THE ROLE OF INTELLECTUAL PROPERTY IN ECONOMIC, SOCIAL AND CULTURAL DEVELOPMENT

by

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1. Introduction

We are living in a "Golden Age" for intellectual property rights (IPR's), in general, and for patents, in particular. Bill Gates speaks of a new "Gold Rush." Patent filings and issuances are skyrocketing, especially in the areas of biotechnology and business methods, so much so that there is talk of a patent "revolution," "explosion," "frenzy." In 1999 the U.S. Patent & Trademark Office granted over 168,000 patents, more than twice as many as in 1980. Trademarks experience a similar boom.

More than ever companies are built around patented technology. The rate of American innovation is soaring. "New ideas are fostered in America like no place else on Earth." (*U.S. News & World Report*, 1/4/99, p.40) "U.S. entrepreneurs power era of unprecedented prosperity" (*USA TODAY*, 7/30/99, p.B1) "Innovate or perish" is the motto. Royalties obtained for licensing patents have reached or exceeded the billion dollar mark for companies such as TI, IBM and over 100 billion dollars for all U.S. industries.

And universities, not to be left out, have jumped on the bandwagon. In 1997, for example, they received 11,303 faculty invention disclosures, filed 4,267 new patent applications and obtained 2,645 patents. More than 1,000 commercial products have been developed under license from universities, putting 250,000 jobs and $30 billion into the economy annually. (*LER*, Feb. 1999, p.11)

Courts read the riot act to infringers. Holding patents valid more often nowadays, they award billion dollar damages. "The recent *Litton* v. *Honeywell* verdict of 2 billion dollars is representative of this trend." (Insight Press flyer, February 1999) Preliminary injunctions and treble damages are no longer rare and permanent injunctions are no longer stayed during appeals.

Thus, patents now are more enforceable and valuable and it no longer pays to infringe as before when, in the unlikely event the patent in suit was upheld, only reasonable-royalty damages were assessed. And there are other drastic contrasts between now and then (60's and 70's).

The following chapters will first discuss certain premises and truisms about the nature and importance of intellectual property and then deal with economic aspects, such as, investment correlation and effects of piracy.

2. An IP System Should be Part of the Basic Infrastructure

An IP system should be part of a country's infrastructure from the outset, rather than something thought about after reaching a fairly advanced state of development, concluded Robert M. Sherwood (Counselor in International Business in Washington) in his book *Intellectual Property and Economic Development* (Westview Press, 1990):

> "Although largely invisible, an intellectual property system which protects innovation and creative expression may be viewed as a helpful precondition to creating and using new technology which boosts economic growth and aids development. From this point of view, the intellectual property protection system may be considered as a valuable part of a country's infrastructure.
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> The concept of infrastructure has proven useful in examining economic development. Roads, irrigation, sewers, schools, water supply, health care and electrical systems are among the preconditions thought beneficial for development. Creation of infrastructure is accorded priority because of this." (p.6)
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> Furthermore, Sherwood stated:
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> "It is submitted that viewing intellectual property protection as an important aspect of a country's infrastructure would focus attention and analysis on its role in the economic development process rather than on trade conflicts." (p.5)

In this context it should be kept in mind that IP protection preceded modern industrial development in most of today's developed and industrialized countries, which at the time were still under-developed countries.

3. There are no Viable Alternatives

Modern and strong IP systems should be of interest for all nations, including the smallest and also the least developed. For this reason, such systems are being adopted around the globe. Many developing and transitional countries established or strengthened their intellectual property systems before the GATT-TRIPS era and without being swayed by pressures from the outside, because they had come to realize that IP systems would serve their own self-interests.

For example, a high official of the Indonesian Government made the following statements in a seminar, which I attended in Jakarta a few years ago when I served as a consultant for the Patent, Trademark and Copyright Office, to assist them in implementing their first patent system:

> "The need to expand our knowledge and to improve our technological development and dominance require a greater availability of technological information through growth and development of the patent system. Only through the expansion of knowledge, and the increase in technological dominance, will we be able to carry out efficiently the process of technology transfer as well as solve related problems.
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> Especially today one cannot ignore the role that intellectual property plays in international markets, which is becoming increasingly more important.
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> The future economic development of the country will focus more and more on the industrial sector directed to exports, which obviously will need access to international markets. This access will only be achieved if we participate in mutual agreements in the sector of intellectual property, through the operation of sufficient, efficient and reciprocal legal protection.
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> .....
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> The current situation, where intellectual property has greater value and more importance provides a very different stage from that of the fifties, sixties or even the seventies."

In my opinion, these affirmations—and similar ones which I heard on subsequent trips to the Republic of Korea and Malaysia—are very positive, modern, and at the same time surprising, since until 1991 there was no patent system in Indonesia. Furthermore, these statements have much relevance in other developing countries because there is considerable parallelism among many of them and Indonesia.

