



## Santa Clara High Technology Law Journal

Volume 15 | Issue 1

Article 4

January 1999

# Control of Inventions in a Networked World

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## ESSAYS

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### CONTROL OF INVENTIONS IN A NETWORKED WORLD\*

Howard C. Anawalt†

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#### INTRODUCTION

Computers and modern communication links, such as the Internet, present fresh challenges to law and legal institutions. It seems clear that technology influences social development and law. Reciprocally, law influences technological development. One of the principal ways this occurs is through the application of intellectual property doctrines. The present paper will focus on the intellectual property doctrines that affect inventive processes. These include patent, copyright, trade secret, and related contract law.<sup>1</sup>

This essay was originally presented at an international conference attended by people of various disciplines. One common thread among those attending was that the professional work of each relates directly to some aspect of the information technologies that dominate our world

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† The author would like to thank Susan Yee and Phillip P. Lee for their help on research and editing of this essay. The essay was originally delivered as a paper to the Second European Conference on Law, Computers, and Artificial Intelligence, University of Hertfordshire, St. Albans, UK, April 1998. It has been modified somewhat for this publication.

1. This group of doctrines is referred to at times as “invention protection law” in this essay.

today.<sup>2</sup> The conference thus discussed a networked world from many different perspectives.

In recasting this essay to its present form, a student asked me "what is a networked world?" We live in a "networked world." The pace of change of information power and handling has been nothing short of phenomenal in the past three decades. My parents would simply not have comprehended the daily lives which have been created by e-mail, computers, grocery store scanners, automobiles run by computerized engines, cell phones, automatic dialing, and so forth. Nor would the scientists and technicians who designed the prototypes of these items. Everything seems changed by these instantaneous processes and their timeless and borderless qualities. Yet for most who are my students today, these are "the good old days."

The student who asked the question has not known a world that is not "a networked world." Some of us who straddle these computer and non-computer generations are not sure whether we are fish or fowl in this new world. One of the author's long time friends captured some of the spirit of the new world's effect on the old when he said: "The only thing that is organized in my life is my hard drive."

Thus, the term "networked world" refers to electronically connected information processors (computers<sup>3</sup>) and those of us who use or receive the impact of them.

This paper contends that three major norms are observable in invention protection law. These norms balance control and access rights, but do so in a way that generally favors access as a primary principle, as access generally favors both technological development and service to the public at large.<sup>4</sup> The primary references in the discussion will be

2. Attendees included intellectual property attorneys, software designers, database consultants, criminologists, computer text process designers, information theorists (computer logic), and international organizations specialists.

3. Whatever the configuration, the mechanism at the end of the wired (or wireless) network is a computer. That is, it is a "machine" comprised of memory and logic components. This is true of items from digital watches and thermostats to supercomputers. The key to these machines is their underlying "software."

4. "Control" refers to the various mechanisms that allow an individual or corporate inventor to prevent others from using methods, etc. without the inventor's permission. At times the control is in the form of a property right. At other times it takes the form of a contract provision. Access refers to one's ability to examine and make use of the ideas or their products. "Norm" is used in one of its common meanings: "an ideal standard binding upon the members and serving to guide, control, or regulate proper and acceptable behavior." WEBSTER'S INTERNATIONAL DICTIONARY 1540 (3<sup>rd</sup> ed. 1993).

Norms often collide in law. This is especially true of control and access. The Pacific Coast has many extraordinary mountain and coastal sites. Some of these areas are open to the en-

to United States law, as that is the body of law with which the author is most familiar. The norms, however, generate a large degree of universal appeal. The case and statutory examples are chosen primarily from areas that deal with computers and related processes in the networked world.

#### THE NORMS

The invention protection norms are:

1. *Protection for Limited Purposes.* Inventions should be protected through intellectual property only for the purpose of creating limited rewards to those whose idea products benefit the public.

2. *Preference for Access Rights.* In general, access to information should be preferred to strict enforcement of rights to control inventions.<sup>5</sup> The limited nature of intellectual property combines with a positive preference for allowing use of the ideas in any given work.

