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*249 DOES INTERNET INFORMATION COUNT AS A PRINTED PUBLICATION?

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I. INTRODUCTION

An inventor cannot patent an idea that is in the public domain. Title 35 Section 102 of the United States Code (U.S.C.) generally states that "printed publications" are considered to be part of the public domain. [FN1] Specifically, section 102(a) precludes the granting of a patent if someone other than the applicant has described the idea in a printed publication before the date of the invention by the applicant. [FN2] Furthermore, section 102(b) specifically prevents procurement of a patent if anyone has described the idea in a printed publication more than one year before the inventor filed an application for a patent in the United States. [FN3]

Whether information available on the Internet can be considered a printed publication poses an important question to today's inventors and patent attorneys. [FN4] This issue is compelling because inventors determine whether or not to pursue a patent based on the knowledge contained in the prior art. [FN5] Resolution of this issue will likely determine how individuals and *250 companies structure their intellectual property strategy. Additionally, this issue will affect patent litigation strategy since it can determine whether or not an issued patent is valid.

Patent law requires that an invention meet three statutory requirements in order to be patented: an invention must be useful, [FN6] novel, [FN7] and non-obvious. [FN8] These three requirements reflect the monopoly contract between the inventor and the public. [FN9] In exchange for granting the inventor the exclusive right to preclude others from using an invention, the public must in turn receive valuable consideration. [FN10] This consideration takes the form of a new idea that was not previously known to the public. This novelty requirement is embodied in 35 U.S.C. § 102(a) and § 102(b). Again, under section 102(a), an applicant is barred from obtaining a patent if the invention was described by another in a printed publication, anywhere in the world, before the date of the invention by the applicant. [FN11] Section 102(b) prevents a patent from being granted on an invention that was described by anyone in a printed publication, anywhere in the world, more than one year prior to the filing date of the applicant's application for a patent in the United States. [FN12]

Information in a printed publication is chosen to represent the public's base of knowledge because such information is: recorded in a legible form, accessible to the public, locatable by the public, of a non-transitory nature, and in most circumstances actually distributed to the public. [FN13] Today, the Internet plays an increasingly important role in providing information to the public. Whereas, as little as twenty years ago a researcher would have relied primarily on books and magazines, a researcher in the near future will rely mainly on Internet web pages and online databases. [FN14]

Due to this large increase of information now available on the Internet, precluding Internet information from being considered a printed publication would most likely increase the number of patents granted, *251 because a potential statutory bar would be eliminated. However, if Internet information is included as a printed publication, it would most likely decrease the number of patents granted and increase the number of challenges to the validity of issued patents. People would be less likely to apply for patents if they knew this information could be used against them in court. Whether either of these results better drives technical innovation is unknown. However, denying printed publication status to Internet information, when it meets the necessary requirements to be considered a printed publication, would clearly go against the idea-for-monopoly rationale for granting patent protection to inventions not already in the public domain. [FN15]

This paper will determine whether information posted to a typical web site constitutes a printed publication. The paper will also devote some analysis to other types of Internet information such as e-mail, chat rooms, and Napster. A review of the previous case law in the area will be followed by a discussion of the current state of the law concerning Internet information. Next, various approaches that courts use in determining whether a document is a printed publication will be applied to Internet information. Finally, this article will provide guidelines a court should use in determining whether certain Internet information is a printed publication.

II. PRE-INTERNET DEVELOPMENT OF THE PHRASE "PRINTED PUBLICATION"

A. Documents Made by a Typewriter

An examination of the case law reveals the factors a court takes into account when deciding whether information is a printed publication. A typewritten thesis was found to be a printed publication in *Gulliksen v. Halberg*. [FN16] Here, the thesis was completely typewritten, bound and placed in the library at Massachusetts Institute of Technology. [FN17] The issue in *Gulliksen* was whether a typewritten thesis was a printed publication. [FN18] The word "printed" in the Patent Act of 1870 encompassed only documents that were produced by a printing press. [FN19]

The *Gulliksen* board reasoned that typewritten material is a printed publication because the characters formed by a typewriter are essentially *252 identical to those formed by a printing press. [FN20] The board held that a typewritten document could be just as easily reproduced as

one made by a printing press because of present photographic processes. [FN21] The board stated, in dicta, that a handwritten thesis is not considered a "printed publication" because handwritten material is difficult to read due to eccentricities in penmanship. [FN22] Therefore, since this particular thesis was embodied in a form that looked like a printed page, and was placed in a library accessible to the public, it was a printed publication. [FN23]

B. Information on Microfilm

Factors determining whether microfilm constitutes a printed publication were discussed in *In re Tenney*. [FN24] In *Tenney*, the United States Army acquired a copy of a German patent application after World War II from Germany's patent office and recorded it on microfilm. [FN25] The microfilm contained an application for a fog-producing machine, and it was placed in the Library of Congress. [FN26] The microfilm was indexed under the heading "German patent applications on aircraft." [FN27]

In determining whether the microfilm was a printed publication, the court looked towards the purpose of the word "printed" in the patent statute. [FN28] The court reasoned that Congress used that word because it wanted to ensure that the American public would become aware of the subject matter via general distribution or publication. [FN29] Therefore, "printing" refers to some mode of producing copies ordinarily used to make a large number of copies. [FN30]

In *Tenney*, although microfilming furnishes a means of making multiple copies, there is no probability that a person would in fact make several *253 copies. [FN31] Microfilming methods are designed to produce one copy as well as many. [FN32] A document produced with a printing press would be more likely to be mass produced because, unless a number of copies were made, a waste of time, labor, and materials would result. [FN33] As such, the microfilmed application was not found to be "printed," and was therefore not a "printed publication." [FN34]

In *In re Wyer*, [FN35] a microfilmed copy of a patent application was placed in the Australian Patent Office. [FN36] The court noted that the state of technology in document duplication, data storage, and data retrieval reduced the "printed publication" requirement to a unitary concept. [FN37] The court held that an item is a printed publication as long as it is made available and accessible to those person's concerned in the art. [FN38] Since the Australian Patent Office had equipment for making copies, had the copies available for public sale, and maintained the microfilm for public viewing, the microfilm was found to be a "printed publication." [FN39]

C. Academic Papers Stored in Libraries

Typewritten academic papers were at issue in *In re Cronyn*. [FN40] Here, three papers written by students were found not to be printed publications. [FN41]

The students wrote these papers and then delivered a presentation of the content to a faculty board. [FN42] The papers were then placed in the main college library. [FN43] The library's indexing system consisted of cards that showed the student's name and the title of their paper.

[FN44] The cards were filed *254 alphabetically by the student's name. [FN45] The court focused exclusively on whether these papers were accessible to the public. The court held that the theses, while seemingly accessible to the public, were not actually accessible to the public because they were not indexed in a meaningful way. [FN46] The student's name was the only research aid, and it did not bear any relationship to the subject of the paper. [FN47] As a result, the papers were not "printed publications." [FN48]

On the other hand, a thesis was held to be a printed publication in *In re Hall*. [FN49] Here, a single copy of the thesis was placed in the Library of Freiburg University in Germany. [FN50] The thesis was catalogued and placed in the main collection, along with being set apart in a special dissertation section in the general stacks. [FN51] The court focused on the public accessibility of the document in determining whether the reference constitutes a "printed publication." [FN52] In holding the document to be a printed publication, the court rejected the argument that a single cataloged thesis in one university library did not constitute sufficient accessibility to those skilled in the art exercising reasonable diligence. [FN53] The Hall court therefore found a thesis to be a printed publication, in part because the thesis was properly catalogued in the library, whereas the Cronyn court found a thesis not to be a printed publication, partially because the thesis at issue was not properly catalogued in the library.

