Losing Patentability by Publication:
When Does a University Publication Become a Patent Bar?

Kumiko Ide
Professor Karen Hersey
Non-Profit Technology Transfer
Term Paper
December 3, 2004

Introduction

A professor employed at a university arrives at an extraordinary invention after months of research. Excited to share her findings, she writes up an article and sends it over to a publisher. After all, she thinks, time is critical. She needs to publish before another so that she can obtain her tenure. However, while tenure may be of one concern, the concept of a patent bar should also enter into the mind of the professor. Once an invention is "published" within the meaning of 35 U.S.C. § 102(b), the patent bar begins to run; once it runs out, the novelty of the invention is destroyed.

35 U.S.C. § 102(b) provides:

> A person shall be entitled to a patent unless –
> …
> (b) the invention was patented or described in a printed publication in this or a foreign country…more than one year prior to the date of the application for patent in the United States…[1]

The invention can no longer be patented once the invention is introduced in the public domain.[2] The policy behind this statute is to ensure that the knowledge that is already accessible to the public could not thereafter be withdrawn, depriving the public of its free use.[3]

Though often misunderstood, a patent is not a grant of monopoly; the term monopoly requires taking away something from the public and granting an exclusive privilege to one person or entity.[4] As applied to patents, the grant of a patent does not withdraw anything from the public domain, but rather adds to the community something that had not been there before.[5] If the public is already aware of the invention, there is no further consideration that can be

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[1] 35 U.S.C. § 102(b) (2004).
[2] *In re Bayer*, 568 F.2d 1357, 1361 (C.C.P.A. 1978).
[3] *In re Wyer,* 655 F.2d 221, 226 (C.C.P.A. 1981).
[4] *In re Tenney*, 254 F.2d 619, 622 (C.C.P.A. 1958).
[5] *Id.* at 623.

offered in exchange for the grant of a patent.[6]

One way a person can be barred from patenting an invention is by describing the invention in a "printed publication" over a year before the patent is filed. It is thus essential to understand the definition of "printed publication," as it encompasses more than just articles submitted to law journals. The word "printed" has evolved from the time it was first introduced into patent statutes in 1836; the process of printing is no longer the only way a document can be published.[7] In determining whether a reference constitutes a "printed publication" under 35 U.S.C. § 102(b), courts look at the "probability of dissemination" or "public accessibility."[8] Such determination involves a case-by-case inquiry into the facts and circumstances surrounding the reference's disclosure to members of the public.[9]

Understanding the definition of "printed publication" is particularly important for university technology transfer offices, because in a way, the publication bar contradicts the cornerstone of the academic world – dissemination and exchange of information and ideas. In order to secure the possibility of commercial licensing, however, university technology transfer offices must make sure the "printed publication" would not encumber the patentability of an invention. This article discusses what constitutes "printed publication" under 35 U.S.C. § 102(b).

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[6] *Regents of the U. of Cal. v. Howmedica, Inc.*, 530 F. Supp. 846, 859 (D.N.J. 1981) (citing *Pickering v. Holman*, 459 F.2d 403, 407 (9th Cir. 1972)).
[7] *Wyer,* 655 F.2d at 226.
[8] *In re Cronyn,* 890 F.2d 1158, 1160 (Fed. Cir. 1989) (quoting *Constant v. Advanced Micro-Devices, Inc.,* 848 F.2d 1560, 1568 (Fed. Cir. 1988)); *Wyer,* 655 F.2d at 226.
[9] *Cronyn*, 890 F.2d at 1161*; In re Hall*, 781 F.2d 897, 899 (Fed. Cir. 1986).

