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Using Digital Locks in Invention Development

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USING DIGITAL LOCKS IN INVENTION DEVELOPMENT*

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I. INTRODUCTION

This essay concerns the use of digital locks in the context of invention development, especially situations where a developer wishes to protect data as a trade secret. Digital locks have been in existence approximately as long as the technologies they guard. Starting in the year 2000, these locks will have an especially vigorous legal effect. Picking a digital lock in most instances will give rise to potential federal civil and criminal liability.

A portion of the Digital Millennium Copyright Act ("DMCA") establishes federal civil and criminal sanctions against those who circumvent digital locks.[1] It also outlaws manufacture of

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1. Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, §§ 1201-03, 112 Stat. 2860, 2863-76 (1998).

circumvention devices.[2] The DMCA protects owners of copyrights, without regard to whether those owners were the creators of the protected work. This essay examines ways in which the actual innovator, large or small, may use digital locks and the DMCA to his or her advantage.[3]

II. BILL AND BETTY'S BISCUIT

Here is a tale of Betty and Bill. Bill describes himself as "an aging phone freak." He is an amateur computer programmer who got involved in computers and software in the late 1970s when he purchased a Radio Shack computer to help his wife, Betty, organize the kitchen. "You know, to help her file recipes, make things easy." If the truth were told, Bill just loves to tinker and the computer was an intriguing new thing for him. His wife knew that, anyway. The couple did not expect that she would make a hobby of the computer herself. Bill says that Betty is the true hacker of the family.[4] Since then, the two of them have acquired and semi-retired twenty-seven different personal computers—Commodores, Ataris, Amigas, Macs, PC clones.

Over recent years Bill and Betty have become annoyed with the number of restrictions that software purveyors and on-line services

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2. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201, 112 Stat. 2860, 2863 (1998).

3. Copyright protects authors, those who write or produce new works. It protects with equal force those who have purchased works, employed authors, or otherwise acquired the ownership of the copyright. Copyrights are personal property that may be freely transferred. Works that are created within the scope of employment generally belong to the employer. *See* 17 U.S.C. § 201 (1994).

4. Today the term "hacker" has acquired a generally negative connotation, especially in press usage. In the unfavorable sense, a hacker is one who breaks into a computer or computer system, usually doing some kind of damage in the process. The term "hacker" originally had a playful and non-pejorative reference and usage. It referred to those who would figure out new things to do with computers or would develop solutions to problems. In all likelihood, Steve Jobs and Steve Wozniak, the founders of Apple Computer, were "hackers." Folks of this bent will seek new problems to solve. Naturally enough, one of these vistas is gaining entry into secured electronic areas. It must seem like mountain climbing. Note—to describe a phenomenon is not to approve it. The hacker may wish to scale the mountain of Pentagon security. Law and society demand that the hacker restrain the urge. See the informative and amusing story about "Cap'n Crunch" and the original "blue box" in *Forbes*. James Daly, *John Draper*, FORBES (FORBES ASAP supplement), June 3, 1996, at 138.

William Safire has offered an interesting set of definitions of types of people, including "freaks," who get well involved in their chosen subjects of interest: "an enthusiast is avid but inexpert, as is an aficionado; a connoisseur is a coolly judgmental expert; a maven is a scholarly nonexpert, often self-taught, who delights in the subject; a freak is someone who gets carried away by the subject beyond all good sense...." William Safire, *On Language – Freaked on Clout*, N.Y. TIMES, March 13, 1994, § 6 (Magazine), at 18.

impose on consumers like themselves. Those who use on-line systems or activate new programs from disks must often accede to digital controls imposed by the information provider. The consumer may be required to provide credit card numbers or agree to terms before proceeding to view or use data.

Betty and Bill gravitate toward freeware. Two years ago, Betty began using Linux exclusively for her work.[5] "We surf the web and keep in touch with the freeware community," she says.

