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# Wet Footprints? Digital Watermarks: A Trail to the Copyright Infringer on the Internet

## I. INTRODUCTION

"Hmmm . . . this is a pretty good picture." With a few clicks of the mouse, John downloads the picture from the Internet<sup>1</sup> to his computer. He quickly manipulates it to become the wallpaper or background on his computer screen. "Hmmm . . . my friends would surely love this background." With a few more keyboard strokes and mouse clicks, John sends this digital picture via e-mail to his numerous buddies, who also save a copy of the picture in their computers. In less than a day, Internet cruisers have posted the picture to various newsgroups with several thousands of people downloading and, then, transmitting it even further. What started as one person's desire to "own" a picture has turned into various copyright infringements.<sup>2</sup>

This is the world of the Internet: an amalgamation of human thoughts, creativity, information, and opinions.<sup>3</sup> However, unlike tangible objects, copyright infringement is possible with a few mouse clicks. These clicks create perfect

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1. The Internet, or cyberspace, is "an international network of interconnected computers." *See Reno v. ACLU*, 117 S. Ct. 2329, 2334 (1997). It is "a collection of interconnected networks and computers that communicate and share information with one another through a common, standard protocol called TCP/IP (Transmission Control Protocol and Internet Protocol)." Deborah Mills-Scofield, *The Internet from Access to 'Zine'*, AT&T TECH., Autumn 1995, at 2. Internet users may utilize many of the available communication methods such as "electronic mail ('e-mail'), automatic mailing list services ('mail exploders,' sometimes referred to as 'listservs'), 'newsgroups,' 'chat rooms,' and the 'World Wide Web.'" *See Reno*, 117 S. Ct. at 2334. These various communication processes can be "used to transmit text; most can transmit sound, pictures, and moving video images." *See id.*

2. Scott Carr, director of marketing for Digimarc Corp., stated that:  
[W]hat's happened with the digital era is that it's become so easy to make a copy of something—to download and scan—that it doesn't seem as if you're doing anything wrong. But you wouldn't run into an art gallery, take a painting off the wall, race to your car and speed off.  
Susan Hovey, *Does Digital Stock Add Value? The Proliferation of Electronic Images Creates Possibilities*, FOLIO, Jan. 1, 1997, at 41.

3. Cyberspace, or the Internet, is "evolving into a meeting place" akin to the "marketplace of ancient Greece," where "people came together to conduct business, to learn and to socialize." *See Mills-Scofield, supra* note 1, at 2.

copies within a fraction of the original time with a potential distribution to millions of people all over the world.<sup>4</sup> On the other hand, the Internet has tremendously facilitated access to a plethora of available information.<sup>5</sup> The Internet's library of information is massive and, unlike a regular library, contains no limitations imposed by physical space. A person can access information from any place in the world.<sup>6</sup> This is the Internet—the haven of information and the garden of civil and criminal liability.<sup>7</sup>

Part II of this Comment provides a background on current copyright laws.<sup>8</sup> Part III discusses steganography, particularly digital watermarking, and encryption—tools that prevent copyright infringements.<sup>9</sup> Part IV covers proposed amendments to the Copyright Act of 1976 (1976 Copyright Act) currently debated in Congress.<sup>10</sup> Part V contains an analysis of these issues, followed by the conclusion in Part VI.<sup>11</sup>

This Comment will also show that the advent of more sophisticated tools places the copyright owner in the best position to prevent copyright infringement on the Internet, and not the Internet Service Provider (ISP).<sup>12</sup> However, this Comment does not propose that the burden of preventing infringements be borne solely by the copyright owner. Rather, it advocates a joint endeavor—the copyright owner should implement technological devices with the support of legislation and ISPs should be liable when they do not respond to notice that an infringing work resides in their system.

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4. See Matthew McKenzie, Special Report, *Copyright Protection: Understanding Your Options*, THE SEYBOLD REPORT ON INTERNET PUBLISHING, Dec. 1996, at 1 (visited Nov. 13, 1998) <<http://www.media.sbexpos.com/specials/copyright.htm>>. Music files which “used to take an hour and a half to download . . . now takes about 5 minutes.” See Larry Lange, *MP3 Compression Opens Recording Industry's Coffers to Hackers—Net Pirates Plunder the High Cs*, ELECTRONIC ENGINEERING TIMES, July 21, 1997, available in 1997 WL 11066354.

5. See *Reno*, 117 S. Ct. at 2334-35 (“Taken together, these tools constitute a unique medium—known to its users as ‘cyberspace’—located in no particular geographical location but available to anyone, anywhere in the world, with access to the Internet.”).

6. See *id.*

7. See *id.* “It is ‘no exaggeration to conclude that the content on the Internet is as diverse as human thought.’” See *id.* at 2335 (quoting *ACLU v. Reno*, 929 F. Supp. 824 (E.D. Pa. 1996)).

8. See discussion *infra* Part II.

9. See discussion *infra* Part III.

10. See discussion *infra* Part IV.

11. See discussion *infra* Part V.

12. The Telecommunications Act of 1996 currently defines two kinds of Internet providers. An “information content provider” is any “person or entity that is responsible, in whole or in part, for the creation or development of information provided through the Internet.” 47 U.S.C.A. § 230(e)(3) (West Supp. 1998). An “access software provider” is a “provider of software (including client or server software), or enabling tools” that (1) “filter, screen, allow, or disallow content”; (2) “pick, choose, analyze, or digest content”; or (3) “transmit, receive, display, forward, cache, search, subset, organize, reorganize, or translate content.” See 47 U.S.C.A. § 230(e)(4).

## II. COPYRIGHT ACT

The U.S. Constitution expressly states that 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>13</sup> The economic theory behind granting copyright protection is “the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in ‘Science and the useful Arts.’”<sup>14</sup>

Congress intended the Copyright laws to “increase and not to impede the harvest of knowledge,”<sup>15</sup> and to “assure contributors to the store of knowledge a fair return for their labors.”<sup>16</sup> Copyright laws aim to “strike a balance between a copyright holder’s legitimate demand for effective . . . protection of the statutory monopoly, and the rights of others to freely engage in substantially unrelated areas of commerce.”<sup>17</sup> Similar to the “patent statute, [the] reward to the [copyright] owner [is] a secondary consideration,”<sup>18</sup> for “the ultimate aim is . . . to stimulate artistic creativity for the general public good.”<sup>19</sup>

### A. *Scope of Copyright*

Federal courts have exclusive jurisdiction over actions arising under the Copyright Act.<sup>20</sup> The Copyright Act of 1909 (1909 Copyright Act) protects works that are published and affixed with the required and proper copyright notice.<sup>21</sup> The 1976 Copyright Act became effective on January 1, 1978<sup>22</sup> and changed the 1909

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13. See U.S. CONST. art I, § 8, cl. 8.

14. See *Mazer v. Stein*, 347 U.S. 201, 219 (1954).

15. See *Harper & Row, Publishers v. Nation Enter.*, 471 U.S. 539, 545 (1985).

16. See *id.* at 546 (citing *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975)).

17. See *Sony Corp. of Am. v. Universal City Studios*, 464 U.S. 417, 442 (1984).

18. See *id.* at 429 (citations omitted) (quoting *United States v. Paramount Pictures*, 334 U.S. 131, 158 (1948)).

19. *Id.* at 432 (citations omitted) (quoting *Twentieth Century Music Corp.*, 422 U.S. at 156 (footnotes omitted)).

20. See 28 U.S.C. § 1338(a) (1994).

21. The 1909 Act states:

Any person entitled thereto by this title may secure copyright for his work by publication thereof with the notice of copyright required by this title; and such notice shall be affixed to each copy thereof published or offered for sale in the United States by authority of the copyright proprietor . . .

17 U.S.C. § 10 (1909) (current version at 17 U.S.C. § 102(a) (1994)).

22. See 17 U.S.C. § 301(a).

Copyright Act's requirements. Instead, the 1976 Copyright Act protects all "original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device."<sup>23</sup>

Thus, to be subject to copyright protection, a work must be fixed and original.<sup>24</sup> A work is "fixed" when embodied in a material object that is "sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration."<sup>25</sup> To be original under the statute, the "work must be original to the author," meaning that the author independently created the work without copying from someone else.<sup>26</sup> One can satisfy "originality," a "constitutional requirement,"<sup>27</sup> with a display of some "minimal level of creativity."<sup>28</sup>

The copyright owner, with certain exceptions, possesses five exclusive rights for a limited time which include the following: (1) the right "to reproduce the copyrighted work or phonorecords"; (2) the right "to prepare derivative works based upon the copyrighted work"; (3) the right "to distribute . . . the copyrighted work to the public"; (4) the right "to perform the copyrighted work publicly"; and (5) the right "to display the copyrighted work publicly."<sup>29</sup> The purpose of this monopoly is to motivate the authors to create and to "allow the public access to the products of their genius after the limited period of exclusive control has expired."<sup>30</sup>

## B. Notice Requirement

To merit protection, the 1909 Copyright Act required that a work must have the required copyright notice.<sup>31</sup> However, Congress eliminated this mandatory requirement when the United States, under the Berne Convention Implementation Act of 1988, entered into the Berne Union.<sup>32</sup> As of March 1, 1989, the owner of a copyright *may* place a copyright notice<sup>33</sup> on "publicly distributed copies from which the work can be visually perceived, either directly or with the aid of a

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23. *Id.* § 102(a).

24. *See id.*

25. *See id.* § 101.

