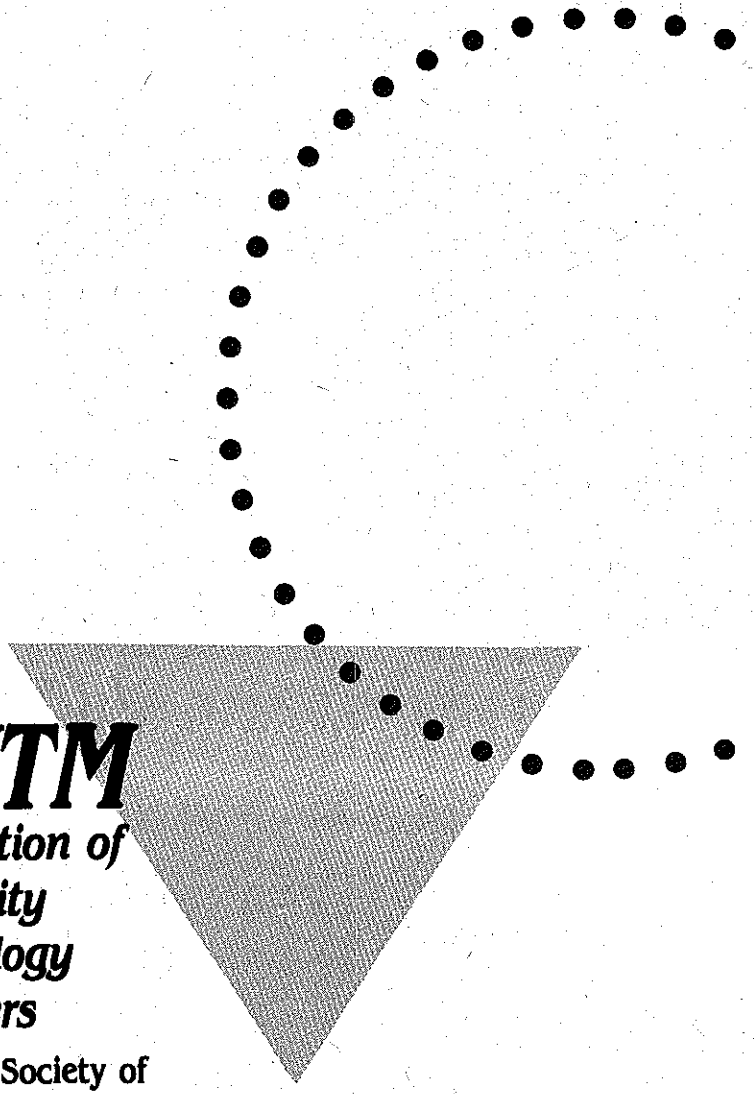
VOLUME II
1990

Journal of the Association of University Technology Managers



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Association of University Technology Managers
(formerly Society of University Patent Administrators)

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The Journal of the
Association of University Technology Managers

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Editor's Preface

Volume 2 of the AUTM Journal focuses on topics of current interest and importance to technology managers.

Conflict of Interest is a subject that has had a wide airing during the past year. It is particularly pertinent to the work of AUTM members, as technology transfer and intellectual property management come into their own at our universities. Karen Hersey's analysis deals with the topic from the university's point of view, highlighting the areas where conflicts are likely to occur, and suggesting how to handle them.

Licensee bankruptcy can be devastating to a university if the appropriate precautions are not taken in the licensing agreement. Eugene Schuler and James Dennehey warn of the danger of licensee bankruptcy, and offer advice for protecting universities against the effects of this eventuality.

Julie Watson's article publicizes her survey of mid-sized health sciences research institutions. Each of us has at sometime tried to measure the success of our program, and in this case, some of the results were unexpected.

With and our Neighbor to the North eager to become a licensing market for United States technologies, the article prepared by Sheldon Burshtein and Patricia Rubin about withholding tax in Canada provides information that will make interactions with Canada more attractive to universities. This article was originally presented to the Association of Collegiate Licensing Administrators (ACLA), and was expanded to include technology licensing agreements as well as trademark licenses.

Paul Waugaman recently spent several months in the Federal Republic of Germany, surveying technology transfer practices at various German institutions. He analyzes what he encountered there in comparison with U.S. institutions, and draws possible lessons for U.S. universities and government as we interact more freely with a united Europe.

Three experts on patent and copyright law have contributed an article that was originally a presentation made at the AUTM annual meeting in February 1989, and was updated for the February 1990 annual meeting. Howard Bremer explains the Omnibus Trade and Competitiveness Act of 1988 and its resultant effects on the protection of university intellectual property; Kathleen Terry comments on the Berne Convention and its implications for university copyrights; and Warren

Woessner analyzes the proposed patent law harmonization, and describes the expected ramifications for universities. This information will serve as handy resource material for technology managers as these changes take effect over the next several months.

We welcome original papers on topics of interest to professional technology managers. Should you wish to discuss a possible subject for an article, please contact me directly.

Jean A. Mahoney

Conflict of Interest: A University Perspective

Karen Hersey*

"Conflict of Interest," three little words that came into their own in the late 1980's and will be with us well into the 90's. They are grist for discussion and debate among scientists, Federal agency and university administrators, educators and private industry. This terrible trilogy along with its close cousin, "misconduct in science," has been responsible for creating an overload of anxiety for the university administrator over the past year or two. And while everyone talks about conflict of interest, dissects it, and tries to solve it, are we sure we understand what it is we are talking about?

Before we can begin to deal effectively with the conflicts issue we need to get a focus on what it is. From the NIH/PHS perspective, conflict of interest seems to be any research activity that is, or could be, motivated by private gain. That is, if the scientist, his or her family, or the educational institution has a financial interest in an outside organization that stands to gain from the research, we have an *ipso facto* conflict of interest. There seems to be a perception that research results tainted by the "private gain motive" are not true and accurate results. Those of us who have spent any amount of time within the university environment know that finagling or skewing research results for private gain is simply not an activity that occupies faculty time and energy. Absent outright fraud, I think few of us would take the position that directing the course of

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research towards an industrial goal is so fraught with conflict that it should be abandoned as an unworthy nonacademic activity.

The university's perspective on conflict of interest tends to be much broader than the NIH/PHS view. While the Federal agencies have a legitimate interest in protecting the use of the taxpayers' dollars and in trying to insure the scientific integrity of the research funded by those dollars, the university has even more at stake. The very essence of the university mission can be placed at risk if potential conflicts of interest are not identified, analyzed and stabilized. The conflict of interest debate is not restricted to technology transfer but touches all corners of the university environment. And, since no technology transfer officer will be sorting out these issues in a vacuum, it might be helpful to give a perspective on conflict issues in the total university sense, especially for those universities that have not yet put conflicts guidelines in place.

With all of the hoopla caused by the proposed NIH conflict of interest guidelines; with the recognition that our external associations are becoming increasingly complex as our need for research dollars increases and the benefits to national competitiveness from technology transfer become obvious; and given our typical university scientist who may no longer fit neatly into the mold of the mid-20th century academician, universities can no longer treat conflict of interest as "nonuseful" subject matter. To the contrary, they owe it to themselves, their faculty and students to provide guidance by pointing out potential conflict areas, measuring the risk to the university and individual posed by the conflict and setting out markers to help the unwary from straying beyond established boundaries.

The task of identifying potential conflicts of interest requires us to consider first the modern-day mission of most American universities. Once this is accomplished we can then recognize those situations which might compromise that mission and establish guidelines to cover them. While defining the university mission is a difficult task at best, one might describe it as four-fold:

1. Preserving existing knowledge through teaching
2. Developing new knowledge through research
3. Disseminating knowledge through public service and technology transfer
4. Training tomorrow's workforce and leaders

As a university tries to assess how interaction with outside organizations might have an effect on its ability to carry out its unique role in society, it becomes obvious that there are two

kinds of relationships that need to be considered: the institution-to-institution associations undertaken by *The University* and the personal relationships established by its faculty, staff and students.

In identifying some of those outside relationships that have become business as usual for most research universities, we can tick off a very diverse list of activities. Institutional associations may take the form of sponsored research (Federal, state, industrial); collaborative research combining the expertise of university and industry personnel; providing industry with access to the university's specialized laboratories and equipment; visiting scientists and adjunct faculty who provide a "hands-on" perspective to research and teaching; and last, but of great importance, technology transfer that commits the university to long-term relationships with industry. Personal associations of faculty, staff and students may take the form of consulting activities; holding a financial interest in a company; part-time employment by a company; and use of company equipment ranging from biological materials to computers provided to the university or faculty either *gratis* or on a barter basis in exchange for information.

While the list is by no means exhaustive, one begins to see that the potential areas for conflict of interest within the university environment are related not only to funded research programs or technology transfer but, in fact, may touch upon any and all activities related to the university's educational, research and public service missions.

After identifying the various conflict areas, the second challenge comes in trying to characterize the conflicts, as each university in establishing its own guidelines must assess the positives and the negatives of both institutional and personal outside activities. Contrary to some opinion, universities need interaction with the outside world (spelled I-N-D-U-S-T-R-Y) on all fronts. Universities need the funds, equipment, stimulation and the real-world experience that association with our industrial colleagues can bring. They also need external partnering in bringing technology from the workbench to the assembly line. The trick is to decide when and where an activity will send a university or a faculty member or student off the track. By focusing on the university's mission and determining when a relationship with a private interest becomes incompatible with the university mission, we put ourselves in a position to weigh positives and negatives against each other.

To bring this step into focus, we might analyze several areas of conflict of interest both for the institution and for the individual. All of these examples are potentially harmful to the contribution of the university and the faculty or staff member

to the overall university mission, and are so prevalent that any university policy dealing with conflict of interest should give them consideration.

Ownership of Research Results. The university's interest in retaining ownership of research results is rooted in its mission to disseminate new knowledge for peer review in search of truth and in its public service mission. As a result, the university can often find itself at odds with industry's interest in keeping new ideas out of the hands of its competitors and, where it serves the corporate purpose, in keeping innovations from public use as well. We have an obvious conflict here between the interests of the two parties, and the university must decide for itself the importance to its mission of maintaining control of research results.

Freedom to Publish. Closely aligned with its ownership of research results is the university's interest in publishing its scientific findings at the earliest opportunity for peer review and as public information. These interests come in conflict with industry's anxiety over potential loss of patent rights and its natural desire to maintain information in secret to establish lead time over competitors. While faculty members may find themselves swayed to the industry point of view in order to get research dollars, it may be up to the university, by establishing policy guidelines, to protect the faculty's right to publish.

Use of Confidential Information. The university has an obligation to itself and to its students to protect the right to use research results on behalf of the public good. Accepting industry confidential information may not only restrict the right of the university to disseminate research results, it may also prevent students from making the fullest use of their educational experience once they reach the workplace. The university is again called upon to judge the value of the research dollar encumbered with confidentiality obligations against the effects that less-than-full disclosure and use of the research experience will have on its mission.

