

**TECHNOLOGY AND THE
PROTECTION OF
INTELLECTUAL PROPERTY**

by

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Following his retirement from Clemson University as Professor of Management and Economics in 1988, he was a Visiting Research Scholar at the National Chiao Tung University in Taiwan, 1988-89 and 1991-92. While in the Republic of China on Taiwan, he lectured at the Chinese Naval Academy and the National Defense University as well as a number of other academic/scholarly institutions. In 1994 he was a Visiting Professor at the Curtin University of Technology, Perth Australia. At Curtin his task was to develop an academic program in the area of transportation and logistics.

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TECHNOLOGY AND THE PROTECTION OF INTELLECTUAL PROPERTY

There are conflicts and there are conflicts, and not all involve the clash of armies, navies and aircraft. Some are silent—no gunfire or bombs exploding—but the stakes are as high or higher than in many armed confrontations. One such conflict is between those who own/control intellectual property and those who want it, and will take it, without paying the asking price.

In 1994, over 206,000 U.S. patents were applied for and over 113,000 patents issued. In 1993, over 48,000 patents were granted to residents of non-U.S. areas. In the same year, 161,000 trademarks were applied for and over 70,000 were granted. In 1995, copyrights in effect totaled 609,200. So much for the legendary clerk in the U.S. Patent Office who quit his job in the early 19th century reasoning that there was nothing more to invent. (1)

Patents in effect worldwide at the end of calendar year 1993 are shown in Table 1.

TABLE 1

PATENTS IN EFFECT WORLDWIDE AT THE END OF CY 1993

	Patents in Effect	
	Number	Percent
Granting Authority		
U.S. Patent and Trademark Office	1,131,239	29.1
Japanese Patent Office	631,063	16.2
Contracting States of European Patent Convention	1,369,545	35.2
Others	759,071	19.5
TOTAL	3,890,918	100.0

Source: *Trilateral Statistical Report, PTO (1994)*

However, sheer numbers are only part of the problem and probably the lesser part. Enforcement of patents, copyrights and trademarks is the issue that often pits government against government and many times spills over into trade sanctions and tariff and quota wars, all of which inhibit free world trade.

One of the oldest instances of “copyright infringement” is the counterfeiting of currency. Another is plagiarism—the taking of another’s thoughts, ideas, and words without attribution or compensation. In the former, governments have generally been successful (but not always) in protecting the integrity of their currencies by vigilance and exacting a high criminal cost on perpetrators, while in the latter, ethical and moral societies limited unearned gains. By the 1950s, however, the guys in the white hats were losing. In fact, it was no longer all that clear who the good guys were. (2)

Historically, protection of intellectual property rights with respect to the written word (copyrights on books, journals, newspapers, etc.) was fairly easy to safeguard. True, books could be reprinted without permission but printing and distribution costs were high and the copyright infringer relatively easy to identify. The greatest obstacle then and now is the concept and exercise of national sovereignty, that is, when a nation refuses to adhere to/enforce international accords that protect intellectual property (patents, copyrights, trademarks) within its boundaries. (3) Absent the use of force, the only other options are to penalize the offending country by diplomatic and/or trade sanctions. To the extent that the latter inhibits free trade among nations then to that extent is the entire world the loser.

A body blow with respect to protecting the written word was the invention of the thermofax and later the plain paper (Xerox) copier. In 1997, the cost to copy a page of printed material is a matter of a few cents and falling. Nor has it been that long since the spoken word was preserved on wax, and later, plastic discs, i.e., long playing records. While unauthorized duplication was possible, it was still relatively expensive. But once again, technology in the form of the inexpensive tape recorders and tapes, and later CD discs and players, significantly lowered the cost of unauthorized duplication. The protection of spoken and visual intellectual property—the cinema and television—also suffered as technology gave us the video recorder/player and inexpensive video tapes.

The most recent and probably the most costly unauthorized duplication of intellectual property, is the unauthorized duplication of computer software. Relatively inexpensive home computers have this capability. Nor is pirating software on a grander scale all that difficult.

