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**ARE STRONG INTELLECTUAL
PROPERTY LAWS
A KEY TO ECONOMIC GROWTH?**
**Recent Developments in Intellectual Property Law
and Cyberlaw in the United States**

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Figure 1.
Korekiyo Takahashi

In early 1886, the Japanese government sent Korekiyo Takahashi to Washington, DC. His mission? To study about the US Patent Office to prepare to open a Japanese Patent Office. At the end of Mr. Takahashi's visit, Dr. Pierce of the US Patent Office asked: "I would like to know why the people of Japan want to have a patent system."

"I will tell you," said Mr. Takahashi. "You know that it is only since Commodore Perry, in 1854, opened the ports of Japan to foreign commerce that the Japanese have been trying to become a great nation, like other nations of the earth. We have looked about us to see what nations are the greatest, so that we could be like them. We said 'There is the United States, not much more than a hundred years old, and America was discovered by Columbus only four hundred years ago,' and we said 'What is it that makes the United States such a great nation?' We investigated and we found that it was patents, and we will have patents."

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Dr. Pierce, reporting the interview, added: "Not in all history is there an instance of such unbiased testimony to the value and worth of the patent system as practiced in the United States."²

1. Introduction

The very favorable opinion of the United States' patent system quoted in the introduction, made over 100 years ago, reflects the views of most people today. Every country with a significant economy has a patent system. Patent systems have been given credit for the vibrant economic growth in the United States, Japan and Europe, as the economies in those countries have focused on high-technology businesses.

But is that credit justified? Are patents (and other intellectual property rights) important for economic strength? Or as a monopoly, do intellectual property rights restrict competition and so harm economic growth?

In the past twenty years, things have changed. So first in this article, I will review the trends over the past twenty years in intellectual property law. How has the law changed? What trends have developed? Where are we headed?

Then we will look at some recent intellectual property and "cyber-law" laws and cases. There are many, many interesting recent laws and cases in the United Courts regarding intellectual property. Here, I focus mostly on laws and cases that help answer this important question: do strong intellectual property rights help create strong economic growth?

My conclusion? Copyright, trademark and trade secret protection help stimulate economic growth by protecting against pirating and free-loading. Strengthening these intellectual property rights should have little effect on competition. By contrast, they should encourage innovation by protecting against misappropriation – what really amounts to theft – of ideas.

² Scientific American 1/2/1886 p 5

Korekiyo Takahashi became Japan's first Commissioner of Patents, and later became Governor of the Bank of Japan. In 1921, Mr. Takahashi became prime minister of Japan, but only for seven months. He was perhaps best known as a long-term Finance Minister that helped lead Japan out of the Great Depression. He advocated economic instead of military competition with the Western powers. For this he was assassinated in 1936 at age 83 by a group of young officers to get him out of the way of the military faction preparing for World War II.

By contrast, patent law can harm economic growth by restricting competition. Strong patent rights usually do more harm than good. We will look closely at the example of the Wright brothers' invention of the "Flying Machine." As the example of the Wright brothers shows, a patent owner with strong patent rights will tend to abandon efforts to innovate and become a monopolist. They will keep competitors out of the market, leading to stagnation rather than growth.

Admittedly, this sounds like a simplistic conclusion to a complex issue. Certainly there are examples where strong patent rights have led to innovation. Some inventors undoubtedly invest time and money in inventing solely because of the assurance the patent system gives that the inventor will be able to recoup his or her investment.

Yet my twenty years working as an intellectual property lawyer lead me to believe that the conclusion is the correct one. With the patent system, the monopoly power of a patent collides with the antimonopoly principles of competition law. In my view, that results in less innovation than we would have with free competition and no patent monopolies.

2. The Past Twenty Years in Intellectual Property Law

In 1984 I passed the bar and became a lawyer, able to represent clients. Before going to law school, I studied computer science, and worked for one year doing research and development in computer graphics. With this technical background, I was asked as my first job at a law firm to review and comment on a computer software license agreement. I do not remember the details of that agreement.

But I do remember that concerns about intellectual property protection for computer programs were very real. Did copyright protect object code? Did source code have to be made public in order to get copyright protection? Was patent protection available for software? Was trade secret protection for software available against third parties? My client, a software company licensing its product to IBM, was very concerned about these issues.

Now we have answers to these questions. Copyright protects software, both object code and source code. Patents broadly protect software, at least in the United States. Trade secrets law protects confidential information, such as algorithms, even against third parties who misappropriate information.

When the Internet started to become popular in the mid-1990s, trademark law also became an important issue for cyberlawyers. Domain names clashed with trademarks. Geographic limitations on trademarks became less important as products began to be sold over the Internet.

Although a variety of changes have occurred, one thing has not changed. That is, the value of patents and intellectual property has always continued to increase. With patents in particular, the number of patents, and the scope that they cover, has greatly increased over the past twenty years.

Is this a good thing? Let us look more closely at these trends.

As we look at these trends, and then look at the laws and cases, keep this in mind. Perhaps intellectual property doctrine has not shown a proper appreciation for the innovation that competition may spur. Do overly broad grants, interpretations, or applications of intellectual property rights unduly limit competition? Do we have the right balance between intellectual property law monopolies and competition law?

Properly understood, intellectual property law and competition law both have the same goal: to promote innovation and enhance consumer welfare. The goal of patent and copyright law, as Article I section 8 of the Constitution says, is "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."

The conventional wisdom is that intellectual property law, properly applied, provides incentives for scientific and technological progress, or in other words, for innovation. Innovation benefits consumers through the development of new and improved goods and services, and spurs economic growth.

Similarly, antitrust law, properly applied, promotes innovation and economic growth by combating restraints on vigorous competitive activity. By deterring anticompetitive arrangements and monopolization, antitrust law also ensures that consumers have access to a wide variety of goods and services at competitive prices.

Do the intellectual property laws inevitably clash with antitrust law? Of course. Matters that involve both intellectual property and antitrust can raise exceedingly complex issues, both legally and factually.

For example, does a strong intellectual property law system decrease competition? Does this harm economic growth? Would we have less innovation if we had no patent system? What about the copyright, trademark, and trade secret protection? Is an effective legal re-

gime defining and protecting property rights a requirement to a well-functioning competitive economy?

But rarely are these questions addressed. The courts have limited ability to consider this type of public policy; the courts must focus on applying the law, not making it. The United States Congress rarely, if ever, addresses this type of issue. The issue goes to the core of our intellectual property and antitrust legal systems. Many factors keep Congress focused on more mundane matters.

Yet this question – have intellectual property laws started to harm economic growth – deserves attention. With this question in mind, let us look in more detail at some of the trends in patent, copyright, trademark and trade secret protection in the United States over the past twenty years.

A. Patents

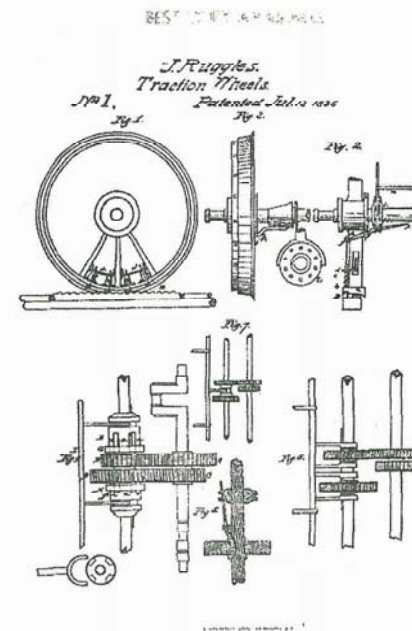


Figure 2. First page from US Patent No. 1, covering Traction Wheels for locomotives (actually this was the 11,281st US Patent issued, since earlier patents were initially not numbered).

The United States stands out as having established one of the most successful patent systems in the world. Over six million patents have been issued since 1790, the year the first patent was issued. That patent went to Samuel Hopkins of Pittsford, Vermont for a new method of making Potash, an industrial chemical used in making soap, glass, fertilizers and gunpowder. American industrial supremacy has frequently been credited to its favourable treatment of inventors, and the inducements (particularly patents) held out for inventive activity.

1. Number of Patents is Increasing

One trend regarding patents is clear. The number of patents, always high in the United States, has increased sharply in the past 20 years. In 1980, the US Patent and Trademark Office ("PTO") issued roughly 66,000 patents. Twenty years later, in 2000, the number had increased more than two and a half times, to over 175,000 patents. (As seen in Figure 1.) And the value of those patents that are granted has also increased.

