

ECUADOR: INTELLECTUAL PROPERTY ISSUES

Final Report

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SECTION A:

**ASSESSMENT OF ECUADOR'S
INTELLECTUAL PROPERTY REGIME**

EXECUTIVE SUMMARY¹

The intellectual property (IP) system of Ecuador exhibits both strengths and weaknesses. Emerging strength comes from three ANCOM Decisions adopted in 1994 by Ecuador under the Cartagena Agreement. Weaknesses exist in the judicial enforceability of IP rights and public administration.

Ecuador's IP system has never been particularly robust except perhaps for the protection of traditional literary works. In recent decades, Ecuador has joined its Andean neighbors in creating a series of common IP accords. The most recent of these decisions were detailed, clearly written and intended to serve not as broad-brush treaty norms, but as the domestic law of each of the five ANCOM countries. Indeed, they have been adopted in totality by each country, including Ecuador, as national legislation.

Decision 344 covers patents, utility models, industrial designs, industrial secrets and trademarks. It sets minimum requirements, with countries free to provide higher levels of protection. Decision 345 provides protection for new plant varieties. It follows the provisions of the relevant international convention with certain exceptions. Decision 351 provides for the rights of authors (copyright) and related rights. While it is generally consistent with the Trade Related Intellectual Property (TRIPS) Agreement, some questions have arisen.

Broadly speaking, these three decisions have further enhanced the level of protection available in the ANCOM countries. Moreover, as a "floor," they set the stage for further enhancements. However, some of their provisions do not comply with the requirements of the TRIPS Agreement which was completed only weeks before these ANCOM decisions took effect. They fall well short of the level of protection needed to give most private investors, whether foreign or Ecuadorean, encouragement to put their funds at risk in Ecuador.

ANALYTICAL STRUCTURE

This assessment is designed to facilitate comparison of Ecuador with other Latin American and Caribbean countries. It examines the intellectual property system of Ecuador in relation to several options for system improvement: TRIPS, NAFTA parity, and a still higher level dedicated to stimulating private investment.

In addition to its commitments to the ANCOM Decisions noted above, Ecuador has made other commitments which will condition the future of its intellectual property system. First, as a member of the World Trade Organization (WTO), Ecuador will take on the obligations of the TRIPS Agreement, discussed below. Second, Ecuador has signed, but not yet ratified, a

¹ Portions of this executive summary and of the assessment that follows were adapted from other published works by Robert M. Sherwood. Copyright 1996, Robert M. Sherwood.

bilateral investment treaty with the United States. Third, Ecuador has joined its hemisphere neighbors in launching negotiations which seek formation of a Free Trade Agreement for the Americas (FTAA) by 2005. This negotiating agenda includes intellectual property.

TRIPS Agreement: The Agreement on Trade-Related Aspects of Intellectual Property Rights, commonly known as the TRIPS Agreement, is the new global intellectual property standard which emerged from the Uruguay Round of multilateral trade negotiations. All members of the World Trade Organization (WTO) are bound by its provisions.

The TRIPS Agreement was, in many respects, a negotiating failure. In December 1991, at a crisis moment in the negotiations, the GATT Secretariat introduced a "balanced text" which merged competing texts from the North and the South. The TRIPS Agreement was fashioned to reduce trade impediments, not to stimulate private investment. It is a lowest-level compromise, meant to serve ordinary trade at the global level.

NAFTA Chapter 17: As countries strive for more open, or more "intimate," trading relations in the evolving global setting, the dynamic of that greater intimacy compels them to offer each other higher levels of intellectual property protection. The North American Free Trade Agreement (NAFTA), which took effect January 1, 1994, provides an example. It improves upon the TRIPS Agreement's level of protection in some important regards and lessens or eliminates some of its shortcomings. A few shortcomings not found in the TRIPS Agreement are added in the NAFTA.

Investment-oriented Protection: The test of an intellectual property system is not whether it reduces trade friction, but whether it stimulates investors, researchers and businesses, both inside and outside the country, to undertake activity which is beneficial for the country. Emphasis on this orientation has been suggested by discovery that numerous individuals in Ecuador have developed new technology but are unable to realize its full potential or bring it to utilization in the national economy because of inadequate protection for their intellectual property.

The main purpose of intellectual property protection has historically been to stimulate private investment in specific activity, namely that which is designed to introduce new technology into the economy. Intellectual property can be thought of as a private creation, generated by invention or expression, to which the state grants the status of property. Intellectual property and advancing technology are two sides of the same coin. The introduction of new technology into the economy of virtually any country, large or small, provides a powerful stimulus for economic growth.

A NUMERICAL RATING SYSTEM

The intellectual property system of a country, if measured on a scale of one to one hundred, begins to stimulate private investment positively as it rises above a threshold of about 65 to 70. This is the point of "technological take-off."

Applying such a rating system, the IP systems of many European countries, Japan and the United States would rate between 75 and 90, with Mexico after her recent reforms at about a 70. Many developing countries fall below 50. The TRIPS Agreement itself has been assessed at about 55 and NAFTA at about 68.

Applying this rating system, the current intellectual property system of Ecuador would rate in the vicinity of 45. The composite results of applying the system to 15 countries including Ecuador are shown at the end of the assessment.

ASSESSMENT OF THE EIGHT COMPONENTS OF ECUADOR'S IP SYSTEM

This assessment is based on information gathered from analysis of relevant laws, secondary materials and consultations in both Guayaquil and Quito with leading members of the intellectual property bar. The assessment is current as late February, 1996.

A. JUDICIAL ENFORCEABILITY: subtract 20 of a possible 25 points

In the realm of intellectual property, a right without an effective legal remedy is not only not a right, it is also an expensive illusion. The judicial system of Ecuador, including judges, prosecutors, police and border officials (customs), together with the legal tools at their disposal, does not constitute a system likely to give potential investors sufficient confidence that their rights will be enforceable in Ecuador.

B. PUBLIC ADMINISTRATION: subtract 7 of a possible 10 points

For many potential investors, their first contact with a country is often the experience of applying for a trademark or patent. An unhappy experience can negatively affect future decisions regarding investment.

Like many other developing country industrial property offices, the National Directorate of Industrial Property is strained by severely limited financial resources. The strain is reflected in lack of adequate equipment, training, and human resource development. The Directorate has no statutory authority to charge for its services and must rely on budget allocations. As in many other countries, it is typical for the budget process, over time, to shrink the resources available to the Directorate. Users of this public service report unacceptably lengthy delays and considerable turn-over among management.

C. COPYRIGHT: subtract 5 of a possible 12 points.

The ability of authors of literary works to protect their creative expressions from unauthorized copying by others has provided a great incentive to literary output. The extension

of this protection to new forms of technology has also served the same end for public enrichment. In most countries, that portion of the economy which utilizes copyright protection is growing.

In Ecuador, ANCOM Decision 351 provides the basic law for the protection of copyright and related rights. It provides fairly modern protection and expands protection in important ways. Still, there are notable deficiencies.

D. PATENTS: subtract 7 of a possible 17 points

The patent confers an exclusive privilege to exclude others from an invention for a limited period of time in return for disclosure of the invention to the public. The objective of a patent is to encourage individuals to devote time and resources to the advancement of technology which in turn benefits the community in general. Economic study has confirmed that the injection of new technology into the economy of a country boosts national economic growth in significant ways.

In Ecuador, the patent law is provided by ANCOM Decision 344 which took effect in 1994. It provides a significant increase in protection for inventions when compared to its predecessor. However, the decision presents difficulties. Among them is the exclusion of certain subject matter from protection. Parallel imports are permitted. Compulsory licenses can be granted under defined circumstances. Transition arrangements (called "pipeline" protection) are not made available. The decision contains no requirements that member countries provide for enforcement of the rights created.

E. TRADEMARKS: subtract 3 of a possible 9 points

Trademarks are a highly visible form of intellectual property. They encourage investors to commit resources to creating and presenting products and services to the public. Consumers rely on them to guide their purchasing decisions.

In Ecuador, trademark protection is now provided by Decision 344 which took effect January 1, 1994. While the decision enhanced trademark protection in important respects, difficulties remain. Among them, the definition of what can constitute a trademark excludes forms which must be permitted under the TRIPS Agreement. The treatment of "notorious" or "well-known" trademarks is generally adequate; however, the requirement of "reciprocity by interested sectors" conflicts with the TRIPS Agreement (and the Paris Convention) and the public to which reference is made is the consumer public in general and not the relevant public. No procedure for appeals against denials is provided, which conflicts with TRIPS.

F. TRADE SECRETS: subtract 6 of a possible 15 points

The community, through its judicial system, supports efforts by those who seek to maintain in secrecy proprietary information which provides a competitive advantage because of

the secrecy. Although little known in most of Latin America, the trade secret plays a quiet but critical role in the creation of new technology.

In Ecuador, the trade secret is now protected by Decision 344. Its protection is generally sound and a considerable advance over prior conditions. However, there are deficiencies. Among them is the unnecessary stipulation that, to be protected, the information must refer to three defined categories of activity. Information that is obvious to a specialist in the field is not protectable. Information furnished to officials in order to obtain government permission of various kinds is not to be considered in the public domain, but beneficial use by others is not prohibited. To be protected, information must be in some tangible form, a conflict with TRIPS requirements. A person with knowledge of a trade secret may use or disclose it without authorization if there is "justified cause" for doing so.

G. HIGHER LIFE FORMS: subtract 3 of a possible 6 points

This component of an IP system is artificially isolated to spotlight the role of intellectual property in bringing high levels of science to the national agricultural base. It examines two things: the protection available to traditional field research and the protection available to the new tools of genetic engineering in the field of biotechnology.

Traditional field research uses tools such as selective breeding and hybridization to enhance species. For plants, the results of this type of research have gained protection internationally under the International Union for the Protection of New Varieties of Plants (UPOV). Countries offering this protection have experienced notable improvements in plant technology.

The much newer tools of biotechnology enable more rapid creation of new species and varieties through biogenetic engineering. Protection for transgenic plants and animals can be obtained through patent protection, and an increasing number of countries is doing so with remarkable results.

In Ecuador, Decisions 344 and 345 provide both types of protection, although with certain deficiencies. Decision 344 offers patentability in this area, although denying patents to transgenic animals, while improved plants can be protected. Decision 345 establishes generally adequate protection for new plant varieties but provides a very broad "saved seed" exemption for farmers among other shortcomings.

H. TREATIES: subtract 4 of a possible 6 points

International treaties form an integral part of a country's intellectual property system. They provide reciprocity for its citizens who would seek protection for their rights in other countries. They offer technical assistance and establish common arrangements with other countries.

Ecuador is a member of the World Intellectual Property Organization (1967) (WIPO) along with 150 other countries. Of 17 treaties administered by the WIPO, Ecuador is a member of three -- the Berne, Rome, and Geneva Conventions -- and although not a member, follows the provisions of the Nice Agreement concerning trademark classifications. Ecuador is not a member of the Paris Convention (1883) concerning industrial property nor of the Patent Cooperation Treaty (1970) concerning technical examination of patents, among the many others administered by the WIPO.

As a member of the World Trade Organization, and therefore an adherent to the TRIPS Agreement, Ecuador will automatically become committed to adopt the core provisions of the Paris Convention.

Summary of Numerical Rating for Ecuador

Area of IP Regime	Points Possible	Points Subtracted due to Ecuador's IP Regime
Enforcement	25	20
Administration	10	7
Copyright	12	5
Patents	17	7
Trademarks	9	3
Trade Secrets	15	6
Life Forms	6	3
Treaties	6	4
TOTAL	100	55

Thus, 55 points are subtracted from 100, which produces a rating of 45 for Ecuador. For comparison of this rating with comparable ratings of other countries, please see the full assessment.

CLOSING OBSERVATIONS

Political resistance to higher levels of IP protection, which is particularly intense in some countries, has been nurtured for several decades in Latin America. The positive role of intellectual property in national economic development is not yet well appreciated, notwithstanding that many individual citizens in most countries are frustrated by inadequate

protection. Their pent up demand for better protection has not yet found a political voice. The voice of the past, as always, is louder than the voice of the future. The most important work that can be done to upgrade the technical base of Ecuador through enhanced IP protection is to give voice to this pent up demand felt by many creative and inventive people in Ecuador.

I. INTRODUCTION

The intellectual property (IP) system of Ecuador exhibits both strengths and weaknesses. Emerging strength comes from three ANCOM Decisions adopted in 1994 by Ecuador and its trading partners under the Cartagena Agreement. Weaknesses exist in the judicial enforceability of IP rights, public administration and treaty memberships.