Still another case of where technology has decreased the value of an artistic asset are negatives of the ubiquitous family photographer. Not too long ago a photographer would spend both time and talent getting a “just right” family picture. The negatives from which additional copies were made, in a sense, were his intellectual property. Though not illegal, state of the art color copiers can reproduce quality family, or for that matter, any photograph, at a fraction of the cost of using a photographic negative.

A final emasculation of legal copyright protection is the ability, in many cases, of the TV viewer to capture satellite transmissions of visually transmitted material. A satellite dish is all that is required. In an attempt to thwart such piracy, program owners have “scrambled” satellite transmissions. At best, they have only slowed the inevitable. That technology will some day be able to unscramble these transmissions, and at very little cost, is a foregone conclusion.

When all is said, technology has made it quite simple for the individual to ignore copyright laws with little chance of apprehension. And while the number of individual copyright infringements can only be guessed at, what is certain is that technology has made many of us felons in the strict sense of the term.

While patent violations are generally not as numerous as copyright violations, they can raise even more complex issues. One of the most common is the unauthorized manufacture of pharmaceuticals. This is particularly true in the world’s poorer countries. In essence, the argument put forth by these countries is that high priced drugs should not be denied to those who cannot afford them. Arguments that research costs must be recovered and that for every successful drug developed, there are many dozens of failures, are dismissed on ethical and humanitarian grounds. When national sovereignty is invoked to protect such pirating, the only recourse left is diplomatic and/or trade restrictions. Or in the case of developing countries, denial of foreign monetary and technical assistance.

In some cases, the issue of patent protection while manufacturing under license can cause a major clash of national interests. A case in point is when the Reagan administration attempted to deny U.S. gas pipeline technology to the Soviet Union. The problem was that a significant part of this technology was manufactured in Europe under license. The Europeans strenuously resisted American attempts to interfere with multi-million dollar contracts being negotiated with the Soviet Union. The issue was settled but not without large helpings of bitterness and acrimony on both sides.

Trademarks as intellectual property and the protection of trademarks is a more subtle issue. (4) Unauthorized use of a registered trademark is fairly easy to identify. Moreover, such infringements are hard to justify on humanitarian

grounds. More often than not, those who intend to benefit from unauthorized use of a trademark will not copy the protected trademark exactly, but come as close as possible. Given a sympathetic judiciary, the pirated, nearly alike, trademark can then be legitimized within a national boundary.

If it is granted that intellectual property is, in fact, a property right and deserving of protection, then two questions must be addressed. The first is how to protect intellectual property from unauthorized use by the individual? Second, how to protect intellectual property from commercial exploitation, particularly in those countries which invoke national sovereignty as a means of circumventing international treaties and conventions?

OPTIONS AND STRATEGIES

The case of unauthorized use of intellectual property by the individual is difficult, if not impossible, to completely solve. Policing costs would greatly exceed any benefit the owner of the intellectual property might receive. If a case study is needed, Britain's one time policy of imposing a tax on the owners of radios/TVs and the cost of enforcement are worth examining in a cost-benefit context.

One strategy that seems to be evolving is for the intellectual property right owner to reap the benefit of his property right more quickly than has been the case in the past. The trend is most evident with respect to property rights in books, videos and recordings. In the case of books, the time between when a book is published in hard cover and when it is made available as a paperback has significantly decreased. Many buyers will simply wait for a desired book to be released in paperback at a fraction of the cost of the hard cover. With an assured lower price in the near future, there is less of an incentive to illegally reproduce or purchase a pirated copy of the book in question.

The same strategy is also emerging with respect to video tapes of television productions and movies. The time between when a movie or television production is released and when a video version is available has markedly decreased. The individual that wants to see a particular movie/television production can expect it to be available at his video rental store in a relatively short time. Or should he wish to own the video, he will find the price considerably less in real terms than it was ten years ago. Thus, in the case of books, videos, and (cassette) tape recordings, low cost options that allow enjoyment of the protected intellectual property, may discourage unauthorized (illegal) reproductions.