A year ago they became serious about the intrusions of the vendors. As a result, they have begun to work on a very elegant little program they call "Betty's Biscuit." The "Biscuit" is a very small program that will attach itself to any identification number or other data that an online vendor may require that a user submit. Suppose one is required to transmit a credit card number or send personal information in order to proceed with a program or computer process. The Biscuit will attach or embed a simple item of the consumer's own code in the reply that requires the vendor itself to do something before it can use the credit card or data sent. For instance, it might automatically require the vendor to respond: "OK, I agree to your restriction." Or the Biscuit might require that the vendor enter a password itself before proceeding further. When the Biscuit is perfected, it will allow the common user to turn the tables electronically on the vendors.[6]

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5. A number of software terms appear in this essay. "Freeware" simply refers to free software. There has been a lively community of computer Internet-oriented people who reject the profit-oriented world of commercial computer development. Linux is an operating system which was developed to cut past the proprietary nature of common operating systems such as MSDOS, Windows, or the MacOS of Apple. The author is not an authority on software or its development. The terms which seem crucial to understanding the essay will be noted as the essay proceeds along, but it seems unnecessary to footnote each and every one. A further word on Linux, a computer operating system, may be of interest at this point:

> Linux follows a cooperative development model in which the source code is freely available to anyone. As a result, thousands of engineers and programmers make changes to their own OS versions, then recompile it with the changes incorporated. When the changes may be useful to others, they're usually uploaded to various Linux centres on the Internet for broader distribution.

Craig Menefee, *Red Hat Software Unveils Linux Package; Operating System*, COMPUTER DEALER NEWS, June 8, 1998, § 22, at 8, *available in* 1998 WL 13887541.

6. Perhaps such a program exists. The author does not know how one might surmount the technical problem of requiring the vendor's access mechanism to accept the attachment of the Biscuit. In the course of developing the Biscuit, Bill and Betty will need some specific counsel to assure that their development activities do not violate the anti-circumvention prohibitions of the DMCA. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(a), 112 Stat. 2860, 2863 (1998). Also, they may need guidance to assure that the Biscuit does not violate the prohibitions on manufacturing or providing products or services that

Betty and Bill have run into some difficulties that they cannot solve in developing the Biscuit. They have decided to consult with some fellow computer amateurs. They plan to send a file of their development notes to these colleagues by electronic mail ("e-mail"). They wish to keep their work on the Biscuit secret, at least for the time being. They have come to you for advice. Basically they want to know what kind of legal protection they will gain from their own use of a digital lock.

III. DIGITAL LOCKS

An old adage has it that if you tell a secret, it is no longer a secret. If one really wants to keep something private, it must be kept to oneself. Betty and Bill, however, need to exchange information. At the same time, they need to target the recipients of information and keep it from falling into unwanted hands. Inventors and developers need to create a balance of exchange of information and preservation of secrecy. This is true of both large corporations and small developers, such as Betty and Bill.

The degree of control over exchanges of innovative information is a client's decision rathan than an attorney's. Some innovators will prefer to get to the marketplace quickly rather than maximize protections of secrecy. Betty and Bill may eventually wish to give their software away, but in the meantime they want to protect it. They wish to protect the information and knowledge they are building during the development process.

Information is volatile and hard to protect. When information is developed or stored digitally, that is, in any computer-based medium, it becomes vulnerable to electronic intrusion. In some ways computer-based information is more vulnerable than its paper

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are "primarily designed or produced for the purpose of circumventing protection" afforded by the digital locks of providers. Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(b), 112 Stat. 2860, 2865 (1998). As with other items, including automobiles, the user himself or herself will bear the responsibility for employing the Biscuit lawfully.

Betty and Bill named the invention Biscuit because that name calls up images of another computer user annoyance, the "cookie."

> A cookie is a small text file containing data about you that is stored on your computer by a Web site that favours them. The Webmaster will use the cookie to store information about what you do at his site, such as what pages you visit, how long you spend looking at each page, which Web site you have just come from and which Web site you choose to visit afterwards.

Steven Lewis, *Cookies*, S. CHINA MORNING POST, November 22, 1998, (Magazine), at 22, *available in* LEXIS, News Library, South China Morning Post File.

equivalent.[7] Computer files or e-mail can easily and irretrievably be sent to the wrong destination or copied and taken by unauthorized persons. On the other hand, computer files can be locked up by electronic means.[8]

Bill and Betty are well acquainted with digital locks and use them all the time. They want, among other things, to know how these locks may help them to protect their development information.