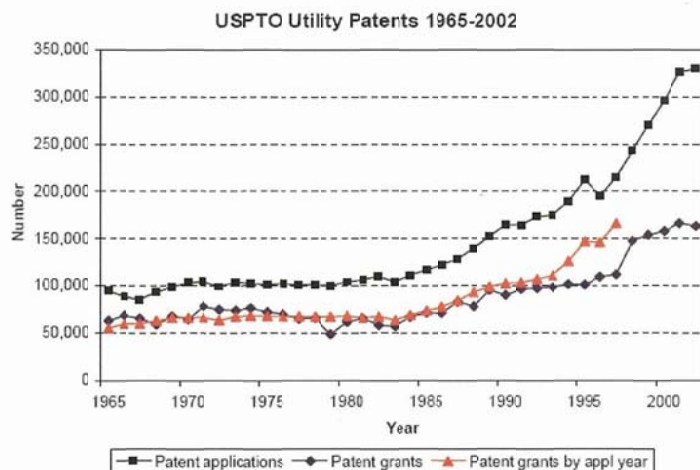


Figure 3. USPTO Utility Patents 1965-2002

2. Under the CAFC, the Strength of Patents is Growing

The patent laws in the United States have *not* changed dramatically in the past 20 years. What has changed? The legal system supporting the patent system, making patents increasingly valuable. The main change has been the influence of the Court of Appeals for the Federal Circuit (known as the "CAFC"). The CAFC was set up in 1982, and greatly changed the patent system.

Prior to the creation of the CAFC, there were some courts, and some circuits, where the rule appeared to be that all patents were invalid. The CAFC has changed that. Not to say, though, that the CAFC has always ruled for patent holders. It has not. One example: the CAFC's controversial decision in the *Festo* case, which substantially limited the scope of patents by narrowing the doctrine of equivalents.

But that the CAFC supports patents can be seen by comparing the CAFC's rulings with previous appellate decisions in patent infringement cases. Between 1953 and 1978, circuit courts affirmed 62% of district court decisions holding patents to be valid and infringed, and reversed 12% of the decisions holding patents to be invalid or not infringed. In the years 1982-90, the CAFC affirmed 90% of district court decisions holding patents to be valid and infringed, and reversed 28% of the judgments of invalidity or non-infringement.

Most seem to think that this strengthening of patents has been a good thing. But there are critics of the fact that intellectual property rights have been strengthened in the United States country since the early 1980s through legislation and judicial interpretations.

Some observers allege that, all too often, important patents - especially in biotechnology and software - are overbroad, and that overbroad patents can inhibit follow-on innovation. Others contend that broad patents are essential to encourage high-risk research in entirely new fields.

This debate has been particularly heated in the context of basic research, particularly concerning biotechnology. Some believe that patents on particular genes or receptors will wall off entire fields of research without generating any marketable product development. One of the cases we will look at - the Genentech case - shows this problem.

The explosion of business method patents is also controversial. The US Patent and Trademark Office ("PTO") sees the recognition of business method patents as the logical continuation of an unbroken evolutionary path from mechanical technology.

Others believe that the PTO has allowed a number of business method patents on ideas that would not appear offhand to meet the usual standards for novelty and non-obviousness. For example, the company Sightsound.com was granted a patent claimed to cover "the sale of audio or video recordings in download fashion over the Internet." That seems hardly a Sightsound invention.

Obvious questions arise: Has the recent explosion of business method patents reflected a commensurate increase in innovation? Or are such patents stifling, rather than promoting, innovation? And what about the strengthening of patent rights in general? What effect has that had on competition?

These questions are difficult to answer because such a broad spectrum of the law must be examined. The creation of the CAFC has not just affected patent law, but it has also affected competition law. Many

of the cases the CAFC decides relate to competition law just as much as patent law.

3. Increasing Effect on Competition

Commentators have suggested many explanations for the increase in the number of patents. These include:

- growth in innovation spurred by new technologies
- the need for companies to protect themselves against infringement suits with blocking patents
- the increased consciousness among the business community of the financial gains to be achieved through patenting all their technology
- creation of the CAFC

Regardless of the reasons underlying this increase, we should consider whether there are implications for innovation and competition. On the one hand, some observers believe that this patent explosion could injure competition by making it more difficult for rival inventors to sell competing products.

According to Professor Carl Shapiro, a “patent thicket” has formed, which he describes as “a dense web of overlapping intellectual property rights that a company must hack its way through in order to actually commercialize new technology.”³ Firms in certain industries fear that it is “all too easy” to infringe another patent accidentally and thereby risk liability.

The patent system does not permit even independent development. So even if an inventor spends time and money to independently make an invention, he or she may not be able to use it. If there is a patent on the invention, whether or not a later inventor sees or even knows of that patent, independent development is not a defense to an infringement action. Because of that, society may pay too high a price in stifling competition in order to reward innovation.

To many, the growth of patent litigation over the last twenty years has been troubling. Awards in patent infringement trials now exceed by wide margins those of twenty years ago. The very size of the stakes in patent litigation, both for plaintiffs and defendants, forces focus on pat-

ents and away from more productive research and innovation.

On the other hand, some observers believe that innovation currently is not hindered. Moreover, even if there were a “patent thicket” problem, some believe that firms have found a range of means to overcome these obstacles, including cross-licenses and patent pooling.

We need to understand the recent trend of patent proliferation: What are the factors underlying the trend - an explosion of innovation, changes in business approaches to intellectual property, patent procedures at the PTO, or other causes? How does this trend affect the commercialization of new technology?

So far, though, little attention has been paid to these issues. That is unfortunate.

As the nation that led the world in the grant of patents and inventive activity, the United States insists that other countries follow suit. Consequently, the harmonization of patent laws has always moved strongly towards the American ideal of stronger property rights in inventions. And not by accident. The US brings considerable pressure to bear to force countries to strengthen their patent protection.

But is that the way the world should move? That needs more careful thought. According to Carl Shapiro, more and more companies are following the lead of Texas Instruments and engaging in “patent mining.” That is, they try to get the most revenue out of their technology by obtaining broad patents and asserting them more aggressively than ever against possible infringing firms, even those who are not rivals.

Shapiro also claims that considerable research shows that companies are increasingly inclined to seek patents, causing an increase in the “propensity to patent.” Some patents are obtained to use offensively to generate revenue. But there has also been an increase in the practice of “defensive patenting,” obtaining a patent to protect oneself from suits by others, or to use in cross-license negotiations.

One report⁴ provides some interesting information about how patents work in the real business world in the United States.

³ Carl Shapiro, “Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting,” in *INNOVATION POLICY AND THE ECONOMY* 119, 120 (Adam Jaffe et al. eds., 2001), available at <<http://faculty.haas.berkeley.edu/~shapiro/thicket.pdf>> (last visited Aug. 17).

⁴ “R&D and the Patent Premium,” NBER Working Paper No. 9431 (January 2003), by Ashish Arora (Carnegie Mellon), Marco Ceccagnoli (Insead), and Wesley M. Cohen (Duke). Information quoted here is taken from a summary of the Working Paper by Robert M. Hunt, Federal Reserve Bank of Philadelphia. The summary is found at <http://www.researchoninnovation.org/tiip/archive/2003_4_c.htm> (last visited Aug. 17).

- The average firm reports that a patent helps to protect the competitive advantage conferred by a product innovation about 38 percent of the time. This measure varies significantly across industries. It is highest in drugs, biotech, and medical instruments. It is lowest for food and tobacco products, and for electronic equipment.
- Firms apply for patents on about one-third of their innovations, but this rate varies significantly across industries. Patent propensity is highest in drugs, biotech, and medical instruments. Manufacturers of computer and office equipment apply for patents on about 40 percent of their innovations. Patent propensity among firms in the semiconductors and other electronic components industries is only about 20 percent.
- The authors estimate that there are, on average, 5.6 patent applications per innovation. Drugs and biotech generate the lowest number of applications per innovation (about 2) while semiconductors, transportation equipment, and rubber products generate the most (7 to 9).
- The authors estimate that, on average, a 10 percent increase in firm R&D spending yields a 5 percent increase in the number of innovations.
- The productivity of firm R&D is positively influenced by information spillovers from universities and government labs. The estimated effect is quite large. The evidence for spillovers from rival firms is mixed.
- The authors estimate that the cost of obtaining patents on an innovation represents about 35 percent of the value of an unpatented innovation. This estimate clearly reflects more than the observable cost of filing for patents.

Reports like this provide valuable insight into the importance of patents in today's business climate in the United States. Certainly every company that participates in a market where innovation is important will have some sort of patent strategy. For better or for worse, just like anti-trust law 20 years ago, companies who do not pay attention to intellectual property law may well find themselves on the defensive in a lawsuit brought by a competitor.

B. Copyright

Economists have largely overlooked copyrights as an area of study.

That may be unfortunate. This form of intellectual property protection may provide valuable insights into how governments can encourage economic development.

Consumers in both developed countries and developing countries share similar concerns about the potential for copyright protection to encroach on the public domain. The "public goods" nature of copyrighted works is more evident than in the case of patents. Regulation of copyrighted works affects access to information and learning, freedom of speech, and the degree of democracy in a society.

Moreover, unlike patent protection, it is hard to argue that copyright induces "authors" (including artists and musicians) to engage in creative activity. Instead, copyright has always protected profits to the authors' publishers and distributors more than to the authors themselves. Likely, publishers promoted the idea that copyrights are granted for the benefit of authors in order to promote the publishers' own interests.

