conditions related to IPR protection, but the introduction of IPR concerns has to date been viewed either as peripheral or as unnecessary interference to the efficient negotiation and startup of projects.

The explicit or implicit neglect of IPRs in AID technology projects has led to a dilemma concerning whether or not the implementation of technology-related projects in nations in which IPRs are infringed upon systematically is in technical violation of the U.S. Omnibus Trade and Competitiveness Act of 1988 (Trade Act). From logical, legal and political standpoints, a conflict emerges over whether the United States should sponsor activities to improve the technical capacities of countries that have

indicated little or no interest in strengthening their IPR protection systems.

The proposed IPR Assistance Program seeks to address this concern by offering a positive approach to safeguard intellectual property. The program will provide a resource pool of IPR assistance that (1) can be tapped for existing technology and private sector development projects on a voluntary basis; (2) can be drawn upon to provide an IPR element in new projects; and (3) can be used for a series of concrete IPR initiatives.

By taking a "carrot" rather than "stick" approach, the program is not intrusive to AID activities already under way, which increases the likelihood for acceptance of the initiative. However, the program takes explicit recognition of the principle that future initiatives will be consistent with U.S. policy positions on IPR protection. Consequently, the proposed program combines a basic pro-development orientation in line with AID objectives with a positive approach toward assisting nations to adopt appropriate policies and enforcement systems.

Project Description

Statement of the Problem

The issue of intellectual property right infringement has risen considerably on the international policy agenda over the past five years. Due in large part to their increasing levels of development and sophistication of production, certain developing countries have become or are becoming sites of widespread violation of IPRs. The rise of counterfeit goods and pirated technologies has meant major foregone revenues to legitimate producers and owners of intellectual property. At the same time, business environments characterized by wholesale disregard for IPRs reduce incentives for investment in research and development, and hence undermine long-term technological advancement.

In response to growing levels of infringement, owners of patents, trademarks and other forms of intellectual property have become increasingly vocal in pressing their demands for laws and enforcement structures which safeguard their rights. Conflicts over IPR protection have in some instances reached the top of bilateral policy discussions between the United States and individual developing countries. U.S. policy clearly states that violations of IPRs are a form of theft, and that sovereign nations bear the responsibility for putting into place laws and enforcement systems to protect intellectual property rights.

Although the subject of intellectual property rights has become a major issue between the United States and developing countries, AID currently has no formal IPR policy or programs.

Unlike some other subjects of dialogue and negotiation, in this area AID can maintain its developmental focus while supporting the U.S. position for better IPR protection. For several reasons, AID should actively consider establishing a program to assist developing nations with Intellectual Property Rights reform and enforcement.

1. A principal motivation for AID involvement is that an IPR program would help to transfer technology and ideas through market-based mechanisms. AID is traditionally the primary U.S. agency involved in official technology transfer programs with developing nations. Strong IPR protection builds a stronger institutional framework through which market-based technology transfer can take place. Given AID's increased emphasis on market-based programs, IPR assistance to developing nations is an especially appropriate vehicle for AID to meet its science and technology goals.

In addition to promoting technology transfer, stronger intellectual property rights regarding expression (copyright) encourage the interchange of ideas. In short, programs to help developing nations implement, administer and enforce stronger intellectual property rights are fully consistent with AID's basic developmental objectives.

2. An AID IPR program would play a productive role in supporting overall U.S. policy regarding intellectual property rights. U.S. policy calls for all nations to protect intellectual property rights more forcefully. However, many developing countries, even those committed to stronger IPR protection, do not have the technical expertise or institutional capabilities necessary to draft and implement appropriate policies, or establish and administer the copyright, patent and legal institutions necessary for IPR enforcement and administration. When developing nations express sufficient commitment, the U.S. Government should stand ready to offer technical assistance and training. An AID IPR program would fill this role.

Since the United States is a leader in market-based technology and expression, and the primary proponent of stronger, internationally guaranteed IPR protection, it is important that the United States also be a leading provider of assistance to help developing nations implement the policies that the United States promotes. Since AID is the primary agency involved with providing technical assistance to developing nations, it should be the agency spearheading this effort.

3. The United States is recognized as a leading source of expertise on intellectual property rights. The U.S. Copyright Office and the Patent and Trademark Office are viewed as models for other countries when establishing or reforming IPR systems. These resources give the United States a comparative advantage for providing IPR assistance relative to other donors. In conjunction

with these U.S. agencies, AID could establish a program to share this expertise and help establish efficient IPR administration and enforcement in recipient nations.

4. An IPR program provides an especially appropriate vehicle for assistance to Advanced Developing Countries. Given the more advanced technological capabilities of ADCs, these countries have the greatest need for improved IPR systems. AID is searching for programs that fit the different needs of ADCs, and an IPR program is a strong potential candidate for such initiatives.

Program Goal and Purpose

The goal of the proposed IPR Assistance Program is to contribute to sustained economic development through the adoption of appropriate systems to protect intellectual property rights (and hence promote innovation) in developing countries. The program's purpose is to provide within AID a mechanism and central set of resources that can be tapped for the formation of effective IPR laws, policies, administrative institutions and enforcement.

The program goal is consistent with both AID's fundamental objective -- to contribute to sustainable, long-term economic development, and with U.S. policy to safeguard the rights of holders of intellectual property. The program purpose is to establish means by which developing countries can consider and put into place appropriate IPR systems on an accelerated basis.

Expected Achievements and Accomplishments

The proposed program is intended and designed to develop a mechanism to provide a comprehensive array of specific IPR assistance which can be closely tailored to individual country conditions and needs. Program activities will not duplicate but rather with complement USAID Mission initiatives in the area of S&T and private sector development. The End of Project Status (EOPS) will include the following accomplishments:

- A IPR Assistance Unit, a collaborative mechanism among relevant U.S. Government agencies, will be established and fully operational in delivering policy guidance, training and technical assistance, and institutional assistance to developing countries.

- Governments and private sectors (U.S. and developing countries) will be constructively engaged in dialogue on policies related to IPR protection.

- Five developing countries will have designed and implemented comprehensive IPR laws with the assistance of the program.

- Ten developing countries will have improved their IPR laws and enforcement structures.

- Officials engaged in IPR administration in thirty developing countries will have received training under the program.

- Measurable reductions in counterfeit/pirated goods and losses to U.S. producers will have been achieved.

These achievements individually represent important outcomes in an overall effort to improve IPR protection. Collectively, the program's accomplishments generate considerable momentum for a series of changes and initiatives to infuse appropriate IPR systems worldwide.

Program Outline

The proposed IPR Assistance Program includes three components: Policy Dialogue; Training and Technical Assistance; and IPR Institution Development. The components and subcomponents within them are summarized below, following which each is described in further detail:

1. Policy Dialogue

   A. Development of an AID Policy Paper on IPRs

   B. Administration of a series of country-specific and regional workshops on IPR policy structures

   C. Preparation of adaptable, model IPR policies, laws and implementation strategies

   D. Research on and monitoring of IPR policies and impacts

   E. Introduction of IPR components in S&T and private sector projects

2. Training and Technical Assistance

   A. Design and administration of U.S.-based, skill specific IPR training courses

   B. Sponsorship of group exposure tours to U.S. IPR agencies

   C. Design and administration of turnkey in-country training courses

D. IPR technical assistance: Advice on legal issues, the administration of copyright and patent systems, management information systems, enforcement mechanisms, etc.

3. Institutional Development

A. Provision of short-term IPR advisors

B. Financing of equipment and software for IPR management

C. Comprehensive training programs for IPR agency personnel

D. Dissemination of materials describing IPR policies and procedures

Component 1: Policy Dialogue. The basic purpose of this component is to prepare a coherent AID policy on intellectual property rights, design a series of sensible, actionable steps that can be taken to introduce appropriate IPR systems, and present the case for IPR reforms effectively to developing country leaderships in productive forms of policy dialogue. The first step is to produce a formal AID Policy Paper on IPRs. As is customary for similar Policy Papers, the IPR Paper would briefly describe the nature of the issue, establish the rationale for an explicit AID policy on IPR, and set forth the official stance on the issue from AID's perspective.

The second subcomponent consists of the difficult task of "developing a market" for IPR reform and assistance under the program. What is proposed is the design of a prototype workshop on intellectual property rights, which can then be administered on a recurrent basis in individual countries (perhaps on regional schedules) or in regional settings (e.g., in ASEAN). The workshops would be geared toward top level policymakers and current or nascent constituencies in favor of IPR protection, and would last one and a half to two days. The speakers would include U.S. agency officials (e.g., from AID, USTR, PTO, Department of State, etc.), a select number of private sector executives, and one or more "resource" persons.

The workshops would focus on relating the benefits of effective IPR systems, presenting the rationale for and substance of U.S. policy, explaining strategies for effecting reforms, and describing available forms of assistance and procedures for obtaining such assistance. Care would be taken to promote and conduct the workshops in a non-confrontational manner, and efforts would be made to secure joint sponsorship by high level leaders in a local government agency or respected private organization. The extent to which the workshops generate interest and commitment for

collaborative IPR efforts would be critical in determining the future success of a joint initiative.

The third element of the policy dialogue component involves the development of model IPR strategies, laws and implementation plans. These "models" should be responsive to the needs, capabilities, and constraints in different sets of developing countries. The strategies should include reasonable phasing methods and other techniques to facilitate implementation and to track technical capacities and political efficacy over time.

The next subcomponent consists of a systematic program of research on the impacts of IPR infringement and protection, and monitoring of specific developments in IPR policy. The research activity will be directed primarily at specific industries (e.g., chemicals, computer software, entertainment, pharmaceuticals, etc.) in target countries, and aimed at determining the benefits and costs derived from the adoption or absence of IPR reforms. The research will draw upon the monitoring of policy developments, which will also provide inputs into AID's general and country-specific IPR strategies.

The final policy dialogue activity will be the introduction of specific IPR components into new S&T and private sector projects. For example, cooperative agreements on joint scientific research can include clauses specifying that research results will be treated according to appropriate IPR standards. The issue of IPR could also be identified explicitly as a policy issue to be addressed in the policy dialogue component of trade and investment promotion projects. Procedures can require that technology transfer activities can be implemented only in countries which indicate serious interest in moving toward appropriate IPR protection standards. The IPR Assistance Program will identify the range of projects for which IPR "interventions" are proper, and will develop models for adoption.

Component 2: Training and Technical Assistance. This component is geared toward providing services to support IPR initiatives. It will place technical and financial resources at the disposal of program-directed activities (a "pro-active" element) and of Missions seeking such resources for their own efforts (a "reactive" element).

The first subcomponent consists of designing and administering short-term, U.S.-based training courses on specific IPR topics. These would be financed by the program, but conducted by a collaborative network of existing organizations -- the Patent and Trademark Office, the U.S. Copyright Office, the Franklin Pierce Law Center and the International Law Institute. Curricula will include patent, trademark and copyright law, policy practices, data systems, management, and other skills relevant to IPR system administration. The curricula would be developed in modules which

take into account variable skill levels and specificity required for several levels of participants.

The second element would involve short-term exposure tours of target IPR administration groups to relevant U.S. agencies and private organizations. These would be aimed at higher level officials and would be oriented toward providing an overview of the U.S. IPR policy and administrative structure. The tours might include a one week general course at one or more of the organizations noted above, followed by visits to key government agencies and private sector organizations involved in IPRs.

The third subcomponent is the design and implementation of comprehensive, in-country training courses on IPR system management. The courses would be to the extent possible "turnkey" operation in that they would focus on "training trainers" for future courses carried out independently from the program. The courses would focus on technical skills required of middle level personnel in IPR protection agencies (e.g., procedures for filing patents and copyrights, managing petitions claiming violations, describing legal recourse, administering computerized information systems, etc.). The IPR Assistance Program would finance small groups of U.S. experts to travel to target countries to set up and operate several courses in collaboration with local "trainers" charged with administration of future courses.

The fourth subcomponent would consist of short-term technical assistance provided to cooperating countries. Under this activity, specialists would be brought in to offer counsel on legal structures and enforcement, economic analysis and monitoring, IPR system administration, MIS design and maintenance, enforcement techniques, etc. The assignments would be designed so that incoming advisors would be working on behalf of local authorities, lest they be viewed as imposing U.S. "requirements" on the host country.

Component 3: Institutional Development. The final component of the IPR Assistance Program is targeted toward nations in an active phase of establishing IPR protection agencies and programs. In essence, a substantive "menu" of services would be made available for targeted country programs offering a higher threshold of activity than indicated in either Component 1 or 2. These country programs would be designed in close collaboration with USAID Missions and recipient country officials.

The first subcomponent would be the provision of short-term IPR advisors. These advisors would be recruited from within U.S. IPR agencies and a pool of outside specialists. They would serve for periods of between three and six months as IPR advisors to recipient country agencies, providing guidance on all aspects of institutional development, administration and operation. A comparable initiative is the AID-funded secondment of FDA and USDA

officials to overseas posts to assist developing countries in meeting U.S. food import requirements. These individuals would not only extend valuable face-to-face assistance on a daily basis to recipient countries, but also absorb insights into attitudes toward and constraints on long-term IPR protection in their posts.

Certain countries may possess sufficient commitment to IPR protection, and have adequate laws in place, but lack the hardware and software required for registration and other tasks associated with IPR administration. This subcomponent would provide funding to obtain and install these systems.

The third subcomponent would be the design and implementation of comprehensive training programs for IPR agency personnel. This program would include participation in courses identified above, but could also involve exchanges and in-place training activities beyond those proposed under Component 2.

The fourth activity under the institutional development component consists of assistance and funding to prepare and disseminate materials describing IPR policies and procedures to private sector executives in recipient countries. This "public outreach" effort aims to secure increasing understanding of and compliance with IPR protection systems. The initiative addresses the numerous situations where appropriate laws and policies are adopted but are largely ignored by local firms. While the strength of actual enforcement depends on the commitment of government authorities, public dissemination at least educates private executives on the nature and importance of the issue, and sensitizes them to the fact that illegal actions will not be tolerated.

Program Implementation Plan

The basic concept of the proposed program is to develop a common set of IPR services and capabilities, and then to extend these services on a country-specific or regional basis. However, each country is unique with regard to its current situation and needs. Therefore, the program should include a strategy under which requirements and initiatives can be determined.

The following tables depict a structure for moving from generic to specific program activities. Table 9 serves to diagnose IPR systems according to three country categories, examining the nature of IPR legal regimes, enforcement, institutional capabilities and human resource capabilities for each group. The country categories include three levels of technological development -- advanced, middle-level, and low-level. The former two categories includes all nations currently on the USTR's Priority Watch List and Watch List, with the exception of developed countries (Canada, Italy, Japan, Portugal, Spain and Yugoslavia).

Table 9

DIAGNOSIS OF IPR SYSTEMS

Level of Technology Development	Legal Regime	Enforcement	Institutional Capabilities	Human Resource Capabilities
Advanced Countries: Argentina, Brazil, Chile, Colombia, India, Malaysia, Mexico, South Korea, Singapore, Taiwan, Thailand, and Venezuela	Basic laws in place, but vary in strength and inclusiveness.	Moderate to poor. Numerous examples of loopholes and laxity.	Agencies established, but limited in advanced capabilities.	Competent senior officials. Technical personnel limited in experience and expertise.
Middle-Level Countries: China (PRC), Egypt, Indonesia, Jordan, Kenya, Pakistan, Philippines, Peru, Saudi Arabia, Turkey, and Other LAC Countries	Legal structures limited. Action beginning due to external pressures.	Limited and with large gaps.	Agencies at early stages of development.	Competence restricted to a few senior officials.
Low-Level Countries: Bangladesh, Burma, Morocco, Nepal, Oman, Sri Lanka, Tunisia, and Other AFR/ANE Countries	Legal treatment rare. Little acknowledgement of issue and needs.	Few laws to enforce.	Largely nonexistent.	Largely nonexistent.

Table 10 shifts from diagnosis to prescription, indicating the nature of desired interventions under each functional category. Initiatives in advanced countries would tend to be more specialized and targeted. Middle-level country efforts would focus greater attention on basic IPR system "startup." The majority of program activities would be directed toward these two country categories. Initiatives in low-level countries would focus more on foundation building and positioning for future action.

Participation in the program would be offered to all nations indicated on the charts, including those which do not have a USAID Mission or Regional Office. Activities in U.S. aid recipient countries would be coordinated by Mission officials, who would be solicited via a program announcement and "marketing tours" by program representatives. Participation by non-AID countries would be organized through U.S. embassies and consulates.

Table 11 moves logically from general prescription to specific activities to be carried out under each of the IPR Assistance Program's components in each category of country. The listing is intended to be indicative rather than inclusive or exclusive. As shown, the most intensive initiatives will be in advanced and middle-level countries.

To avoid administrative "overload" and to test the program's capacity within manageable bounds, the program will initially be implemented in no more than three countries from each category. Participation will be voluntary, and will be based on solicitations for expressions of interest. However, as an added inducement for participation, U.S. negotiators considering unilateral trade sanctions against specific IPR violating countries might deem program participation as indicative of nations' commitment to adopt appropriate IPR regimes.

Program Management, Administration and Budget

Management oversight of the proposed IPR Assistance Program will be provided by an interagency Steering Group consisting of seven members from the following agencies: AID (three members, one each from PPC, S&T and Office of the Science Advisor), the Department of State, the U.S. PTO, the U.S. Copyright Office, and the Office of the USTR. The Steering Group will set overall policies, review progress achieved, and assist program coordination. The Steering Group will meet on a quarterly basis.

The day-to-day administration of the program will be the responsibility of an outside private contractor which will be selected on a competitive basis. The contractor will be charged with overall program coordination, the management of sub-grants and cooperative agreements, the preparation and implementation of annual work plans, and financial administration.

Table 10

PRESCRIPTION FOR IPR IMPROVEMENT

Level of Technology Development	Legal Regime	Enforcement	Institutional Capabilities	Human Resource Capabilities
Advanced Countries: Argentina, Brazil, Chile, Colombia, India, Malaysia, Mexico, South Korea, Singapore, Taiwan, Thailand, and Venezuela	Strengthen and expand scope of laws.	Increase commitment. Employ effective enforcement techniques.	Introduce advanced systems (e.g., computerized MIS).	Undertake advanced, specialized overseas training.
Middle-Level Countries: China (PRC), Egypt, Indonesia, Jordan, Kenya, Pakistan, Philippines, Peru, Saudi Arabia, Turkey, and Other LAC Countries	Introduce sound basic laws.	Establish framework for effective enforcement.	Develop primary operational capacities.	Focus on core staff training and development.
Low-Level Countries: Bangladesh, Burma, Morocco, Nepal, Oman, Sri Lanka, Tunisia, and Other AFR/ANE Countries	Develop attitudes and commitment in favor of IPR protection.	Explore long-term strategies.	Initiate discussions on institutional arrangements.	Await future requirements.

Table 11

IPR ASSISTANCE PROGRAM ACTIVITIES

Level of Technology Development	Policy Dialogue	Training and Technical Assistance	Institutional Development
Advanced Countries: Argentina, Brazil, Chile, Colombia, India, Malaysia, Mexico, South Korea, Singapore, Taiwan, Thailand, and Venezuela	Policy workshops Research and monitoring IPR components in AID projects	U.S.-based, skill specific training Turnkey in-country training Advanced system technical assistance	Short-term advisors Equipment and software Public outreach
Middle-Level Countries: China (PRC), Egypt, Indonesia, Jordan, Kenya, Pakistan, Philippines, Peru, Saudi Arabia, Turkey, and Other LAC Countries	Policy workshops Policy model discussions Research and monitoring IPR components in AID projects	U.S.-based, general training Exposure tours General technical assistance	Equipment and software Comprehensive training Public outreach
Low-Level Countries: Bangladesh, Burma, Morocco, Nepal, Oman, Sri Lanka, Tunisia, and Other AFR/ANE Countries	Policy workshops	Exposure tours	Await future requirements

The program activities will be carried out by the contractor and through cooperative arrangements with U.S. Government agencies (PTO, Copyright Office, etc.) and private sector organizations (Franklin Pierce Law Center and International Law Institute). The U.S. Government entities will be provided program funding through interagency cooperative agreements, and the private organizations will receive AID grants. Funding levels and programming will be based on annual work plans determined by the Steering Group in collaboration with the organizations involved.

The overall funding required for the proposed IPR Assistance Program will depend on the level of activity (i.e., number of individual country initiatives) to be carried out under the program. Initial calculations indicate that in order to achieve a "critical mass" of activities, total program funding on the order of $6 million annually would be required, or about $18 million for a three-year activity. Of the $6 million annual total, approximately $1 million would be programmed for policy dialogue, $2 million for training and technical assistance, $2 million for institutional development, and $1 million for program management and administration. These minimums could be revised upward if higher thresholds of activity were deemed desirable, or downward if fewer countries are served or if IPR assistance is targeted toward a few select industries.