D. Methods Used by Pre-Internet Courts to Interpret the Phrase "Printed Publication"

A review of the case law indicates that courts place emphasis on the word "printed" or on the word "publication" when analyzing the phrase "printed publication." This is very evident in the two microfilm cases previously discussed. The Tenney court focused on whether the microfilmed patent application met the policy goals behind the "printed" requirement. [FN54] *255 Alternatively, the Wyer court looked primarily at whether the microfilmed patent application was "published." [FN55]

The two academic paper cases previously discussed also demonstrate this distinction. The Gulliksen court focused exclusively on whether the thesis was "printed." [FN56] On the other hand, the majority of the analysis in Cronyn was devoted to determining whether the academic papers were "published." [FN57] In view of the various approaches that courts take, this paper will analyze whether Internet information is a printed publication under both the "print" theory and the "publication" theory.

III. CURRENT STATE OF THE LAW CONCERNING INTERNET INFORMATION

Information posted to the Internet is likely considered a printed publication by many of today's practicing patent attorneys. [FN58] Therefore, most attorneys have probably drafted patent claims around information found on the Internet, since they consider it to be prior art. As such, current and past patents will probably not be found invalid if Internet postings are found to constitute printed publications. [FN59] At this time, courts have not addressed the question of whether information accessed via the Internet falls within the definition of a printed publication. However, two law review articles have considered this issue.

A. The Barger View

In 1993, Andrew Barger authored an article in which he discussed the ramifications of stolen intellectual property being posted on the Internet. [FN60] *256 Barger sought to revise 35 U.S.C. § 102(b). [FN61] The purpose of his revision was to allow inventors to obtain patent protection even if a cyberthief posted the inventor's ideas on the Internet more than one year before the inventor applied for a patent. [FN62] Barger concludes that information posted to the Internet does qualify as a printed publication. [FN63] Barger cites dicta from the Wyer court stating that information on magnetic disc constitutes a printed publication if there is sufficient proof of its dissemination. [FN64] Barger further highlights that the Wyer court focused on the public accessibility and dissemination aspects of a printed publication rather than on the mode in which the information was embodied. [FN65] Since the Internet is simply data contained on hard drives (magnetic discs), Barger logically concludes that information on the Internet is a printed publication. [FN66]

B. The Oppenheimer View

A 1999 article by Max Stul Oppenheimer specifically addresses whether a posting to the Internet constitutes a printed publication. [FN67] Oppenheimer concludes that under the current case law and with the Internet as it exists today, an Internet posting would not be a printed publication. [FN68] Oppenheimer states that an explicit holding of the case law is that a printed publication must be accessible to the public. [FN69] Oppenheimer concludes that Internet postings are not printed publications because they are not publicly accessible, i.e. are not adequately indexed to be easily located by a reasonable researcher. [FN70] Further, Oppenheimer argues that implicit assumptions made in the case law do not apply to Internet postings. [FN71] These assumptions concern whether a document will remain publicly available, whether the *257 content of the document will remain fixed, and whether the document has a verifiable date of publication. [FN72]

C. Brief Analysis of the Two Law Review Articles

The Barger analysis is too thin to significantly influence a court in deciding whether information posted to the Internet is a printed publication for purposes of barring a patent under 35 U.S.C. § 102(a), (b). Similarly, Oppenheimer's analysis does not deal with the issue in a meaningful way because he ignores the fact that a large amount of Internet information is adequately indexed. [FN73] Moreover, several court cases and aspects of the Internet contradict his implicit assumptions analysis. [FN74] Thus, it will be necessary to determine whether Internet postings constitute printed publications by considering the points of these two law review articles together with the case law, the purpose of patent law, and the mechanics by which information is disseminated through the Internet.

IV. THE "PRINT" THEORY OF ANALYSIS

Courts that focus on the "print" theory require that a printed publication be both published and produced by a mass copying process that ensures the copies are legible. [FN75] The phrase "printed publication" first appeared in the Patent Act of 1836. [FN76] At that time, the printing press was the only available means for widely distributing copies of a work. Although copies of works could be made by hand, these were not sufficient in the eyes of Congress because handwritten documents do not rise to the level of accessibility of printed documents. [FN77] Congress wanted to be certain that information serving as the public's base of knowledge was in a form capable of being distributed to a wide audience. [FN78]

As technology advanced, so did the law. As such, a document produced by a typewriter was found to be no different than one produced by a *258 printing press, and was thus considered a printed publication in *Gulliksen v. Halberg*. [FN79] The board reasoned that a typewritten thesis was "printed" because the letters were all of uniform size and shape, the spacing was generally arranged in the same manner, and photographic processes of making copies existed such that copies could be easily made. [FN80] Additionally, the *Gulliksen* court stressed that to be a printed publication, the item must be embodied in a form that is in fact a legible record. [FN81] This requirement eliminates documents written in pencil or pen because variations in people's handwriting could create confusion as to what information is in the document. [FN82]

The invention of microfilm was also analyzed under the "print" theory by the court in *In re Tenney*. [FN83] A microfilmed copy of a German patent application copy was placed in the Library of Congress and indexed in the directory as "German patent applications on aircraft." [FN84]

The *Tenney* court held that this particular microfilm was not "printed" because there was but a single copy, and because microfilming differs from printing. [FN85] The *Tenney* court further noted that a person would not be any more likely to make one copy than to make many copies from microfilm, and that the expense of creating a document by printing ensures that many copies will be made. [FN86]

In addition, the "print" theory requires that a printed publication be "published." [FN87] This simply means that the document must be stored in a place that ensures public accessibility, or alternatively, be distributed to the public. [FN88]

In conclusion, under the "print" theory, a document must first be embodied in a legible form that allows for many copies to be made before the document will be considered a "printed" publication. Additionally, a document must actually be published: either by being publicly accessible, or by being disseminated to the public.

*259 V. INTERNET'S STATUS UNDER THE "PRINT" THEORY

A posting on the Internet appears to satisfy the requirements of a printed publication under the "print" theory of a "printed publication." Information on public web pages can be easily copied

or viewed by the relevant public. In addition, this information is embodied in a legible form because the letters are all of uniform size and shape. The Internet, by its very nature, is designed to allow users to access information. These characteristics satisfy the publication requirement under the "print" theory. An analysis of two law review articles on this subject helps to strengthen this conclusion.

A. Barger's Analysis of Internet Information

Andrew Barger's article considered dicta by the Wyer court.[FN89] The court stated that "[w]hether information is printed, handwritten, or on microfilm or a magnetic disc or tape, etc., the one who wishes to characterize the information, in whatever form it may be, as a 'printed publication' ... should produce sufficient proof of its dissemination" [FN90] In effect, the court said that information stored on a computer's hard drive would be deemed printed as long as sufficient levels of dissemination or accessibility were reached. [FN91] Hence, since the Internet is nothing more than a connection between the hard drives of millions of computers, Barger concludes that almost all information on the Internet constitutes a printed publication because it is widely disseminated or at least widely accessible. [FN92] Barger conditions his conclusion by mentioning *Regents of the U. of California v. Howmedica, Inc.*, [FN93] and stating that a printed publication must be "fixed in a tangible medium of expression." [FN94]

In *Howmedica*, slides shown at a lecture were held not to be printed publications because they were shown only for a limited duration of time. [FN95] This amount of time was insufficient to disclose the invention to enable a *260 person skilled in the art to make or use the invention. [FN96] Barger draws a parallel between the limited exposure of information in *Howmedica* and the language of the Federal Copyright Act. [FN97] Barger then concludes that to be printed, a document must be "fixed in a tangible medium of expression." [FN98]

Based on Barger's analysis, it appears that a temporary posting of a message in an on-line chat room or an instant messenger program would not constitute a printed publication. Such a temporary posting would be akin to a projection of slides shown during a lecture. However, it also appears that other Internet information such as bulletin board posts, e-mails, and web page information would constitute a printed publication because these are not temporary and, in effect, are designed to be accessed over a period of time. [FN99]

Although Barger makes a good argument, a court would probably not be compelled by dicta on magnetic discs from 1981, combined with an analogy to the copyright laws, in determining whether Internet postings in the year 2001 are printed publications. More likely, a court would look toward the "print" or "publication" tests that courts customarily use in the determination of whether a document is a printed publication.