The American experience in the nineteenth century is instructive. Today the United States is notorious for denouncing acts of copyright piracy in countries like Taiwan and China. This is somewhat ironic, since the US itself was notorious as a copyright pirate for a hundred years.

During most of the 1800s, only American authors enjoyed copyright protection. Works by foreign authors could be freely copied. Since even then the US economy was one of the world's largest, using that period as a case study provides rare evidence regarding the likely costs and benefits of weak enforcement for property rights in literary and artistic works.

What has the last twenty years shown us about copyright protection? Unlike patent protection, we have not seen strong copyright prevent competition. In fact, copyright law has faded in economic importance as computer software copyright has been increasingly limited. On the other hand, the explosion of the Internet has strained the ability of copyright holders to enforce their copyrights against piracy.

1. Competitive Importance Decreasing as Software Copyright Came and Went

In 1979, the National Commission on New Technological Uses of Copyrighted Works (known as "CONTU") issued its final report.⁵ Based on the report, the US Congress amended the copyright law to include

⁵ Final Report of the National Commission on New Technological Uses of Copyrighted Works, *available at* <<http://digital-law-online.info/CONTU/contul.html>> (last visited Aug. 17).

computer programs as protected subject matter.

Many companies tried to use the copyright to protect ideas in their programs, or the “look and feel” of the programs. For example, in 1988 a panel of arbitrators ordered Fujitsu to pay IBM nearly a billion dollars for a license to make operating system software that was compatible with IBM’s software.

Now that kind of case is rare. Under today’s law, Fujitsu would not have had to pay IBM a single penny. Rather than use copyrights as offensive weapons against their competitors, software companies now use them more as defensive weapons to protect against piracy and theft. That is the more usual way that copyright has traditionally been used in the book, movie and music industries.

So copyright law has become less of a tool for companies to use against competitors to gain or protect their market share. Instead, copyright law has reverted to its traditional role of allowing copyright owners to prevent others from making copies of their works. It seems legitimate to say that few people would defend the copyright pirates that continue to plague the software industry.

2. US Joins Berne Convention

One important development in copyright law happened within the last twenty years when the United States joined the Berne Convention in 1988. That made copyright notices much less important. It also helped make copyright protection truly international protection, as the United States finally came on board with the rest of the world and most countries now share quite similar copyright laws.

3. Copyrights Very Different From Patents

From a competition law point of view, copyrights are very different from patents. Under patent law, an inventor can infringe someone else’s patent even if he or she has never seen the patent, and in fact have no idea that it exists. Under copyright law, if an author independently creates a work, it is not an infringement even if it is exactly the same as someone else’s work.

And copyright protection is automatic. Unlike patents, which must be applied for and cost a lot of money to obtain, copyright protection costs nothing to get and no formalities are required.

These and other differences have made copyright law much less important, when thinking about effect on economic growth, than patent law. The trends over the past twenty years tend to confirm that.

4. Copyrights Give Truly International Protection

Finally, unlike patent law, and also unlike trademark law, copyright protection is truly international. A work written in Japan can be protected against infringement in the United States. That makes copyright law much more flexible than, for example trademark law, in adapting to the new conditions where the Internet allows people to easily transfer copyrighted works across borders.

5. Internet Distribution Causing Issues

Broadband Internet access has become more available in recent years. That has made downloading files and faster. For music and movies in particular, that has made copyright owners more and more concerned about protecting their copyrighted works from piracy.

For example, in 2003 more than 50 major motion pictures in the United States were pirated and available on the Internet before they came out in theaters. Smith Barney estimates that the film industry made \$52 billion in 2003, but would have made \$3.5 billion more except for piracy.⁶ Next year’s losses to piracy are expected to be \$5.4 billion.

As another example, music is easily available for copying over the Internet. Many blame Internet file-sharing programs for the fact that music album sales fell 16% between 2000 and 2003.

In some parts of Asia, even the pirates selling illegal copies of movies have problems with piracy. Some movies being sold for about \$1.76 in Taiwan had the pirate’s company name put in the DVD so that the company could tell when another pirate was copying its pirated version of the movie.

Copyright law cannot help greatly with these issues. But some changes were made to the laws to help. Some of those issues will be discussed later. More important than changes to copyright law may be changes to business models. Copyright owners of music and movies are trying to change their business models to adapt to Internet distribution. Copyright law should be changed to help them do that.

6. Copyright Period Lengthening

One trend has been for copyrighted works to be protected for longer and longer periods. Recently the term of protection for copyrighted

⁶ “Hollywood Robbery,” TIME, January 26, 2004, available at <<http://www.time.com/time/magazine/story/0,9171,1101040126-578973,00.html>> (last visited Aug. 17).

works was increased by 20 years. Works created by a person are now protected for 70 years after the person's death. Previously, the term had been 50 years after death. Works created by a company are now protected for 95 years, rather than the previous 75 years.

Some have protested that these long terms of copyright protection keep copyrighted works from going into the public domain when they should. They have a point. Copyright protection supposedly lasts for a limited term. Recently, the term of copyright has seemingly become unlimited.

That being said, the length of copyright term seems to have little effect on economic growth. While there may be other reasons for opposing strong copyright laws and long copyright terms, the economic and competition principles have little relevance.

C. Trademark

1. Trademarks Increasing in Value

One trend over the past twenty years has been the increasing value of trademarks. For many years the three most valuable trademarks worldwide were Marlboro, Coca-Cola and Budweiser. Not because these products are better than others. But simply because have been so heavily advertised that most people around the world are familiar with these trademarks.

1. Coca-Cola	\$70B
2. Microsoft	\$65B
3. IBM	\$52B
4. GE	\$42B
5. Intel	\$31B
6. Nokia	\$30B
7. Disney	\$28B
8. McDonald's	\$25B
9. Marlboro	\$22B
10. Mercedes	\$21B
11. Toyota	\$21B
12. HP	\$20B

Table 1. Top 12 most valuable trademarks in 2003⁷

⁷ BusinessWeek, with data provided by Interbrand (available at <<http://bwnt.businessweek.com/brand/2003/index.asp>> (last visited Aug. 17)).

For example, many years ago one of my clients purchased rights to two trademarks in eight European countries. The trademarks were for liquid soap and shampoo. My client paid \$150 million for the two trademarks.

That did not include any trade secrets or patents covering the soap and shampoo. According to my client: "We know how to make soap and shampoo as well as the sellers do. All we need are the brands. That's where the value is. The trademarks have been advertised heavily, and they are worth a lot in those countries."

2. Internet Brings Global Problems

As the Internet becomes more of a marketplace, trademark law has started to see problems from the Internet's global reach. A trademark registration is not international. It covers only the country where it is made. But with goods sold over the Internet, a seller and buyer could be in any country.

For large global brands, like Coca-Cola, that will not matter. For brands used in smaller, more localized areas, that can cause a problem. So far, trademark law shows no signs of adapting to this problem. While the harmonization of national trademark laws continues, at least as far as the United States is concerned, trademarks are still considered local rather than global. Globalization of trademarks is not happening.

3. Internet and Domain Names

One problem caused by the global, cross-class use of the Internet contrasted with the local, limited-class nature of trademarks has been Internet domain names. For example, one company where I worked, BEA Systems, had a trademark for BEA in the United States covering software. Another company was already using the www.bea.com Internet domain name. We had to use www.beasys.com for several years. Finally, we were able to get the www.bea.com domain name.

Legislation to stop "cybersquatting" and the registration of famous domain names has cut down on the practice. But issues continue to arise in these areas.

D. Trade Secrets

1. Unfair Competition Issues From Employee Mobility

Over the past twenty years, employees have increasingly moved from company to company, rather than stay with a single company for

most of their careers. Some estimate that high-tech workers in the United States' "Silicon Valley" now spend an average of less than three years with any company before taking a new job.

This has caused problems with trade secrets and unfair competition law. But the law has seemed to handle this problem quite well.

2. "NDAs" Become Mainstream

Over the past 20 years, one interesting trend has been the fact that Non-Disclosure Agreements ("NDAs") have become so popular. While having an NDA is not harmful, in most cases it is not necessary. Trade secrets will usually still be protected in the US under the Uniform Trade Secrets Act even without an NDA.

But while people focus on getting an NDA signed, they fail to mark their confidential material with a "Confidential" label. Doing that is much more important to getting trade secrets protected than is getting an NDA signed.

3. Used as Competitive Weapon

Another trend in trade secrets law has been to try to use trade secrets as a competitive weapon in the courts. Some have tried to argue that discovering trade secrets through reverse engineering is improper. That was argued in the *Brunner* case discussed below. Luckily, in most cases, these arguments have failed.

E. Cyberlaw

1. Cyberlaw More Important as Traditional Intellectual Property Becomes Less Applicable

One interesting development has been the increasing importance of "cyberlaw." That is, law that relates to the Internet or the computer industry but is outside the boundaries of traditional intellectual property law. As we have experimented with some new laws in the United States, mistakes have been made.

For example, the Semiconductor Mask Works Protection Law has been relatively worthless. Certainly experience throughout the world has shown that those laws to protect semiconductor mask works were a mistake. They just are not needed.