26. *See* Feist Publications v. Rural Tel. Serv. Co., 499 U.S. 340, 345 (1991).

27. *See id.* at 346.

28. *See id.* at 358.

29. 17 U.S.C. § 106.

30. *See* Harper & Row, Publishers v. Nation Enter., 471 U.S. 539, 546 (1985) (quoting Sony Corp. of Am. v. Universal City Studios, 464 U.S. 417, 429 (1984)).

31. *See supra* text accompanying note 21.

32. *See* Berne Convention Implementation Act of 1988, Pub. L. No. 100-568, 102 Stat. 2853. This Act codified the mandatory requirement of notice to a permissive one in 17 U.S.C. § 401(a). *See id.*

33. Generally, a notice consists of (1) the "symbol © . . . , or the word 'Copyright', or the abbreviation 'Copr.'"; (2) the "year of first publication of the work"; and (3) the "name of the owner of copyright in the work." 17 U.S.C. § 401(b)(1)-(3).

machine or device.”<sup>34</sup> Although an artist need not place a copyright notice on publicly distributed copies, the artist gets additional benefits for placing a copyright notice in his work.<sup>35</sup> For example, it puts potential infringers on notice that the work has a copyright and, more importantly, an infringer cannot use an innocent infringer defense, such as lack of notice, to mitigate actual or statutory damages.<sup>36</sup>

### C. Civil Sanctions

Any person “who violates any of the exclusive rights of the copyright owner . . . is an infringer of the copyright or right of the author.”<sup>37</sup> On the other hand, “anyone who is authorized by the copyright owner to use the copyrighted work in a way specified in the statute or who makes a fair use of the work is not an infringer of the copyright.”<sup>38</sup>

A copyright owner has several civil remedies available for copyright infringement, but some of these remedies are only available if the owner registered the copyrighted work.<sup>39</sup> A federal court may grant temporary and final injunctions to restrain copyright infringement.<sup>40</sup> Impoundment and destruction or reasonable disposition of infringing copies, including the devices or paraphernalia used to create the infringing work, are also available.<sup>41</sup> An infringer may also be liable for either the copyright owner’s actual damages and any additional profits made by the infringer or statutory damages.<sup>42</sup> Statutory damages may range from as little as \$500 to as much as \$20,000, depending on the court’s view of what is fair and just under the circumstances.<sup>43</sup> For willful infringements, however, the court may award statutory damages from as little as \$200 to a maximum of \$100,000.<sup>44</sup> Moreover, “the court in its discretion may allow the recovery of full costs by or against any party other than the United States or an officer thereof,” including reasonable attorney’s fees.<sup>45</sup>

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34. *See id.* § 401(a).

35. *See id.* § 401(d).

36. *See id.*

37. *Id.* § 501(a).

38. *Sony Corp. of Am. v. Universal City Studios*, 464 U.S. 417, 433 (1984).

39. *See* 17 U.S.C. § 412 (setting forth an example of statutory damages or attorney’s fees unavailable for unpublished work before the effective date of registration).

40. *See id.* § 502.

41. *See id.* § 503(a).

42. *See id.* § 504(a).

43. *See id.* § 504(c)(1).

44. *See id.* § 504(c)(2).

45. *See id.* § 505.

#### D. Criminal Sanctions

Under federal statutory law, “[a]ny person who infringes a copyright willfully and for purposes of commercial advantage or private financial gain” shall be criminally liable for copyright infringement.<sup>46</sup> Similar to civil remedies, “forfeiture and destruction or other disposition of all infringing copies . . . and all implements . . . used in the manufacture of such infringing copies” are also available.<sup>47</sup> In addition, a person who fraudulently places a copyright notice on articles or distributes these articles with “fraudulent intent” and knowledge that the information is false “shall be fined not more than \$2,500.”<sup>48</sup> Moreover, the court may impose a maximum of \$2,500 fine on persons who, with fraudulent intent, remove or alter a copyright notice on a copyrighted work or misrepresents a material fact on a copyright registration application.<sup>49</sup>

#### E. Three kinds of copyright infringement

##### 1. Direct Infringement

To establish a prima facie case of direct infringement, a plaintiff must show ownership of a valid copyright in the infringed work and a defendant who engaged in copying.<sup>50</sup> To prove copying, the plaintiff must show that the defendant had access to the plaintiff’s copyrighted work, and that the defendant’s work is substantially similar to the plaintiff’s work.<sup>51</sup>

An operator of a bulletin board service (BBS), without notice of the copyright infringement, may be liable for direct infringement for acts committed by a third party. In *Playboy Enterprises v. Frena*,<sup>52</sup> the defendant, a BBS operator, had infringing works stored in his computer system uploaded by one of the defendant’s subscribers.<sup>53</sup> The defendant was unaware of the existence of the pirated copies until served with a summons.<sup>54</sup> The court held the defendant liable for direct copyright infringement.<sup>55</sup> The court reasoned that intent or knowledge is not a

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46. *See id.* § 506(a).

47. *See id.* § 506(b).

48. *See id.* § 506(c).

49. *See id.* § 506(d)-(e).

50. *See Allied Mktg. Group v. CDL Mktg.*, 878 F.2d 806, 810 (5th Cir. 1989); *Sid & Marty Krofft Television Prods. v. McDonald’s Corp.*, 562 F.2d 1157, 1162 (9th Cir. 1977). A copyright owner with a valid copyright registration can also use the certificate of registration to establish “prima facie evidence of the validity” of the copyrighted work. *See* 17 U.S.C. § 410(c).

51. *See Kouf v. Walt Disney Pictures & Television*, 16 F.3d 1042, 1045 (9th Cir. 1994).

52. 839 F. Supp. 1552 (M.D. Fla. 1993).

53. *See id.* at 1554.

54. *See id.*

55. *See id.* at 1559.

prerequisite for the finding of copyright infringement and, consequently, "even an innocent infringer is liable."<sup>56</sup>

On the other hand, in *Religious Technology Center v. Netcom On-line Communication Services*,<sup>57</sup> the court found a BBS operator and the Internet access provider, Netcom, not liable for direct infringement.<sup>58</sup> Plaintiffs sued a BBS subscriber, the BBS operator, and Netcom for copyright infringement.<sup>59</sup> In *Religious Technology Center*, the defendant-subscriber posted some of plaintiff's copyrighted work.<sup>60</sup> After several attempts to stop the subscriber from posting the copyrighted work on the Internet, plaintiffs contacted the BBS operator and Netcom.<sup>61</sup> The BBS operator refused to exclude the subscriber from its BBS unless the plaintiffs proved that they owned the copyrights to the works upon which there was an alleged infringement.<sup>62</sup> Plaintiffs, believing that the demand was unreasonable, refused to comply with the operator's request.<sup>63</sup> Netcom also refused to exclude the subscriber because of the technical difficulty of prescreening the postings of that particular subscriber and because blocking access to the infringing subscriber would result in preventing hundreds of other users from accessing the Internet.<sup>64</sup>

The court in *Religious Technology Center* held that Netcom and the BBS operator were not liable for direct infringement.<sup>65</sup> The court reasoned that although Netcom and the BBS operator installed and maintained systems whereby messages were automatically forwarded and incidental copies made, Netcom and the BBS operator did not cause the copying.<sup>66</sup> Neither Netcom nor the BBS operator had taken any "affirmative action that directly resulted in copying plaintiff's works."<sup>67</sup> In addition, the court explained that "[a]lthough copyright is a strict liability statute, there should still be some element of volition or causation which is lacking where a defendant's system is merely used to create a copy by a third party."<sup>68</sup>

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56. *See id.*

57. 907 F. Supp. 1361 (N.D. Cal. 1995); *see also* *Central Point Software v. Nugent*, 903 F. Supp. 1057, 1061 (E.D. Tex. 1995) (holding a BBS operator liable for copyright infringement).

58. *See* *Religious Tech. Ctr. Servs. v. Netcom On-Line Communication*, 907 F. Supp. 1361, 1382 (N.D. Cal. 1995).

59. *See id.* at 1366.

60. *See id.* at 1365-66.

61. *See id.* at 1366.

62. *See id.*

63. *See id.*

64. *See id.*

65. *See id.* at 1382.

66. *See id.* at 1368.

67. *See id.*

68. *Id.* at 1370.



## 2. Contributory Infringement

The 1976 Copyright Act “does not expressly render anyone liable for infringement committed by another.”<sup>69</sup> However, the “absence of such express language . . . does not preclude the imposition of liability for copyright infringements on certain parties who have not themselves engaged in the infringing activity.”<sup>70</sup> Because the “common law concepts of tort liability are relevant in fixing the scope of the statutory copyright remedy,”<sup>71</sup> a court may also find a person guilty of contributory or vicarious infringement.<sup>72</sup>

Contributory copyright infringement occurs when a defendant “induces, causes or materially contributes to the infringing conduct of another” and knows or should have known of the infringing activity.<sup>73</sup>

Although Netcom was not liable for direct infringement, the court in *Religious Technology Center* stated that Netcom would be subject to liability for contributory infringement if it had knowledge and materially participated in the infringing activity.<sup>74</sup> Because plaintiffs gave notice to Netcom regarding the posting of copyrighted works, a genuine issue of fact existed as “to whether Netcom knew or should have known that such activities were infringing.”<sup>75</sup> Furthermore, the court found a genuine issue of fact pertaining to the element of “substantial participation” because Netcom may have induced or materially contributed to the infringing activity by failing to take steps to investigate once Netcom received notice.<sup>76</sup>

## 3. Vicarious Liability

To win a claim for vicarious liability, a plaintiff must establish that defendant (1) had the “right and ability to control the infringer’s acts” and (2) had received a direct financial benefit from the infringing activity.<sup>77</sup>

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69. *Sony Corp. of Am. v. Universal City Studios*, 464 U.S. 417, 434 (1984).