Digital locks are analogous to physical locks. Where a door lock contains physical blocking elements, the digital lock uses digital patterns or code to block access to information.[9]

In 1998, Congress added provisions that gave great legal strength to the use of electronic locks. The DMCA added a new section to the Copyright Act, section 1201, which provides: "No person shall circumvent a technological measure that effectively controls access to a work protected under this title. . . ."[10] That change makes even the simplest digital locking device legally effective against any who would circumvent it after November of 2000.[11] The full panoply of civil remedies, including injunctions, damages, and attorney fees applies to violators.[12] Criminal sanctions may be imposed as well.[13]

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7. Digital data is stored and transmitted electronically. It cannot be directly read or physically stored in the way that its paper equivalent can. However, in some ways one can keep better track of it. For example, if a batch of data is stored on one single computer, individual component items are not so likely to get lost or misplaced. As a friend once remarked: "The only organized thing in my life is my hard drive." Also, electronically stored data contains much embedded information, such as file creation dates and indications of modifications. These aspects provide some very concrete advantages when it comes to determining such things as the right to control the item or whether it has been altered.

8. Experienced computer users can easily gain access to computer based data. On the other hand, such data can be protected by digital locking techniques such as encryption and passwords. If you have used an automatic teller at a bank or logged on to a data supply service, such as LEXIS, you have probably used a digital locking device, the password, in order to proceed.

9. The automatic teller machine provides an example. From the outset, these machines have required the use of a combination of a secret code and a bank identification card to gain access.

10. Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201, 112 Stat. 2860, 2863 (1998).

11. The DMCA becomes effective "at the end of the 2-year period beginning on the date" of its enactment. Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201, 112 Stat. 2860, 2863 (1998). It was signed into law in October of 1998. *See* Statement by President William J. Clinton upon Signing H.R. 2281, *reprinted in* 1999 U.S.C.C.A.N. 677-78 (Pamphlet No. 12 Feb. 1999).

12. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1203, 112 Stat. 2860, 2874 (1998).

13. The DMCA provides for hefty criminal penalties ranging up to 10 years in prison and $1,000,000 in fines. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103,

The new provisions make the humblest digital lock a formidable legal barrier. Anyone who takes minimal effort can achieve a degree of secrecy protection over electronic data.

IV. THE DMCA DIGITAL LOCK PROVISIONS

The digital lock provisions were added as part of a legislative package ambitiously titled, "The Digital Millennium Copyright Act (DMCA)."[14] That Act has several components:

- Technical amendments to bring various sections of the Copyright Act into compliance with the World Intellectual Property Organization (WIPO) Copyright Treaty.[15]
- Prohibitions on the circumvention of technological copyright protection devices.[16] This is the aspect that gives legal strength to digital locks and is primarily discussed in this essay.
- Protection of Copyright Management Information.[17]
- Rules governing online copyright infringement.[18]

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§ 1204, 112 Stat. 2860, 2876 (1998).

14. Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998).

15. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, secs. 101-102, 112 Stat. 2860, 2861 (1998).

16. The DMCA also broadly prohibits making and marketing circumvention devices. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201, 112 Stat. 2860, 2863 (1998). "No person shall manufacture, import, offer to the public, provide, or otherwise traffic in any technology, product, service, device, component, or part thereof, that—(A) is primarily designed or produced for the purpose of circumventing a technological measure that effectively controls access to a work protected under this title...." Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(a)(2), 112 Stat. 2860, 2864 (1998). The DMCA also provides a very similar prohibition applicable to items "primarily designed or produced for the purpose of circumventing protection afforded by a technological measure that effectively protects a right of a copyright owner under this title in a work or a portion thereof...." Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1202(a), 112 Stat. 2860, 2872 (1998).

17. The DMCA prohibits removing or altering "copyright management information." Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1202, 112 Stat. 2860, 2872 (1998). Copyright management information is defined to include the title and identifying information concerning a work, name and information about the author of a work, terms and conditions for use of the work, and symbols which refer to or "link" to identification information. Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1202(c), 112 Stat. 2860, 2873 (1998). The Act also forbids providing false copyright management information. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1202(a), 112 Stat. 2860, 2872 (1998). The prohibition is limited to acts done "knowingly and with the intent to induce, enable, facilitate, or conceal infringement...." Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1202(a), 112 Stat. 2860, 2872 (1998).

18. The DMCA contains liability limitations (or "safe harbors") that are designed to facilitate distributions of copyrighted works by removing liability from those who merely distribute works at the behest of someone else. *See* Digital Millennium Copyright Act, Pub. L.

- Limitations of liability for the use of software to repair computers.[19]
- Design protection for boat hull designs.[20]

Even though packaged in the Copyright Act, the anti-circumvention provisions are anti-theft laws, pure and simple. Practitioners may guide their clients in using these provisions to their advantage by recognizing that their practical effect is to create legal enforcement of electronic locks per se. That conclusion, however, needs to be defended by some legal analysis.