Student Thesis

In 1978, the Patent and Trademark Office Board of Appeals heard the case of *In re Bayer*, and in their decision found the patent invalid because the subject matter had been published more than a year before the patent application was filed. The case concerned whether or not a thesis written by a graduate student at the University of Toledo, submitted in order to partially fulfill the degree requirements for his Masters of Science in chemistry, was "printed publication" within the meaning of 35 U.S.C. § 102(b).[10] The Board ruled that the student's thesis defense before a graduate committee, comprised of his adviser and two other faculty members, constituted an announcement to an interested public the availability of his thesis.[11] The Board reasoned that because these three faculty members would have been able to access his thesis deposited in the library, the student's thesis was a "printed publication."[12] The defendant appealed to the Court of Customs and Patent Appeals (CCPA), which reversed the decision of the Board, finding that while the thesis was presented in front of three members of the department's graduate committee, their acting in their capacity as arbitrators of the student's entitlement to his degree should not be regarded as "accessibility to a part of the public … concerned with the art."[13] The CCPA ruled that merely depositing the thesis in the university library, where it remained uncatalogued and unshelved as of the critical date (one year before the filing date), would not be considered "published" within the meaning of 35 U.S.C. § 102(b).[14]

In contrast to the finding in *Bayer*, the U.S. Court of Appeals for the Federal Circuit deemed a student's doctoral thesis to be "published" under the definition of 35 U.S.C. § 102(b)

[10] *Bayer,* 568 F.2d at 1357, 1361.
[11] *Id.* at 1358.
[12] *Id.*
[13] *Id.* at 1361.
[14] *Id.*

by when the student's thesis was catalogued and shelved before the critical date in *In re Hall*.[15] In 1986, the Board sustained the patent examiner's rejection of claims, based on the printed publication bar.[16] The U.S. Court of Appeals for the Federal Circuit affirmed the decision of the Board.[17] Although the specific dates of cataloging and shelving were unclear, the court accepted the general library practice, which indicated that the thesis had been catalogued and shelved more than a year prior to filing of the patent, as valid evidence, and deemed the student's doctoral thesis was available prior to the critical date.[18] Though the appellant argued that "a single cataloged thesis in one university does not constitute sufficient accessibility to those interested in the art exercising reasonable diligence[,]" the court rejected the argument, ruling that one cataloged thesis is enough to establish prior art.[19]

The Board revisited the question of a thesis as "printed publication" once again in 1989 in *In re Cronyn*.[20] The Board ruled that three theses written by students as a requirement of a Bachelor of Art degree at Reed College, constituted a "printed publication" under the definition of 35 U.S.C. § 102(b).[21] Unlike *Hall*, the theses were not catalogued or indexed in a meaningful way; instead, they were listed on three out of 450 cards filed alphabetically by author in a shoebox in the chemistry department library.[22] In reaching its decision, the Board found this case indistinguishable from *Hall*, stating that like in *Hall*, if "reasonable diligence" would have been exercised by a researcher in the field, they "would have uncovered the documents[,]"

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[15] *In re Hall,* 781 F.2d at 899.
[16] *Id.* at 897.
[17] *Id.* at 899.
[18] *Id.*
[19] *Id.*
[20] *In re Cronyn*, 890 F.2d at 1158.
[21] *Id.* at 1159.
[22] *Id.* at 1161.

and therefore, the theses were deemed to be "printed publications."[23] The U.S. Court of Appeals for the Federal Circuit reversed the decision of the Board, claiming that "availability" was not sufficient to make them reasonably accessible to the public when the only aid to researchers was the student's name, which bears no relationship to the subject of the student's thesis.[24]

As a result of these cases, university technology transfer offices need to take affirmative steps to ensure the "printed publication" bar does not affect the university professors' or students' inventions. If there is a patent in the process of being filed, the office should make sure the thesis or dissertation that reveals the details of the invention is held by the library, uncatalogued and unshelved, until the patent application is filed. As ruled in *Bayer*, a thesis deposited in the library after defense before a faculty committee would not affect the patentability of an invention contained in the thesis as long as the thesis is not made available for public viewing. In addition, the university technology transfer office must adequately communicate the importance of patent bar with the library managers so that the theses do not inadvertently get catalogued or indexed. Nowadays, libraries often enter information into a computer database; this certainly enables interested public to find the theses with ease. Because of the consequences involved, the university technology transfer office should understand that it only takes one thesis to be catalogued at school to invalidate a patent and an opportunity for the university to license out the invention.