70. *Id.* at 435.

71. *See Screen Gems-Columbia Music v. Mark-Fi Records*, 256 F. Supp. 399, 403 (S.D.N.Y. 1966).

72. *See Demetriades v. Kauffman*, 690 F. Supp. 289, 292 (S.D.N.Y. 1988) (stating courts’ history of recognizing that a person may be held liable for the infringing acts of another, even if such person was not involved in the actual copying or had knowledge of the infringing acts).

73. *See Religious Tech. Ctr. v. Netcom On-line Communication Servs.*, 907 F. Supp. 1361, 1373 (N.D. Cal. 1995) (quoting *Gershwin Publ’g Corp. v. Columbia Artists Mgmt.*, 443 F.2d 1159, 1162 (2nd Cir. 1971)).

74. *See id.*

75. *See id.* at 1374.

76. *See id.* at 1375.

77. *See id.* (citing *Shapiro, Bernstein & Co. v. H.L. Green Co.*, 316 F.2d 304, 306 (2nd Cir. 1963)).

Following the common law concept of tort liability, the court in *Religious Technology Center* held that a genuine issue of fact existed as to whether Netcom had the right and the ability to control the infringer's acts because Netcom reserved the "right to take remedial action against subscribers" if necessary.<sup>78</sup> Although plaintiffs could have proven this element, the court held that Netcom was not vicariously liable because plaintiff failed to prove that Netcom received a direct financial benefit due to the infringement.<sup>79</sup> The court reasoned that plaintiffs failed to satisfy the second prong because Netcom received a fixed payment and plaintiffs failed to present evidence establishing that the infringing activity directly financially benefitted Netcom.<sup>80</sup>

### F. Fair use

Fair use of a copyrighted work is an affirmative defense to copyright infringement.<sup>81</sup> Copyrighted works used by others for "criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research" may fall under the fair use defense.<sup>82</sup> In determining whether an infringement is fair use, courts utilize the following factors in their analysis:

- (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
- (2) the nature of the copyrighted work;
- (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
- (4) the effect of the use upon the potential market for or value of the copyrighted work.<sup>83</sup>

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78. See *Religious Tech. Ctr.*, 907 F. Supp. at 1375.

79. See *id.* at 1377.

80. See *id.*

81. See 17 U.S.C. § 107 (1994); *Campbell v. Acuff-Rose Music*, 510 U.S. 569, 569 (1994) ("From the infancy of copyright protection, some opportunity for fair use of copyrighted materials has been thought necessary to fulfill copyright's very purpose."). Other defenses available for copyright infringement are "misuse of copyright by the copyright owner, abandonment of copyright, estoppel, collateral estoppel, laches, res judicata, acquiescence, and unclean hands." INFORMATION INFRASTRUCTURE TASK FORCE, WORKING GROUP ON INTELLECTUAL PROPERTY RIGHTS, WHITE HOUSE INFORMATION INFRASTRUCTURE TASK FORCE, INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE: THE REPORT OF THE WORKING GROUP ON INTELLECTUAL PROPERTY RIGHTS 128 (1995) (footnotes omitted) (visited Mar. 6, 1998) <<http://www1.uspto.gov/web/offices/com/doc/ipnii/>> [hereinafter *IPNII Report*].

82. See 17 U.S.C. § 107.

83. *Id.* § 107(1)-(4).

Generally, “[c]ommercial uses that involve no ‘transformation’ by users and harm actual or potential markets will likely always be infringing, while nonprofit educational transformative uses will likely often be fair.”<sup>84</sup> Thus, a court would likely find that direct copying of a protected work or commercial use of a copyrighted work is not a fair use as compared to a use that changed or added something new to the original copyrighted work or a use for non-profit purposes.<sup>85</sup>

### III. COPYRIGHT PROTECTION THROUGH TECHNOLOGY

The increase in copyright infringements by average users of the Internet is a result of technology.<sup>86</sup> To combat this proliferation of abuses, the answer may also partly lie with technology.<sup>87</sup>

#### A. Digital Watermarking (Steganography)

Steganography is the field of science that deals with “encod[ing] digitized information with attributes that cannot be disassociated from the file that contains that information.”<sup>88</sup> This field has also been identified with “digital fingerprinting” or “digital watermarking.”<sup>89</sup>

To best explain digital watermarks a comparison to traditional watermarks on special papers is helpful.<sup>90</sup> Watermarks are indiscernible on special paper except when the user holds the paper up to the light.<sup>91</sup> These watermarks, as unique identifiers, serve as proof of authenticity.<sup>92</sup>

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84. See *IPNII Report*, *supra* note 81, at 80.

85. See *id.*

86. See *supra* text accompanying notes 4-5.

87. See discussion *infra* Part III.A and III.B.

88. See *IPNII Report*, *supra* note 81, at 189. Steganography is derived from the Greek word that means, “covered writing.” Neil Johnson, *Steganography* (visited Mar. 5, 1998) <<http://www.jjtc.com/stegdoc/sec202.html>>. Steganography allows messages to be sent without alerting readers or viewers that a secret communication is concealed. See *id.* In ancient Greece, for example, Demeritus used steganography when he notified Sparta of Xerxes’ intent to invade Greece. See *id.* To notify the other side without being caught, Demeritus hid a message by scraping the wax off the face of a tablet and by writing the message on the underlying wood. See *id.* Demeritus later applied fresh wax on the tablet to make it appear blank and unused and, hence, passed guard inspection. See *id.* Another example of steganography in history is when a person would tattoo messages on a messenger’s shaved head. See *id.* After the hair has grown sufficient to cover the tattoo, a person can only view the hidden message by shaving the messenger’s head again. See *id.* Another example is a hidden message written in invisible ink embedded in an ordinary letter. See Herb Bethoney, *A Lasting Way for Artists to Leave Their Mark*, PC WEEK, Dec. 9, 1996, at 92.

89. See Gale Bradley, *NEC Establishes Software Company*, ELECTRONIC NEWS, May 5, 1997, at 18; *IPNII Report*, *supra* note 81, at 189.

90. See Digimarc Corporation, DIGIMARC WATERMARKING GUIDE I (1997) (visited Mar. 3, 1998) <[http://www.digimarc.com/download/Watermarking\\_Guide.pdf](http://www.digimarc.com/download/Watermarking_Guide.pdf)> [hereinafter *Guide*].

91. See *id.*

92. See *id.*

Similar to traditional watermarks, digital watermarks are effective only when imperceptible; digital watermarks cannot be visible when viewing a digitized photograph or audible when listening to a digitized sound recording.<sup>93</sup> Otherwise, watermarks would obstruct the quality of the image or the music and, furthermore, facilitate removal by copyright infringers.<sup>94</sup> Additionally, to be effective, watermarks must remain recognizable even if the document has undergone several conversions such as photocopying, editing, scanning and rescanning, manipulation by imaging programs, file compression, or conversion across file formats.<sup>95</sup> However, unlike traditional watermarks, digital watermarks are only recognizable through appropriate software.<sup>96</sup>

Although digital watermarks will not prevent theft, they are "expected to deter copyright piracy of still images, video and audio files transmitted over the Internet, intranets,<sup>97</sup> digital satellite and digital cable."<sup>98</sup> An intentional attempt to delete watermarks will result in a conspicuous degradation in the quality of the work,<sup>99</sup> consequently giving viewers or listeners less incentive to pirate the inferior copy. Furthermore, a copyright owner may be able to trace the source of an unauthorized copy posted on the Internet, thereby exposing that user inducing the abuse to liability.<sup>100</sup> Watermarks could also deter counterfeiters from making illegal copies because an imitation would be easily identifiable from the original,<sup>101</sup> thus, boosting

93. See Jian Zhao, *Look, It's Not There: Digital Watermarking is the Best Way to Protect Intellectual Property from Illicit Copying*, BYTE.COM, Jan. 1997 (visited Mar. 3, 1998) <<http://www.byte.com/art/9701/sec18/art1.htm>>. Watermarks can also prevent future copying devices from making digital or analog copies of copyrighted works. See George Newman, *Watermarks Could Thwart Internet Piracy Embedded Messages Contain Copyright Information*, BILLBOARD, July 13, 1996, at 94.

94. See Zhao, *supra* note 93. A message that alerts a person that something contains additional concealed information would likely result in people trying to find the hidden message whereas such would likely not occur with a message that does not arouse any suspicion at all. See Johnson, *supra* note 88 ("A message in ciphertext may arouse suspicion while an invisible message will not.")

95. See Zhao, *supra* note 93. Watermarks are "robust to common signal and geometric distortions such as digital-to-analog and analog-to-digital conversion, resampling, and requantization, including printing and compression, and rotation, translation, cropping, and scaling." *Internet News*, ELECTRONIC DESIGN, May 1, 1996, at 64W.

96. See *id.*

97. See Craig Stedman, *Outsourcers Zero in on Intranets HP/AOL Service for Corporate Users*, COMPUTERWORLD, Mar. 11, 1996 ("Intranets are private, internal company setups that operate over protected portions of the Internet . . .").