Ecuador's IP system has never been particularly robust except perhaps for the protection of traditional literary works. In recent decades, Ecuador has joined its Andean neighbors in creating a series of common IP accords, one of the earliest sub-regional trade agreements to take a common approach to intellectual property protection in the Hemisphere. Bolivia, Colombia, Ecuador, Peru and Venezuela have sustained this sub-regional arrangement, at times with difficulty, since 1969. Decision 85 (mid-1970s) sought to establish a common regime for the treatment of patents and trademarks. The provisions of Decision 85 were viewed by many investors with concern, among other things, because of their hostility toward intellectual property protection and their tendency to offer a broad scope for compulsory licensing.

Decision 311 (of late 1991) replaced Decision 85 and was itself replaced by Decision 313 in early 1992. At the time, both were viewed as offering enhanced protection, but they were also considered as deficient by at least some important groups of potential investors for numerous reasons ranging from subject matter exclusions, short patent terms and ease of compulsory licensing, to issues that were not addressed, such as protection for trade secrets.

At the beginning of 1994, Decision 344 took effect, replacing Decision 313. At the same time, Decisions 345 and 351 were also issued. They were additions to the ANCOM intellectual property regime and cover, respectively, new plant varieties and the rights of authors and related rights. The texts of these three decisions were detailed, clearly written and intended to serve, not as broad-brush treaty norms, but as the domestic law of each of the five countries. Indeed, they have been adopted in totality by each country, including Ecuador, as national legislation.

Decision 344 covers patents, utility models, industrial designs, industrial secrets and trademarks. It sets minimum requirements, with countries free to provide higher levels of protection. As to patents: inventions in some important fields are excluded from patentability; working in any ANCOM country constitutes working in any other; compulsory licenses are available and validation (revalidation) patents are not permitted. As to industrial secrets: basically sound protection is made available although certain disabilities and difficulties are created including limits on the categories of protected information and the requirement that the information be in tangible form. As to trademarks: well known trademarks have a basis for protection; first registration takes priority over first use; and parallel imports are allowed.

Decision 345 provides protection for new plant varieties. It follows the provisions of the UPOV Convention¹ with certain exceptions. In particular, the term of protection is somewhat shorter than the convention and the exception which permits farmers to "save seed" for their own use is broader than the convention.

Decision 351 provides for the rights of authors (copyright) and related rights. This comprehensive decision provides most favored nation treatment for ANCOM member countries. While it is thought to be generally consistent with the TRIPS Agreement,² some questions arise regarding waiver of moral rights and full compatibility with international practice under the Berne Convention.

Broadly speaking, these three decisions have further enhanced the level of protection available in the ANCOM countries. Moreover, as a "floor," they set the stage for further enhancements. However, some of their provisions do not comply with the requirements of the TRIPS Agreement which was completed only weeks before these ANCOM decisions took effect. They fall well short of the level of protection needed to give most private investors, whether foreign or Ecuadorean, encouragement to put their funds at risk in Ecuador.

¹ The International Union for the Protection of New Varieties of Plants (UPOV) is an international organization headquartered in Geneva, Switzerland, which was formed by the International Convention for the Protection of New Varieties of Plants. The Convention was signed in 1961 and revised in 1972 and 1978. Twenty-six states were bound by the Act of 1978 at the beginning of 1996, among them Argentina and Mexico from the Latin American states. The Act of 1991, which stipulates a higher level of protection for plant breeders, had not yet entered into force as of 1 January 1995.

² See discussion below.

II. ANALYTICAL STRUCTURE OF THE ASSESSMENT

This assessment is made with regard to eight primary system components: enforceability, public administration, copyright, patent, trademark, trade secrets, higher life forms, and treaty memberships. These components have been chosen to facilitate comparison of Ecuador with nine other Latin American and Caribbean countries previously assessed by the consultant for the InterAmerican Development Bank.³

The assessment examines the intellectual property system of Ecuador in relation to several options for system improvement: TRIPS, NAFTA parity, and a still higher level, one capable of stimulating private investment.

In addition to its commitments to the ANCOM Decisions discussed above, Ecuador has made other commitments which will condition the future of its intellectual property system. First, as a member of the World Trade Organization (WTO), Ecuador will take on the commitments of other WTO members. These include the obligations of the Trade-Related Intellectual Property (TRIPS) Agreement, discussed below. Second, Ecuador has signed, but not yet ratified, a bilateral investment treaty with the United States. This treaty contains an intellectual property agreement which has been described (perhaps inaccurately) as stipulating a NAFTA-Plus level of protection. Third, Ecuador has joined its hemisphere neighbors in launching negotiations which seek formation of a Free Trade Agreement for the Americas (FTAA) by 2005. This negotiating agenda includes intellectual property.⁴

Each of these commitments will shape the approach Ecuador takes to intellectual property over the next ten years. However, these external commitments alone would be wisely supplemented by careful attention to objectives which Ecuador seeks regardless of its international commitments. They may very well be higher than the international levels of protection which, by their nature, tend to settle at a lowest common denominator.

A. TRIPS Agreement

The Agreement on Trade-Related Aspects of Intellectual Property Rights, commonly known as the TRIPS Agreement, is the new global intellectual property standard which emerged from the Uruguay Round of multilateral trade negotiations. All members of the World Trade Organization (WTO) are bound by its provisions. It took effect 1 January 1995.

The TRIPS Agreement was, in many respects, a negotiating failure. In December 1991, the negotiators were unable to resolve basic issues, largely in agricultural trade. At the crisis moment, the GATT Secretariat produced a "balanced text" regarding intellectual property which simply, and somewhat illogically, merged competing texts from the North and the South. The

³ See Sherwood, 1996.

⁴ For a discussion of the options for IP accords within the FTAA process, see Sherwood and Braga, 1996.

TRIPS Agreement, moreover, reflects tortured attempts at compromise, with some language so convoluted that few but a handful of negotiators can discern the intention. Other segments of the text are precise and clear. Overall, the text is presented in broad brush strokes, to establish concepts, unlike the much more detailed 1994 ANCOM Decisions which, as noted, have themselves become the text of national law in the member states.

The main point to observe is that the TRIPS Agreement was fashioned to reduce trade impediments, not to stimulate private investment. None of the parties to the negotiation gave much, if any, thought to the historic role of IP as a motivation for investment. The TRIPS Agreement is a lowest-level compromise, illogical in its amalgamation and meant to serve only ordinary trade at the global level.

Finally in regard to TRIPS, it is worth keeping in mind that many countries -- India and Brazil among them -- are likely to attempt a minimalist approach to their TRIPS compliance. There is inherent leeway in translating any treaty into domestic legislation, and because, as noted, portions of the TRIPS Agreement text are difficult to comprehend and other portions are sweeping, the opportunities for attempting minimalist interpretations are many. Other WTO member countries -- the United States and Germany, among others -- will surely vigorously challenge such attempts.

B. NAFTA Chapter 17

As countries strive for more open, or more "intimate," trading relations in the evolving global setting, the dynamic of that greater intimacy compels them to offer each other higher levels of intellectual property protection. The experience of both NAFTA and MERCOSUR, which seek trade intimacy exceeding that of the WTO's TRIPS, appears to point to that same dynamic. The MERCOSUR countries, after initial hesitation, are now working toward a higher degree of congruence in their IP regimes.

The North American Free Trade Agreement (NAFTA) provides its example in Chapter 17. This chapter embodies the accord reached by Canada, Mexico and the United States regarding intellectual property protection after the Canada-U.S. Free Trade Agreement failed to include an intellectual property chapter.

NAFTA came into effect on January 1, 1994. NAFTA removes barriers to trade (in goods and services) and to investment flows in North America and sets the stage for changes in domestic policies that may distort trade and competition. It is an exercise in "deep integration," even though it lacks the institutional and political components of the European Union.

Chapter 17 of NAFTA establishes the primary intellectual property commitments made by its three members. Its 21 articles encompass provisions regarding copyright, sound recordings, satellite signals, trademarks, patents, computer "chips," trade secrets, geographical indications and extensive enforcement provisions. This text originated from the GATT Uruguay Round negotiating text as it stood at the end of December, 1991.

Chapter 17 improves upon the TRIPS Agreement's level of protection in some important regards⁵ and lessens or eliminates some of its shortcomings. As with TRIPS, a careful comparison of NAFTA's provisions with existing national IP regimes throughout the Hemisphere would show many gaps and disparities in most countries.

Among the NAFTA provisions which exceed the TRIPS level of protection, we note these: more precise and comprehensive treaty adherence requirements including UPOV adherence for new plant varieties, a more positive statement of national treatment, highly constrained transition periods, protection for encrypted satellite signals, narrower controls on abusive conditions, enhanced protection for software, databases, and sound recordings, enhanced contractual rights in copyright, tighter language regarding rental rights, extended minimum trademark terms, broader definition of the relevant public in determining whether trademarks are well known, tighter compulsory licensing constraints, disallowance of dependent patents, "pipeline" protection, and reversal of the burden of proof for process patents. The treatment of patent exhaustion, sometimes called parallel imports, is not entirely clear cut but appears to be constrained.

On the other hand, shortcomings noted in the TRIPS Agreement are carried over into the NAFTA provisions. Among them are these: the convoluted treatment of existing subject matter (TRIPS 70; NAFTA 1720.4), the limits on remedies (TRIPS 44; NAFTA 1715.7), the balancing of the interests of third parties (TRIPS 17, 26 & 30; NAFTA 1713.4, 1708.12 and 1709.6), the imprecision of border enforcement (TRIPS 51-60; NAFTA 1718), and the lack of answers for the questions of what constitutes an abuse and what would justify non-working. The loophole of TRIPS Article 41(5) which lessens commitments to enforce IP rights is echoed, but only partially, in NAFTA in 1714.5. Subjective terminology, such as "substantial", "unwarranted", and "fair", abounds almost as much in NAFTA as in TRIPS. The TRIPS standard of "gross negligence" in preventing trade secret losses is also carried over.

A few shortcomings not found in the TRIPS Agreement are added in the NAFTA. Prominent among them is leeway to require that trade secrets must be in tangible form. In contrast with the explicit, if imprecise, TRIPS treatment of IP administration, the NAFTA treatment is sparse, scattered, and remarkably vague.

C. Investment-Oriented Protection

The test of an intellectual property system is not whether it reduces trade friction, but whether it stimulates investors, researchers and businesses, both inside and outside the country, to undertake activity which is beneficial for the country. The emphasis of this analysis, therefore, is on the perspective of private investors, particularly national investors, in the context of national development strategies. This emphasis has been suggested in particular by the

⁵ See Kent (1993) for a Canadian perspective of the enhancements, particularly in the area of patents. See also IFAC-3 (1992).

experience of the consultants in Ecuador where numerous examples were discovered of Ecuadorean individuals who have developed new technology but who are unable to realize its full potential or bring it to utilization in the national economy because of inadequate protection for their intellectual property.

The main purpose of intellectual property protection has historically been to stimulate private investment in specific activity, namely that which is designed to introduce new technology into the economy. For example, the patent serves as an invitation to investment. By selectively reducing risk, without reducing competition, investors are encouraged to commit their resources to create and develop technology.

For Ecuador, a wise strategy would be to elevate the value of patents, trade secrets and the other forms of industrial property to the level where they can be relied on with confidence, thereby extending the strongest possible invitation to investment. The experience of many countries shows that lesser levels of protection may produce work for administrators but attract only nominal numbers of applications for protection and stimulate little investment. Without making a deep examination, it appears that Ecuador in recent years has received far fewer applications than its investment needs would indicate.

Intellectual property can be thought of as a private creation, generated by invention or expression, to which the state grants the status of property. Intellectual property and advancing technology are two sides of the same coin. The introduction of new technology into the economy of virtually any country, large or small, provides a powerful stimulus for economic growth.

D. Numerical Rating System

The intellectual property system of a country, if measured on a scale of one to one hundred, begins to stimulate private investment positively as it rises above a threshold of about 65 to 70. This is the point of "technological take-off" at which at least three things begin to happen: private venture capital becomes willing to invest in small companies based on new technology; private companies become willing to conduct internal research to improve their products; and external technology becomes willing to enter the country.

The rating system was derived primarily from work performed for the InterAmerican Development Bank in nine Latin American and Caribbean countries over the last four years. In brief,⁶ the rating system subtracts points for specific gaps and deficiencies in an IP regime. Those points are then aggregated and subtracted from 100 to produce a number by which to make comparisons with other IP regimes.

⁶ For a full description of the rating system and its application to 14 developing countries and to the TRIPS and NAFTA, see Sherwood, 1996.

The numerical rating system draws on the work of Edwin Mansfield⁷ by stressing the influence of intellectual property as significantly relevant to private investment decision-making. He found that the decisions of private American, German and Japanese companies are significantly influenced by the intellectual property systems of developing countries when they consider investing, licensing or creating joint ventures there.⁸ This is particularly true of investment in high level technological activity such as full manufacturing, development of sophisticated products, and industrial research. It is probable that private national investors are even more vulnerable to lack of strong and effective protection than are most foreign investors.