And one of the other new "cyberlaws," the CAN-SPAM Act will turn out to be a bother to legitimate email users while not cutting down on spam emails. But we will discuss that Act a little later.

2. New Issues Bring New Law

In general, though, some courts and legislatures have shown surprising creativity in modifying traditional intellectual property law, or developing new cyberlaw, to address the new issues raised. As use of the Internet continues to increase, the United States legal system seems to be keeping up with the disputes and legal issues that this new technology brings.

But commentators have noted that new measures need to be taken. In some areas, the intellectual property laws are not working. For example, if you sell the drug Viagra, the operating system software Windows XP, or the movie "The Last Samurai," you should hold enormous pricing power because no one else can legally sell what you sell. But increasing numbers of people are willing and able to break the laws. That weakens the pricing power of the holders of the intellectual property rights.

For example, file sharing is a major reason CD prices are declining for the first time. The software you can buy at very low prices in some Third World countries is almost certainly an illegal copy. Now chemical engineers in various countries are learning to copy patented molecules and produce illegal pharmaceuticals, which they sell for a fraction of the price.

As the world changes, and as the Internet makes geographic distance less of a barrier, the laws must change to keep up.

3. Recent Case Law and Legislative Developments

A. Patents

1. Genentech Case – Impact on Competition

A lawsuit filed April 11, 2003 in United States District Court for Los Angeles grabbed the attention of the life sciences community. The key parties were three high-profile biotech developers: MedImmune, Genentech, and Celltech. MedImmune challenged the validity and enforceability of an important Genentech patent.

But this was not just a normal patent litigation case. Behind the Genentech patent, MedImmune charged, was an illegal, anti-competitive agreement that "profoundly and fundamentally altered the competitive landscape in the biotechnology industry."

The Genentech patent under attack, US Patent No. 6,331,415, claims methods for producing monoclonal antibodies. Many biotech

companies use those methods to produce antibodies for human therapy. This patent is also known as the “new Cabilly patent.”

What is curious is that the new Cabilly patent contains the same claims as a Celltech patent, US Patent No. 4,816,397—otherwise known as the Boss patent. However, where Celltech’s patent would have expired in early 2006, Genentech’s patent, which exists only because of a settlement between the two companies, will not expire until the end of 2018.

And therein lies the problem. Rather than passing into the public domain in a few short years, this valuable antibody technology will stay protected until 2018. Companies practicing these patented methods face paying royalties for an additional dozen years. This fact has frustrated many biotech companies that licensed the Boss patent and naturally assumed that their royalty obligations would end in 2006. MedImmune took that frustration one step further and went to court, seeking to invalidate the new Cabilly patent.

The sequence of events began back in 1983, when Celltech and Genentech both filed patent applications. On March 25 of that year, Celltech filed a patent application in the United Kingdom, naming Michael Boss and others as the inventors of fundamental antibody expression methods. Shortly thereafter, the company filed an international application under Patent Cooperation Treaty procedures, which became a US application in 1984.

The US patent issued on March 28, 1989. On April 8, 1983 (two weeks after Celltech’s effective filing date), Genentech filed its US patent application, naming Shmuel Cabilly and others as the inventors of similar antibody expression methods. Genentech’s patent (known as the “old Cabilly patent”) also issued on March 28, 1989, as US Patent No. 4,816,567.

Prior to the grant of the old Cabilly patent, Genentech had also filed a continuation application. That application was amended in March 1990, in accordance with US Patent and Trademark Office rules: Genentech filed that amendment to initiate an interference action. Therefore, Genentech copied the Boss patent’s antibody claims into its own application and requested that the PTO declare an interference between Celltech’s patent and Genentech’s application.

An interference is a legal proceeding unique to the United States, with its “first to invent” priority for patents. (The United States awards a patent to the first person to make an invention. In other countries, the patent is awarded to the first party to file a patent application on the invention.) The PTO resolves which party was first to invent when two

different parties allegedly make the same invention.

On Feb. 28, 1991, the PTO Board of Appeals and Interferences declared an interference between Celltech’s patent and Genentech’s application. Celltech was given the benefit of its U.K. filing date and considered the senior party in the interference. So to win, Genentech had to prove a date of invention prior to the U.K. filing date. (Under US patent law, the junior party has the burden of establishing by a preponderance of the evidence that it made the invention prior to the senior party.)

After seven years of the interference proceeding, the Board of Appeals and Interferences ruled in favor of Celltech. The Board concluded that Genentech had not proven a date of invention before U.K. filing date. Genentech was thus not entitled to a patent.

Not surprisingly, Genentech appealed that PTO decision in the US District Court in San Francisco. During the federal court litigation, Genentech submitted new evidence in the form of a draft patent application from the files of Cabilly, the company’s lead inventor, which Genentech claimed predated Celltech’s U.K. filing date.

Based on this new evidence, Genentech filed a summary judgment motion requesting that it be awarded priority of invention. Celltech opposed the motion, and the District Court denied it. Celltech was near winning the case. It had won the interference, and now had won a challenge to the interference.

Strangely enough, though, Celltech agreed to a settlement of the District Court litigation with Genentech. Why did Celltech agree to settle a case that it had won? The settlement agreement was filed under seal and remains confidential, so we do not know the details. But we can guess at its contents from press releases by the parties.

Celltech agreed that Genentech had conceded priority of invention, so Genentech won the case. The PTO was ordered by the US District Court to revoke the Boss patent and issue the new Cabilly patent covering the same invention. The new Cabilly patent essentially extends patent coverage on antibody manufacture by 12 years. Only now Genentech has the patent rather than Celltech.

A joint press release from Genentech and Celltech issued on Dec. 18, 2001, the same day as the new Cabilly patent, tells us why Celltech gave up the Boss patent five years early. Genentech agreed to pay Celltech for all royalties that it would have accrued until the normal expiration of the Boss patent in 2006, so Celltech loses no money by losing the patent. And Genentech agreed to grant licenses to Celltech for use of the antibody expressions processes covered by the new Cabilly patent.

So as a result of the settlement, both Genentech and Celltech are happy. Celltech gets all the royalties it would have received anyway, plus a license to the Genentech patent until it expires. Competitors must pay for a similar license. And Genentech gets a patent that the PTO determined it was not entitled to. Only the competition loses from this arrangement.

This tidy settlement agreement between Genentech and Celltech will clearly harm competition. But in late 2003, the US District Court in Los Angeles ruled that MedImmune cannot pursue antitrust claims in its suit to invalidate the new Cabilly patent. The court ruled that because another federal court judge approved the agreement there was no antitrust violation. The court also noted that the new Cabilly patent was issued under rules set by the PTO.

Since both a previous federal court judge and the PTO blessed the agreement, this new court refused to even consider whether it was illegal. "This is not a case of an anticompetitive private agreement receiving immunity because it passed through government hands in some ministerial way," the court wrote in her decision issued December 24, 2003.

Criticizing without knowing all the facts may be dangerous. But it seems clear from what we can tell about the *Genentech* case that Genentech was not entitled to a patent. Certainly both Genentech and Celltech were not both entitled to a patent on the same invention, with an effective patent period totaling 35 years.

Yet that is what happened. Now this valuable technology will not enter the public domain until 2018. And competition will suffer for that.

2. Festo Case – Reduced Strength

While the *Genentech* case shows how strong patent rights have become, the *Festo* case cuts back on the scope of some patent claims. On May 28, 2002, the Supreme Court issued its opinion in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, a patent case involving the bases and scope of "prosecution history estoppel." The Supreme Court has granted certiorari to address two questions relating to the doctrine:

- (1) Does every claim-narrowing amendment designed to comply with any provision of the Patent Act – including those provisions not related to prior art – automatically create prosecution history estoppel regardless of the reason for the amendment?
- (2) Does a finding of prosecution history estoppel completely bar the application of the doctrine of equivalents.

Writing for a unanimous Court, Justice Kennedy answered the first question by agreeing with the Federal Circuit that "a narrowing amendment made to satisfy *any* requirement of the Patent Act may give rise to an estoppel." (Emphasis added.) Justice Kennedy rejected Festo's view that estoppel should not arise when the amendment was made to comply with the statutory requirements concerning the form of the application (in this case, under 35 USC. § 112):

Addressing the second question, Justice Kennedy rejected the Federal Circuit's view that prosecution history estoppel completely bars the application of the doctrine of equivalents. Instead, Justice Kennedy sided with the views of the dissenting Federal Circuit judges that a flexible-bar rule was more appropriate and consistent with the Court's precedent:

Justice Kennedy said that a complete bar is inconsistent with the purpose of applying the estoppel in the first place – to hold the inventor to the representations made during the application process and to the inferences that may reasonably be drawn from the amendment. By amending the application, the inventor is deemed to concede that the patent does not extend as far as the original claim. It does not follow, however, that the original claim becomes so perfect in its description that no one could devise an equivalent.