98. See Bradley, *supra* note 89, at 18.

99. See *Internet News*, *supra* note 95, at 64W. Digital watermarks are practically impossible to erase because individual hidden bits that are part of the watermarks are randomly distributed throughout the document. See Otis Port, *Copyright's New Digital Guardians*, BUS. WK., May 6, 1996, at 62.

100. See Newman, *supra* note 93 ("Watermarks will allow record companies to automatically scan the Internet for songs that they own . . .").

101. See *supra* note 99 and accompanying text.

a copyright owner's confidence to distribute his work on the Internet.

The advantage of digital watermarks is that they can contain other invisible information, including: the author's name and e-mail address, or a unique reference number that links to a particular database that holds complete copyright contact information.<sup>102</sup> "Digital images, video and audio with their relatively high noise levels are all good candidates for watermarking," but simpler images, such as a 2-color logo, text files, and executable programs, are not good candidates.<sup>103</sup> In situations where digital watermarking may not be so effective, software publishers have relied on notification as the simplest form of protection, and copyright owners on the Internet can follow the same approach.<sup>104</sup> One way is to print a copyright notice at the bottom of every page or when the user prints a Web document.<sup>105</sup>

Digital watermark readers are currently available on the market.<sup>106</sup> Contact information regarding the copyright owner is also available with a few clicks of the mouse.<sup>107</sup> Although digital watermarks will not facially indicate whether the use

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102. Currently, a number of watermarking software is available, for example, PictureMarc distributed by Digimarc Corporation, *Digimarc* (visited February 10, 1999) <<http://www.digimarc.com>>, FBI (Fingerprinted Binary Identification) by HighWater FBI; SysCoP (System for Copyright Protection) by Fraunhofer Institute for Computer Graphics; and Beatnik from Headspace ([www.headspace.com](http://www.headspace.com)). See McKenzie, *supra* note 4; *Updates, Downloads, Plug-Ins & Add-Ons*, INTERACTIVITY, Apr. 1997, at 12, available in 1997 WL 9904390; Zhao, *supra* note 93. Adobe Photoshop, the foremost photo-editing software used to manipulate photographs, contains Digimarc watermarking filters which enable users to insert watermarks and, moreover, warn users of copyrighted works. See Jacqueline Augustine et al., *Adobe Photoshop 4.0; Newest Version of Photo-Editing Program; Software Review; Evaluation*, PETERSEN'S PHOTOGRAPHIC, Mar. 1997, at 24.

103. See McKenzie, *supra* note 4. Digital watermarks will not work for software programs or computer-generated text files as changing even one bit in these documents may drastically change and corrupt the contents of these files, thereby making them unusable. See Port, *supra* note 99, at 62. However, this problem may be addressed by "software boxes" which automatically pay the creator or publisher once a user executes or loads a program or data. See *id.* Both IBM and Electronic Publishing Resources have "software boxes" on the market. See *id.*

104. See McKenzie, *supra* note 4.

105. See *id.*

106. PictureMarc, a free digital watermark reader by Digimarc, allows a computer user to access Digimarc's MarcCentre by clicking on a menu. See Kathy Yakal, *How Much is that Picture in the Window? Digital Watermarking Helps Protect Intellectual Property*, COMPUTER SHOPPER, Aug. 1997, at 114. Furthermore, the Dice Co., *Digital-Watermark* (visited February 10, 1999) <<http://www.digital-watermark.com>>, creator of Argent, a watermarking system for the audio industry, is also in the process of developing a system for the imaging industry. See *id.*

107. Digimarc, through MarcCentre and HighWater Signum, *Highwater Signum* (visited February 10, 1999) <<http://www.highwatersignum.com>>, offers an on-line locator service that provides contact profiles or copyright owner information. See *id.* Digimarc charges \$99 per year to keep a copyright owner's information in the database. See *id.* More interesting is that Digimarc hopes to make watermark readers part of "Web browsers, HTML authoring tools, and word processors," thus facilitating identification of copyrighted works as they change or are transferred from one medium to another. See *id.*

is legal,<sup>108</sup> software programs, such as special web crawlers,<sup>109</sup> can facilitate finding sites on the Internet to show potential and actual infringements.<sup>110</sup>

Most of the current watermarking systems rely on the theory that "providing accurate copyright information is more important than controlling access, and that most users will respect online copyright if publishers make it easy for them to do so."<sup>111</sup> Moreover, there are several incentives for a copyright owner to watermark its work. Watermarks protect the artist's work by communicating to users that the work has a copyright.<sup>112</sup> Watermarks also allow artists, given the appropriate software, to track down uses of their works.<sup>113</sup> Consequently, watermarks may be a marketing tool. For example, a user who loads up a particular document in the appropriate software can determine where to get information on obtaining permission from copyright owners, thereby facilitating licensing and the commissioning of a new work from the artist.<sup>114</sup>

### B. Encryption

Encryption is an additional longstanding means of protection.<sup>115</sup> Originally used exclusively by the government to protect confidential information, the private industry has slowly adopted encryption over the last twenty years.<sup>116</sup> Cryptography's<sup>117</sup> primary use is for "ensuring data integrity, authenticating users, facilitating nonrepudiation (the linking of a specific message with a specific sender) and maintaining confidentiality."<sup>118</sup>

108. A person copying or using a copyrighted and watermarked work without the owner's permission may have a fair use defense against copyright infringement. *See* discussion *supra* Part II.F.

109. MarcSpider, a service offered by Digimarc, creates reports notifying copyright owners where to find their watermarked images on the Internet. *See Guide, supra* note 90, at 3; Yakal, *supra* note 106, at 114.

110. *See* Elizabeth Veomett, *Just Add Watermark*, BUS. WK., Sept. 1, 1997, at 35.

111. *See* McKenzie, *supra* note 4.

112. *See Guide, supra* note 90, at 2.

113. *See id.*; *see also supra* note 109.

114. *See id.*

115. *See* *Bernstein v. United States Dep't. of State*, 974 F. Supp. 1288, 1292 (N.D. Cal. 1997).

116. *See id.*

117. Cryptography is "an area of applied mathematics that seeks to develop confidentiality in electronic communication." *Id.* Cryptography is also "the art and science of keeping messages secure . . . [, and] the process of disguising a message in such a way as to hide its substance is called encryption." *Karn v. United States Dep't. of State*, 925 F. Supp. 1, 3 & n.1 (D.D.C. 1996) (quoting BRUCE SCHNEIER, *APPLIED CRYPTOGRAPHY 1* (1994)). On the other hand, a "cryptographic algorithm" is a mathematical function or equation that can be applied to transform data into an unintelligible form"; ciphertext is one such example. *See id.*

118. *See Bernstein, 974 F. Supp.* at 1292.

Generally, "encryption amounts to a 'scrambling' of data using mathematical principles that can be followed in reverse to 'unscramble' the data."<sup>119</sup> This system involves using the appropriate "key" to decrypt and encrypt the file.<sup>120</sup> Publishers frequently view encryption as the solution to protecting electronic data.<sup>121</sup> However, "using encryption to protect electronic data is like securing the barn with a high-tech combination lock."<sup>122</sup> Once a person enters the lock's proper combination, "the animals are loose and forever beyond control."<sup>123</sup> Once a hacker has intentionally broken the lock and decrypted the document, he can then send the key, the decrypting software, or the decrypted document to thousands or even millions of people to use.<sup>124</sup>

#### IV. PROPOSED LEGISLATION

With ambiguous results from cases involving the Internet, ISPs have sought certainty through legislation<sup>125</sup> and have argued for exemption or a higher standard of copyright liability.<sup>126</sup> To define some certainty, Congress has introduced several bills trying to clarify ISPs' copyright liability.

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119. *IPNII Report*, *supra* note 81, at 185.

120. *See Bernstein*, 974 F. Supp. at 1292. Encryption's uses vary from "protecting personal messages over the Internet and transactions on bank ATMs to ensuring the secrecy of military intelligence." *See id.*

121. *See Port*, *supra* note 99, at 62.

122. *Id.*

123. *See id.*

124. *See IPNII Report*, *supra* note 81, at 186.

125. Liability of Internet providers with regards to defamatory statements published through their service has previously been unclear. *Compare* *Cubby, Inc. v. Compuserve Inc.*, 776 F. Supp. 135 (S.D.N.Y. 1991) (holding that Compuserve was not liable for defamatory statements made by a third party), *with* *Stratton Oakmont, Inc. v. Prodigy Services Company*, No. 31063194 1995 WL 805178 (N.Y. Sup. Ct. 1995) (unpublished) (holding that Prodigy was liable for defamatory statements made by a third party). However, the Communications Decency Act of 1996 attempted to resolve this ambiguity in favor of no liability by stating that "[n]o provider or user of an interactive computer services shall be treated as the publisher or speaker of any information provided by another information content provider." *See* 47 U.S.C.A. § 230(c)(1) (West Supp. 1998). However, this Act does not address the liability of Internet providers for copyright infringement. *See* 47 U.S.C.A. § 230(d)(2) (West Supp. 1998) ("Nothing in this section shall be construed to limit or expand any law pertaining to intellectual property.").

126. ISPs contend that:

[T]he volume of material on a service provider's system is too large to monitor or screen; that even if a service provider is willing and able to monitor the material on its system, it cannot always identify infringing material; that failure to shield on-line service providers will impair communication and availability of information; that exposure to liability for infringement will drive service providers out of business, causing the NII [National Information Infrastructure] to fail; and that the law should impose liability only on those who assume responsibility for the activities their subscribers (and, presumably, they) engage in on their system.