Research or Licensing Arrangements with Faculty-owned Companies. Here the university faces the nub of the conflict-of-interest dilemma. Does the fact that the university enters into a contractual agreement with a faculty-owned company create an *ipso facto* conflict of interest? Each university will need to weigh the positive and negative consequences and arrive at is own conclusions. The end result will no doubt vary among universities according to the differences in emphasis

each university puts on its mission. While some universities will opt out of such arrangements as overwhelmingly compromising their mission of unbiased education and research, others may find that their goals for economic development and technology transfer allow them to operate in this arena. The bottom line, however, will be for the university to provide guidelines to assist faculty and administrators who face these conflict situations time and again.

University Interest in Private Companies. This is another conflict area that presents itself often enough that universities must address it. As we seek to license the technology developed in our universities in a responsible manner, the start-up company may be looked upon as an important vehicle for transferring the niche invention to public use. A capital-starved start-up company may offer an equity interest to the university as an alternative to cash or running royalties. The extent to which taking an equity position in a company or a seat on the board of directors may present an unacceptable conflict of interest for a university will again be the subject of weighing positives and negatives against the university mission.

Use of University Facilities for a Private Purpose. The facilities-use problem presents another potential for conflict of interest. Can the university preserve its open environment, and are the needs of its student and faculty best served by providing private industry or faculty engaged in a private purpose with access to specialized equipment and laboratories? In an effort to entice industry to donate funds and equipment, or to help a start-up company licensed to university technology, many universities face pressure to make their facilities available to industry and faculty for commercial purposes that may have nothing to do with basic research. Universities must meet head-on the issues presented in creating preferences for their faculty and spin-off companies, establishing enclaves of secrecy, and preempting faculty and student educational and research use as they set up guidelines for if, when, and how their laboratories will be opened.

Faculty Consulting. Most universities view faculty consulting as an indispensable part of the university's mission of public service. It is also the activity most susceptible to conflict of interest. In coming to grips with its consulting policy, each university must set guidelines for the faculty. The guidelines should establish the primacy of the faculty's obligation to the university, both in terms of professional expertise and time commitment, and they must alert the faculty to the boundaries

on use of university facilities for consulting purposes. While some universities may take the position that the university should not interfere with the personal associations of its faculty and staff, that may well be characterized as shirking the university's responsibility to insure the fulfillment of its mission. There is little question that faculty consulting has a direct impact on the integrity of the faculty work product, both in terms of content and effectiveness. As long as this work product is a quantifier of the university's success in fulfilling its teaching and research missions, the university has a vital interest in it. In any event, as Federal rules on conflict of interest are inevitable, administrative noninvolvement in faculty consulting is a luxury that will not be available for long.

Faculty Interest in Outside Organizations. Closely linked with faculty consulting, a prime setting for conflict of interest occurs where the faculty have interests in outside organizations that may place them in a position of divided loyalty. Each university must again weigh its interest in meeting its mission by providing an educational and research environment free of outside commercial influence against the benefits that may occur from allowing faculty to have "hands-on" commercial or professional experience. The extent to which such activity will be sanctioned will vary with each university according to the dictates of its mission. However, the university has an obligation to its faculty to mark the boundaries.

Student Employment by Faculty-owned Company. A situation that arises in many universities, this potential conflict area often goes unnoticed by administrators. However it sows the seeds for potentially stressful situations for students who are wooed into working for an advisor or professor outside of the university. Since this outside activity may dictate the course of a student's research, universities that have not recognized the potential for conflict of interest here have failed in their educational mission. While this employment may not always be detrimental to the student, the university needs to establish guidelines to protect students from situations that adversely affect their learning and research experience.

Once potential conflicts of interest have been identified and characterized, the university has an obligation to act by setting up guidelines for its faculty, staff and students. As all of us who have ever attempted to establish policy know, guideline-making is a risky business in a university environment where individual freedoms reign supreme, and everyone has a Ph.D. Rather than attacking the task in a helter-skelter fashion hoping

to score a few hits, a useful alternative might be to set up a model to follow in establishing each guideline. At best you will end up with a coherent set of guidelines for faculty, staff and students to follow that will preserve the integrity of the university's mission. At worst you will have created an unpopular monster, but at least you will have a rational basis for it.

While most of us technology managers may be better at developing royalty strategies than we are at creating policy models, there is a certain synergism between the two. Both start with an end result in mind, taking steps in between calculated to reach the goal in a manner satisfactory to all participants. Consider the following as a model against which we might test our guideline-making, using as an example faculty/staff interests in outside organizations:

Area of Conflict: (Define It) Faculty/Staff Interest in External Organizations

Purpose of Guideline: (Relationship to University Mission)

a. To eliminate the taint of the "personal gain motive" from research activity
b. To provide guidance for acceptable external time commitments
c. To strike a balance between preservation of the university's commitment to unbiased education and research and its interest in economic development, technology transfer and a faculty with well-rounded experience.

Proposed Guideline: (First Draft)

> To avoid a conflict of interest between faculty and staff university obligations and external activities, faculty and staff shall make a full disclosure of financial interests held in outside organizations that have a business relationship with the university. Faculty and staff shall also disclose any supervisory positions held in external organizations whether or not such organization has a business relationship with the university.

Qualifiers: (Fine Tune It)

a. Level at which faculty/staff interests become significant enough for disclosure
b. Family disclosure

Final Guideline: (Finished Product)

By coming to terms with potential conflict areas through developing guidelines in a thoughtful and rational manner, the university is signalling to both its internal constituency and the external community that it does not exist in a vacuum. The university is recognizing, instead, an obligation to interact with the community in a manner that will preserve its unique mission, and at the same time, insure that its intellectual resources are utilized to the fullest extent.

Protecting the University from Licensee Bankruptcy

Eugene K. Schuler, Jr. and James R. Dennehey*

Bankruptcy, debtor, trustee, secured interests, assets, tangible property, pre-petition and post-petition — all are terms not normally discussed in a university setting and not usually the concern of most colleges and universities. With the growth of technology transfer programs and the increase in licensing of university technology the issue of licensee bankruptcy is one of which every licensor must be aware. With the increase in university-based incubators, technology parks, faculty start-up companies, and other start-up companies, specifically in biotechnology, the financial stability of university licensees is more important than ever.

BANKRUPTCY IS TOO LATE

If a university's licensee has filed for bankruptcy it is already too late. At that point the remedies available to the university are limited. In fact, if the licensee is in bankruptcy the university is faced with what is best described as a salvage operation. The key is to be able to terminate the license sufficiently in advance of licensee bankruptcy in order to retain control of the licensed rights. If timely termination is not possible, the alternative is to build as strong a position as is

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practical in the license agreement itself, to support the return of the license to the university by the Bankruptcy Court if the licensee declares bankruptcy.

The Bankruptcy Court functions as an equity court. That is, the standard employed by the court in settling bankruptcy cases is "fairness" or equitable treatment of all the parties. The court has considerable authority to modify security interests, agreements terminated within 90 days of the declaration of bankruptcy, and the assets of the party in bankruptcy while attempting to work out an equitable plan that will provide all creditors with some portion of their total claim against the debtor. Non-profit corporations do not receive any special consideration under the Bankruptcy Act.

HOW WILL THE COURT TREAT A CONTRACT?

There have been few bankruptcy cases involving patent licenses, as most such cases have been settled through negotiation, not litigation. However, one important question, "Do patent licenses constitute executory contracts?" has been settled. Under the Bankruptcy Code the answer is yes. An executory contract is one in which there are obligations left to perform. The Bankruptcy Court will decide what those obligations are in keeping with its efforts to make a fair allocation of the assets of the debtor.

The bulk of bankruptcy case law involves the bankruptcy of the licensor and the attempt by the licensee to keep its right to make, use and sell products under the license. It is unlikely that a university will file for bankruptcy protection, so the prior decisions of the bankruptcy court do not have much relevance to the university as a licensor.

There is a much clearer picture of the direction the court will take concerning contractual obligations. Under Chapter 7 or Chapter 11 proceedings the debtor-in-possession or trustee can:

1. reject the contract (then treated as a breach)
2. assume the contract (and continue performance)
3. assume the contract and assign it to third party (who must continue performance).

The assumption and assignment of a contract by the trustee may be the only way for the court to generate revenue for the debtor. If assumption and assignment occur, any defaults must be cured and there must be adequate assurance of future performance by the assignee. State law will have an impact on what the trustee is allowed to do. Some states hold that a

license is a "personal" contract and not assignable. However, if a sub-licensee exists, the personal nature of the contract is limited. For policy, political or financial reasons the university may have a concern about who performs under the assigned license. Steps the university may take to address this concern are discussed below.

LICENSOR PROTECTION

There are a variety of clauses that can be included in a license agreement other than the standard due diligence and minimum royalty provisions. Examples of these clauses follow with a description of the positive and negative aspects of their use.

NON-PLEDGE FOR SECURITY

A clause should be included prohibiting the pledging of the license by the licensee as security for any creditor, such as banks, venture capitalists or other lending agencies. If there is not a non-pledge clause in the license agreement, but there is a non-assignability provision, the non-assignability clause is undermined because the license can be pledged as collateral. At the least, the university must take legal action should a creditor assert its right to the license as collateral. At the worst, the university will lose its ability to control who has the rights granted under the license, in which case the rights may be assigned to a third party selected by the creditor, the court or the trustee.

NON-ASSIGNABILITY/NON-TRANSFERABILITY

A clause preventing the assignment of the license to a third party is also a necessary part of the agreement. Some states define a patent license as a personal contract and therefore not assignable. For those states that do not define a license as personal in nature this provision may be helpful. One qualification is that a sub-license limits the personal nature of the contract because it is no longer solely between the licensor and the licensee. Solutions to this include a prior approval requirement for any sub-licenses and a strict limitation on uses allowed under a sub-license. A rationale should also be included describing why the license should not be transferred, e.g., the success of the program depends on the relationship of the licensor (the university), the licensee (the corporation) and the inventor(s) (usually faculty).

SECURITY INTEREST

A security interest can be approached in several ways. It can be taken in the assets of the licensee or in the rights licensed. The collateral could be the right to make, use and sell the product. It can also be taken in any sub-license fees or income as a method to secure payments. Some shortcomings include the fact that a pre-petition security interest will not secure post-petition debt without an order from the Bankruptcy Court rolling over that security interest. In other words the security interest must be renewed in a post-petition proceeding.

LIMITATION ON USE

"Use limitations" are the best way for the university to protect itself. The Bankruptcy Court cannot expand the use clause. If the license is assigned to a third party over the objections of the university, the assignee is limited to the permissible uses. Examples of this type of limitation include geographic, product or field limitations. The use of a geographic limitation could involve the requirement that the product be manufactured in a certain state or area. Many universities, both public and private, are encouraged to participate in economic development efforts by licensing companies in the state where they are located. Another example would be a prohibition on commercial activity in a country with a history of human rights violations.

SELF-EFFECTUATING TERMINATION CLAUSE

Under this clause, if the licensee fails to perform, the license automatically terminates. The university is still obligated to send a notice of termination, but a self-effectuating clause adds strength to the university's position.

BOND PROVISION

A bondholder has greater rights than a stockholder in a bankruptcy proceeding. If the bond is convertible to stock or equity then the bondholder is subordinated to the other creditors. If it is not convertible, then the bondholder is still in a preferred position. The bond could be in lieu of an immediate up-front payment for the issuance of the license and is payable at some future date. Should the licensee declare for bankruptcy the payment is protected as a debt of the licensee. The bond must be a separate instrument and not a condition of the license. Non-payment of the bond cannot be a breach of the

license agreement. If it is a condition of the license then the Court will not consider it a debt instrument, eliminating the advantage. If prepared as a separate agreement, it will not be a condition of assumption of the license by the Court.