In addition to ensuring that theses remain unshelved and uncatalogued until the patent application is filed, it may also be wise to conduct thesis defense in an exclusive setting, where

[23] *Id.* at 1159.
[24] *Id.* at 1161.

only the faculty acting as arbitrators hear the defense, like in *Bayer*. The court would most likely determine thesis defenses advertised and conducted in a setting that is made open to public as announcement of the availability of information regarding the invention to those interested. Like a catalogued thesis, advertisement and openness of the theses defense would help those interested in the field to find theses of their interest with their exercising of reasonable diligence. If theses defenses were to be made public, a university technology office should make sure that the student theses containing potentially patentable invention would not be made available. Still better, a university technology office should advise departments to keep the thesis defenses conducted internally.

Microfilm

Courts have traditionally interpreted and applied the "printed publication" doctrine in two tiers: whether the reference was a) printed, and b) published.[25] However, with the advancement in technology, recent courts have begun abandoning this two tier approach for the "unitary approach."[26]

In 1981, The U.S. Court of Customs and Patent Appeals decided a case on the question of whether a microfilm constitutes a "printed publication" within the meaning of 35 U.S.C. § 102(b).[27] In *Wyer*, more than two years prior to filing a patent application in the U.S., the same patent application was filed at the Australian Patent Office, which, conforming to its practice,

[25] *Tenney*, 254 F.2d at 627 (finding the microfilm copy not to be "printed publication" by reasoning that microfilms are not "printed," and thus finding the lack of need to analyze whether the reference was "published").
[26] *Wyer*, 655 F.2d at 224.
[27] *Id.* at 223.

was laid open to public.[28] The Australian Patent Office produced: 1) a microfilm copy of the application; 2) a cut-up microfilm copy of the application used to make diazo copies; and 3) the six diazo copies.[29] One of the diazo copies was retained at the Australian Patent Office, while the other five were distributed to the sub-offices.[30] There were equipments available in the Patent Office a well as the sub-offices for the public to view the diazo copies on a display screen, as well as to produce and purchase the paper copies.[31] Diazo copies were also available for sale to the public.[32]

The Patent and Trademark Office examiner rejected the patent application under 35 U.S.C. 102(b) on the ground that the invention had already been disclosed in a "printed publication."[33] The PTO Board of Appeals affirmed the decision of the examiner, and the CCPA affirmed the decision of the Board.[34] In affirming the Board's decision, the CCPA noted the changes in the interpretations of the term "printed publication" as applied to cases such as *In re Tenney*.[35] While earlier courts had stated that to constitute a "printed publication," the reference must be both "printed" and "published," the *Wyer* court recognized that the traditional process of "printing" was no longer the only process for "publication."[36] The court invalidated the previous "printing" and "publication" dichotomy approach; instead, the court approached "printed publication" as a unitary concept.[37] The court recognized that due to advancement in technology, whether a document had been "printed" now had very little to do with whether there

[28] *Id.* at 222.
[29] *Id.* at 223.
[30] *Id.*
[31] *Id.*
[32] *Id.*
[33] *Id.* at 222.
[34] *Id.*
[35] *Id.* at 224 (citing *Tenney*, 254 F.2d at 625).
[36] *Id.* at 225.
[37] *Id.*

is a high probability of dissemination.[38] The court saw the current question as whether the document containing essentials of the claim invention was disseminated or otherwise made available so that a person skilled in the art, exercising reasonable diligence, could find it and comprehend the essential aspects of the invention.[39] Applying the new standard to this case, the CCPA found that although microfilms are not "printed," because the appellant's patent application was accessible in the Australian Patent Office and its sub-offices, the claimed invention was invalid under 35 U.S.C. 102(b) patent bar.[40]

As a result of new technology, it no longer matters whether the information is printed, handwritten, or on microfilm, magnetic disc, or tape.[41] After the decision of *Wyer*, courts no longer consider those references "printed" as the only information that may be a patent bar under 35 U.S.C. § 102(b).[42] In recent years, the internet has become one popular method in disseminating information. As a result, since the word "printed" no longer carries the same significance as it used to, university technology transfer office should be aware that the disclosure of an invention over the internet, which allows a rapid dissemination of information to interested public, could also potentially ruin their chances of obtaining patents.

Presentation

In 1981, the U.S. District Court for the District of New Jersey evaluated a case where the Regents of the University of California and Wright Manufacturing Company jointly sued

[38] *Id.*
[39] *Id.*
[40] *Id.* at 227.
[41] *Id.* at 225.
[42] *Id.* at 224.