*See IPNII Report*, *supra* note 81, at 115-16.

A. *On-Line Copyright Liability Limitation Act (On-Line Act)*

The On-Line Act, which was introduced on July 17, 1997, attempts to delineate ISP liability.<sup>127</sup> The proposed bill would amend the federal copyright law and establish that an individual, providing access or transmission, shall not be liable for direct infringement or be vicariously liable for third-party infringing actions provided that individual follows the guidelines established in § 512 of the On-Line Act.<sup>128</sup>

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127. See H.R. 2180, 105th Cong. (1997).

128. See *id.* The amendment will be contained in a new section which establishes the following:  
Sec. 512. Limitations on liability relating to material on-line

(a) EXEMPTIONS – A person shall not be liable –

(1) for direct infringement, or vicariously liable for the infringing acts of another, based solely on transmitting or otherwise providing access to material on-line, if the person –

- (A) does not initially place the material on-line;
- (B) does not generate, select, or alter the content of the material;
- (C) does not determine the recipients of the material;
- (D) does not receive a financial benefit directly attributable to a particular act of infringement;
- (E) does not sponsor, endorse, or advertise the material; and
- (F)(i) does not know, and is not aware by notice or other information indicating, that the material is infringing, or
- (ii) is prohibited by law from accessing the material[.]

(2) in the case of a finding of contributory infringement based solely on conduct for which a person is exempt from liability for direct infringement or vicarious liability under paragraph (1), for any remedy other than injunctive relief under section 502, except that such injunctive relief shall be available only to the extent that all acts required by such relief are technically feasible and economically reasonable to carry out.

Nothing in clause (I) of paragraph (1)(F) shall impose an affirmative obligation to seek information described in such clause.

(b) LIMITATION BASED UPON REMOVING, DISABLING, OR BLOCKING ACCESS TO INFRINGING MATERIAL – A person shall not be liable for any claim based on that person's removing, disabling, or blocking on-line access to material, in response to information by notice or otherwise indicating or alleging that the material is infringing, whether or not the material is infringing.

(c) OTHER DEFENSES NOT AFFECTED – Removing, disabling, or blocking access to material which a person transmits or to which a person otherwise provides on-line access, or the failure to do so, shall not adversely bear upon the consideration by a court of a defense to infringement asserted by that person under section 107 or any other provision of law.

(d) MISREPRESENTATIONS – Any person who knowingly materially misrepresents that material on-line is infringing shall be liable for any damages, including costs and attorney's fees, incurred by any person who relies upon such misrepresentation in removing, disabling, or blocking access to the material claimed to be infringing.



The On-Line Act establishes that an individual or an ISP is not under an affirmative duty to determine whether a certain material is infringing, unless the individual or ISP is put on notice.<sup>129</sup> Moreover, the On-Line Act protects an individual from liability for actions preventing infringement, such as “removing, disabling, or blocking on-line access to material.”<sup>130</sup> Furthermore, a person who “remov[es], disabl[es], or block[s]” on-line access to material based on information that the material is infringing is not liable regardless of whether the material is infringing or not.<sup>131</sup>

In addition, the proposed amendment includes any individual “who knowingly materially misrepresents that material on-line is infringing shall be liable for any damages, including costs and attorneys’ fees, incurred by any person who relies upon such misrepresentation in removing, disabling, or blocking access to the material claimed to be infringing,”<sup>132</sup> thus, deterring false claimants of copyright ownership.

### *B. Copyright Treaties Implementation Act (CTIA Act)*

The World Intellectual Property Organization’s (WIPO) CTIA Act,<sup>133</sup> introduced on July 29, 1997, concerns protecting copyright management information.<sup>134</sup> Copyright management information is defined as the following:

[I]nformation which identifies the work, the author of the work, the owner of any right in the work, or information about the terms and conditions of use of the work, and any numbers or codes that represent such information, when any of these items of information is attached to a copy of a work or appears in connection with the communication of a work to the public.<sup>135</sup>

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*Id.*

129. See *supra* note 128 and accompanying text.

130. See *supra* note 128 and accompanying text.

131. See *supra* note 128 and accompanying text.

132. See *supra* note 128 and accompanying text.

133. H.R. 2281, 105th Cong. (1997) (stating that the purpose of the legislation was “to implement the World Intellectual Property Organization Copyright Treaty and Performances and Phonograms Treaty”).

The provision on anticircumvention, which was finally adopted as the Administration’s proposal and which was ultimately incorporated into H.R. 2281, is intended to protect the rights of copyright owners while encouraging the continued advancement of technology in a balanced manner that takes into account the needs and concerns of all interested parties and the importance of promoting the continued growth of electronic commerce with its benefits for all members of American society.

*Legislative Hearing on the “WIPO Copyright Treaties Implementation Act” H.R. 2281 and the “Online Copyright Liability Limitation Act” H.R. 2180 Before the Subcomm. on Courts and Intellectual Property, 105th Cong. (1997) (statement of Bruce A. Lehman, Assistant Secretary of Commerce and Commissioner of Patents and Trademarks) (visited Mar. 10, 1999) <<http://www.house.gov/judiciary/40001.htm>> [hereinafter *Lehman Statement*].*

134. See *Lehman Statement, supra* note 133; H.R. 2281 § 1202.

135. *Lehman Statement, supra* note 133.

The CTIA Act would add another chapter to the 1976 Copyright Act<sup>136</sup> containing four sections: (1) section 1201,<sup>137</sup> which prohibits the circumvention of

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136. *See id.*

137. The proposed section will contain the following:

Sec. 1201. Circumvention of copyright protection systems

(a) VIOLATIONS REGARDING CIRCUMVENTION OF TECHNOLOGICAL PROTECTION MEASURES –

(1) No person shall circumvent a technological protection measure that effectively controls access to a work protected under this title.

(2) 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 protection measure that effectively controls access to a work protected under this title;

(B) has only limited commercially significant purpose or use other than to circumvent a technological protection measure that effectively controls access to a work protected under this title; or

(C) is marketed by that person or another acting in concert with that person for use in circumventing a technological protection measure that effectively controls access to a work protected under this title.

(3) As used in this subsection–

(A) to 'circumvent a technological protection' means to descramble a scrambled work, to decrypt an encrypted work, or otherwise to avoid, bypass, remove, deactivate, or impair a technological protection measure, without the authority of the copyright owner; and

(B) a technological protection 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.

(b) ADDITIONAL VIOLATIONS–

(1) 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 protection afforded by a technological protection measure that effectively protects a right of a copyright owner under this title in a work or a portion thereof;

(B) has only limited commercially significant purpose or use other than to circumvent protection afforded by a technological protection measure that effectively protects a right of a copyright owner under this title in a work or a portion thereof; or

(C) is marketed by that person or another acting in concert with that person for use in circumventing protection afforded by a technological protection measure that effectively protects a right of a copyright owner under this title in a work or a portion thereof.

(2) As used in this subsection–

technical copyright protection measures; (2) section 1202,<sup>138</sup> which protects

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- (A) the term 'circumvent protection afforded by a technological protection measure' means avoiding, bypassing, removing, deactivating, or otherwise impairing a technological protection measure; and
- (B) a technological protection measure 'effectively protects a right of a copyright owner' under this title if the measure, in the ordinary course of its operation, prevents, restricts, or otherwise limits the exercise of a right of a copyright owner under this title.
- (c) **IMPORTATION-** The importation into the United States, the sale for importation, or the sale within the United States after importation by the owner, importer, or consignee of any technology, product, service, device, component, or part thereof as described in subsection (a) or (b) shall be actionable under section 337 of the Tariff Act of 1930 (19 U.S.C. 1337).
- (d) **OTHER RIGHTS, ETC., NOT AFFECTED-** Nothing in this section shall affect rights, remedies, limitations, or defenses to copyright infringement, including fair use, under this title.
- (e) **LAW ENFORCEMENT AND INTELLIGENCE ACTIVITIES-** This section does not prohibit any lawfully authorized investigative, protective, or intelligence activity of a law enforcement agency of the United States, a State, or a political subdivision of a State, or of an intelligence agency of the United States.

H.R. 2281 § 1201.

138. The proposed section 1202 contains the following:

Sec. 1202. Integrity of copyright management information

- (a) **FALSE COPYRIGHT MANAGEMENT INFORMATION-** No person shall knowingly-
  - (1) provide copyright management information that is false, or
  - (2) distribute or import for public distribution copyright management information that is false, with the intent to induce, enable, facilitate, or conceal infringement.
- (b) **REMOVAL OR ALTERATION OF COPYRIGHT MANAGEMENT INFORMATION-** No person shall, without the authority of the copyright owner or the law-
  - (1) intentionally remove or alter any copyright management information,
  - (2) distribute or import for distribution copyright management information, knowing that the copyright management information has been removed or altered without authority of the copyright owner or the law, or
  - (3) distribute, import for distribution, or publicly perform works, copies of works, or phonorecords, knowing that the copyright management information has been removed or altered without authority of the copyright owner or the law, knowing or, with respect to civil remedies under section 1203, having reasonable grounds to know, that it will induce, enable, facilitate, or conceal an infringement of any right under this title.
- (c) **DEFINITION-** As used in this chapter, the term 'copyright management information' means the following information conveyed in connection with copies or phonorecords of a work or performances or displays of a work, including in digital form:
  - (1) The title and other information identifying the work, including the information set forth on a notice of copyright.
  - (2) The name of, and other identifying information about, the author of a work.
  - (3) The name of, and other identifying information about, the copyright

copyright management information; (3) section 1203,<sup>139</sup> which provides civil

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- owner of the work, including the information set forth in a notice of copyright.
- (4) Terms and conditions for use of the work.
- (5) Identifying numbers or symbols referring to such information or links to such information.
- (6) Such other information as the Register of Copyrights may prescribe by regulation, except that the Register of Copyrights may not require the provision of any information concerning the user of a copyrighted work.
- (d) **LAW ENFORCEMENT AND INTELLIGENCE ACTIVITIES-** This section does not prohibit any lawfully authorized investigative, protective, or intelligence activity of a law enforcement agency of the United States, a State, or a political subdivision of a State, or of an intelligence agency of the United States.