TITLE TO PATENTS

If the financial stability of the licensee is in question, retain title to the patent and license rights under the patent. If a university intends to convey patent title to a licensee, a security interest in the patent to secure future royalties is an important provision of the agreement. Problems with this approach derive from the Bankruptcy Court's position that it will only estimate the present value of this security interest, not a claim to future royalties that can't be determined. If the security interest is only in the future royalty stream then there is a problem with this approach. However, if a large, already accrued claim has developed, then this approach has value as a negotiating strategy with the Court.

TERMINATION

Provisions allowing the termination of the license by the university upon voluntary or involuntary bankruptcy of the licensee are called *ipso facto* provisions. They do no harm, and are not enforceable, but may give the licensee pause before filing for bankruptcy. Similarly, provisions that require thirty days' notice by the licensee prior to filing for bankruptcy will not be enforceable as a mechanism for termination, as they fall within the ninety-day period during which the Court may look back to determine if any assets have been removed from the petitioner. This is particularly so if the university uses a "failure to notify" provision in an attempt to terminate the license. While the university may argue that the license is terminated, the Court will see it differently. Another problem with this approach is that this type of provision gives an impression that the university was not acting in good faith. The university can reasonably protect itself against the possibility of failure by the licensee, but it cannot overreach. Notification to the university by the licensee in advance of bankruptcy may be considered collusion. If the license is legitimately terminated before the filing of a bankruptcy petition, the court cannot revive a terminated agreement even within the ninety-day period. The self-effectuating termination provision would be useful in this situation even though the university must still notify the licensee that the agreement is terminated.

SUB-LICENSE PROVISIONS

Standard sub-licensing provisions return a percentage of sub-license income received by the licensee to the university. An alternative approach, and one that may offer partial protection from licensee bankruptcy, is to require that the university's share of sub-license income be paid directly to the university rather than through the licensee. This language can be incorporated into the license and protects a potential revenue stream from licensee bankruptcy, as the sub-licensee could still make and sell a product under the original sub-license.

DUE DILIGENCE

Due diligence provisions are linked to self-effectuating termination provisions. Failure to reach the required milestones defined in the due diligence provision triggers the automatic termination of the agreement. If no action is taken to notify the licensee that the agreement has terminated, a waiver of strict performance has occurred. The university may waive strict performance by inaction, but once waived, the waiver will continue after the licensee files for bankruptcy if the license has been assumed by the trustee or debtor-in-possession. Often universities "ride" with their licensee hoping the situation will improve. This non-enforcement of provisions of the license in these situations is a waiver of strict performance. It is legitimate to do so, but the university should be aware that there are ramifications beyond the relationship with the licensee if bankruptcy occurs.

PAYMENT PROVISIONS

Payment provisions and financial reporting provisions can be used to monitor the fiscal stability of the licensee to spot trouble before it occurs. In particular, minimum annual payments are useful. An additional step that many universities ignore is to make the obligation to pay an annual minimum accrue on a monthly or quarterly basis. One annual due date may come too late. Monthly payments or quarterly payments of the accrued obligation limit the university's risk. Another option is to have the obligation accrue monthly and be deposited in an escrow account each month. The payment could then be made from the escrow account quarterly.

CONCLUSION

Should universities be concerned about the bankruptcy of their licensees? Yes. Should they be overly concerned? Probably no. The prospect of bankruptcy cannot be the driving force in a negotiation. The university should select a licensee on the assumption that it will perform, and perform well.

An over-emphasis on security interests, bonds and other protective provisions can sour the relationship between the university and the prospective licensee during negotiations. All parties are assumed to be acting in good faith. An aura of bad faith develops around an extreme concern for protection from licensee bankruptcy. If the licensee does file for protection under the Bankruptcy Act, some provisions, such as the thirty-day notice of bankruptcy, may in fact make a negative impression on the Bankruptcy Court. In the same way, a security interest may hurt more than help. The post-petition effect of the security interest must be to secure some type of indebtedness. If there is no indebtedness the security interest has little value.

The university should try to place itself in a position of strength if it appears in Bankruptcy Court. It should demonstrate, if it can, that the public good will be served by having the license terminated and returned. Arguments concerning the university's equity in the technology should also be advanced. Even then the university's position may be rejected by the Court, the trustee or the creditor's committee.

Create a strong argument for the return of your license from the Bankruptcy Court in all license agreements, but more importantly use strategies to keep your license out of the Bankruptcy Court. If you're in it, it may be too late.

Technology Transfer Strategies: Invention Evaluation and Licensing at Midsize Health Sciences Research Institutions

Julie M. Watson*

INTRODUCTION

As part of an institutional re-evaluation of technology transfer procedures at The University of Iowa (Iowa), the Office of Technology Liaison was requested to report on the technology transfer practices of other institutions and their effectiveness. We were particularly interested in strategies with regard to evaluation of invention disclosures and patent licensing. We believed that a better understanding of other programs would give us an idea of the relative effectiveness of our program and new strategies to employ.

Although most university technology managers are familiar with the strategies of the three or four most successful licensing programs, this is probably not a relevant comparison group for the majority of institutions. As technology transfer strategies and successes are believed to be highly dependent on the nature of the technology, we need to look not only to the most successful programs for role models, but also to our peer institutions, those that might have similar types and numbers of invention disclosures.

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The specific objective of this survey was, therefore, to compose a profile of the ways in which institutions similar to Iowa conduct their technology evaluation and patent licensing programs. We also sought to gain insight into the success of the various strategies employed.

METHODS

Sample Selection. Iowa is a public university with a faculty of approximately 1600 and student enrollment near 30,000. Iowa ranks seventeenth in research funds received among public universities (FY 1987, NSF), and, with an annual research funding of $80 million (5-year average), ranks thirty-third among all universities. Institutional strengths include the health sciences and the liberal arts.

We created a sample group of institutions likely to have technology profiles similar to Iowa's. We chose to define our sample group as institutions with comparable annual research funding and a similar disciplinary emphasis, in this case the health sciences. We reasoned that these factors would be most likely to determine the types and numbers of invention disclosures generated at an institution.

Institutions with research funding within $\pm$37.5% of Iowa's were identified using fiscal year 1987 research expenditures as an index (NSF: *Chronicle of Higher Education*, 35, 1988). Institutions within the range defined were then cross-checked for membership in the Association of Medical Colleges (Medical School Admission Requirements 1989-90), as an indication that the school had significant health sciences activity.

A total of 30 schools satisfied these criteria. Individuals with primary responsibility for technology transfer at each institution were identified using the Association of University Technology Managers 1989 Membership Directory or, when necessary, through calls to the identified institution.

Survey Instrument. The survey document was designed to assess how the decision is made to pursue a given disclosure; what licensing methods are used; and how successful an institution's licensing efforts have been.

Questions addressed specific aspects of evaluation (technical, patent, and market) and licensing (timing, identifying licensees, contacting licensees). Each question was followed by a list of alternative methods that might be used. Respondents were asked to indicate the frequency with which a given method was employed (never, occasionally, usually, always) and also to indicate how valuable that strategy has been for them (poor, fair, good, very good, excellent). Additional questions

concerned disclosure and license rates, royalty income and personnel. The questions requested annual rates based on a 5-year average.

Respondents were also asked to provide a 5-year average of annual research funding received, which was then used for data analysis. Although funding received is believed to provide a more representative estimate of research activity than funding expenditures, there is variability in how different institutions calculate annual funding, and these numbers must be viewed with caution.

Surveys were mailed to technology transfer managers at each institution with a letter explaining our purpose. Follow-up calls to those who did not respond were made approximately one month following the original mailing.

RESULTS

GENERAL BACKGROUND

Response Rate. Completed surveys were received from 20 of the 30 schools, a response rate of 67%. Responses from two institutions were omitted from the analysis in one case because of incomplete data and, in the second case, because the institution's reported profile was inconsistent with original sampling criteria. The data reported here represent responses from 60% of the original survey group.

Research Funding. The annual research funding average among the respondents, based on 1987 NSF data, did not differ from the total group surveyed ($73.8 million v. $75.3 million). Among the respondents, the 5-year average annual research funding received was not significantly different from fiscal year 1987 expenditures for the group as a whole ($72.1 million v. $73.8), although it was different for particular institutions.

Technology Transfer Activity. The average annual royalty income was $161,000, the average disclosure rate was 29.4 per year, and the average number of licenses executed annually was 6.0.

Program Success. Before evaluating the effectiveness of various technology evaluation and licensing strategies, we first examined survey responses to determine if annual royalty income or disclosure rate could be accounted for by other variables.

There was no significant relationship between disclosure rate and annual royalty income in the total group ($r=0.119$, $p>0.5$).

There was a statistically significant correlation between 5-year average annual research funding received and disclosure

rate ($r=0.600$, $p<0.01$). No such relationship existed between the disclosure rate and research funding expenditures for a single year (1987 NSF report; $r=0.151$, $p>0.5$).

Royalty income was significantly related to faculty size ($r=0.596$, $p<0.01$) and there was a positive but nonsignificant correlation between royalty income and average annual licenses executed ($r=0.380$, $p>0.1$).

Next, we defined four statistics that were believed to give some indication of the productivity and success of a technology transfer program. We evaluated the amount of royalty income received annually for each million dollars in research funding; annual royalty income received per disclosure; the number of disclosures received for each million dollars of research funding; and the number of disclosures received per executed license.

For each statistic, a group average and standard deviation were calculated (see Table 1). Institutions were then classified into three subgroups: highly successful, moderately successful, and least successful, for each statistic. Moderately successful programs were those falling within plus or minus one standard deviation of the mean; highly successful programs were those more than one standard deviation above the mean; and least successful were those more than one standard deviation below the mean. The classification was repeated for each of the four statistics described above. Finally, each institution was assigned to one of the three success subgroups based on its average position across the four statistics.

Table 1: Program Success Statistics

Statistic	Group Average	Standard Deviation
Royalty income per research funding	\$2460 per million	1990
Royalty income per disclosure	\$7110	7200
Disclosures per research funding	0.43 per million	0.21
Disclosures per license	6.9	5.3

We examined differences between the subgroups to determine what strategies the more successful technology transfer programs employed.

The 5-year average annual research funding received was higher for the highly successful subgroup, as defined above, ($87.2 million v. $72.1 million) but 1987 funding expenditures were not ($78.6 million).

Personnel. The average professional staff size was 1.3 (full-time equivalent), with a range of 0.1 to 3.0. With respect to professional background of the staff, 54% of the institutions reported staff with legal training, 77% of the institutions had staff with business training, and 69% had technically trained staff. At many institutions, one person had more than one type of training.

Institutions in the highly successful subgroup had a higher average staff size: 1.6 full-time equivalent professionals. The professional background of the staff did not vary consistently between the subgroups. However, the moderately successful subgroup had a higher percentage of legally trained staff (71%).

Value Ratings. The value assigned to a given method were, with few exceptions, about the same for all of the possible methods (good to very good). Therefore, the value ratings, did not discriminate between the methods; the few exceptions are noted below.