3. *Protection for Functional Works.* Inventive work products comprise two general categories: functional works and expressive works.<sup>6</sup> The two classes call for differing treatment. As a general proposition, functional works merit shorter temporal protection, yet deserve greater assurance of reasonable compensation per instance of usage.

The first norm states a basic expectation that appears to form the foundation of invention protection law.<sup>7</sup> Society grants rights to in-

ture public (access) while others are privately owned (control). One can easily understand the conflict if, for example, a family, individual, or corporation owned Point Lobos, Yosemite Valley, or Mount Rainier. Such ownership (therefore control, exclusion, and exploitation) of natural beauty and resources exists in wide measure. A similar, if not identical problem exists with regard to idea products.

5. A patent grants access to its teaching from the time that the patent is issued, which is when its disclosure is made to the public. The disclosure allows for the use of the ideas in the patent. This is fundamental to United States patent law, which does not allow one to own an idea. See, e.g. *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972). However, the patentee receives, in most instances, a right to exclude others from practice of his or her invention. The control over the product of the ideas (that which is "reduced to practice") is offered to provide an incentive to the inventor to share the idea with the public. See *infra* note 22, and accompanying text.

6. The two categories have overlapped to a marked degree in intellectual property law. The classic example is the inclusion of software or programming under copyright protection.

7. The three norms operate to reduce the degree of contradiction between control of ideas and their products and open access to those ideas and products. Control and access can be seen as antinomies. (An antinomy is "a contradiction between two philosophical principles each of which is taken to be true or between inferences correctly drawn from such principles." WEBSTER'S INTERNATIONAL DICTIONARY 95 (3<sup>rd</sup> ed. 1993). Actually more than two norms can be in conflict in any given situation.) Coherence offers great value. However, conflict among norms also contributes to vitality in life, in philosophy, and in law. Much has been written in law reviews about

ventors, because their work benefits the people at large.<sup>8</sup> Property rights in inventions are granted because people derive some good from them.

The second norm reflects the way in which inventions actually benefit people. If humanity is to gain, it must enjoy access to the inventive activity on reasonable terms. This entails access to the invention itself and to the underlying ideas and knowledge that drive the invention. Humanity benefits more from the knowledge gained from inventions than from the particular product produced. The increase in knowledge allows for more inventions and improvements on them. The gain in knowledge is like the advantage of teaching someone to fish. Much more is gained than would be from the gift of a fish alone. A primary function of creating invention protection is to increase knowledge and understanding. The benefit to humanity comes more from access to the ideas and driving forces that produce the inventions than from the inventions themselves.

Intellectual property law strikes a balance. On the one hand, "property" rights are created to exclude others from access to the matter in question. On the other hand, humanity can only enjoy benefits through access. Thus, the property right should give way when it interferes with the reason for its creation in the first place.

Two major, additional social policies favor the pro-access principle. The first is the commitment to freedom of speech or free exchange of ideas. The second is the general social policy that favors freedom to exercise a trade or to compete. Intellectual property laws stand as exceptions to these major policies. Being exceptions, intellectual property laws ought to yield to the major policies when conflict arises.

The third norm proposes that functional works ought to be treated differently from those that communicate. Functional works are ones

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the matter of coherence and antinomy in recent years. See, e.g., William A. Edmundson, *The Antinomy of Coherence and Determinacy*, 82 IOWA L. REV. 1 (1996).

8. Thomas Jefferson, the third United States President, was an inventor himself as well as a member of the first patent board. He stated: "[I]f nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me." VI WRITINGS OF THOMAS JEFFERSON, at 180-81 (Wash. ed.), quoted in *Graham v. John Deere Co.*, 383 U.S. 1, 8-9 n.2 (1965).

that actually get a job done.<sup>9</sup> They *do* something. A cookbook will tell one how to bake a cake. A programmed machine will actually bake the cake.

Functional works deserve high and certain compensation when they reduce labor and save resources. At the same time, functional works usually command a market or value precisely because they are so practical. The norm states that society should distinguish functional works from others by providing functional works with brief but sure rewards.