The anti-circumvention prohibitions apply literally when one breaks past an electronic lock which guards *copyrighted* material. The Act states: "No person shall circumvent a technological measure that effectively controls access to a work protected under this title . . . ."[21] The term "title" undoubtedly refers to the Copyright Act, because the provision involved, 17 U.S.C. 1201, is an amendment to Title 17, the Copyright Act. This conclusion may need a bit more fortification.

The DMCA has a "title," namely, "The Digital Millennium

No. 105-304, sec. 202, § 512, 112 Stat. 2860, 2877 (1998). The section provides limitations of liability for a broad range of common activities for "service providers." Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 202, § 512, 112 Stat. 2860, 2878 (1998). These limitations function as defenses in addition to other defenses, such as fair use. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 202, § 512, 112 Stat. 2860, 2878 (1998). The provisions for these exclusions from liability are detailed and complex. Those representing service providers need to consult the statute.

In general, entities that restrict their activities to transmitting works for other parties without modification of content receive a release from copyright liability, if they establish certain copyright protective practices. To qualify, the online service provider must carry out policies that terminate users who are repeat infringers and accommodate to "standard" technical copyright protection measures such as digital watermarks. Without this exclusion from liability, transmitters of materials can be subject to direct, vicarious, and contributory infringement.

19. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, secs. 301-302, § 117, 112 Stat. 2860, 2886-2887 (1998). Those who repair computers may make copies which are necessary to the repair of a computer. The privilege is limited to the repair of hardware and the copy must be immediately destroyed after the repair is completed.

20. The DMCA adds protection for boat hull designs. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 502, §§ 1301-1332, 112 Stat. 2860, 2905 (1998). The Act provides for protection for "an original design of a useful article which makes the article attractive or distinctive in appearance to the purchasing or using public . . . ." Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 502, § 1301(a)(1), 112 Stat. 2860, 2906 (1998). While the definition of coverage is initially broad, it is immediately narrowed to protect only vessel hull designs. The result of this legislation is to allow specific protection to a class of designs that was previously denied protection by the Supreme Court *in Bonito Boats v. Thunder Craft Boats, Inc.*, 489 U.S. 141 (1989). This is a most odd thing to place in a copyright act.

21. Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(a)(2)(A), 112 Stat. 2860, 2863 (1998).

Copyright Act" (DMCA). Thus, the reference to "a work protected under this title" might be a self reference to any work protected by a digital lock. The notion of such a self reference, however, flies in the face of the structure and language of the Act and the apparent intent of Congress.

The DMCA is organized into a series of sections, most of which are amendments to Title 17 of the United States Code. The code is organized into "Titles," which constitute the major coverage of certain subjects. Title 17 is the Copyright Title. The DMCA while having a "title" is not itself a codification. It is not a "title" or subdivision of the code. The section which adds the anti-circumvention provisions reads:

> Sec. 103. Copyright Protection Systems and Copyright Management Information. (A) In general Title 17, United States Code, is amended by adding at the end the following new chapter: Chapter 12—Copyright Protection and Management Systems . . . .

The structure of section 103 amends a code, the codified, Copyright Act. The specifically chosen word, "title," is a term of art. In the normal legislative usage the term "title" in a federal statute refers to a particular part of the code; here it is the Copyright Act. Numerous references throughout the Act indicate that Congress was concerned with assuring protection of copyrighted works.[22]

V. DMCA PROTECTION EXTENDS BEYOND COPYRIGHT

While the anti-circumvention provisions aim to protect copyrighted works, in practice they will protect all kinds of "writings" and data in electronic form. As long as some portion of a locked electronic file or communication contains some element of copyrighted work, the circumvention provisions appear to apply.

The prima facie elements of a circumvention action are:

- *circumvention*

22. Sections of the DMCA are replete with examples of the focus on protecting copyrighted works. Section 1201, for instance, starts out by creating an elaborate administrative apparatus intended to assure that the prohibition shall not frustrate the legitimate uses of classes of fair users of copyrighted works. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(a)(1)(B),(C), and (D), 112 Stat. 2860, 2863 (1998). The definition of circumvention for the purposes of the digital lock provisions specifically require that the circumvention must "avoid, bypass, remove, deactivate, or impair a technological measure, without the authority of the copyright owner. . . ." Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(a)(3), 112 Stat. 2860, 2863 (1998). The legislative history indicates that the intent of the legislation is to protect copyrighted works. H.R. CONF. REP. NO. 105-796, at 63-64 (1998).