INVENTION EVALUATION

Technical Evaluation. Respondents reported that technical evaluations are always done but who does the evaluation varies between schools and within an institution. Results are summarized in Table 2. The most commonly used evaluators are staff (39%), faculty committees (34%), and inventors (44%). Consultants, paid or volunteer, are rarely used. Twelve percent of the schools report always or usually using a technology broker or exclusive agent to conduct technical evaluations.

Highly successful programs are more likely to rely on staff to do technical evaluations (80%) and less likely to use patent committees (20%). Schools in the highly successful subgroup never use technology brokers for technical evaluations while schools in the least successful subgroup do (34%).

Patent Evaluation. Ninety-four percent of the institutions report conducting a patent evaluation in making the decision whether to proceed with a disclosure. Seventy-two percent of the schools always use a patent attorney and 61% never use staff to conduct the evaluation. However, those using staff evaluations judge them to be as valuable as those of patent attorneys. Sixty-one percent of the institutions report always or usually conducting a patent search before making a decision to proceed with a patent application.

Table 2: Technical Evaluation

Done by	Frequency Used (%) Always/Usually	Occas./Never
Faculty Committee	34	67
Other Faculty	17	83
Inventor(s)	44	55
Paid Consultant	6	95
Voluntary Consultant	0	100
Technology Broker	12	89
Staff	39	61
Other	12	89
Not Done	0	100

Schools in the moderately successful subgroup are more likely to use staff rather than patent attorneys to conduct patent evaluations. This subgroup also reported the highest percentage of legal staff (see above).

Market Evaluation. As shown in Table 3, all institutions report that market evaluations are always or usually done, mostly by staff (61%) or inventors (44%). Twenty-two percent report using technology brokers. Consultants, paid or volunteer, are rarely used. Business schools as a source of assistance were given a poor rating.

Market evaluations are reported to be informally conducted and to seek a wide range of information. Most institutions attempt to determine the overall value of a technology to a licensee (78%) and the size of the market (72%). Other commonly sought information regards competitive technologies and the companies existing in the field of the invention.

The highly successful programs always use staff to conduct market evaluations (100%) while the other subgroups are less likely to do so (50%). The highly successful subgroup may also use the inventor to do market evaluation, but is not likely to use a technology broker or agent.

The highly successful programs generally seek the same information as the other schools but tend to be more consistent about the information they seek. They also attempt to estimate potential profit.

Table 3: Market Evaluation

	Frequency Used (%) Always/Usually	Occas./Never
Done by:		
Inventor(s)	44	56
Staff	61	39
Business School	0	100
Paid Consultant	6	94
Voluntary Consultant	0	100
Technology Broker	22	78
Other	0	100
Not Done	0	100
Information Sought:		
Overall Value	78	23
Size of Market	72	28
Market Niche	61	39
Profit Potential	55	45
Competitive Technology	66	33
Companies in the Field	66	33
Additional Capital Required	44	56
Other	17	83

LICENSING STRATEGIES

Timing. Institutions varied considerably in the time at which they began to market an invention. For the group as a whole, there was an even distribution of starting points from before the invention evaluation was completed to after a patent application was filed. The highly successful programs tended to begin their licensing efforts before filing for a patent but after a complete evaluation of the technology.

Identifying Licensees. The most common sources of potential licensees are the research sponsor (50%), faculty contacts (66%), and in-house information files or data-bank (50%). Secondary sources are published and computer indexes of companies and personal contacts. Never used or given poor ratings are faculty-owned companies and university visits to companies. Sources also given unfavorable ratings are university-sponsored open houses, technology fairs, and listing

of available technology, either in computerized or printed form. These methods resulted only in "window-shoppers" or "tire-kickers" it was reported. The data are summarized in Table 4.

Table 4: Identifying Licensees

Method	Frequency Used (%) Always/Usually	Occas./Never
Faculty Companies	0	100
Research Sponsor	50	50
Faculty Contacts	66	34
University Database	50	50
University Open House	6	94
Technology Fair	12	89
Visits to Companies	0	100
Published Index	28	72
Computer Database	34	67
Computer Listing	17	83
Printed Listing	12	89
Other (Personal Contacts)	22	78

Institutions in the highly successful subgroup are more likely to use faculty contacts (100%) and personal contacts (40%), and less likely to use computer databases to find licensees.

Contacting Licensees. Institutions reported primarily using a focused approach, contacting less than 6 companies (55%) to offer licenses. There is a reliance on a personal approach, using research sponsors (50%), faculty contacts (55%) and personal contacts (50%). Direct mail (39%) and phone calls (44%) are also used. Confidentiality agreements are widely employed (72%). Rarely are contacts made through university alumni, at technology fairs, or university visits to companies. The data are summarized in Table 5.

Highly successful programs are more likely to use a focused approach and to use research sponsors (80%) and faculty contacts (100%) as the introduction to potential licensees than other programs.

Table 5: Contacting Licensees

Method	Frequency Used (%) Always/Usually	Occas./Never
Focused Approach	55	45
Broad Approach	22	89
University Alumni	0	100
Research Sponsor	50	50
Faculty Contacts	55	45
Direct Mail	39	61
CDAs	72	28
Phone Calls	44	56
Personal Contacts	50	50
Professional Assn. Contacts	33	67
Visit Contacts	17	84
Technology Fairs	6	94

DISCUSSION

The results of the survey presented here suggest that technology transfer at midsize research universities with a health sciences emphasis is an enterprise conducted by a small staff with a variety of expertise. The staff has responsibility for most aspects of the process, from evaluation to licensing, and rarely has the benefit of external assistance. Few schools use brokers or agents, and those that do, in this group, are those with the least successful programs.

Most market evaluations are informal and are usually conducted by staff without specific marketing expertise. Research sponsors, faculty contacts, and personal contacts are the most often used means of identifying and contacting licensees. On the average, schools that are most successful use these methods more often than those that are least successful. The more formalized methods, such as technology fairs and listing of technologies, were given poor ratings. The results suggest that finding a licensee is a highly personalized business and that it is directly dependent on faculty reputations and industrially-sponsored research.

Our motivation in conducting this survey was the perception that we were doing a poor job of technology transfer. The results presented here suggest that, compared to our peer institutions, we are doing an average job of technology transfer

and would place ourselves in the moderately successful category. It is not clear from this study if institutions comparable to Iowa are doing a poor job of technology transfer or if technology transfer is not as lucrative as university administrations have believed. It may be possible, for example, that one needs a large program or a certain technology mix before greater financial success can be realized.

Despite the overall poor performance of this cohort, we can draw some conclusions regarding the creation of a more successful program at a midsize health sciences institution.

As staff are the key evaluators, it is important that staff be capable and innovative in conducting technical and market evaluations on limited budgets. Also notable is that highly successful programs were more likely to have a larger staff size.

Because the results suggest that licensing is a highly personalized business, it makes sense for staff to cultivate personal and professional contacts. It is also important to develop and maintain good cooperative faculty relationships and to use their evaluation expertise and industrial contacts.

The importance of research sponsors in technology licensing suggests that greater cooperation with the grants and contracts administration office, to encourage research contracts leading to intellectual property, will contribute to the success of a technology transfer program.

This survey focused specifically on two aspects of technology transfer: invention evaluation and licensing. Other areas of technology transfer, such as university policy, budget and funding, staffing, and reporting structure, could also influence program success and should be explored. We also looked at a specific cohort of schools. It would be interesting to know how the results presented here apply to other schools and if, in fact, different types of technology require different technology transfer program strategies.

United States University Licensors and Withholding Tax in Canada

Sheldon Burshtein and Patricia Rubin*

1.0 INTRODUCTION

A license agreement between a United States licensor and a Canadian licensee or a foreign licensee who earns income in Canada usually provides for payment of royalties by the licensee to the licensor. Under Canadian tax law, the licensee must withhold a percentage of this royalty and pay it to the Canadian Government as a withholding tax when the licensee pays or credits the royalty to the United States licensor.

In the normal course, the licensor would get a tax credit in the United States roughly equivalent to the amount withheld and paid as tax by the licensee. In the case of a university, which does not pay income tax, such a tax credit may be worthless. However the provisions of a bilateral treaty between Canada and the United States may enable a university to

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structure its arrangements with a licensee to reduce or eliminate the amounts withheld or to qualify for special status so that licensees making payments to the university need not withhold amounts and pay them to the Canadian Government.

2. WITHHOLDING TAX UNDER THE TAX ACT

To understand the liability of both residents and non-residents for taxation in Canada we must consider the *Income Tax Act* ("the Tax Act")[1] In brief, a resident in Canada is taxed on his world income.[2] The term "resident" is not defined in the Tax Act. The courts have developed various principles to determine whether a person is resident in Canada, and different principles are applied to determine the status of individuals and corporations. The Tax Act also deems a person to be resident in Canada in certain circumstances; for example, a corporation incorporated in Canada after April 26, 1965, is deemed to be a resident in Canada.[3] It is clear from the case law that residence is a question of fact to be determined from all of the circumstances and that a person may be resident in more than one country for purposes of the Tax Act. A non-resident is taxed on his income earned in Canada from employment, business and the disposition of taxable Canadian property.[4] Additionally, non-residents are subject to withholding tax on investment-type income.[5] These comments will address the application of Part XIII of the Tax Act, titled "Tax on Income from Canada of Non-Resident Persons", and the relief provided by the *Canada-United States Income Tax Convention, 1980* (the "Treaty")[6] in the context of a license between a Canadian licensee and a United States university licensor.

The income of non-profit organizations and charities, such as universities and colleges, residing or carrying on business in Canada is exempt from Canadian tax.[7] However, United States charitable and non-profit organizations deriving income from Canadian sources are generally required to pay withholding tax imposed by Part XIII. Paragraph 212(1)(d) imposes a 25% withholding tax on certain rents, royalties, or similar payments paid or credited by a resident of Canada to a non-resident person. A "person" is defined to include any body corporate and politic, and the heirs, executors, administrators or other legal representatives of such person, according to the law of that part of Canada (which province) to which the context extends.[8]

Paragraph 212(1)(d) subjects a non-resident person to Canadian tax for those payments that are in the form of a rent, royalty or similar payment, whether it be for "know-how," for the use of confidential technical information, or for any other

consideration except for payments described in subparagraphs (vi) through (x). This means that if an amount may be characterized as a rent, royalty or similar payment, it need not fall within the specific cases enumerated in subparagraphs (i) through (v) in order to attract withholding tax.[9] Those enumerated payments to which withholding tax applies and those exceptions that might be relevant to United States university licensors are:

212(1)(d) rent, royalty or similar payment, including, but not so as to restrict the generality of the foregoing, any payment

(i) for the use of or for the right to use in Canada any property, invention, trade name, patent, trade mark, design or model, plan, secret formula, process or other thing whatever,

(ii) for information concerning industrial, commercial or scientific experience where the total amount payable as consideration for such information is dependent in whole or in part upon

(A) the use to be made thereof or the benefit to be derived therefrom,

(B) production or sales of goods or services, or

(C) profits,

(iii) for services of an industrial, commercial or scientific character performed by a non-resident person where the total amount payable as consideration for such services is dependent in whole or in part upon

(A) the use to be made thereof or the benefit to be derived therefrom,

(B) production or sales of goods or services, or

(C) profits,

but not including a payment made for services performed in connection with the sale of property or the negotiation of a contract,

(iv) made pursuant to an agreement between a person resident in Canada and a non-resident person under which the non-resident person agrees not to use or not to permit any other person to use any thing referred to in subparagraph (i) or any information referred to in subparagraph (ii), or

(v) that was dependent upon the use of or production from property in Canada whether or not it was an installment on the sale price of the property, but not including an installment on the sale price of agricultural land,

but not including

(vi) a royalty or similar payment on or in respect of a copyright in respect of the production or reproduction of any literary, dramatic, musical or artistic work,

...