Applying such a rating system, the intellectual property systems of many European countries, Japan and the United States would rate between 75 and 90, with Mexico after her 1994 reforms, at about a 70. Many developing countries fall below 50, some of them well below that level. The TRIPS Agreement itself has been assessed at about 55 and NAFTA at about 68.

Applying this rating system, the current intellectual property system of Ecuador would rate in the vicinity of 45, indicating that the technological take-off point is not yet close at hand. The composite results of applying the system to 15 countries including Ecuador are shown in Annex 1 and 2 at the end of this assessment. The assessment which follows is intended to indicate how the IP system of Ecuador compares with that of other countries.

**IP RATING SYSTEM:
MAXIMUM POINTS POSSIBLE**

Area of IP Regime	Number of Points
Enforceability	25
Administration	10
Substantive Law	
-- Copyright	12
-- Patents	17
-- Trademarks	9
-- Trade Secrets	15
-- Life Forms	6
-- Treaties	6
TOTAL	100

⁷ See Mansfield, 1994 and 1995.

⁸ His survey gathered responses from 94 American, 32 Japanese and 20 German firms. The firms were randomly selected from diverse industries ranging in sensitivity to IP protection from construction to fine chemicals. The Hemisphere countries included among those studied were: Argentina, Brazil, Chile, Mexico and Venezuela.

III. ASSESSMENT OF THE EIGHT COMPONENTS OF ECUADOR'S INTELLECTUAL PROPERTY SYSTEM

This assessment is based on information gathered from three sources. The first source is analysis of the text of relevant laws. The second is material which comments on the three central ANCOM Decisions and on treaty memberships. The third is consultations in both Guayaquil and Quito with leading members of the intellectual property bar.⁹ The assessment is current as of November, 1995, the time of the consultant's visit to Ecuador. No information has been received since to indicate any changes, which would make the assessment current as of late February, 1996.

A. Judicial Enforceability of Intellectual Property Rights

In the realm of intellectual property, a right without an effective legal remedy is not only not a right, it is also an expensive illusion. The judicial system of Ecuador, including judges, prosecutors, police and border officials (customs), together with the legal tools at their disposal, do not constitute a system likely to give potential investors sufficient confidence that their rights will be enforceable in Ecuador.

Deficiencies in various aspects of the judicial system, broadly defined, have been documented.¹⁰ Antiquated procedures, lack of useful oral argument, delays, weak administrative control of case loads, undemocratic approaches to the judicial power, poorly organized judicial system and other factors are among the deficiencies. It can be noted that in the public referendum of November, 1995, certain major judicial reforms were defeated.

With respect to intellectual property, as in many other countries in Latin America, the judges are largely unfamiliar with the concepts of intellectual property, although this is beginning to change with several recent successful raids under copyright law. There is authority for immediate injunctive relief but persuading the judge to grant one is not always easy. The cost of obtaining an injunction depends on the court, with costs differing by as much as a factor of ten. It is apparently not necessary to post a bond. Seizures may be ordered, but the judge will not participate in copyright actions. Specific performance language in the copyright law would be helpful. Cases against pirated videos are said to be easier to present to the judges because the evidence is quite visible, whereas cases involving software are more difficult because the evidence is less tangible or visible. Some observers note that the enforcement mechanisms available in Peru now are superior to those in Ecuador. The provisions for enforcement of copyright provided in Decision 351 are rudimentary and do not meet the standards of the TRIPS Agreement or NAFTA.

⁹ Because some of the comments offered were highly critical, the identity of those consulted will be held in confidence.

¹⁰ In particular see a series of monographs produced by *La Corporacion Latinoamericana para el Desarrollo* (CLD) noted in the references to this assessment.

Application of the numerical rating system to the ENFORCEABILITY component of Ecuador's IP system resulted in subtraction of 20 of a possible 25 points.

The TRIPS Agreement has extensive provisions for the enforcement of intellectual property rights found in Articles 41 to 61. They cover general obligations, civil and administrative procedures and remedies, provisional measures, and special requirements related to border measures, and criminal procedures. Although these articles are relatively detailed, there is considerable leeway for their application.

It is beyond the scope of this assessment to determine in detail the respects in which Ecuador's current judicial system might fall short of the TRIPS requirements in this regard. In brief, however, the primary requirements, found in Article 41, are that the judicial system is to "permit effective action against any act of infringement of intellectual property rights" covered by the TRIPS Agreement, "including expeditious remedies to prevent infringements and remedies which constitute a deterrent to further infringements." The procedures are to be fair and equitable and not unnecessarily complicated or costly or entail unreasonable time-limits or unwarranted delays. From a broad focus, it seems clear that Ecuador's commitment to the TRIPS Agreement will call for judicial reform in many respects.

The NAFTA requirements in regard to enforcement of IP rights are found in 1714 to 1718. They cover the same set of subjects as does the TRIPS Agreement's Article 41 to 61. In most regards, the NAFTA language is the same or closely similar to that of the TRIPS Agreement. In some passages, the NAFTA language is expressed more clearly,¹¹ and there is an important deletion in NAFTA 1714(5) as compared with TRIPS Article 41(5).

Whether compared with TRIPS or NAFTA, the judicial system of Ecuador faces substantial reform if the level of public confidence is to rise to a point where the intellectual property system is to positively influence investment decisions directed to the enhancement of Ecuador's technical base.

Recommendations for Enforcement

1. Create specialized courts for intellectual property. This would be a practical way to develop a pool of knowledge among judges regarding the concepts of intellectual property. There are several ways to do this, but the reforms now under consideration in Panama could serve as an example.
2. Provide training for judges in IP concepts. This would contribute to their ability to render well-reasoned decisions.

¹¹ Compare, for example, the first sentence of TRIPS Article 51 with the first sentence of NAFTA 1718. But compare the first sentence of TRIPS Article 70(4) with the beginning of NAFTA 1720(4), the latter of which is not a complete sentence!

3. Revise the civil and criminal procedure codes to provide more efficient and timely remedies. This would help to reduce infringements and improve Ecuador's reputation as a place to invest in higher level technology.
4. Increase the severity of penalties for infringements to serve as effective deterrents.

B. Public Administration

For many potential investors, their first contact with a country is often the experience of applying for a trademark or patent. An unhappy experience can negatively affect future decisions regarding investment.

Public administration of the patent and trademark laws in Ecuador is based in Quito in the Ministry of Industry and Commerce. The National Director of Industrial Property presides over a relatively small office and archive in a fairly modern building. Like many other developing country industrial property offices, this office suffers from lack of financial resources. The deficit is expressed in lack of adequate equipment, training, and human resource development. Although partially computerized, the Directorate is far short of making maximum use of computers to speed and lighten administrative burdens. The Director explained that there is a tension between introducing modern ways and the habits of long-time employees, but given limited resources for acquisition of new equipment and software, that tension may be somewhat theoretical.

A remarkable feature of public administration in Ecuador is that the Directorate of Industrial Property charges no fees for the services it provides. There is no statutory authority for doing so. This is quite unique in the consultant's fairly extensive experience. The Directorate lives from an allocation of funds set each year in the national budget. As in many other countries, it is typical for the budget process, over time, to shrink the real resources available to operate the Directorate.

Users of this public service suggested that the Directorate functions relatively well compared to other government offices, yet some taint of corruption in the past is not unknown, unacceptably lengthy delays are experienced, and there is considerable turn-over among senior management.

Patent applications received by the Directorate in recent years were reported as follows:

<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
88	107	86	339	230

Note: The figure for 1995 was current as of November 16, 1995.

The number of applications increased sharply in 1994 after Decision 344 took effect.

Unfortunately, time did not permit assessment of the measures being taken to provide adequate public administration for the rights created by Decision 345 regarding protection for new plant varieties, nor was copyright administration under Decision 351 examined. Copyright administration is a dependency of the Ministry of Education.

Application of the numerical rating system to the PUBLIC ADMINISTRATION component of Ecuador's IP system resulted in subtraction of SEVEN of a possible TEN points.

The TRIPS Agreement stipulates in rather general terms the obligations its adherents undertake with regard to public administration. They are found in Article 62. Its chief emphasis is on granting rights within "a reasonable period of time." Where the administrative process results in conflicts, they are to be resolved under the same guidelines as applied to judicial proceedings under Article 41. That is to say, such proceedings are to be fair and equitable, not unnecessarily complicated or costly, or entail unreasonable time limits or unwarranted delays. In a technical refinement, it requires that member states apply to service marks the same treatment required for trademarks under Article 4 of the Paris Convention (1967).

The NAFTA IP standards contain very little guidance regarding public administration. References to the subject are brief and scattered through the text of Chapter 17. Such guidance as is given is consistent with the TRIPS standards.

The deficiencies which most trouble potential investors are logical. Decisions are to be processed within reasonable time periods. Corruption does not influence decisions. Administrative discretion is exercised in a manner which can be perceived and understood by the public, which often means that decisions are written and logical. Bias or poorly informed decisions are absent. Regulatory requirements are not unduly burdensome and the cost of acquiring rights is reasonable relative to the service provided.

Recommendations for Public Administration:

1. Create a semi-autonomous institute to provide public administration.
2. Authorize validation patents.
3. Authorize the collection of fees, but shift their burden to the stage of commercialization when they can be more easily borne.
4. Use the Directorate (after conversion to an institute) as a source of public information regarding new technology.

There is a trend among developing countries to shift public administration of the IP laws to a semi-autonomous institute which is given authority to retain the fees it receives and apply them to capital and operating expenses and with authority to hire, train and dismiss employees.

The institute is directed by a non-political volunteer board drawn from the public and private sectors. Mexico has recently inaugurated such an institute, Brazil and Costa Rica have had them for several decades and Argentina has just enacted authority for such an institute.¹² A draft law to create such an institute was made available to the consultants. It would lead Ecuador in this direction.¹³

As to validation, it must be noted that only a handful of patent offices in the world today are capable of performing serious technical examination of patent applications to determine if the claimed invention is, in fact, an advance in the state of the art. Today, all other countries rely either directly or informally on examinations made by these few offices. The United States, Europe and Japan are the prominent examination centers. Each employs several thousand highly qualified scientists in order to provide examination in the full range of fields in which inventions are being made. The cost of maintaining such sophisticated offices runs above \$300 million a year.

For Ecuador to attempt serious technical examination of patent applications flies in the face of reality. For this reason, it is recommended that a "validation system" be adopted. While it is recognized that this appears to violate Decision 344, the future cannot be otherwise, unless Ecuador is prepared to indulge in the deception of pretending to examine applications. Under the proposed validation system, applicants would be required to file a simple notice with the patent office in Quito identifying the invention only by reference to a patent application filed in any one of the internationally recognized examination centers. Once a patent is granted by any of those centers, a full application is filed in Ecuador based on such a grant and then upon payment of appropriate fees (see below) a validation patent is granted for a term equal to the remaining term of the primary patent granted by one of the international centers.

Regarding fees, authority to collect fees should be granted to the Directorate (or semi-autonomous institute). However, the temptation to recognize the potential for revenue generation and in particular the capture of foreign exchange should be tempered by awareness that high fees will deter applications in the first place. For the sake of small local inventors, it is recommended that Ecuador lead other developing countries by establishing a regime for fees that shifts the costs of acquiring patents to a later time when the invention has realized a successful commercialization. By "backloading" fees, the burden of patent acquisition is shifted to the time when economic events, rather than paper events, make it much easier for the inventor to carry the burden of those fees.

¹² It is noted that the use of semi-autonomous institutions has not worked particularly well in Ecuadorean experience, with the superintendency of companies often cited. Still, a carefully structured institute should be considered.

¹³ Because the status of the draft could not be ascertained during the first visit, it was not examined in detail. The institute would have responsibility not only for industrial property, that is for patents, trademarks and closely related rights, but also for copyright and related rights.

More specifically, this could well mean that the fees normally associated with patent acquisition, particularly the cost of translations for foreign applicants or local inventors who apply first abroad, would be postponed. To balance the postponement of these fees, other fees, which are often called maintenance fees, would be increased, perhaps up an increasing "ramp." As a further refinement, and to keep fee schedules in line with economic reality, the ramp would start to increase only after the first commercial sale anywhere in the world.

This approach to backloading fees could imply a period of relatively low income for patent offices during the first several years after it is initiated. This would be a highly appropriate situation for interim technical assistance from multilateral development organizations, such as the World Bank, the World Intellectual Property Organization or the InterAmerican Development Bank.

As to the fourth recommendation, that of enabling the Directorate (institute) to make technical information widely available to the public, it is important to recognize that the technological capability of digital information transmission has changed remarkably in the last 18 months. Now the Internet provides world-wide access to searchable databases.