Justice Kennedy noted that when the court is unable to determine the purpose underlying a narrowing amendment, the court should presume that estoppel applies. When the purpose for a narrowing amendment can be determined, the court should look at that purpose and decide whether estoppel makes sense. For example, if the reason for the amendment has nothing to do with the equivalent at issue, estoppel would not apply.

The Court vacated the Federal Circuit's judgment in favor of the defendants and remanded for a determination of the scope of equivalents surrendered by the patentee's narrowing amendments.

Many see the *Festo* decision as drastically affecting the effect of claim amendments. If a patent attorney is not careful during prosecution, he or she may accidentally give up the broad scope that would otherwise be available under the doctrine of equivalents. Because of that, some patent attorneys claim that the *Festo* decision has changed patent prosecution dramatically.

To my mind, the *Festo* decision is just common sense. Certainly care should be taken during patent prosecution to limit amendments as much as possible. A patent attorney should not try to get unreasonably

broad claims, since the examiner will object and the claims will have to be amended. At the same time, in most cases the possibility of prosecution history estoppel being applied will be less important than getting broad claims in the first place.

3. The *Knorr* Case – Reduced Strength

The Court of Appeals for the Federal Circuit (“CAFC”) decided to consider the issue of deciding whether patent infringement is willful, and thus brings liability for triple damages. The Federal Circuit asked for interested parties, called *amicus curiae* or “friends of the court,” to file briefs on the subject of how patent willfulness is proven.

Thirty responses were filed, all of them urging the court to revise its precedent. The responses ranged from companies to patent attorney organizations. In particular, the responses all urged that the court abandon its current rule allowing an adverse inference of willful infringement when an accused patent infringer asserts the attorney-client privilege.

The responses were nearly unanimous on a second question as well. Almost all responses urged the CAFC to reject an adverse inference against an infringer who failed to obtain advice of counsel at all. One felt there should be an adverse inference in some cases. Even it supported an adverse inference only where the patent owner had provided the infringer with actual notice, or where the infringer had legal reason to seek legal advice.

The CAFC rarely decides, on its own, to review as a whole court an issue like that of willful infringement. That shows how important the CAFC considers the issue to be. When the CAFC expressly invited briefs from the public, and had an overwhelming response to its invitation, that showed how important the public considers the issue to be. In fact, the CAFC received more responses in this case, *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*,⁸ than it did in the earlier *Festo Corp. v. Shoketsu Kinzoku Kogyu Kabushiki Co.* case.

Many responses also addressed a third question: does the fact that a substantial defense to infringement exist mean that there can be no liability for willful infringement, even if the infringer did not get a legal opinion. In other words, if the question of infringement is close, a defendant may have decided that he or she is not infringing, and decided not to get

an opinion. If the defendant loses in the infringement lawsuit, may he or she be found liable for willful infringement even having presented a strong defense?

On this issue, the responses were split. Clearly opinions on this issue differ.

Because the responses from patent attorneys and companies indicate strong support for a change, the CAFC will probably decide to limit the cases where willful infringement is found. That will make it harder for patent owners to obtain triple damages, which may result in more potential defendants deciding to take the risk of challenging patents. If so, there may be some benefits to competition.

4. IRS Objection to Patent “Gift” Values

One issue that has recently arisen has been the practice of making charitable donations of patents to universities. A company with a patent it is not going to use will donate it to a university. The company can then take a tax deduction for the value of the patent. And the university can use the patent in its research.

That makes sense. What does not make sense is the value the companies have been putting on the patents. In early 2003, SBC Communications donated a virus screening patent “worth” \$7,300,000 to the University of Texas. The valuation was done by a Los Angeles based Intellectual Capital Management Group (ICMG). Under the federal tax laws, SBC can count 35% of the value of the donation against its revenue for federal tax purposes.

The problem is that most people who have looked at the patent believe it is worthless. So on one side, people believe it is worthless. On the other side, it is worth \$7.3 million. How do you tell who is right? There is really no way.

What the federal tax authority, the IRS, has done is to insist on very conservative valuation of patent donations. For example, it will accept a value based on the amount of money that was spent on obtaining the patent. Or based on the license revenues that the patent has generated. These valuations make sense. But universities fear that these low valuations will result in fewer donations being made. So they are fighting the IRS to get them to be more generous.

⁸ *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 344 F.3d 1336 (Fed. Cir. 2003).

B. Copyrights

1. Digital Millennium Copyright Act ("DMCA")

The Digital Millennium Copyright Act ("DMCA") was passed in 1998 to protect copyrighted works against piracy by using the digital recorders and copiers that have made piracy so easy. As in any copyright law, the key is to maintain the traditional balance between protecting information and affording access to it. The DMCA assumes that technology is better suited to this task than law, and prohibits the circumventing of various protection technologies.

The DMCA prohibits the "circumvention" of any effective "technological protection measure" (e.g., a password or form of encryption) used by a copyright holder to restrict access to its copyrighted material. The DMCA also prohibits the manufacture of any device, or the offering of any service, primarily designed to defeat an effective "technological protection measure." However, these two prohibitions did not go into effect until two years and 18 months, respectively, after the DMCA was passed.

One of the most heavily debated provisions of the Act centered on the liability of Internet service providers (called "ISPs"). Following lengthy debate between intellectual property owners and service providers, the final law exempts any "online service provider" or carrier of digital information from copyright liability based solely on the content of a transmission made by a user of the provider's or carrier's system.

In addition, the DMCA establishes a "take down" mechanism for avoiding copyright infringement liability. Even if an ISP has infringing information stored on its own computer system, the ISP will not be liable for copyright infringement if the ISP acts "expeditiously to remove or disable access to" infringing material identified in a formal notice by the copyright holder. More about this later, in relation to the ISP liability cases.

The DMCA specifically states that it makes no change to the fair use doctrine.

Prior to passage of the DMCA, an amendment was added. This amendment, was created jointly by the Recording Industry Association of America ("RIAA") and the Digital Media Association ("DiMA") industry groups, as well as members of Congress. The amendment addresses licensing issues that will have a profound effect on the music industry, and on the new webcasting industry.

Under current copyright law, webcasters have to pay a license fee to

"perform" music over the Internet. These fees are often paid through ASCAP, BMI and SESAC to writers and publishers affiliated with those organizations. Under the amendment, webcasters will also owe a license fee to the record companies. For the time being, the fees are negotiable. However, it is expected that a fee structure will be added to the Act in the future.

Some claim that the DMCA is being used to silence researchers, computer scientists and critics. While not limited to the DMCA, the views of both supporters of "Copy Left" (Lawrence Lessig and Jonathan Zittrain) and "Copyright" (Jane Ginsberg and Paul Goldstein) have recently been quite vocally expressed.

On the Copy Left side, supporters argue that more works need to become part of the public domain, as part of a "cultural commons." They argue strongly against what they call the "permission culture," where anyone wanting to sue even a small part of a copyrighted work needs to seek permission. They also argued strongly against the Copyright Term Extension Act.

On the side of traditional copyright, supporters argue that the rights of authors need to be respected. They believe that the Copy Left movement improperly emphasizes the public domain over the rights of authors. Most traditional copyright supporters believe that copyright law will adapt to fairly accommodate the new digital media.

Both sides feel that the other side tilts the balance improperly. So far, the traditional copyright supporters have prevailed, since their side includes publishers with their political power. Certainly there are some economic issues at stake in this debate. But neither side seems to argue that their view would lead to greater economic growth. Unlike patents, competition does not take the central role in the copyright debates.

2. Copyright Term Extension Act

In 1998, the United States Congress extended by 20 years the length of protection afforded to works created by both individuals and corporate copyright holders. This put US copyright law in harmony with the majority of other Berne treaty nations. Previously, the term of copyright was life plus 50 years for individual authors and 75 years for corporate "creators." Now the respective terms are 70 and 95 years. The new law applies both to new works and to all works still under copyright on the bill's effective date.

3. Internet Service Provider ("ISP") Cases

Let us look at one important aspect of the Digital Millennium Copyright Act of 1998 (known as the “DMCA”). The DMCA gives some protection to Internet Service Providers (known as “ISPs”) against liability for copyright infringement – a so-called “safe harbor.” Many issues have now arisen about this safe harbor, and other aspects of the laws.

For example, the Church of Scientology has cleverly used the provisions of the DMCA to attack its critics. The Church of Scientology owns many copyrights in its religious materials. Historically, it has acted very aggressively to protect those rights.

Indeed, the Scientologists’ successful 1995 litigation⁹ against the ISP Netcom was the reason the safe harbor provisions were put in the DMCA. The safe harbor protects ISPs from liability for infringing content that is posted on (or made accessible through) their websites if the ISPs “take down” that content when they are notified by the copyright’s owner. These so-called “take down” provisions have attracted considerable attention in the past few years as a result of new litigation initiated by the Church of Scientology.

In 2002, the Church of Scientology notified the providers of the Internet search engine Google that it was providing access to a Norwegian website that was critical of Scientology and illegally displaying the Church’s copyrighted materials. The Church demanded that Google take down hyperlinks to the website. In order to stay within the safe harbor provisions of the DMCA, Google voluntarily complied with the demand.