(viii) a payment made under a bona fide cost-sharing arrangement under which the person making the payment shares on a reasonable basis with one or more non-resident persons research and development expenses in exchange for an interest in any or all property or other things of value that may result therefrom.

2.1 ROYALTIES

Revenue Canada considers that the words "rent" and "royalty" are not necessarily restricted to periodic payments but may in certain circumstances include singular or lump-sum payments.[10] Its position conforms with recent case law, which holds that all payments, regardless of form, made in respect of

an item enumerated in Subparagraphs (i) through (v) attract withholding tax.[11]

Withholding tax is imposed by Subparagraph 212(1)(d)(i) on payments for the use or for the right to use in Canada any property, invention, trade name, patent, trade mark, design or model, plan, secret formula, process or other thing whatever.[12] Franchise payments for the use of trade marks, trade names or industrial designs would fall within this Subparagraph.[13] On the other hand, payments for the outright purchase of a patent or to obtain an outright assignment of an existing license from the licensee would not fall within this subparagraph. Revenue Canada points out that, in the latter case, payments required to be made to the licensor under the terms of the license may be subject to withholding tax. In both cases, if payments are dependent upon the use of or production from the patent or license, tax is payable under Subparagraph 212(1)(d)(v).[14]

Revenue Canada regards "know-how" payments as including payments for special knowledge, skills or techniques that are considered beneficial in the conduct of the business. These payments may be for experience, ability or research, which may be reflected in blueprints, drawings, specifications, plant layouts, designs, secret processes and formulae.[15] The form of payment for "know-how" and confidential information is considered to be that of a royalty, and withholding tax is applied to these payments pursuant to Subparagraph 212(1)(d)(ii).

However, copyright royalties and similar payments in respect of the **production or reproduction** of any literary, dramatic, musical or artistic work are exempt from withholding tax.[16] Although it had been judicially held that computer programs were subject to copyright in Canada,[17] even though not specifically stated in the *Copyright Act*, it was felt that confirmation of this in the legislation was desirable. An amendment made to the *Copyright Act* on June 8, 1988, specifically provides that the term "literary work" is defined to include computer programs.[18] Revenue Canada accepts that where an owner of a computer program grants the right to a resident of Canada to produce or reproduce computer software in Canada for distribution to Canadian end-users, the exemption provided in Subparagraph 212(1)(d)(vi) of the Act will apply, but only to payments made after June 8, 1988.[19] Revenue Canada's position on the exemption for payments made prior to the legislative amendments may be open to challenge. However, even after June 8, 1988, if the end-user of a computer program (as opposed to a licensee) merely acquires a **right to use** a computer program under a license agreement and not the right to **produce or reproduce** the program, it is Revenue

Canada's position that the exemption will not apply,[20] as the payor does not have the right to produce or reproduce the computer program. Hence, the requirements for withholding tax on royalty or similar payments made to non-residents by end-users of computer programs would not be affected by the amendments made to the *Copyright Act*.

2.2 MECHANISM

A Canadian taxpayer, such as a Canadian licensee, is required to withhold the amount of the tax set out in the Act and to remit that amount to the Canadian government, specifically to the Receiver General, on behalf of the non-resident, notwithstanding any agreement he may have with the payee to the contrary.[21] The tax is payable on the gross amounts paid or credited to the non-resident without deducting any expenses attributable to the earning of this amount.[22] A Canadian taxpayer who fails to withhold the proper amount is liable to pay the whole of the amount that should have been withheld,[23] plus a penalty of 10% of that amount, together with interest at a prescribed rate per annum, on the amount that should have been deducted.[24] Moreover, the non-resident is jointly and severally liable with the Canadian taxpayer to pay any interest on the amount that should have been withheld.[25] Revenue Canada takes the position that the liability for the amount owed may be assessed against the Canadian taxpayer or the non-resident payee or both until the assessment is paid, but the 10% penalty may be assessed only against the Canadian taxpayer.[26] This means that if a Canadian licensee fails to withhold the tax payable, the United States university licensor is liable for that amount and any interest on that amount until it is paid. In addition, a penalty may be imposed on the Canadian taxpayer for failing to remit to the Receiver General amounts actually withheld.[27]

The reporting procedure with respect to non-resident withholding tax is as follows. The licensee prepares form NR4/NR4A Summary and Supplementary form NR4 reporting all amounts withheld or credited under Paragraph 212(1)(d) of the Tax Act. Copies 1 and 2 of the Summary and Supplementary are filed with Revenue Canada, and copies 3 and 4 of the Supplementary are sent to the United States licensor not later than March 31 of the following year. The United States licensor may use these as tax credits in the United States. The obvious question is, of what use are tax credits to a tax-exempt organization?

3.0 THE EFFECT OF THE TREATY

Although the Tax Act provides for a withholding tax of 25% on royalties or similar payments,[28] a number of provisions in the Treaty may affect the taxation of such payments where the recipient of the royalties is a resident of the United States. The *Income Tax Application Rules, 1971*[29] provide that if a treaty stipulates a lower rate than that set out in Part XIII, that lower rate applies.[30] The Treaty limits the rate of withholding tax on royalties to 10% of the gross amount of the royalties, provided that the property or right on which the royalties are paid is not effectively connected with a "permanent establishment" through which the non-resident, beneficial owner carries on a business in Canada or a fixed base in Canada through which the non-resident, beneficial owner performs independent, personal services.[31] The term "royalties" under Article XII is defined as:

> . . . *payments of any kind received as a consideration for the use of, or the right to use, any copyright of literary, artistic* or scientific *work* (including motion pictures and works on film, videotape or other means of reproduction for use in connection with television), *any patent, trade mark, design or model, plan, secret formula or process*, or for the use of, or the right to use, tangible personal property or for the information concerning industrial, commercial or scientific experience, and, notwithstanding the provisions of Article XIII (Gains), includes gains from the alienation of any intangible property or rights described in this paragraph to the extent that such gains are contingent on the productivity, use or subsequent disposition of such property or rights.[32] [emphasis added]

The same Article also provides for the exemption of copyright royalties and other like payments in respect of the production or reproduction of any literary, dramatic, musical or artistic work, other than royalties in respect of motion pictures and works on film, videotape or other means of reproduction for use in connection with television.[33] This exemption is similar to the one in Subparagraph 212(1)(d)(vi) of the Act. Payments for other rights of the copyright holder are subject to withholding tax. Such royalties might, for instance, be for adapting a computer program, the right to translate a work or to adapt the work in other forms.

Copyright also subsists in logos and other design trademarks in Canada.[34] To the extent that the rights for which the license is granted, or some portion of them, may be said to be in respect of the reproduction of an artistic work under the licensor's copyright, as opposed to rights granted to use trademarks, the royalties subject to taxation may be eliminated or reduced.

3.1 EXEMPT ORGANIZATIONS

Our particular interest in the Treaty lies in the exempting provisions under Article XXI. Paragraph 1 provides:

> Subject to the provisions of paragraph 3, income derived by a religious, scientific, literary, *educational or charitable organization* shall be exempt from tax in a Contracting State (Canada in our situation) if it is resident in the other Contracting State (the United States) but only to the extent that such income is exempt from tax in that other State. [emphasis added]

Paragraph 3 provides:

> The provisions of paragraphs 1 and 2 shall not apply with respect to the income of a trust, company or other organization from carrying on a trade or business or from a related person other than a person referred to in paragraph 1 or 2.

More simply stated, to be exempt from tax in the state of source, namely Canada, income must:

(1) be derived by an organization within the description of "religious, scientific, literary, educational or charitable" as used in Article XXI; and

(2) be exempt from income tax in the Contracting State in which the organization is resident, namely the United States.

It is assumed that most United States universities so qualify.

3.2 PRACTICAL EXAMPLE

For example, assume that a United States university grants a license to a Canadian licensee in respect of a patented process, know-how related to the process and the right to reproduce software relating to the operation of the process. A royalty of $100 owing to the United States licensor would be subject to a statutory withholding tax of 25% or $25, and $75 would normally be remitted to the university. By virtue of the Treaty, this rate is reduced to 10% or $10, so $90 would be paid to the university. If the royalties are attributed as one-third for patent rights, one-third for know-how, and one-third for the exempted copyright rights, for example, the $33.33 for the copyright license would not have to be withheld; but 10% of the $67.67 for the other licensed properties would have to be withheld, so the amount withheld would be $6.77, and $93.23 would be paid to the university. If the licensor is an educational organization, as would clearly be the case for a United States university, the tax is nil, and the full $100 may be remitted to the university.

3.3 HOW TO GET EXEMPTION

Revenue Canada has set forth the following procedures with respect to obtaining an exemption under Article XXI of the Treaty.[35] An application of a United States university for a letter of exemption made pursuant to Paragraph 1 of Article XXI requires a certified copy or a photocopy of:

(1) the Charter, Articles of Incorporation or similar instrument setting out the purposes of the University; and

(2) a letter of determination by the Internal Revenue Service of the United States Treasury Department setting forth the status of the University under the Internal Revenue Code.

The Canadian payor to a university recognized under Paragraph 1 of Article XXI is not required to withhold non-resident tax if the security is registered in the name of the organization as listed in Revenue Canada's annual publication, *"List of United States Organizations Exempt from Canadian Non-Resident Tax Under Article XXI(1) of the Canada-United States Tax Convention."*[36] If an organization such as a university is not listed in the latest revision of that publication, Revenue Canada advises the payer to obtain from that organization, as

evidence of its exempt status, a photocopy of the letter of exemption issued to it by the Department. Based on the present workload of Revenue Canada, it would take about five to six weeks to process an application. The letter of exemption is effective for three years.

While there is nothing in the Treaty or the Tax Act which directly speaks to a retroactive application of the letter of exemption, refunds of all or part of the tax withheld under Part XIII of the Tax Act may be obtained for the previous two years. A person or organization, including a non-resident university, may apply in writing within two years from the end of the calendar year in which the amount was paid to the Minister of National Revenue for a refund for the amounts paid in excess of the tax that it was liable to pay.[37] For example, if a Canadian licensee withheld Part XIII tax on a December, 1987, payment to a United States university licensor and remitted it to the Receiver General in January, 1988, the amount withheld may be refunded if a written refund application is received by December, 1990. A United States university may claim a refund by forwarding a letter signed by either the Canadian licensor/payor, or itself as a non-resident taxpayer,[38] and forwarding an Application for Refund of Non-Resident Tax[39] including the "Certification" together with form NR4 to the district office that received the tax.[40]

NOTES

1. S.C. 1970-71-72, c. 63, as amended: All section, subsection, paragraph and subparagraph numbers mentioned herein refer to the Tax Act unless otherwise mentioned.