- of a technological *measure*
- which provides *effective access control*
- to a work protected by *copyright*.[23]

Assume that Bill and Betty have keep their Biscuit development notes in a computer file.[24] This file happens to be one that is separate from the file containing the Biscuit program itself. Snoopy Smith, a fellow software developer electronically enters their computer and reads or copies the file.[25] Bill and Betty decide to sue Smith for circumvention infringement.

Bill and Betty used a password to keep others from gaining access to the Biscuit file. Smith circumvented the access protection and gained access to the notes. Smith may have learned the password, used repeated attempts to guess it, or used some other means to get past the lock. The first two elements, use of a lock and circumvention have been established.[26] It is clear enough that Smith circumvented a digital lock in the form of a password.

The third element Betty and Bill must establish is that their lock was effective. The requirement of effectiveness is not onerous.

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23. "No person shall circumvent a technological measure that effectively controls access to a work protected under this title . . . ." Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201, 112 Stat. 2860, 2863 (1998) (emphasis added).

24. A "file" is the common term for an individual unit of computer data or programming. A file is "a collection of related records or data that are used as a unit." MICHAEL HORDESKI, ILLUSTRATED DICTIONARY OF MICROCOMPUTERS 102 (2d Ed. 1986).

25. Gaining entry to one's computer is a snap for adept software users. One example is the ease with which viruses may be placed in individual computers.

26. The proof of the first two elements, use of a lock and circumvention, will usually be straightforward. The anti-circumvention provisions of the DMCA are governed by the following definitions:

> (3) As used in this subsection-
>
> (A) To 'circumvent a technological measure' means to descramble a scrambled work, to decrypt an encrypted work, or otherwise to avoid, bypass, remove, deactivate, or impair a technological measure, without the authority of the copyright owner; and
>
> (B) A technological measure 'effectively controls access to a work' if the measure, in the ordinary course of its operation, requires the application of information, or a process or a treatment, with the authority of the copyright owner, to gain access to the work.

Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(a)(3), 112 Stat. 2860, 2865 (1998).

The terms of the Act do not require intentional circumvention for civil liability. Civil liability may be imposed in favor or anyone injured by "violation of section 1201 or 1202." Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1203, 112 Stat. 2860, 2874 (1998). Criminal liability, however, requires willful violation for commercial advantage or financial gain. *See* Digital Millennium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1204, 112 Stat. 2860, 2876 (1998).

Section 1201 (a) (3) of the DMCA states:

> A technological measure 'effectively controls access to a work' if the measure, in the ordinary course of its operation, requires the application of information, or a process or a treatment, with the authority of the copyright owner, to gain access to the work.[27]

Use of a simple password or some form of encryption program should suffice to meet the requirement. Betty and Bill need not use the most sophisticated type of device to receive protection.

Finally, Betty and Bill must prove that their lock protected a copyrighted work.[28] In most instances, the plaintiff will be able to show that he or she has protected some kind of a copyrighted work. Any sort of expression which is fixed in a tangible medium of expression may qualify for copyright.[29] The expression must be original to the author. That is, the expression must possess a modicum of originality. Mere collection of data, such as the collection of information comprising a telephone book, will not qualify.[30] Certain communications and recordings of data may ultimately be excluded from copyright protection. However, so long as there is some element in the digitally locked item that might be a subject of copyright, it would appear that the plaintiff has met the required copyright element.[31]

Betty and Bill's file will likely comprise a "work" of some sort. Is it a copyrighted work for the purposes of the anti-circumvention provision? The notes themselves are the expression of their development results. If they were suing for copyright infringement, the expressive parts of the Biscuit would receive protection. Some aspects of the file would be denied protection. The file contains their development notes as opposed to the Biscuit program itself. The information in itself and the substance of their observations would not receive copyright protection, as these constitute factual matter, rather

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27. Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(a)(3), 112 Stat. 2860, 2865 (1998).

28. It is well for the plaintiff to concede that the lock must have been used to protect a copyrightable work of which he is the owner.

29. *See* 17 U.S.C. § 102 (1994). There are exceptions, including ones stated in 17 U.S.C. § 102(b), but the main point is that some form of expression which is fixed is the basic requirement.