Howmedica, Inc. for patent infringement.[43] While the plaintiffs alleged that the manufacture and sale of a knee prosthesis sold by the defendant violated their patent, the defendant asserted that plaintiffs executed fraud on the Patent and Trademark Office in the procurement of their patent as an affirmative defense.[44] As one argument, Howmedica contended that the patent was invalid because the description of the invention had been contained in "printed publications" prior to the critical date under 35 U.S.C. § 102(b).[45] Howmedica pointed to several newspaper articles containing information about implantation operation, as well as oral and visual lectures conducted by two inventors, Drs. Waugh and Smith, as evidence of "printed publications."[46]

The court rejected the plaintiff's argument, holding that neither the newspaper articles nor the lecture constituted "printed publications" within the meaning of 35 U.S.C. § 102(b).[47] The court reasoned that the newspaper articles did not described the invention with sufficient specificity to bring the invention into the public domain, and thus, did not constitute "printed publications."[48] Likewise, the court determined that the lecture delivered before the California Medical Association presented in front of approximately thirty people would not be considered "printed publications."[49] Although there were slide projections at the lecture, the court determined that they were limited in duration and could not have disclosed the invention to the extent a person skilled in the art could recreate the same invention.[50] In addition, the court noted that the public did not have any access to the slides prior to the critical date, and no prints

[43] *Howmedica*, 530 F. Supp. at 848.
[44] *Id.* at 853-854.
[45] *Id*. at 859.
[46] *Id.*
[47] *Id.*
[48] *Id.*
[49] *Id.* at 859-860.
[50] *Id.*

of the slides were made available.[51] The court reasoned that because there was no evidence that the "publication" was disseminated to the extent that another person in the field could make use of the claimed invention, the lecture did not constitute a patent bar.[52]

In contrast, in *MIT v. AB Fortia*, a presentation was determined to be a prior art.[53] MIT as the petitioner brought an action against a foreign pharmaceutical company before the U.S. International Trade Commission (ITC) for violating Section 337 of the Tariff Act of 1930,[54] when it imported microcarriers infringing MIT's '534 and '654 patents.[55] Section 337 deems it an unfair competition when there is an unauthorized importation of products manufactured abroad which infringes on an unexpired, valid U.S. patent.[56] One of the defenses for claims filed under Section 337 is proof of patent invalidity.[57] ITC determined that the foreign pharmaceutical company did not violate Section 337 because the U.S. patents were invalid, as the invention claimed was "obvious."[58] MIT filed an appeal with the U.S. Court of Appeals for the Federal Circuit, which affirmed the decision reached by the Commission, and ruled MIT's patent to be invalid.[59] The ITC concluded, and the court affirmed, that the Birmingham paper that had been orally presented by Dr. Levine of the MIT group to the First International Cell Culture Congress in Birmingham, Alabama over a year before the patent application was filed was a "printed publication" within the meaning of 35 U.S.C. § 102(b).[60] Here, both the ITC and the court considered how 50 to 500 people interested and skilled in the subject matter heard

[51] *Id.* at 860.
[52] *Id.*
[53] *Mass Inst. of Tech. v. AB Fortia*, 774 F.2d 1104, 1109 (Fed. Cir. 1985).
[54] 19 U.S.C.S. § 1337 (2004).
[55] *MIT*, 774 F.2d at 1107.
[56] *Id.* at 1108.
[57] *Id.*
[58] *Id.* at 1107-1108.
[59] *Id.* 1108.
[60] *Id.*

the presentation of the Birmingham paper, a copy of the paper was given to the head of the conference prior to the presentation, and after the presentation, copies were distributed upon request to as many as six persons more than one year before the filing date.[61] The court found that because the facts showed that the paper was disseminated or made public to the extent that persons interested and of ordinary skill in the subject matter or art could recognize and comprehend the essentials of the claimed invention without further research or experimentation, the Birmingam paper was deemed prior art.[62]