B. Oppenheimer's Analysis of Internet Information

Oppenheimer applied the "print" theory in concluding that general Internet postings do not meet the current case law standard of a printed publication. [FN100] In his conclusion, Oppenheimer

states that while some courts might rule otherwise, most courts would deny printed publication status to Internet postings. [FN101] Although an Internet posting can be transferred to paper, the posting itself exists as electronic data. [FN102] Microfilm exhibits the same characteristics in that it can be used to produce a paper image. [FN103] Microfilm itself, however, is not a paper image. [FN104] Using such an analogy, Oppenheimer concludes that an Internet posting should be analyzed along the same lines as microfilm. [FN105] Oppenheimer also points to dicta in *Wyer*, which supports the *261 argument that data stored in electronic form should not be rejected as a printed publication solely because it initially exists in this medium. [FN106]

1. Public Accessibility of Internet Information

Oppenheimer next focuses on the requirement set forth in *Wyer* that a printed publication be accessible to the public. [FN107] The accessibility requirement can be broken into two sub-requirements: (1) the "right to look", and (2) the "ability to find." [FN108] The "right to look" requirement asks whether a document is intended to be publicly accessible, whereas the "ability to find" requirement denies printed publication status to documents that cannot be located by the public due to inadequate indexing. [FN109] Thus, to be publicly accessible, a document must meet both of these sub-requirements. [FN110]

Internet postings meet the "right to look" requirement because the postings are meant to be publicly accessible. [FN111] This statement holds true whether a fee is required to access the web site, or whether the web site is free. Either way, the public is not prohibited from accessing the information. Oppenheimer, however, argues that Internet postings do not meet the "ability to find" requirement because articles on the Internet are too difficult to locate due to the sheer number being posted daily. [FN112] Oppenheimer notes that the number of articles posted to the Usenet sites alone was approximately 130,000 per day in 1995, and has been increasing dramatically since then. [FN113] Similarly, Oppenheimer draws attention to the notion that there is currently an insufficient system of indexing these documents such that a member of the interested public can separate the relevant documents from the irrelevant. [FN114] While search engines such as AltaVista, Excite, and Yahoo!, etc., exist, there is no universal search engine, nor is one likely to become available in the future. [FN115]

*262 Thus, at this time, Internet postings are akin to the microfilm patent application in *Tenney*. [FN116] Oppenheimer argues that although theoretically accessible, such postings are not adequately indexed and are not able to be located by those skilled in the art. [FN117] Therefore, the knowledge in these documents does not rise to the level of accessibility required of a printed publication. [FN118]

2. Why Internet Information is Publicly Accessible

Oppenheimer underestimates the ability with which a member of the public can locate particular documents on the Internet. Although a standard index does not currently exist, search engines do allow users to locate particular documents. [FN119] Further, there are search engines that query all of the popular search engines and give users a list of web sites that were pulled

from ten or fifteen different search engines. One example of such a search engine that searches other search engines is Dogpile. [FN120] Search engines obtain their directories through registration. [FN121] Thus, an owner of a web site connects to a search engine and lists the information on their web site in the appropriate directory, using proper search terms and a description. [FN122]

Typically, when one pulls up a list of web sites given by a search engine, the list will include some description of the web site or include a line of text, which shows how the search terms are used on the web page. These features allow one to quickly access the relevant web sites. This feature of search engines solves Oppenheimer's problem of not being able to separate the relevant from the irrelevant documents. [FN123]

*263 3. Technical Information on the Internet

Standard search engines perform very well in locating technical information, which is typically relevant in patent cases. For instance, consider the scenario where a researcher wants to locate technical material on bypass systems that would allow fish to avoid contact with hydroelectric power generators located on rivers and other waterways. Selecting the search engine HotBot, [FN124] one can first use the search term "hydroelectric." Once the matches are provided by the search engine, the search can be narrowed by using an advanced search and limiting the matches to the term "American Society of Mechanical Engineers." Such a search leads to a technical journal article that provides helpful information on the design of bypass systems, such as urging a designer to use round pipe instead of square pipe. [FN125]

4. Case Law Concerning the "Ability to Find" Information

In regard to less easily locatable web sites, the case law in this area does not require a printed publication to be indexed in such a way that it will always be found by a member of the public. For instance, a thesis deposited in a state university library was found to be a printed publication in *Ex parte Hershberger*. [FN126] The thesis in this case was in a loose-leaf binder and consisted of both typewritten pages and handwritten pages. [FN127] A single copy of the thesis was placed in a library at the University of Michigan. [FN128] The thesis was not allowed to be removed from the library, but was available for anyone to read. [FN129] Copies of the thesis were not allowed to be made unless permission was granted from the author, and if another library borrowed this thesis, that library would have to follow these same rules. [FN130] Furthermore, anyone reading the thesis had to sign a form accepting these restrictions. [FN131]

*264 The board held that the thesis was a "printed publication" because the thesis was placed in a public institution with the intent to make the information known to the public. [FN132] The thesis was properly indexed in the library, and was available to anyone who was interested in reading it. [FN133] The board discounted Hershberger's argument that the thesis was not a printed publication because it was located in a single library and thus not sufficiently distributed to the public. [FN134]

A searcher looking within the University of Michigan library would be able to find this thesis because it is properly indexed inside the library. However, someone living in Florida could conceivably have difficulty finding a thesis indexed in a Michigan library. No universal index exists as to theses recorded and stored in all public or private institutions. [FN135] Therefore, a person in Florida would have similar difficulty finding this thesis as would an Internet searcher who attempted to locate a document on a server that is not listed in a popular search engine.

5. Comparing an Internet Search to a Thesis Search in a Library

The "ability to find"[FN136] would likely be greater for the Internet searcher than for the library thesis searcher. This is because most web sites on the Internet contain "hypertext links", i.e., links that reference or point the visitor to relevant documents or related web sites. Occasionally, a searcher will be able to find the relevant document by following links as opposed to using a search engine. While it is possible that a thesis could make reference to a related thesis in another library, this method of finding a relevant document is much more limited. A searcher would have to order the thesis from the other library, incurring cost in both time and money, all the while being uncertain that the thesis is helpful until the thesis actually arrives. An Internet searcher, on the other hand, could instantly access the related web *265 site, via links, and determine if the referenced document is relevant. [FN137] The superior ease with which Internet references can be viewed makes them more likely to be used in a search than references cited from a thesis cross-referencing a document in another library. This means the "ability to find" a document is at least equal to, if not better, on the Internet than through a thesis search in libraries across the country.

Support for this argument is also found in *Hamilton Laboratories, Inc. v. Massengill*. [FN138] In *Hamilton*, the court found a single copy of a dissertation placed in a university library to be a printed publication. [FN139] The court reasoned the dissertation was in the public domain because it was "put on file in the library of the college, available to students there and to other libraries having exchange arrangements with Iowa State." [FN140] This reasoning suggests that it is not necessary for a document to be indexed in libraries all across the United States. Being indexed in only one library, or in a few libraries at most, is sufficient. Similarly, a document that is properly indexed in a single search engine on the Internet would constitute a printed publication. Although a court may require the document to be listed in the index of a common search engine, it certainly would not require a document to be listed in all of the search engines, or in a master directory that indexes all of the documents on the Internet.

6. Necessary Scope of the "Ability to Find" Requirement

Oppenheimer suggests that the "ability to find" is only satisfied if any searcher sitting down at a computer can locate a document. [FN141] For the Internet to satisfy this requirement, a universal guide or index must be created such that any document can be located. [FN142] This system would be analogous to a phone book, which nationally lists all phone numbers. On the other hand, the courts in *Hershberger* and *Hamilton* view "ability to find" in *266 a local database context. [FN143] In their view, a phone book that lists only the phone numbers in Allegheny

County would be sufficient to satisfy the "ability to find" requirement.

Under this analysis, a substantial amount of information on the Internet will be capable of being found by the relevant public. Information stored in an online database, such as CyberAtlas, is properly indexed and able to be found by the relevant public. [FN144] The relevant public can likewise find information that is properly indexed through a search engine. Of course, information that is improperly indexed in a database is not able to be found by the public, and therefore is not a printed publication. [FN145] Likewise, a web site that is inadequately indexed on a search engine does not meet the requirements of a printed publication. Logic dictates that the public cannot access an inadequately indexed web site because the web site is generally not capable of being found.