Indeed, we live in the 21st Century and not in the sixties or seventies of the last century, and nowadays we all live in a world that is becoming smaller and more interdependent every day, that is to say, we live in a "global village."

On the other hand, there are no countries where IP systems were abolished, although Professors Melman and Machlup, famous economists of the fifties, after reviewing the American patent system in a study commissioned by the U.S. Congress, arrived at the following astounding conclusion: "If we did not have a patent system, it would be irresponsible, on the basis of our current knowledge and of its economic consequences, to recommend establishing one."

But the patent system has survived Professors Melman and Machlup and other critics of similar mentality. Today critical opinions about the patent system are rarely heard, and conclusions such as those of Professors Melman and Machlup seem like bad jokes. Professors Mansfield and Scherer, well-known contemporary economists, never would say such things.

For Mansfield, the patent system is a very important instrument as regards the technological development, because investment in R&D always depends on the degree of protection of IP and given the intimate relationship between industrial innovation and economic growth, adequate protection of IP is indispensable for industrialized as well as for developing countries.

Time and again studies and proposals have been presented regarding alternatives to patents, as for example, economic incentive systems to inventors without grant of an exclusive right; but the patent system has outlived these and other proposals, because time has demonstrated that, when all is said and done, it is the best and most viable alternative of them all.

In this connection, the Spanish Professor Carlos Fernández-Novoa, of Santiago of Compostela, in his book *Toward a New Patent System*, studied other alternative systems, particularly a governmental system of monetary premiums, but rejected it. He concluded that: "(T)he patent system is the only system that provides incentives for technological research that is reconcilable with the system of market economy."

By now I believe it is incontrovertible that a robust system of IP rights is indispensable for technological development, which stimulates economic growth and social welfare.

Patents and other IPRs indeed:

- do have a great impact on research by disseminating information on advances in technology,
- do promote the innovation process,
- do encourage high risk investments which lead to industrialization,
- do facilitate licensing and technology transfer, and hence
- do have a significant influence on economic progress.

4. Patents do not Constitute Monopolies

The notion that patents constitute monopolies is still widely held. This is a misconception that has caused a lot of mischief. A patent as well as other IP as such can never be a monopoly. The prevailing thought today is that a patent is property—a property like a house or a car or a share of stock—and not a special privilege, a monopoly granted by the government.

In a PLI program on IP licensing which I attended some time ago, there was a presentation by a prominent Washington antitrust lawyer in which he all too liberally referred to patents being monopolies, as antitrust lawyers, economists and, most unfortunately, some IP lawyers and IP professors are still wont to do. When I challenged him on his wrongly equating patents with monopolies, he really let me have it! He gave the following example of what he considered a clear and manifest case of a patent monopoly: A U.S. and a Japanese company independently invent and develop the same cancer cure and both companies file for patents with the USPTO. The Japanese company prevails in the ensuing interference, ends up with the patent and refuses to license it, so as to have a monopoly on this drug.

It's so curious that he needed to bring a Japanese company and a cancer cure into the picture to make his point. But even this fact pattern does not a monopoly make! It is simply a case of unthinking monopolophobia or worse.

For a perfect answer to our misguided antitrust lawyer, let us listen to none other than the former CAFC Chief Judge Howard Markey, who had this to say in *Carl Schenck, A.G.* v. *Nortron Corp.*, 218 U.S.P.Q. (BNA) (698, 699 (CAFC, 1983):

> Nortron's brief characterizes Schenck as a "german monopolist." That denigration, whether inserted in a vain hope of prejudicing the court or otherwise, has no support in the present record. Disclosure of an invention found to have revolutionized an industry is but a classic example of the ideal working of the patent system. If a patentee or licensee enjoys widespread sales, that too is but an example of the incentive-useful arts promoting element in the patent system. Patents and licenses are exemplifications of property rights. Further, and happily, participation in the U.S. patent system, as patentees and as licensees, is available to citizens and non-citizens alike.

Another quotation from an article written by Judge Markey: (*Why not the Statute*, 65 JPOS 331 (1983)):

> One of the most water-muddying words is "monopoly." (Elsewhere in his article called a "nasty buzzword.") The word, of course, appears absolutely nowhere in the

> patent statute, 35 U.S.C. 154. On the contrary, 35 U.S.C. 154 specifies that a patent is a grant for seventeen years "of the right to exclude others from making, using, or selling the invention," and 35 U.S.C. 261 says "Patents shall have the attributes of personal property." Thus, as the statute makes plain, the owner of a patent has the same right in the patented invention that you have to your car, your clothing, or your golf clubs—i.e., the right to exclude others, which is but a pseudonym for "property."
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> It is of course possible to use any property—patents or stocks or bonds or horses—in a scheme to violate the antitrust laws. Opinions in such cases will contain the word "monopoly," but the word there applies, or should apply, to the unlawful conduct, not to the patent right itself. From such cases, and from the careless use of the nonstatutory term "monopoly" as synonymous with "patent," has come the curious canard that there is somehow a "conflict between the patent laws and the antitrust laws."