One of the best examples of the overlap between functional and communicative works is the software that directs computers. From one vantage point, the program is a literary work. But once put to use for its intended purposes, the program represents a modern equivalent of wheels, pulleys, and gears. The only difference is that software “instructs” an assembly of computer chips and wires to perform given activities through directing electrical impulses within the hardware. The matter is well described in the discussion of a District Court judge in the 1992 case *Computer Associates International v. Altai, Inc.*<sup>10</sup> In this case, the court appointed its own computer expert from The Massachusetts Institute of Technology, Dr. Randall Davis, to analyze the role of the software at issue in the case.

Dr. Davis explained that a computer program must be viewed both as text and as behavior. The text perspective focuses upon the object code and the source code. Although unintelligible to people untrained in computer programming, both object code and source code can be expressed in written form. Object code appears as a series of zeros and ones, representing the magnetic polarization of the “bits” that are read by the computer. The source code is a combination of words, symbols, and numbers used by programmers to describe, or provide the basis for, the object code of a particular program.<sup>11</sup>

The functionality distinction acts as a primary limiting principle in intellectual property law. Basically, the distinction operates to limit the property rights available to functional works. Under the major

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9. The terms “function” and “functional” have a variety of meanings. Here the intended meaning of functional is “capable of performing; operative.” AMERICAN HERITAGE DICTIONARY 285 (2nd ed. 1983).

10. *Computer Associates International v. Altai, Inc.*, 775 F. Supp. 544 (E.D.N.Y. 1991).

11. *Id.*, at 559.

branches of United States federal law, functional works are granted patent protection, but denied copyright protection.<sup>12</sup>

Let us now turn our attention to the primary areas of invention protection available in the United States.

#### FUNCTIONALITY AND ACCESS — PATENTS AND COPYRIGHTS

The primary areas of federal invention protection in the United States are patents and copyrights. In addition, specific federal statutes protect certain other types of inventive works, such as semiconductor chip layouts.<sup>13</sup> State law protects inventive activity through trade secret and contract law.

**PROTECTION OF FUNCTIONAL WORKS.** Patents are available only for functional works.<sup>14</sup> In order to qualify for a patent, an inventive work must fall within the description of a “new and useful process, machine, manufacture, or composition of matter . . . .”<sup>15</sup> In essence, patented items “do something.” One must apply for a patent grant, and the application is thoroughly scrutinized to assure that the utilitarian process or article meets the statutory conditions of being new, useful, and not obvious to other persons who are skilled in the field to which the invention applies. Only after the patent examiner is satisfied as to the novelty and utility of the invention and the fee is paid, that a patent is granted.<sup>16</sup> The patent grant extends for a term of twenty years from the date of filing the application.<sup>17</sup>

12. The United States has a dual system of government that affects both private and public law. The United States Constitution grants the federal government exclusive power to create basic invention protection through patent and copyright laws. Each of the fifty states possesses power to enact intellectual property laws protecting such matters as trade secrets to the extent that they do not conflict with federal laws, in which case they would be “preempted” by the federal law.

13. Semiconductor Chip Protection Act, 17 U.S.C. §§ 901-914 (1994). Another example of specialized invention protection is the Plant Patent Act of 1930, 35 U. S. C. § 161 (1994).

14. The discussion refers to utility patents provided for by the main thrust of the Patent Act, 35 U.S.C. §§ 101-103, 112, 151 (1994). United States law provides for a variety of strictly ornamental patents, the design patent. These are available for a term of fourteen years for “any new, original and ornamental design.” 35 U.S.C. § 171. These design patents are only for decorative aspects and the discussion in the text does not refer to them.

15. 35 U. S. C. § 101 (1994).

16. 35 U. S. C. §§ 101, 103, 120, 131, 146 (1994).

17. Manual of Patent Examining Procedure (MPEP), Original Sixth Edition, January 1995, Revision Three July 1997, U.S. Department of Commerce, Patent and Trademark Office. **TRANSITIONAL RULES** – All patents that are in force on June 8, 1995, or that will issue on an application that is filed before June 8, 1995, will automatically have a term that is greater of the twenty year discussed above or seventeen years from the patent grant. *See also*, 35 USC § 154(a)(2) stating the twenty year patent term.