However, a web site possessing a particularly descriptive address, i.e., www.bicycle.com, allows for information to be found by the public, regardless of whether the web site is listed in a search engine, because it is more probable that a person would search for a web site with a descriptive title like "bicycle." Since most people search the Internet using search engines and links, it could be argued that a person would not blindly type in names of unknown web sites to locate information. [FN146] The web site's name would thus have to be very descriptive of the information contained within it to be considered a printed publication if the web site was not listed in a search engine.

Other types of Internet information could possibly meet the "ability to find" requirement. A discussion in an on-line chat room could be found by the relevant public, provided the relevant public was informed of the place and time that a particular discussion was to take place. Otherwise, a *267 typical discussion in an on-line chat room would not be capable of being found by the relevant public, and would probably take place for a short period of time from a location that would not be transmitted to the relevant public.

E-mail also satisfies the "ability to find" requirement because it is delivered directly to the recipient's mail program or computer. The same holds true with regard to an instant messenger program or a music exchange program such as Napster.

Thus, concerning non-posted Internet information, it appears that these forms of Internet information constitute printed publications. The only exception under the print theory would be discussions in on-line chat rooms that were not announced to the relevant public.

VI. "PUBLICATION" THEORY OF ANALYSIS

The second theory that courts use to interpret the phrase "printed publication" is the "publication" theory. [FN147] The publication takes an expansive view of the word "printed," and considers a document printed if it is embodied in a form from which many copies can easily and quickly be reproduced from one standard article, thereby ensuring general distribution and public disclosure. [FN148]

The Wyer court stated that information, whether printed, handwritten, or on microfilm or a

magnetic disc or tape, etc., may be a printed publication so long as a method of producing a large number of copies is available. [FN149] The court held that printed publication status is to hinge on whether the document is publicly accessible. [FN150] The document considered in *Wyer* was a patent application contained on microfilm. [FN151] The court made a factual inquiry into whether the microfilm was open for public inspection and was properly indexed. [FN152] Since the microfilm possessed both of these factors, it was found to be a printed publication. [FN153] The court suggests that microfilm is a printed publication because many copies can be made via the microfilming process. [FN154]

*268 The *Cronyn* court also analyzed documents under the "publication" theory. [FN155] Here, the documents in question were academic theses written by college students. [FN156] These papers were placed in the college library and indexed according to the author's name. [FN157] The court focused on the dissemination and public accessibility characteristics of the papers, concluding that the papers were neither disseminated to the public, nor publicly accessible, because they were not indexed in a meaningful way. [FN158] As such, the papers were not printed publications. [FN159]

Thus the "publication" theory places its focus on whether the document has been made widely available and accessible to the public. [FN160] As such, if an idea has been so distributed throughout the public, and is contained in some tangible form, it should be given the status of a printed publication.

VII. INTERNET'S STATUS UNDER THE "PUBLICATION" THEORY

A general Internet posting is designed to be accessed by the public via computer. Information posted on a host's computer can be widely accessed, reproduced and distributed. Such a posting meets the broad interpretation of the term "printed" under the "publication" theory of "printed publications." [FN161] Moreover even a private web site posting fulfills the "printed" requirement because the method by which the information is stored ensures easy reproduction. [FN162] Although, public disclosure is limited on a private web site, this fact is irrelevant in determining whether the information is printed.

As previously discussed, a large amount of information posted to the Internet is properly indexed, and is thus, accessible to the public. [FN163] Furthermore, most web sites are created for public viewing. [FN164] Thus, a *269 general Internet posting, properly indexed and dedicated for public viewing, seemingly meets the requirement that a document be placed widely and irretrievably in the hands of the public under the "publication" theory of "printed publication." [FN165] In contrast, private web site postings are not considered printed publications under this same requirement, because by definition, a private web site posting is not intended for public viewing.

Oppenheimer, however, argues that Internet postings are not printed publications under the publication theory due to the lack of public accessibility through a form of indexing. [FN166] The "ability to find" argument under the publication theory is analogous to that made earlier under the print theory. [FN167] Oppenheimer further argues that Internet postings do not meet

the implicit assumptions of the case law, and thus cannot be considered printed publications. [FN168] Oppenheimer explains that case law on printed publication assumes: 1) an intent to make a document publicly accessible; 2) to continue the availability of the document; 3) to continue the form and content; and 4) to ascertain a verifiable date of publication. [FN169] Therefore, Oppenheimer states that Internet postings need to meet two tests. [FN170] First, Internet postings must meet the explicit holdings of case law. [FN171] Secondly, Internet postings "must show that there are no implicit, underlying assumptions in the caselaw that would not apply equally." [FN172]

A. Permanent Availability of Internet Information

Oppenheimer argues that case law implicitly assumes that once a document becomes publicly available, it will remain publicly available. [FN173] Although Oppenheimer does not offer a specific example of a document's initial and however continued availability, this assumption seems to be correct when viewing the assumption's two components: 1) once the *270 document is released to the public, it will not be destroyed or withdrawn therefrom; and 2) the document will remain invariable. [FN174] In order for the public to have access to a web site, the public needs the host's server to download the information. [FN175] According to Oppenheimer, an Internet posting is not permanently publicly available. [FN176] An owner of a web site can remove the document from the web site, and by doing so removes the information from the public domain. [FN177] An Internet posting would in effect be recalled much like the recall and destruction of an entire run of books or magazines. [FN178] In actuality, this recall feature of the Internet is stronger than traditional modes of printed publications, because a host does not have to track down purchasers or viewers of the information. [FN179] Additionally, a server can go down through technical problems that are completely beyond the control of the host owner. [FN180] Technology is available to increase the permanence of web documents, but it is not commonly used throughout the Internet. [FN181]

1. An Analogy Between Information Posted on the Internet and Information Distributed at a Conference

While Oppenheimer may have a viable argument for the implicit assumption of permanent public access to some forms of printed publications, such as books or theses, his argument does not apply to other documents, which courts have held to be printed publications, i.e., documents of a transitory nature. [FN182] A court found summaries of papers which were read at a technical conference to be printed publications in *Deep Welding, Inc. v. *271 Sciaky Bros., Inc.* [FN183] In *Deep Welding*, conferences on vacuum technology were conducted in Namur, Belgium. [FN184] The conferences were open to the public, and Americans were in attendance. [FN185] At the conferences, summaries of the presentations were distributed on paper to those in attendance. [FN186] The Seventh Circuit Court of Appeals characterized such conference summaries as printed publications. [FN187] Conference summaries that are distributed at public meetings to persons skilled in the relevant art are not only printed publications, but are also proper evidence of prior art. [FN188] Therefore, a statutory bar under 35 U.S.C. § 102(a), (b) includes a document's "availability and accessibility to persons skilled in the subject matter or

art." [FN189]

By making such a characterization, the Deep Welding court did not account for the possibility that conference summaries could not be accessed by those not in attendance. [FN190] The Seventh Circuit made no requirement for those having copies to share the conference summaries with those not having copies, nor does it appear that the presenter was required to furnish copies of the summaries upon late requests. [FN191] Thus, conference presentation summaries differ from a thesis in that once distributed to the public, conference summaries are, in effect, withdrawn from further public access, while a thesis is continually maintained in a library where it is available to the public.

A web site that is removed from a server is analogous to a conference summary, in that the information posted to the web site is distributed to the public for a limited time, and distribution and continued public access ceases. The printed publication requirement of the Patent Act would have then been met because the relevant public or, if widely distributed, the general public, would have had access to the information. [FN192] However, a web site will not satisfy the printed publication requirement if no one visits the web site. As a result, a web site without a hit is analogous to a public conference that no one attended.