2. Subsection 2(1).

3. Subsection 250(4). Interpretation Bulletin No. IT-221R2: "Determination of an Individual's Residence Status", dated February 3, 1983, Paragraph 2: "A person is deemed to have been resident in Canada throughout a taxation year subject to the rules in Subsections 250(1) and (2) and a corporation is deemed to have been resident throughout a taxation year subject to the rule in Subsection 250(4) and deemed not to have been resident subject to the rule in Subsection 250(5) ie., by virtue of an agreement or convention between Canada and another country."

4. Subsection 2(3).

5. Part XIII.

6. As amended by Protocols signed on June 14, 1983, and March 28, 1984.

7. Section 149.

8. Subsection 248(1).

9. Interpretation Bulletin No. IT-303: "Know-how and Similar Payments to Non-Residents", dated April 8, 1976, Paragraph 5.

10. *Ibid.*, Paragraph 7.

11. *Ibid.*, Paragraph 10; *The Queen v. Farmparts Distributing Limited*, [1980] C.T.C. 205 (F.C.A.); and *The Queen v. St. John Ship Building and Drydock*, [1980] D.T.C. 6272 (F.C.A.).

12. Subparagraph 212(1)(d)(i).

13. IT-303, *supra*, note 9, Paragraph 11.

14. *Ibid.*, Paragraph 12.

15. *Ibid.*, Paragraph 3.

16. Subparagraph 212(1)(d)(vi).

17. *Apple Computer Inc. v. Mackintosh Computers Ltd.* (1988), 44 D.L.R.(4th) 74, 16 C.I.P.R.15 (F.C.A.).

18. S.C. 1988, c.15, s.1(2).

19. Letter from K.H. Major for Director, Reorganizations and Non-Resident Division, Speciality Rulings Director, Legislative and Inter-Governmental Affairs Branch, Revenue Canada to Blake, Cassels & Graydon, dated February 22, 1989.

20. *Ibid.*

21. Subsection 215(1).

22. Subsection 214(1).

23. Subsection 215(6).

24. Subsection 227(8).

25. Subsection 227(8.1).

26. Information Circular No. 77-16R3: "Non-resident Income Tax," dated February 18, 1988, Paragraph 61.

27. Subsection 227(9).

28. Paragraph 212(1)(d) and Subsection 212(5).

29. *Income Tax Application Rules, 1971*, enacted as Part III of Chapter 63, S.C. 1970-71-72 (hereinafter "ITAR").

30. *ITAR*, Subsection 10(6).

31. Treaty, Article XII, Paragraph 5.

32. Treaty, Article XII, Paragraph 4.

33. Treaty, Article XII, Paragraph 3.

34. *Canadian Tire Corporation Ltd.v.Retail Clerks Union, Local 1518* (1985), 7 C.P.R. (3d) 415 (F.C.T.D.); and *Les Rôtisseries St.Hubert Ltée c. Le Syndicat des Travailleurs (euses) de la Rôtisserie St. Hubert de Drummondville (C.S.N.) et al.*(1987), 12 C.I.P.R.89 (Que.S.C.).

35. IC 77-16R3, *supra*, note 18, Paragraph 76. Applications should be forwarded to:

    Revenue Canada Taxation
    Registration Directorate
    Non-Resident Unit
    Program Services Section
    Ottawa, Ontario
    K1A 0L8

36. See Appendix A.

37. Section 227(6).

38. For complete details, see IC 77-16R3, *supra*, note 17, Paragraph 65ff.

39. Form NR7-R: Application for Refund of Non-Resident Tax.

40. Income tax returns filed by non-residents are filed with:

    Ottawa Taxation Centre
    Non-Resident Section
    Ottawa, Ontario
    K1A 1A3

University-Industry Technology Transfer Practices in the Federal Republic of Germany: Some Lessons for U.S. Institutions

Paul G. Waugaman*

ABSTRACT

A survey of industry-university technology transfer practices in the Federal Republic of Germany indicates that there are practices and policies that could be adapted to American institutions in spite of fundamental differences in the organization, financing and legal frameworks of higher educational institutions in the two countries. Institutional participation in technology transfer is relatively recent in Germany, and includes functions normally encompassed by continuing education and extension programs at U. S. universities. Recommendations for U. S. institutions and governments are made based on the positive and negative points noted.

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I. INTRODUCTION

This paper is based on a survey undertaken under the auspices of the North Carolina Board of Science and Technology in order to determine:

1. If the assumption is valid that it is easier to transfer technology from academic laboratories to companies in the Federal Republic of Germany than it is in the United States;
2. If any of the contributing factors to this ease could be adopted in the U.S. environment by universities or by government action.

The survey was not an exhaustive study, carefully developed and systematically administered, with a carefully selected sample of respondents. Rather it was based upon interviews of scientists and administrators at several German research organizations, principally in the German State (*Land*) of North Rhine-Westphalia (Nordrhein-Westfalen -- NR-W); but also in other parts of the Federal Republic of Germany. Interviews and discussions took place during a visit to Nordrhein-Westfalen by a delegation of research administrators from four North Carolina research universities and the Research Triangle Institute. The visit, sponsored by the N.C. Board of Science and Technology, afforded opportunities for the participants to visit research laboratories at six universities, two area technology development centers, two large industrial firms, and one national research laboratory. In addition to these visits, the author spent two weeks visiting other institutions and held discussions with scientists and administrators at one additional university, one additional national research laboratory, four additional companies, and one additional technology center. The author also made more extensive visits to two of the institutions that the delegation had visited. In total, visits were made to seven universities, six companies, three area technology development centers, and two national research laboratories. Fifty-five scientists and research administrators were interviewed in sufficient depth that their responses contributed to the survey.

Wherever possible, interviews were arranged with officials who would have broad perspectives and experiences. Many of these industry officials had worked with both German and U.S. universities. Some of the university respondents had worked with both German companies and U.S. companies. Factual data regarding the size of programs, the number of licenses, research agreements, etc., were not readily available from many respondents and, therefore, are not used.

Some obvious themes and trends emerged which can be helpful as American universities contemplate working with companies operating in Germany, as American academic investigators collaborate on efforts involving the creation of new knowledge or applied research with German counterparts, and finally, as American academic research administrators reappraise their institutional invention, patent, and licensing policies with an eye toward the increasingly international market for new technologies.

The way university-industry technology transfer is organized, supported, and carried out in Germany, particularly in the *Land* Nordrhein-Westfalen has both positive and negative features from the U.S. perspective. As the lessons of the German experience are considered for adoption in the U.S., it is important is to look at both aspects.

II. THE POSITIVE ASPECTS

A. *Governments have taken a positive role in the support of applied research and development at universities which results in new products, processes, and innovations.* The *Länder* governments and the Federal government have chosen to place significant financial and human resources at the disposal of applied research. Both levels of government have generally rejected the concept that applied research and development leading to new products, processes, and techniques is a value only to the company or industry that is likely to be the direct beneficiary. This "public good" attitude is reflected in actions to promote applied research:

1. The expansion of the Fraunhofer Society.

The Fraunhofer Society for Promotion of Applied Research (Fraunhofer-Gesellschaft-FhG) was founded in 1949 to "pursue research and development in the spheres of the national sciences and engineering on behalf of industry" [Massow, p. 38]. FhG maintains 36 research laboratories (institutes) at various locations in the Federal Republic, FhG has a staff of 5,000 workers, approximately 1,500 of whom are scientists and engineers. The Society spends approximately DM 575 million annually. In 1987, 28% of the total expenditure, or DM 162 million was basic support provided by the Federal government (90%) and the *Länder* (10%). The balance, DM 390 million, was support for project research sponsored by agencies of the Federal government, by the *Länder*, and by industry. Over the past 10 years, industry-sponsored project research has been the major growth factor for the Society, while

basic support as a percentage of the Society's budget has decreased from almost 45% to 28%. The total FhG budget grew from approximately DM 325 million to DM 577 million from 1983 through 1987 [FhG Annual Report, p. 4].

2. The expansion of grant funds through the Federal Ministry for Research and Technology (Bundesministerium für Forschung und Technologie – BMFT) for projects that jointly involve companies and academic investigators, and that promote "market-oriented" technologies.

Applied research is supported by the Federal government principally through BMFT, and to a lesser extent, through ministries. Approximately 40% of BMFT's grant expenditures in recent years are applied research and collaborative projects in research areas of high economic priority, known as "market-oriented technology promotion"[BMFT p. 70]. Such projects involve universities in collaboration with the national research centers, and, more importantly, with companies interested in new products and processes. BMFT is also responsible for developing and promoting the Federal government's research policies; in its most recent report of 1988 it has identified the promotion of university-industry collaborative research as a major priority [BMFT, p. 34].

3. Support by the *Länder* of university research institutes and laboratories with good track records, demonstrating the high likelihood of attracting significant industrial research sponsorship, and subsequently developing commercially viable products, processes, and techniques that will enhance the economic status of the *Land*.

In Nordrhein-Westfalen, the role of the *Land* government as a research patron of considerable magnitude permits it to influence the research priorities and future direction of each university as well as of the total *Land*. The *Land* Ministry for Science and Research (Ministerium für Wissenschaft und Forschung) has maintained a steady level of funding (approximately DM 40 million for salaries and operating expenses, and DM 130 million for equipment acquisition) for new research programs of high priority. These funds are used to augment university staffing and operating allocations in order to initiate research programs of high priority and relevance to the *Land* government. Once programs are established, funding is absorbed in the overall budget for the universities (approximately DM 5 billion per year), and the annual budget for new program development is maintained. The Ministry has

used these discretionary funds to leverage support from national organizations such as the FhG to acquire expensive equipment and to establish important research institutes at some universities. Establishing new institutes has responded to strategic economic development goals and has enabled the NR-W universities to retain gifted faculty members.

These public science and technology programs all support applied research projects and programs of commercial value and importance and thereby promote economic prosperity and the generation of wealth.

B. *The Länder promote and support technology transfer offices at universities.* There are 88 universities (*wissenschaftliche Hochschulen*) in the Federal Republic. The majority of their support is provided by the *Länder*. Approximately 20% of each *Land*'s annual expenditure for university operations comes from the Federal government to finance buildings and capital equipment for university expansion. [Massow, p.22]. The *Länder* are therefore the principal sponsors of the universities.

In NR-W, the *Land* government has used creative ways to involve universities in research of commercial interest. One way has been to provide funds to universities to create technology transfer offices (*Transferstellen*) at each one. Across the Federal Republic, 20 universities have *Transferstellen* [Budach, pp. A1-A53]. Each of the 14 universities in NR-W has a *Transferstelle*. At the larger institutions, this comprises three professional and two supporting staff positions. Each office functions somewhat differently based upon the perceived needs of the university administration, the perceived needs of the university faculty, and the interest and capability of the office director.

The *Transferstellen* concentrate on efforts with indirect or intangible benefit for the university and for the faculty. These efforts include industrial liaison, assessment of area or regional needs for academic expertise and for new technologies, and management of university outreach to the commercial sector — including the organization and operation of continuing education programs, brokerage services for experts and consultants, and exhibitions at trade shows. In these roles the *Transferstellen* appear to function like the industrial extension services or engineering outreach programs of some state technical schools in the U.S., such as N.C. State University or Georgia Institute of Technology. The *Transferstellen* appear to have only a minor role in the protection of intellectual property or in the marketing of intellectual property on behalf of the institution or the faculty. Each of the technology transfer officers interviewed admitted that the job of recruiting faculty

to work with companies was made more difficult by heavy teaching loads and the absence of immediate financial incentives through consultantships and other financial inducements to such relationships. As in the United States, many small and medium-sized companies do not have the financial resources to pay for consultants or for large-scale research projects.