By contrast, copyright law protects only expressive works.<sup>18</sup> It specifically denies protection to functional works. "In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work."<sup>19</sup>

The Semiconductor Chip Protection Act presents a third, hybrid sphere of federal invention protection. The subject of its protection is a class of very useful design elements, which in themselves do not function.<sup>20</sup> Semiconductor chips are very tightly constructed batches of electrical circuitry that exist in a very tiny three-dimensional fragment of semiconductor material (usually silicon). The Act protects the three-dimensional design or "mask work," which is a series of templates much like silkscreens.<sup>21</sup> The mask work is a strictly functional design. Once registered, the mask work enjoys a very limited protection period of ten years from the date of registration or its first commercial exploitation, whichever comes first.<sup>22</sup> The Act denies ownership of underlying principles with a limitation that is identical to Section 102(b) of the Copyright Act.<sup>23</sup>

Because software is both expressive and functional, the courts have experienced difficulty determining whether patent or copyright law ought to provide protection. Courts have responded with rulings that allow protection under either regime, depending on the construction of the ownership claims before the court. To the extent that software guides a particular process or changes a state of matter, it may receive patent protection.<sup>24</sup> On the other hand, since software consti-

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18. "Copyright protection subsists . . . in original works of authorship fixed in any tangible means of expression . . ." 17 U.S.C. §102. (1994).

19. 17 U.S.C. §102 (b). *See generally* Bateman v. Mnemonics, Inc., 79 F.3d 1335 (5th Cir. 1996).

20. *See supra* note 14, and accompanying text.

21. The Act defines a "mask work" as a series of related images, "having or representing the predetermined, three-dimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product . . ." 17 U.S.C. § 901(a)(2)(A) (1994).

22. *See* 17 U.S.C. §904 (1994).

23. *See* 17 U.S.C. §902(c) (1994). *See supra* note 19, and accompanying text.

24. *See* Arrhythmia Research Tech. v. Corazonix Corp., 958 F.2d 1053, at 1057, 1059 (Fed. Cir. 1992).



tutes a "literary work" under the Copyright Act, it will be protected for the much longer time period provided by copyright law.<sup>25</sup>

As a result of the functionality constraints, software protection has the following characteristics within the United States:<sup>26</sup>

When software is protected by a patent, the scope is limited to the specific metes and bounds of the patent claims and enjoys a relatively short period of protection. Enforcement of rights is theoretically very sure, though patent litigation is very expensive.

When protected by a copyright, the same software enjoys a long period of protection, but the strength of protection is very limited because copyright protects only the particular expression, not general utilitarian aspects, such as methods.

Even when copyright protects the particular expression embodied in a piece of software, a particular use may be judged privileged under the "fair use" doctrine. This brings our attention to the sources of access norms in federal invention law.

**ACCESS NORMS.** Congress established the patent and copyright laws based on a constitutional grant of power that states a purpose of serving the public interest: "[T]he Congress shall have the Power . . . [t]o 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."<sup>27</sup>

Patent law accomplishes its service to the public by requiring that the patent itself teach the public how to practice the invention.<sup>28</sup> In response to the patentee's dedication of his inventive work to the public, he receives a monopoly to practice it for a period of years.<sup>29</sup> Access rights are granted by the patent itself, which is open to public view from the time it is granted.<sup>30</sup>

The copyright solution to the access need is two-fold. First, one may not own the underlying ideas, but only the expression that arises

25. See *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240 (3d Cir. 1983). The term of a copyright is the life of the author plus 50 years or a term of 75 years in the case of a corporation. 17 U.S.C. §302(a), (c) (1994).

26. Protection beyond the borders will depend, of course, on the norms of the nation where activity takes place. This is one factor that allows institutions such as the Internet to have such a major impact.

27. U.S. CONST. art. I, §8, cl. 8.

28. See 35 U.S.C. §§ 111-112 (1994).

29. More accurately, one does *not* receive the right to practice the invention, but only the right to exclude others from practice.