The Church of Scientology subsequently notified the providers of the Internet Archive, a library of stored webpages, that it too was providing access to the Norwegian website. The Internet Archive responded by removing all of the website’s pages from its archive, regardless of whether they included the Church of Scientology’s copyrighted materials.

The Church of Scientology’s aggressive tactics have drawn criticism. More generally, the DMCA’s provisions requiring ISPs to take down allegedly infringing materials in order to be assured the protection of the DMCA’s safe harbor have been criticized as giving too much power to copyright holders.

Another controversy over the DMCA’s “take down” provisions has emerged in peer-to-peer (known as P2P) file sharing (the sharing of mu-

sic or video files between individuals over the Internet). The music industry’s successful legal campaign against P2P operators such as Napster, Aimster, and others is well known. But numerous smaller services still permit users to unlawfully swap copyrighted files over the Internet. The Recording Industry Association of America (known as the “RIAA”) has sought to end this infringing activity by taking legal action against the ISPs and web hosting services to terminate access to the infringing websites.

In June 2002, the RIAA sued AT&T, WorldCom, and Cable & Wireless to terminate access to a Chinese website that distributed pirated music. Although the lawsuits were dropped once the website was disconnected, ISPs have become increasingly uneasy about their emerging role as the protector of third party copyrights. In particular, they fear the monitoring costs and potential liability this new role may create.

These lawsuits show the tension that sometimes arises between the right to free speech, found in the First Amendment to the Constitution of the United States, and the copyright laws. Economic interests are sometimes impacted, as with the online music trading services which distribute music for free, thus taking away a significant part of the revenue of music distributors. However, the tension between competition and copyrights remains much less than that between competition and patents.

C. Trade Secrets

1. DVD Copy Control Ass’n v. Bunner

On August 25, 2003, the California Supreme Court issued an interesting decision in *DVD Copy Control Association, Inc. v. Bunner*.¹⁰ The subject of the case was the defendant’s posting on his website of a computer program that allows users to circumvent the copy protection on DVDs.

The Supreme Court decision holds that courts may order a person to remove trade secret information from a website without violating the free speech protections of the United States and California Constitutions. The case was closely watched because the Court of Appeal had held that computer code posted by Bunner was “pure speech” and warranted the highest level of protection under Bunner’s free speech rights.¹¹

⁹ Religious Technology Center v. Netcom On-Line Communications, 907 F. Supp. 1361 (N.D. Cal. 1995).

¹⁰ DVD Copy Control Association Inc. v. Bunner, 31 Cal. 4th 864 (2003).

¹¹ DVD Copy Control Association Inc. v. Bunner, 93 Cal. App. 4th 648 (2001).

Oct 1999	Johansen posts DeCSS; Bunner then posts DeCSS
Nov 1999	DVD CCA sends demand letters
Dec 1999	DVD CCA sues Bunner
Jan 2000	Trial court issues injunction against Bunner
Nov 2001	Appeals court reverses trial court
Jan 2003	Johansen acquitted in Norway
Aug 2003	California Supreme Court reverses appeals court

Table 2. Dateline in the *Bunner* case

The Court of Appeal had ruled that Bunner's publication of the program could not be enjoined even if it had been created by misappropriation of trade secrets. The Court of Appeal decision thus raised the possibility that it would become difficult or even impossible for companies to get an injunction in trade secret cases. By overruling the Court of Appeal's decision, the California Supreme Court confirmed that publication of trade secret information may properly be enjoined, in appropriate circumstances, without violating free speech protections.

The underlying case concerned the publication of the software known as "DeCSS," which allows a user to defeat the copy protection known as "CSS" on some DVDs. DeCSS was developed by a Norwegian teenager named Jon Johansen, who posted the code on a website. Bunner then posted the DeCSS code on his own website, as did many other website operators around the world.

The DVD CCA, which owns CSS, sued Bunner and other defendants, claiming that they misappropriated the DVD CCA's trade secrets by posting the DeCSS computer program on their websites. The Superior Court issued an order preventing the defendants from continuing to post the DeCSS code on their sites. The Court of Appeal then overruled the injunction.

It is not clear from the court record how Johansen developed DeCSS, or even whether he was the one who did so. For the purposes of the appeal, however, the California Supreme Court assumed that he developed DeCSS, and that he did so by misappropriating trade secrets. The Court further assumed that Bunner misappropriated trade secrets.

The Supreme Court agreed that the First Amendment to the United States Constitution, as well as the California Constitution protects computer code. However, the Court held that those provisions do not always prevent injunctions from being entered.

The Court found that protection of trade secrets depends "on the judiciary's power to enjoin disclosures by those who know or have reason to know of their misappropriation." The Court also found that "the injunction burdens no more speech than necessary to serve the government's important interest in maintaining commercial ethics."

The Court therefore reversed the Court of Appeal decision that the injunction violated the First Amendment right to free speech. However, the Supreme Court sent the case back to the Court of Appeal with instructions to determine whether or not the record supports the claim that a trade secret was misappropriated.

Although the DVD CCA won the battle at the California Supreme Court, it later lost the war. Probably sensing the tide shifting away from it, the DVD CCA announced in January 2004 that it was withdrawing its suit against Bunner. The Court of Appeal refused to accept the concession by the DVD CCA, and went on to decide the case. It ruled in favor of Bunner.¹²

The Court of Appeal reversed the trial court's grant of a preliminary injunction. The Court emphasized three points in its ruling. First, the DeCSS program was already widely available to the public at the time of the posting on the Internet by Bunner. Second, there was only "sparse" evidence that the DeCSS program had been improperly obtained in the first place. Third, the preliminary injunction burdened more speech than was necessary to protect the DVD CCA's property interest in its trade secret.

D. Cyberlaw

1. CAN-SPAM Act

The "Controlling the Assault of Non-Solicited Pornography and Marketing Act of 2003" (or "CAN-SPAM Act") was designed to provide protection from "spam" (unwanted emails) to Internet users across the US. The CAN-SPAM Act preempts many provisions of existing state anti-spam laws. For example, the highly restrictive California law that was set to take effect in January 2004 will no longer be valid now that the federal law has been passed.

The CAN-SPAM Act will not prohibit the sending of commercial email. It does, however, prohibit certain fraudulent and misleading

¹² DVD Copy Control Assoc. Inc. v. Bunner, 2004 Cal App. LEXIS 234 (February 27, 2004).

practices, and requires senders of unsolicited commercial emails to give recipients a means to “opt out” of future mailings from those senders.

The Act also authorizes the Federal Trade Commission (“FTC”) to bring enforcement proceedings against violators. Finally, the Act permits, but does not require, the FTC to establish a national “do not spam” list similar to the “do not call” registry that now restricts telemarketing calls.

Frankly speaking, the CAN-SPAM Act will not reduce the amount of spam that most users receive. If the senders of spam have not already moved their servers outside the US, they will do so now. They will continue to operate as usual.

Ironically, the greatest impact of the CAN-SPAM Act will be on legitimate businesses that use email to do marketing, to fill customer orders, and to communicate with their customers. Those businesses have had to become familiar with the detailed provisions of the CAN-SPAM Act, and put a compliance program in place to make sure that they avoid the penalties of the Act.

Some highlights of the new CAN-SPAM Act are as follows:

a. Preempts State Anti-Spam Laws

Perhaps the most important provision of the CAN-SPAM Act is its preemption language. The Act specifically preempts state anti-spam restrictions not directly related to fraud or deception. Businesses welcome the protection this gives against more restrictive state legislation. It simplifies the task of compliance with legal requirements, since there is only one federal law instead of fifty state laws.

But the preemption of state laws also prevents states from enacting laws that might be more effective on cutting down on spam. Given that the CAN-SPAM Act will do little to restrain “spammers,” and more powerful state laws have been preempted, we can expect little legal protection from spam.

b. Permits Broadcast Advertising

Unlike the highly restrictive California statute that was set to take effect in January 2004, the CAN-SPAM Act allows companies to send email ads to potential customers. The Act does not require that the recipients give prior consent to the mailings. Nor does the sender have to have a preexisting or current business relationship with the recipient.

c. No Private Right to Sue Spam Senders

Unlike the pending California statute and some other state anti-spam laws, the CAN-SPAM Act does not give recipients of commercial emails a private right of action to sue the senders for violations of the Act. Enforcement will be only by means of criminal and civil actions brought by the FTC or state law enforcement authorities. Internet service providers, however, do have a right to bring civil lawsuits under the new Act.

d. “Opt Out” Option Required

The sender of email ads must give recipients the means of asking not to receive future email ads from that sender. This means that the email must give the recipient the ability to send a reply message or other “Internet based communication” that opts out of future emails from the sender. Also, the recipient’s ability to make such an “opt out” response must be good for at least 30 days after the original message is sent.

e. Email Ads Must Be Identified

Email advertisers to identify their messages as ads or solicitations, and to do so by means that are “clear and conspicuous.” The FTC will determine specific, required means of identification by rulemaking. While it may seem that this will help people identify spam in their email inboxes, in practice most advertisers will simply move offshore, and it is doubtful that many spam messages will be identified as ads.

f. Prohibits Misleading Headers

The CAN-SPAM Act prohibits misleading headers and other practices that mask the origin of email ads. Specific prohibited practices include falsification of header information, false registrations for email accounts or IP addresses used in connection with email ads, and retransmissions of email ads for the purpose of concealing their origins.