ANNEX 1

GLOSSARY OF TERMS

Berne Convention: An international copyright convention negotiated in 1886 and revised in 1971. The Berne Convention is administered by WIPO. It is based on the principle of providing "national treatment" to works created by nationals of other member states. Under the Berne Convention, the rights which are to be afforded to authors and creators are spelled out in more detail than is found in the UCC. The minimum term of protection under Berne is also longer than under the UCC.

compulsory license: A license generally granted by a government (with or without the consent of the right owner) which permits a party other than the original owner of the rights to use a patent, trademark, copyright, etc. Most compulsory licenses are granted based on a finding of non-working, or for national security reasons.

copyright: Protection provided by a government to authors of literary, dramatic, musical, artistic, and certain other intellectual works.

counterfeits: Copies of products protected by intellectual property laws and which are intended to deceive the purchaser by purporting to be something they are not.

GATT: The General Agreement on Tariffs and Trade. Created in 1947, the GATT is both an international agreement embodying rules to govern international trade, and an institution charged with conducting trade negotiations and settling international trade disputes among nations.

GSP: Generalized Systems of Preferences. A system of tariff preferences given by developed to developing nations. GSP programs are intended to increase developing nations' exports and thereby their foreign exchange earnings.

industrial property: Most intellectual property with the exception of copyrights -- generally patents, trademarks and trade secrets.

intellectual property: the term applied generally to intangible forms of property the value of which derives generally from creative effort.

mask work: "A series of related images, however fixed or encoded, having or representing the predetermined three-dimensional pattern of metallic, insulating or semiconductor material present or

removed from the layers of a semiconductor chip product."[1] The term is used in U.S. law to define the subject matter of the legal right in semiconductor designs.

OECD: Organization for Economic Cooperation and Development. Formed in 1948 as the Organization for European Cooperation as part of the Marshall Plan, this international organization promotes cooperation among its members on international economic issues. The following nations are OECD members: Australia, Austria, Belgium, Canada, Denmark, the Federal Republic of Germany, Finland, France, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

Paris Convention: An international convention on industrial property rights. The Paris Convention was negotiated in 1883, and is now administered by WIPO. The Convention requires national treatment in its members' patent and trademark laws, and creates a means of determining priority between competing claims.

patents: Government grants of temporary monopoly rights on innovative processes or products.

piracy: The act of reproduction, or other (generally commercial) use of the intellectual property of others without authorization.

Section 301: A provision of the 1974 Trade Act that provides authority for the USTR to investigate and retaliate against foreign "unfair" trade practices, which have been interpreted to include the lack of satisfactory protection of intellectual property.

Section 310 (Super 301): One provision of this section of the omnibus Trade and Competitiveness Act of 1988 requires the USTR to identify countries that offer "inadequate" protection for intellectual property.

Section 337: Under the Tariff Act of 1930 (as amended), the U.S. International Trade Commission has the authority to investigate and prescribe sanctions against imports that involve "unfair" trade practices such as the infringement of U.S. intellectual property laws. The need for demonstrating injury was eliminated in the 1988 Trade Act.

service mark: A mark used in the sale or advertising of services to identify the services of one person and distinguish them from the services of others.

trade secrets: Sensitive information that companies attempt to keep confidential.

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[1]Semiconductor Chip Protection Act of 1984, Public Law No. 98-620, tit. III, 98 Stat. 3347, 17 U.S.C. Section 901.

trademarks: Words, names, symbols, or devices that distinguish an item as the product of a particular manufacturer as distinct from that of another.

TRIPS: Trade-Related Intellectually Property, one of 24 negotiating committees of the Uruguay Round of GATT.

UCC: Universal Copyright Convention. A copyright convention administered by the United National Education, Scientific, and Cultural Organization (UNESCO), the UCC was negotiated in 1952 and revised in 1971. UCC member states agree to provide "adequate and effective" copyright protection for the rights of copyright owners, and to accord national treatment to the works of nationals of other UCC members. The UCC also reduces the difficulties which can be associated with satisfying foreign formalities.

Uruguay Round: The latest round of trade negotiations held under GATT auspices, including negotiations on agriculture, services, intellectual property, and investment issues. The Uruguay Round was launched at the GATT Ministerial Meeting in Punta del Este, Uruguay on September 12, 1986.

utility model: A patent-like right issued in some nations to inventions which fail to meet the standards of technical progress necessary to qualify for a patent.

WIPO: The World Intellectual Property Organization. WIPO was organized in 1963 to administer several of the major intellectual property conventions, including the Berne and Paris Conventions. One of the objectives of WIPO is to promote intellectual property protection around the world through educational support and the provision of technical assistance.

working requirement: A requirement to produce or import, sell or advertise, a patented invention, trademarked good, or copyrighted work, generally associated with the lapse of intellectual property protection or the granting of a compulsory license if working requirements are not met.

ANNEX 2

DEFINITIONS OF INTELLECTUAL PROPERTY PROTECTION MECHANISMS

Internationally accepted methods to protect intellectual property include trademarks, copyrights, patents, trade secrets, semi-conductor mask works, and proprietary technical data. These devices are defined below.

Trademarks

A trademark is any word, name, symbol, or device used by manufacturers or merchants to identify their goods and distinguish them from those manufactured or sold by others. Seed and breed certification systems operate similar to trademark protection to prevent others from trading on the reputation that a breeder establishes with a new plant or animal variety. Violation of trademark law consists of counterfeiting and other forms of infringement. Counterfeiting is the unauthorized use of a representation or copy of a registered trademark or service mark.[1] Other forms of infringement include offering for sale, distribution, or advertising any goods or services using a copy or colorable imitation so similar that confusion is likely to result.[2]

Copyrights

A copyright is a form of protection to authors for original works including literary, dramatic, musical, artistic, and other intellectual works. The owner has the exclusive control of the reproduction, publication, and sale of the work for a limited period of time. The copyright is limited to copying the publication and does not preclude the use of the information contained therein. Copyright violations are referred to as infringement or piracy.[3]

Patents

A patent is a grant made by a government to an inventor, conveying and securing to the inventor the exclusive right to make,

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[1]A service mark is a mark or device used to identify a service such as transportation or insurance offered to customers.

[2]U.S. International Trade Commission, "Foreign Protection of Intellectual Property Rights and the Effect on U.S. Industry and Trade," Chapter 1, Publication 2065, Washington, DC, February 1988.

[3]U.S. International Trade Commission, op. cit., Chapter 1.

use and sell his or her invention for a period of years.[4] Invention patent systems usually require that an application for a patent must include an enabling disclosure which sufficiently describes the invention so that others skilled in the same technical field can "build around it." Patent laws thus encourage early publication of an invention in exchange for grants of limited monopoly.

To be valid, an invention patent must disclose an invention that is novel, useful, and an improvement over the prior art. An invention must be novel in the sense that it has not been previously published, exhibited or otherwise described. As to its utility, the invention must be capable of industrial or agricultural application, and not be purely ornamental.

The degree of improvement over prior art that an invention must exhibit defines the most important attribute of a patent system. This increment, also known as inventive step or level of invention requirement, must be greater than what would be obvious to the average person skilled in the art.

Utility models or petty patents are similar to invention patents in that they give the inventor the right to exclude others from practicing the invention for some period of time. They differ from invention patents in requiring only novelty and utility, without any inventive step above the prior art. Petty patents therefore preserve rights to minor variations of known devices rather than to major technical innovations having broad adaptability. Countries usually grant petty patent protection for a much more limited time than is the case for invention patents. Since the inventive step need not be determined, such systems are less costly than most invention patent systems. In many developing countries, minor adaptations of machinery and other inventions to accommodate local conditions help the local economy but may not be valuable abroad. Nationals of these countries are more likely, therefore, to utilize petty patents rather than undertake the more costly and difficult process of obtaining invention patents.

Patent violations are referred to as patent infringement or piracy.

Trade Secret Protection

A trade secret is a plan or process, tool, mechanism, or compound known only to its owner and those of his or her employees to whom it is necessary to confide. It can be a secret formula or process not patented but known only to certain individuals using

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[4]Henry Campbell Black, Black's Law Dictionary, (St. Paul MN: West Publishing Co., 1979), p. 705.

it in compounding some article of trade having a commercial value.[5] Trade secret contracts prevent people (primarily ex-employees and collaborators) from disclosing secrets of manufacture to competitors. Violations of trade secrets are referred to as misappropriations.

Semiconductor Mask Work Protection

Under the Semiconductor Chip Protection Act of 1984, mask work protection exists for original mask works fixed in a semiconductor chip product by, or under the authority of the owner of the mask work, which have been registered or commercially exploited anywhere in the world. The owner has the exclusive right to: (i) reproduce the mask work by optical, electronic, or other means; (ii) import or distribute a semiconductor chip product in which the mast work is embodied; and (iii) induce or knowingly cause another person to take either of these actions.

Mask work is defined as a series of related images, however, fixed or encoded, having or representing the pre-determined three-dimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product.[6] Violations in mask works are referred to as infringement or piracy.

Proprietary Technical Data Protection

Proprietary technical data consist of data submitted to a government agency in connection with the regulatory review of a product, such as new pharmaceuticals or chemicals.

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[5]Henry Campbell Black, Black's Law Dictionary, p. 1339.

[6]Semiconductor Chip Protection Act of 1984, Public Law No. 98-620 tit. 111, 98 Stat. 3347, 17 U.S.C. § 901.

ANNEX 3

POSITIONS ON INTELLECTUAL PROPERTY PROTECTION

DEVELOPED COUNTRY POSITIONS

U.S. Government Policy

The U.S. Government has taken the lead among the developed countries in arguing for stronger IPR laws in all countries. International agreements such as the Berne and Paris Conventions call for equal treatment between foreigners and nationals with respect to international property. The U.S. Government has been critical of existing regimes and even of the Berne and Paris Conventions arguing for "adequate and effective protection."

In April 1986, the U.S. Administration released a policy statement on IPR protection (see Annex 7). In that statement, the government outlines its major arguments for stronger IPR protection:

- Adequate and effective protection fosters creativity and know-how, encouraging investment in research and development and in new facilities.
- Innovation stimulates economic growth, increases employment and improves the quality of life.
- Technological progress is a critical aspect of U.S. competitiveness as well as freer and fairer global trade.
- In developing countries, improved intellectual property protection can foster domestic technologies and attract needed foreign know-how and investment.

Therefore, the U.S. position is very clearly for stronger protection in all countries. The United States was among those supporting the inclusion of intellectual property rights in the Uruguay round. Stronger intellectual property rights has been an important item on the U.S. foreign policy and trade agenda.

Developed Country Positions in General

In recent years, other developed countries have followed the lead of the United States in recognizing the importance of strong intellectual property rights protection. Consequently, most OECD countries have been strengthening their IPR laws in recent years. All industrialized countries now have fairly comprehensive intellectual property protection. Laws vary considerably over

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issues such as product coverage, the time period for which exclusive rights are granted, and procedures for registration.

Many industrialized countries handle patents on products and processes differently. There is considerable debate, for example, over protection for new and emerging technologies such as biotechnology and semi-conductor chip designs. A number of countries can require patent holders to grant licenses to others (a practice known as compulsory licensing). Canada, for example, allows compulsory licensing of pharmaceuticals. The United States is opposed to compulsory licensing. Most compulsory licenses are granted on a finding of non-working[1] of the patent, or are granted for national security reasons.

Copyright procedures also vary from country to country. Until 1989, U.S. copyright laws were not harmonized with those of other developed countries. Until March 1989 the United States was not a member of the Berne Convention. Until that time the United States was a member of the Universal Copyright Convention. Formerly, the rights afforded to authors and creators were not specified in as much detail as that under current law. In addition, the minimum terms of protection have been increased under the current U.S. law.

Although differences persist in the treatment of intellectual property in the industrialized countries, laws have tended to converge in recent years and the scope for international standards is improving. The OECD countries were able to reach a consensus, for example, that setting new multilateral standards for IPRs should be examined in the GATT Uruguay Round of multilateral trade negotiations.

In the past, the OECD[2] endorsed the opinion that certain types of intellectual property protection are anti-competitive, primarily licensing agreements and patents. Recently, however, the OECD cancelled its 1974 OECD Council "Recommendations on Restrictive Business Practices Relating to the Use of Patents and Licenses" and supported the conclusions of a report by the Committee on Competition Law and Policy entitled, "Competition Policy and

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[1]A working requirement is a requirement to produce, import, sell, or advertise a patented invention, trademarked goods, or copyrighted work. Generally, it calls for a lapse of intellectual protection or the granting of a compulsory license if working requirements are not met (are "non-working").

[2]Organization for Economic Cooperation and Development.

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Intellectual Property Rights.[3] The report argues that long-standing notions about conflict between intellectual property rights and competition policy should be reconsidered. It concludes that intellectual property rights, like other forms of property, are necessary for the functioning of a competitive, market-based economy.

In preparation for the Uruguay Round negotiations on IPR protection, the OECD prepared another study[4] which provides economic justifications for granting stronger IPR protection.

The report provides several economic arguments in favor of strong IPR laws. It maintains that stronger IPR protection:

- Encourages and safeguards intellectual and artistic creation, of which the social and cultural benefits are widely recognized, by inducing individuals (or firms) to undertake creative work.

- Disseminates new ideas and technologies quickly and widely, by supplying a public "database" of innovations leading to accelerated industrial progress.

- Promotes investment by offering restricted competition from imitators to those who accept the risk of researching and developing new innovations.

- Provides consumers with the fruits of creation and invention, through the production and distribution of higher-performance goods which were stimulated by IPR.

In April 1990, the EC submitted a detailed proposal to GATT for new standards to protect intellectual property and proposed trade related remedies to enforce the standards. The areas covered by the EC proposal include patents, copyrights, trademarks, trade secrets, semiconductors and industrial design.

Private Sector Positions

Several private sector associations have been organized in the United States and other developed countries to help lobby for stronger IPRs to protect their industries. The Intellectual

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[3]"Competition Policy and Intellectual Property Rights," OECD Report Number 24-89-03-1 (Paris: OECD, June 1989).

[4]"Economic Arguments for Protecting Intellectual Property Rights Effectively," (Paris: OECD, November 1989).

Property Committee (IPC), for example, is a group representing diverse American industries which has worked with its counterparts in Europe and Japan to promote their interest in introducing intellectual property rights in the Uruguay Round of the GATT negotiations. The Council for International Business has also encouraged support for the GATT initiative among its members. Both the IPC and the U.S. Chamber of Commerce have developed minimum standards of IPR protection to be used as the basis for standards proposed by the United States in the Uruguay Round, as mentioned above.

Several U.S. private sector lobby groups have taken initiatives to protect the intellectual property of their members in foreign countries. In several cases these groups have taken legal action against IPR violators through the foreign country judicial system. ADAPSO (the software and services association) has created a task force to monitor, gather evidence, and prosecute software pirates. Some of the private sector groups most active in fostering intellectual property right protection are:

- Motion Picture Industry of America (MPAA)
- American Society of Composers, Authors and Publishers (ASCAP)
- Recording Industry Association of America (RIAA)
- Association of American Publishers (AAP)
- Intellectual Property Alliance (IPA)
- U.S. Computer Software and Service Industry Association (ADAPSO)
- Pharmaceutical Manufacturers' Association (PMA)

The level of interest shown by the artistic, software and pharmaceutical industries correlates with the fact that these industries are, in comparison with other industries, more subject to IPR infringement and concomitant losses.

DEVELOPING COUNTRY POSITIONS

Government Positions

In the late 1960s through the 1970s, developing countries mounted an effort to obtain better terms of technology transfer between North and South countries. Developing countries attempted to shift the existing intellectual property rights framework in their favor. Their leaders argued that payments of royalties and license fees to foreign holders of patents and copyrights constituted "unfair" terms of exchange and that holders of these rights in developed countries had no moral or "natural" rights to protection in developing countries. The work of Dr. Paul Prebisch and his colleagues provided the economic justification for reduced

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levels of patent protection.[5] No new conventions or agreements were reached as a consequence of the North-South debate. Many developing country governments actually weakened their own IPR laws and the administration of those laws in the years which followed.

Today, many developing countries still resist pressures to strengthen their intellectual property regimes. Several country leaderships hold the view that strict IPR regimes run counter to their commercial, economic and social interests. According to this view, which has been expressed by the Latin American Association of Pharmaceutical Industries, technology monopolies "reserve the markets of the region for exports from the United States and other developed nations at prices higher than international price levels."[6]

The conclusion of this perspective is that because developing countries possess only limited R&D capabilities, and since costs of acquiring new technologies are too high, developing country users should be allowed "free access" to technologies, since knowledge is a common property to all and the economic development of the poorer nations is of benefit to everyone.

Some developing countries officially support the protection of intellectual property rights but implicitly condone infringement through lack of effective enforcement. Other developing countries, especially the NICs, are beginning to have new technologies and innovations of their own to protect. In 1986-87, Singapore, Taiwan, Korea and Indonesia all strengthened their laws, partly in response to domestic lobbying to protect intellectual property. In 1986, the Korean Government stated in an official document that "the patent system is one of the most effective systems to promote technological progress. Therefore, in a word, the patent system contributes to economic growth through promotion of technological progress in a country."[7]

Private Sector Positions

The violators of intellectual property rights, especially in well organized industries in which the executives are well educated and familiar with the political process (such as the pharmaceutical

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[5]See "North/South Technology Transfer: The Adjustment Ahead - Analytical Studies," (Paris, OECD, 1982).

[6]Nicolas Kulibaba, "Intellectual Property: New Dimension in Trade Disputes," The Latin America & Caribbean Review, 1989.

[7]Industrial Property System in Korea's Economic Development: Country Report for the International Symposium in Tokyo Japan, Republic of Korea Office of Patents Administration, March 1986, p. 10.

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industries in Argentina and India and the publishing industry in Korea), are often few in number but dedicated in their cause and politically influential. Consumers, by contrast, are a much larger group but tend to be less vigorously opposed to improved IPR protection. Furthermore, in most of the "core violator" countries, there are few organized groups which seek to protect consumer interests. The groups of consumers whose well-being is perceived by government policymakers as most affected by changing levels of intellectual property protection are students and users of pharmaceutical products.[8]

Consumers have been vocal in their opposition to stronger patent laws for pharmaceuticals in several developing countries. They have argued that paying "monopolistic prices" for drugs and medical devices works against their social welfare. In addition, several governments of the countries studied, including Argentina, Brazil, India, Korea, and Taiwan, all impose price controls on pharmaceutical products as part of their health and social welfare policies.

In several of the Asian countries, students are major users of pirated copies of books and software. For members of this group, the possibility of increased intellectual property protection, raising their cost of education, is viewed as a threat to their ability to obtain an education. As a result, students in Asia have been vocal in their opposition to stronger IPR laws.

On other intellectual property issues such as the protection of trade secrets, trademarks, and semiconductors, no organized consumer movements are visible in the main violator countries.

The supporters of intellectual property protection in the developing countries are from diverse groups. In most of the countries the greatest pressure for comprehensive reform has come from foreign-based companies injured by the lack of IPR protection. These firms and the private sector organizations which represent them are strongly committed to the enhanced protection of intellectual property. Their influence on government policymakers, however, varies depending on their importance in the economy, the weight the host country attaches to foreign investment, and the ability of the firm to forge alliances with domestic interest groups.

There are many examples, even in the biggest IPR violator countries, where the innovative work of national intellectual property owners is protected. Argentina and Mexico, for example, have long traditions of cultural creativity, and literary, musical and artistic works receive full copyright protection in these nations. The Indian movie industry is the largest movie industry

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[8]Gadbaw and Richards, op. cit. p. 15.

in the world but has suffered severe losses due to video piracy; during 1983 and 1984 the Indian copyright law was significantly strengthened to deter piracy. Brazil has a rapidly developing software capability and a copyright law passed in 1989 provides increased protection to Brazilian software companies. There are many similar examples where governments of developing countries have designed strict IPR laws only in the areas where they feel they have an industry to protect, or a "comparative advantage."

Other groups which support intellectual property protection in developing nations are those whose interests are primarily threatened by foreign (i.e., U.S.) trade retaliation due to a lack of intellectual property protection (see Chapter VI). In Korea, Singapore, and Taiwan, threats of trade sanctions by the United States were taken very seriously and exporter groups have used their substantial political clout to accelerate government measures to prevent U.S. trade retaliation. In Mexico, the main trade association representing exporters favored revisions to Mexico's patent laws. In Argentina and India, however, there has been little recognition among exporting companies that their access to the United States or other developed countries may be linked to their countries' protection of intellectual property.