A thesis can be qualified as a printed publication even if no one looks at it since a presumption exists that the public has knowledge of a *272 publication once a single printed copy is proved published. [FN193] In contrast, there must be more than a mere posting to a web site before such a site constitutes a "printed publication." A web site, if analogized to a conference summary, can only be a printed publication if the proponent shows that the relevant public, or the public in general, actually received the information. [FN194] Tracking the number of hits a particular web site receives would prove this requirement. Further, one could track the actual people who accessed the web site to see if those people were members of the relevant public. This task is accomplished by having a visitor sign the web site's "guest book." Alternatively, the web site can record the Internet Service Provider ("ISP") address of a visitor, and then identify that visitor by contacting the corresponding ISP.

Furthermore, proof of whether the web site was visited could be obtained by locating the document on someone's computer, or by producing hard copies of the posted document. Therefore, the Internet currently has a means of determining whether the relevant public or the general public has viewed a particular web site, and whether that web site can be considered a printed publication.

Analogously, other forms of Internet information can be characterized as a printed publication. E-mail is distributed to specific people and cannot be recalled once a person receives the message. This feature is also true for certain types of instant message programs that allow users to save the contents of a conversation. Similarly, information distributed through Napster, chat rooms, or File Transfer Protocol ("FTP") is likewise unable to be removed by the host because this information is in effect "given" to the user.

2. An Analogy Between Information Posted on the Internet and Information Distributed to the

Public

In *Tampax*, the plaintiff sold products inside a carton that also contained a printed instructional leaflet. [FN195] The court held that the leaflets were printed publications. [FN196] The court reasoned that the leaflet was a printed *273 publication because it was "extensively distributed and its use unrestricted, and as easily obtainable as a trade catalogue." [FN197]

Information posted to a web site, but later removed is comparable to the leaflet in *Tampax*. There is no guarantee that an instructional leaflet or web site will always remain publicly available. Once a manufacturer quits selling, or revises an existing product, or a web site crashes, the original instructional leaflet or web site is no longer distributed or accessible to the public. Thus, the public is exposed to the information for only a limited period of time. After such period, the information is further disseminated in printed form only by those who saved the leaflet, or by those who downloaded the document and saved it on their computer's hard drive, or made a hard copy.

Additionally, the *Tampax* and *Deep Welding* courts focused on relevant dissemination or degree of dissemination. [FN198] The printed publications were considered permanently accessible to the public, despite the fact that they were available for a limited time, and were not stored in a location where the public could reach them. [FN199] Thus, in analyzing *Tampax* and *Deep Welding*, a web site may qualify as a printed publication if it meets the distribution requirement, irrespective of whether the information is eventually removed from the web site's server, or otherwise made inaccessible.

Similarly, other types of Internet information can be characterized as a printed publication just by being distributed to the public. E-mail, chat messages, instant messages, songs on Napster, FTP files, and information on networks are all transmitted to a user. Once received, the information is out of the Internet host's hands and cannot be recalled. Printed publication status should not be denied for these forms of Internet information because the content cannot be taken back once distributed.

B. Modification of Internet Information

Oppenheimer argues that it is a case law implicit assumption that once a printed publication is publicly available, the form and content of the document will remain fixed. [FN200] Oppenheimer further argues Internet postings are "easily modified" and digital modifications are difficult to detect in electronic form. [FN201] Thus, according to Oppenheimer, information someone *274 posted on a web site a year ago is most likely not the same information posted on the web site today. Such a situation could prove to be problematic in that the question of the true date of publication arises. The answer to this question could ultimately validate or invalidate a patent under the one-year statutory bar of 35 U.S.C. § 102(b). [FN202]

1. Case Law Concerning Printed Publications That Can Be Modified

In *Ex parte Hershberger*, a document that was subject to modification did not invalidate its status as a printed publication. [FN203] The document in question was a thesis composed of both typewritten and hand written pages. [FN204] The thesis was assembled in a loose-leaf binder. [FN205] Hershberger objected to the possible ease in which someone could alter or remove pages of this thesis after placement in the university's library. [FN206] Nonetheless, the court ruled this thesis to be a printed publication. [FN207]

The potential for modification also existed in *Massachusetts Institute of Technology v. AB Fortia*. [FN208] In this case, the printed publication in question was first orally presented by the author during a conference on cell cultures. [FN209] Between 50 and 500 cell culturists attended the conference. [FN210] Copies of the presented paper were passed out at this time and distributed on request to as many as six people over a year after the conference. [FN211] The court held the paper to be a printed publication. [FN212] The court here was not concerned with the fact that the conference copies were distributed some time after the initial conference, and therefore could have been different from the original version. [FN213]

*275 2. Internet Features that Reduce the Probability of Modification

The possibility of an owner or a hacker modifying a web site is a valid concern when the sole reason is to defraud a tribunal. [FN214] Although Oppenheimer points to the use of encryption technology to authenticate original documents, he adds that most web pages are not currently authenticated. [FN215] However, other verification methods do exist. For instance, an original document could be copied to a "mirror site" on another server, which could be made available at a later date to corroborate or discount the authenticity of the offered document. [FN216] Just the possibility of an owner having his web page copied to a mirror site should itself act as a deterrent to forgery.

Also, there is a high probability that researchers who take a particular interest in a document will choose to download it to their hard drives or make printouts of the web page. Downloaded documents also could be compared with one another and with the offered document to determine if the information had been modified. Furthermore, a search engine or its archived files could be verified to see if its information conflicts with what is on the document, since most web pages are put into a search engine. In addition, the testimony of the casual web surfer could be used to ascertain what a particular document did or did not contain at a particular time. Consequently, both case law and technological advances support the characterization of Internet postings as printed publications.

In contrast, information in chat lounges, instant message programs, e-mails, and Napster are not as susceptible to being modified by the host. These modes of information involve sending information to the relevant public. Once the public or recipient has a copy of the information, the host cannot then modify the information. However, where the public may not have a copy of the information in an instant message or chat lounge, it is necessary for the people receiving the message to confirm the content of the information conveyed with the originator. Otherwise there is too great an opportunity to modify information, and printed publication status should not be granted in such situations.

*276 C. Verifiable Date of Internet Information

Finally, Oppenheimer contends that case law implicitly assumes that a printed publication has a verifiable date of publication. [FN217] For instance, this date would be the date a newspaper was printed or when a thesis was indexed. [FN218] Oppenheimer states that due to the electronic nature of the Internet, the host is able to provide an inaccurate date of public availability. [FN219] Therefore, Internet postings do not meet the requirement of a verifiable date of publication because such postings always possess this problematic feature; not only in those cases where the host chooses to falsify a publication date. [FN220]

Typically, someone posting something to the Internet knows when he or she posted it, however. In addition, web sites commonly keep track of dates and times as to when a message on a bulletin board was posted, when an e-mail was sent, or when a web site was created or modified. [FN221]

The policy of the Patent and Trademark Office ("PTO") is that the effective publication date of a magazine is the date it reaches an addressee, not the date it was placed in the mail. [FN222] Similarly, when people receive information on their computers in the form of an e-mail, an instant message, a chat room message, or by simply calling up a web page, it is analogous to receiving a magazine in the mail, i.e., the effective publication date is the date the computer user accesses the information, not the date it was posted to the screen. Therefore, in regard to a hacker or a web site owner who attempts to falsify a publication date of a general posting, the hacker or owner has less control over the verification date since it is the visitors or recipients who give effect to the publication date. [FN223]

*277 Since this publication date depends on when the information is received, and is controlled by more than one person, the chances of fraud are significantly decreased. [FN224] Furthermore, the verification date is simply information that can also be modified. Thus, the same arguments that were made earlier regarding modification of information are also applicable to verification of the publication date. [FN225]

VIII. CONCLUSION AND RECOMMENDATIONS

A case by case analysis of a particular web site must be made to determine if the information on the web site can be considered a printed publication. An Internet posting will need to be indexed and authenticated, mirrored to another location, or visited by the general or relevant public to be considered a printed publication. By requiring one of these further steps, in addition to indexing, a court can be certain that the information on the web site was available to the public on its stated date of publication and was not modified thereafter.

However, private web sites should not necessarily be considered printed publications. Private web sites are not designed to be accessed by the public. Therefore, private web sites are not publications. Certain private web sites include databases designed only to be accessed within a

particular company, or by just a few individuals.