Traditionally, patent offices have been a repository for technical information in the form of published patent applications. Today, however, it is possible to go on-line from virtually any country to access international databases which effectively substitute for the traditional patent office file room. Sophisticated science researchers in virtually any country already do their search for the latest technology in this fashion. Utilization of patent office file rooms in developing countries will not increase. Instead, it would probably make better sense for patent offices to abandon attempts at competing with these electronic databases. They could instead become providers of access to electronic repositories of the latest technological information. This might mean subsidizing internet access for ordinary citizens, offering instruction in how to use sophisticated search and retrieval software for electronic databases, and otherwise maximizing the use of the latest means to provide technical information to the widest range of Ecuadoreans.

C. Copyright and Related Rights

The ability of authors of literary works to protect their creative expressions from unauthorized copying by others has provided a great incentive to literary output. The extension of this protection to those who perform works for audiences and to those who express their creativity through new forms of technology has also served the same end for public enrichment.

In most countries, that portion of the economy which utilizes copyright protection is growing. The revolution in the organization, distribution and utilization of data-based information is changing business, education, entertainment and basic science. Countries with effective protection for the rights of those involved in this revolution will tend to boost their economies and raise the level of knowledge utilization more than other countries.

In Ecuador, ANCOM Decision 351 provides the basic law for the protection of copyright and related rights. As noted above, this Decision is a new element of the common IP regime for the countries of ANCOM. The Ministry of Education has responsibility for its implementation.

Decision 351 provides fairly modern protection and expands protection to make explicit that computer programs (software) can be protected as literary works, and that databases and compilations of data can be protected. It also contains a useful definition of what constitutes a communication to the public and adds an array of enforcement provisions. Still, there are deficiencies. Among them are provision for "moral rights" without the possibility of their waiver. There is no clear right to prohibit or approve parallel imports or transmission in digital media of sound recordings, and it is not clear whether sound recordings which existed prior to the effective date of the Decision are protected.

Application of the numerical rating system to the COPYRIGHT component of Ecuador's IP system resulted in subtraction of FIVE of a possible 12 points.

The TRIPS Agreement's approach to copyright and related rights is basically to invoke the provisions of the Berne Convention¹⁴ and then to supplement its scope, for example, by making explicit that computer programs (software) are literary works and that sound recordings and the capture of live performances are protected. The distinction between ideas and expressions, which is not present in the Berne Convention, is affirmed. The right to prohibit or approve public rental of works, including software and videos, is also made available. On the other hand, TRIPS excludes moral rights from its coverage, leaving countries free to legislate under Berne Article 6bis, which the ANCOM countries have done in Decision 351, Article 11. TRIPS also does not define what constitutes "public" in the context of establishing public performance and public communication rights. It also does not provide for prohibition of "parallel imports." Thus, in some regards, Decision 351 exceeds the standards of TRIPS while setting a lower level of protection in other matters.

The NAFTA provisions also exclude moral rights. In contrast with TRIPS, they contain a workable definition of "public" and a clearer definition of rights to protect sound recordings. Protection for parallel imports is also not found in NAFTA. The provision regarding "national treatment" found in NAFTA is superior to the TRIPS language in that it constrains efforts to elude the scope of the common accords.

An investment-oriented IP regime would not differ substantially from the TRIPS Agreement's norms. Such a regime would assure that full protection is extended to all forms of creative expression, that the rights conferred on the owners of copyright are not restricted in ways that reduce their effectiveness, that moral rights can be waived by authors, that the periods

¹⁴ The Berne Convention for the Protection of Literary and Artistic Works (1886) has been modified several times, with the latest version being the Stockholm text of 1967 and the Paris text of 1971. There were 112 member states as of early 1995.

of protection are at least those provided by the Berne Convention, and that unduly burdensome procedural formalities are eliminated.

Recommendations for Copyright:

1. Permit authors to waive their moral rights, perhaps basing such permission on Article 12 of Decision 351.
2. Introduce prohibitions against parallel imports of products containing copyrighted works.
3. Clarify that pre-existing sound recordings are protectable to the extent of the Berne time limits for protection.
4. Establish that producers of sound recording will have an exclusive right to control electronic or other transmissions in digital media, as distinguished from only a right of remuneration.

The creation of moral rights which cannot be waived is troublesome both to investors and to artists whose economic interests are thereby impaired. Importation of copyright-protected goods from another country without authorization from the copyright holder is disruptive to commercial arrangements in the country of importation. Sound recordings produced prior to the TRIPS Agreement are to be protected for their full term, as the current dispute with Japan illustrates. The right to control electronic transmission in digital media is an issue at the frontier of modern communications technology.

D. Patents

The patent confers an exclusive privilege to exclude others from an invention for a limited period of time in return for disclosure of the invention to the public.

The objective of a patent is to encourage individuals to devote time and resources to the advancement of technology which in turn benefits the community in general. Economic study has confirmed that the injection of new technology into the economy of a country boosts national economic growth in significant ways.¹⁵

In Ecuador, the patent law is provided by ANCOM Decision 344 which took effect in 1994. The decision covers patents of invention, industrial design, utility models, industrial secrets and trademarks. The decision provided a significant increase in protection for inventions when compared to its predecessor, Decision 313.

¹⁵ This research centers around the works of Robert Solow and Edwin Mansfield, the latter having identified the social welfare benefit which stems from new technology.

Today in Ecuador, patent protection is available to most inventions, including transgenic plants. The term of protection is a full 20 years from filing the application. There are no delays in the effect of the decision. Industrial working of the patent is required within one of the ANCOM countries, but importation in quantities sufficient to meet market demand will suffice. A grace period of one year with respect to the novelty requirement is available to those who disclose their invention to the public under defined circumstances. Clear procedures for obtaining a patent are established. A one year priority date is established among the member countries of the Cartagena Agreement and other countries which reciprocate. The burden of proof is reversed in litigation regarding process patents. Member states may strengthen the rights conferred by the decision either through national laws or by virtue of international treaties. Cooperative arrangements among the member states are sought with regard to administration of the rights created.

However, the decision presents difficulties. Among them, certain subject matter is excluded from protection; the list includes computer software, transgenic animals, pharmaceuticals which appear on a list prepared by the World Health Organization, and diagnostic methods. Patented products must bear the patent number on the product itself or on its packaging. Parallel imports cannot be thwarted. Limits on the rights conferred with regard to experimental use by others are too broad. Compulsory licenses can be granted under defined circumstances, including for reasons of public interest, free competition or to support dependent patents. Transition arrangements (called "pipeline" protection) are not made available to inventions previously denied patentability but patented in other countries. The decision contains no requirements that member countries provide for enforcement of the rights created.

The foregoing comments apply also to utility models.

The provisions for the protection of industrial designs is flawed by the exclusion of clothing, by unusual special definitions for subject matter, by a term of only eight years, and by uncertainty as to what may constitute a design which presents secondary differences.

Application of the numerical rating system to the PATENT component of Ecuador's IP system resulted in subtraction of SEVEN of a possible 17 points.

The TRIPS Agreement establishes standards for patent protection in eight articles and incorporates the core of the Paris Convention.¹⁶ Limits on patentable subject matter are narrower than under Decision 344; for example, computer software and all pharmaceutical inventions are to be protected. At the same time, TRIPS permits delays of up to ten years for pharmaceutical patents while Decision 344 calls for immediate patentability. The rights conferred on patent holders (Article 28) are detailed; whereas, there is no comparable provision under Decision 344. Limitations on the rights conferred, however, are stated only very generally under TRIPS. Compulsory licensing is circumscribed by a long list of conditions but

¹⁶ The Paris Convention for the Protection of Industrial Property (1883) has been modified several times with the latest version being that of the Stockholm text of 1967. There were 129 member states as of early 1995.

does not seek to limit the circumstances under which such a license may be granted. Importation presumably satisfies any requirement that a patent be worked locally (Article 27). Parallel imports appear to be actionable under Article 28, but Article 6 is contradictory, at least with regard to dispute settlement. A twenty year term of protection from filing is established. The burden of proof is reversed in process patent litigation.

Although NAFTA tracks the language of the TRIPS Agreement in many regards, it provides a somewhat higher standard of patent protection. The list of subject matter exclusions is slightly shorter. Importation clearly satisfies working requirements. Pipeline protection is to be made available. A patent may be revoked for non-working when a compulsory license has not remedied the lack of working. Dependent patents are not assisted by compulsory licenses. The patent term may be either 20 years from filing or 17 years from grant, an option rendered moot by the TRIPS Agreement.

An investment-oriented IP regime extends protection to all inventions with only the narrowest of exceptions. The value of the patent is then diminished, if at all, by only narrowly defined availability of compulsory licensing, and exceptions to and limits on the rights granted to rights holders. Utility models are available. The term of protection is a full 20 years from filing.

Recommendations for PATENTS:

1. Eliminate most subject matter exclusions from patentability.
2. Further narrow the availability of compulsory licensing.
3. Narrow the leeway for experimental and non-commercial use by third parties.
4. Permit exclusion of parallel imports, except from within the ANCOM area.
5. Make optional the requirement that the patent number appear on the product or its packaging.
6. Allow "pipeline" protection.

Subject matter exclusions tend to trouble those working in other fields because they cannot be sure when the law might change to exclude their field. The inclusion of patents for biotechnology, advanced computing, diagnostics and other fields now excluded from coverage will help Ecuador participate in important leading-edge technologies.

The treatment of compulsory licensing, while mostly consistent with classic patent doctrine, does not fit well with modern economic reality. A decision as to whether such a license will be granted is made by officials long after the patent is granted. The decision to

award such a license is made by people who are not primarily skilled in making the judgments required to award such licenses. This has a chilling effect on investment decisions.

The limitations which permit unauthorized use of a patent for non-commercial or personal or educational use seem innocent. However, because they are broadly defined, they worry inventors and investors who fear these exceptions can be used to conduct competitive research.

The threat of unrestricted parallel imports raises concerns among potential investors since they disrupt commercialization in Ecuador, leading, for example, to dismissal of employees and loss of advertising revenue by local firms. Under this provision, there is a possibility that products will enter Ecuador from other countries where their commercial introduction is legal but where patent protection would not prevent their sale. In effect, permitting parallel imports can become a way to circumvent patent protection in Ecuador. Permitting parallel imports from within the ANCOM area, however, overcomes these difficulties, assuming that each of the countries has similar rules for commercialization and deep trade integration is intended.

To require that the patent number be shown on each product or its package contradicts the concept of a free trade area, since the patent number will normally be different for each of the area countries. To use a different number on each item, depending on a product's destination market, lowers efficiencies of scale and increases consumer costs. The requirement could usefully be made optional with the patent holder.

The importance of pipeline protection will fade with time. However, for those involved, it is a matter of importance.

E. Trademarks

Trademarks are perhaps the most ancient form of intellectual property. A community honors them because they designate the source and quality of goods and services, saving consumers from confusion.

Trademarks are a highly visible form of intellectual property. They encourage investors to commit resources to creating and presenting products and services to the public. Consumers rely on them to guide their purchasing decisions.

In Ecuador, trademark protection is now provided by Decision 344 which took effect January 1, 1994, as part of the ANDEAN common regime for IP. While the decision enhanced trademark protection in important respects, difficulties remain. Among them, the definition of what can constitute a trademark excludes forms which are now permitted under the TRIPS Agreement. The long list of things which may not be used as marks contains language which is confusing. The treatment of "notorious" or "well-known" trademarks is generally adequate; however, the requirement of "reciprocity by interested sectors" conflicts with the TRIPS Agreement (and the Paris Convention) and the public to which reference is made is the consumer public in general and not the relevant public. This is important since there is no use

requirement. Moreover, the age and continuous use of the mark are to be assessed, which may present difficulties for new products which emerge quickly. Acquisition of distinctiveness over time is not contemplated. Multi-class applications are prohibited. No procedure for appeals against denials is provided, which conflicts with TRIPS.

Application of the numerical rating system to the TRADEMARK component of Ecuador's IP system resulted in subtraction of THREE of a possible nine points.

The TRIPS Agreement defines what can constitute a trademark in broad, inclusive terms. The definition conflicts with that of Decision 344. In determining whether a trademark is "well-known," knowledge within the relevant sector of the public both within and outside the country is to be taken into account. As noted, this conflicts with Decision 344 which speaks of the public in general. Exceptions to the rights conferred by a trademark are to be limited by taking into account the legitimate interests of the owner of the trademark and of third parties. Stipulations regarding use requirements do not apply to Decision 344 which has no such requirement.

NAFTA provisions for trademarks follow the TRIPS provisions closely. In regard to "well-known" trademarks, it is made emphatically clear that a country may not require knowledge beyond the sector of the public which normally deals with the relevant goods or services.

An investment-oriented IP regime would insist, among other things not relevant to Decision 344, that strong measures be available to defeat speculative registration of well-known trademarks.