ANNEX 4

ECONOMIC ANALYSIS OF INTELLECTUAL PROPERTY RIGHT PROTECTION

ECONOMIC JUSTIFICATION OF ENHANCED IPR PROTECTION

Most developed countries provide intellectual property protection because their governments believe that intellectual property is an effective means of encouraging innovation and the diffusion of technology -- activities which have high economic rates of return. Intellectual property rights protection, it is argued, must be respected to provide a fair return to the private investors who take the substantial risks involved in developing and commercializing new technologies.

Intellectual property protection (e.g. patents) will promote domestic innovation in developing countries by providing additional incentives to domestic economic actors to invest more resources in technological advancements. Investments made for technological advancements are highly risky. This elevated risk derives from the uncertainties associated with technological advancements. Innovation is driven by the expected economic payoff; investment decisions are based on the rate of return investments are expected to yield. However, investors must be compensated to bear more risk. This is demonstrated in the financial markets where assets are priced according to the risks associated with their expected rate of return.

Uncertainties involved with investments in technological advancements are associated with: (i) uncertainties about the feasibility of the project; and (ii) uncertainties about future market conditions (including uncertainties about future demand as well as supply strategies pursued by competitors). Typically a long lead time exists between the initial research stage and final distribution of a new product, which means that investors must predict events into the future based on limited knowledge. For example, in the pharmaceutical industry it has been estimated to take an average of ten years and $125-$160 million to bring a new pharmaceutical product to market.[1] Moreover, it has been estimated that no more than ten percent of all R&D projects will be

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[1]Basic framework of Gatt Provisions on Intellectual Property: Statement of Views of the European, Japanese and United States Business Communities," The Intellectual Property Committee, Keidanren and UNICE, June 1988, p. 13.

commercially viable, and there is no way to identify the successful ventures a priori.[2]

The uncertainties associated with investments in technology would tend to cause underinvestment in technological advancement, unless investors were granted greater economic incentives to encourage projects of high social value (high benefit to the overall economy). Intellectual property protection provides this extra incentive.

In summary, intellectual property protection has been justified on the grounds that it encourages investment in innovative activities which have a high economic rate of return. In the absence of protection there would be underinvestment in these high priority areas. The benefits to a society from introducing IPR protection include increased investment (both domestic and foreign), higher employment, the transfer of new technology, and the spread of knowledge and ideas.

Most analysts would not dispute the above arguments on the numerous long-term economic benefits to countries from enhancing IPR protection. However, serious questions remain, especially from the viewpoint of developing countries. Concerns raised by those who are still unclear about the net benefits of IPR protection in developing countries include:

- What are the direct short run benefits and costs to developing countries from undertaking enhanced IPR protection?
- Does intellectual property protection in a developing country encourage domestic innovation or simply provide additional incentives to foreign innovators?
- Can a country achieve the best of both worlds by protecting intellectual property developed by its own citizens while permitting "free access" to intellectual property developed by foreign citizens?
- Are weak intellectual property laws a deterrent to foreign investment and the transfer of technology?

These and other questions related to the economic impact of intellectual property protection are examined in the sections which

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[2]L.W. Evans of the Standard Oil Corporation, "Licensing in Brazil: The View of a U.S. Corporation," Lecture, (1986).

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follow. Where possible, specific empirical data are used to test these hypotheses.

The economic costs for a developing country to introduce more stringent IPR protection involve: (i) loss of revenues to infringers; (ii) loss in consumers' surplus; and (iii) additional costs involved with the design and enforcement of stricter IPR protection.

Pirate Revenues

In order to identify these costs with some precision, levels of pirate sales must be estimated. In a study of seven countries, Gadbaw and Richards estimated the levels of pirate sales in eight industries.[3] (See Figure 1 below).

The level of pirate sales was estimated on the basis of industry studies, interviews, and other published estimates. India had the highest levels of pirate sales ($950 million), followed by Brazil ($742 million), and Taiwan ($642 million).

The major industries affected by the pirate sales in the Gadbaw and Richards study are presented in Figure 2 below. Pharmaceuticals and computer industries were the main industries affected by IPR infringement according to that study.

Figure 3 below provides a graphic description of the methodology for calculating revenues lost to pirate firms. In this situation there are three supply curves, S_r for right owner, S_p for pirate supply, and S for full market supply (which includes right owner supply and pirate supply). There is only a single market demand curve, D.

When there is no intellectual property protection, price will be set at P_1 (the price at which S and D curves intersect). P_1 is equal to both the <u>marginal cost</u> of legitimate producers (i.e. does not include R&D and advertising costs) and the <u>average unit cost</u> of infringers (i.e. assumes no R&D or advertising costs for infringers). At P_1 right owners will supply Q_1 units and total right owner revenues are represented by the area $OP_1 \times OQ_1$. Pirate producers will supply $Q_3 - Q_1$ units and total pirate revenues are represented by the area $(OP_1 \times OQ_3) - (OP_1 \times OQ_1)$.

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[3]Gadbaw and Richards, op. cit., pp. 92-95. Countries included in the study are India, Brazil, Taiwan, Korea, Argentina, Mexico and Singapore. Industries covered are pharmaceuticals, agricultural chemicals, semiconductors, and book publishing.

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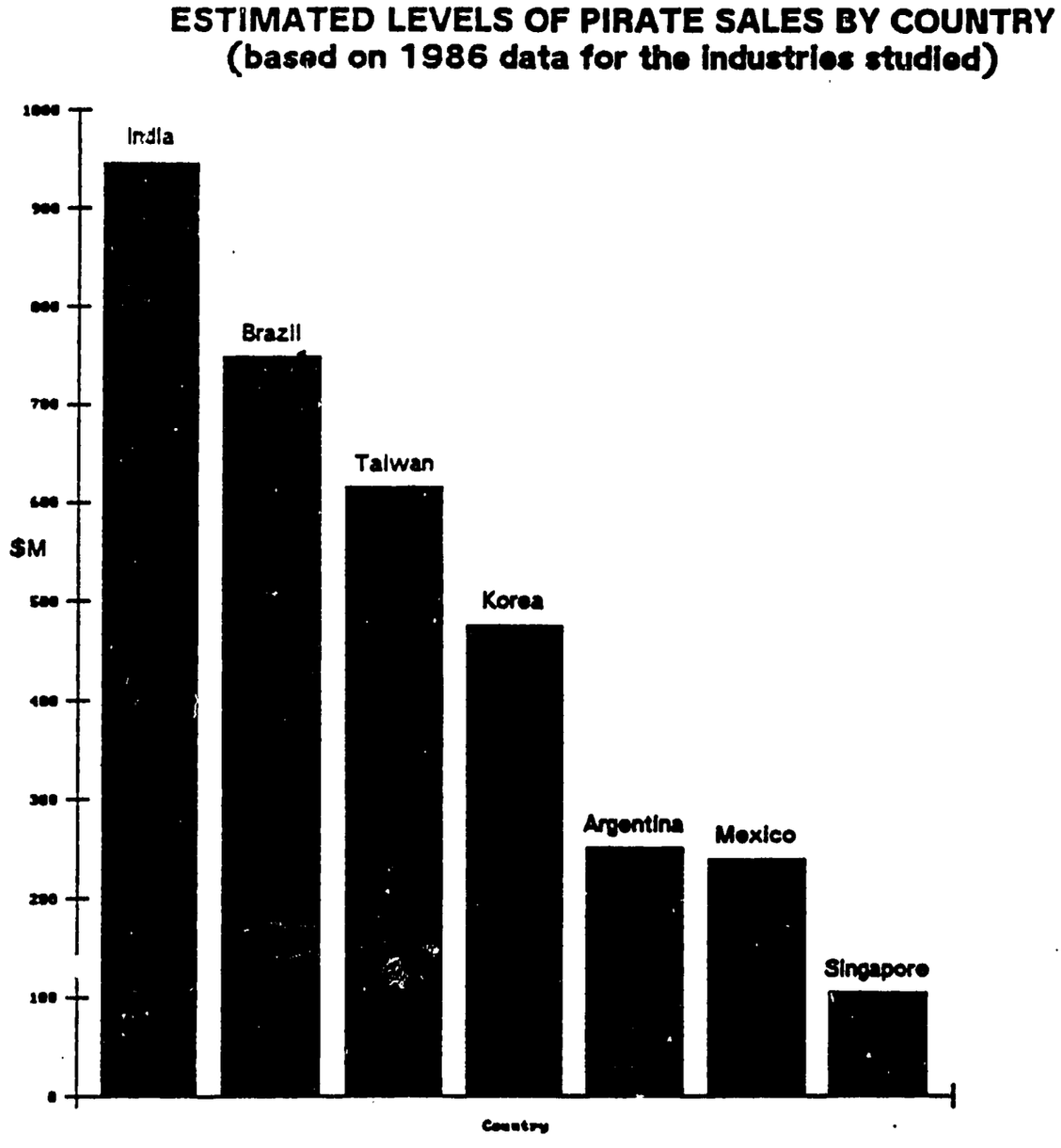
Figure 1



SOURCE: Gadbaw and Richards, op. cit., p. 93.

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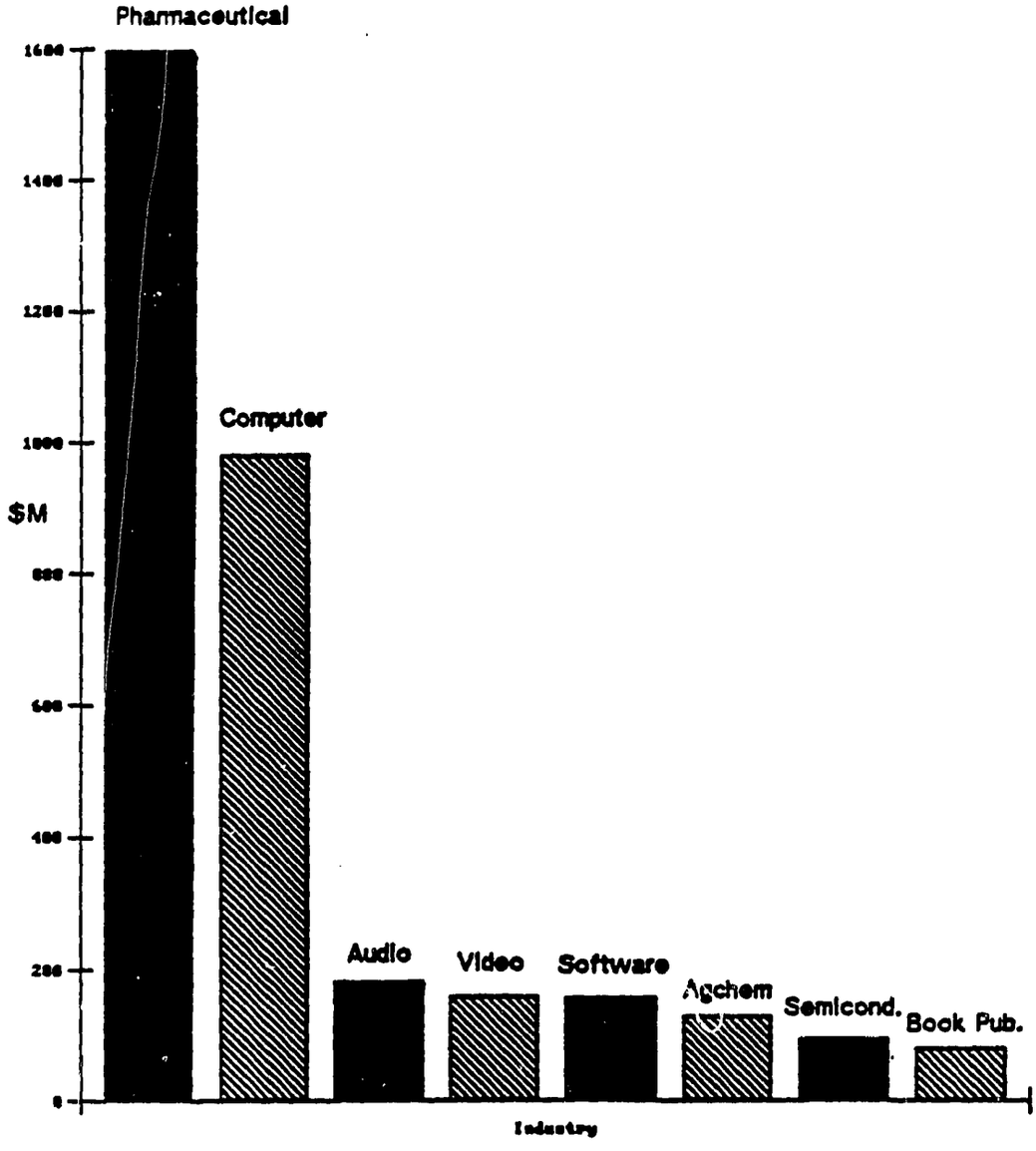
Figure 2

ESTIMATED LEVELS OF PIRATE SALES IN THE INDUSTRIES STUDIED (based on 1986 data)



SOURCE: Gadbaw and Richards, op.cit., p. 94.

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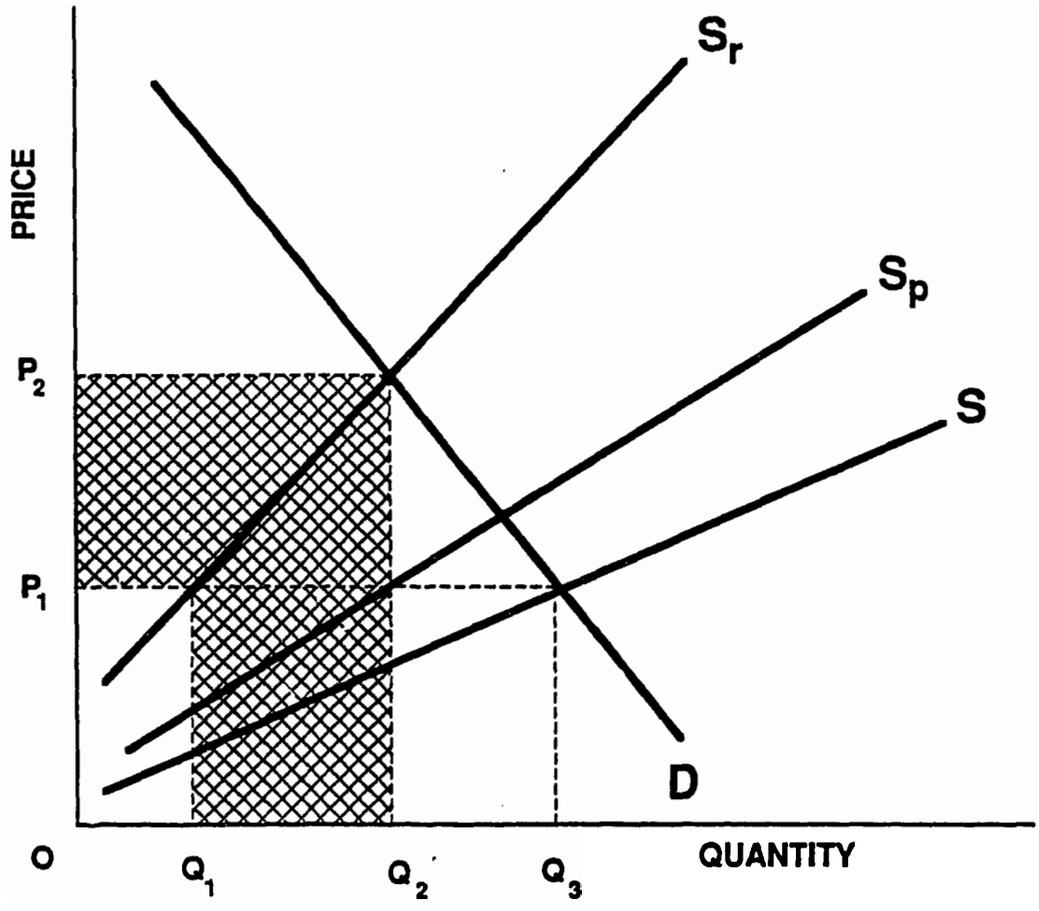
Figure 3

ADDITIONAL REVENUES CAPTURED BY LEGITIMATE OWNERS AND BY PIRATE PRODUCERS



LEGEND:

$OP_1 \times OQ_1$ = Right owner revenues with pirate sales.

$(OP_1 \times OQ_3)-(OP_1 \times OQ_1)$ = Pirate revenues without intellectual property protection

$(OP_2 \times OQ_2)-(OP_1 \times OQ_1)$ = Additional right owner revenues with intellectual property protection

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With full intellectual property protection, pirate supply would be eliminated, leaving the Sr curve as the new market supply curve. Prices would rise to P_2 and right owners would supply Q_2 to the market. P_2 is the monopolistic price paid by the consumer when output is set at the point where profits are maximized by the producer. Total revenues to the right owners would increase to the area $OP_2 \times OQ_2$. Additional revenues resulting from protection (embodying increases in price and quantity) are equal to the area $(OP_2 \times OQ_2) - (OP_1 \times OP_1)$.

It should be noted that the reduction in legitimate sales caused by infringements $(Q_2 - Q_1)$ is less than the quantity of infringing sales $(Q_3 - Q_1)$, by reducing the price set by the legitimate producer infringement causes total volume of sales to rise. However, pirate revenues will be lower than additional right owner revenues if the price elasticity of demand[4] is less than one, since the percentage change (increase) in price $[(P_2 - P_1)/P_1]$ will be greater than the percentage change (decrease) in quantity demanded $[(Q_2 - Q_3)/Q_3]$. As such, additional right owner revenues $(OP_2 \times OQ_2) - (OP_1 \times OQ_1)$ would be greater then pirate revenues -- $(OP_1 \times OQ_3) - (OP_1 \times OQ_1)$.

Consumer Surplus Effects

Little research has been undertaken on consumer surplus effects of intellectual property protection. Most economists would agree that intellectual property protection grants producers some degree of monopoly power, thereby raising the prices of protected goods. In a monopolistic situation, the profit-seeking producer can price above marginal costs and reduce the output of goods embodying intellectual property. Few analysts would dispute that intellectual property protection encourages higher prices because it is higher prices and profits which are used as the incentive to encourage greater innovative activities.

Gadbaw and Richards[5] estimated the price effects of enhanced IPR protection for a group of seven developing countries (see Table 1 below). Price elasticity of demand and probable price change were estimated, based on industry data and on actual price sales information.

These price changes were significantly high in some industries such as software and video, but were only modest in agricultural chemicals, pharmaceuticals and semiconductors. For the latter

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[4]The assumption of a price elasticity of demand less than one for IPR goods with full IPR protection make empirical sense as legal restrictions would grant producers some degree of monopoly -- lowering the quantity and closeness of substitutes available.

[5]Gadbaw and Richards, op. cit., pp. 388-407.

industries it is not clear whether the price changes estimated would be sufficient for producers to recoup R&D expenditures incurred. For the pharmaceutical industry, it was assumed that even if effective IPR protection were introduced, there still would be price controls thereby limiting price increases to only five percent.

In a separate study, Feinberg and Rousslang[6] analyzed the impact of IPR protection on static consumer welfare. Using conventional consumer surplus theory, the authors applied ITC data for U.S. firms to estimate the consumer gains[7] from IPR infringement (see Table 2 below). The estimated price elasticities in this study were higher than those in the Gadbaw and Richards study; all were greater than unity. It is somewhat surprising to find such high elasticities of demand in the Feinberg and Rousslang estimates for intellectual property goods, given that IPR protection restricts the number and closeness of substitutes available. Nevertheless, these serve as reasonable estimates of consumer welfare losses from IPR protection.

Several different researchers have analyzed the effects of IPR protection on prices in the pharmaceutical industry. These studies have generally concluded that patent protection can allow pharmaceutical companies to charge significantly higher prices for their patented products. According to a study published by the International Consumers Unions (IOCU),[8] the lack of patent protection in Thailand allows consumers to buy generic cimetidine for U.S.$0.34 for one day's therapy compared to paying $1.68 for one day's therapy of "Tagamet", the inventor's brand. In another study,[9] Vaitsos analyzed prices charged in the Columbian pharmaceutical industry. He estimated that pharmaceutical prices charged in Columbia were an average of 155 percent above world prices.

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[6]R. Feinberg and D. Rousslang, "The Economic Effects of Intellectual Property Right Infringements," The Journal of Business, January 1990.

[7]The consumer surplus is calculated as the area under the demand curve from Q_2 to Q_3 (see Figure 5 of this report).

[8]See K. Balasubramiam, "Policy Options in Pharmaceutical Patents for Developing Asian Countries," IOCU, 1988, p. 27.