In addition, transitory information, such as words spoken in a chat lounge, may also meet the case law requirements of a printed publication. However, transitory information will only be a printed publication if the relevant public is present at the time the words are transmitted. Otherwise, the information would be too hard to find. The transitory nature of a chat lounge in which words are written to a server is analogous to a summary distributed at a technical conference. Furthermore, e-mail messages may also be considered to be printed publications so long as they are distributed to the relevant public. Similarly, e-mail is also analogous to a summary handed out at a conference. The receipt of the e-mail puts the information into the hands of another party, greatly minimizing the chances of modification while simultaneously allowing for a verifiable date of publication. Peer-to-peer network programs, such as Napster, display similar properties to that of e-mail and should be analyzed along the same lines. Also, instant message programs should be treated the same as e-mail. Unlike a chat room, instant messages are sent to specific addresses. This feature makes instant *278 messages seem more like e-mail, and therefore they should be analyzed accordingly for printed publication status.

[FNa1]. Mr. Pierotti is an associate with the law firm of Dority & Manning in Greenville, South Carolina. His primary area of practice is patent and trademark law. Mr. Pierotti wishes to acknowledge Professor Michael J. Madison, University of Pittsburgh, for his assistance in the preparation of this article. This article reflects only the present views of Mr. Pierotti, and should not be attributed to either Dority & Manning, nor to any of Mr. Pierotti's present or future clients.

[FN1]. 35 U.S.C. § 102(a-b) (1994 & Supp. 1999)

[FN2]. 35 U.S.C. § 102(a) (1994 & Supp. 1999)

[FN3]. 35 U.S.C. § 102(b) (1994 & Supp. 1999)

[FN4]. The Internet is the virtual world formed by the connection of the hard drives of millions of computers. An Internet researcher can obtain information by accessing public or private web sites, viewing bulletin boards, receiving e-mail from other users, or by engaging in real time communication with other users in a chat lounge.

[FN5]. See generally 35 U.S.C. §§ 102-03 (1994 & Supp. 1999)

[FN6]. See 35 U.S.C. § 101 (1994).

[FN7]. See 35 U.S.C. § 102 (1994 & Supp. 1999).

[FN8]. See 35 U.S.C. § 103 (1994 & Supp. 1999).

[FN9]. *In re Tenney*, 254 F.2d 619, 624, 117 U.S.P.Q. 348, 352 (C.C.P.A. 1958).

[FN10]. See *id.*

[FN11]. See 35 U.S.C. § 102(a) (1994 & Supp. 1999).

[FN12]. See 35 U.S.C. § 102(b) (1994 & Supp. 1999).

[FN13]. See *Gulliksen v. Halberg*, 75 U.S.P.Q. 252, 253 (Pat. Off. Bd. App. 1937); *In re Cronyn*, 890 F.2d 1158, 1159-60, 13 U.S.P.Q.2d 1070, 1071- 72 (Fed. Cir. 1989); *Ex parte Hershberger*, 96 U.S.P.Q. 54, 56-57 (Pat. Off. Bd. App. 1952).

[FN14]. See Max Stul Oppenheimer, *In Vento Scribere: The Intersection of Cyberspace and Patent Law*, 51 Fla. L. Rev. 229, 230-31 (1999).

[FN15]. *Id.* at 233.

[FN16]. 75 U.S.P.Q. 252, 253 (Pat. Off. Bd. App. 1937).

[FN17]. See *id.*

[FN18]. *Id.*

[FN19]. See *id.*

[FN20]. See *id.*

[FN21]. See *id.*

[FN22]. See id.

[FN23]. See id.

[FN24]. 254 F.2d 619, 117 U.S.P.Q. 348 (C.C.P.A. 1958).

[FN25]. Tenney, 254 F.2d at 620, 117 U.S.P.Q. at 349.

[FN26]. See Tenney, 254 F.2d at 620-21, 117 U.S.P.Q. at 349.

[FN27]. See Tenney, 254 F.2d at 621, 117 U.S.P.Q. at 350.

[FN28]. See Tenney, 254 F.2d at 624-26, 117 U.S.P.Q. at 352-53.

[FN29]. See Tenney, 254 F.2d at 626, 117 U.S.P.Q. at 353.

[FN30]. See Tenney, 254 F.2d at 626, 117 U.S.P.Q. at 354 (citing *Gulliksen v. Halberg*, 75 U.S.P.Q. 252, 255 (Pat. Off. Bd. App. 1937) (Edinburg, Exam'r in Chief, dissenting)).

[FN31]. See Tenney, 254 F.2d at 627, 117 U.S.P.Q. at 354.

[FN32]. See Tenney, 254 F.2d at 627, 117 U.S.P.Q. at 354.

[FN33]. See Tenney, 254 F.2d at 627, 117 U.S.P.Q. at 354.

[FN34]. See Tenney, 254 F.2d at 627, 117 U.S.P.Q. at 354.

[FN35]. 655 F.2d 221, 210 U.S.P.Q. 790 (C.C.P.A. 1981).

[FN36]. Wyer, 655 F.2d at 223, 210 U.S.P.Q. at 791.

[FN37]. See Wyer, 655 F.2d at 226, 210 U.S.P.Q. at 794.

[FN38]. See Wyer, 655 F.2d at 227, 210 U.S.P.Q. at 795.

[FN39]. See Wyer, 655 F.2d at 226-27, 210 U.S.P.Q. at 794.

[FN40]. 890 F.2d 1158, 13 U.S.P.Q.2d 1070 (Fed. Cir. 1989).

[FN41]. See Cronyn, 890 F.2d at 1161, 13 U.S.P.Q.2d at 1073.

[FN42]. See Cronyn, 890 F.2d at 1158-59, 13 U.S.P.Q.2d at 1071.

[FN43]. See Cronyn, 890 F.2d at 1159, 13 U.S.P.Q.2d at 1071.

[FN44]. See Cronyn, 890 F.2d at 1159, 13 U.S.P.Q.2d at 1071.

[FN45]. See Cronyn, 890 F.2d at 1159, 13 U.S.P.Q.2d at 1071.

[FN46]. See Cronyn, 890 F.2d at 1161, 13 U.S.P.Q.2d at 1072.

[FN47]. See Cronyn, 890 F.2d at 1161, 13 U.S.P.Q.2d at 1072.

[FN48]. See Cronyn, 890 F.2d at 1161, 13 U.S.P.Q.2d at 1073.

[FN49]. 781 F.2d 897, 228 U.S.P.Q. 453 (Fed. Cir. 1986)

[FN50]. See Hall, 781 F.2d at 897, 228 U.S.P.Q. at 454.

[FN51]. See Hall, 781 F.2d at 898, 228 U.S.P.Q. at 454.

[FN52]. See Hall, 781 F.2d at 899, 228 U.S.P.Q. at 455.

[FN53]. See Hall, 781 F.2d at 900, 228 U.S.P.Q. at 456.

[FN54]. In re Tenney, 254 F.2d 619, 627, 117 U.S.P.Q. 348, 354 (C.C.P.A. 1958).

[FN55]. In re Wyer, 655 F.2d 221, 227, 210 U.S.P.Q. 790, 795 (C.C.P.A. 1981).

[FN56]. Gulliksen v. Halberg, 75 U.S.P.Q. 252, 253 (Pat. Off. Bd. App. 1937).

[FN57]. In re Cronyn, 890 F.2d 1158, 1161, 13 U.S.P.Q.2d 1070, 1072 (Fed. Cir. 1989).

[FN58]. I spoke with three practicing patent attorneys. Although all three felt that Internet information is considered a printed publication, they never researched the issue.

[FN59]. The word "posting" in this paper means information contained on a typical public web site such as <<http://www.thesmokinggun.com>> (visited Oct. 29, 2001), which contains various documents on public figures, events, and news. Other types of Internet information obtained in chat lounges, private web sites, and e-mail are discussed separately.

[FN60]. See G. Andrew Barger, Lost in Cyberspace: Inventors, Computer Piracy and "Printed Publications" Under Section 102(b) of the Patent Act, 71 U. Det. Mercy L. Rev. 353 (1993).