Recommendations for TRADEMARKS:

1. Establish that only the knowledge held by the relevant public, rather than the public in general, need be taken into account when examining for well-known trademarks.
2. Delete the requirement that there be reciprocity in order for the defense of "well-known" trademarks to be effective. This is tied to adherence to the Paris Convention, discussed below.
3. Amend the list of things which can constitute a trademark so that it conforms with the TRIPS Agreement.
4. Provide for appeals against adverse administrative decisions.

These recommendations would reduce conflicts between the TRIPS Agreement and Decision 344.

F. Trade Secrets

The community, through its judicial system, supports efforts by those who seek to maintain in secrecy proprietary information which provides a competitive advantage because of the secrecy.

Although little known in most of Latin America, the trade secret plays a quiet but critical role in the creation of new technology.

In Ecuador, the trade secret is now protected by Decision 344. Its protection is generally sound and a considerable advance over the prior situation. However, there are deficiencies. Among them is the stipulation that, to be protected, the information must refer to three defined categories of activity. There is no reason for this confining definition. Information that is obvious to a specialist in the field is not protectable. Information furnished to officials in order to obtain government permission of various kinds is not to be considered in the public domain, but beneficial use by others is not prohibited. To be protected, information must be in some tangible form, a conflict with TRIPS, but not NAFTA, requirements. A person with knowledge of a trade secret may use or disclose it without authorization if there is "justified cause" for doing so.

Application of the numerical rating system to the TRADE SECRET component of Ecuador's IP system resulted in subtraction of SIX of a possible 15 points.

The TRIPS Agreement defines what is protectable as a trade secret in terms which, though similar, differ from those of Decision 344. For example, the term "honest commercial practices" competes with "fair trade practices." Under both TRIPS and Decision 344, information known in general to people in the relevant field may be protected if its specific configuration and composition is not known to them. Beneficial use by others of data submitted in support of applications for government permissions or approval is prohibited. However, such data are to be shielded from disclosure to others only when they relate to approvals for the marketing of pharmaceutical and agricultural chemicals that utilize new chemical entities. Decision 344 is broader than the TRIPS requirement in this regard. The non-disclosure is time limited under TRIPS.

The comparable NAFTA provisions follow the TRIPS language closely, but permit countries to require information be in tangible form, as does Decision 344. This follows the current Mexican law.

An investment-oriented IP regime calls for a statutory basis for protection of trade secrets, including the ability to take action against third parties who obtain such secrets without authorization. Information need not be in tangible form to merit protection. There are no time limits on the duration of protection for the information. Data submitted to government officials in connection with applications for any type of authorization are to be kept from disclosure to or beneficial use by others.

Recommendations for TRADE SECRETS:

1. Eliminate the requirement of tangibility (Article 74).
2. Eliminate the requirement that to be protectable, information must fall within the three categories of Article 72, second paragraph.
3. Assure that disclosure to or beneficial use by others of information submitted to government officials in connection with applications for any type of authorization will be prohibited.

To require that only information in tangible form can be protected is quite unrealistic for most industrial activity. Technology is developed incrementally. To require that each increment must be recorded in some tangible form is an unnecessary and costly burden.

The three categories of Article 72, while clear enough, are restrictive and serve no useful purpose.

To allow others to benefit from secret information submitted of necessity to government officials would defeat an important element of trade secret protection.

G. Higher Life Forms

To place a spotlight on the role of intellectual property in bringing high levels of science to the national agricultural base, this component of an IP system is artificially isolated for assessment. It examines two things: the protection available to traditional field research and the protection available to the new tools of genetic engineering in the field of biotechnology.

Traditional field research uses tools such as selective breeding and hybridization to enhance species. For plants, the results of this type of research have gained protection internationally under the International Union for the Protection of New Varieties of Plants (UPOV). Countries offering this protection have experienced notable improvements in plant technology.

The much newer tools of biotechnology enable more rapid creation of new species and varieties through biogenetic engineering. Protection for transgenic plants and animals can be obtained through patent protection, and an increasing number of countries is doing so with remarkable results.

In Ecuador, Decisions 344 and 345 provide both types of protection, although with certain deficiencies. Decision 344 offers patentability in this area, denying patents to transgenic animals, although improved plants can be protected. Decision 345 establishes generally adequate protection for new plant varieties but (a) provides a very broad "saved seed" exemption for farmers, (b) needs clarification regarding the nature of the temporary initial protection available

before registration is completed, and (c) has periods of protection shorter than some of those stipulated by the UPOV Convention (1991 Act).

Application of the numerical rating system to the HIGHER LIFE FORMS component of Ecuador's IP system resulted in subtraction of THREE of a possible six points.

The TRIPS Agreement addresses this component in two ways. As to patents, it permits countries to exclude all but microorganisms from patentability. It goes further, however, to say the members must provide protection for new plant varieties either by patents or a *sui generis* system or any combination thereof. It does not further define what a *sui generis* system might look like.

The NAFTA provisions also address this component in two ways, both of which are quite similar to the TRIPS approach. The language dealing with new plant varieties repeats the concepts of the TRIPS provision. However, there is an annex in which Mexico undertakes to comply with the substance of the UPOV Convention. In fact, Mexico joined this convention in its 1978 version in December 1995.

Recommendations for HIGHER LIFE FORMS:

1. Narrow the "saved seed" exception and modify Decision 345 in other regards to bring it into full conformity with the 1991 Act of the UPOV Convention.
2. Permit patenting of higher life forms, excluding from patentability only inventions which alter human genetic material except when they provide primarily and specifically for the treatment, prevention or cure of disease.

Having made an excellent start toward better agriculture through the application of higher science, Ecuador would benefit further from the full measures of the most recent version of the UPOV Convention. The ability to obtain patents for transgenic plants and animals would also benefit specific elements of agriculture and aquaculture in Ecuador, such as the shrimp, banana, and cut flower industries.

H. Treaties

International treaties form an integral part of a country's intellectual property system. They provide reciprocity for its citizens who would seek protection for their rights in other countries. They offer technical assistance and establish common arrangements with other countries.

Investors take note of treaty memberships in appraising a country's IP system. Membership in many treaties will indicate the level or degree of protection maintained by the country without the need to examine the detailed laws and regulations of the country to a deeper extent prior to making investment decisions.

Ecuador is a member of the World Intellectual Property Organization (1967) (WIPO) along with 150 other countries. Of the 17 treaties administered by the WIPO, Ecuador is a member of three. These are the Berne Convention (1971) concerning copyright; the Rome Convention (1961) concerning performers, phonograms and broadcast organizations; and the Geneva Convention (1971) concerning phonogram duplication. Ecuador also follows the provisions of the Nice Agreement (1957) concerning trademark classifications without being a member.

Ecuador is not a member of the Paris Convention (1883) concerning industrial property nor of the Patent Cooperation Treaty (1970) concerning technical examination of patents, among the many others administered by the WIPO.

As a member of the World Trade Organization, and therefore an adherent to the TRIPS Agreement, Ecuador will automatically become committed to adopt the core provisions of the Paris Convention.

Application of the numerical rating system to the TREATY component of Ecuador's IP system resulted in subtraction of FOUR of a possible six points.

The TRIPS Agreement, as noted, requires member states to comply with Articles 1 to 12 and 19 of the Paris Convention. The Paris, Berne, and Rome Conventions are made relevant in other respects as well. Although the Treaty on Intellectual Property in Respect of Integrated Circuits (sometimes called the Washington Treaty or the "chips" treaty) has not received sufficient ratifications to take effect, its core provisions were incorporated by reference into the TRIPS Agreement and then supplemented by other requirements.

The NAFTA provisions are more emphatic in requiring that effect be given to the substantive provisions of the Paris, Berne, UPOV and Geneva Conventions.

An investment-oriented regime will encourage investment through direct memberships in at least the Paris, Berne, Geneva and UPOV (1991) Conventions. In addition, the Patent Cooperation Treaty provides an avenue for more effective administration of the patent function. It should be noted that under a fairly recent decision made by WIPO, there is no added cost in terms of fees for a country to join additional treaties once it has undertaken the cost associated with at least one treaty membership.

Recommendations for TREATIES:

1. Adhere to the Paris Convention.
2. Adhere to the Patent Cooperation Treaty.

Direct membership in the Paris Convention sends a stronger signal to investors than indirect compliance.

The Patent Cooperation Treaty (PCT) is gaining recognition as an important means of facilitating public administration of the patent function.

CLOSING OBSERVATION

Political resistance to higher levels of IP protection, which is particularly intense in some countries, has been nurtured for several decades in Latin America. The positive role of intellectual property in national economic development is not yet well appreciated,¹⁷ notwithstanding that many individuals in most countries are frustrated by inadequate protection. This pent up demand for better protection has not yet found a political voice. The voice of the past, as always, is louder than the voice of the future. The most important work that can be done to upgrade the technical base of Ecuador through enhanced IP protection is to give voice to this pent up demand.

¹⁷ See Sherwood, 1990.

ANNEX I
REFERENCES

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ANNEX II

RATING SCALE FOR INVESTMENT-ORIENTED INTELLECTUAL PROPERTY PROTECTION: COUNTRY COMPARISONS

**OVERVIEW MATRIX:
ASSESSMENT OF THE IP REGIMES OF SELECTED COUNTRIES**

Country or Agreement	Enforcement (25)	Administration (10)	Copyright (12)	Patent (17)	Trademark (9)	Trade Secrets (15)	Life Forms (6)	Treaties (6)	TOTAL POINTS SUBTRACTED
Argentina	21	3	4	13	0	13	4	3	61
Bahamas	0	1	4	3	3	0	5	4	20
Barbados	0	9	7	10	1	0	6	0	33
Brazil	17	7	5	14	3	13	5	0	64
Chile	9	5	2	5	1	10	5	2	39
Costa Rica	8	0	5	16	3	12	4	6	54
Ecuador	20	7	5	7	3	6	3	4	55
El Salvador	21	8	5	1	7	10	3	2	57
Guatemala	25	8	10	14	7	12	6	6	88
India	18	3	5	11	4	8	6	5	60
Mexico	17	2	7	1	0	3	1	0	31
Pakistan	8	6	8	14	5	1	2	6	50
Panama	17	5	3	7	8	12	6	6	64
Paraguay	21	5	10	15	7	12	6	2	78
Uruguay	5	2	7	14	5	10	4	2	49
TRIPS	18	3	4	10	0	3	4	4	46
NAFTA	12	5	2	5	0	5	3	1	33

ANNEX III

**CORRELATION OF RATING SCALE
AND MANSFIELD 1994/95**

**TENTATIVE CORRELATION of
RATING SYSTEM with MANSFIELD 1994/95**

<u>RATING SYSTEM</u>	<u>MANSFIELD FINDINGS</u>
100	
(75-90+ = US, EU, Japan)	
83 Bahamas	
71 Mexico	
<----->	research and development
69 Barbados	
68 ^^NAFTA	
62 Chile	
<----->	complete manufacture
55 ^TRIPS	
51 Uruguay	
50 Pakistan	
<----->	components manufacture
46 Costa Rica	
45 Ecuador	
43 El Salvador	
40 India	
<----->	assembly
39 Argentina	
37 Brazil	
36 Panama	
<----->	sales and distribution
32 Paraguay	
12 Guatemala	

Note: the scale increments are not evenly distributed and the position of the Mansfield categories relative to the scale calibration is done by inference and is approximate.

SECTION B:
CASE EXAMPLES OF
INTELLECTUAL PROPERTY ISSUES

PREFACE

The first set of following case examples illustrates the effects of inadequate intellectual property protection on inventive and creative individuals in Ecuador. They suggest that enhanced protection would benefit Ecuador's technological base and economic development. Indeed, they suggest a hidden demand for better technology protection in that country. The second set of case examples derives from our experience in other countries with weak intellectual property protection;¹ these examples demonstrate the debilitating effects of and hidden demand for intellectual property protection that seem always to be present in such nations.

Each one-page example in the first set is a generic summation of an actual situation that was encountered in two weeks of interviews conducted in Ecuador during November 1995 and January 1996. We are confident that further research in Ecuador would unearth further case examples.

The case examples are confined to no more than one page by design. Our experience indicates that a single page is normally read, while more voluminous reports often are not. Therefore, it is recommended that the case examples be used selectively, though distributed widely. An example for use might be in a weekly opinion piece in a newspaper, newsletter or other such publication. Should a journalist be interested in pursuing a specific Ecuadorian example, it might be possible (with prior permission of the individual or institution involved) to put the journalist in contact with the local source of the example.

This is not to say that the case examples should never be passed along as a collection. For individuals and institutions that are deeply interested in the subject, the full dossier might be valuable. Examples would be the proposed Working Group on Ecuadorian Intellectual Property, the Ecuadorian Association of Intellectual Property, or students preparing a thesis on the topic.

The associated list of potential speakers, culled from our interviews, should be kept confidential, at least until a given suggested individual agrees to speak on the topic in a seminar, roundtable or other public forum.