[9]See C. Vaitsos, "Patents Revisited: Their Function in Developing Countries," The Journal of Development Studies, October 1972.

Table 1

PRICE EFFECTS OF
IPR PROTECTION

	Price Elasticity of Demand (E_D)	Price Effect of IPR Protection (%)
Agricultural Chemicals	.8	3
Pharmaceuticals	.7	5*
Book Publishing	1.00	20
Audio	1.00	13
Video	1.4	67 - 118
Software	.95	186
Semicondutors	1.10	3

SOURCE: Gadbaw and Richards, op. cit., pp. 386-407.

Table 2

GAINS IN CONSUMER SURPLUS FROM
IPR INFRINGEMENT OF U.S. GOODS

	Price Elasticity of Demand (%)	Gain in Consumers Surplus ($ millions)
Entertainment	3.7	58.1
Computer	5.7	1,608.4
Consumer	8.8	34.4
Industrial	3.3	232.7
Electronics	16.6	.6

SOURCE: Feinberg and Rousslang, op. cit.

Such cases of price discrimination are not confined to developed countries alone. In the famous Roche Products case in the United Kingdom,[10] the U.K. Government ordered the British subsidiary of Hoffman-La Roche to reduce the selling price of its tranquilizers, Valium and Librium, by 60-75 percent and to refund $27.5 million for overpricing. The British Monopolies Commission had discovered that Roche was paying the parent company U.S.$925 per kg for a substance available in Italy (where no patent protection was available for pharmaceuticals at the time) for $22.50 per kg, and $2,305 per kg for a substance that could be bought in Italy for $50.

These cases give some examples of the differences between patent and non-patent prices. The Thai and Columbian cases provide what appear to be good estimates of the difference between average cost pricing (including development costs)[11] and marginal cost pricing (with no development costs). The Italy case is more extreme and seems to represent a case of monopoly pricing. What is not clear in the Italy case, for example, is the extent to which the over-charging is a result of patent laws or simply other factors such as transfer-pricing or contract abuse -- which could occur without patent protection.

The above studies on IPR effects on prices have their limitations, however. First they assume that infringing output is a perfect substitute for the genuine article. Second, they are static and short-run analyses that ignore the dynamic and longer-run costs which arise when infringement discourages innovative activities or informative advertising. For these reasons they probably over-estimate the consumer benefits from infringement as discussed below.

The assumption that infringing output is a perfect substitute for legitimate goods is not always valid. Particularly for counterfeit goods (infringement of trademark) the products offered are often vastly inferior in quality. The consumer surplus obtained from purchasing these goods (at a lower price) would be significantly below the benefits from purchasing goods equal in quality to the legitimate goods. Furthermore, if the consumer

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[10]See "The Role of the Patent System in the Transfer of Technology to Developing Countries," United Nations No. E75.11, 1975, paragraph 277.

[11]The evidence seems to suggest that the difference between legitimate producers' and infringers' costs of production are substantial in the pharmaceutical industry. It has been estimated to take an average of ten years and $125-$160 million to bring a new pharmaceutical product to market, a process which can be easily and inexpensively duplicated after the fact in the absence of patent protection.

cannot distinguish between high and low quality goods in the market, then the low quality merchandise might chase the high quality merchandise out of the market. Lacking full information, potential buyers cannot discern the actual quality of individual products but can discern the average quality in the market and, therefore are only willing to pay a price that reflects the average. This lower price will chase the above-average quality products out of the market.[12]

There are additional ways in which IPR protection can enhance consumer satisfaction and guarantee quality which should be taken into account when measuring consumer surplus effects. For instance, trademark protection ties responsibility for the content and quality to specific producers, ensuring the consumer of a certain level of quality. Quality control can be critical for such sectors as pharmaceuticals where the consumer needs guarantees that the product has the right ingredients and is not harmful. Furthermore, trademarks can act as a source for information for consumers through advertising and product labelling.

IPR protection also can improve consumer welfare by increasing the spectrum of choice arising from the introduction of new higher performance products. Several private U.S. business groups in high technology industries interviewed for this report stated that their industries will not enter the markets in many of the developing countries unless adequate IPR protection is offered.

In summary, the potential consumer benefits from lower priced infringing goods are important, but in some cases are overstated in that they ignore (i) quality issues, (ii) the benefits to consumers from informative advertising, and (iii) the consumer gains from having a wide access to high performance goods and services. The opportunity costs of foregoing these consumer gains would tend to decrease consumer gains from lower prices under infringement.

The Benefits of Protecting Intellectual Property

Economic Growth

The main economic benefits of protecting intellectual property evolve from the level of additional innovative output available to a country. Innovative output may consist of new products, new processes, or new literary works. Direct employment and investment benefits accrue from research and development (R&D) laboratories, new manufacturing plants, or import facilities for producing or processing the innovative efforts. Indirect benefits can also

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[12]See George Akerloff, "The Market for Lemons: Qualitative Uncertainty and the Market Mechanism," Quarterly Journal of Economics, No. 84 (1970), pp. 488-500.

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accrue from an increase in local market activity. For example, foreigners would use services such as banks, insurance firms, and legal experts, as well as other inputs.

Considerable research has been undertaken on the linkages between technological innovation and economic growth. For example, Edward Denison[13] found that technological innovation was responsible for about 40 percent of the total increase in U.S. national income per person during 1929-1957. It should stand to reason that strong intellectual property protection should lead to an increase in technological innovation, which in turn leads to higher economic growth.

Very few references are found in the economic literature, however, on empirical studies of the economic benefits of IPR protection. There are two likely reasons. First, it is difficult to separate these effects from other factors influencing economic growth and to quantify them; second, the role of IPRs in economic theory has not been considered sufficiently important to justify complex research. Traditionally, macroeconomic variables such as exchange rates, interest rates, fiscal and monetary policy and level of debt have been considered the most important determinants of economic growth, particularly in developing countries.

Looking at the economic growth experiences of the main IPR violators studied in this report, it does not appear that in the short run weak IPRs had a strong negative influence on economic growth (see Table 3 below). On average, the group of violating countries had economic growth rates which were slightly better than the average for middle income developing countries as a whole.

For countries such as Brazil and Mexico, which achieved high growth rates in the 1960s and 1970s and low rates in the 1980s, the influence of their foreign debt burden was probably the most significant factor influencing growth. Korea and Singapore, two of the East Asian NIC success cases, recorded economic growth rates among the highest in the world from the 1960s to the present. The main factors attributable to the strong economic performance of the Asian countries are prudent monetary and fiscal policy, competitive exchange rates and well-trained and relatively cheap labor forces.

From the evidence presented above, it appears that intellectual property rights protection probably played a small role in economic growth performance, at least in the short run. It is difficult to separate out the effects of IPR protection, but

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[13]See Edwin Mansfield, "Intellectual Property, Technology and Economic Growth," in Intellectual Rights in Science, Technology and Economic Performance, Westview Press, 1990, p. 19.

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Table 3

GROWTH IN INCOME IN IPR VIOLATOR COUNTRIES*
(GDP Growth)

	1965-80	1980-87
India	3.7	4.6
Brazil	9.0	3.3
Argentina	3.5	-.3
Mexico	6.5	.5
Korea	9.5	8.6
Singapore	10.1	5.4
Average for Violator Group	7.1	3.7
Average for Middle Income Countries	6.2	2.8

SOURCE: World Bank, World Development Report, 1989.

*NOTE: Data for Taiwan are not available.

it is clear that other factors were probably more important. These determinations do not, however, preclude the possibility that even for the high-economic growth examples presented above, growth rates might have been even higher with stronger IPR protection.

It should also be emphasized that even though developing countries and NICs may achieve fast growth up to a point with weak IPRs, there may be some serious limitations to growth beyond that point. Nearly all the rich countries in the world provide stringent IPR protection. Therefore, strong IPRs may be a necessary, but not sufficient, pre-condition for elevation to the status of high income developed countries.

Foreign Investment

It is often argued that weak systems of protection deter direct foreign investment (DFI), particularly investment involving the transfer of sophisticated but easily replicable technology. Investor surveys[14] have revealed that intellectual property rights protection plays a significant (in a statistical sense) but subordinate role in investment decisions.

The main factors explaining DFI flows are the economic environment, the size and growth prospects of the domestic market, factor supply and costs, and the so-called "rules of the game" including regulatory policy, price controls, taxation policy, and investment policies and remittance rules.[15] Rules that are perceived to be arbitrary or unfair, particularly if subject to frequent changes, become a critical deterrent to investment at the margin. By increasing the cost and risk of doing business, such rules may cause firms to either divest or not invest in the first place.

The evolution of DFI flows in the study countries is interesting in these respects (as shown in Table 4). DFI grew rapidly between 1975 and 1980 but fell in the mid-1980s in the Latin American countries. Investment flows decreased sharply in those countries as the economic crisis deepened. In these Latin American countries, the inflexion point seems to be associated with the onset of the debt crisis, increasing macroeconomic instability, and economic contraction. During the 1980-1987 period, there were

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[14]See C. Wallace, "Foreign Direct Investment in the Third World: U.S. Corporations and Government Policy," Center for Strategic and International Studies, Washington DC, 1989.

[15]See C. Wallace ibid., and Frost and Sullivan, "Measurement of the Investment Climate for International Business," prepared for USAID, September 1988.

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very few changes in the IPR laws of Brazil, Mexico and Argentina; the critical shift was in the economic environment.[16]

For Korea and Singapore, the investment environment remained relatively attractive to foreigners throughout the 1975 to 1988 period as a result of sound macroeconomic policies, outward orientation and productive labor forces. These countries significantly improved their IPR regimes in 1986-1987 but it is still too early to judge from the available data if the increases in DFI in 1988 were in response to the enhanced IPR policies.

It is often argued that it is not the volume but the composition of DFI which is most affected by weak IPR regimes, and that international firms in high technology areas refrain from investing in countries with weak IPR protection. Anecdotal evidence on this issue is inconclusive. On the one hand, in Brazil, foreign investors play a very important role in intellectual property intensive industries: 41 percent ownership in nonelectric machinery, 44 percent in electric machinery, 68 percent in transport material, 21 percent in chemicals, and 71 percent in pharmaceuticals. It is ironic that in the least protected industry (pharmaceuticals) from IPR perspective, the share of international firms ownership was second highest of all industries in Brazil.[17] On the other hand, there are reports[18] of increased U.S. investments in India and Singapore following the introduction of stricter copyright legislation in those countries.

IPR and Technology Flows and Development

One of the potential benefits of strict IPR protection is technology flows and development. It is difficult to measure the impact of IPR regimes on technology flows using conventional macroeconomic data. For example, balance of payments statistics are usually too broad to make any definitive determinations about the quality of technology imports.[19]

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[16]C. Frischtak, "The Protection of Intellectual Property Rights and Industrial Technology Development in Brazil," in Intellectual Property Rights in Science, Technology and Economic Performance, op. cit., p. 79.

[17]ibid., pp. 79-80.

[18]Based on discussions with representatives from USTR.

[19]The services account of the balance of payments includes licensing and royalty payments but these statistics are not disaggregated in IMF balance of payment statistics.

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Table 4

DIRECT (NET) INVESTMENT INFLOWS
IN IPR VIOLATOR COUNTRIES
(U.S. $ millions)

	1975	1980	1985	1988
Brazil	1,303	1,913	1,362	1,279
Argentina	124	680	905	-18
Mexico	610	2,184	503	3,378
Korea	79	-5.2	308	628
Singapore	682	1,136	809	1,326

SOURCE: International Monetary Fund, International Financial Statistics, 1970-1986.

An alternative approach to quantifying the impact of IPR regimes on technology flow is to survey high technology firms. A recent OECD survey on international technology licensing shows that exchange controls, government regulations (particularly prior approval), and inadequate protection of industrial property rights in developing countries are the key disincentives to technology transfer through licensing (see Table 5). In some countries, license payment limits are important disincentives to transfer of technology packages.

It has also been argued that weak IPRs discourage domestic investment in research and development. Table 6 below presents an international comparison investment in research and development. It is clear from the table that there is a general relationship between level of development and the percentage of GNP spent on R&D. Most industrialized countries spend two percent or more of GNP on R&D, but of the newly industrialized countries, only Korea spends more than one percent.

Intellectual property protection does not seem to be strongly correlated with aggregated domestic R&D expenditure. For example, South Korea had weak IPR laws until 1987 and India still has weak patent laws, yet these countries spend more on domestic R&D than other countries which are not the same level of overall economic development. Conversely, Sri Lanka has strong IPR laws but has a much lower percentage expenditure on R&D than India.

Similar to expenditures on R&D, the numbers of scientists and engineers also seems to be broadly correlated with overall levels of economic development. Of the countries presented, Brazil is the only case where the number of scientists and engineers is not strongly correlated with level of income. It is possible that investment in human capital for R&D development has lagged in Brazil because of the low financial returns offered to R&D because of the weak IPR regime in Brazil. Generally speaking, however, the data suggest that weak IPR regimes do not strongly affect investment in scientific and engineering education.

Summary of Net Economic Benefits of IPR Protection

In the short run, the aggregated economic benefits of stronger IPR protection are difficult to measure. The impact of IPR protection on such key macroeconomic indicators as economic growth, foreign investment, R&D expenditure and technology flows is difficult to measure, partly because these indicators are strongly influenced by other factors.

Table 5

DISINCENTIVES TO LICENSING IN DEVELOPING COUNTRIES

Nature of Disincentive	% of Respondents Citing as Significant Problem
Inadequate IPR Protection	75
Competition Laws and their application to licensing agreements	21
Government Regulations:	
Prior Approval	80
Local Purchase Raw Materials	59
Local Purchase Capital Goods	55
Import Quotas	57
Export Regulations	52
Exchange Controls	88
Taxes on Licensing Income	62

*Based on 109 responses from executives of manufacturing firms in OECD countries.

SOURCE: OECD, "International Technology Licensing Survey Results," mimeo, August 1987, Table 40.

Table 6

R&D EXPENDITURES: INTERNATIONAL COMPARISONS

Country	R&D/GNP (% 1986)	Scientists/ Engineers	Scientists and Engineers per Million
Industrialized			
USA	2.6	785,000	3,270
Japan	2.6	531,612	4,253
Newly Industrialized			
South Korea	1.8	32,117	804
Singapore	.5	2,401	953
Brazil	.7	32,508	256
Semi-Industrialized			
Philippines	.2	5,919	117
Argentina	.4	10,486	360
Mexico	.6	16,679	217
Developing			
India	.9	100,136	136
Sri Lanka	.2	1,939	126
Indonesia	.3	24,895	156

SOURCE: UNESCO Statistical Yearbook, 1986.

The costs of IPR protection should be measured against the benefit stream to obtain an indication of the net benefits to IPR protection. Studies which have attempted to assess the net static welfare benefits of IPR protection have concluded[20] that the welfare losses to legitimate producers may well be smaller than the static benefits to consumers and infringers combined. However, these studies have not included information and quality losses imposed by counterfeiting or the dynamic costs arising when infringement discourages investment in innovative activities.

Most economists would not dispute the longer-term economic benefits to be derived from intellectual property protection, however. Without intellectual property protection, a less than socially optimal amount of intellectual property would be produced and the pace of innovation would be slow. Because of "free-riding," firms would have weak incentives to absorb the costly expenditures required to develop intellectual property.

The great divergence between social and private rates of return to R&D investment strongly suggests that there is underinvestment in innovative activities. The returns to society from such a reallocation of private resources should outweigh the foregone gains society would receive if those resources had been dedicated to their former uses. This premise lends strong support to the proposition of strengthening intellectual property protection. Heightened intellectual property protection would enable firms to obtain higher returns on their successful innovations and thereby increase their incentive to engage in socially beneficial R&D.

The implications of the above conclusions is that since the short-run economic benefits for enhanced IPR protection are not easy to quantify, economic arguments alone will probably not be sufficiently persuasive to convince developing countries to reform their IPR regimes. Using the trade arguments which clearly demonstrate restrictions to U.S. markets could be a more persuasive and powerful argument. The long-term economic benefits of enhanced IPR protection could, however, provide useful supplemental argumentation, when used in conjunction with trade actions as was done with Korea, Singapore, and Taiwan.

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[20]Feinberg and Rousslang, op.cit.

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ANNEX 5

CURRENT PROGRAMS TO ASSIST DEVELOPING NATIONS

A number of institutions are engaged in assisting developing nations improve their administration and enforcement of intellectual property protection. These institutions include the U.S. government intellectual property agencies such as the U.S. Patent and Trademark Office (PTO) and the U.S. Copyright Office, which both run regular training programs for developing country intellectual property officials; the World Intellectual Property Organization (WIPO) based in Geneva, which organizes training and technical assistance on intellectual property worldwide; and several private, non-profit U.S. educational institutions which offer specialized courses in intellectual property for individuals from developing countries. All of these institutions are open to working with AID to craft programs that meet AID's specific needs, if funding can be provided. Their current programs are described below.

World Intellectual Property Organization (WIPO)

The World Intellectual Property Organization is the international organization charged with promoting the protection of intellectual property through cooperation between sovereign states. Its major activity is to administer the main multilateral treaties covering intellectual property (e.g. the Paris Convention for the Protection of Industrial Property, the Berne Convention for the Protection of Literary and Artistic Works). WIPO also conducts activities to encourage the wider acceptance of existing treaties, revise treaties, conclude new treaties and promote close practical intergovernmental cooperation in the administration of intellectual property.

In addition to these administrative and policymaking functions, WIPO is the primary institution assisting developing nations to improve their protection of intellectual property. WIPO activities in this area include:

- Training intellectual property specialists; and
- Creating or modernizing legislation and governmental institutions (including the preparation of Model Laws and provision of direct advice to individual governments).

WIPO training programs are usually conducted in cooperation with national institutions. For example, the U.S. Copyright Office plans to conduct a seminar on copyright protection in conjunction with WIPO in 1990. In addition, many of the participants of the U.S. Patent and Trademark Office's (PTO) Visiting Scholar Program

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participate through the auspices of WIPO. Training is provided by experienced nationals of the host country, professionals from intellectual property institutions in developed countries, and private professionals. According to the U.S. PTO, all of these services are provided on a "pro bono" basis. Participants and WIPO cover only travel and subsistence costs. WIPO's primary role is one of organization, not of providing training services directly.

WIPO also organizes training programs with donor agencies to help meet the priorities of the donor country. For example, WIPO organized a specialized course (held in Algeria) for Francophone nations that was financed by the French Government.

Judging from the broad distribution of participants in these training courses, there is demand in most AID-assisted countries for assistance in the institutional, administrative and enforcement aspects of intellectual property right protection. For example, most low income African countries send participants to WIPO training seminars.

In addition to training, WIPO also provides technical assistance to developing nations. In some cases, WIPO will send its own officials, but primarily WIPO finds qualified personnel from national intellectual property organizations and private individuals to meet the requests from developing-nation intellectual property agencies. For example, WIPO contributed significant resources to help China develop its intellectual property codes and administration.

U.S. Government Agencies

The two U.S. agencies most involved in the administration of intellectual property rights, the U.S. Copyright Office and the Patent and Trademark Office, both currently conduct limited programs to transfer their knowledge to developing countries. In addition, the Customs Department could provide training on enforcement of intellectual property rights, primarily against counterfeit goods, if outside funding could be arranged. The Customs Department, however, has no formal training or technical assistance program on intellectual property.

U.S. Copyright Office

The U.S. Copyright Office has long been involved in training activities for foreign copyright officials, but its programs are limited due to lack of funds. With the appropriation of $100,000 per year by Congress starting in fiscal year 1988, the Copyright Office has established the International Copyright Institute to provide a permanent institution to conduct training and organize international symposia on copyright issues. The Institute and ad hoc training and technical assistance activities with developing

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countries of the Copyright Office are administered by the Assistant Register of Copyrights.

The basic training program of the Institute is a two-week session on copyright law, practices, and policies for officials from developing countries. The number of participants is not fixed, but usually ranges around ten persons. Each year the program takes a different geographical and topical focus. For example, in the first year, 1988, the training program focused on explaining U.S. copyright law and practices to East Asian countries, with which the U.S. Government was involved in bilateral copyright negotiations. In 1989 and in 1990, the program concentrates on explaining basic copyright practices to officials who have only an elementary knowledge of copyright issues and administration. The program is composed primarily of lectures by experts from within and outside of the Copyright Office. This year, the program will be organized in cooperation with WIPO. WIPO will cover the travel and subsistence costs of most of the participants.

In addition to the International Copyright Institute, the U.S. Copyright Office also provides ad hoc assistance to developing nations on copyright issues. For example, copyright officials travelled to Nigeria and advised the Nigerian government on the administration of a new copyright law. This technical assistance was paid for by USIA. The Copyright Office has also advised the Chinese government on copyright law.