There is, of course, no such conflict, just as there is no such conflict between the law dealing with stocks, bonds, or horses and the antitrust laws.

Hence, it should be crystal-clear from Judge Markey's comments that a patent is not a monopoly and, in fact, is not even a "limited," "legal" or "temporary" monopoly.

And, very importantly, the Justice Department and Federal Trade Commission professed up front in their joint 1995 "Antitrust Guidelines for the Licensing of Intellectual Property" that (1) "intellectual property (is) comparable to any other form of property", (2) there is no presumption that "intellectual property creates market power" and (3) "intellectual property licensing...is generally pro-competitive." What an 180-degree turn when contrasted to Justice's prior hostility to patents, culminating in their philosophy that a patent conferred monopoly power as a matter of conclusive presumption and at least nine common licensing restrictions ("nine no-no's") were *per se* illegal!

In light of Judge Markey's persuasive argumentation and the Justice Department/Federal Trade Commission's surprising about-face, is high time that we stopped using the term "patent monopoly," especially because of its extremely negative connotation that inventors and innovators are reprehensible monopolists rather than public benefactors par excellence.

In fact, a patent, far from being a monopoly, encourages and promotes competitiveness and, consequently, growth of industry. On this point, Professors Daniel A. Zuccherino and Carlos O. Mitelman, in their article entitled "Solid IPR Protection as a

Tool of Economic Development (6 Derechos Intelectuales, 79,97-99, Editorial Astrea, Buenos Aires, 1994) had the following to say:

> "We are absolutely convinced that there is no reason to call inventor's rights a monopoly.
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> While it is true that a patent provides a patent holder an advantageous position, he or she is constantly exposed to being overtaken by the competition. It is exactly due to his/her patent position that competitors are motivated to 'invent around.'
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> The greater the rate of innovation, the greater the dynamic of competition. Competition induced by the existence of a patent brings about a plurality of alternatives."

In summary, the several reasons why a patent as such is not and cannot be a monopoly can be stated as follows:

1. A monopoly is something in the public domain that the government takes from the public and gives to a person (like in the famous British case of the playing cards). An invention is something that did not exist before and was not in the public domain. It is something novel, that upon publication via the grant of the patent, enriches the public domain with the knowledge of the invention, and upon expiration of the patent, enters into the public domain, free to be used by anyone.

2. According to our patent legislation, a patent is personal property, like any other personal injury.

3. A patent does not grant the positive right to make, use and sell the patented invention but merely the negative right to prevent others from making, using and selling such an invention.

4. The patent right or property is too severely restricted in terms of duration and scope and patent misuse law, to be considered a monopoly.

5. There are almost always alternatives available to the public—prior art alternatives, alternatives that are obvious and hence not patentable and alternatives provided by improvement inventions.

6. If anything, patents intensify competition; they can lead to many improvement patents as competitors are motivated to "invent around."

Better terminology for "patent monopoly": patent property, patent right, patent grant, exclusivity.

5. "Everything Under the Sun Made by Man" is Patentable

The momentous pronouncement that "everything under the sun made by man" is patentable comes from the 1980 U.S. Supreme Court in the *Chakrabarty* decision. In deciding that new living organisms are patentable, they recognized that there is no better way to provide incentives for such potentially very valuable inventions. Clearly, this point nullifies the argument that inventions in the nutritional, pharmaceutical and biotechnological fields are too important to be patented. On the contrary, exactly because of the high public interest, they are too important *not* to be patented. And because of this, Professor Thomas Field, my colleague at the Franklin Pierce Law Center, emphasizes that such products should be patentable *a fortiori*. In other words, the greater the public interest, the greater the need for protection and with it the need to provide an incentive for investments.

Also, in the light of the *Chabrabarty* pronouncement, which bespeaks the expansiveness of the U.S. patent law, there should be no exclusion of subject matter from patentability. With the *Chakrabarty* decision, the first of the conventional exclusions to patentability fell, namely, that living matter was not patentable. Many patents on animals and plants have since been granted. We also know now that software, supposedly unpatentable (only copyrightable), because of the unpatentability of mathematical algorithms, is not only patentable but patent protection has become the protection of choice, side by side with copyright and trade secret protection. And as recently as in 1998, we had a "seismic precedent," the *State Street Bank* decision, where the Federal Circuit Court of Appeals ruled that a pure computer program designed solely to make financial calculations was patentable. This decision reinforces the recent trend of federal decisions bolstering the patentability of software. With this decision the business-method exception to patentability was also dealt a mortal blow.

And now the fastest growing area in U.S. patent activity—a veritable flood—is data processing for business use or software and business methods—the "fuel of the New Economy." According to Mr. Jay Walker of Priceline.com Inc. fame, "business-method patents are no different than patented factory processes for making steel or chemicals; it's just that the raw material of the digital age is information." (Wall Street Journal, October 3, 2000, p.B4).