C. *There is a history of positive working relationships between individual professors and industry.* Both industrial and academic respondents mentioned that academic-business relationships were important and relatively time-honored. Traditionally, these relationships have involved consultation by faculty and placement of former students. Some companies have had long-standing relationships with one or two university institutes. These institutes would be considered "out of bounds" to other companies. For example, in Nordrhein-Westfalen, many large companies in the steel, coal, textile, and heavy machinery industries had special relationships with one or more research institutes at the Technical University at Aachen (RWTH). This type of relationship provided a company with a steady stream of well-trained scientists and engineers who could transfer know-how and new ideas from their academic laboratory to the company. The relationships provided the senior faculty member with the opportunity to do consulting in an industry relevant to his scientific expertise and to receive a steady flow of real-world-oriented research topics for graduate students entering graduate study. In these arrangements, very little attention was paid to issues of patents. It was always assumed that inventions would be completed in a company laboratory, even when they were based on concepts initiated at an academic laboratory. These relationships continue, but the types and sizes of firms have changed.

The concept of project-based research support at universities is relatively new. BMFT grant programs have encouraged companies to move more research into a greater variety of academic labs and have encouraged more professors to seek industry support for their academic research. Professors appear quite willing to license their inventions to the company sponsors, and even to companies with which they do not have a special relationship. Their principal motivation appears to be continued research support, not personal income. Companies, however, do not consider university laboratories to be an important source of technology, but value them as a source of trained people, consultants, and specialized research.

Faculty start-ups are still not common in Germany, but they appear to be increasing in frequency and popularity as a

technology transfer mechanism. At many universities, senior professors are operating small companies, often in close coordination with the basic research under way at their university institutes. Increasingly, non-tenured junior faculty members are leaving university institutes to start companies based on their discoveries or on discoveries made by senior professors. Area technology development centers, organized and financed by coalitions of municipal governments, chambers of industry and commerce, craft unions, and financial institutions, are important for these spin-off ventures. University *Transferstellen* cooperate closely with these centers. For non-tenured scientists, however, the route from the university to the business world is a one-way street. It is extremely difficult for a non-tenured scientist to return to a university if a business venture fails.

D. *University Transferstellen operate with a "market-pull" orientation rather than a "technology-push" orientation.* In the U.S., academic technology transfer efforts usually begin with a "technology push" orientation. These efforts are dependent upon the inventions produced by faculty. Inventions emerge from research with little consideration for the needs and exigencies of the marketplace. Academic technology managers work with the technology available, and the market "pull" or need is a secondary consideration. Market considerations tend to be made after the invention is disclosed to justify the feasibility or value of available technology.

Technology managers at German universities tend realistically to appraise the local market needs and to attempt to respond to them. They accomplish this through surveys of the technology needs of companies in their geographic sphere of influence, and through the "packaging" of specialized education or research programs in response to the needs of area businesses and labor groups. Marketing and licensing of inventions does not appear to be a major feature of this outreach.

III. THE NEGATIVE ASPECTS

A. *Universities do not have a major interest in the ownership of intellectual property.* Universities generally do not exercise a voice in the protection of intellectual property created in their laboratories, or its use through licensing.

The Basic Law of the Federal Republic, and the law governing the organization and operation of universities (Framework Act for Higher Education) stipulate that the

conduct of research will be free of governmental and institutional interference. This principle gives the faculty members considerable autonomy and precludes universities from claiming title to inventions and patents based on work done by their faculties or staff members. Therefore, professors — who are for the most part the principal inventors — are free to retain title to any patents or copyrights they may seek. This puts them in a position to enter directly into licensing agreements with commercial organizations.

As public institutions supported by tax revenues, German universities are also precluded from engaging in commercial activities "in competition" with commercial firms. This prohibition has been widely interpreted as a bar to institutional involvement in — and institutional benefit from — technology licensing.

Laws of product liability in the Federal Republic have been structured to limit liability and to protect the licensor from liability. With regard to legal issues of performance, the university professor as licensor is also provided with important safeguards, and the university as a public agency is exempted from legal liabilities in much the same manner that the Tort Claims Acts in the U.S. provide state universities a formal means for limiting and controlling liability claims made against them.

Because there is so little direct financial benefit to universities, the *Transferstellen* generally view licensing and protection of intellectual property as a sideline function. None of the four technology transfer officers interviewed could discuss authoritatively the number of active invention licenses at their universities, the number of new or active invention disclosures, or issues of license terms, such as percentage royalty rates, up-front payments, sharing of royalties between institutional and individual inventors, and so forth.

Therefore, the financial return or benefit of a given invention is limited almost exclusively to the inventor's laboratory or institute, and does not accrue to the general benefit of the university. This, of course, provides a powerful incentive to individual professors who are productive and work in fields of high commercial relevance. Conversely, it tends to isolate and limit the options of professors in fields with minimal commercial relevance.

B. *Federal law and the practices of the FhG further undermine the university's role in technology transfer.* Regulations regarding inventions made in projects sponsored by BMFT preclude the exclusive licensing of those inventions. The BMFT has begun to promote industry-sponsored research by giving

priority to projects partially supported by companies [BMFT, p. 34]. This means that a company that co-sponsors research with the BMFT cannot obtain an exclusive license. However, because the responsibility to license rests with the individual professor and because the professor cannot be induced to license to more than one licensee, most companies appear to be comfortable with the current situation. This attitude is surprising, knowing how skittish U.S. companies are about non-exclusive licenses, and how careful German companies are about getting exclusive options and licenses from U.S. universities. German companies might not be as comfortable as they appear to be now if the universities become more involved in the process of licensing.

The FhG institutes aggressively seek industrial sponsorship for applied research. Seventy-two percent of the Society's annual budget comes for project support [FhG Annual Report, p.4]. These institutes may draw late-stage development work away from the more traditional university research institutes. Inventions made at FhG institutes are licensed solely through the Society's central licensing office. The Society retains 25% of all royalty income and 75% goes to the Institute where the invention took place.

C. *There is little experience in the assessment of the economic value of university inventions or technology.* Both academic and business respondents to the survey indicated that scientific and academic considerations generally came first in university-industry research collaborations in Germany. An industry respondent who had experience with both German and U.S. universities characterized the difference between the U.S. and Germany as follows:

> U.S. universities worry first about the financial and business arrangements and then about science. In contrast, German professors worry first about science and then about the business and financial aspects.

Other respondents commented on the "mercantile" attitude of American universities with regard to research funding, and to the application of research results. Although no data were obtained on license provisions, one can assume from this survey that a systematic study would indicate that licensing terms are probably more favorable to the company than to the inventor regarding royalty rates, payments prior to marketing, and improvements. University technology transfer officers responded that advising professors on license agreements was an element of their responsibilities, but that professors seldom consulted them.

D. *The traditional university practices of tenure and promotion often function as a barrier to the retention of bright young faculty members.* Promotion of junior faculty members to professorial rank, and selection for tenure at German universities are still governed primarily by seniority, not merit or achievement. In Nordrhein-Westfalen the Government spends significant effort and resources to retain faculty members when their research is important to promote technological innovation, but their university is not prepared to do what is necessary to retain them. These efforts are not always successful. When these faculty members leave for other universities outside NR-W, or leave academia for other careers, the dislocation of research groups can be quite damaging. Although U.S. universities often display similar rigidities, the German environment is much less flexible. In the overall environment of rapid technological change, this organizational rigidity is particularly dysfunctional.

IV. LESSONS FOR THE U. S.

The Federal Republic of Germany is the economic keystone of the European Economic Community. As the EEC approaches the economic integration in 1992, it presents new opportunities and challenges for U. S. academic institutions as well as businesses. Recent political events in Central Europe make a reunified Germany a powerful economic factor in Europe. There are lessons to be considered that could make our institutions better at technology transfer.

A. **Incentives for inventors.** In Germany, senior faculty members have a strong incentive to protect and license intellectual property even though inventors are seldom in a strong negotiating position with potential licensees. A minority of U.S. academic institutions with invention and patent policies provide the inventor more than 50% of royalty income [Heathington and Heathington, p. 35]. Given the level of effort and input required of an inventor, even when an enthusiastic licensee has been found, a minority stake in royalty income may not be a strong inducement, particularly when "big hit" inventions are few and far between. Presently, royalty income to U.S. universities is estimated at approximately $50 million annually [AUTM, Feb, 1989]; but is concentrated at a handful of institutions. Most U.S. technology transfer programs are not breaking even. Further, assuming distributions for program costs and inventors' shares, less than 50% of this royalty income is real income for universities. Let us assume that

$20-25 million from invention royalties actually gets back to the universities. This number is insignificant for most institutions when compared to sponsored research revenues. Universities, therefore, would be giving up very little by boosting inventors' shares to 50% of royalty proceeds or better. *A majority stake in royalty income might provide more incentive to inventors to participate in the tortuous process of innovation, and would not cost institutions significant income.*

B. **The purpose and goals of technology transfer programs.** With the examples of spectacular financial successes at universities like the University of Wisconsin, the University of California, and Stanford University, many academic administrators have a vision of an untapped gold mine of revenue to replace dwindling research support. As it becomes clear that few university inventions ever become commercial successes, many institutions will become disenchanted with the effort and expense involved. It is important to consider the indirect benefits of technology transfer programs in the light of any university's public service mission. Intangible benefits include:

1. The rapid introduction of new technologies and improvements into the marketplace of commercial ideas;

2. The availability, for faculty who wish to use it, of a system to follow their research advances into broad application;

3. The availability, for business and industry, of a system to protect the commercial value of practical inventions resulting from university research through the patent system; and

4. For universities, a way to protect their proper interests in the benefits of the rare but valuable commercially important inventions that do originate in their laboratories.

Even though there are organizational, financial and legal differences between U.S. and German universities, there is an important lesson here. *U.S. universities need to move away from the position of viewing technology transfer principally or solely as an income-generating operation; and view it principally as a public service function, and a service to faculty.*

C. **The importance of the role of governments in promoting applied research and technology transfer.** The supportive environment for technology transfer in the Federal Republic is largely dependent on Federal and *Länder* science and technology policies, research support targeted at market-oriented

technologies, and actions by *Länder* governments to promote the use of the research capabilities of universities as tools for economic development and industrial revitalization. In the U.S. by contrast, federal action, beyond efforts to promote technology transfer by the federal laboratories, has been minimal. Action by the state governments has varied from state to state.

Whereas state and federal governments in the U.S. give lip service to eliminating the funding gap in the cycle of innovation between basic research and commercial development, the governments of the Federal Republic are making significant investments that are providing the necessary incentives to university faculty members to participate in this process and to conduct research and development projects which are of commercial importance.

The following are some specific actions to consider in the U.S.