*Id.* § 1202.

139. The proposed section 1203 contains the following:

Sec. 1203. Civil remedies

- (a) **CIVIL ACTIONS-** Any person injured by a violation of section 1201 or 1202 may bring a civil action in an appropriate United States district court for such violation.
- (b) **POWERS OF THE COURT-** In an action brought under subsection (a), the court--
  - (1) may grant temporary and permanent injunctions on such terms as it deems reasonable to prevent or restrain a violation;
  - (2) at any time while an action is pending, may order the impounding, on such terms as it deems reasonable, of any device or product that is in the custody or control of the alleged violator and that the court has reasonable cause to believe was involved in a violation;
  - (3) may award damages under subsection (c);
  - (4) in its discretion may allow the recovery of costs by or against any party other than the United States or an officer thereof;
  - (5) in its discretion may award reasonable attorney's fees to the prevailing party; and
  - (6) may, as part of a final judgment or decree finding a violation, order the remedial modification or the destruction of any device or product involved in the violation that is in the custody or control of the violator or has been impounded under paragraph (2).
- (c) **AWARD OF DAMAGES-**
  - (1) **IN GENERAL-** Except as otherwise provided in this chapter, a person committing a violation of section 1201 or 1202 is liable for either--
    - (A) the actual damages and any additional profits of the violator, as provided in paragraph (2); or
    - (B) statutory damages, as provided in paragraph (3).
  - (2) **ACTUAL DAMAGES-** The court shall award to the complaining party the actual damages suffered by the party as a result of the violation, and any profits of the violator that are attributable to the violation and are not taken into account in computing the actual damages, if the complaining party elects such damages at any time before final judgment is entered.

remedies for violations of sections 1201 and 1202; and (4) section 1204,<sup>140</sup> which provides criminal remedies for violations of sections 1201 and 1202.

Section 1201 deals with circumventing encryption and access.<sup>141</sup> This section prohibits the circumvention of “technological protection measure[s] that effectively control[] access”<sup>142</sup> to a copyrighted work or the manufacturing or distribution of any product or service designed to circumvent measures that protect the rights of copyright owners.<sup>143</sup>

Section 1202, on the other hand, deals directly with the “[i]ntegrity of copyright management information.”<sup>144</sup> This section bars a person from knowingly providing “copyright management information that is false” with the intent to induce or conceal infringement.<sup>145</sup> As stated in the proposed bill, circumventing

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- (3) STATUTORY DAMAGES-
  - (A) At any time before final judgment is entered, a complaining party may elect to recover an award of statutory damages for each violation of section 1201 in the sum of not less than \$200 or more than \$2,500 per act of circumvention, device, product, component, offer, or performance of service, as the court considers just.
  - (B) At any time before final judgment is entered, a complaining party may elect to recover an award of statutory damages for each violation of section 1202 in the sum of not less than \$2,500 or more than \$25,000.
  - (4) REPEATED VIOLATIONS- In any case in which the injured party sustains the burden of proving, and the court finds, that a person has violated section 1201 or 1202 within 3 years after a final judgment was entered against that person for another such violation, the court may increase the award of damages up to triple the amount that would otherwise be awarded, as the court considers just.
  - (5) INNOCENT VIOLATIONS- The court in its discretion may reduce or remit the total award of damages in any case in which the violator sustains the burden of proving, and the court finds, that the violator was not aware and had no reason to believe that its acts constituted a violation.

*Id.* § 1203.

140. The proposed section 1204 contains the following:

Sec. 1204. Criminal offenses and penalties

- (a) IN GENERAL- Any person who violates section 1201 or 1202 willfully and for purposes of commercial advantage or private financial gain-
  - (1) shall be fined not more than \$500,000 or imprisoned for not more than 5 years, or both, for the first offense; and
  - (2) shall be fined not more than \$1,000,000 or imprisoned for not more than 10 years, or both, for any subsequent offense.
- (b) STATUTE OF LIMITATIONS- Notwithstanding section 507(a) of this title, no criminal proceeding shall be maintained under subsection (a) unless such proceeding is commenced within 5 years after the cause of action arose.

*Id.* § 1204.

141. *See id.* § 1201.

142. *See id.* § 1201(a)(1).

143. *See id.* § 1201(a)(2).

144. *See id.* § 1202.

145. *See id.* § 1202(a).

technological protection measures and falsifying or altering copyright management information in violation of the CTIA Act may result in civil and criminal sanctions.<sup>146</sup>

*C. Digital Copyright Clarification and Technology Education Act of 1997 (Digital Act)*

The Digital Act was introduced on September 3, 1997 in the Senate and concerns providing "limitations on copyright liability relating to material on-line, and for other purposes."<sup>147</sup>

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146. *See id.* §§ 1203-04.

147. *See* S. 1146, 105th Cong. (1997). The purposes of the Digital Act include the following: [T]o protect the rights of copyright owners in the digital environment . . . to clarify that providing network services and facilities with respect to the transmission of electronic communications of another person does not result in liability under the Copyright Act [and] to clarify that Internet and on-line service providers are not liable for third-party copyright infringements unless they have received notice in compliance with this Act of the infringing material and have a reasonable opportunity to limit the third-party infringement.

*Id.* The proposed Digital Act would add section 512 to the existing copyright law which would read as follows:

Sec. 512. Liability relating to material on the Internet and on-line

- (a) Material Being Transmitted Through an Electronic Communications System or Network-
- (1) NETWORK SERVICES WITH RESPECT TO THE TRANSMISSION OF ELECTRONIC COMMUNICATIONS- A person shall not be liable for direct, vicarious or contributory infringement of copyright arising out of providing electronic communications network services or facilities with respect to a copyright infringement by a user. A person shall be considered to provide 'network services and facilities' when such person transmits, routes or provides connections for material on behalf of a user over an electronic communications system or network controlled or operated by or for the person, including intermediate and transient storage, the processing of information, and the provision of facilities therefor, if-
- (A) the provision of services is for the purpose of managing, controlling or operating a communications system or network, supplying local access, local exchange, telephone toll, trunk line, private line, or backbone services, including network components or functions necessary to the transmission of material contained in electronic communications carried over those services; or
- (B) the transmission of material over the system or network on behalf of a user does not involve the generation or material alteration of content by the person.
- (2) PRIVATE AND REAL-TIME COMMUNICATION SERVICES- A person shall not be liable for direct, copyright arising from supplying to another-

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- (A) a private electronic communication, including voice messaging or electronic mail services, or any other communication for which such person lacks either the technical ability or authority under law to access or disclose such communication to any third party in the normal course of business; or
  - (B) real-time communication formats, including chat rooms, streamed data, or other virtually simultaneous transmissions.
  - (3) **INFORMATION LOCATION TOOLS-** No person shall be liable for direct, vicarious or contributory infringement of copyright services or facilities with--
    - (A) a site-linking aid or directory, including a hyperlink or index;
    - (B) a navigational aid, including a search engine or browser; or
    - (C) the tools for the creation of a site-linking aid.
- (b) **MATERIAL RESIDING ON A SYSTEM OR NETWORK-**
- (1) **COOPERATIVE PROCEDURE FOR EXPEDITIOUS RESPONSE TO CLAIMS OF INFRINGEMENT-** A person shall not be liable for direct, vicarious or contributory infringement of copyright arising out of the violation of any of the exclusive rights of the copyright owner by another with respect to material residing on a system or network used in conjunction with electronic communications that is controlled or operated by or for the person, unless upon receiving notice complying with paragraph (b)(3), the person fails expeditiously to remove, disable, or block access to the material to the extent technologically feasible and economically reasonable for a period of ten days, or until receiving a court order concerning the material, whichever is less.
    - (2) Paragraph (b)(1) shall apply where such person--
      - (A) did not initiate the placement of the material on the system or network;
      - (B) did not determine the content of the material placed on the system or network; and
      - (C) did not contract for placement of the specific material on the system or network by another person in order to provide that content as part of the person's service offering.
    - (3) A person shall not be deemed to have notice that material residing on a system or network used in conjunction with electronic communications is infringing unless the person--
      - (A) is in receipt of a notification that the particular material is infringing. Such notification shall:
        - (i) pertain only to allegedly infringing material that resides on a system or network controlled or operated by or for the person;
        - (ii) be submitted in accordance with directions displayed on the person's system or network indicating a single place or person to which such notifications shall be submitted;
        - (iii) be signed, physically or electronically, by an owner of an exclusive right that is allegedly infringed, or by a person authorized to act on such owner's behalf;
        - (iv) provide an address, telephone number, and electronic mail address, if available, at which the complaining party may be contacted in a timely manner;
        - (v) describe the material claimed to be infringing, including information reasonably sufficient to permit the person expeditiously to identify and locate the material;
        - (vi) provide reasonable proof of a certificate of copyright registration for the