And Robert Stoll from the USPTO observed in his talk in Moscow on "How to protect the technologies of the future" (*Managing Intellectual Property*, July/August 2000, p.25, 27) that "In earlier times, inventions and innovations were made

in garages and on workbenches, then they moved to the research laboratory. today, much invention and innovation is carried out on computers."

In response to opponents of business method and software patents, he stated:

> "I haven't seen any evidence that our patent law has hindered the growth of the US software industry. Quite the contrary, actually."

And the biotech industry has prospered and grown into a powerhouse. He believes that:

> "history demonstrates that the availability of patent protection, especially in cutting-edge technologies, is vital to the birth—and growth—of entire industries. The same can be said of protection for other forms of intellectual property as well."

In conclusion, I would contend that one of the most efficacious ways of building a strong economy is to insist on protecting intellectual property. And that contrary to myth, strong patent laws do not hinder small, regional companies in favor of large multi-nationals. Regional companies would be the first to gain from the technology transfer, increase in joint ventures, and enhanced technical training that foreign investment brings.

Besides, the act of patenting is a neutral act and should not be restrained for social engineering purposes, and the patent right is a negative one, a right of exclusion rather than a positive one, a right to use. Should there be a public policy need to control the commercialization of a patented product, let there be separate legislation for that purpose similar to the recent separate side-by-side (proposed) legislation on patenting and regulating biotech inventions in Finland.

6. Trade Secrets and Patents are Complementary

Of course, any IP system should include not only patents, but also trade secrets, utility models, industrial designs, trademarks, copyrights, etc. All of these are most important for technological development and economic growth and, therefore, it is important to establish and maintain strong and modern systems in these other fields just as in that of patents.

In relation to trade secrets, recently called "the IP of the new millennium, which can no longer be treated as a stepchild" (Mark Halligan, *Conference on Developments in IP Law*, John Marshall Law School, February 25, 2000) but inexplicably termed "undisclosed information" in Article 39 of TRIPS, it should be kept in mind that the

patent system and the trade secret system are not mutually exclusive, but, in reality, complementary. To protect adequately new inventive products or processes both IP categories can and should be used in complementary, even synergistic, ways.

Patents are but the tips of icebergs in a sea of trade secrets. Over 90% of all new technology is covered by trade secrets and over 80% of all license and technology transfer agreements cover proprietary know-how, i.e. trade secrets, or constitute hybrid agreements relating to patents and trade secrets. As a practical matter, licenses under patents without access to associated know-how are often not enough to use the patented technology. Bob Sherwood calls trade secrets the "workhorse of technology transfer." The quiet role they play in IP protection is thus deceiving.

Trade secrets are the first-line defense: they come before patents, go with patents and follow patents. Patents and trade secrets are not mutually exclusive but actually highly complementary and mutually reinforcing; in fact, they dovetail. In this context, it should be kept in mind that our Supreme Court has recognized trade secrets as perfectly viable alternatives to patents (*Kewanee Oil* v. *Bicron* (1974) "the extension of trade secret protection to clearly patentable inventions does not conflict with the patent policy of disclosure") and further strengthened the bases for trade secret reliance in subsequent decisions (*Aronson* v. *Quick Point Pencil* (1979) and *Bonito Boats* v. *Thunder Craft Boats* (1989)). Interestingly, in his concurring opinion in the *Kewanee Oil* decision, Justice Marshall was "persuaded" that "Congress, in enacting the patent laws, intended merely to offer inventors a limited monopoly (*sic*) in exchange for disclosure of their inventions (rather than) to exert pressure on inventors to enter into this exchange by withdrawing any alternative possibility of legal protection for their inventions." Thus, it is clear that patents and trade secrets cannot only coexist, but are in harmony rather than in conflict with each other.

In the past—and even today—if trade secret maintenance was contemplated at all, e.g. for manufacturing process technology, which can be secreted unlike gadgets or machinery, which upon sale can be reverse-engineered, the question always was phrased in the alternative. For example, titles of articles discussing the matter read "Trade Secret vs. Patent Protection," "To patent or not to patent," "To patent or to padlock," etc.

I submit that it is not necessary and, in fact, shortsighted, to choose one over the other. To me the question is not so much whether to patent or to padlock but rather what to patent and what to keep a trade secret and whether it is best to patent as well as to padlock, i.e. integrate patents and trade secrets for optimal protection of innovation.

It is true that patents and trade secrets are at polar extremes on the issue of disclosure. Information that is disclosed in a patent is no longer a trade secret.

As pointed out above, however, patents and trade secrets are indeed complementary, especially under the following circumstances:

Firstly, in the critical R&D stage and before any applications are filed and also before patents issue, trade secret law particularly "dovetails" with patent law (see *Bonito Boats*).