30. *See* Feist Publications v. Rural Tel. Serv. Co., 499 U.S. 340, 351 (1991). Ideas and systems do not qualify for copyright, either. *See* 17 U.S.C. § 102(b).

31. In a tightly litigated or high stakes case, one can be sure that this matter will be fully examined. The defendant will predictably urge a far higher requirement of copyrighted content.

than expression.[32] However, the circumvention provisions do not require Bill and Betty to prove a copyright infringement case.[33] They must merely establish that the work protected by the lock in some way was a copyrighted one.

In a copyright infringement action, most plaintiffs would have to allege and prove copyright registration.[34] Registration is not required as a precondition to bringing a circumvention action. The DMCA makes it quite clear that copyright infringement and lock circumvention are two separate types of legal actions.[35]

The DMCA anti-circumvention provisions operate to protect data well beyond the bounds of copyright. So long as one's locked file or communication contains some copyrightable material, for example, a brief personal note or a comment, one can expect legal protection.[36] It is federal legal protection. Even if one were

32. Factual matter is excluded from copyright protection: "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." 17 U.S.C. § 102(b). *See Feist Publications*, 499 U.S. at 350-51.

33. The Biscuit program itself will be generally protected by copyright. *See* Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1249 (3d Cir. 1983). However, its basic design very likely will not receive effective protection by copyright. Other developers will be generally free to examine the Biscuit software and adapt its techniques, so long as they do not copy the overall "expression" of those techniques. Certain aspects of software are denied protection because they are dictated by considerations of efficiency, external requirements or which are common software practices. *See* Computer Assocs. Int'l., Inc. v. Altai, Inc., 982 F.2d 693, 714-15 (2d Cir. 1992). Systems, methods of operation, and the like are denied copyright protection by 17 U.S.C. § 102(b).

34. Copyright infringement actions are separate from circumvention actions. *See* Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(c)(1), 112 Stat. 2866, 2865 (1998), which provides: "[N]othing in this section shall affect rights, remedies, limitations, or defenses to copyright infringement, including fair use, under this title." Most persons must first register the copyright with the Register of Copyrights prior to bringing suit for copyright infringement (for example, copying of one's novel.) *See* 17 U.S.C. § 411 (1994).

Copyright resides in the fixed work, whether it has been registered or not. *See* 17 U.S.C. § 102(a) (1994). The gravamen of the circumvention action is on the intrusion, rather than the infringement of copyright.

35. See *supra* note 34 and accompanying text.

36. The anti-circumvention provisions are subject to a range of exceptions or defenses. A defendant will need to show that any of the claimed exceptions apply. These defenses include:

a. Fair use. *See* Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(c)(1), 112 Stat. 2860, 2865 (1998).

b. Free speech. "Nothing in this section shall enlarge or diminish any rights of free speech or the press for activities using consumer electronics, telecommunications, or computing products." Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(c)(4), 112 Stat. 2860, 2866 (1998).

c. Use by nonprofit libraries to determine in good faith whether to acquire a copy of a work. *See* Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103,

eventually to lose a given circumvention suit, the use of digital locks will have had an enormous deterrent effect for most of one's protected items. Since it is so simple to prove circumvention, those who wish to pry into locked information should think long and hard before running the risks of a civil action. Furthermore, circumvention will constitute a crime.

VI. TRADE SECRET PROTECTION

The DMCA provides considerable protection for any electronically locked information, even if that information ultimately is not copyrightable subject matter. Thus, use of a digital lock will be very valuable throughout the invention development process. While use of a digital lock is effective, it also has limitations.

Bill and Betty's Biscuit file is a form of trade secret. Trade secrets are important at each stage of invention development and marketing.[37] The essence of trade secret law lies in taking reasonable steps to protect the matters that one identifies as important enough to regard as secret.[38] In 2000, when federal law recognizes and enforces the use of digital locks, one may effectively argue that the use of such locks constitutes a reasonable step in one's efforts to preserve confidential information.