We began our investigation of the state of economic and technological activity with the presumption that we could encounter a number of examples and individuals that would demonstrate problems caused by the existing weak protection of intellectual property protection in Ecuador. The attached examples validate that original presumption. The information contained in the examples needs to be presented, in an effective manner, to Ecuadorian society and decision makers in order to counter the existing conventional wisdom that intellectual property protection is an issue that is only of concern to foreigners.

¹ These case examples, by Robert M. Sherwood, were written prior to this activity and have been distributed previously as part of a series of "Briefing Papers on Technology and Growth."

I. ECUADORIAN CASE EXAMPLES REGARDING INTELLECTUAL PROPERTY

CONSTITUTIONAL PROHIBITIONS TO TECHNOLOGY PROTECTION?

A well-traveled Ecuadorian businessman in the high technology sector learned that businesses in other countries utilized detailed confidentiality agreements with their employees in order to protect their proprietary technology. He obtained a copy of such a standard agreement and sent it to his attorney to review. The attorney responded that the majority of the provisions of the agreement would be considered unconstitutional or otherwise unenforceable in Ecuador. Therefore the businessman decided that he could not implement the policy of requiring new employees to sign such an agreement, and he feels that his technology is less well protected than if he were able to do so.

The provisions in question related to the rights of the employer to the innovations or inventions made by the employee while working with the company as well as non-competition provisions. Specific exclusions were made for inventions made by the employee on his own time and not related to the business of the employer. Although such language would seem to closely track the provisions of Ecuadorian labor law, it is curious that a written agreement of those same concepts would somehow be deemed unconstitutional or illegal. Many other countries, including Mexico and Brazil, allow for such written agreements between employers and employees. Indeed, such agreements have become standard practice in most high technology companies around the world.

With its recent accession to the World Trade Organization, Ecuador made an affirmative decision to open its economy and compete at a worldwide level. As many other countries have discovered, merely joining the world economy and lowering external tariffs is only the beginning of the process. Adequating domestic laws to permit world class competitiveness is also necessary. Ecuador's ability to compete will depend on allowing common international business practices, such as confidentiality agreements.

Perhaps a large part of why the Ecuadorian attorney was unable to endorse the use of the agreement was because Ecuador has for years deemed intellectual property protection as suspect or, at best, unimportant. Large and small companies around the world, as well as their governments, take quite a different point of view. In the case of the above Ecuadorian businessman, he saw it as important to try to protect his company's technology. There are certainly others in Ecuador that would benefit from such world class protection. One wonders what the benefits to Ecuador are of that being unconstitutional.

THE SAD COMEDIAN

A well known Ecuadorian comedian recently invested his own resources in producing a videotape of his act. He had hardly begun selling the video before he realized that many others were selling his video, at a slightly reduced price, without paying royalties to him as the producer or artist. He is reportedly quite upset about this circumstance. He also sees little benefit in producing any more videos since he not only doesn't benefit, but risks his investment as well.

Some would say that the consumer benefits by purchasing the video at a slightly cheaper price. But does the consumer benefit if the artist decides not to make any other videos? Other Ecuadorian artists that learn of the experience might decide not to make videos as well. Does Ecuadorian society suffer a loss from the practical inability to protect copyrighted works?

It would seem so. Reportedly, before the introduction of cassette audio tapes, Ecuador had a thriving recording industry with over 20 different companies making phonograms. These days, with pirated recordings abounding in the market place, there are only two such companies in Ecuador. Such a development has downstream effects beyond the specific companies. Ecuadorian musicians see recording as less profitable and more difficult to arrange. Fewer Ecuadorian artists are able to be injected onto the international stage. What about the employment effects of the disappearance of the recording and production companies? What incentive is there to produce an Ecuadorian film?

Copyright protection goes well beyond the video, film and music industries. The important area of computer software also counts on copyright as its primary form of intellectual property protection. Ecuadorian software producers are also sadly familiar with the difficulties of enforcing their rights. Software, of course, is a global market, and an increasing source of international trade. Already a few Ecuadorian software producers export a portion of their product. Shouldn't they, as well as video and recording artists, have the advantage of reasonable protection in their home market?

Piracy of copyrights is perceived as a victimless crime. The protection of intangibles, such as intellectual property rights, does have victims, however. As the comedian discovered, intellectual property protection, or the lack thereof, has very real and tangible effects on him. The unseen victims are the society and economy of nations that have ineffective protections.

It's not funny.

BIOTECHNOLOGY AND ECUADORIAN EXPORTS

The bulk of Ecuador's exports are agricultural. Bananas and flowers are prominent examples. Agriculture, while a traditional industry, faces a high technology future. Advances in transgenic engineering promise drought resistant, pest resistant and low fertilizer crops. Also foreseeable is a world of never before seen 'designer' agricultural products such as chocolate flavored bananas and blue roses. Such products will certainly sell for a higher price than their traditional counterparts, having a higher value added component. Will Ecuador benefit from these changes, or will it continue to sell mere commodities to the world?

Under current Ecuadorian law, transgenic inventions are not patentable. Because no legal protections exist for discoveries in this field, there is virtually no economic incentive to invest in researching the area. For a country that depends so heavily on agricultural and aquatic (such as shrimp) exports, this seems a curious policy.

Though certain multinational corporations have invested large sums in research efforts in the biotech field, most of the commercially successful inventions thus far on the market have been made by relatively small companies. A talented scientist can perform world-class biotech research with a modest laboratory and equipment. It tends to be a research activity that requires more human capital than financial resources. There is no reason, other than lack of intellectual property protection, why Ecuadorians cannot enter the field.

Ecuador's rich biodiversity is a preeminence that the country could take great advantage of in the biotech area. At present most of the laboratory research on the country's unique flora, the key to unlocking its riches, occurs outside of Ecuador. Foreign researchers collect samples and promptly pack them off to their home countries. Local investigation of the nation's biodiversity would be spurred by allowing the fruits of such research similar legal protection in Ecuador to that which it receives abroad.

The future is coming quickly, and biotechnological discoveries will surely form an important part of that future. Ecuador's strong agricultural export sector is based on "natural comparative advantage." What will happen as other nations begin to benefit from "man-made comparative advantage"? What advantage is there for Ecuador to effectively exclude its scientists and investors from benefiting from this new age?

WHY IS TECHNOLOGY AFRAID OF ECUADOR?

Recently, an Ecuadorian fruit grower and exporter tried to obtain a promising technology from a group in California. Though the Californians had licensed the same technology to various countries around the world, they told the Ecuadorian that they had decided not to license to Ecuador because of the relative lack of intellectual property protection in that country. That decision means that the Ecuadorian exporter will not have access to the benefits of the technology, which would have increased sales, employment and foreign exchange income for his business and for the country.

The decision of the California technology owner was not made on the basis of prejudice against the country or people of Ecuador, but rather on a quite understandable business basis. The technology is maintained as a confidential trade secret, and there is little if any trade secret protection in Ecuador. Should the technology be lost in Ecuador, it well could be lost around the world. In every country where they did license the technology, there were laws that would disallow a competitor from utilizing or divulging their technology; therefore they felt that the technology was reasonably secure. In Ecuador, such laws hardly exist and have never been enforced in jurisprudence.

Many countries that have intellectual property systems similar to Ecuador's have wondered why they have problems in obtaining the newest technologies. They often complain that only older technologies are available to their businesses. One reason is that cutting-edge technology is treated as an important and valuable asset by the companies and countries that develop it. Potential loss of the technology is seen as a tremendous commercial risk. Previous generations of technology become a diminished asset and therefore less risky to license into less secure environments. Again, the decision is not based on bigotry or conspiracy but on the same basis that one would use with their own important asset -- can it be adequately protected?

The negative effects on Ecuador's competitiveness are relatively easy to see in an example such as the above, where a useful technology is unavailable to the country. Less well perceived are the silent losses to domestic technology development. The lack of incentive for Ecuadorians to invest in research to advance technology means not only that domestic production receives no benefit, but that little Ecuadorian technology is produced to license abroad. Careers for talented Ecuadorian researchers are few, augmenting the so called 'brain drain.' Yet some in Ecuador claim that protecting intellectual property will only benefit foreign interests, so why do it? The essential question is whether technology is produced where it's protected or protected where it's produced. Either way, one wonders what benefit redounds to Ecuador by scaring technology away.

FOMENTING SCIENCE AND TECHNOLOGY IN ECUADOR

A foundation was recently established in Ecuador to promote science and technology. The foundation plans on funding university research and independent research centers throughout the country and on granting scholarships to talented Ecuadorian students to study science and technology abroad. In the process of developing the initial mission of the foundation, its founders have learned a lot about the importance of intellectual property protection. Indeed, a recently acquired, long-sought loan from a prominent multilateral financial institution specifically included a requirement for addressing legal protections for technology.

The foundation is discovering that the protection of scientific and technological research is fundamental. Universities and research centers that do not have policies regarding inventions find it difficult to benefit from them. Is an invention the property of the research institution or the inventor, or both? No matter who receives such rights, are they protectable? Will industry seek to obtain technology from the research institutions that put resources into discovering it, or will they merely hire the researcher to obtain it? Will they be sufficiently interested in developing such technology if they know that competitors can just as easily acquire it by hiring their employees? Will the students to whom the foundation grants scholarships be able to find adequate positions in science and technology in Ecuador, or will they be tempted to work abroad where such research is better funded and more profitable?

The foundation finds itself in a position of almost fearing success because of these uncertainties. If the framework for intellectual property protection, the internationally accepted manner of protecting technology, were stronger in Ecuador, many of these concerns would be greatly diminished. The foundation would have the ability to protect the research results that it funds and possibly fund more research with any proceeds from a successful new technology. Increased research in Ecuador would make it easier for trained Ecuadorians to find positions in their own country.

The foundation began its work with the idea that subsidies (push) would advance Ecuadorian capabilities in science and technology. As its work advances, the foundation is discovering that patents, trade secrets, copyrights and plant protection laws are at least as important (pull). Intellectual property protection is designed to reward successful research. The lack of such protection makes such success a riskier proposition. Apparently the primary fund provider to the foundation views it as an important element of its investment too. Does Ecuador have a system of protection that will promote science and technology, or will the existing system cause the foundation's efforts to be less promising than they should be?

UNIVERSITY RESEARCH IN ECUADOR

Directors of research in Ecuadorian universities know they have a problem. Visits to the polytechnic research efforts in both Quito and Guayaquil demonstrated that there was deep concern about the universities' abilities to link with private industry. Indeed, the concern extended to intra-university issues regarding ownership of inventions and innovations produced in their research centers.

The directors of technological and scientific research stated that they were greatly interested in the subject of intellectual property, the legal protection granted to inventions, innovations and other discoveries. They are aware that many foreign universities have technology policies and special offices for the management of the universities' research assets. They perceive that collaboration with private industry seems to function better in those countries. They also voiced concern about the so called brain-drain, whereby talented Ecuadorian scientists and researchers find that their careers would be better served by moving abroad.

Indeed, universities in the United States are among the most frequent users of the patent system in that country. Proceeds from university inventions help to fund more research in those institutions. In Ecuador, this seldom occurs. Also, in countries with a high level and appreciation for intellectual property protection, because of the universities' ability to manage and grant exclusive rights in their inventions, private industry funds and otherwise closely collaborates with these academic research centers.

Ecuador's system of intellectual property protection is not generally perceived as an important component for university research, except by those charged with administering such research. Trade secret protection, the base of all intellectual property protection, hardly exists in Ecuador. This limits collaboration between researchers as well as between the university and industry, because of concerns of maintaining the information confidential and proprietary. Patents and copyrights are perceived as tenuous protection compared to other countries, at least in the eyes of potential users of the system. Therefore, the currently existing intellectual property system in Ecuador seems to barely merit a technology policy within the universities.

Stronger protection of trade secrets and increased confidence in the enforceability of patents would allow Ecuadorian universities to better manage their technology, leading to increased funding and cooperation with the private sector. Such an outcome would also probably increase the ability of highly trained Ecuadorians to engage in their career within Ecuador and allow them to add to the country's technological base. Finally, a stronger system of protection for technology would allow Ecuadorian universities to 'level the playing field' and engage in world-class research at home, rather than simply learning about it abroad.

FINANCING AND TECHNOLOGY PROTECTION

One of the most important sources for funding new businesses in Europe and North America is venture capital. Venture capital firms seek new technologies that can be commercialized. In essence, a venture capital firm makes a calculated bet on the ability for a new business to be successful, hoping to profit handsomely from its investment.

Though there are many banks and other financial institutions in Ecuador, there are no venture capital firms. Some attribute this to the vagaries of currency depreciation, inflation or a general shortage of capital. Another important reason, not generally considered, is that technology protections in Ecuador are generally perceived to be weak. Interviews with foreign venture capital managers clearly demonstrate the importance to their decisions of a reliable system of intellectual property protection.