- material in question, a filed application for such registration, or a court order establishing that use of the material in the manner complained of is not authorized by the copyright owner or the law;
- (vii) contain a sworn statement that the information in the notice is accurate, that the complaining party is an owner of the exclusive right that is claimed to be infringed or otherwise has the authority to enforce the owner's rights under this title, and that the complaining party has a good faith belief that the use complained of is an infringement;
  - (viii) be accompanied by any payment that the Register of Copyrights determines is necessary to deter frivolous and de minimis notices; and
  - (B) A person who is an employee or agent of a nonprofit educational institution, library or archives, acting within the scope of his employment, or such an educational institution, library or archives itself, shall not be deemed to have notice under subparagraph (A) if that person reasonably believed (i) that the allegedly infringing use was a fair use under Sec. 10 or (ii) was otherwise lawful; and
  - (C) The Register of Copyrights may, by regulation, establish guidelines identifying additional information to be included in the notice and shall issue a standard notice form in both electronic and hard copy formats, which complies with this paragraph, but failure of a party to provide any such additional information, or failure to use any issued form, shall not invalidate the notice.
- (4) **MISREPRESENTATIONS AND REDRESS FOR WRONGFUL NOTIFICATIONS-** Any person who materially misrepresents that material on-line is infringing in a notice described in paragraph (b)(3)(A), shall be liable in a civil action that may be brought in an appropriate United States district court or State court for statutory damages of not less than \$1,000, and any actual damages, including costs and attorneys' fees, incurred by-
- (A) the actual copyright owner or the alleged infringer arising out of the disabling or blocking of access to or removal of such material; or
  - (B) any person who relies upon such misrepresentation in removing, disabling, or blocking access to the material claimed to be infringing in such notice.
- (5) **LIMITATION ON LIABILITY BASED UPON REMOVING, DISABLING, OR BLOCKING ACCESS TO INFRINGING MATERIAL-** A person shall not be liable for any claim based on that person's removing, disabling, or blocking access for a period of ten days, or until the person receives a court order concerning the material, whichever is less, to material residing on a system or network used in conjunction with electronic communications that is controlled or operated by or for that person in response to notice pursuant to paragraph (b)(3)(A) that the material is infringing, whether or not the material is infringing.
- (6) **OTHER DEFENSES NOT AFFECTED-** A person's removing, disabling, or blocking access to material residing on a system or network used in conjunction with electronic communications that is controlled or operated by or for that person, pursuant to paragraph (1),



In particular, the Digital Act establishes that ISPs are not liable for the transmission of electronic communications by others.<sup>148</sup> It also absolves ISPs of liability for materials residing in their system or network, unless the ISP receives notice as prescribed under the Digital Act and "fails expeditiously to remove, disable, or block access to the material to the extent technologically feasible and economically reasonable."<sup>149</sup> The bill also states that ISPs shall not be liable for "direct, vicarious or contributory infringement" by providing links to other information, providing a search engine or a browser, or providing tools to create site-links.<sup>150</sup>

## V. ANALYSIS

From its inception, copyright law has "developed in response to significant changes in technology."<sup>151</sup> Because of the breadth and explosion of digitized piracy and copyright infringement on the Internet, the appropriateness of the

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or the failure to do so, shall not adversely bear upon the consideration by a court of any other issue pertaining to liability or remedy, including any other limitation on liability established in paragraph (a), any other applicable defense, any claim that the service provider's alleged conduct is not infringing, or whether or not such conduct is willful or innocent.

*Id.* § 512.

148. *See id.*

149. *See id.* § 512(b)(1). The purposes of the Digital Copyright Clarification and Technology Education Act of 1997 are as follows:

Sec. 101. PURPOSES.

The purposes of this Act are--

- (1) to clarify the application of copyright law in the unique environment of Internet and on-line communication;
- (2) to foster the continued growth and development of the Internet as a means of communication and commerce, including the lawful distribution of intellectual property;
- (3) to protect the rights of copyright owners in the digital environment;
- (4) to clarify that providing network services and facilities with respect to the transmission of electronic communications of another person does not result in liability under the Copyright Act;
- (5) to clarify that Internet and on-line service providers are not liable for third-party copyright infringements unless they have received notice in compliance with this Act of the infringing material and have a reasonable opportunity to limit the third-party infringement; and
- (6) to create incentives for the rapid elimination of infringing material residing on an electronic communications system or network without litigation.

*Id.* § 101.

150. *See id.* § 512(a)(3)(A)-(C).

151. *See Sony Corp. of Am. v. Universal City Studios*, 464 U.S. 417, 430 (1984) (footnote omitted) (dealing with copyright issues related to television shows copied by video tape recorders). For example, "innovations in copying techniques gave rise to the statutory exemption for library copying embodied in § 108 of the 1976 revision of the Copyright law." *Id.* at 431 n.11.

current copyright law is again pushed into the forefront.<sup>152</sup> One of the main reasons why piracy is on the rise is because of the ease of committing copyright violations.<sup>153</sup> In spite of the fact that scientific improvements facilitate copyright piracy, they also provide practical solutions to curb the onslaught of copyright abuses.<sup>154</sup>

Compounding the ease of copying, a user who downloads a picture for use on a web page, for example, might think nothing of copying one picture. Although this type of use may seem innocent when viewed in isolation, “[i]solated instances of minor infringements when multiplied many times, become in the aggregate a major inroad on copyright that must be prevented.”<sup>155</sup> Moreover, “[a] particular use which may seem to have little or no economic impact on the author’s rights today can assume tremendous importance in times to come.”<sup>156</sup> Those single instances of copyright infringement amount to millions of dollars in losses.<sup>157</sup> For example, according to the Recording Industry Association of America, music piracy is costing \$300 million of lost revenue in the United States and \$2 billion worldwide.<sup>158</sup>

There are competing interests on the Internet. For example, “[t]raditional book publishers, record companies, and moviemakers want extensive copyright safeguards on the Net,”<sup>159</sup> while netizens, on the other hand, would strongly argue that it violates the “free access to information” ideal that is the backbone of the Internet.<sup>160</sup>

152. See *Sony*, 464 U.S. at 430.

153. See McKenzie, *supra* note 4, at 1.

154. See *id.* (“Opponents of stricter laws point out that online publishers can also supply their own protection, using commercially available technology.”); see also discussion *supra* Part III.

155. See *Sony*, 464 U.S. at 482 (Blackmun, J., dissenting) (quoting S. Rep. No. 94-473, at 58 (1995)).

156. *Id.* (quoting House Committee on the Judiciary, Copyright Law Revision, pt. 6, Supplementary Report of the Register of Copyrights on the General Revision of the U.S. Copyright Law: 1965 Revision Bill, 89th Cong. 14 (Comm. Print 1965)). Putting the situation into perspective, “[j]ust think what happens to the shareware author’s expectation of a profit or the sales of a commercial sound recording if ten thousand individuals make such seemingly harmless personal copies.” See *IPNII Report*, *supra* note 81, at 203. Furthermore, the explosive growth of Internet users will compound this situation as exemplified by the Government’s estimate in 1996 that as many as 40 million people use the Internet and that such number is expected to increase to 200 million by 1999. See *Reno v. ACLU*, 117 S. Ct. 2329, 2344 (1997).

157. See Lange, *supra* note 4 (indicating that this figure also includes non-Internet related piracy); see also Veomett, *supra* note 110, at 35. Another estimate suggests that copyright owners annually lose \$15 to \$17 billion because of piracy and trade barriers; incompatibility between mechanisms protecting intellectual property contribute to this loss. See *IPNII Report*, *supra* note 81, at 131.

158. See Lange, *supra* note 4.

159. See Port, *supra* note 99, at 62.

160. See *id.*

An option for copyright owners is to keep their copyrighted work off of the public network; however, when copyright owners isolate themselves, they eliminate one of the most frequently accessed forms of media used by consumers today.<sup>161</sup>

Groups who argue for ISP liability contend that on-line service providers “are in the [best] position to know the identity and activities of their [clients] and to stop unlawful activities.”<sup>162</sup> In addition, they contend that “they are still in a better position to prevent or stop infringement than the copyright owner,”<sup>163</sup> and “[b]etween these two relatively innocent parties, the best policy is to hold the service provider liable.”<sup>164</sup> However, this is far-fetched considering the amount of traffic a carrier is handling and the steady increase of users on the Internet.<sup>165</sup> With the limited amount of time and resources available, it is impossible for an ISP to view files residing in its system, and, more critically, to determine whether a copyright violation has occurred.<sup>166</sup> Furthermore, ISPs may be compelled to raise prices for services such as small business accounts,<sup>167</sup> which are perhaps the kinds of services that propel Internet commerce and growth. One of the distinguishing aspects of the Internet is that every company, whether small or worth billions, can

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161. Companies now commonly use Internet web sites to improve public relations, increase revenue, and sell merchandise on-line. See generally Dean M. Gloster et al., *Untangling Legal Knots on the Web: Avoiding Internet Liabilities*, ANDREWS SPORTS & ENT. LITIG. REP., Dec. 1996 (discussing the uses and liability dangers of the Internet). A study released in 1996 also expects commerce on the Internet to exceed \$225 billion by the year 2000. See *id.*

162. See *IPNII Report*, *supra* note 81, at 117. However, Senator Ashcroft contended:

We must confirm that the entities who facilitate the operation of the global information infrastructure not be unfairly liable for literally billions of transmissions that individual users send via the Internet or post on the World Wide Web every week. We cannot make the Internet too costly to operate. Liability for infringement of copyright should reflect the degree of control that any party had in the determination of the content of the offending message. Those providing the infrastructure that makes the Internet possible should not be held liable for the content of messages to which they have no access. Often, the copyright holders will be best situated to make a determination of whether their copyrighted material is being infringed.