30. The origin of the term "patent" is from the French, "lettres patent," indicating that the matters have been opened to all to view.

from use of the ideas. Secondly, the expression itself is subject to “fair use” by the public. The fair use defense allows a wide range of adaptive uses, quotations, and comparisons in creating works of one’s own. The scope of this privilege reaches far, allowing one to fully copy a work in order to understand its elements or to copy aspects of its substance to produce a transformed work.<sup>31</sup>

#### TRADE SECRETS AND CONTRACTS

Trade secret law and contract doctrines provide essential methods for protecting all stages of inventive activity — conception, development, production, and marketing. Inventions start with ideas, and ideas are vulnerable to disclosure and misappropriation at all steps of development. Trade secret law and contract doctrines provide means for the protection of ideas in themselves. Since ideas travel as freely as the air, inventive ideas remain vulnerable at each step of the inventive process. United States law provides for ownership of ideas in themselves.<sup>32</sup> The gap is filled by reliance on tort law (trade secrets) and contract doctrines. These doctrines constitute a major part of the stock in trade of intellectual property attorneys.<sup>33</sup>

PROTECTION OF IDEAS IN THEMSELVES. Trade secret law depends on the inventor taking adequate steps to preserve the secrecy of inventive work at all stages of development and exploitation.<sup>34</sup> An inventor may choose to rely on trade secret protection even when other means, such as patent or copyright are available. There is no particular time duration for trade secret protection. Presumably, the protec-

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31. In *Sega Enterprises, Ltd. v. Accolade, Inc.* 977 F.2d 1510 (9th Cir. 1992), the Ninth Circuit permitted a game developer to make a copy and utilize a portion of another company’s game in order to produce competing, but fully independent works. In *Campbell v. Acuff-Rose Music, Inc.* 510 U.S. 569 (1994), the Supreme Court found that copying aspects of a popular song in order to produce a parody was permissible under fair use. In the process, the Court indicated that one enjoys a broad liberty to use material in a transformed expression of one’s own. *Id.* at 575-76.

32. *See, e.g., Desny v. Wilder*, 46 Cal. 2d 715, 739, 299 P.2d 257, 265-66 (1956); *See also Joyce v. Gen. Motors Corp.*, 551 N.E.2d 172, 175 (Ohio 1990).

33. Courts often describe these claims as based on property rights. In a 1917 case, Justice Holmes stated: “The word property as applied to trade-marks and trade secrets is an unanalyzed expression of certain secondary consequences of the primary fact that the law makes some rudimentary requirements of good faith.” *Du Pont de Nemours Powder Company et al. v. Masland et al.*, 244 U.S. 100, 102 (1917).

34. Most states in the United States have enacted a version of the Uniform Trade Secrets Act. Regarding trade secrets, *see generally*, HOWARD C. ANAWALT AND ELIZABETH F. ENAYATI, *IP STRATEGY — COMPLETE INTELLECTUAL PROPERTY PLANNING, ACCESS, AND PROTECTION* §1.06 at 184 (1998).

tion may last as long as the secrecy itself is preserved.<sup>35</sup> One need not apply for protection. On the other hand, the protection really lasts only so long as one remains vigilant.

Contracts provide one of the most pervasive, and thereby effective, means of protecting the development, production, and marketing of inventive work. However, some caution is in order. Often inventors and their attorneys assume that just because an agreement is in place, an inventive work will be protected. There are a number of flaws in this assumption. One flaw is the fact that contracts provide no protection against the activities of parties who are not party to the contract. A and B cannot impose obligations on C by agreeing between themselves.<sup>36</sup> If you create an agreement whereby a third party will not disclose your valuable information, you may be able to obtain contract damages against the party who discloses, but you cannot retrieve the disclosed idea or obtain contract remedies against non-parties.<sup>37</sup>

Successful intellectual property contracts depend on clarity of design and careful supervision of performance under the contract. Contracts such as development, licensing, employment, and non-disclosure agreements protect a broad range of inventive work activities. Thus, in a given case, it may become important for counsel to clarify whether contract and trade secret claims may also be described as being based on property rights. However, in many instances the scope of available remedies is so broad that it scarcely makes any difference whether one styles the matter as embracing property.

Contract and trade secret claims are not restricted to statutory objectives as is the case with patents and copyrights. For instance, trade secret law and contract doctrines may protect the idea for a game show or the general plan for a situation comedy series. One could not obtain a patent for such ideas and plans, as they are not within the scope of utilitarian items provided for by the statute. Copyright law would not extend protection either, since neither ideas nor general plans receive protection.<sup>38</sup>

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35. Statutes of limitation provide one form of time limit.