Secondly, provided that an invention has been enabled and the best mode described, as is requisite in a patent application, all associated know-how not disclosed can and should be retained as a trade secret. That the "written description" and "best mode" requirements apply only to the *claimed* invention, should be kept in mind in this context.

Thirdly, all the mass of R&D data, including data pertaining to better modes, developed after filing, whether or not inventive, can and should also be maintained as trade secrets, to the extent the data are not disclosed in separate applications.

Fourthly and especially with respect to complex technologies consisting of many patentable inventions and volumes of associated know-how, complementary patenting and secreting is tantamount to having the best of both worlds. In this regard GE's industrial diamond process technology, which is partially patented and partially under trade secret protection, comes to mind as an excellent illustration of the synergistic integration of patents and trade secrets to secure invulnerable exclusivity.

Was GE's policy to rely on trade secrets in this manner, or, for that matter, Coca-Cola's decision to keep their formula secret rather than patent, it which could have been done, damnable? Clearly not.

7. Integration of IPR's

As was shown above, patents and trade secrets are complementary, if not inseparable, and can and should be relied on side by side for optimal protection. In other words, it is possible to eat the cake and have it. The erstwhile view, prevalent even in the U.S. and still widespread in foreign countries, that only single protection is possible, e.g. utility and design patents on the same product are incompatible, has long gone overboard. Dual or multiple protection, integrating various IP categories and exploiting their overlap, especially in modern fields of technology, e.g. biotechnology, computer technology and other high technology areas, is now increasingly the order of the day.

Professor Jay Dratler, of the University of Hawaii "tied all the (formerly fragmented) fields of intellectual property together," for the first time in his treatise on

"Intellectual Property Law: Commercial, Creative, and Industrial Property", *Law Journal Press*, 1991, inasmuch as intellectual property has become a "seamless web" in light of progress in technology and commerce, with new technologies straddling the gaps between most IP categories.

Professor Dratler explains:

> "The (IP) fields overlap significantly, and the boundaries of each are far from sharply defined. Indeed, several different types of protection are often available for the same thing, or for different aspects of the same thing; therefore, resort to several kinds of protection may be required for complete coverage.
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> .....
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> Although several distinct types of intellectual property protection may protect a single product or service, there is usually a center of gravity. That is, one form of protection is usually the most important commercially, and the others assume a subordinate or supplementary role. This does not mean, however, that supplementary protection lacks value. Supplementary protection may cover additional subject matter, strengthen the exclusivity provided by other coverage, or invoke additional remedies for piracy." (Jay Dratler, Jr., "Intellectual Property Law: Commercial, Creative and Industrial Property," Law Journal Seminars Press, v. 1, pp.1-14, 1-20 to 21, 1999.

Professor Dratler goes further and shows how integration of IP categories may even achieve synergy and provide fall-back forms of IP. In this regard witness the very recent *Pizza Hut* CAFC decision, in which two patents on preparing sausage toppings for pizza were held invalid for the reason that prior use and sale had taken place more than a year before filing, while valid trade secrets on associated, ancillary know-how permitted Pizza Hut to recover damages for misappropriation of the trade secrets.

Dratler gives detailed illustrations of the many forms of IP protection that are available in the fields of computers (hardware and software), biotechnology and aesthetic designs of articles. And multiple protection for plants is also clearly available, not only via plant patents and plant variety protection certificates but also via utility patents, trade secrets and even design patents.

More recently, Stephen Elias, picking up on Professor Dratler's theme, presented a "Guide to Use of Intellectual Property Protections," in chart form, in which he lists 119 creative work categories and the multiple IP protection available therefor. (Stephen Elias, *Patent, Copyright & Trademarks — A Desk Reference to Intellectual Property Law*, Nolo Press, pp. 10-12, 1996).

8. A Utility Model System is also Desirable

A strong, modern patent system should also include a petty patent or a utility model or a short-term patent, as it is called in Ireland, which established such a system recently, with the European Union to follow shortly. Such second-tier protection for subpatentable inventions is desirable, given the strict patentability requirements, the long pendency and the high cost of conventional patents. In other words, petty or short-term patent protection would provide coverage for a large area of innovations which fall between design and utility patents, cannot be protected by trade secrets and for which present utility patents are out of reach because of high patentability standards and/or excessive costs.

9. A Strong IP System is in the Interest of Nationals

An IP system first and foremost is in the interest of nationals. There is genius and creativity everywhere but they need nurture. No country has a "monopoly" on that but where national talent and inventiveness are neglected, inventors and scientists have to go abroad to protect adequately their inventions. And this leads to the so-called "brain drain."

In this regard Sherwood had the following comments in his already cited book (p.197):

> "If people seem to be more inventive in the United States or Europe or Japan, it is not an accident. It is not because of genes or schooling or intelligence or fate. Implementation of the intellectual property system is critical because of the habit of mind which is fostered in the population. Human ingenuity and creativity are not dispersed unevenly across the globe. Those talents are present in every country. In some, unfortunately, the enabling infrastructure of effective intellectual property protection is missing."