4. Conclusion

Is US intellectual property law headed in the right direction? Do intellectual property rights add to economic growth? Or do they just reward a few lucky inventors, just like the lottery, with no real benefits to society?

To answer those questions, patents provide the best form of protection to look at first. Then the other traditional forms of intellectual

property protection – copyright, trademark and trade secret – are worth looking at. Finally, cyberlaw and other new forms of legal and self-help protection also bear looking at.

To sum up my conclusions, strong intellectual property protection has become an entrenched part of the business environment in the US. The conventional wisdom is that this will promote economic growth by encouraging innovation. In the case of patents, at least one historical example shows us that the conventional wisdom may well be wrong.

A. Patents

The patent system may be causing more economic harm than benefit. Strong protection of patent rights rewards patent owners. But it does not help society. In fact, by giving one company a monopoly it reduces competition, reduces innovation and increases prices.

Monopolies not only harm society, they may also harm the monopolist. Some economic studies have suggested that in a market that has two competing firms, both firms will do better than if only one firm controlled the market, with no competition. That is because a monopolist tends to spend less time and effort expanding the market.

And a patent system consumes many resources. An average patent application in the United States, with attorneys' fees and filing costs, probably costs about \$13,000 to put on file. Prosecution costs vary, although they are usually less than the initial costs. Maintenance fees that must be paid to keep the patent alive also cost a great deal over the life of a patent.

So a company that has a portfolio of patents will spend millions of dollars to build that portfolio. Yet 98% of all patents have no commercial value. That is, they do not generate any license revenue, and no products are marketed based on them. That suggests that much of this money is wasted.

And if infringement lawsuits are brought, the plaintiff and defendant may spend as much as \$1 million each in lawyer's fees. Certainly these are the worst-case numbers, and few patent cases go to trial. But a medium-sized high-technology company will typically spend at least \$1 million a year on patent-related costs, and that is just to obtain and maintain a patent portfolio and licensing program. Could that money be better spent on researching new innovations?

That money and technical resources should be better spent, from a social viewpoint, on developing new products. The intellectual prop-

erty laws should, for society's greatest good, encourage inventors and companies to develop new technologies and products to develop the market. Instead, inventors and companies are allowed to try to keep a market to themselves, free from competition.

Professor Fritz Machlup in 1958 reported his findings from his study of the US patent system to Congress.¹³ He concluded that we had only a very limited basis for evaluation, but did offer some conclusions.

If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.

While against abolishing the patent system, his comments are hardly a rave review of the economic benefits of the patent system.

What Machlup noted in his report is still true today:

None of the empirical evidence at our disposal and none of the theoretical arguments presented either confirms or confutes the belief that the patent system has promoted the progress of the technical arts and the productivity of the economy.

But while empirical evidence may be lacking, we can look at history as a guide to whether or not patents provide more good than harm.



1. The Wright Brothers and Their Patents

One example, though not a recent development, shows the pitfalls of the patent system. That is the Wright brothers' invention of the airplane, or "Flying Machine."

The Wright brothers received US Patent No. 821,393 for a "Flying Machine" on May 22, 1906. Looking ahead, Orville and Wilbur Wright had been able to recognize at the end of the glider experiments in 1902

Figure 4. Orville and Wilbur Wright

¹³ "An Economic Review of the Patent System," Study No. 15, Subcomm. Patents, Trademarks and Copyrights of the U.S. Senate Judiciary Comm. (1958) (annotated version available at <http://www.ipmall.fplc.edu/hosted_resources/jepson/unit1/aneconom.htm> (last visited Aug. 17)).



Figure 5. The Wright brothers' 1906 patent for a "Flying Machine"

that \$150,000 was spent in court costs, a substantial amount for those time.

Unfortunately, like many other engineers before and after them, the Wright brothers were stubborn and completely lacking in basic social skills. They wanted nothing more than to sell out and be free to pursue their research into airplanes. But they did not know how to do that. The brothers alienated all potential buyers by refusing to demonstrate their airplane until a contract had been signed.

The Wright brothers' stubbornness grew partly out of their obsession about the danger of having the invention stolen. After proving to themselves and the world that powered flight was possible, they essentially locked the airplane away and focused on patent enforcement and

that they needed to protect their work. The patent was applied for on March 23, 1903, nine months before their historic first flight on December 17, 1903.

The Wright brothers' general airplane patent was granted not only in the United States, but also in France, England, Germany, Russia, Italy, Austria, Hungary, Belgium, and Spain. When other aviators or manufacturers tried to profit from flying exhibitions or the sale of aircraft, the Wrights vigorously invoked their patent and filed many infringement suits at home and abroad.

The Wright brothers were aggressive in protecting their invention and barring others who tried to use this knowledge to make newer or better airplanes. Orville Wright estimated

litigation. Having just invented the airplane, the Wrights stopped flying for two and a half years.

There was some reason for their paranoia. Almost as soon as the brothers announced their first flight, the brothers received a threatening letter from Augustus Herring, who had rushed to file a patent covering some aspects of the Wright brothers' own design after a visit to Kitty Hawk. Herring was a glider pilot and, as soon become clear, a con artist and charlatan. His patent was later denied, but that did not stop Herring from continuing to try to profit from wild claims about his aviation abilities.

The Wright brothers' first priority was to patent their airplane, and they duly received their patent in 1906. According to the Wright brothers, their patent did not just cover their specific design, but the whole concept of three-axis control – being able to independently steer the aircraft in pitch, roll, and yaw – that was critical to powered flight. This patent became a mighty weapon that the Wright brothers used for the next thirteen years to sue anyone else who tried to fly an airplane.

It may not have been as big of a problem if the Wright brothers themselves had kept working on aircraft design, or if the original flyer

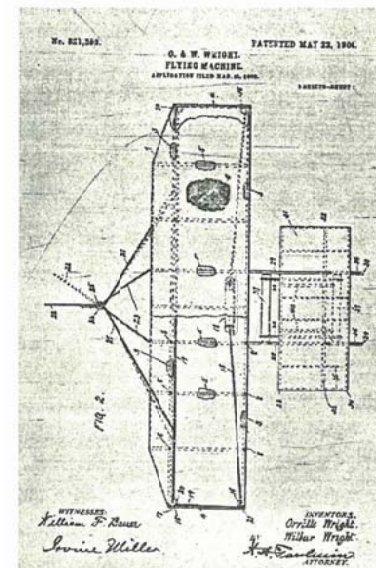


Figure 6(a). The Wright brothers' patented "Flying Machine"

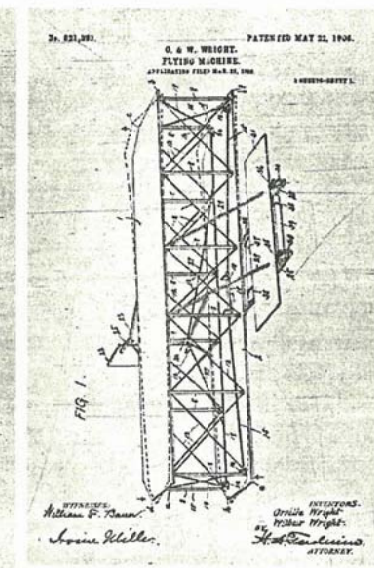


Figure 6(b). The Wright brothers' patented "Flying Machine"

had been good enough for others to want to take a license. But neither was the case.

The Wright brothers never advanced their initial 1903 design. They became so consumed with their lawsuits that they spent no more time or energy on aircraft design. For three or four years, their design outperformed those of all others. But it quickly became obsolete as others found better ways to do the things the Wright brothers had done.

While innovative, the Wright brothers' design had some key features that were quickly superseded by other inventions. One major problem the Wright airplane had was instability. Any modern airplane will naturally and gradually return to its equilibrium position even if it gets tossed around in turbulence. This positive dynamic stability must be built into each design.

The Wright plane's negative stability meant that the pilot constantly had to adjust the plane to correct for any turbulence. If the pilot did not correct the motion, the plane would continue with its motion until it fell out of the sky. Other designers began to build positive stability into their planes. The Wright brothers never did.

A second problem was the technique the Wright brothers used to turn the plane. On modern planes, a pilot turns by moving small control surfaces on the trailing edge of the wing called ailerons. The Wright brothers rejected ailerons in favor of wing warping, where the pulling of wires would change the actual wing shape. This technique was as elegant as it was ultimately ineffective. Ailerons quickly became the norm.

Steering in general was the main problem for airplanes of the time. The wings and other surfaces had to be large to generate enough lift. The forward "rudder" (soon known as a "canard wing") was added for just that purpose. But the forward rudder and other large wings allowed the plane float around on a cushion of lift without strongly pointing in the forward direction. The plane naturally wanted to weathervane around into the wind.