36. One may be obliged to inquire whether the party one deals with is previously obligated to some other party. *See* *Ralph Andrews Productions v. Paramount Corp.*, 222 Cal. App. 3d 676, 682, 271 Cal. Rptr. 797, 799-800 (2d Dist. 1990).

37. *See* Judge Cardozo's celebrated analysis in *MacPherson v. Buick Motor Co.*, 217 N.Y. 382, 111 N.E. 1050 (1916), and *The Basis of Affirmative Obligations in the Law of Torts*, 53 AM.L. REG. (S.) 209, 216 (1905).

38. Only to the extent that the scenarios sketched out expressive detail or characters might they be protectable. *Nichols v. Universal Pictures Corp.*, 45 F.2d 119 (2d Cir. 1930) represents the classic line of departure in United States law. There, Judge Learned Hand denied protection to a

SILENCE ON ACCESS NORMS. Where patent and copyright speak in concrete terms of preservation of access rights, trade secret law and contract doctrines remain silent. If these doctrines are to be applied in ways that do not stifle access, then one must look to more general public policy limitations. The patent and copyright laws themselves present points of departure for determining what policies ought to condition the scope of trade secret and contract protection of inventive ideas. For example, the United States Supreme Court has commented, "A state law that substantially interferes with the enjoyment of an unpatented utilitarian or design conception which has been freely disclosed by its author to the public at large impermissibly contravenes the ultimate goal of public disclosure and use which is the centerpiece of federal patent policy."<sup>39</sup>

The traditions of access integral to federal patent and copyright laws can and will be looked to for guidance on access in other common law arenas.

In *Fasa Corporation and Virtual World Entertainment v. Playmates Toys, Inc.*,<sup>40</sup> Fasa, a computer game designer, sued another designer and marketer, Playmates, for infringement of its game "Battletech". One of Playmates' defenses was that Allen, allegedly an agent of Fasa, had waived all of Fasa's intellectual property rights in its product when he signed a "new product submission" form before presenting the design of Battletech to Playmates.<sup>41</sup> The court ruled that Allen was not an agent under the relevant state law. The judge then stated an alternative basis of decision, that a broad waiver of undesignated intellectual property claims was invalid as a matter of law. The court offered two grounds for this conclusion. One was that the provision violated relevant state public policy. The other was that federal intellectual property policies precluded enforcement of the waiver: "In the instant case, we are persuaded that a purported waiver of future, unknown federal intellectual property rights is unenforceable and void as against public policy."<sup>42</sup>

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playwright who claimed protection to a plot line and character scheme of a "Romeo and Juliet" type love affair. *See id* at 122.

39. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 156-57 (1989).

40. *Fasa Corporation and Virtual World Entertainment v. Playmates Toys, Inc.*, 892 F Supp. 1061 (N.D. Ill., 1995).

41. *See id* at 1064.

42. *Id* at 1067.

## THE NORMS IN A NETWORKED WORLD

Unlike real property, modern inventive works do not reside in any permanent location. Formulas and methods for working with silicon chips, chemical products, or genetic codes go wherever our networked communications will take them, and they can do so instantly. Even traditional personal property, while it can be moved, is tangible. It will always be located somewhere at some given time. Inventive works can be found anywhere at any given time.

Property rights are by nature abstract. One may see and walk on a piece of land, however, the title of right to a plot of land is a pure abstraction that the law enforces. The matter of abstraction multiplies when it comes to claims of right to inventive processes. First, the legal order identifies certain aspects of the world of ideas that may properly be subject to a claim of right. Once identified, the order defines the protectable elements so they are reflected in general rules.<sup>43</sup> Finally, the definitions must be applied to the particular.

Let us compare a common land acquisition with obtaining a patent. For land, one identifies the land, then makes sure that the title deed describes the right piece of land. This might be physically verified, for example, by survey. Once the deed is delivered with intent to convey the land (and usually recorded) one becomes the owner.