[FN61]. See id. at 374-77.

[FN62]. See id. at 372-74.

[FN63]. See id. at 359-68.

[FN64]. See id. at 363.

[FN65]. See id. at 362-63.

[FN66]. See *id.* at 363-67.

[FN67]. Oppenheimer, *supra* n. 14.

[FN68]. See *id.* at 270.

[FN69]. See *id.* at 259.

[FN70]. See *id.* at 260-61.

[FN71]. See *id.* at 261-65.

[FN72]. See *id.* at 262.

[FN73]. See *infra* Parts V.B.1-6.

[FN74]. See *infra* Part VII.B.

[FN75]. See *In re Tenney*, 254 F.2d 619, 625-26, 117 U.S.P.Q. 348, 353-54 (C.C.P.A. 1958); *Gulliksen v. Halberg*, 75 U.S.P.Q. 252, 253-54 (Pat. Off. Bd. App. 1937).

[FN76]. See *Tenney*, 254 F.2d at 625, 117 U.S.P.Q. at 353.

[FN77]. See *Tenney*, 254 F.2d at 625-26, 117 U.S.P.Q. at 352-54.

[FN78]. See *Tenney*, 254 F.2d at 626, 117 U.S.P.Q. at 354.

[FN79]. 75 U.S.P.Q. 252, 253 (Pat. Off. Bd. App. 1937).

[FN80]. See *id.*

[FN81]. See *id.*

[FN82]. See *id.*

[FN83]. 254 F.2d 619, 117 U.S.P.Q. 348 (C.C.P.A. 1958).

[FN84]. *Tenney*, 254 F.2d at 621, 117 U.S.P.Q. at 350.

[FN85]. See *Tenney*, 254 F.2d at 627, 117 U.S.P.Q. at 354.

[FN86]. See *Tenney*, 254 F.2d at 627, 117 U.S.P.Q. at 354.

[FN87]. See *Gulliksen v. Halberg*, 75 U.S.P.Q. at 252, 254 (Pat. Off. Bd. App. 1937).

[FN88]. *Id.*

[FN89]. *Barger*, *supra* n. 60, at 362-63.

[FN90]. *Id.* at 363 (citing *In re Wyer*, 655 F.2d 221, 227, 210 U.S.P.Q. 790, 795 (C.C.P.A. 1981)).

[FN91]. In fact, the court approached the term "printed publication" as if it was a unitary concept, stating that the dichotomy between being "printed" and being "published" was no longer valid, but redundant. See *Wyer*, 655 F.2d at 226, 210 U.S.P.Q. at 794.

[FN92]. See *Barger*, *supra* n. 60, at 362.

[FN93]. See 530 F. Supp. 846, 210 U.S.P.Q. 727 (D.N.J. 1981).

[FN94]. *Barger*, *supra* n. 60, at 363.

[FN95]. Howmedica, 530 F. Supp. at 860, 210 U.S.P.Q. at 738-39.

[FN96]. See Howmedica, 530 F. Supp. at 860, 210 U.S.P.Q. at 738-39.

[FN97]. See Barger, *supra* n. 60, at 363.

[FN98]. *Id.*

[FN99]. See *id.* at 363-64.

[FN100]. See Oppenheimer, *supra* n.14, at 260-61.

[FN101]. See *id.* at 270.

[FN102]. See *id.* at 258-59.

[FN103]. See *id.* at 259.

[FN104]. See *id.*

[FN105]. See *id.* at 258-59.

[FN106]. See *id.* at 259.

[FN107]. See *id.*

[FN108]. *Id.* at 259.

[FN109]. See *id.* at 260.

[FN110]. See id. at 259-60.

[FN111]. See id. at 260.

[FN112]. See id. at 260-61 & n.132.

[FN113]. See id. at 260.

[FN114]. See id. at 260-61 & n.136.

[FN115]. See id. at 260-61 & n.132.

[FN116]. See discussion *infra* Part II.B. & Part IV.

[FN117]. See Oppenheimer, *supra* n. 14, at 260 & n. 136.

[FN118]. *Id.* at 260-61.

[FN119]. See Bruce Grossan, Search Engines: What They Are, How They Work, and Practical Suggestions for Getting the Most Out of Them <<http://www.webreference.com/content/search/how.html>> (last modified Feb. 21, 1997). See also Walt Howe & Hope Tillman, Walt's Navigating the Net Forum: Major Search Engines and Directories <<http://www.delphi.com/navnet/faq/search.html>> (last modified Dec. 1, 2000).

[FN120]. Dogpile <<http://www.dogpile.com>> (visited Nov. 3, 2000).

[FN121]. See Registering With Search Engines <<http://www.iplabs.com/internet-marketing/se.htm>> (visited Nov. 2, 2000).

[FN122]. See *id.*

[FN123]. See Oppenheimer, *supra* n. 14, at 260-61.

[FN124]. HotBot <<http://www.hotbot.lycos.com>> (visited Nov. 2, 2000).

[FN125]. See Cornelia F. Mutel, From Wind to Water, Mechanical Engr. <<http://www.memagazine.org/backissues/january2000/features/water/water.html>> (visited Nov. 2, 2000).

[FN126]. 96 U.S.P.Q. 54, 56 (Pat. Off. Bd. App. 1952).

[FN127]. See id. at 55.

[FN128]. See id.

[FN129]. See id. at 55-56.

[FN130]. See id.

[FN131]. See id. at 56.

[FN132]. See id. at 56-57.

[FN133]. See id. at 56.

[FN134]. See id. at 56-57.

[FN135]. See generally The OCLC Membership: Building the Future of Librarianship <<http://www.oclc.org/oclc/promo/10381q/10381q.htm>> (visited Nov. 2, 2000). I asked a librarian at the University of Pittsburgh, School of Engineering as to the most comprehensive index for locating theses. This index is WorldCat, and it is run by OCLC. WorldCat is the most comprehensive listing of library publications. OCLC still requests libraries to become members, indicating that not all libraries and publications are registered and listed with this service.

[FN136]. See discussion *infra* Part V.B.1.

[FN137]. But see Online Computer Library Center, Inc. <<http://www.oclc.org>> (visited Nov. 2, 2000). Only theses after 1997 have full text available for instant viewing. This indicates that a thesis search on the Internet, however, may not be much more effective than simply ordering a thesis that was cross-referenced in another thesis.

[FN138]. 111 F.2d 584, 45 U.S.P.Q. 594 (6th Cir. 1940).

[FN139]. See Hamilton, F.2d at 585, 45 U.S.P.Q. at 595.

[FN140]. See Hamilton, F.2d at 585, 45 U.S.P.Q. at 595.

[FN141]. See Oppenheimer, *supra* n. 14, at 260-61.

[FN142]. See *id.* & n. 132.

[FN143]. This premise is not explicit, but rather implicit in the court's reasoning. A single library is analogously equivalent to a local database context.

[FN144]. See CyberAtlas <<http://cyberatlas.internet.com/resources/glossary/article>> (visited Nov. 2, 2000). This site has an exclusive on-line glossary of computer and Internet-related information. A user simply types the word they are looking for into the web page, and information on the term appears.

[FN145]. See *In re Tenney*, 254 F.2d 619, 621-22, 117 U.S.P.Q. 348, 349- 51 (C.C.P.A. 1958) (holding that an application for a fog-producing machine that was listed under "German patent application on aircraft" was not a printed publication and also holding that the microfilm application in question was not printed). See also *Gulliksen v. Holberg*, 75 U.S.P.Q. 252, 254 (Pat. Off. Bd. App. 1937) (holding under the "print" theory that a printed publication must be in a place where the public could have access to the document).

[FN146]. See Oppenheimer, *supra* n. 14, at 232.

[FN147]. See *id.* at 244.

[FN148]. See *id.* at 244-45.

[FN149]. In re *Wyer*, 655 F.2d 221, 227, 210 U.S.P.Q. (BNA) 790, 795 (C.C.P.A. 1981).

[FN150]. See *Wyer*, 655 F.2d at 226-27, 210 U.S.P.Q. at 795.