Finally, the Copyright Office is in the process of organizing a small intern program with the Franklin Pierce Law School, which has a special intellectual property rights program for non-U.S. students. The school and its programs are explained below. Students from this program would spend a month at the Copyright Office working with staff and conducting a useful comparative copyright law study.

The Copyright Office has expressed its desire to expand its training and technical assistance activities with developing countries, if additional funds can be obtained.

U.S. Patent and Trademark Office

The Patent and Trademark Office has both formal and informal training and technical assistance programs to assist developing nations. As in the case of the Copyright Office, the PTO would be willing to expand these activities, if external funding is provided.

The formal training program of the PTO is its Visiting Scholar Program. This program offers training in intellectual property for the selected representatives of developing countries. The PTO attempts to offer the program's four week session twice a year.

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Each session focuses on a different aspect of intellectual property administration, but also provides a general overview in the first week.

The teachers in the program come from the PTO's Patent Academy, which is the training institution for PTO employees. In addition to training and tours in the Washington area, participants also spend a week at the Franklin Pierce Law Center in Concord, New Hampshire, where in addition to lectures by Law Center faculty, they meet with private sector representatives.

The PTO covers the cost of most of the training, but most participants must find other sources to cover transportation and living expenses. Sources of support for the scholars include the WIPO, the UNDP and their own governments.

Scholars are selected by their governments or regional intellectual property organizations in consultation with the PTO. WIPO acts in many cases as a clearinghouse for applicants to the program. The PTO makes the final selection based upon foreign government needs, capabilities of the applicant and the PTO's relations with the foreign government agency of the applicant.

In addition to the formal Visiting Scholar Program, the PTO provides technical assistance on an ad hoc basis, especially to countries which have demonstrated a commitment to improve the legal basis for intellectual property rights protection. For example, the PTO assisted the Chinese government to establish its patent office, and is working with the Indonesians to improve their intellectual property legislation.

According to several persons interviewed at the PTO, the PTO has in several instances over the past ten years (at AID's request) prepared program proposals designed to assist developing countries improve their intellectual property rights administration. Even though AID requested these proposals, they were eventually rejected because they did not serve top AID priorities. Due to these experiences, PTO is now adverse to working with AID to design a new program, unless AID is committed to establishing such an activity.

Private Organizations

Two private institutions offer specialized programs on intellectual property rights law and administration for individuals from developing countries. They are the Franklin Pierce Law Center in Concord, New Hampshire, and the International Law Institute in Washington, D.C.

In addition, several law schools, including George Washington, George Mason, Georgetown, and John Marshall in Chicago, have specialties in intellectual property law, but they have no special

programs for individuals from developing countries. Individuals with appropriate legal backgrounds could take courses at these schools to develop a specialization in intellectual property law.

Franklin Pierce Law Center

The Franklin Pierce Law Center offers three different intellectual property programs of different duration. The Law Center is the only institution in the United States that offers a specialized degree program in intellectual property. It has seven full-time faculty in its intellectual property program.

The most extensive program lasts one year (three semesters), and leads to a Masters of Intellectual Property (MIP) degree. This program covers all facets of intellectual property law, from patent practices and procedures to copyright law to trademark law. The first two semesters are devoted to course work, while the third semester is comprised of a series of three one-month internships, including one with the U.S. Patent and Trademark Office. Other internship possibilities include placement at other U.S. Government agencies involved in intellectual property administration and negotiation and private law firms. Some financial aid is available for developing country applicants for this program.

In addition to the MIP program, Franklin Pierce offers two shorter programs for persons with a college-level education who have not had a legal education. These shorter courses are called the Professional Education in Intellectual Property and Licencing of Technology (PILOT) Programs. The six-month PILOT program includes the same required courses as the first semester of the MIP program, followed by a single one-month internship. The Law Center provides no financial assistance for the PILOT program. However, the Law Center encourages applicants from developing countries to contact the A.I.D. training officer in their home country for assistance and information.

A six-week Summer PILOT program is also available. The summer program changes slightly from year to year, but covers various aspects of intellectual property law. In 1988, for example, it covered Patent and Trade Secret Law, Licensing Intellectual Property, and Patent Practices and Procedures. Applicants are encouraged to contact AID for financial assistance.

The International Law Institute

The International Law Institute is a thirty-five year old institution that provides short-term seminars on a range of legal economic and financial problems of developing countries. These seminars are conducted both in Washington and overseas. In addition to organizing regularly provided seminars, the Institute also designs seminars to meet the specialized needs of contracting

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clients. The Institute often conducts these specialized seminars overseas.

Most of their regular seminars, including the one on Intellectual Property, are conducted in cooperation with Georgetown University. Teachers come from Georgetown University, other universities, private law and consulting firms, and national and international agencies.

The seminar on intellectual property is a two week course entitled Intellectual Property - Policy and International Negotiation. It includes sections on: 1) renegotiation of property rights; 2) the right to transfer intellectual property; and 3) negotiation practices. Unlike other intellectual property training courses, the International Law Institute course is more focused on transactions than on the administration and enforcement of intellectual property law.

ANNEX 6

KEY CONTACTS

U.S. Government Agencies

Patent and Trademark Office
Office for International and Legislative Affairs
Mike Kirk, Assistant Commissioner for External Affairs
(Responsible for Visiting Scholar Program)
Telephone: (703) 557-3065

U.S. Copyright Office
Anthony P. (Pat) Harrison
Assistant Registrar of Copyrights
Director of the International Copyright Institute
Telephone: (202) 707-8350; Telefax: (202) 707-8366

U.S. Customs Office
Advisory Projects
David Harrell - Telephone: (202) 535-4368
Pat Henton - Telephone: (202) 566-9793

Director of IPR Task Office
John Atwood - Telephone: (202) 566-8933

Private Training Institutions

International Law Institute
1615 New Hampshire Ave. N.W.
Washington, D.C. 20009

Contact: Mr. Stuart Kerr
Telephone: (202) 483-3039; Telefax: (202) 483-3029

Franklin Pierce Law Center
2 White Street
Concord, New Hampshire 03301

Contact: William O. Hennessey, Director, Graduate Programs
Telephone: (603) 228-1541; Telefax: (603) 224-3342

International Organizations

World Intellectual Property Organization (WIPO)
34, Chemin des Colombettes
1211 Geneva 20
Switzerland

Contact: Arpad Bosch, Executive Director
Henry Olson, Director, Copyright and Public Information
Telephone: (41-22) 991-105

ANNEX 7

OFFICE OF THE
UNITED STATES TRADE REPRESENTATIVE
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C. 20506

ADMINISTRATION STATEMENT ON THE

PROTECTION OF U.S. INTELLECTUAL PROPERTY RIGHTS ABROAD

April 7, 1986

GENERAL CONCERNS AND ISSUES

Inadequate recognition and protection of intellectual property rights abroad is a serious and growing problem. Foreign violations of U.S. intellectual property rights, through piracy, counterfeiting, misappropriation and infringement, severely distort international trade and deprive innovators, creators and inventors of rewards and opportunities that are rightfully theirs.

Intellectual property protection is critically important to the United States, our trading partners and the world economy.

- Adequate and effective protection fosters creativity and know-how, encouraging investment in research and development and in new facilities.

- Innovation stimulates economic growth, increases employment and improves the quality of life.

- Technological progress is a critical aspect of U.S. competitiveness as well as freer and fairer global trade.

- In developing countries, improved intellectual property protection can foster domestic technologies and attract needed foreign know-how and investment.

The Administration has pursued initiatives to encourage adequate and effective protection of intellectual property rights at home and abroad. The United States provides strong protection for intellectual property rights within our borders for domestic and foreign citizens and businesses. We expect other nations to do the same in the interest of stimulating increased innovation and improving living standards throughout the world. To achieve better protection, the Administration's program includes:

-- strengthening existing international and national standards for protection and enforcement;

forms of authorship, such as computer software and satellite retransmissions. In some cases domestic laws do not even cover foreign works.

* Many nations require that trademarks be used in commerce as a condition for maintaining ownership rights, despite the fact that the countries' trade policies make such use impractical or impossible.

Inadequate enforcement

* Piracy thrives even in some countries that have nominally good laws. The causes are simple: inadequate penalties that have no meaningful deterrent effect and a lack of government commitment to enforcing the rights guaranteed by law. This problem is particularly acute for such industries as motion pictures, sound recordings and software. Such industries lose hundreds of millions of dollars annually to pirates whose actions, if not encouraged or condoned, are at least not adequately penalized by their governments.

Inadequate international standards:

* The standards contained in some international conventions are too weak, especially in the patent area. A country can be in full compliance with international conventions even though it may not provide any protection whatsoever for entire classes of products, such as chemicals, pharmaceuticals and biotechnology. In addition, countries can grant patents for as little as five years and still meet the standards of current international conventions. Such unreasonably short patent terms do not provide the inventor an adequate opportunity to recoup research and development costs.

* The value of intellectual property rights of U.S. nationals is also diminished by a variety of other practices perfectly in keeping with the international conventions. Among these are unreasonable working requirements and compulsory licensing policies that fail to provide prompt, adequate and effective compensation. Efforts in recent years to reopen the conventions to improve standards of protection have encountered concerted efforts by many nations to weaken standards even further.

* Many new and still emerging technologies, such as semiconductor chips, software and biotechnologies, either are not explicitly covered or are discriminated against by international conventions, and they are constantly in danger of not being protected under national laws.

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- Finally, the dispute settlement and enforcement mechanisms of existing conventions are ineffective.

THE ADMINISTRATION'S AGENDA

The Administration's strategy to pursue vigorously the strengthening of intellectual property protection involves using existing intellectual property conventions and organizations (for example the World Intellectual Property Organization), improving them by amplifying other international agreements to cover intellectual property concerns (for example, the General Agreement on Tariffs and Trade) and using bilateral and domestic policy instruments.

A. INTERNATIONAL INITIATIVES

Multilateral actions

The Administration will:

(1) seek to conclude, in the new GATT round of multilateral trade negotiations, an enforceable multilateral trade agreement against trade-distorting practices arising from inadequate national protection of intellectual property. We will examine and discuss with our trading partners the possibility of incorporating into such an agreement the guaranteed or minimum protections contained in existing international intellectual property conventions where they are adequate. Where the guaranteed or minimum protections are inadequate, we will seek to include provisions for greater protection. In this connection, we will seek to develop trade-based dispute settlement procedures that would draw on the trade expertise of the General Agreement on Tariffs and Trade and the intellectual property expertise of the World Intellectual Property Organization.

(2) work to resolve the persistent problems of counterfeiting by seeking the early adoption of a GATT Anti-Counterfeiting Code and to strengthen existing standards through the World Intellectual Property Organization.

(3) seek commitments by adherents to existing international intellectual property agreements to provide -- through trade-based agreements where appropriate -- adequate enforcement, transparency of governmental actions and regulations and a commitment not to use intellectual property laws to distort international trade.

(4) work for increased protection under the Paris Convention and vigorously pursue U.S. accession to the Berne Convention.

(5) improve protection for new and evolving technologies such as biotechnology and semiconductor-chip designs.

(6) oppose erosion of protection under existing international treaties and agreements.

(7) pursue greater adherence to agreements to reduce the burden and expense to U.S. intellectual property owners of filing for protection in a large number of countries.

(8) engage our trading partners in discussing the idea of establishing a multilateral or regional patent office. Such an office could provide a higher level of common patent protection, including coverage and terms, and establish a more efficient system for gaining patent protection beyond the U.S. borders.

Bilateral actions

The Administration will:

(1) pursue a vigorous program of bilateral negotiations and consultations to encourage development and enforcement of adequate and effective protection for U.S. intellectual property rights.

(2) work to ensure that intellectual property provisons of existing bilateral agreements are fully observed.

(3) make representations to countries where U.S. parties are injured because their intellectual property rights are not protected in accordance with international obligations.

(4) make vigorous use of the full array of U.S. trade and other laws to encourage other nations to provide timely, adequate and effective protection for intellectual property rights.

(5) expand existing programs of seminars and technical cooperation aimed at improving expertise and competence on technical intellectual property issues.

B. DOMESTIC INITIATIVES

The Administration will:

(1) work for enactment of the Administration's "Intellectual Property Rights Improvement Act of 1986 to strengthen and expand the protection of U.S. intellectual property rights.

(2) cooperate with private sector representatives to establish technical assistance programs to aid developing countries in implementing adequate protection for intellectual property.

ANNEX 8

USTR PRIORITY WATCH LIST AND WATCH LIST FOR IPR VIOLATORS
(as of April 1990)

Priority Watch List

Brazil
India
Mexico
People's Republic of China
Republic of Korea
Saudi Arabia
Taiwan
Thailand

Watch List

Argentina
Canada
Chile
Colombia
Egypt
Greece
Indonesia
Italy
Japan
Malaysia
Pakistan
Philippines
Portugal
Spain
Turkey
Venezuela
Yugoslavia

ANNEX 9

U.S. CHAMBER OF COMMERCE GUIDELINES FOR STANDARDS FOR THE PROTECTION AND ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS

Introduction

The attached Guidelines for the Protection and Enforcement of Intellectual Property Rights were developed by a U.S. Chamber of Commerce task force over the past 14 months through a process involving broad representation of U.S. businesses that rely on intellectual property protection. They cover the fields of copyrights, patents, trademarks, trade secrets and semiconductor chip layouts. This U.S. Chamber of Commerce effort looks to both the bilateral and multilateral arenas in seeking adequate and effective intellectual property protection around the world.

The expanding interest in better global intellectual property protection calls for development of a new business consensus at both the national and international levels. Consensus is needed to guide government officials as they pursue a variety of initiatives for better protection. The enclosed papers are being sent to inform U.S. officials about the developing consensus in the business community and to serve as guidelines in the conduct of bilateral and multilateral talks.

The U.S. Chamber of Commerce initiative has centered thus far on facilitating an articulation of views widely held within a broad cross section of the U.S. business community with respect to standards of adequate and effective protection. Fifty-five business groups and associations were consulted in this effort (see attached list), and over 150 technically skilled and experienced business and legal experts participated actively (list will be attached).

This work within the U.S. Chamber of Commerce has been done in close concert with the Intellectual Property Committee (IPC), a coalition of 11 U.S. based multinationals (see attached list). Over the past year, the IPC has been facilitating development of a business consensus at the international level with a direct focus on the trade-based treatment of intellectual property within the GATT Round of multilateral negotiations. Five statements of Fundamental Principles, covering patents, copyrights, trademarks, trade secrets and semiconductor chip layouts are evolving as the critical output of the IPC.

The U.S. Chamber of Commerce Guidelines and the IPC Fundamental Principles, although derived from somewhat different contexts, are intended to reflect the same substantive principles of protection. Both the Guidelines and the Fundamental Principles are intended to be neutral with respect to international harmonization efforts. A concept underlying both is that to have real value a GATT arrangement must incorporate a reference statement short of which adequate and effective protection cannot be realized. In this regard the business community has an important role to play in developing a basic consensus upon which governments can rely.

In both bilateral and multilateral arenas elimination of any element of a system of intellectual property protection undermines the entire system. The system as a whole provides the protection and cannot, therefore, be bargained away in any particular. It is hoped that as discussion of global protection

of intellectual property advances, it will be more widely seen that sound protection benefits all countries, including particuarly those seeking to advance their development.

The U.S. Chamber of Commerce, with the release of the enclosed Guidelines and taking into review the IPC's Fundamental Principles, is beginning an effort to assist in broadening the emerging international business consensus on intellectual property protection, particularly in the new GATT setting. To this end, the U.S. Chamber of Commerce is sending the Guidelines for the Protection and Enforcement of Intellectual Property Rights to American Chambers of Commerce Abroad and other business groups overseas to inform them of the state of consensus in the United States and to further support the building of an international business consensus.

Attachments

Attachment I

GROUPS ASKED TO COMMENT
ON U.S. CHAMBER OF COMMERCE GUIDELINES

American Amusement Machine Association

American Apparel Manufacturers Association

American Association of Small
Research Companies

American Bar Association

American Casting and Manufacturing Association

American Corporate Counsel Association

American Electronics Association

American Film Marketing Association

American Intellectual Property Law
Association

American Petroleum Institute

American Seed Trade Association

Association of American Publishers

Association of the Bar of the City of New York

Automotive Parts and Accessories
Association, Inc.

Chemical Manufacturers Association

Computer and Business Equipment
Manufacturers Association

Computer Software and Services
Industry Association (ADAPSO)

Cosmetics, Fragrances and
Toiletries Association

Electronic Industries Association

Federal Bar Association

Greeting Card Association

Horticulture Research Institute

Industrial Biotechnology Association

Industry Coaltion on Technology Transfer

Information Industry Association

Intellectual Property Committee

Intellectual Property Owners, Inc.

International Anticounterfeiting
Coalition, Inc.

International Business-Government Counsellors

International Franchise Association

International Intellectual Property Alliance

Licensing Executives Society

Motion Picture Association

Motor and Equipment Manufacturers Association

Motor Vehicle Manufacturing
Association of the U.S.

National Agricultural Chemical Association

National Association of Manufacturers

National Candy Wholesalers Association

National Council of Patent Law Associations

National Federation of Independent Businesses

National Music Publishers Association

National Patent Council

National Standards Association

Patent and Trademark Office Society

Pharmaceutical Manufacturers Association

Proprietary Association

Recording Industry Association of America

Rubber Manufacturing Association

Scientific Apparatus Makers

Semiconductor Industry Association

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Software Publishers Association

Sporting Goods Manufacturing Association

U.S. Council for International Business

U.S. Trademark Association

Wine and Spirits Wholesalers of America

Attachment II

Intellectual Property Committee

Bristol-Myers Company

E.I. du Pont de Nemours and Company

FMC Corporation

General Electric Company

General Motors Corporation

Hewlett-Packard Company

International Business Machines Corporation

Johnson & Johnson

Merck & Co., Inc.

Monsanto

Pfizer, Inc.

Rockwell International Corporation

U.S. CHAMBER OF COMMERCE

March 11, 1987

U.S. CHAMBER OF COMMERCE
INTELLECTUAL PROPERTY TASK FORCE

Guidelines for Standards for the Protection
and Enforcement of Copyright*

Protected Works

1. National copyright laws must protect all forms of creative expression. Traditionally, this includes literary works, musical works (including accompanying lyrics), dramatic works, cinematographic and audiovisual works, sound recordings, pictorial, graphic and sculptural works, choreography and pantomime. National laws must also protect newer and still emerging forms of intellectual creativity, especially those related to technological developments. Thus, for example, all types of computer programs (applications programs, operating systems, etc., whether in source or object code) must be protected as literary works.

2. Protection must be extended regardless of the form or medium in which the work is expressed, embodied, or communicated -- e.g., whether on paper, film, or canvas, or as in the new technologies, in electronic or optical fixations, or any other form of representation.

3. Protection must be accorded to compilations and derivative works, whether embodied in traditional or, as with electronic databases, in new media, without prejudice to any rights in preexisting materials upon which they are based.

4. Protection must be extended regardless of whether or not the work is published, communicated or disseminated.

5. Protection must not be removed or diminished because of the scientific or social utility of a work, or because of its aesthetic, philosophical, or political acceptability.

Securing Protection

6. Copyright protection must attach automatically, upon the creation of a work. It must not be subject to conditions of exposure, manufacture, distribution or exploitation in a country.

7. Neither copyright, the transfer of rights, nor enforcement should be conditioned upon satisfaction of formal requirements of registration, notice, deposit, or the like.

* For important background information about this paper please see accompanying cover sheet.

1615 H Street, N.W. □ Washington, D.C. 20062 □ 202/463-5460
Telex: RCA 248302 (Int'l) □ TWX 710 822 9382 (Domestic) □ Cable: COCUSA

8. Any other conditions that appear to be mere [illegible], "perfecting," or "remedial" must not burden or impair -- in principle or in practice -- the fullest enjoyment, exercise, and enforcement of copyright protection.

9. Rights under copyright must be freely and separately transferable; transferees (assignees and exclusive licensees) must be entitled to full enforcement of their acquired rights.

Exclusive Rights

10. The copyright law must protect the exclusive rights: to copy or reproduce a work in whole or in part, and whether identically or in substantially similar fashion; to translate, revise, and otherwise adapt and prepare derivative works; to distribute copies of the work by sale, rental, or otherwise; and to publicly communicate, directly or indirectly (e.g., perform, display, exhibit, broadcast, transmit and retransmit), the work, whether "live" or from a fixation, regardless of how delivered (e.g., by electronic network; by terrestrial links, broadcast signal, or satellite; or otherwise) and regardless of whether it emanates from beyond national borders.