However, suppose one seeks to patent a process, say a new way to peel fruit by machine. The claimant must show that the peeling method is new. If the method is already known, then it will not be viewed as "new," and will not be patentable. Furthermore, even if the method is new, one must also show that it is not a method that persons skilled in developing such machines would easily come up with by applying their usual set of skills and experience.<sup>44</sup> One must engage in a laborious process to convince a government official that these requirements exist. One seeking to obtain rights to land bears no comparable burdens.

The very nature of invention rights makes them vulnerable. More than other claims of right, invention rights rely on the legal processes for articulation and realization.<sup>45</sup> Furthermore, the legal environment

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43. 35 U.S.C. §§ 101-103, 112 (1994); 17 U.S.C. §§ 102, 106, 107 (1994) (demonstrating this aspect in patents and copyrights).

44. This requirement under the United States patent code is called "non-obviousness." 35 U.S.C. § 103 (1994). The three requirements are new, useful and non-obvious. Surely a process for peeling fruit will be useful, but it may be obvious.

45. United States patent law attempts to create firm boundaries of the resulting property right through an issuance process, whereas, copyright is created automatically upon fixing a work in a

of networked communications is fully international. These communication means do not recognize international boundaries. Stable claims of right require a large degree of international cooperation.

The nature of information-based inventions creates specific needs for careful legal balancing. These areas increase in importance when the inventions are made available over networked media. I wish briefly to identify several of those needs here.

1. *Interoperability.* Interoperability means simply that things must be able to work together. For example, if you wish to have an electric light bulb light up, you must connect it to a power source. This involves screwing it into a socket and connecting the socket to a power source by means of a wire connected to a plug that is then inserted into a receptacle.<sup>46</sup> In order for software-based inventions to function effectively, they often need to be connected to other devices. In order to “connect,” they must be able to do the equivalent of understand the software with which they will be linked. The need for interoperability has an impact on hardware as well. For instance, the software constraints of the Microsoft computer operating system have influenced the design of the Intel microprocessors that utilize the system.<sup>47</sup>

2. *Reverse engineering.* Reverse engineering means to take something apart to see how it works. Reverse engineering closely relates to the matter of interoperability. If one wishes to create either connecting products or competing products, one will often need to figure out how other legally protected inventions work. This is accom-

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medium of expression. Copyright “establishes flexible claims of ownership which are conditioned by public access rights, such as ‘fair use.’” HOWARD C. ANAWALT AND ELIZABETH F. ENAYATI, IP STRATEGY — COMPLETE INTELLECTUAL PROPERTY PLANNING, ACCESS, AND PROTECTION, § 1.01[5] at 25 (1998).

46. The bulb/socket connection and the plug/receptacle connection are each “interfaces.” Software interoperability problems commonly involve two general kinds of interfaces. The type discussed in the text is the ability of various kinds of software to work with each other. The second type of interface is the interaction between the human user and the machine or computer. This “user interface” presents different kinds of important access claims. For instance, in *Lotus Dev. Corp. v. Borland Int’l., Inc.*, 49 F.3d 807 (1st Cir. 1995), *aff’d.*, 516 U.S. 233 (1996), one software developer, Borland, successfully maintained that another, Lotus, could not employ copyright ownership on the basic components of its user interface. The interface was made up of a group of very common words, such as “print” and “quit” that constituted commands within a piece of spreadsheet software. See *Lotus Dev. Corp.*, 49 F.3d at 809.

47. The interoperability problem can be seen in older technologies, as for example, when one seeks to plug in an electric appliance when traveling to a foreign country. The configuration of the plug or the voltage of the electric source may require adaptation.

plished by taking them apart. This matter is particularly important in software fields.<sup>48</sup>

3. *Technological locks, encryption, and identification.* Internet communications freely broadcast information of all kinds. Those who make the information available may wish to seal their communications. They do so by translating their data into a code form that will be gibberish to others who do not have the key to retranslate the data. This is encryption.

Another important need for encryption is authentication. When one transacts over the Internet, one's personality and identity disappears into a stream of bits. Encryption provides a means for creating a reliable identity.

4. *Information gathering.* One can readily gain information about other computer users by placing a "cookie" or an information-gathering program on the hard drive of a user's computer.

Each of these activities presents special challenges to many aspects of networked communications, especially those communications that deal with inventive works. The list is by no means exhaustive.