However, courts will not necessarily conclude that the use of a digital lock by itself amounts to a reasonable effort to protect a given

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§ 1201(d), 112 Stat. 2860, 2866 (1998).

d. Law enforcement. *See* Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(e), 112 Stat. 2860, 2866 (1998).

e. Reverse engineering for the "sole purpose of identifying and analyzing those elements of the program that are necessary to achieve interoperability of an independently created computer program." Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(f), 112 Stat. 2860, 2866 (1998).

f. Encryption research. *See* Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(g), 112 Stat. 2860, 2867 (1998).

g. Protection of minors. *See* Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(h), 112 Stat. 2860, 2868 (1998).

h. Disabling of "cookies" or personal information gathering devices. *See* Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(i), 112 Stat. 2860, 2868-69 (1998).

i. Security device testing. *See* Digital Millenium Copyright Act, Pub. L. No. 105-304, sec. 103, § 1201(j), 112 Stat. 2860, 2869 (1998).

37. *See* H. C. ANAWALT & E. F. ENAYATI, IP STRATEGY—COMPLETE INTELLECTUAL PROPERTY PLANNING, ACCESS, AND PROTECTION, (1999 ed.) § 2.04 (regarding the protection of ideas in themselves).

38. *See id.* at §§ 1.06[3]-[4].

trade secret.[39] In general, the judgment of whether one has taken reasonable steps depends on an examination of the entire circumstances relative to the trade secret claim.[40] Trade secret protection involves drastic encroachment on norms of free flow of information, freedom to compete, and liberty to use one's own skills. Thus, courts often exercise great care in preserving the countervailing rights of those who are defendants in trade secrets actions.[41]

Apart from the question of whether a court will enforce a specific trade secret claim, one must consider the practical protection afforded by trade secret law. With few exceptions, trade secret law allows one to pursue only those who have misappropriated the secret.[42] That is, one may only pursue those who obtain a trade secret by improper means or disclose the trade secret without consent.[43] While providing ample remedies against offenders, trade secret law unfortunately will not provide full protection once the secret is out. It is rather like closing the barn door after the cow has escaped — except that one can usually catch the cow, but often cannot retrieve the trade secret.[44] One does not possess a legal means of retrieving

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39. An unpublished federal case notes the question of whether a digital lock will amount to adequate means to protect a trade secret. The case does not decide the question, and it arose before the effective date of the DMCA anti-circumvention provisions. *See* Twin Vision Corp. v. Bellsouth Communication Sys., Inc., No. 97-55231, 1998 U.S. App. LEXIS 13607 (9th Cir. June 22, 1998).

40. Until 1996, trade secret law was a matter of state law only. Also, the state laws focused primarily on civil, rather than criminal liability. In 1996, Congress enacted the Economic Espionage Act of 1996, which provides for heavy criminal penalties for anyone convicted of stealing, copying, or receiving "trade secrets" as defined in the Act. Economic Espionage Act of 1996, 18 U.S.C.A. §§ 1831-1839 (Supp. 1998).

41. For a classic California case on this subject, *see Diodes, Inc. v. Franzen*, 260 Cal. App. 2d 244, 255 (1968) (protecting rights of employee mobility).

42. A trade secret violation is a species of tort. Thus, only the actual wrongdoers can be pursued in these actions. In some instances, a third party may have some obligation to inquire into the source of the information he or she receives. See ANAWALT & ENAYATI, *supra* note 37, at § 106[6] (regarding the duty to inquire).

43. *See* UNIF. TRADE SECRETS ACT, § 1(2) (amended 1985). *See also* Robert G. Bone, *A New Look at Trade Secret Law: Doctrine in Search of Justification*, 86 CAL. L. REV. 241, 247 (1998) ("Although trade secret doctrine varies from state to state, the general rules are substantially similar in all jurisdictions. To establish liability for trade secret infringement, the plaintiff must show: (1) the information qualifies as a 'trade secret,' and (2) the defendant acquired, used, or disclosed the information in breach of confidence or by other improper means.").

44. Some commentators have complained that trade secret law is a weak means of protection, as it is ineffective against judgment proof defendants:

> The majority of States have some form of civil remedy for the theft of such information - either adopting some version of the Uniform Trade Secrets Act, acknowledging a tort for the misappropriation of the information, or enforcing various contractual arrangements dealing with trade secrets. These civil

the valuable information once it has traveled beyond the parties who have initially wrongly acquired or disclosed it.

Thus, one who wishes to protect digital data will need to observe the following practical steps:

Identify the information and files. Separate the important information from other information, so that one can take truly effective measures to assure that those matters are locked up. Otherwise one will waste effort or fail to protect the important items. Also, claiming things are secret when they are not tends to undermine one's secrecy claims regarding truly confidential matter. No one will believe that the invitation to the company softball game or annual picnic is a secret.