11. Restrictions of exclusive rights to "public" activity (e.g., the right of "public" performance): (a) must not apply to the reproduction or adaptation rights; and (b) in the case of distribution and communication rights must not be drawn or applied in such fashion as to create exemptions for sequential, simultaneous or cumulative uses of a work by persons outside the normal family circle (e.g., uses by computer networks, by clubs, and by institutions, are "public").

12. Any limitations and exemptions to exclusive rights must be consistent with Berne Convention (1971) standards and in any event must be very narrowly drawn and construed to avoid impairing actual or potential markets for, or the value of, copyrighted works.

13. Compulsory licenses must not be adopted where legitimate local needs can be met by voluntary actions of copyright owners. Implementation, where necessary, of compulsory licenses must be strictly limited to those permitted in the Berne Convention (1971); must not transgress treaty standards (for example, compulsory licensing of the reproduction right for printed material must generally not impede the copyright owner's normal exploitation of a work); must preserve all material interests of authors and copyright owners; and must be accompanied by detailed laws and regulations that provide strong safeguards (e.g., notification of the copyright owner and effective opportunity to be heard; mechanisms to ensure prompt payment and remittance of royalties consistent with those that would be negotiated in a free market; and workable systems to prevent exports).

Duration

14. Copyright must generally endure for a term of no less than the life of the author and fifty years after his or her death. The term of protection for works of juridical entities (works made for hire), must be no less than fifty years.

15. Terms of protection must not be varied according to perceived social or scientific value of particular works or classes of works.

Enforcement and Penalties

16. Countries must provide effective civil and criminal penalties, procedures, and judicial and enforcement agencies such as to ensure rapid enforcement against, full compensation for, and effective impediment to, infringement.

17. Criminal penalties must include monetary fines and imprisonment in cases of commercial piracy, and be provided, adjusted when necessary, and imposed at such level and in such fashion to provide a real deterrent. Local enforcement agencies must provide all necessary cooperation in investigating, initiating, and completing prosecutions. Provisions for ex parte, interim and permanent seizure (both within the country and at the border) of infringing materials and implements used in their creation must be provided.

18. Civil remedies must include preliminary and final injunctions, compensatory and punitive damages, profits, attorneys' fees, and orders for the destruction or delivery of infringing materials and implements used in their creation. Authors, owners, assignees, and exclusive licensees of copyright must be given full, prompt and unimpeded access to the courts, without subjection to preliminary or intermediary non-judicial procedures.

19. Liability must be imposed upon sellers and other distributors, as well as makers, of infringing materials, and upon all entities that materially contribute to infringement.

20. Proof of subsistence of copyright and ownership must be facilitated by appropriate presumptions. In any case, general rules of procedure, proof, evidence, or the like existing outside a country's copyright law must not be applied in such fashion as to impair prompt and effective preventive and remedial action.

Transitional Provisions

21. Countries that have afforded no effective protection to foreign works must provide transitional (retroactive) copyright protection for preexisting works.

U.S. CHAMBER OF COMMERCE

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U.S. CHAMBER OF COMMERCE
INTELLECTUAL PROPERTY TASK FORCE

Guidelines for Standards for the Protection
and Enforcement of Patents*

Definition of the Patent Right

1. A patent should grant the right to exclude all others from manufacture, use or sale of the invention covered by the patent during the term of patent. Where a process is the claimed invention, the exclusion should include use of the process as well as sale of the product produced thereby.

2. The standards for patentability should only be novelty, usefulness and non-obviousness. Affirmative public interest determinations and other conditions beyond these standards should not apply to grant or continued validity of a patent.

Coverage

3. Patents should be granted for any inventions, whether for a process or product, regardless of subject matter. Without limiting the foregoing, protection shall not be denied chemical processes and products, plants and plant parts, foods, beverages, biotechnology processes and products (including plasmids, micro-organisms, DNA sequences and the like), pharmaceutical and agrichemical processes and products and computer program related processes and products.

Infringement

4. Infringement should be deemed to occur when without authorization there is manufacture, importation, use or sale of a patented product or the use of a patented process or the importation, use or sale of the product produced by a patented process.

5. The scope of protection afforded by a patent should include not only subject matter defined by the patent claims (formal definitions of the invention in a patent document), but also "equivalents" of the claimed invention. "Equivalents" should be defined as products or processes which do the same thing as the claimed invention in substantially the same way to accomplish substantially the same result.

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6. Whoever sells a material component, which is not a staple article or commodity of commerce, of a patented invention knowing it is especially made or especially adapted for use in an infringement of the patent, should be liable as a contributory infringer.

7. Whoever actively induces infringement of a patent should be liable as an infringer.

Licensing and Assignment

8. The patent holder may license or assign the patent in whole or in part - exclusively or non-exclusively - and may, for example, limit the grant of rights geographically, by quantity, by field of use, or otherwise.

Term of Protection

9. Patent holders should be granted a "reasonable" minimum effective term of protection. A term of 20 years from the date of filing or 17 years from the date of patent grant would be "reasonable". Extension of this term should be made where the effective term is diminished by time taken to obtain government regulatory approvals other than approval of the patent application.

Examination

10. A period of examination of a patent application shall not be "unreasonable" and the patent applicant shall be given timely adequate notice of all actions by the patent authority during the period of examination. An examination period in excess of four years would normally be considered "unreasonable".

Opposition Proceedings

11. The patent applicant shall be promptly notified in an affirmative manner of any opposition. Foreign applicants shall be given at least four months from date of notification to respond with extensions permitted upon payment of reasonable fees. Neither opposer nor the patent authority should be permitted to extend any opposition beyond a reasonable period, normally not more than four years.

Compulsory Licensing

12. While recognizing the right of any country to exercise the right of eminent domain and to correct anti-trust type violations by appropriate remedies, nevertheless compulsory licensing should not be imposed. As a final step towards eliminating compulsory licensing, no license shall be imposed:

    (a) in a manner which discriminates between different patented subject matter; or

    (b) for lack of local working where needs are reasonably met by importation authorized by the patentee; or

    (c) where commercialization is delayed with reasonable justification or by any circumstances beyond the patent holder's control including regulatory review of product safety, import restriction, price control and the like; or

    (d) which confers exclusive rights of any nature.

13. If a compulsory license is imposed, the patentee shall be fully compensated considering among other things, the actual or potential loss of market share.

Enforcement

14. There shall be established non-discriminatory, transparent civil procedures under which the patent holder can effectively enforce his exclusive rights under the patent.

15. Available remedies for patent infringement shall include both preliminary and final injunctions and monetary damages. Monetary damages shall be adequate to serve as a deterrent to infringement and adequate to compensate patent holders for losses caused by infringement.

16. The civil procedures for patent enforcement shall include discovery adequate to enable the patent owner to obtain information about infringing activities. Where civil procedures do not provide adequate discovery, a shift of the burden of proof to the alleged infringer shall occur.

17. Actions for enforcement of patent rights shall be acted upon by the appropriate authority within a "reasonable" time period. For example, final determination more than four years from the date of initiation of enforcement proceedings should be considered "unreasonable".

Transition Provisions

18. Suitable transition provisions should be adopted.

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INTELLECTUAL PROPERTY TASK FORCE

Guidelines for Standards for the
Protection and Enforcement of Trademarks*

The Trademark Right

1. The owner of a trademark shall have the exclusive right to use the mark for the goods on which it has been used or registered, as well as for related goods; a trademark that is confusingly similar, considering both the marks and the goods on which they are used, infringes that right. Each country shall enact a clear law as to how one establishes and maintains trademark rights.

2. Service marks shall be given the same protection as trademarks, and whenever used herein the term trademark shall be deemed to include service marks and the term goods shall be deemed to include services.

3. The right to establish, maintain and protect trademark rights, both administratively and judicially, shall be equally available to nationals and non-nationals, under the same terms and conditions in every respect, and at a reasonable cost.

Definition

4. A trademark may consist of any word, symbol, design, colors, shape or device, or any combination of them, capable of distinguishing one person's goods from those of others, but it may not comprise the generic name of the goods or merely descriptive terminology.

5. A country shall not be required to recognize trademark rights in, or grant protection to, terms that consist of immoral, deceptive or scandalous matter; national flags or insignias; names, portraits or signatures of living individuals without their consent; or terms that disparage or falsely suggest connection with persons, institutions or beliefs.

Registration

6. Rights may derive from use, or registration, or a combination thereof, and objective provisions for establishing and maintaining rights shall be clearly and publicly stated.

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7. Where rights are dependent upon registration, a country shall provide an efficient system for registration. Consularizations, legalizations and similar proofs of authenticity of documents should not be required except in extraordinary circumstances.

8. Trademarks shall be allowed and registered for all goods, but no rights shall be granted to trademarks that are likely to deceive, or cause mistake or confusion with pre-existing trademark rights.

9. Where a system of registration exists, and where that system provides for examination, procedures shall be expeditious, applicants shall be promptly notified if registration is granted or denied, and specific reasons for denial shall be stated in writing.

10. A country shall not utilize a system for registering trademarks that is any more burdensome in requiring multiple class registrations for similar or closely related goods than the International Classification System under the Nice Agreement. Classification shall be for the purpose of administrative convenience only and shall not be determinative of the registrant's rights.

11. Applications for registration or registrations of trademarks, including information as to goods and classes, shall be conspicuously, promptly and timely published, in order to allow interested persons sufficient time to challenge applications or registrations, and to allow them to search government records to determine potential conflicts with proposed trademarks.

12. There shall be administrative provisions to challenge the granting of registration, and there shall be further provisions for expeditious appeal to the courts following the denial or grant of registration.

13. Validity of a trademark or its registration shall not depend on unreasonable requirements such as use in a specified form or in conjunction with another trademark.

14. In order to reduce piracy and counterfeiting, owners of well-known trademarks should be granted registration, and the right to challenge others' claims to rights in confusingly similar marks, even if the owners have not commercialized the goods in that country.

Term of Registration

15. A trademark shall be registered for no less than five years. It shall be renewable indefinitely for further terms of no less than five years, assuming any reasonable use or other conditions have been met. Excessive fees shall not be imposed for renewal.

16. Provision shall be made for complete or partial cancellation of a registration in the case of fraud, bad faith, or if the owner has not used the trademark on the goods for a reasonable length of time without justification. Government restrictions on the sale, production or import of goods and other special circumstances shall exempt owners of registrations from the requirement of use.

Protection of Trademarks

17. Civil procedures shall be established and readily available to permit trademark owners to prevent others from using the same or confusingly similar trademarks on related goods and otherwise to enforce their rights.

18. Remedies provided for trademark infringement shall include preliminary and final injunctions as well as monetary awards adequate to compensate trademark owners for their losses and to serve as effective deterrents.

19. Actions to bar the importation, production and sale of counterfeit goods shall be subject to expedited procedures, and severe penalties shall be available.

20. Procedures shall be established and readily available to protect against unfair competition, such as passing off and use of confusing trade dress and trade names.

21. Government enforcement and support of all remedies to establish and protect trademark and unfair competition rights is imperative.

Licensing and Assignments

22. Licensing and assignment of trademarks shall be permitted, and use by a licensee subject to control by the licensor shall only inure to the benefit of the licensor.

23. As long as they do not result in consumer deception, licenses and assignments shall not be subject to government approval or restriction.

24. No compulsory licensing of trademarks shall be required.

Transition Rules

25. Transition rules shall be developed to provide implementation of the provisions of these standards so that the rights and procedures for protecting those rights will be promptly available.

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INTELLECTUAL PROPERTY TASK FORCE

Guidelines for Standards for the Protection
and Enforcement of Trade Secrets*

Definition of Trade Secret

1. A trade secret may consist of any formula, pattern, device or compilation of information which is used - actually or potentially - in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers.

Definition of the term "Person"

2. Person means a natural person, corporation, trust, estate, partnership, association, joint venture, government, government agency, or any other legal or commercial entity.

Definition of the term "Misappropriation"

3. Misappropriation means disclosure or use of a trade secret not authorized by the owner, or legal possessor having the right to so authorize, by any person if in fact such trade secret was derived, directly or indirectly, from said trade secret owner or possessor even if such person did not know that such disclosure or use was not authorized.

Proprietary Registrations

4. Trade secrets disclosed to a government as a condition for any required registration of a product, such as for a pharmaceutical or agrichemical, shall be preserved by the government for the exclusive use and benefit of the originator of the trade secret data.

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Agreements to license or assign inventions and Trade Secrets and to maintain confidence not prohibited.

5. Any person, including an employee, shall not be prohibited from contracting with another person, including an employer, to license or assign all or any part of an invention or trade secret, present or future, made or owned by that person to the other person or to maintain a trade secret in confidence and not to disclose or use the same without authorization for an unlimited period of time and shall recognize such contracts to be legal, valid and enforceable.

No time limit on life of Trade Secret

6. There shall be no time limit on the life of a trade secret so long as the information qualifies as a trade secret.

Remedies for misappropriation and protection of Trade Secrets

7. The actual or threatened misappropriation of a trade secret shall normally be the subject of any one or all of preliminary and final injunctions and assessment of actual or exemplary monetary damages.

Trade Secret treated like any other personal property

8. A trade secret shall be considered personal property and subject to the same remedies, both civil and criminal, for its protection and misappropriation as that afforded other personal property.

Time limit for bringing action

9. An action for misappropriation of a trade secret shall be permitted within a time limit of not less than 3 years from the time the misappropriation was discovered by the person bringing action.

Agencies for enforcement

10. There shall be provided appropriate courts or other government agencies to enforce such trade secrets and contracts and to provide the remedies herein contemplated.

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INTELLECTUAL PROPERTY TASK FORCE

Guidelines for Standards for the Protection
and Enforcement of Semiconductor Chip Layout*

Subject Matter

1. A semiconductor chip layout capable of being fixed in a semiconductor chip product.

2. Such layout may be produced or stored by any means including optic or electronic.

Requirements and Scope of Protection

3. Protection shall be granted for a layout that is original to at least an extent that elements have been combined as a result of independent intellectual effort.

4. Protection for layout shall not extend to any idea, method of operation, and the like.

5. Such protection shall not prevent allowance of other intellectual property right protection.

Exclusive Right

6. An exclusive right shall vest in the owner of the layout and shall include reproduction, importation, and distribution and shall include the right to prohibit others from performing such acts.

7. Such exclusive rights may be transferred from one entity to another as personal property and may be licensed.

Term of Protection

8. A layout shall be protected for a term of at least ten years from the earlier date of either registration or first commercial exploitation.

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Registration

9. If registration of a claim of protection is required to be made with an appropriate national or international authority:

   (a) The applicant must be given at least two years from the date of first commercial exploitation;

   (b) The effective date of registration shall be the date on which a complete application is received by such authority;

   (c) Portions of the identifying material, if also required for deposit, may be withheld from such deposit whenever the applicant does not want to disclose or divulge sensitive information which is confidential to the applicant;

   (d) An applicant dissatisfied with a refusal by the authority to issue a certificate of registration may seek judicial review.

Compulsory Licensing and Reverse Engineering

10. Compulsory licensing during the term of protection shall not be permitted.

11. Reproduction of a layout will be permitted, without authorization of the owner, whenever it is done for the purpose of teaching, analyzing or evaluating concepts or techniques embodied in the layout.

Infringement and Enforcement

12. A person who violates any exclusive right of an owner of a layout shall be liable as an infringer.

13. Such owner shall be entitled to institute a civil action for infringement.

14. Any court having jurisdiction of a civil action may grant damages, injunctions, and other relief consistent with national practice.

Notice

15. A uniform symbol should be used to provide notice of protection.

16. Such symbol may be affixed to a semiconductor chip product by the owner of the layout embodied in the product.

17. The affixation of such notice shall not be a condition for such protection.

Transition Rules

18. Transition rules shall be developed in connection with these fundamental principles.

Trade Sanctions and Dispute Settlement

19. There should be a dispute settlement mechanism adequate for the resolution of treaty violations and for the determination of appropriate economic and trade sanctions commensurate with the violations.

20. Every nation should be subject to sanctions if it does not make good faith efforts and reasonable progress toward protecting layouts.

ANNEX 10

DRAFT AGREEMENT ON TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS

CONTRACTING PARTIES

[preamble]

Hereby agree that the following paragraph shall become Article IX bis of the General Agreement:

The contracting parties agree to provide effective and adequate protection of intellectual property rights in order to ensure the reduction of distortions and impediments to international trade. The protection of intellectual property rights shall not itself create barriers to legitimate trade. They therefore agree that they will provide for protection of intellectual property rights under their domestic laws and practices in conformity with the rules and disciplines set out in Annex II.

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ANNEX II

RULES AND DISCIPLINES ON THE PROTECTION OF INTELLECTUAL PROPERTY RIGHTS(1)

Nothing in this Annex shall derogate from existing rights and obligations under the GATT. Unless expressly stated otherwise, nothing in this Annex shall prevent contracting parties from granting more extensive protection to intellectual property rights than that provided for in this Annex. This Annex only creates obligations and rights between contracting parties and creates no direct rights for individuals.

Contracting parties shall provide for the protection of intellectual property rights under their domestic law and practice in accordance with the following provisions:

PART 1: GENERAL PROVISIONS

Article 1 Intellectual Property Conventions

Contracting parties shall in their domestic law and practice comply with the substantive provisions of the Paris Convention for the Protection of Industrial Property as revised at Stockholm in 1967, and of the Berne Convention for the Protection of Literary and Artistic Works as revised at Paris in 1971. In addition, they shall comply with the provisions of this Annex.

Article 2 National Treatment

In addition to the full application of the provisions of Article III of the General Agreement, contracting parties shall accord to the nationals(2) of other contracting parties treatment no less favourable than that accorded to nationals with regard to the protection of intellectual property rights subject to the exceptions already provided for in, respectively, the Paris Convention and the Berne Convention as referred to in Article 1 above, as well as in other existing conventions on intellectual property administered exclusively or jointly by the World Intellectual Property Organisation.(1)

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(1) Throughout this Annex 'intellectual property' is to be understood as encompassing all subject matters covered by Part 2.

Throughout this Annex the term 'right holder' means the right holder himself, any other natural or legal persons authorised by him, or persons, including federations and associations, having legal standing under domestic law to assert such rights.

(2) The term 'nationals' shall be understood as those natural or legal persons qualified for protection under the relevant international conventions on intellectual property administered exclusively or jointly by the WIPO subject to the reservations permitted by those conventions.

Article 3 Most Favoured Nation Treatment/Non-Discrimination

In addition to the full application of Article I of the General Agreement, contracting parties shall ensure that the protection of intellectual property rights is not carried out in a manner which would constitute an arbitrary or unjustifiable discrimination between nationals of a contracting party and those of any other country or which would constitute a disguised restriction on international trade.

Article 4 Customs Unions and Free Trade Areas

Contracting parties which constitute a customs union or free trade area within the meaning of Article XXIV of the General Agreement may apply to one another measures relating to the protection of intellectual property rights without extending them to other contracting parties, in order to facilitate trade between their territories.

PART 2: STANDARDS IN THE FIELD OF INTELLECTUAL PROPERTY

A. Copyright and related rights

Article 1 Rights of Authors

Authors and their successors in title shall enjoy the rights conferred upon them by the Paris Act of the Berne Convention for the Protection of Literary and Artistic Works of 24 July 1971.

Article 2 Computer Programs

For the purpose of Article 1, computer programs shall be protected as literary works.

Article 3 Rights of Authors concerning Rental

(1) Authors and their successors in title shall, at least in the case of cinematographic works and computer programmes, have the exclusive right to authorise or prohibit the rental of originals and copies of the copyright works.

(2) In circumstances where such an exclusive right has not been established, contracting parties shall provide for an equitable remuneration to be obtained in the rental of originals or copies of their protected works corresponding to the economic value of such a use.

(3) For the purposes of paragraphs (1) and (2), "rental" means the making available, for a limited period of time and for direct profit-making purposes, of a protected work or copies of such a work.

(4) There shall be no obligation to provide for a rental right in respect of works of applied art or architecture.

Article 4 Rights of Phonogram Producers

Producers of phonograms shall enjoy the right to authorise or prohibit the direct or indirect reproduction of their phonograms. The provisions of article 3 paragraphs (1), (2) and (3) shall apply mutatis mutandis in respect of the producers of phonograms.

Article 5 Rights of Performers

The protection provided for performers shall include the possibility of preventing :

(a) the broadcasting by wireless means and the communication to the public* of their live performance;

(b) the fixation of their unfixed performance; and

(c) the reproduction of a fixation of their performance.