The three invention norms offer a strong basis for international cooperation. At the same time, their rationales will be constantly tested. If they offer justice, as they have, they will provide a sound basis for building international rules. Whatever international solutions are offered will be critiqued by different cultures and tested by varying conditions of human need. If the norms truly serve needs of the various cultures, they are likely to thrive. To the extent they fall short, they will not.

TREATIES. One part of the process of cooperation involves creating common rules and expectations through treaties. Creation of the recent WIPO Copyright Treaty provides an example.<sup>49</sup> The treaty reaffirms and strengthens the long-standing effort to make copyrights secure and uniform. The treaty was entered into because it accounts for

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48. "There are many forms of software reverse engineering, most of which are non-controversial. One reverse engineering technique known as decompilation (or disassembly) has been the subject of extensive scrutiny. Decompilation involves the translation of machine readable object code into a higher level, human readable form which can be studied by a software engineer." American Committee for Interoperable Systems, "Myths and Facts Concerning Software Reverse Engineering" (Mar. 1998) (on file with the author).

49. World International Intellectual Property Organization (WIPO) Copyright Treaty, December 20, 1996, art. 5. 36 I.L.M. 65 (1997). The treaty was adopted by the Diplomatic Conference in Geneva, and has been ratified by a number of nations.

the impact that computer and communication technologies have on copyright law.<sup>50</sup>

The treaty obliges member states to provide copyright protection for software on the same basis as other literary works.<sup>51</sup> Authors of literary and artistic works shall enjoy an exclusive right “of authorizing the making available to the public of the original and copies of their works through sale or other transfer of ownership.”<sup>52</sup> The treaty also recognizes that authors should enjoy the advantages of networked communications, such as the Internet.<sup>53</sup>

While providing these strong rights to ownership and control, the treaty recognizes the countervailing norm of access and distinguishes works on the basis of functionality. First, the treaty excludes ideas, facts, procedures, and methods from copyright scope.<sup>54</sup> Second, it recognizes a concept of fair use or access, even to those works that do qualify for copyright protection. The nations may provide for limitations of those rights “in certain special cases that do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interests of the author.”<sup>55</sup> The treaty reflects the presence of each of the norms.

The presence of the norms in treaties invite lively debate in national legislatures of signatory parties when it comes time to consider legislation to implement the treaties.

**COMMERCIAL PRACTICES.** Even when treaties do not exist, the proposed norms may come into play. If the norms in fact represent basic fairness in the treatment of invention rights, then one can benefit by taking them into account in business transactions. One can build the norms of fairness into contracts that are made or offered, especially those transactions that occur in the networked media themselves.

One may ask why the holders of invention rights should build norms of access or limitations based on functionality into their contract proposals. A major reason is that the vulnerability of information-based inventions makes cooperation a practical necessity. If inventions are not offered on fair terms, they become susceptible to “piracy” because of the fluidity and ubiquity of the communications media. In such a situation, the inventor gains the advantage by offering his in-

50. *See id.* at pmb1.

51. *See id.* at art. 4.

52. *Id.* at art. 6.

53. *See id.* at art. 8.

54. *See id.* at art. 2.

55. *Id.* at art. 8.



ventive works on equitable terms that others will respect. The alternative will too often be a claim of right that is not enforceable.

#### CONCLUSION

The three invention norms emphasize the following: invention protection should be limited to that protection which serves the public at large; compensation should be reasonable; and broad access to inventions should be assured. Both reasonable compensation and fair access depend to a large degree on assessment of the functionality of the invention in question.

The norms provide for fairness in protecting inventive works. They are well grounded in long traditions of intellectual property law. They respect reasonable compensation demands while assuring access to the fruits of invention. Thus, they can claim wide support from communities all around the networked world.

One can put the norms to immediate use. When nations consider treaties or municipal law changes, one can consult the norms and apply them to assure fairness. When entering into business relations on the Internet, one can structure offerings and transactions on the basis of the norms. Finally, when taking advantage of the access that networked communications offer, users and consumers can treat others fairly by respecting invention rights and the access expectations of other users. The norms are practical. We can make them work, and we need to do so.