Take more than minimal steps. Use strong electronic security with respect to keeping or transmitting the important items. Take care in distributing passwords. Change the passwords when appropriate. Consider the use of strong encryption.[45] Strong encryption is now

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> remedies, however, often are insufficient. Many companies choose to forgo civil suits because the thief is essentially judgment proof... or too difficult to pursue.... In addition, companies often do not have the resources or the time to bring suit. They also frequently do not have the investigative resources to pursue a case. Even if a company does bring suit, the civil penalties often are absorbed by the offender as a cost of doing business and the stolen information retained for continued use.

Spencer Simon, *The Economic Espionage Act of 1996*, 13 BERKELEY TECH. L.J. 305, 309-10 (1998).

45. Encryption is any means of putting a message, entry, or program into a cipher, scrambled message, or other secret language convention. Strong encryption simply means to use a version that is hard to crack, although today it is a term of art referring to digital means that use very long intermediary numbers, currently 128 bits, for encoding and keying a message, etc.

Here is an interesting description of what is available today:

> Cerberus, the fierce hound that stood guard at the entrance of Hades, had three heads. As he was able to survey every direction, the security provided by this demon of the pit was almost impenetrable. There is today a similar guard dog that you can set before your networked computer. Like Cerberus, Crypto has three heads. Unfortunately, Crypto's three purveyors are apt to spend as much time keeping an eye on each other as they are on protecting your data and communications.
>
> Crypto (cryptography) is able to secure digital communications on your computer in practically invincible code. Present methods of strong encryption are so good there are federal agencies fighting tooth and nail to control them. Hence Crypto's three heads: the software industry that creates encryption programs, the government (FBI and National Security Agency [NSA]), and the criminals of the world. The long and contentious history of commercial cryptography is interesting for what it reveals about the difficulties with keeping society both free and safe.

Michael Castelluccio, *A Myopic Guard Dog; Cryptography*, MGMT. ACCT., Aug. 1998, at 52.

readily available in the United States in software and hardware forms.[46]

Counsel can assist the client by discussing the value of encryption, passwords, and other electronic locks. However, these are just techniques, and like the use of a padlock or a plain paper envelope, they do not solve the trade secret analytical problems.

In addition to trade secret protection, digital locks can be used to secure attorney client communications. As a matter of practice, strong encryption can make sensitive attorney-client communication by e-mail a practical option. In the immediate past, such communication was very risky, largely due to the lack of understanding of the attorney and client as to how easy it is to invade electronic communications. Unless protected, these are as open as a postcard, and one would never send confidential attorney-client advice or work product by a postcard.[47]

VII. CONCLUSION

Bill and Betty's Biscuit might turn out to be quite a useful invention. They are already at work on Biscuit II, a telephone version which will automatically screen and reject unsolicited phone calls, carry on meaningless conversations, or copy the redialing behavior of the unsolicited call. They may be turning to you for advice on how to protect themselves on that project.

Attorneys have an important role in the process of helping inventors devise effective ways to protect their innovations during the vulnerable development process. The DMCA provides one additional tool. It is a complicated statute. The portions dealing with digital locks contain a bewildering array of internal cross references, definitions, and exceptions.[48] Innovators need clear explanations of the impact of the DMCA anti-circumvention provisions, so they can avoid the pitfalls of circumvention and take advantage of digital locks.

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46. For a discussion of software solutions, see, for example, Eamonn Sullivan, *Making Business Secure*, PC WEEK, Oct. 27, 1997, at 72 (discussing PGP (Pretty Good Privacy), a popular software application). For a discussion of hardware solutions, see, for example, *HP Pushes Export-Friendly Crypto*, ELECTRONIC NEWS, Jan. 11, 1999, at 30.

47. In fact, electronic communications such as e-mail are more vulnerable than postcards because it is much easier for the intruder to scan such communications and identify the sensitive items that he or she seeks. One can use browser technology to prowl through unsecured communications and databases.

48. *See supra* note 36 (listing nine exceptions or defenses to the anti-circumvention provisions of the DMCA).

An innovator needs to avoid the unlawful by-passing of others' digital locks. He or she may successfully integrate the use of locks into their development communications and record keeping. Digital locks provide useful means for securing trade secrets and confidential electronic communications, such as those between attorney and client. The DMCA digital lock provisions will allow an additional reliable means to protect innovators' exchanges of ideas and information during the development process.