Article 6 Rights of Broadcasting Organisations

Broadcasting organisations shall enjoy the right to authorise or prohibit :

(a) the fixation of their broadcasts;

(b) the reproduction of fixations;

(c) the communication to the public* of their television broadcasts; and

(d) the rebroadcasting by wireless means of their broadcasts.

Article 7 Public Communication of Phonograms

If a phonogram published for commercial purposes, or a reproduction of such a phonogram, is used directly for broadcasting or for any communication to the public*, a single equitable remuneration shall be paid by the user to the performers, or to the producers of the phonogram, or to both.

Article 8 Exceptions

Contracting parties may, in relation to the rights conferred by Articles 4, 5, 6, and 7 provide for limitations, exceptions and reservations as permitted by the Rome Convention for the Protection of Perfomers, Producers of Phonograms and Broadcasting Organisations of 26 October 1961.

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* Participants may wish to consider the need for a definition of the term "public".

Article 9 Term of Protection

(1) The term of protection granted to producers of phonograms, performers and broadcasting organisations shall last at least until the end of a period of 50 years computed from the end of the year in which the fixation was made or the performance or broadcast took place.

(2) Contracting parties may, however, provide for a period of protection of less than 50 years provided that the period of protection lasts at least for 25 years and that they otherwise assume a substantially equivalent protection against piracy for an equivalent period.

B. Trademarks

Article 10 Protectable Subject Matter

(1) Trademark protection shall be granted. Trademarks may consist of any signs capable of being represented graphically, particularly words, including personal names, designs, letters, numerals, the shape of goods or of their packaging, provided that such signs are capable of distinguishing the goods or services of one undertaking from those of other undertakings.

(2) Protection shall be denied in particular to marks which are

(i) devoid of any distinctive character,

(ii) contrary to public order or to accepted principles of morality,

(iii) of such a nature as to deceive the public, for instance as to the nature, quality or geographical origin of the goods or services, and

(iv) in conflict with earlier rights.

(3) The term "trademark" shall include service marks and collective marks.

Article 11 Acquisition of Rights

A trademark right may be acquired by registration or by use. For the acquisition of trademark rights by use, contracting parties may require that such use has resulted in a reputation of the trademark. A system for the registration of trademarks shall be provided. Use of a trademark prior to registration shall not be a condition for registration. Contracting parties are encouraged to participate in a system for the international registration of trademarks.

Article 12 Rights Conferred

(1) The proprietor of a registered trademark shall have exclusive rights therein. He shall be entitled to prevent all third parties not having his consent from using in the course of trade identical or similar signs for goods or services which are identical or similar to those in respect of which the trademark is protected, where such use would result in a likelihood of confusion. However, in case of the use of an identical sign for identical goods or services, a likelihood of confusion shall not be required.

(2) Protection for registered or unregistered trademarks shall extend under trademark law or other law to the use in the course of trade of any sign which is identical with, or similar to, the trademark in relation to goods or services which are not similar to those in respect of which the trademark is protected, where the latter has a reputation and where use of that sign without due cause takes unfair advantage of or is detrimental to the distinctive character or the repute of the trademark.

(3) The proprietor of a trademark, whether acquired by registration or use, shall be entitled to take action against any unauthorised use which constitutes an act of unfair competition or passing off.

Article 13 Exceptions

Limited exceptions to the exclusive rights conferred by a trademark, such as fair use of descriptive terms, may be made, provided that they take account of the legitimate interests of the proprietor of the trademark and of third parties.

Article 14 Term of Protection

The registration of a trademark shall be indefinitely renewable. Initial registration of a trademark shall in general be for a term of 10 years.

Article 15 Requirement of Use

(1) If use of a registered mark is required to maintain trademark rights, the registration may be cancelled or protection may be denied only after an uninterrupted period of at least five years of non-use, unless legitimate reasons for non-use exist. Use of the trademark by another person with the consent of the right holder shall be recognised as use of the trademark for the purpose of maintaining the registration.

(2) Legitimate reasons for non-use shall include non-use due to circumstances arising independently of the will of the proprietor of a trademark (such as import restrictions or other government regulations on products protected by the trademark) which constitute an obstacle to the use of the trademark.

Article 16 Other Requirements

The use of a trademark shall not be unjustifiably encumbered by special requirements, such as use with another trademark or a requirement which reduces the function of a trademark as an indication of source.

Article 17 Licensing

Compulsory licensing of trademarks shall not be permitted.

Article 18 Transfer

Trademarks may be transferred with or without the transfer of the undertaking to which they belong.

C. Geographical indications including appellations of origin

Article 19 Protected Indications

Geographical indications are, for the purpose of this agreement, those which designate a product as originating from a country, region or locality where a given quality, reputation or other characteristic of the product is attributable to its geographical origin, including natural and human factors.

Article 20 Restricted Acts

(1) Geographical indications shall be protected against any use which constitutes an act of unfair competition, including use which is susceptible to mislead the public as to the true origin of the product. Shall notably be considered to constitute such use :

- any direct or indirect use in trade in respect of products not coming from the place indicated or evoked by the geographical indication in question;

- any usurpation, imitation or evocation, even where the true origin of the product is indicated or the appellation or designation is used in translation or accompanied by expressions such as 'kind', 'type', 'style', 'imitation' or the like;

- the use of any means in the designation or presentation of the product likely to suggest a link between the product and any geographical area other than the true place of origin.

(2) Where appropriate, protection should be accorded to appellations of origin, in particular for products of the vine, to the extent that it is accorded in the country of origin.

Article 21 Protective Measures

(1) Appropriate measures shall be taken under national law for interested parties to prevent a geographical indication from developing into a designation of generic character as a result of the use in trade for products from a different origin, it being understood that appellations of origin for products of the vine shall not be susceptible to develop into generic designations.

(2) The registration of a trademark which contains or consists of a geographical or other indication denominating or suggesting a country, region or locality with respect to goods not having this origin shall be refused or invalidated. National laws shall provide the possibility for interested parties to oppose the use of such a trademark.

(3) In order to facilitate the protection of geographical indications including appellations of origin, an international register for protected indications shall be established. In appropriate cases the use of documents certifying the right to use the relevant geographical indication should be provided for.

D. Industrial designs and models

Article 22

(1) Industrial designs and models which are original or novel shall be protected in conformity with the relevant provisions of the Paris Convention. They may also be protected under copyright law.

(2) The protection conferred shall permit the proprietor to prevent at least the manufacture, the sale, or the importation for commercial purposes, of an object which is the subject matter of the model or design right.

(3) The term of protection made available shall be at least 10 years. Where protection is subject to registration, the contracting parties shall provide for an initial term of protection of at least 5 years, with a possibility of renewal for at least another period of 5 years.

E. Patents

Article 23 Patentable Subject Matter

(1) Patents shall be granted for any inventions, whether products or processes, which are susceptible of industrial application, which are new and which involve an inventive step.

(2) Contracting parties may exclude from patentability:

- inventions, the publication or exploitation of which would be contrary to "ordre public" or morality;

- plant or animal varieties or essentially biological processes for the production of plants or animals; this does not apply to microbiological processes or the products thereof.

(3) Contracting parties shall provide for the protection of plant varieties by patents and/or by an effective sui generis system.

(4) Patents shall be available according to the first-to-file principle.

Article 24 Rights Conferred

(1) A patent shall confer on the proprietor at least the following exclusive rights. The proprietor shall be entitled to prevent third parties not having his consent from making, offering, putting on the market or using a product which is the subject matter of the patent, or importing or stocking the product for these purposes. In the case of a patented process, the patent confers on its proprietor the right to prevent others not having his consent from using that process and from offering, putting on the market, using, or importing or stocking for these purposes the product obtained directly by that process.

(2) Limited exceptions to the exclusive rights conferred by a patent may be made for certain acts, such as rights based on prior use, acts done privately and for non-commercial purposes and acts done for experimental purposes, provided that they take account of the legitimate interests of the proprietor of the patent and of third parties.

(3) A patent may not be revoked on grounds of non-working.

(4) If the subject-matter of a patent is a process for obtaining a new product, the same product when produced by any other party shall, in the absence of proof to the contrary, be deemed to have been obtained by the patented process. In the adduction of proof to the contrary, the legitimate interests of the defendant in protecting his manufacturing and business secrets shall be taken into account.

Article 25 Term of Protection

The term of protection made available shall be at least 20 years from the date of filing of the application. Contracting parties are encouraged to extend the term of patent protection, in appropriate cases, to compensate for delays caused by regulatory approval processes.

Article 26 Compulsory Licences

Where the law of a contracting party allows for the grant of compulsory licences, such licences shall not be granted in a manner which distorts trade, and the following provisions shall be respected :

(1) Compulsory licences shall be non-exclusive and non-assignable except with that part of the enterprise or goodwill which exploits such licence.

(2) They shall provide for the payment of an equitable remuneration to the right holder corresponding to the economic value of the licence.

(3) Except in the case of a manifest national emergency, a compulsory licence may only be issued after unsuccessful efforts made by the applicant in line with normal commercial practices to negotiate a voluntary licence with the right holder.

(4) Compulsory licences may not be issued for non-working or insufficiency of working on the territory of the granting authority if the right holder can show that the lack or insufficiency of local working is justified by the existence of legal, technical or commercial reasons.

(5) Each case involving the possible grant of a compulsory licence shall be considered on its individual merits.

(6) Compulsory licences shall not concern know-how related to the exploitation of the invention.

(7) Any compulsory licence shall be revoked when the circumstances which led to its granting cease to exist and are unlikely to recur, taking into account the legitimate interests of the right holder and of the licencee. The continued existence of these circumstances shall be reviewed upon request of the patent holder.

(8) All decisions concerning compulsory licences shall be subject to judicial review.

F. Lay-out designs of integrated circuits

Article 27

Contracting parties shall, subject to the following provisions, in their domestic law and practice comply with the substantive provisions of the Treaty on Intellectual Property in Respect of Integrated Circuits of May 26 1989:

(1) (a) In contracting parties requiring registration as a condition for protection, topographies shall be protected for a term of no less than 10 years from the date of filing an application for registration or of the first commercial exploitation wherever in the world it occurs, which ever is the earlier, except that if neither of the above events occurs within 15 years of the first fixation or encoding there shall no longer be any obligation to provide protection.

(b) In contracting parties not requiring registration as a condition for protection, topographies shall be protected for a term of no less than 10 years from the date of the first commercial exploitation wherever in the world it occurs, except that if a topography is not so exploited within a period of 15 years of the first fixation or encoding, there shall no longer be any obligation to provide protection. -

(2) The act of importing, selling or otherwise commercially distributing a product incorporating an infringing topography shall not itself be an infringement if the person performing the act in question did not know and had no reasonable grounds for believing that the product was infringing at the time he acquired it. However, for such acts committed after that person comes into knowledge or has reasonable grounds for belief that the product incorporates an infringing topography, he shall be liable to pay an equitable remuneration to the rightholder.

(3) Non-voluntary licences shall not be granted for purposes or on terms which could result in a distortion of international trade.

G. <u>Acts contrary to honest commercial practices including protection of undisclosed information</u>

<u>Article 28</u>

In the course of ensuring effective protection against unfair competition as provided for in Article 10bis of the Paris Convention -

(a) contracting parties shall provide in their domestic law and practice the legal means for natural and legal persons to prevent information within their control from being disclosed to, acquired by or used by others without their consent in a manner contrary to honest commercial practices, insofar as the following conditions are satisfied :

(i) such information is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known or easily accessible;

(ii) actual or potential commercial value results from the secrecy; and

(iii) the person in possession of the information has taken reasonable steps to keep it secret.

(b) Contracting parties, when requiring the publication or submission of test or other data, the origination of which involves a considerable effort, shall protect such efforts against unfair exploitation by competitors. The protection shall last for a reasonable time commensurate with such efforts, the nature of the data required, the expenditure involved in their preparation and shall take account of the availability of other forms of protection.

PART 3: ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS

Section 1: General Obligations

Article 1 Types of Procedures and Remedies

Contracting parties shall protect all intellectual property rights covered in this annex by means of civil law, criminal law or administrative law or a combination thereof. In conformity with the provisions below, they shall provide effective procedures, internally and at the border, to protect these intellectual property rights against any act of infringement, including effective remedies to stop or prevent infringements and which constitute an effective deterrent to further infringements. These procedures shall be applied in such a manner as to avoid the creation of obstacles to legitimate trade and provide for safeguards against their abuse.

Article 2 General Requirements

Procedures concerning the enforcement of intellectual property rights shall be fair and equitable. They shall not be unnecessarily complicated, costly or time consuming, nor shall they be subject to unreasonable time-limits or unwarranted delays.

Article 3 Decisions

Decisions on the merits of a case shall, as a general rule, be in writing and reasoned. They shall be made known at least to the parties to the dispute without undue delay.

Article 4 Judicial Review

Final administrative decisions on the merits of a case concerning the protection of an intellectual property right shall be subject to the right of appeal in a court of law.

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Section 2: Civil and Administrative Procedures and Remedies

Article 5 Fair and Equitable Procedures

Contracting parties shall make available to right holders civil judicial procedures concerning the enforcement of any intellectual property right covered by this Annex. Defendants shall have the right to written notice which is timely and contains sufficient detail, including the basis of the claims. Parties shall be allowed to be represented by independent counsel, and procedures shall not impose overly burdensome requirements concerning personal appearances. All parties to such procedures shall be duly entitled to substantiate their claims and to present the evidence, including, for example, expert testimony and test data, relevant for the establishment of the facts and the determination of the validity and infringement of the intellectual property rights concerned, as well as to exercise their rights of defence. The procedure shall provide a means to identify and protect confidential information. Decisions shall only be based on such evidence in respect of which parties were offered the opportunity to be heard.

Article 6 Evidence of Proof

Where a party has presented a coherent case and has identified an item of evidence relevant to the substantiation of its claim and which lies in the control of the opposing party, the court may order that this evidence be produced by the opposing party, subject to conditions which ensure the protection of confidential information.

Article 7 Injunctions

The judicial authorities shall be authorised, upon request, and irrespective of whether the defendant has acted with intent or negligence, to issue an order that the infringement be refrained from or discontinued.

Article 8 Remedies other than Injunctions

Where an intellectual property right has been found to be infringed, the right holder can request that the infringing goods, as well as materials and implements predominantly used in their creation, be, without compensation of any sort, forfeited, and destroyed or disposed of outside the channels of commerce in such a manner as to minimise any harm caused to him. Such a request shall only be granted where such measures are not out of proportion to the importance of the infringement in question, for example, in cases of deliberate and flagrant infringements. The disposal of the infringing goods outside the channels of commerce shall not include their sale. Other than in exceptional cases the simple removal of the trade marks affixed without authorisation shall not be ordered.

Article 9 Damages

The right holder shall be entitled to obtain from the infringer adequate compensation of the injury he has suffered because of a deliberate or negligent infringement of his intellectual property right, and to recover

the costs, including attorney fees, reasonably incurred in the proceedings. In appropriate cases recovery of profits may be granted even where the infringer has not acted intentionally or negligently.

Article 10 Right of Information

Unless this would be out of proportion to the importance of the infringement, the infringer may be ordered by a court to inform the right holder, of the identity of third persons involved in the production and distribution of the infringing goods or services, and their channels of distribution.

Article 11 Indemnification of the Defendant

Parties wrongfully enjoined or restrained by any measures taken for the purpose of enforcing intellectual property rights shall be entitled to claim adequate compensation of the injury suffered because of an abuse of enforcement procedures and to recover the costs, including attorney fees, reasonably incurred in the proceedings. Contracting parties may provide for the possibility that these parties may in appropriate cases claim compensation from the authorities. They shall provide for such possibility in the case of administrative ex officio action.

Article 12 Administrative Procedures

When contracting parties provide for administrative procedures concerning the enforcement of intellectual property rights, these procedures shall conform to principles equivalent to those applied to judicial procedures.

Section 3: Provisional Measures

Article 13

(a) Contracting parties shall provide for judicial procedures for the adoption, upon request by a right holder, of prompt and effective provisional measures

(i) to prevent an infringement of any intellectual property right from occurring or being continued, and in particular to prevent the goods from entering commercial channels, including their importation and exportation, and

(ii) to preserve the relevant evidence with regard to the alleged infringement.

Where appropriate, provisional measures may be adopted inaudita altera parte, in particular where any delay is likely to cause irreparable harm to the right holder, or where there is a demonstrable risk of evidence being destroyed.

(b) The applicant shall be required to provide any reasonably available evidence so as to permit the court to establish with a sufficient degree of certainty that he is the right holder and that his right is being infringed or that such infringement is imminent, and to provide a security or equivalent assurance sufficient to protect the defendant and to prevent abuse.

(c) Where provisional measures have been adopted inaudita altera parte, the parties affected shall be given notice, at the latest immediately after the execution of the measures. A review, including an oral hearing, shall take place upon request of the defendant with a view to deciding, within a reasonable period after the notification of the measures, whether these measures shall be modified, revoked or confirmed.

(d) Where provisional measures according to paragraph (a) (i) are to be carried out by customs authorities, the applicant may be required to supply any other information necessary for the identification of the goods concerned.

(e) Without prejudice to paragraph (c), provisional measures taken on the basis of paragraph (a) shall, upon request by the defendant, be revoked or otherwise cease to have effect, where proceedings leading to a decision on the merits of the case are not initiated within a reasonable period not exceeding one month after the notification of the provisional measures, unless determined otherwise by the court.

(f) Where the provisional measures are revoked or where they lapse due to any act or omission by the applicant, or where it is subsequently found that there has been no infringement or threat of infringement of an intellectual property right, the defendant shall be entitled to claim from the applicant adequate compensation of any injury caused by these measures.

(g) Contracting parties may provide for provisional administrative procedures. Article 12 shall apply accordingly.

Section 4: Special Requirements Related to Border Measures (3)

Article 14 Suspension of Release by Customs Authorities

Without prejudice to Article 20 below, contracting parties shall, in conformity with the provisions set out below, establish procedures according to which a right holder, who has valid grounds for suspecting

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(3) For members of a customs union or of a free trade area, the term "border" is understood to apply to their border to countries or areas which are not part of the customs union or free trade area, and the term "territory" is understood as the customs territory of the union or area.

that the importation of goods which infringe an intellectual property right may take place may lodge an application in writing with the competent authorities for the suspension by the customs authorities of the release into free circulation of such goods.

Contracting parties may provide for corresponding procedures concerning the suspension by the customs authorities of the release of such goods destined for exportation from their territory.

Article 15 Application

The application under Article 14 must contain prima facie evidence of the alleged infringement and evidence that the applicant is the right holder. It must contain all pertinent information known or reasonably available to the applicant to enable the competent authority to act in knowledge of the facts to hand, and a sufficiently detailed description of the goods to make them readily recognisable by the customs authorities. It must specify the length of period for which the customs authorities are requested to take action. The applicant may also be required to supply any other information necessary for the identification of the goods concerned. The competent authorities shall inform the applicant within a reasonable period whether they have accepted the application and the period for which it will remain in force.

Article 16 Security or Equivalent Assurance

Contracting parties shall seek to avoid border enforcement procedures being abused by means of unjustified or frivolous applications. For this purpose they may require a right holder, who has lodged an application according to Article 14, to provide a security or equivalent assurance. Such securities or equivalent assurances shall not unreasonably deter recourse to these procedures.

Article 17 Duration of Suspension

The importer and the applicant shall be promptly notified of the suspension of the release of goods according to Article 14 above. If, within two weeks after the applicant has been served with a notice of the notification of the suspension the customs authorities have not been informed that the matter has been referred to the authority competent to take a decision on the merits of the case, or that the duly empowered authority has taken provisional measures, the goods shall be released, provided that all other conditions for importation or exportation have been complied with. In exceptional cases, the above time-limit may be extended by another two weeks.

Article 18 Indemnification of the Importer and of the owner of the goods

The importer and the owner of the goods shall be entitled to claim from the applicant adequate compensation for any injury caused to them through the wrongful detention of goods or through the detention of goods released pursuant to Article 17 above.

Article 19 Right of Information and Inspection

Without prejudice to the protection of confidential information, the competent authority shall be empowered to give the right holder sufficient opportunity to inspect any product detained by the customs authorities in order to substantiate his claims. Unless this would be contrary to provisions of domestic law, the customs authorities shall inform the right holder, upon request, of the names and addresses of the consignor, importer, consignee and of the quantity of the goods in question.

Article 20 Ex officio Action

Contracting parties may require customs authorities to act upon their own initiative and to suspend the release of goods in respect of which they have acquired a sufficient degree of certainty that an intellectual property right is being infringed.

In this case, the customs authorities may at any time seek from the right holder any information that may assist them to exercise these powers.

The importer and the right holder shall be promptly notified of the suspension. Where the importer has lodged an appeal against the suspension with the customs authorities, the suspension shall be subject to the conditions, mutatis mutandis, set out in Article 17 above.