Interestingly, the fact that most of the patents are granted to foreigners in developing countries does absolutely not mean that the patent system serves only foreigners. The truth is that this occurs also in all industrialized countries with Japan and the U.S. the only exceptions. In the U.S. almost half of all the granted patents belong to foreigners, too.

> "(T)he proportion of patents granted to non-residents within all countries appears to be high as the result of a multiplier effect. An invention which is patented in a number of countries will be recorded as a domestic invention in only one country, but will appear in the statistics of patents granted to non-residents in all other

countries in which the invention is patented. This multiplier effect accounts for the high proportion of patents granted to non-residents in the vast majority of countries." (WIPO, Background Reading Material on Intellectual Property, 1988, p.77).

In this connection, let me quote again Professors Zuccherino and Mitelman (*supra* at 87):

> "It would be a mistake to think that patent protection constitutes a useful institution only for industrialized countries—an instrument of protection exclusively adapted for technology owners. On the contrary, it is fundamental for those countries that find themselves at the beginning of their industrial development.
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> The leading industrialized nations, Japan, United States, France, Germany, or England introduced patent protection in an era in which they all were underdeveloped countries and the prevailing motivation was to surpass the technological gap when compared to others; first, through import and adoption of foreign technology, and then, through the progressive development of a home-grown technology."

A few years ago, in a seminar in Lima, Peru, which was organized by INDECOPI and which I attended to give a talk, I was approached by a couple who told me that the husband had invented significant improvements in cars. They wanted to go to Miami to enlist an American patent attorney in order to patent his inventions in the United States, because, in their opinion, "it made no sense to try to patent anything in Peru." In other words, such inventors are not empowered by their country's IP regime to become innovators and entrepreneurs and pursue their dreams. Query: are such inventors even denied a basic human right—a right to exercise their inventive faculties and obtain effective protection for their creations?

10. Correlation of Investments and IP Protection

The problem in countries without a solid patent system, is that there are none of the incentives provided by such a system, which is prejudicial to technological development and economic growth. Actually, there are four incentives that a patent system furnishes, namely, to invent, to divulge inventions, to "invent around" prior inventions and to invest in the commercialization of inventions and, interestingly, the incentive to invest is the most important of them all. (CAFC Judge Giles Rich).

Conventional wisdom has it that the ratio of requisite investment in the three phases of product innovation from laboratory to market place, namely, invention, development and commercialization is supposed to be of the order of 1:100:1000, and this would support the thesis of investment incentive.

Robert Sherwood published an article on correlation of investments and IPRs. ("Intellectual Property Systems and Investment Stimulation...," 37 *IDEA*, No. 2, 1997, p.261.) In it he evaluates and classifies IP regimes of different countries as well as the GATT-TRIPS regime using a scale of 0 to 100. This study was done from an investor's perspective. Some of the numerical scores are: Guatemala 13; Argentina 39; India 46; Brazil and Pakistan 49; Costa Rica 54; TRIPS 55; Peru 61; Chile 62; Mexico 69; Republic of Korea 74; U.S., EU, Japan 75-90+, etc. GATT-TRIPS does not obtain a higher score inasmuch as it is a system of minimal standards; in other words, it is a floor and not a ceiling. TRIPS merely reduces trade conflicts rather than stimulate investments. Sherwood then invokes Professor Mansfield's investment/IP protection correlation from his published World Bank reports (Discussion Papers 19 and 27), indicating that the TRIPS level of protection is only good enough to support private investment in sales and distribution, assembly, and parts manufacture. A higher level of protection is needed to stimulate private investment in complete manufacture, product development and private research.

In this context, it is interesting to note there still exists a school of thought that asserts that technology is the "common heritage of mankind," that is to say, that all technology should be made available for free. But if technology should come free, why not oil and gold? This observation was provided by one of my students, none other than the then Director of Patents and Trademarks of Zimbabwe, Mr. Naboth Mvere, upon commenting that some countries have oil and others have gold and some countries have technology; and the countries that have oil and gold do not consider them part of the "common heritage of mankind" and accordingly give them away for free.

11. Japan & Republic of Korea Showed the Way

At this point in my talk I cannot help but mention the models and examples of Japan and Republic of Korea which indeed are excellent models and examples to follow and imitate. Japan is a most magnificent example to emulate. The Republic of Korea and the other "tigers," have followed the model of Japan with much success. As was done by the Japanese, one should put in place modern IP laws and through license contracts one should acquire as much technology from abroad as possible. In Japan experience demonstrated that, once a country installs a solid and effective patent system, the flow of technology toward that country increases, as well as their access to more advanced technologies. Such a patent system assures a simpler technology transfer

process, greater access to desired technology at lower costs. On the other hand, the Japanese experience has also shown that licensing of foreign technology, as a general rule, serves as a catalyst to promote the local inventive activity.