Intellectual property protection is the legal system that protects owners' rights in patents, copyrights, trade secrets, plant varieties and trademarks. The general impression in the Ecuadorian business community is that such rights seem unsure in Ecuador. Though Andean Pact decisions and some local laws exist ostensibly to protect certain patents, copyrights and perhaps even trade secrets, the fact is that most videos and sound recordings sold in Ecuador are illegitimate, that there is little faith in the patent system, and that virtually every business has a story about how their technology or confidential information was obtained by a competitor when an employee changed companies. In such an environment, it is perhaps not so surprising that new technology-based companies have difficulty finding investors.

Part of the reason the existing system of intellectual property protection seems to work poorly in Ecuador might be the perception that rights to intangible property are somehow less serious than rights to physical assets. Yet when businesses cannot control their own technology and have little incentive to make their own investments in research and development, is it any wonder why third-party lenders and investors fear backing a new technology? Andean Pact Decisions 344, 345 and 351 increase the ostensible protection of intellectual property, but still exclude protections for vital sectors such as biotechnology, and seem to have not yet been implemented in Ecuadorian legislation or jurisprudence. The protection of technology is seen as a lesser priority, and certain groups, primarily those that profit from piracy, proclaim it as against the national interest.

In a recent conversation in Guayaquil, a prominent businessperson spoke of an acquaintance in the United States that invested in the patents of struggling inventors, adding "even in the U.S. it is sometimes necessary to sell a portion of the intellectual property rights." Perhaps the issue is better seen that in a secure environment for technology, that provides an effective legal infrastructure for its protection, an inventor is able to find financial backing for the new business.

BENEFITTING FROM ECUADOR'S BIODIVERSITY

There is untapped wealth in Ecuador's biodiversity. The flora and fauna of Ecuador's diverse regions holds the promise of new medications and other useful inventions. Nonetheless, the common complaint is that foreign researchers arrive in the country, take samples, and return abroad to develop findings, leaving little economic benefit in Ecuador. One of the reasons that foreign companies and universities purposely avoid developing their research in Ecuador, which might otherwise be logistically attractive, is that the level of intellectual property protection is low.

Intellectual property protection is the legal framework for protecting research and technology. Patents, trade secrets and plant variety protection figure prominently. A company is far less willing to invest the financial resources required to do advanced scientific research in an environment where it fears the loss of their discoveries to competitors that have not invested such resources. In Europe, North America and parts of Asia, intellectual property protection is considered to be strong enough that a company can legally prevent the loss of its technology when an employee leaves to join a competing firm. Patent and plant variety protections are deemed sufficiently well enforced to make the results of research a profitable activity. Ecuador's reputation in this regard is poor.

Little if any trade secret protection exists in Ecuador. Trade secrecy forms the base of every secure intellectual property system. Patents and other government-granted rights are viewed as difficult, if not impractical, to enforce in Ecuador. Some Ecuadorian inventors seek foreign patents, but don't feel it is worth seeking a patent in Ecuador. Foreign companies and research institutions have a choice of doing their research in Ecuador or in their home countries. When a large disparity exists between the strength of technology protection systems, their choice is always in favor of the stronger system.

To attract the actual research and development functions to Ecuador, and the attendant economic benefits, the country would need to raise its level of intellectual property protection. Were this to occur, the attraction to perform the research on indigenous biodiversity would increase dramatically, bringing jobs, foreign exchange and world-class scientists to the country. The national economy would benefit as would local communities and the country's technological base as a whole.

The wealth of biodiversity in Ecuador must be developed in order to transform it into wealth for Ecuadorians. In a competitive global economy, weak protection for technological activities drives the key to unlocking these riches abroad.

FRUSTRATED INVENTORS

Interviews with a number of Ecuadorian inventors indicate a high level of frustration with the legal framework for protecting their inventions.

A medical doctor discovered a new and useful remedy only to learn that his invention was not patentable in Ecuador. Some others that have encountered this issue have gone abroad for patents and found that the further development of their inventions had to occur in countries with a higher level of technology protection. Some Ecuadorian inventors have simply given up research efforts as not worthwhile.

One Ecuadorian inventor developed a process for converting waste bananas into glue and animal feed. Because of his feeling that Ecuadorian patent protection was weak, he sought to patent his process in the United States. When he learned that U.S. patent protection only had validity within the United States, he was frustrated because his process would only be truly valuable in banana producing countries.

An Ecuadorian invention in the nutritional supplement area is produced in Ecuador, but different parts of the manufacturing process are conducted in separate facilities in different cities so as to maintain the full process secret from the employees. This increases the cost and logistical difficulties of production, but assures the inventor that no one else will know his entire invention.

Several Ecuadorian inventors have gone on to establish companies that export the products of their inventions. When asked if they had an interest in selling or licensing their technology abroad, they recognized that such a business might increase profits, but would mean that they would have less control over their trade secrets and therefore choose not to engage in the licensing business.

Finally, because of the relative weakness of intellectual property protection in Ecuador, many companies simply do not invest in serious research and development, knowing that they face difficulties in preventing competitors from obtaining their innovations. Therefore the opportunities for Ph.D researchers and other inventors are diminished in Ecuador, adding to the brain drain.

A higher level of protection of technological innovations would stimulate research in Ecuador and diminish the multiple frustrations currently encountered by Ecuadorian inventors. Of course, an increase in Ecuadorian inventions would benefit the nation's economy, bringing more jobs, foreign exchange and more interest in engaging in research and development.

TECHNOLOGICAL COMPETITIVENESS IN ECUADOR

Virtually every Ecuadorian business person knows that it is difficult to protect their technology. From jam producers to chemical laboratories to software producers they know that a technical employee can decide to become or join a competitor and essentially take the technology of their former employer. Laws to prevent this sort of unfair competition tend to be seldom, if ever, enforced. The resulting disincentive for Ecuadorian businesses to engage in serious research and development has important economic effects.

Why would a business invest resources in trying to improve their product or process if they know that their competitors will soon obtain the same innovations without having to invest any more than it costs to tempt away an employee? At least one Ecuadorian industrialist performs research and development abroad, because of an ability to protect the results in other countries. Many Ecuadorian businesses license technology from abroad, but how much technology do they generate to license outside of Ecuador? Is Ecuador less capable of producing technology than other countries?

If Ecuadorian businesses could be confident of maintaining their innovations proprietary, they would be stimulated to invest in research and development. At present, most 'research' done by businesses in Ecuador is really at the basic level of quality control, rather than innovation. Even without serious research efforts businesses sometimes discover a better way of producing their goods, but through a process of '*decantacion*,' they soon see that their competitors have adopted their new technology. Some have said that the world simply works in that way, that guarding technology is really not feasible unless the knowledge resides only with the owner of the business. But in many countries businesses are able to legally restrict competitors from utilizing their technological innovations. Trade secret protection allows them to get a judicial order against such unfair competition. Indeed, the negative consequences of obtaining technology through employee transfer in strong technology protection countries have caused many businesses to adopt policies whereby new employees must affirm that they are not bringing with them the proprietary information of former employers.

If Ecuador increased the current level of trade secret protection, Ecuadorian businesses would see the enhanced value of doing research. Besides providing much needed jobs to talented Ecuadorian researchers, such a development might increase the country's global competitiveness and add to the nations' technological base. No nation holds a monopoly on great minds or talent, but some nations make it easier for technology to be produced. Shouldn't Ecuador?

A LOSS IN THE ECUADORIAN SOFTWARE SECTOR

An Ecuadorian software producer employed a number of computer programmers, among many others, in the course of developing a successful software application product. The application was configured to work on a certain platform (computer type) and its basic operating environment. Indeed, the licenses for the application software specified that it would only be utilized on that certain platform.

After learning all about the application software, a group of the programmers left the company and designed an interface that would enable the application software to work on a variety of more common platforms and began to commercialize their product.

Not only was this an interference in the contractual terms of the originator's licenses, but the programmers probably would not have been in a position to develop their interface had it not been for the fact that they were aware of the source code and other trade secrets of the originator's software application. They could only have acquired this knowledge by having been employed and extensively trained by the originating company.

In countries with more developed levels of intellectual property protection (such as Japan, the United States, Mexico, and the nations of the European Union), the programmers would not have been permitted to utilize the confidential information of their former employer to set up a competing company. Trade secrecy and unfair competition laws would have been invoked to curtail the illicit use. In Ecuador, however, because of a lack of legal protection for confidential information, the originator suffered the loss of its trade secrets, the loss of valuable employees, and a potential diminishment of its market, because of its inability to prevent the unfair competition.

A small high-technology company's ability to grow and prosper is directly related to its ability to protect its technology. If Ecuador had effective protection for trade secrets and against unfair competition, the programmers would probably have either continued to advance the progress of the original company or have applied their skills to developing new and useful software products in other businesses. Instead, they chose to abandon their employer and utilize its confidential information to unfairly compete against it. The overall loss in economic dynamism, while difficult to quantify, is easy to discern. In an environment in which such technology is less protectable, the incentive to invest in the research and development required for such advances is likewise diminished, impacting investment, employment and the possibility of garnering foreign exchange.

An economy that seeks investment, innovation and growth, such as Ecuador's, would benefit from adequating its legal framework to promote such investment and innovation. Allowing high-technology start-ups to suffer from the loss of their confidential information hardly advances that goal.

II. CASE EXAMPLES OF INTELLECTUAL PROPERTY ISSUES RELEVANT TO ECUADOR

WHAT IS A "TRADE SECRET"?

The name "trade secret" (secreto industrial) is not universally used. But in nearly every country the idea behind the name is well understood.

The idea is very ancient. Where a family developed a special way of making a product, the secret of its manufacture was kept in the family through the generations. This is still true in many parts of the world.

Gradually, communities came to formally recognize the usefulness of the trade secret and would provide legal protection against unauthorized taking of business information which was being kept within the family or the enterprise.

Throughout the world, much of industry in the last century was based on the skilled knowledge of craftsmen. These men would keep their secrets to themselves; frequently their employer would not know how they did their job.

Today the trade secret is just as vital to commerce. It takes on a growing role as business becomes more information dependent and complex and as people move more readily from one position to another, changing companies and loyalties.

Although the definition of "trade secret" is not uniform from one country to another, in those which have given the matter attention, the concept is fairly broad. In many countries (including Brazil) the concept includes both commercial information, such as lists of customers and suppliers, and industrial information, such as processing instructions and quality control procedures.

A simple definition of "trade secret" is "any information in tangible or intangible form useful in business, industry or the practice of a profession."

Another is "information including, but not limited to, a formula, pattern, compilation, program, device, method, technique or process that derives independent economic value, actual or potential, from not being generally known to others who may obtain economic value from it and which is subject to efforts that are reasonable under the circumstances to maintain secrecy."

Deriving information through examination or reverse engineering of a publicly available product would not violate a trade secret.

Basically the idea is that if someone has worked to develop information useful in his trade or business, another should not be able to benefit commercially from that information if the originator took precautions to keep it secret. The state supports that effort to maintain the secret in order to encourage commerce and industry.

HOW IMPORTANT IS THE TRADE SECRET?

The trade secret has no fan club. The trade secret does not create a following of specialists, unlike other categories of intellectual property, such as the patent, copyright and trademark. By its nature, the trade secret is intensely private. It does not call upon government to create registries or agencies, as do other categories of intellectual property.

The trade secret is not given publicity equal to its importance. Unlike patents and trademarks, there is no practical way to determine the number of trade secrets in use in any country. The chief means of judging the importance of the trade secrets is to ask those who use them, namely businesspeople.

One study, done in the United States in the late 1970s, surveyed several hundred businesses. The question was asked: what portion of technology transferred by your business relies on use of the trade secret? The answer: about 65%. More recently, an informal survey of licensing executives in Europe and the United States confirmed this high proportion, with answers to the same question ranging from 60% to 85%. A Brazilian technology transfer official suggested that in Brazil the number has been as high as 90%.

A study released by the U.S. International Trade Commission in 1988 also showed a high proportion of reliance on the trade secret as a vehicle for transferring technology internationally.

Within an enterprise, as a stream of technology is being developed, it may be inconvenient to take the time and expense to apply for patents on every new idea that is generated. Indeed, some elements of the technology may not be patentable. It is common practice to seek patents for a few elements within the technology stream, leaving the rest to coverage through use of the trade secret. This is particularly true for fast moving fields of technology and increasingly the norm.

The trade secret is particularly appropriate to safeguard process technology, the how-to-make-it knowledge, which cannot be learned from reverse engineering or inspection of the marketed product. The trade secret, of course, does not preclude others from independently developing identical or similar process technology.

In many developing countries, the trade secret has not yet achieved full standing in its modern role of fostering the development and transfer of advancing technology. Strengthening the statutory foundations of the trade secret would aid in attaining this desirable role.

THE SECRET OF TRADE SECRETS

Where trade secrets are little valued, as in Ecuador, the development and acquisition of technologies is slowed and stunted in quiet ways.