That kind of design did not last long. The familiar plane layout of most modern aircraft – a long fuselage with a tail and horizontal stabilizer behind the wing – soon became the norm. In fact, that design actually predated the Wright brothers' design by almost a century. But the Wright brothers had to move to their design, and add the canard wing, to get the maximum lift possible.

Had the Wright brothers used a powerful engine, they could have used a better design. The mechanic at their bicycle shop, who had no

expertise in building engines, built their engine. Their engine was terribly underpowered, even by the standards of the day. The Wright brothers knew how to build airframes, not engines. They were able to get their plane airborne only because their ingenious propeller design and high-lift wing made up for the poor engine.

A fellow aviator, Glenn Curtiss, knew how to build innovative, lightweight engines. Curtiss offered to go into partnership with the Wrights in 1906. That partnership would have dramatically changed the course of aviation history. But the Wright brothers turned him down. In fact, they focused on Curtiss in litigation, and worked hard to sue Curtiss out of the airplane business.

Curtiss did not steal anything from the Wright brothers. His designs were as revolutionary as the Wright brothers. But in the years to come, the Curtiss-Wright rivalry would become the most bitter of the many legal disputes initiated by the Wright brothers.

Curtiss, backed by Alexander Graham Bell, fought back by trying to build new airplanes faster than the Wrights could win court cases against him. He also went to great lengths to try to establish prior art or at least narrow the scope of the patent ruling. Despite the many innovations in the Curtiss design, the court took the broadest possible view of the Wright patent.

Curtiss and the Wright brothers were bitter rivals, each side as stubborn as the other. But while the Wright brothers' efforts were focused on enforcing their patent, Curtiss worked on aviation innovations as much as litigation. Clearly the Wright brothers obtaining a patent took them out of aviation engineering and into the courtroom. What was unfortunate is that it also stopped all other American aviators from getting their innovations to market.

For the Wright brothers, the patent struggle was a series of Pyrrhic victories. They wanted justice and credit for inventing the airplane, after which they would continue to pursue their research further. Instead they found themselves consumed by litigation, and forced to watch others catch up with and overtake their technical lead, particularly in Europe, where aviation research had strong state support.

The endless legal battle over the airplane patent may even have contributed to Wilbur Wright's early death in 1912. Wilbur came down with typhoid at an especially rough patch in the legal proceedings, and died at age 45. His brother Orville lived long enough to see the Wright Co. taken over by Curtiss in 1929. Neither brother made any substantive contribution to aviation after 1908.

The Wright Co. continued to pursue the patent suit, but it was never completely resolved. Curtiss was able to drag out negotiations with repeated proposals for settlement that were never finalized. The Wright brothers' lawsuits in Europe also dragged on, with no one big defeat but eventually fizzling out.

The United States government finally put an end to the patent strife in 1917. World War I was three years old, and airplanes more advanced than any American designs were being used in the war. The US government insisted that the rival aviation companies form a patent pool, removing patent barriers to creating new airplane designs.

Together with the war, the patent pool inspired a golden age of American aviation. The pool stayed in effect until 1975. Companies who wanted to preserve a competitive advantage did so using trade secrets (such as Boeing's secret recipe for hanging jet engines under an airliner wing).

Under this arrangement, all aviation companies joined together in a new organization known as the Manufacturers Aircraft Association. All members of the association were required to pool their patents. They were then granted use of the patented technology after payment of a blanket fee.

Curtiss and Wright-Martin, successor to the Wright Co., each received \$2 million under the agreement. This made Orville Wright a wealthy man (Wilbur Wright had already died). So the Wright brothers' patent wars ended. Despite being the first in the world to make a powered, controlled flight, the Wright brothers did more to harm the US airplane industry than to help it.

The advent of World War I stimulated the fledgling aircraft industry around the world. But no US models flew in the World War I skies. The US selected a British model, called the De Havilland DH-4, for the majority of its World War I airplane production. Most US pilots in Europe flew French models.

2. Lessons From the Wright Brothers' Example

Nothing can illustrate the effect of the Wright brothers' patent war better than this: By 1917, less than fifteen years after the first flight of an airplane in the US, the US was so far behind Great Britain, France and Germany in aircraft design that its pilots flew French aircraft and its factories build British designs. Some of the competitive aircraft are seen in Figures 7(a) and (b).



Figure 7(a). Vintage World War I German airplane



Figure 7(b). Vintage World War I British airplane

The Wright brothers' patent story drives home some key lessons about the US patent system. The reason for patents is to encourage innovation, reward entrepreneurship, and make sure useful inventions get widely disseminated.

But in this case (and in countless others, in other fields), the practical effect of patents turned out to be to hinder innovation. A patent war erupted, truly innovative technologies were attacked by the patent owner, and the inventors – never motivated by money in the first place – ended up unhappy.

Other examples exist. The main transformative technologies of the 20th century - aviation, the automobile, and the digital computer - started off with patent wars. Only once these patent wars were settled, and true competition began, did these key industries develop.

The Wright brothers won every patent case they fought, and it did them absolutely no good. The prospect of a fortune was not what motivated them to build an airplane. They would have built it whether they received a patent for it or not.

Ironically, the Wright brothers would probably have been happier, and richer, had they not obtained a patent. In 1903, the Wrights were years ahead of any potential competitor, and possessed a priceless body of practical knowledge. Their trade secrets and accumulated experience alone would have made them the leaders in the field, especially if they had teamed up with Curtiss. Instead, they got to watch heavily government-subsidized programs in Europe take the technical lead in airplane design as American aviation stagnated.

At the same time, more patents are being granted than ever before, with broader claims, and with little regard for prior art. Shown the way by “inventors” such as Jerome Lemelson, entire companies are basing their business models on extracting money by getting patents without actually creating any products or new technologies. And the boundaries of patent law are expanding.

Critics of certain aspects of the patent system grow increasingly vocal. Some, like Greg Aharonian, have shown that many patents have issued without citing obvious non-patent prior art. In many cases, anyone active in that field or industry would know about the prior art. These abuses of the patent system seemingly have grown to be quite normal.

But is the answer to reform the patent system, or some solution even more fundamental? If the patent system fails to work for the archetypal example of the Wright brothers - two inventors, working alone, who single-handedly invent a major new technology - why do we keep the patent system at all? Would we all be better off without it?

B. Copyrights, Trademarks, Trade Secrets

In my view, the patent system should be closely examined for its effects on competition. Other traditional forms of intellectual property protection – copyrights, trademarks and trade secrets – have more benefits than harm from a competition law standpoint.

Certainly these areas of intellectual property protection also present issues to address. They may be stifling legitimate activities, with the scope of “fair use” under copyright law being limited. As the *Burner* and ISP “take down” cases have shown, threats to free speech should also not be ignored.

C. “Cyberlaw” and Other Laws

In the era of globalization, the law continues to play a role. But events are showing that the law may have less influence than practical measures. Cyberlaw may become more important than traditional patent, trademark, copyright and trade secret law. Mistakes may be made, but that does not mean the attempt was not useful.

D. My Suggestions?

We have looked back at my twenty years of practicing intellectual property law. We have looked at some recent developments in intellectual property law and cyberlaw in the US. We have looked at the example of the Wright brothers and their airplane patent. Based on all that, what do I suggest?

This may be a bold suggestion for a patent lawyer, but my view is that the patent system should be abolished in the US. In my opinion, we would be better off without its harm to competition and hindrance of the development of new industries. We need to pay more attention to other means of appropriation and rewards such as data encryption, unfair competition laws, and private contracts.

The Orphan Drug Act, for example, offers drug companies a limited incentive to develop drugs with limited markets. Drugs get developed, and competition does not suffer. But there have not been many attempts to explore alternatives to patents and copyrights.

Patent and copyright law has certainly changed since they were first established in the US, back when the US Constitution required them. But should we adopt alternatives, or even discard, these systems with our

drastically different social environment of the 21st century?

For example, American copyright piracy during the 19th century did not lead to ruinous competition. Publishers were able to appropriate returns through a number of strategies, including first mover advantages, reputation, and price and quality discrimination. The dominant firms cooperated in establishing private rights of exclusion in foreign-authored books, which could be traded.

All this suggests that publishers were able to simulate the legal grant through private means, although at higher cost since such rights were not enforceable at law. Courts were also able to offer more individualized protection through alternative doctrines in contract laws, misappropriation, and unfair competition. These alternatives may increase the costs to rights holders, but may also result in a net increase in social welfare.

Intellectual property law should be used only to fight unfair, criminal acts, not legitimate competition. For the patent system in particular, the focus is not on unfairness, but in giving a patent holder a competitive tool. Patents now are used to fight competition, not tools to fight theft.

Companies should be encouraged by intellectual property laws to compete strongly but fairly. Self-help should be encouraged rather than reliance on intellectual property schemes that are slow to change. In a capitalistic society like ours in the US, perhaps the patent monopoly should be discarded as an 18th century system no longer needed.