[FN151]. See *Wyer*, 655 F.2d at 223, 210 U.S.P.Q. at 791.

[FN152]. See *Wyer*, 655 F.2d at 226, 210 U.S.P.Q. at 794.

[FN153]. See *Wyer*, 655 F.2d at 227, 210 U.S.P.Q. at 795.

[FN154]. See *Wyer*, 655 F.2d at 226, 210 U.S.P.Q. at 794-95.

[FN155]. In re *Cronyn*, 890 F.2d 1158, 1158, 13 U.S.P.Q.2d (BNA) 1070, 1070 (Fed. Cir. 1989).

[FN156]. See *Cronyn*, 890 F.2d at 1158-59, 13 U.S.P.Q.2d at 1071.

[FN157]. See *Cronyn*, 890 F.2d at 1158, 13 U.S.P.Q.2d at 1071.

[FN158]. See *Cronyn*, 890 F.2d at 1160-61, 13 U.S.P.Q.2d at 1071-72.

[FN159]. See *Cronyn*, 890 F.2d at 1161, 13 U.S.P.Q.2d at 1073.

[FN160]. See *Oppenheimer*, *supra* n. 14, at 244.

[FN161]. See *id.* at 244-45.

[FN162]. See *id.*

[FN163]. See discussion *infra* Parts V.B.1-6.

[FN164]. See Cyberatlas: The Big Picture: Traffic Patterns: How Wide is the Web? <http://cyberatlas.internet.com/big_picture/traffic_patterns/article/0,1323,5931_199701,00.html> (visited Nov. 29, 2000). Stating that 2.2 million public web sites exist as compared to 400,000 "private" sites. Private sites are so named because access requires a fee or some other information.

[FN165]. See Oppenheimer, *supra* n. 14, at 244-49.

[FN166]. *Id.* at 260.

[FN167]. See discussion *infra* Parts V.B.1-6.

[FN168]. Oppenheimer, *supra* n. 14, at 261-62.

[FN169]. *Id.* at 262.

[FN170]. *Id.* at 258.

[FN171]. See *id.*

[FN172]. See *id.*

[FN173]. *Id.* at 262-63 (noting, without citing any authority, this implicit assumption).

[FN174]. *Id.* See also *Ex parte Hershberger*, 96 U.S.P.Q. 54, 57 (Pat. Off. Bd. App. 1952) (holding a thesis both typewritten and handwritten a printed publication due to the permanent character of the ink and its availability to the public).

[FN175]. See Oppenheimer, *supra* n. 14, at 263.

[FN176]. See *id.* at 263-64.

[FN177]. See id. at 263.

[FN178]. See id.

[FN179]. See id. & nn. 148-49.

[FN180]. See id. at 264.

[FN181]. See Doi <<http://www.doi.org>> (visited Apr. 16, 2000). Digital Object Identifier ("DOI") provides a service to link articles on the Internet with other Internet articles with assigned DOI numbers. A user can enter this DOI number, which takes the user to the spot on the Internet that contains this article.

[FN182]. See generally *Deep Welding, Inc. v. Sciaky Bros., Inc.*, 417 F.2d 1227, 163 U.S.P.Q. 144 (7th Cir. 1969).

[FN183]. *Deep Welding*, 417 F.2d 1227, 163 U.S.P.Q. 144.

[FN184]. See *Deep Welding*, 417 F.2d at 1235, 163 U.S.P.Q. at 150.

[FN185]. See *Deep Welding*, 417 F.2d at 1235, 163 U.S.P.Q. at 150.

[FN186]. See *Deep Welding*, 417 F.2d at 1235, 163 U.S.P.Q. at 150.

[FN187]. See *Deep Welding*, 417 F.2d at 1235, 163 U.S.P.Q. at 150.

[FN188]. See *Deep Welding*, 417 F.2d at 1235, 163 U.S.P.Q. at 151.

[FN189]. *In re Wyer*, 655 F.2d 221, 226, 210 U.S.P.Q. 790, 794-95 (C.C.P.A. 1981).

[FN190]. See *Deep Welding*, 417 F.2d at 1235, 163 U.S.P.Q. at 150-51.

[FN191]. See *Deep Welding*, 417 F.2d at 1235, 163 U.S.P.Q. at 150-51.

[FN192]. See *Wyer*, 665 F.2d at 626-27, 210 U.S.P.Q. at 794-795.

[FN193]. See *In re Tenney*, 254 F.2d 619, 626-27, 117 U.S.P.Q. 348, 354 (C.C.P.A. 1958).

[FN194]. See *Deep Welding*, 417 F.2d at 1235, 163 U.S.P.Q. at 151 (holding that summaries of a conference shown to be distributed to persons skilled in the art under consideration were printed publications).

[FN195]. *Tampax, Inc. v. Personal Products Corp.*, 38 F. Supp. 663, 49 U.S.P.Q. 311 (E.D.N.Y. 1941).

[FN196]. See *Tampax*, 38 F. Supp. at 663, 49 U.S.P.Q. at 311.

[FN197]. *Tampax*, 38 F. Supp. at 671, 49 U.S.P.Q. at 320.

[FN198]. See *Tampax*, 38 F. Supp. at 671, 49 U.S.P.Q. at 319-20. See also *Deep Welding*, 417 F.2d at 1235, 163 U.S.P.Q. at 150-51.

[FN199]. See *Tampax*, 38 F. Supp. at 671, 49 U.S.P.Q. at 319-20.

[FN200]. *Oppenheimer*, supra n. 14, at 262.

[FN201]. *Id.* at 264.

[FN202]. See *id.* See also 35 U.S.C. § 102(b) (1994 & Supp. 1999).

[FN203]. 96 U.S.P.Q. 54, 56-7 (Pat. Off. Bd. App. 1952).

[FN204]. See *id.* at 55-6.

[FN205]. See *id.* at 56.

[FN206]. See *id.*

[FN207]. See *id.* at 56.

[FN208]. 774 F.2d 1104, 227 U.S.P.Q. 428 (Fed. Cir. 1985).

[FN209]. See *Mass. Inst. of Tech.*, 774 F.2d at 1108-09, 227 U.S.P.Q. at 431-32.

[FN210]. See *Mass. Inst. of Tech.*, 774 F.2d at 1108, 227 U.S.P.Q. at 431.

[FN211]. See *Mass. Inst. of Tech.*, 774 F.2d at 1108-09, 227 U.S.P.Q. at 431-32.

[FN212]. See *Mass. Inst. of Tech.*, 774 F.2d at 1109, 227 U.S.P.Q. at 432.

[FN213]. See *Mass. Inst. of Tech.*, 774 F.2d at 1108-09, 227 U.S.P.Q. at 431-32.

[FN214]. See *Oppenheimer*, *supra* n. 14, at 264-66 & n. 155.

[FN215]. *Id.* at 264 & n. 150.

[FN216]. See *id.* at 263. But see *id.* at 263 n.146.

[FN217]. *Oppenheimer*, *supra* n. 14, at 262, 264.

[FN218]. See *In re Bayer*, 568 F.2d 1357, 1361-62, 196 U.S.P.Q. 670, 675 (C.C.P.A. 1978).

[FN219]. See *Oppenheimer*, *supra* n. 14, at 264-65.

[FN220]. See id.

[FN221]. See World Wide School <<http://www.worldwideschool.org>> (visited Nov. 7, 2000). This site has a discussion board on educational topics. The board shows the date and time a message was left. See also HotelChat <<http://www.hotelchat.com>> (visited Nov. 7, 2000). This web site is a chat lounge on various topics, indicating the date and time each message was posted to the particular discussion in progress. See also Herald-Standard Online Edition <<http://www.heraldstandard.com>> (visited Nov. 7, 2000). This is the web site of a newspaper. The site has a message on it that indicates the information on the web page is modified daily.

[FN222]. U.S. Dept. of Commerce, Patent & Trademark Office, Manual of Patent Examining Procedure § 706.02(a) (8th ed. Aug. 2001).

[FN223]. See id.

[FN224]. See id.

[FN225]. See discussion *infra* Parts VII.B.1-2.

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