These policies are even more beneficial, because acquired technology generally comes accompanied by foreign capital and investment in considerable quantities. Furthermore, technology importation not only leads to export of products manufactured via the introduced technology, but also to the export of the improved and modified technology ("reverse technology transfer").

In summary, the progress made by Japan since World War II is due to their patent system and to their political opening to the licensing of technology, both of which were very attractive to foreign technology providers. Also, the most rapid form for achieving industrialization in a country consists in importing foreign technology and adequately protecting IP.

A few years ago I attended a seminar organized by the ABPI (Brazilian Association of IP) and held in Salvador, Bahia. I could not believe what I heard: Brazilians talking about IP and technology transfer as one would expect to hear in developed countries.

For example, Dr. Virgilio Da Costa Neto, President of the Research & Development (R&D) Center of Bahia (CEPED), expressed wistfully that Japan was a wonderful example to imitate as concerns technological development and patents. Japan showed the way, he said.

Regarding that country, he made reference to the gigantic electronics company, Sony, which emerged after the last World War as a small family business, with a single patent based on a good idea for improving the radio.

Dr. Da Costa Neto also referred to interesting other concepts: Obtaining patents, he said, is a good business practice... patents help at the table of negotiations... and only through patents can an entrepreneur or a small company resist the competition of the giants.

Furthermore, he deplored the fact that, in spite of having a staff of more than 100 persons in/his R&D Department, sufficient funds, and considerable technological development, he had not received any request to patent something.

Similar considerations were also expressed by Professor Eloisa Biasotto Mano, Director of the Macromolecular Institute of the Federal University of Rio de Janeiro.

On the other hand, it was mentioned, that in a prior year, Brazil had paid out only three million dollars in terms of royalties for licenses from abroad, while the interest on the external debt reached more than 14 billion dollars.

The Republic of Korea is another very interesting case, another example of the application of the successful Asian Formula. The Republic of Korea did very well in imitating other countries, but the imitation took the legal form of improvement of a foreign product, rather than an illegal copy.

The Koreans also resorted to reverse engineering of American, European and Japanese products; improved them sufficiently so as to classify them as new, in addition to producing them very inexpensively. To market these products in the USA, Europe and Japan, they had to avoid infringement of existing patents in these countries.

Sherwood has the following interesting observation is this regard:

> "It can be conjectured that Korea could have done even better had it had a strong system of protection in place in, say, 1960. The other factors which boosted Korean technical abilities would have produced even more. Where Korea had gaps in protection, products imported into Korea faced local pirate copies, as in the field of publications, movies, pharmaceuticals and agricultural chemicals, but this is not what accounts for Korea's new-found industrial prowess. Indeed, these areas are precisely among those where Korea is industrially weak today." (p.178)

Subsequently other Asian countries, such as Indonesia, Malaysia and Thailand, were following the Japanese experience and that of the "four tigers," applying the successful Asian or Japanese formula of economic development through patents and licenses.

12. Consequence of Copying & Lack of Enforcement

Many countries with low standards of living have weak patent systems. These countries may reap near-term benefits by duplicating recently developed technology without compensation to the inventor. But it is difficult for a country to have a high standard of living when its companies are low-profit producers.

Jonathan Zavin et al, in their article on "The Value of Intellectual Property Rights Enforcement in Developing Countries" (Economic Perspectives, June 1997) pose the question:

"whether developing countries have as clear an interest in protecting intellectual property rights (and answer:) we believe they do and that such protection should be high on the agenda of all countries that aspire to economic growth and full membership in the global economy."

They then list six reasons why all countries should "aggressively and effectively protect IP," as follows:

– Foreign owners of IPRs stay out of the country—won't build plants, ship in and license local distributors.
– Home-grown taxpaying channels of distribution are not developed. Tax base doesn't grow and taxes are not paid where piracy is rampant.
– Markets are flooded with inferior illegitimate products and technology is not incorporated in the country's technology base and infrastructure. There is no technical support.
– Development of a country's industries is impeded. Local inventors and authors can't make a living from their work. Local IP is less likely to be created and suffers.
– Countries are in non-compliance with requirements of international laws and face trade sanctions.
– The basic shared moral proposition that it is not proper to take someone's work and effort without payment, is violated.

After a trip under USIA auspices to Pakistan in 1997 and a visit to a recording company in Islamabad, I had this to say in my trip report about my experience:

"The realization is setting in that the negative consequences of inadequate intellectual property protection are affecting Pakistan's economic development. During the visit at Shalimar Recording Company, Islamabad, Mr. Khalid Hassan, its CEO, lamented the fact that pirates were driving recording and publishing companies out of business, his company being down to 11 from 400 employees and another company already having folded completely. Lawsuits are very slow, there are no injunctions and damage awards and penalties are rather nominal, so it is hard to stop piracy."