In a recent decision reached in August 2004, the Federal Circuit wrote an opinion which laid out the factors the court thought essential in order to addressed the question of whether a prior art reference was a "printed publication" within the meaning of 35 U.S.C. § 102(b).[63] In *In re Klopfenstein*, the appellants filed a patent application that was rejected by the PTO examiner on the ground that the idea had already been presented more than a year before the application was filed in what would be considered a "printed publication" under 35 U.S.C. § 102(b).[64] The PTO examiner based this decision on the fact that two years prior to filing their patent application, the appellants, along with a colleague, M. Liu, presented a printed slide presentation ("the Liu reference") at a meeting of the American Association of Cereal Chemists (AACC).[65] The presentation, consisting of fourteen slides, was printed and pasted onto poster boards, and displayed continuously for two and a half days at the AACC meeting.[66] A month after the first presentation, the slides were again put on display for less than a day at an

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[61] *Id.* at 1109.
[62] *Id.* (citing *Wyer*. 655 F.2d at 226).
[63] *In re Klopfenstein*, 380 F.3d 1345, 1349 (Fed. Cir. 2004).
[64] *Id.* at 1346.
[65] *Id*.
[66] *Id.*

Agriculture Experiment Station (AES) at Kansas State University.[67]

The appellants argued that the Liu reference should not be considered a "printed publication" because no copies were distributed, and there was no evidence that the reference was photographed.[68] The examiner rejected these arguments, and the appellants appeared before the Board.[69] The Board affirmed the decision of the PTO examiner on the grounds that the invention was made "publicly accessible to those of ordinary skill in the art" and that this introduction into the public domain of "disclosed material via printed display" with use of posters represented a "printed publication" under 35 U.S.C. § 102(b).[70]

The appellants appealed the Board's decision to the U.S. Court of Appeals for the Federal Circuit.[71] In filing the appeal, the appellants asserted, relying on cases such as *Cronyn*, *Hall*, *MIT*, and *Wyer*, that distribution and/or indexing, which was absent in this case, was required for something to be considered a "printed publication."[72] The court rejected the appellant's argument that distribution and indexing are the only factors to be considered in a §102(b) "printed publication" inquiry; instead, the court clarified that "public accessibility" is the criterion by which a prior art reference will be judged.[73] In evaluating this issue in the absence of neither distribution nor indexing, the court used four factors to determine whether the reference was still sufficiently accessible to those in the field to be considered "printed publication" under 35 U.S.C. § 102(b).[74] These factors are as follows:

1) the length of time the display was exhibited;

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[67] *Id.*
[68] *Id.* at 1347.
[69] *Id*.
[70] *Id*.
[71] *Id*.
[72] *Id.* at 1348.
[73] *Id.* at 1350.
[74] *Id.* at 1349.

2) the expertise of the target audience;
3) the existence (or lack thereof) of reasonable expectations that the material displayed would not be copied;
4) the simplicity or ease with which the material displayed could have been effectively captured.[75]

In affirming the decision of the Board, the court applied each factor to the facts of the case.

First, the court looked at the duration in which the posters were displayed. The court determined that the longer a reference is displayed, the more likely it would be considered a "printed publication."[76] In this case, the posters were displayed for three days, approximately two and a half days at AACC meeting, and a little more than a day at AES. The Court contrasted this case with *Howmedica*, where the display was transient, and thus insufficient to deem the lecture a "printed publication."[77] Here, the court determined that Liu reference's display was more than transient.[78]

Next, the court looked at the expertise of the intended audience.[79] If the presentation was viewed by those with ordinary skill in the art, who could easily retain the new and useful information presented, then however ephemeral the existence, it may be considered a "printed publication."[80] In this case, the audience at AACC was comprised of cereal chemists and others having ordinary skill in the art, and thus, they would have easily retained the information presented by the Liu reference.[81]

Thirdly, the court looked at the expectation that the material presented would not be copied, as the court is reluctant to find something a "printed publication" if the party reasonably

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[75] *Id.*
[76] *Id.* at 1351.
[77] *Id.*
[78] *Id*.
[79] *Id*.
[80] *Id*.
[81] *Id*.

expects the information displayed would not be copied.[82] The court explained that the policy behind this inquiry is to help preserve the incentive for and encourage inventors to participate in academic presentations or discussions.[83] The court listed the protective measures such as 1) license agreements, 2) non-disclosure agreements, 3) anti-copying software, or even 4) a simple disclaimer informing the viewing public that no copying of the information will be allowed.[84] Here, since Liu reference did not contain any disclaimer, and there was no reasonable expectation under the ordinary professional practice that the display would not be copied or photographed, this factor weighed in favor of the court finding the Liu reference as "printed publication."[85]