With regard to the importer's rights to claim compensation, the provisions of Article 18 shall apply, mutatis mutandis.

Article 21 Remedies

Without prejudice to the other rights of action open to the right holder, and subject to the right of the defendant to lodge an appeal to the judicial authorities, the competent authorities shall provide for the forfeiture, destruction or disposal of the infringing goods in accordance with the principles set out in Article 8 above. Other than in exceptional circumstances the authorities shall not allow the re-exportation of the infringing goods in an unaltered state or subject them to a different customs procedure.

Article 22 De minimis Imports

Contracting parties may exclude the application of the above provisions to small quantities of goods of a non-commercial nature contained in travellers' personal luggage or sent in small consignments.

Section 5: Criminal Procedures

Article 23

Contracting parties shall provide for criminal procedures and penalties to be applied in cases of wilful infringements of trademarks and copyright on a commercial scale. Such remedies shall include imprisonment and monetary fines sufficient to provide an effective deterrent and in appropriate cases the seizure, forfeiture and destruction of the infringing goods and of devices used in the commission of the offence. Contracting parties may provide for criminal procedures and penalties to be applied in cases of infringement of any other intellectual property right, in particular where it is committed wilfully and on a commercial scale.

PART 4: ACQUISITION OF INTELLECTUAL PROPERTY RIGHTS AND RELATED INTER-PARTES PROCEDURES

Article 1

Where the acquisition of an intellectual property right covered by this Annex is subject to the intellectual property right being granted or registered, contracting parties shall provide for procedures which permit, subject to the substantive conditions for acquiring the intellectual property right being fulfilled, the granting or registration of the right within a reasonable period of time so as to avoid that the period of protection is unduly curtailed.

Article 2

Procedures concerning the acquisition or renewal of such intellectual property rights shall be governed by the general principles set out in Part 3, Section 1, Articles 2 and 3.

Article 3

Where the national law provides for opposition, revocation, cancellation or similar inter-partes procedures, they shall be expeditious, effective, fair and equitable.

Article 4

Final administrative decisions concerning the acquisition of an intellectual property right or any other matter subject to an inter-partes procedure referred to in Article 3 above, shall be subject to the right of appeal in a court of law or quasi-judicial body.

PART 5: SUPPLEMENTARY PROVISIONS

Article 1 Other Conventions

Contracting parties shall, within a period of [-] years, adhere to the Paris Convention for the Protection of Industrial Property as revised at Stockholm in 1967 and the Berne Convention for the Protection of Literary and Artistic Works as revised in Paris in 1971. They shall also give careful consideration to adhering to other international conventions on intellectual property with a view to strengthening the international framework for the protection of intellectual property rights and furthering the development of legitimate trade.

Article 2 Transparency

Laws, regulations, judicial decisions and administrative rulings of general application, pertaining to the availability, scope, acquisition and enforcement of intellectual property rights, shall be made available in such a manner as to enable governments and traders to become acquainted with them.

Contracting parties shall notify the laws and regulations referred to above to the Committee on Trade Related Intellectual Property Rights in order to assist the Committee in its review of the operation of this Annex. The Committee shall enter into consultations with the World Intellectual Property Organisation in order to agree, if possible, on the establishment of a common register containing these laws and regulations. If these consultations are successful, the Committee may decide to waive the obligation to notify such laws and regulations directly to the Committee.

A contracting party, having reason to believe that a specific judicial decision, administrative ruling or bilateral agreement in the area of intellectual property rights affects its rights under this Annex, may request in writing to be given access to or be informed in sufficient detail of such specific judicial decisions and administrative rulings or bilateral agreement.

Article 3 Prior Consultation

Contracting parties shall make reasonable efforts within the framework of their constitutional systems to inform and, upon request, to consult with the other contracting parties on possible changes in their intellectual property right laws and regulations, and in the administration of such laws and regulations relevant to the operation of this Annex.

Article 4 Transitional Period

Contracting parties shall take all necessary steps to ensure the conformity of their laws, regulations and practice with the provisions of this Annex within a period of not more than [-] years following its entry into force. The Committee on Trade Related Intellectual Property Rights may decide, upon duly motivated request, that developing countries which face special

problems in the preparation and implementation of intellectual property laws, dispose of an additional period not exceeding [-] years, with the exception of Part 1, in respect of which this additional period shall not apply. Furthermore, the Committee may, upon duly motivated request, extend this additional period by a further period not exceeding [-] years in respect of least developed countries.

Article 5 Technical Assistance

Developed contracting parties shall, if requested, advise developing contracting parties on the preparation and implementation of domestic legislation on the protection and enforcement of intellectual property rights covered by this Annex as well as the prevention of their abuse, and shall grant them technical assistance on mutually agreed terms and conditions, regarding the establishment of domestic offices and agencies relevant to the implementation of their intellectual property legislation, including the training of officials employed in their respective governments.

Article 6 Committee on Trade Related Intellectual Property Rights

Contracting parties shall establish a Committee on Trade Related Intellectual Property Rights composed of representatives from each contracting party. The Committee shall elect its own chairman, establish its own rules of procedures and shall meet not less than once a year and otherwise upon request of any contracting party. The Committee shall monitor the operation of this Annex and, in particular, contracting parties' compliance with their obligations hereunder, and shall afford contracting parties the opportunity of consulting on matters relating to trade related intellectual property rights. It shall carry out such other responsibilities as assigned to it by the CONTRACTING PARTIES, and it shall, in particular, provide any assistance requested by them in the context of procedures under Articles XXII and XXIII of the General Agreement. In carrying out its functions, the Committee may consult with and seek information from any source they deem appropriate.

Article 7 Joint Expert Group

In order to promote cooperation between the Committee on Trade Related Intellectual Property Rights and bodies under the World Intellectual Property Organisation, the latter shall be invited by the Committee to serve together with the GATT Secretariat as Secretariat for a joint Expert Group which shall consist of representatives of the CONTRACTING PARTIES and of the Member States of the Paris and Berne Unions. The Expert Group shall, when requested to do so by the Committee, advise the Committee on technical matters under consideration.

Article 8 Dispute Settlement

Contracting parties agree that in the area of trade related intellectual property rights covered by this Annex they shall, in relation to each other, abide by the dispute settlement rules and procedures of the General Agreement, and the recommendations, rulings and decisions of the CONTRACTING PARTIES, and not have recourse in relation to other contracting parties to unilaterally decided economic measures of any kind. Furthermore, they undertake to modify and administer their domestic legislation and related procedures in a manner ensuring the conformity of all measures taken thereunder with the above commitment.

Article 9 International Cooperation

Contracting parties agree to co-operate with each other with a view to eliminating international trade in goods infringing intellectual property rights. For this purpose they shall establish and notify contact points in their national administrations, and shall be ready to exchange information on trade in infringing goods. They shall, in particular, promote the exchange of information and co-operation between customs authorities with regard to trade in counterfeit goods.

Article 10 Review and Amendment

Contracting parties shall review the implementation of this Annex after the expiration of the transitional period referred to in Article 4. They shall, having regard to the experience gained in its implementation, review it [-] years after that date, and at identical intervals thereafter. The contracting parties shall also undertake reviews in the light of any relevant new developments which might warrant modification or amendment of this annex.

ANNEX 11

SELECTED INDICATORS FOR RESEARCH AND DEVELOPMENT EXPENDITURES

(Figures in U.S. Dollars)

COUNTRY (Percent)	YEAR	CURRENCY	R&D EXPENDITURE IN US $ in 000	G.N.P. IN U.S. $ in 000	R&D EXPENDITURE AS % of GNP	POPULATION	R&D EXPEND. PER CAPITA IN US$	ANNUAL AVE. R&D EXP. PER S&E IN R&D	SECTORAL EXPENDITURE ON R&D: PRODUCTIVE SECTOR (INT+NON-INT) in 000	HIGHER EDUCATION in 000	GENERAL SERVICES in 000	SOURCE OF FUNDS FOR RESEARCH AND DEVELOPMENT: GOVERNMENT FUNDS in 000	PRODUCTIVE ENTERPRISE & SPECIAL FUNDS in 000	FOREIGN FUNDS in 000	OTHER FUNDS in 000	EXCHANGE RATE IN NAT.CURR = 1 US $
ASIA																
India	1984	Rupee	1,596,691	177,410,113	0.90	736,000,000	2.169	15,946	415,825	2,190	1,178,676	1,388,342	208,349	-	-	11.363
									(26.0)	(0.1)	(73.8)	(87.0)	(13.0)	-	-	
Indonesia	1986	Rupiah	188,490	71,552,988	0.26	166,940,000	1.129	6,363	NA	NA	NA	NA	NA	NA	NA	1282.560
									NA	NA	NA	NA	NA	NA	NA	
Israel	1978	Pound	323,570	12,942,797	2.50	3,690,000	87.688	21,977	202156	96688	24695	204390	93775	-	25410	19.020
									(62.5)	(29.9)	(7.6)	(63.2)	(29.0)	-	(7.9)	
Korea	1986	Won	1,728	96,008	1.80	41,180,000	0.042	36,736	1159	186	383	328	1398	1	-	881.450
									(67.1)	(10.8)	(22.1)	(19.0)	(80.9)	(0.1)	-	
Kuwait	1984	Dinar	21,063	2,340,388	0.90	1,640,000	12.844	13,941	13280	438	7345	7233	13537	-	293	3.379
									(63.1)	(2.1)	(34.9)	(34.3)	(64.3)	-	(1.4)	
Pakistan	1984	Rupee	107,874	32,809,341	0.33	93,290,000	1.156	8,700	95974	4283	7618	107874	-	-	-	14.046
									(89.0)	(4.0)	(7.1)	(100)	-	-	-	
Philippines	1982	Peso	61,238	39,278,689	0.16	50,780,000	1.206	10,351	5977	6469	48792	47055	9151	4657	376	8.540
									(19.8)	(10.6)	(79.7)	(76.8)	(14.9)	(7.6)	(0.6)	
Qatar	1986	Riyal	24,203	65,584,392	0.04	310,000	78.083	105,558	12012	12194	0	24206	-	-	-	0.275
									(49.6)	(50.4)	-	(100)	-	-	-	
Singapore	1984	Dollar	100,464	19,134,124	0.53	2,520,000	39.867	41,864	50021	32629	17814	49224	43223	8017	-	2.133
									(49.8)	(32.5)	(17.7)	(49.0)	(43.8)	(8.0)	-	
Sri Lanka	1984	Rupee	10,095	5,871,413	0.17	15,600,000	0.647	3,617	956	634	8505	8450	-	1645	-	25.438
									10	(6.3)	(84.2)	(83.7)	-	(16.3)	-	
Thailand	1985	Baht	127,877	42,62[illegible],526	0.30	51,680,000	2.474	NA	NA	NA	NA	88958	17711	21208	0	27.159
								NA	NA	NA	NA	(69.6)	(13.8)	(16.6)	-	
Turkey	1983	Lira	55,763	27,881,285	0.20	47,280,000	1.179	155,846	19583	66899	34251	NA	NA	NA	NA	225.460
									(16.2)	(55.4)	(28.4)	NA	NA	NA	NA	

SOURCES:

(1) UNESCO Statistical Yearbook, 1988.

(2) International Financial Statistics, 1989.

SELECTED INDICATORS FOR RESEARCH AND DEVELOPMENT EXPENDITURES

(Figures in U.S. Dollars)

COUNTRY (Percent)	YEAR	CURRENCY	R&D EXPENDITURE IN US $ in 000	G.N.P. IN U.S. $ in 000	R&D EXPENDITURE AS % of GNP	POPULATION	R&D EXPEND. PER CAPITA IN US$	ANNUAL AVE. R&D EXP. PER S&E IN R&D	SECTORAL EXPENDITURE ON R&D: PRODUCTIVE SECTOR (INT+NON-INT) in 000	HIGHER EDUCATION in 000	GENERAL SERVICES in 000	SOURCE OF FUNDS FOR RESEARCH AND DEVELOPMENT: GOVERNMENT FUNDS in 000	PRODUCTIVE ENTERPRISE & SPECIAL FUNDS in 000	FOREIGN FUNDS in 000	OTHER FUNDS in 000	EXCHANGE RATE IN NAT.CURR = 1 US $
AFRICA																
Congo	1984	Franc C.F.A.	58	2,193,565	0.003	1,700,000	0.034	68	56	1	1	40	15	3	0	436.960
									(96.0)	(2.4)	(1.6)	(68.8)	(25.5)	(5.7)	-	
Malawi	1977	Kwacha	1,429	780,817	0.18	5,540,000	0.258	7,531	NA	NA	NA	NA	NA	NA	NA	0.903
									NA	NA	NA	NA	NA	NA	NA	
Mauritius	1986	Rupee	3,928	1,404,352	0.28	99,000	39.681	12,877	0	111	401	1552	59	230	2087	13.466
									(0)	(2.8)	(97.2)	(39.5)	(1.5)	(5.9)	(53.1)	
Nigeria	1977	Naira	65,747	20,801,856	0.32	72,580,000	0.906	29,908	NA	NA	NA	NA	NA	NA	NA	1.551
									NA	NA	NA	NA	NA	NA	NA	
Rwanda	1984	Franc	2,351	1,417,191	0.17	5,900,000	0.399	33,119	-	545	1806	1887	-	464	-	100.178
									-	(23.2)	(76.8)	(80.3)	-	(19.7)	-	
Seychelles	1983	Rupee	1,899	141,380	1.34	60,000	31.656	105,517	108	-	1791	927	-	972	-	6.768
									(5.7)	-	(94.3)	(48.8)	-	(51.2)	-	
Sudan	1978	Pound	1,922	1,075,923	0.18	17,560,000	0.109	488	882	293	747	1807	11	13	91	2.662
									(45.9)	(15.2)	(38.9)	(94.0)	(0.6)	(0.7)	(4.7)	
LATIN AMERICA																
Argentina	1982	Peso	895,703	223,925,857	0.40	28,690,000	31.220	85,418,972	366821	196571	332312	848895	0	12931	33877	2.592
									(40.9)	(21.9)	(37.1)	(94.8)	-	(1.4)	(3.8)	
Brazil	1982	Cruzeiro	1,723,542	246,220,351	0.70	126,810,000	0.004	52,351	511938	280758	909121	1138073	337021	89687	137037	179.514
									(30.1)	(16.5)	(53.4)	(66.9)	(19.8)	(5.3)	(8.1)	
Chile	1986	Peso	73,900	14,780,018	0.50	12,330,000	5.994	NA	29806	40291	3803	50499	20031	0	3370	195.816
									(40.4)	(54.4)	(5.1)	(68.3)	(27.1)	-	(4.6)	
Ecuador	1979	Sucre	34,244	8,960,400	0.38	7,890,000	4.340	16,712	1010	4978	28256	23628	1853	5356	3487	25.000
									(3.0)	(14.5)	(82.5)	(69.0)	(5.4)	(15.6)	(10.0)	
Guatemala	1983	Quetzal	41,906	8,360,150	0.50	7,520,000	5.573	NA	NA	NA	NA	NA	NA	NA	NA	1.069
									NA	NA	NA	NA	NA	NA	NA	
Mexico	1984	Peso	949,529	158,254,867	0.60	76,790,000	12.365	56,751	257707	480462	181360	141403	8314	14569	785244	167.800
									(50.3)	(50.6)	(19.1)	(14.9)	(0.9)	(1.5)	(82.7)	
Panama	1975	Balboa	2,715	1,500,000	0.18	1,680,000	1.416	13,342	1177	415	1123	1453	272	776	214	1.214
									(43.3)	(15.3)	(41.4)	(53.5)	(10.0)	(28.6)	(7.9)	
Peru	1984	Sol	98	48,930	0.20	19,200,000	0.005	NA	[illegible]	NA	NA	46947	26618	20534	3762	1625.000
									NA	NA	NA	(48.0)	(27.2)	(21.0)	(3.8)	
St. Lucia	1984	E.Car.Dollar	4,500	151,185	2.98	133,700	34.615	13,389	NA	NA	NA	NA	NA	NA	NA	2.700
									NA	NA	NA	NA	NA	NA	NA	
Venuzuela	1985	Bolivar	188,229	47,057,333	0.40	17,320,000	10.861	NA	82431	33177	2197	NA	NA	NA	NA	7.500
									(70.0)	(28.2)	(1.9)	NA	NA	NA	NA	

HUMAN RESOURCES FOR RESEARCH AND DEVELOPMENT

COUNTRY	YEAR	TYPE OF DATA	SCIENTISTS AND ENGINEERS	TECHNICIANS	POPULATION IN 000	S&E PER MILLION POPULATION	TECHNICIANS PER MILL. POPULATION	NO: OF TECHNICIANS PER S & E	TYPE OF DATA	SCIENTISTS AND ENGINEERS EMPLOYED BY TYPE OF RESEARCH ACTIVITY: NATURAL SCIENCE	ENGINEERING AND TECHNOLOGY	MEDICAL SCIENCE	AGRICULTURA SCIENCE	SOCIAL SCIENCE & HUMANITIES	OTHER FIELDS	SECTORAL EMPLOYMENT: HIGHER EDUCATION	GENERAL SERVICES
AFRICA																	
Congo	1984	EA	862	1,473	1,700	507	866	1.7	FT+PT	145	68	50	285	245	69	473	21
Kenya	1975	EA	361	183	13,410	27	14	0.5	FTE	99	28	16	183	35	-	122	-
Malawi	1977	ST	189	242	5,540	34	44	1.3	FTE	56	20	2	71	40	-	77	11
Mauritius	1986	ST	267	191	99	2697	1,929	0.7	FTE	11	26	1	179	34	16	57	199
Nigeria	1977	ST	2,200	1,345	72,580	30	19	0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rwanda	1985	ST	71	67	5,900	12	11	0.9	NA	NA	NA	NA	NA	NA	NA	NA	NA
Seychelles	1983	ST	18	6	60	300	100	0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sudan	1978	ST	3,806	3,271	17,560	217	186	0.9	FTE	513	686	222	560	1,218	67	1,065	1,341
Zambia	1976	ST	250	150	5,140	49	29	0.6	FTE	83	112	10	21	24	-	54	84
LATIN AMERICA																	
Argentina	1982	EA	10,486	NA	29,160	360	NA	NA	FTE	4,024	1,971	856	1,835	1,076	724	5,200	2,600
Brazil	1982	ST	32,508	NA	126,810	256	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chile	1984	ST	1,587	104	11,920	133	9	0.1	FTE	485	474	284	110	220	14	NA	NA
Ecuador	1979	EA	2,049	1,252	7,890	260	159	0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Guatemala	1984	EA	NA	NA	7,740	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	94	3,648
Mexico	1984	ST	16,679	29,467	76,790	217	384	1.8	FTE	3,786	2,690	3,866	2,385	3,952	-	62	26
Panama	1975	EA	204	301	1,680	121	179	1.5	FTE	39	41	40	33	28	23	NA	NA
Peru	1981	ST	4,858	NA	17,750	274	NA	NA	NA	NA	NA	NA	NA	NA	NA	22	2,968
St. Lucia	1984	ST	53	86	130	408	662	1.6	FTE	NA	NA	NA	NA	NA	NA	7,979	3,432
Venuzuela	1983	EA	4,568	2,692	16,390	279	164	0.6	FTE	786	300	204	437	388	68	1,001	864
ASIA																	
India	1984	EA	100,136	NA	736,000	136	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indonesia	1984	ST	24,895	4,125	159,890	156	26	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Israel	1984	EA	39,749	13,986	4,160	9555	3,362	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
Korea	1983	EA	32,117	19,493	39,930	804	488	0.6	FT	4,706	16,371	3,964	3,589	-	1,679	13,137	6,394
Kuwait	1984	ST	1,511	561	1,640	921	342	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pakistan	1986	EA	9,325	14,028	99,160	94	141	1.5	FTE	2,635	1,325	1,316	3,289	-	760	-	-
Philippines	1982	ST	5,919	2,577	50,780	117	51	0.4	FTE	753	1,404	131	1,599	929	-	773	4,816
Qatar	1986	EA	229	61	310	739	197	0.3	FT+PT	160	53	2	5	-	9	185	-
Singapore	1984	EA	2,401	1,359	2,520	953	539	0.6	FT+PT	353	1,498	515	35	-	-	NA	NA
Sri Lanka	1983	EA	1,939	1,420	15,420	126	92	0.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thailand	1975	EA	NA	NA	41,870	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,242	1,344
Turkey	1983	ST	7,747	2,689	47,280	164	57	0.3	FTE	891	1,040	1,350	1,590	531	1,907	5,660	1,649

Source: UNESCO Statistical Yearbook, 1988

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