In 1997, unauthorized copying of computer software is probably the most visible infringement of intellectual property rights. Not only is it the most visible, but also the most costly to the property right owner. But, as in the case of books, videos, and recordings, unauthorized use by an individual (using his home computer) is almost impossible to police. While it is true that the price of copyrighted software programs decrease over time, the usually high initial cost insures that unauthorized copying will remain an attractive option. (5) Also working against lower future prices is the fact that many of the most desired programs are constantly being updated. What is current last year, will probably be obsolete (less desirable) a year later. One option, but one that may not be economically viable, is for the software owner to avoid “quantum leaps” in upgrading his products. Improvements made in smaller increments, presumably at a lower price, may discourage unauthorized use, but this is far from certain. (6)

Three things seem certain. First, ending unauthorized use of protected intellectual property by the individual is almost impossible. Second, when the asking price of protected property is relatively low, the individual, after calculating the transactions cost for unauthorized use, will pay, as often as not, the asking price. It might also be noted that while technology has made unauthorized use of intellectual property simple and inexpensive, technology (and the competitive market place) can also be harnessed to insure that the asking price of intellectual property remains low.

Options to protect intellectual property rights in the international commercial marketplace include:

- Continue the status quo. Holders of intellectual property would continue to complain to their governments when international infringement occurred. Relief would depend upon their governments willingness and ability to act. In their own countries, property right holders would rely on the domestic judicial system to protect/enforce their rights.
- Raise the cost of infringement at the national and international level. This, of course, begs the question of how to do it and how high to raise the cost. Nor does it address the moral dilemma of poor nations and peoples that cannot, for example, afford life saving/enhancing pharmaceuticals that are protected by patents.
- Adopt an essentially socialist model wherein a national government rewards the holder of intellectual property. The distribution/use of the property is then determined by the government together with the

responsibility of preventing infringements. The flaw in this approach is—how much should or will government reward intellectual property owners? History suggests that rewards will be lower rather than higher which raises the issue of how to insure the incentive necessary to advance world knowledge in the arts and sciences. Moreover, the trend is in the opposite direction. Former socialist states are adopting the western view in which the marketplace, not government, rewards creative endeavors. (7)

- Develop an all inclusive model wherein government would share the risk in certain humanitarian research areas with the private sector, e.g. cures for AIDS and cancer. Variants of this model are found at many colleges and universities. The university provides various kinds of support for the researcher and shares in any income derived from patents issued. Similar models for providing support and sharing in the results of successful research are found in numerous federal facilities.
- Give the owner of intellectual property the option of (1) transferring his rights to government for a specified payment or payments, or (2) relying on the present system of enforcement.
- Develop a two tier international system for marketing the benefits of protected intellectual property in specific areas such as drugs, hygiene, and food production and preservation. Developing countries below a stated economic threshold would pay an agreed upon percent of marketplace determined license fees, royalties, etc. Countries eligible for preferred treatment would be periodically reviewed. In a two tier system the holder of the property right would receive something as contrasted with nothing as is now the case when a nation invokes national sovereignty as a means of circumventing any obligation to pay for the intellectual property in question.

A suggestion worth considering regardless of the option chosen is—delink GATT/WTO rules and regulations from international rules, procedures, and agreements that protect intellectual property. The regulation of international trade in goods and services is sufficiently different from international enforcement of intellectual property rights to warrant separate approaches and solutions. The present system penalizes advanced societies. As it stands, GATT/WTO standards for protection of intellectual property are less stringent than that desired by developed countries. No present option for insuring protection of intellectual property would be foreclosed by separating the two areas.

CONCLUSION

Protection of intellectual property as a continuing major national and international problem can be seen from a sample of recent news stories reporting on the subject.

US to speed up patents for anti-terrorist devices- (Washington—Patent applications for anti-terrorism inventions would receive ‘special status’ allowing them to be dealt with more quickly by the Commerce Department’s Patent and Trademark Office....Patent applications usually are examined in the order in which they appear on an examiner’s docket. If an applicant is granted ‘special status,’ his or her invention moves ahead of all others....)

Journal of Commerce, August 2, 1996

Piracy tapers off in Taiwan: But experts fear new wave possible- (Taipei—Like other newly prosperous cities in Asia, Taipei’s back streets include shops selling counterfeit CD and video recordings, computer software and designer clothes....The recognition and protection of intellectual property rights has become a key U.S. and European priority in recent years, as these regions have moved to safeguard their competitive advantage—ideas, trademarks and new technologies.... Analysts say violations here are starting to tail off for several reasons, including an increase in Taiwan’s own proprietary technology.)