13. How to Modernize and Strengthen an IP System

To modernize and strengthen an IP system with due regard to the principles enunciated above, I submit that a course of action involving the following six overlapping phases should be pursued:

1) modernization and strengthening of national IP legislation,
2) installation of an effective IP administration,
3) adherence to all relevant and important international IP treaties,
4) instillation of appreciation in all sectors of the importance of IP in economic and cultural development,
5) improvement of judicial mechanisms for the enforcement and defense of IPR's, and
6) establishment of regional, centralized IP systems and offices.

The last phase, for which there are ample precedents in the EU, Eurasia, Africa (ARIPO, OAPI), should be seriously considered as long as a World Patent is not over the horizon and it is believed that many developing countries will not be able to live up to the TRIPS mandates. Establishment of regional IP systems and offices should be embraced in my view in preference to other proposals that have been floated recently, such as, the "Rapid Patent System" (an application is published but stays pending for 20 years and then goes abandoned, unless a patentability examination is requested by someone—an ultimate deferred examination system) or a "Reference System" (comparable to the former confirmation or validation patent system but one which takes the PCT a step further.)

14. Conclusion

If a strong industrial property system is indispensable to technological development which in turn is indispensable to economic growth; if an industrial property system should be part of a country's infrastructure from the very beginning, rather than something to be considered after reaching a fairly advanced state of development; if an effective industrial property system provides not only an incentive to invent but also, and by far more importantly, an incentive to invest in innovation; if the quality of investments a country can attract (domestically and from abroad) is directly proportional to the quality of its industrial property system; if investments, technology transfer and licensing are easier to bring about via industrial property rights as vehicles and bases; and if industrial property rights are not and cannot be monopolies per se, but rather a commodity and property, the acquisition and transfer of which has clear pro-competitive effects—all of which by now are well-established tenets and truisms—then our industrial property systems should not only be effective and strong but also liberally expansive rather overly restrictive as we go into the new millennium.

[Annex follows]

Annex

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on
Intellectual Property Rights and Technology Transfer

- The defense of intellectual property rights today is the new frontier as were the human rights yesterday.
- An effective IP system is indispensable to technological development which leads to economic growth and social welfare.
- An IP system should be part of a country's infrastructure from the outset rather than something that one thinks about after reaching a fairly advanced stage of development (Robert Sherwood).
- There are no viable alternatives to the present patent system which is the only system "that is compatible with the system of market economy" (Professor Carlos Fernandez-Novoa).
- There is solid correlation between the quantity of investments that can be attracted and the quality of the patent system (Professor Mansfield).
- Of the four incentives provided by a patent system, namely, to invent, to disclose, to "invent around" and to invest, the incentive to invest is the most important.
- An IP system does benefit nationals, not just foreign corporation; after all there is genius and creativity everywhere but they need nurture.
- A patent and other IP are property and are not and cannot be monopolies (a patent does not take from the public and give to the individual; on the contrary, it takes from the individual and gives to the public).
- "Everything under the sun made by man is patentable" (U.S. Supreme Court in the Chakrabarty decision); hence, there should virtually be no exclusions of subject matter from patentability.
- Subject matter that is viewed as too important to be protected (e.g. pharmaceuticals) is, on the contrary, "too important not to be protected" (Professor Thomas Field).
- Some countries have gold—some have oil—and some have technology and those that have gold and oil do not consider them part of the "common heritage of mankind" and accordingly give them away for free (Naboth Mvere, former Controller of IP, Zimbabwe).
- The duration of a patent should be no shorter than 20 years from filing and preferably 25 years or more or provide for patent term restoration to compensate for regulatory and other delays.

- Lead times for commercializing inventions have become longer in all areas and not just the pharmaceutical area and hence conventional periods of three or four years till lapsing or compulsory licensing and short patent terms are badly out of step with present realities.
- Patents and trade secrets are not mutually exclusive but complementary; they "dovetail" (U.S. Supreme Court in the Bonito Boats decision); thus, the question is not whether to patent or to padlock but rather what to patent and what to keep a trade secret and whether it is best to patent and to padlock, i.e. expoit the overlap.
- "Trade secret law and patent law have coexisted in this country for over one hundred years..... the extension of trade secret protection (even) to clearly patentable inventions does not conflict with the patent policy of disclosure." (U.S. Supreme Court in the Kewanee Oil decision).
- Multiple forms of protection can and should be utilized and integrated by exploiting the overlap between the various IP categories, especially in modern fields of technology; this provides fall-back positions, achieves synergistic effects and thus optimizes exclusivity (Professor Jay Dratler).
- Technology transfers, licensing and investments are ever so much easier to carry out and accomplish via patents and other IPRs as vehicles or bases.
- Importation of technology leads not only to export of products but also to export of adapted, improved technology (reverse technology transfer).
- The days when technology transferors took advantage of transferees (in developing countries) are gone, the realization having taken hold that the only viable license is one that results from a win/win approach and passes the fairness test.