143 CONG. REC. S8729 (daily ed. Sept. 3, 1997) (statement of Sen. Ashcroft).

163. See *IPNII Report*, *supra* note 81, at 117.

164. See *id.*

165. A study done in January 1997, estimated that the number of Internet hosts exceeds sixteen million; each host is capable of hosting multiple websites and each individual site is composed of multiple individual pages. See 143 CONG. REC. S8729 (daily ed. Sept. 3, 1997) (statement of Sen. Ashcroft). One major infrastructure provider reported “traffic of 250 terabytes a month—a terabyte is a thousand billion bytes, which translates into almost six billion bytes a minute—for one carrier.” *Id.* Byte is an “[a]bbreviation for binary term, a unit of storage capable of holding a single character.” PC Webopedia (emphasis added) (visited Mar. 6, 1998) <<http://www.webopedia.internet.com/TERM/b/byte.html>>. The growth of “‘host’ computers—those that store information and relay communications—” is astounding, “from about 300 in 1981 to approximately 9,400,000 by . . . 1996.” See *Reno v. ACLU*, 117 S. Ct. 2329, 2334 (1997). “Roughly 60% of these hosts are located in the United States.” *Id.*

166. See 143 CONG. REC. S8729 (daily ed. Sept. 3, 1997) (statement of Sen. Ashcroft).

167. “[A] typical six-page small business Web site with a single response form” would amount to “\$18 to \$25 per month.” Dr. Ralph F. Wilson, *How to Choose a Web Hosting Service (ISP) for your Business Web Pages* (visited Mar. 6, 1998) <<http://www.wilsonweb.com/articles/webhost.htm>>.

afford to publicize on the Internet and with no distinction of geography or size.<sup>168</sup> By raising the price of Internet sites and opportunities to publish, small business may be precluded from conducting business on the World Wide Web.<sup>169</sup>

Others prefer to have ISPs as part of the chain of liable parties because of the "deep pocket" theory.<sup>170</sup> However, unlike other businesses, the capital needed to become an Internet publisher or vendor in cyberspace is "relatively insignificant by U.S. standards."<sup>171</sup> Thus, the hope of finding the party who can compensate the injured party may not prove forthcoming.<sup>172</sup> Furthermore, this low access barrier not only presents enormous chances for entrepreneurial ventures, but also for fraud.<sup>173</sup>

The 1976 Copyright Act, in accordance with the Berne Convention, does not require a copyright notice.<sup>174</sup> However, to ameliorate the dilemma of copyright infringement on the digital world, another kind of notice requirement, like digital watermarks, may be apropos. It is possible to construe digital watermarks containing copyright management information<sup>175</sup> as a prima facie case of copyright ownership or license to use a certain work. Furthermore, a person wanting to use a certain work can ascertain the copyright owner through reasonable means.<sup>176</sup> Hindrances to get valid rights and licenses would be relatively minimal.<sup>177</sup>

168. See Mills-Scofield, *supra* note 1, at 2.

169. The Telecommunications Act of 1996 expressly states:

It is the policy of the United States—

- (1) to promote the continued development of the Internet and other interactive computer services and other interactive media;
- (2) to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, unfettered by Federal or State regulation;
- (3) to encourage the development of technologies which maximize user control over what information is received by individuals, families, and schools who use the Internet and other interactive computer services;
- (4) to remove disincentives for the development and utilization of blocking and filtering technologies that empower parents to restrict their children's access to objectionable or inappropriate online material; and
- (5) to ensure vigorous enforcement of Federal criminal laws to deter and punish trafficking in obscenity, stalking, and harassment by means of computer.

47 U.S.C.A. § 230(b)(1)-(5) (West Supp. 1998).

170. See *IPNII Report*, *supra* note 81, at 115 & n.371.

171. See Ian C. Ballon, *The Law of the Internet: Developing a Framework for Making New Law*, 482 PRACTICING L. INST. 9, 20 (1997).

172. See *id.* at 20-21.

173. See *id.* at 20.

174. See discussion *supra* Part II.B (discussing the notice requirement).

175. See discussion *supra* Part III.A.

176. See discussion *supra* Part III.A.

177. See discussion *supra* Part III.A.

One advantage of having digital watermarks on a copyrighted work is that any ambiguity of ownership, similar to what happened in the *Religious Technology Center* case, is avoided.<sup>178</sup> The ISP can quickly verify true ownership through a few clicks of a mouse.<sup>179</sup>

Copyright owners taking affirmative steps to identify their work counters the contention that ISPs are in the best position to prevent copyright infringement with watermarks.<sup>180</sup> The copyright owners, unlike ISPs, know which of their works possess copyrights and can mark them accordingly. The guesswork by ISPs of whether an infringement occurred or not will be tremendously alleviated.

One feasible argument is that works containing digital watermarks may force all users to ask permission from copyright holders.<sup>181</sup> This would inhibit potential artists from using works permitted under fair use or works already in the public domain.<sup>182</sup> On the other hand, the use of watermarks will clearly delineate to the public what works are within the public domain and are available to copy.

Legal assurances, like statutes and legislation, must exist for technological copyright protection to be fully successful and to encourage copyright owners to engage in self-help.<sup>183</sup> Any new law must “not undermine the ability of copyright owners to enforce their rights and have meaningful recourse to prevent on-line infringement” and, moreover, must also ensure that liability “not be imposed inappropriately.”<sup>184</sup> The ideal is to achieve “a system where copyright owners and service providers work together to minimize infringement and expand the Internet as a medium for exploiting copyrighted works.”<sup>185</sup>

With the support of legislation, digital watermarks may prove to be a very effective sword against copyright infringers. Digital watermarking, a relatively inexpensive tool, furnishes adequate notification and gives control to copyright

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178. See discussion *supra* Part II.E and Part III.A.

179. See discussion *supra* Part III.A.

180. See 143 CONG. REC. S8729 (daily ed. Sept. 3, 1997) (statement of Sen. Ashcroft).

181. See *IPNII Report*, *supra* note 81, at 82.

182. See *id.*

183. Marybeth Peters of the Register of Copyrights stated:

One of the most serious challenges to effective enforcement of copyright in the digital environment is the ease, speed and accuracy of copying at multiple, anonymous locations. In order to meet this challenge, copyright owners must rely on technology to protect their works against widespread infringement. But every technological device that can be devised for this purpose can in turn be defeated by someone else's ingenuity. Meaningful protection for copyrighted works must therefore proceed on two fronts: the property rights themselves, supplemented by legal assurances that those rights can be technologically safeguarded.

*Legislative Hearing on the "WIPO Copyright Treaties Implementation Act" H.R. 2281 and the "Online Copyright Liability Limitation Act" H.R. 2180 Before the House Subcomm. on Courts and Intellectual Property, 105th Cong. (1997)* (statement of Marybeth Peters, Register of Copyrights) (visited Mar. 10, 1999) <<http://www.house.gov/judiciary/4012.htm>>.

184. See *id.*

185. See *id.*

holders on where and how they want their work distributed.<sup>186</sup>

The different bills discussed in this Comment address the various issues of copyrighted digital works and ISP liability.<sup>187</sup> Enacting a bill that clearly punishes an individual for misrepresenting and altering copyright management information while prohibiting circumvention of technological protection will help pave the way in making digital watermarks a de facto requirement for copyrighted works on the Internet.<sup>188</sup> Consequently, ISPs will be more willing to block access or remove infringing works on their system because it is possible to resolve the verification of copyright ownership through reasonable means and with more certainty.<sup>189</sup> A bill imposing liability on an ISP for not expeditiously removing infringing works when a copyright owner gives notice to that ISP will assure that the rights of copyright owners remain protected.<sup>190</sup> Thus, in this way, the ideal of copyright owners and ISPs working hand-in-hand to minimize infringements may reach fruition.<sup>191</sup>

Although Congress has not enacted any of the bills cited in this paper, it is highly foreseeable that one of these bills, or a similar bill will pass because of the clamor for certainty regarding ISP liability.

## VI. CONCLUSION

The billion-dollar piracy being proliferated on the Internet is the result of persons duplicating copyrighted works with relative ease.<sup>192</sup> Technology, which facilitated these copyright abuses, may also assist in circumventing these violations.<sup>193</sup> However, technology alone will not suffice; concurrent joint application of legal procedures and technological copyright protections is necessary to protect both the free flow of information on the Internet and the property rights of copyright holders.<sup>194</sup>

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186. It is possible to determine distribution of copyrighted works through reports generated by special web crawlers. *See supra* notes 107 & 110 and accompanying text.

187. *See* discussion *supra* Part IV (discussing proposed legislation).

188. *See* discussion *supra* Part IV (discussing proposed legislation).

189. *See* discussion *supra* Part IV (discussing proposed legislation).

190. *See* discussion *supra* Part IV (discussing proposed legislation).

191. *See supra* note 133 and accompanying text.

192. *See supra* note 157 and accompanying text.

193. *See* discussion *supra* Part III (discussing copyright protection through technology).

194. *See supra* note 183 and accompanying text.