Technology does not spontaneously appear in boxes, ready made. Creation of technology is an on-going activity, with additions, improvements and breakthroughs occurring along the way. Something new may be learned each day.

The ingredients for developing technology are, first, trained people and, second, an environment in which they are encouraged to apply their skills. Part of that environment is the assurance that as their work progresses, others cannot appropriate it for use in competition, having incurred no risk or cost. If a worker departs, taking that company's hard earned knowledge with him to a competing company, and there is no recourse to stop the second company, the desire to innovate is stifled, competition is diminished in that regard, and technology does not advance as swiftly.

Although perhaps not widely known, today in Ecuador people are making new inventions, advancing technology, creating new works. They range from software for financial institutions to medicinal compounds, from oil spill technology to creation of useful products from conversion of plant waste, from improving shrimp through biogenetic engineering to improving older technology with new methods.

But even if they know nothing about intellectual property, common sense tells them that if they disclose their new idea it can be taken and used by others. Their intuition, if not their lawyer, tells them it is unwise to reveal their idea. This hinders their ability to get help in evaluating, developing and financing their idea. Even if disclosed, those who might volunteer to finance the launch of the business know that without the assurance of trade secret protection, they could be making a poor investment. (Patent protection is, of course, a possible alternative, but this could be costly for a small new business.)

Good trade secret protection would encourage those with new technical ideas who seek to start a new business. Shielded by the confidence that a proper disclosure of their idea could not be taken and used by others, they would be able to enlist others in bringing the idea through the stages of development, through trial and error, to market readiness. They could aggressively seek financing as well.

Starting small companies helps the industrial base to diversify and expand. These are the seeds from which large businesses grow. In many of the new sciences, Ecuador has opportunities to emerge at a world-competitive level with benefits to trade, employment, and the ability to hold talented minds at home.

AN INVISIBLE MAGNET

In the landscape of economic development, it seems that less happens than might be expected, given the resources applied. One reason, which has been largely unexamined to date by those involved, could be the lack of sound systems for safeguarding intellectual products which characterizes many developing countries. This lack creates two major disincentives to economic development. First, a strong element of incentive to individuals is missing, which stunts their inventiveness and creativity. This means new businesses do not germinate to the same degree as in countries with sound safeguards.

Second, such potential projects and new businesses as might otherwise merit financial backing, suffer for fear that their core idea can be easily and freely taken by others. Funds are not drawn to the potential.

When this issue is occasionally examined, it is typical to observe that funding is not available because the country is poor. While there may be some merit to this observation, the reason the country is poor may be compounded by the lack of safeguards for innovation. Looked at from another perspective, it may be that financing not otherwise available would be drawn by new business ventures if safeguards were in place.

In countries with effective systems for safeguarding innovation, funding for new ideas is drawn from many sources, formal and informal. At the level of the potential micro business, funding of an informal type is common. An individual or family will put their own funds into the project. Friends may be willing to participate. The "early money," which is needed to reach the point where more formal funding can be sought, can be obtained. The assurance that the core ideas of a venture can be safeguarded serves as a kind of invisible magnet. Funds are attracted where, seemingly, none exist. This could very well happen in so called "poor" countries as well.

Once the inclination to risk investing in micro business is boosted by knowledge that intellectual products can be safeguarded, the structures for matching new ventures with funds begin to form, thereby increasing the flow of financing. The system of safeguards, where in place, triggers the formation of funding structures, even those as simple as word-of-mouth networks. Money comes "out from under the mattress." A little flight capital finds a reason to return. The core of this phenomenon is the clearly understood concept that one who innovates or creates is, for reasons of an increased public benefit, entitled to the (temporary) ability to enjoy an exclusive marketplace position. Others can create or invent around that position, but the unique market opportunity is often enough to serve as the crucial magnet for funds.

A FLAW IN THE RESEARCH PARK?

In some developing countries, officials and university people are introducing research parks or science parks. Often they are located close to universities or government research facilities. The idea is to incubate small businesses based on new scientific developments. Often the individuals working in the universities or research centers are the same people who are to lead the new businesses.

This works in France, the United States and other developed countries. Why not in Brazil? or India? or Thailand? Land is acquired and developed, some buildings put up, special tax arrangements worked out and all the appearances of the parks on the outskirts of Nice, France or Yale University are replicated. Yet what New Haven produces does not seem to be happening in Rio de Janeiro.

The difference appears to be ineffective enforcement of legal rights, the lack of trade secret protection and gaps in the patent system. Disclosure of new technical knowledge by those who create it to associates who could usefully be involved is inhibited. Funds are not willingly drawn to the project. No one is confident that another firm or group will not show up quickly to copy their work. In consequence, either the effort to press forward with the new knowledge is kept modest, missing its full potential, or it never gains enough momentum to get launched.

Evidence that deficient intellectual property rules diminish the results which research parks in Brazil could produce is available. For example, at the electronics park on the south side of Rio the level of cooperation within the park among those working there is far below the level of expectation as compared with comparable parks in Europe and the United States. Also, it is said by one of its founders that for the newly created biotech park associated with the Federal University of Rio de Janeiro, trade secrets and patents will be extremely vital.

Further evidence comes from the work being done at the Instituto de Investigaciones Electricas in Cuernavaca, Mexico, where interaction with "spin-off" companies has been hampered by lack of trade secret protection.

The introduction of incubator parks in Ecuador is now being planned. Their eventual success will be aided by a more robust protection for intellectual property in Ecuador.

KNOWLEDGE DIFFUSION: HOW IT HAPPENS

People in any society gain knowledge from many sources. Parents, newspapers, friends, radio, visitors, travel, television, books, shopping, and school are all sources.

Some knowledge spreads by itself. The velocity of gossip is relatively high, but may not travel very far for lack of interest. Scientific knowledge can travel rapidly also, but only to those prepared to receive such special information.

Some knowledge, although of considerable value, is costly to disseminate. For example, knowledge of what medicine is effective against a specific medical condition or of what fungicide will prevent crop loss in certain plants, is knowledge first known to those who innovate such products. For doctors and agronomists it is not self-evident that such products work or even that they exist, unless the originators of such products make an effort to inform these specialists.

As a further example, the public at large would know little about how computers operate if those who created computers did not make an effort to inform potential customers. Put another way, the purchasing public would have little idea of how to operate computers or, indeed, whether or not they are worth having, if a certain amount of education were not done by computer makers.

Such knowledge-based products are more common today. Knowledge is required to understand and use many products, even to assess such products for their usefulness and desirability.

Even though many may desire such specialized knowledge, the willingness by those who possess it to make it available is conditioned by their ability to appropriate the benefits of dispensing such knowledge. Suppose, for example, an innovator in Brazil creates a new way to eliminate diesel exhaust fumes by mixing Ingredient X and several common substances with fuel in the tank. Ingredient X is a unique compound but easy to make from common materials. How willing will the innovator be to teach his new fume reduction method if anyone else can immediately copy his ingredient and sell it in competition against him, taking advantage of the knowledge he has spread on behalf of his innovation?

In this example, intellectual property protection can be seen in its role of fostering knowledge diffusion. Precisely in developing countries, where diffusion of technical knowledge is of greatest general public value, this role would be most beneficial. This is the theoretical analysis of Prof. M. L. Burstein of York University, Toronto, Canada, in his paper "Diffusion of Knowledge-based Products: Applications to Developing Economies", Economic Inquiry, Vol. XXII, October 1984, Western Economic Association.

R&D: DO THE INPUT AND OUTPUT MODELS CLASH?

Brazil is intent on boosting its technological capacity. Technology is clearly a driving force for any country. Research and development (R&D) is the source of new technology. Promotion of science and technology (S&T) is a crucial prior step.

Brazil has developed and continues to develop government programs to boost S&T and R&D. The BNDES, FINEP and many other institutions and agencies dispense substantial funds to advance the creation of technology. Tax incentives for R&D have recently been announced. This is Brazil's input model. It is fairly strong.

At the same time, Brazil's R&D output model is weak. Inventions and new ways of making things, which are the output of the R&D model, are governed by a system of intellectual property protection which is flawed and broadly ineffective.

For example, the 1971 Industrial Property Code prohibits the granting of patents for inventions in important fields, such as metal alloys, to which government research funds are dedicated and for which tax credits are available. Also, much research leads to technical knowledge which can only be safeguarded by trade secret protection. Yet the 1971 Code provides protection only in severely restricted situations and is therefore largely ineffective.

Lack of attention to securing the results of R&D seems to contradict the growing attention given to input. Does it make sense to promote R&D in metal alloys, for example, when any discoveries made cannot be fully protected by patents? Does it make sense to foster work on chemical process technology when, again, patents are prohibited and trade secrets are ineffective?

Inventiveness and creativity are subdued when their results can be immediately copied by anyone. Thus, it would seem that funds being put into R&D programs by government agencies may not be producing as much as they would if the results were safeguarded by patent, copyright and trade secret protection.

It might be possible to test these observations by a comparison between the output of R&D programs in, say France, and in Brazil. Any suggestion that reduced output from R&D programs in Brazil is caused by lower intelligence or poor education is unfair to Brazil. The difference stems largely from the way new technical information, i.e. R&D output, is protected.

It appears that Brazil's industrial property model undermines the R&D input model, leading to inefficient use of scarce government resources.

INTELLECTUAL PROPERTY PROTECTION AS INFRASTRUCTURE

What is infrastructure? It is a big word for what makes things happen in an economy. Infrastructure is things like roads, and electrical systems, and schools. Without them in a country, many things would not happen. They are the necessary preconditions for a great deal of beneficial activity.

The same is true for intellectual property protection.

Roads themselves do not do anything. They do not make things. They are inactive. But they help other things to happen. Because of them, vegetables get to market. Lumber gets to the cities. Fire trucks get to fires.

Electrical systems themselves do not do anything. They do not make things. They are passive. But because they are there, others things can happen. Light bulbs can give off light. Computers can function. Machine tools can make tools.

Schools themselves house students and teachers. They turn out human resources. They do not make products or earn money (normally). They enhance human abilities and skills. They provide information.

Intellectual property protection is another form of infrastructure. An intellectual property system which effectively protects new technology and creative expression is a critical ingredient in a country's economy. Without it, less happens there.

Multilateral lending institutions, like the InterAmerican Development Bank and the International Bank for Reconstruction and Development, devote vast resources to strengthening the infrastructure of many developing countries. Economists recommend enhanced infrastructure to aid in economic development.

In parallel, installation and administration of a system for intellectual property protection builds confidence that discoveries or innovations or creative expressions which individuals make will be safeguarded from exploitation by others. When this confidence grows, so does the economy.

When the infrastructure of intellectual property protection is in place, research is willingly conducted, the results of university research find their way to market, research parks come alive and financing for technology based companies is found. Although invisible, this form of infrastructure gives energy to ideas and is vital to the diffusion of knowledge. It helps important things happen.

INVESTMENT: DRIVEN BY TECHNOLOGY

Twenty years ago foreign investment was the leading actor on the international business stage. Technology played a supporting role. The image itself was static.

Today, technology drives investment. Now the image is dynamic and always changing, as technology moves relentlessly forward. To think primarily of investment is old fashioned, "behind the curve."

Some of the world's products are now made by networks of companies. Technology, not ownership, is the key to these networks. The auto industry is an example. The United States, European and Japanese auto companies practice different approaches to out-sourcing, but all look to places like Mexico and Brazil for components. Those sources are chosen partly because of competitive costs, but the ability to meet technical specifications for those components is the key, and even more so for future sourcing choices.

Other modern products are produced by small new companies. They spring up quickly. Some go on to be major producers. Computing and bio tech are examples. Clearly these fields are driven by emerging technologies, not by investment choices.

To put things another way, money now flows to support good new technology, rather than the reverse.

Technology itself flows or moves from point of origin to other locations. Knowledge, in one sense, knows no boundaries. There is, however, emerging awareness of a new rule of conductivity, so to speak, which applies to technology. Technology will move along paths where its conductivity is assured. It is reluctant to flow where it is not protected.

Sound protection for new technology through such devices as patents, copyright, and trade secrets enhances conductivity. This in turn conditions secondary investment decisions. Gaps in protection reduce conductivity for new technology.

Where there are gaps in protection, secondary protection is often sought in the form of ownership of a technology recipient by the technology supplier. Thus ownership can become a contributor to conductivity, but the broadest enhancement of conductivity comes from a comprehensive system for protecting new technology, that is, from adequate and effective safeguards for inventions, creative expressions and special technical knowledge.

III. SUGGESTED SPEAKERS FOR INTELLECTUAL PROPERTY SEMINARS IN ECUADOR

SUGGESTED SPEAKERS FOR INTELLECTUAL PROPERTY SEMINARS IN ECUADOR

QUITO

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Note: **Bold** signifies possible members of Congressional Work Group