Journal of Commerce, September 23, 1996

Music copywriters out of hand. (Greenville, SC—Americans were appalled to find out recently that Girl Scout troops around the country were being ‘shaken down’—forced to pay music copyright fees when they sing songs like ‘This Land Is Your Land’ around the campfire. They buy paper, twine and glue for their crafts—they can pay for the music too, grumbled the American Society of Composers, Authors and Publishers (ASCAP), which holds the copyrights to almost 4 million songs. And if the little campers kept it up, ASCAP threatened to ‘sue them if necessary.’)

Greenville (SC) News, September 24, 1996

Big Drug Makers Push Egypt, Other Nations To End Their 'Piracy' (Cairo—Egypt is defying foreign drug makers as it creates a home-grown pharmaceuticals industry. Local companies, insignificant before the 1980s, now supply two thirds of the nation's medicines. Their profit margins run as high as 26% and their executives ride in limousines...Its piracy, Pfizer and Glaxo say, but it's legal under Egyptian law, which provides only weak patent protection for drugs. The wrangling that produced the 1994 General Agreement on Tariffs and Trade (GATT) gave poorer countries 10 years to strengthen their drug-patent laws....)

The Wall Street Journal, December 13, 1996

U.S. to lower trade boom on Argentina: American firms claim pirated pharmaceuticals cost them millions (Washington—U.S. firms [claim they are] denied as much as \$500 million in income per year. Pharmaceuticals Research and Manufacturers of America said 'Argentina has reneged on repeated promises, over 17 years to provide effective patent protection.')

Miami Herald, January 15, 1997

Japan copyright agreement for musicians resolved (Tokyo—Tokyo agreed to backdate royalty payments to American copyright holders. Agreement was to backdate copyright protection for sales in 1950s and 1960s. Previous protection was only back to 1971. The European Union (EU) estimated loss of \$120 million/year through lost royalties.)

Miami Herald, January 17, 1997

Former Kodak manager, in secretly taped meeting, denies he'd sell secrets (Rochester, NY—Through a network of dozens of Kodak retirees and his own inside knowledge, Worden [former Kodak manager] is accused of stealing film-making trade secrets and selling them to rivals. Kodak cited nine known sales worth \$117,550. Mr. Worden denied the accusation saying 'I'm not in the business of selling secrets, and I'm not in the business of selling formulas.'

Greenville (SC) News, February, 1997

As the divergence in income/living standards between the rich and poor nations widens, the issue of who owns intellectual property and at what price, will not

go away. It seems fair to conclude that a large majority of the 185 some odd member countries of the United Nations, if given the means, would abolish or severely curtail intellectual property rights. And while protection of intellectual property as practiced in the western world will continue, howbeit at a high cost, it will continue only because so-called "Third World" nations lack the means to change the system. A second reasonable conclusion is that law firms (worldwide) that specialize in copyright/patent/trademark cases, will have more than enough work to keep them employed well into the 21st century.

NOTES

(1) U.S. Department of Commerce, *Statistical Abstract of the United States 1996*, 116th ed. In 1994, IBM was granted 1,298 patents, Xerox 611, and AT&T 595.

(2) The United States is a member of the Berne Convention (1989) and the Universal Copyright Convention (1955).

(3) Not considered in this paper, although still an infringement on property rights, is the counterfeiting of (usually expensive) merchandise, e.g., cameras, watches, designer clothes. Absent a “conspicuous consumption” motive, a buyer can usually protect himself by exercising reasonable care in making a purchase.

(4) The issue is further complicated by a requirement in most American states that trademarks also be registered in the particular state.

(5) A unique option for obtaining and paying for new computer programs is available on the Internet or Bulletin Board (SHAREWARE). An author makes available his program with a suggested price to be remitted to him. There is no prohibition against downloading the program nor is there an enforceable way to ensure compensation for the owner.

(6) In the recent past, some software owners upgraded their programs and as often as not, did not charge for the upgraded versions. The change to major upgrades at a greater frequency and at a price is the general rule in 1997.

(7) The socialist view with respect to intellectual property rights is precisely stated by Karl Marx—“from each according to his ability, to each according to his need.” The Christian admonition is much the same. “To whom much is given so too is much expected.”

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