Finally, the court looked at the simplicity in which the material displayed could have been copied by the viewing public.[86] While a more complex display makes it harder for the members of the public to effectively capture the information, a simple display can help the public learn the information, take notes, and later reproduce what has been presented.[87] Here, there were fourteen separate slides in bullet point format, with no more than three bullet points to a slide, and the presentation was displayed in a comprehensive format.[88] Moreover, the court reasoned that because most of the eight substantive slides recited what is already known by those practicing in the field, and only two slides were needed for the audience to capture the novel information presented in the slides, the court considered this factor weighing in favor of the court

[82] *Id*.
[83] *Id*.
[84] *Id*.
[85] *Id*.
[86] *Id*.
[87] *Id*.
[88] *Id*.

finding the Liu reference as "prior art."[89]

Considering all four factors, the court determined that the Liu reference was publicly accessible, even though there was a lack of dissemination and indexing.[90] By formulating the four factors in determining what is a "printed publication," *Klopfenstein* clarified that the focus of the determination should be "public accessibility."

Howmedica, *MIT*, and *Klopfenstein* all demonstrate that nontraditional references such as presentations and visual displays can also be considered by courts as prior art reference and a "printed publication" under 35 U.S.C. § 102(b). At this point, the four factor test in *Klopfenstein* may not be too helpful. Specifically, with only one application of the four factor test, the boundaries in applying this test is yet to be determined. For example, *Klopfenstein* has suggested in its dicta that including a simple disclaimer informing the viewing public that no copying, recording, or photographing of the information will be allowed would help prevent a presentation from being a patent bar is to include. The court recognizes and encourages academic presentations with this factor, which is good, but how much weight this factor would be given in relation to the other three factors is still unclear.

For now, the best way to prevent a presentation from being a patent bar is to make sure not to disclose to the extent that those in the field would not be able to simply take the information from the presentation and recreate the invention on their own. In addition, to ensure what occurred in *MIT* would not be repeated, it would be wise for university technology transfer offices to advise professors and students against distributing any detailed hand-outs during presentations. While courts may determine ephemeral presentation of materials such as

[89] *Id.* at 1352.
[90] *Id*.

power point, transparencies or slides do not to act as patent bars, as demonstrated in *Howmedica*, hand-outs are much more substantive and certainly more than ephemeral, and thus courts are more likely to find the reference as "published." The maxim to follow is, "the more the invention is disclosed, the more likely it is for the court to find the reference as prior art."

Dealing with the Conflict

With the publication bar that threatens the patentability of an invention, how could university professors and students make certain that their inventions remain patentable, and yet engage in the policy of the university which encourages dissemination? One way in which the university technology transfer office can assure that the conflict would not become a problem is to retain a patent counsel who would review papers that may be disseminated or presentations that may be conducted before a patent is filed. This way, the technology transfer office could prevent inadvertent disclosure which may result in a loss of a valuable patent, but still allow professors and students to disseminate information to a certain extent. Yet another way is to simply make sure that professors are well informed of this patent bar. It is important to make sure there is a policy that necessitates the professors to promptly file an invention disclosure form to the technology transfer office so that the technology transfer office could make sure the publication bar would not become a problem.

Conclusion

The interpretation of the words "printed publication" has evolved since the words were first introduced. This makes sense, as technology advancement has changed the

ways in which information can be disseminated. The old two level approach of determining whether a reference is "printed" and "published" is now inferior to the modern unitary approach, which focuses on the dissemination and accessibility of the reference. While an increase in the vehicles of accessibility and dissemination of information may be considered a positive change, it has also significantly increased the possibility of inadvertent disclosure resulting in an invention's loss of patentability. If technology transfer offices discover that a professor had already engaged in an action which the court would determine as a patent bar, the office must promptly file within the one year grace period, or risk a patent rejection based on 35 U.S.C. § 102(b) "printed publication" bar.

It is thus recommended that a university technology transfer office clearly includes in its policies of prompt invention disclosure from professors to the technology transfer office so that the office could adequately advise the professors so as to prevent the patent bar from becoming an encumbrance down the road.