1. At the federal level, the Administration and Congress should:

a. Expand Small Business Innovative Research (SBIR) set-asides, which will support applied research in small and new businesses. SBIR awardees have a good track record of collaborating with universities.

b. Promote applied or commercially important research in federal agencies concerned with non-defense research and technology, such as health and medical care (NIH), food and agricultural technologies (USDA), transportation (DOT), manufacturing technologies (Commerce), and energy (DOE).

c. Reconsider the value and importance of a national industrial policy to promote research and development in technological fields of national strategic importance in a global and increasingly competitive economy.

2. At the state level, individual state governments should:

a. Initiate programs of state support for centers of excellence with a strong emphasis on capability, interest, and market demand for applied research.

b. Consider state-wide industrial policies, identifying those commercial opportunities where academic talent and ability can be teamed with local business to promote significant economic growth.

c. Follow up on industrial policies with support to public and private research universities to promote technology transfer, and to promote and facilitate university action in implementing state industrial policies.

d. Follow up on industrial policies with programs supporting the initiation and maintenance of area technology development centers in major urban areas. These centers can focus available business assistance, capital, business incubator, and academic research and technology transfer resources in a community on the process of business development in the technical fields identified in industrial policies.

Government should take actions to promote applied research likely to yield commercially significant results, and to support university technology transfer. These actions would be appropriate public steps to create jobs, to expand private investment, and to foster economic opportunity.

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Trends in Intellectual Property Law

Howard W. Bremer, Kathleen R. Terry and Warren D. Woessner*

INTRODUCTION

Only a few years ago the terms "innovation," "technology transfer," and "intellectual property" did not seem to be in the legislative vocabulary, but those words have become the buzz words in Washington now. In fact, Representative Robert Kastenmeier of Wisconsin, chair of the Subcommittee on Courts, Intellectual Property and the Administration of Justice, said that now that Congress is finally paying attention to some intellectual property matters, it is his intention to introduce additional legislation on this issue.

As early as 1963, some governmental officials, particularly in the then-Department of Health, Education and Welfare and in the National Science Foundation, recognized the need to encourage the technology transfer function through the development of Institutional Patent Agreements. Historically, little attention had been directed to that issue in most government agencies, which continued to advocate a Government-take-all policy.

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The national stimulus of the OPEC oil embargo in 1973 jolted the United States out of its complacency, and economists and business people were forced to look about them. They observed that something was happening to America's place in the world, and what they saw was not encouraging. There were many disquieting statistics that gave cause for real concern that the United States was fast losing its position of technological leadership. Expenditures for basic research and for research and development were declining, in constant dollars, while in the same period spending in Germany, Japan and the U.S.S.R was increasing; foreign nationals were receiving an ever-increasing number of U.S. patents (in 1987, 47% of the issued U.S. patents went to foreign nationals); the balance of trade (which in the manufactured goods area had been built in part on exported U.S. technology) was rapidly declining; there seemed to be an anti-patent attitude in the courts; the belief was widespread that the antitrust statutes and patents were antithetical; the government was acquiring thousands of patents but was doing little to encourage innovation; and the large universities and research centers, which led the world in new ideas and Nobel laureates, seldom took the necessary steps to see that their important discoveries were commercialized. On the whole, innovation stagnated.

Leaders in the private and public sectors slowly realized that a strong patent system could perform as our forebears had intended "to promote the progress of science and the useful arts"; that patent laws were not the antithesis of the antitrust laws, and in that sense did not give rise to bad "monopolies," but tended to stimulate competition, and that a strong patent system encouraged innovation. These realizations resulted in a spate of legislation intended to improve the protection of intellectual property to increase America's competitiveness in world markets. The Court of Appeals for the Federal Circuit was established so that adjudication of patent disputes could be made by a single, knowledgeable, last-resort entity and not by a judiciary that often had no real understanding of or appreciation for technology and the goals, or even the workings, of the patent system. As Chief Judge Markey of that Court has said, "No institution has done so much for so many, with so little public and judicial understanding, as has the American patent system."

Public Laws 96-517 and 98-620 first gave and then perfected the right of universities, small businesses, and non-profit institutions to take title to any invention made in whole or in part through the expenditure of federal funds. Other laws gave government laboratories the right to reward inventors, a crucial step in encouraging the extra effort needed to protect their

inventions. The Lanham Act was overhauled. Still other laws amended the tax and trade laws and expanded the scope of intellectual property protection to add incentives for seeking that protection.

Keeping up with these changes is a never-ending task. In the 100th Congress, for example, the law changed again with 10 separate bills addressing 15 different issues. This is merely a reflection of the prominence that intellectual property has achieved in the formulation of national policy.

OMNIBUS TRADE AND COMPETITIVENESS ACT

Howard W. Bremer

A. INTRODUCTION

The Omnibus Trade and Competitiveness Act, signed into law by President Reagan on 23 August 1988, plugged a leak in the protection of intellectual property that seriously undermined the value of many university patents. No longer can a company go off-shore and practice a patented process, importing the resultant product into the United States without a license, without paying royalties, and without fear of patent infringement liability. Other sections of the law strengthen the enforcement of a wide variety of intellectual property protection by making it easier for the owner to obtain exclusion orders from the United States International Trade Commission. Finally, the Trade Act was given even sharper teeth to persuade "pirate countries" to enact and enforce laws for the protection of intellectual property.

B. PATENT PROVISIONS

It is now infringement of a process patent to use or sell in this country, or to import products made using the patented process. To gain the protection of this section, the patentee must establish only "a substantial likelihood that the product was made by a patented process." The alleged infringer then must rebut the presumption by showing that the patented process was not used.

Overly harsh laws are not enforced, so a saving clause was added to exclude the small retailer caught selling the infringing product. The "innocent infringer," who did not practice the patented process, did not control the person who did so, or had no actual knowledge that a patented process was used, has only limited liability. First, the patent owner must exhaust remedies against importers and wholesalers before seeking redress from

non-commercial users and retailers. Products that are substantially changed by subsequent processes or are only trivial components of another product will not be considered infringing. Notice of infringement is required for liability. The defendant must have actual knowledge or receipt of information sufficient to persuade a reasonable person that it was likely that the product was made by a patented process. Furthermore, there is no remedy for infringement for products in possession or in transit at the time of notice of infringement. The notice defense would be unavailable to those who practiced the process or had knowledge before the infringement that a patented process was used.

This extension of the scope of infringement is likely to be important to universities. Consider the Cohen-Boyer patents, which may eventually be the most valuable patents ever owned by a university. Before this law was enacted, a company making recombinant human insulin in the United States needed a license from Stanford or faced an infringement suit, but a company manufacturing the same product in the Bahamas was not liable for infringement on importation of recombinant insulin into the United States. Now the Stanford patents could be used to prevent either activity.

Another part of the law eases the burden that was attached to the filing of an application in a foreign country. Section 184 of Title 35 of the United States Code provides that one who files a patent application must wait six months before filing a corresponding application in a foreign country. The waiting period was intended to permit the U.S. Patent and Trademark Office to determine if the application contained information important to national security. The interpretation of applicable regulations required that one needed a foreign filing license to add *any* further disclosure to a foreign patent application. An inventor could lose U.S. patent protection if he provided additional information or filed a foreign application without a license.

Under the new law, the scope of a foreign filing license permits "subsequent modifications, amendments and supplements containing additional subject matter" to be sent to a foreign patent office without processing a special license. One cannot, however, provide such additional subject matter if it changes the nature of the invention or discloses national security information.

C. EXCLUSION ORDERS

Intellectual property owners can more easily block imports that infringe patents, copyrights, registered trademarks, and

mask works. In addition to an unfair act or method of competition, the previous law required proof that the tendency or effect of the act would be to destroy or to substantially injure a domestic industry. New Section 337 of the Tariff Act considers the following acts to be unlawful:

1. the importation or sale in the U.S. of articles that infringe U.S. patents or copyrights or that are made by a patented process; and
2. the importation or sale in the U.S. of articles that infringe U.S. trademarks; and
3. the importation of semiconductor chips that infringe registered mask works.

These acts are unlawful only if an industry related to the infringing articles exists, or is being established. However, the definition of protected industry has been relaxed to include persons or establishments that have made "substantial investment in [the] exploitation [of the relevant intellectual property] including engineering, research and development, or licensing." That category includes universities.

These are *criminal* charges, prosecuted by the government. If infringement is alleged, the intellectual property owner must bring a complicated and expensive *civil* suit in order to pursue a remedy. To block infringing products, a university may apply to the United States Trade Commission, requesting a directive to the United States Custom Service.

For example, consider the situation wherein Research University holds title to a United States patent and foreign counterparts covering a process for making widgets. There are no companies making widgets in the U.S., and Research University has not been able to find a U.S. licensee. Efforts to convince Buccaneer Company to become a licensee break down, and Buccaneer Company decides to manufacture the articles in Surinam, a country in which Research University has no patent. Buccaneer Company does so and imports the articles into the U.S. for sale. Research University applies to the U.S. International Trade Commission for relief.

Under the old law, Research University loses on two counts. It is not infringement to import articles made by a patented process. In any case, as there is no domestic industry, Research University cannot establish injury. Under the new law, Research University can document that the articles were more likely than not made by the patented process and that Research University's substantial investment in research and licensing entitles it to the status of a protected industry. The Commissioner grants a temporary exclusion order which becomes

permanent on the failure of Buccaneer Company to rebut Research University's allegation. Research University concomitantly sues Buccaneer Company for infringement, recovering treble damages and attorneys' fees. Ideally, the attendant publicity attracts licensees from all over the world.

D. TRADE ACT SANCTIONS

When university technology leaves the United States, whether by licensing, by publication including issued patents, or via a returning foreign scholar, it falls beyond a university's capability of policing and protection. Foreign patents can, of course, provide some degree of protection, but many of the developing countries do not have effective patent systems and do not feel it is economically advantageous to enforce patents. The developed world considers this to be thinly veiled piracy.

For some time, the United States has used Section 301 of the Trade Act (19 U.S.C. 2411-2416) to exert pressure on foreign countries to respect and enforce rights in intellectual property. It was through threatened Section 301 sanctions that South Korea was persuaded to strengthen its patent laws. The new Act sets up a procedure to invoke these sanctions. The United States Trade Representative must identify foreign countries that deny "adequate and effective" intellectual property protection and that deny "fair and equitable" market access to persons relying on intellectual property protection. Countries that fail these criteria will be listed in the Federal Register, and the United States Trade Representative must initiate an investigation of these countries, the investigation to be completed within 18 months. The United States Trade Representative then recommends sanctions to the President against those countries found to engage in "unjustifiable, unreasonable or discriminatory" trade practices. The actions available to the President include suspension of trade agreement concessions, imposition of duties, and loss of preferred trading status ("most favored country"). As of fall, 1989, two cases have already been brought. The United States Trade Representative has been requested to investigate the entire Japanese patent system and the allegedly inadequate protection of pharmaceuticals available in Brazil.

E. SUMMARY

Universities can use these new laws to their advantage in technology transfer by being aware of these points:

1. **Process patents**: Pure method or process patents have increased greatly in value. Furthermore, it is not essential to seek a U.S. licensee. Now, a good foreign licensee can gain a protected position in the United States market.
2. **Foreign filing license**: Formerly, it was necessary to obtain a filing license when material that supplemented an earlier-filed U.S. patent application was placed on file overseas. Now, if the added material does not change the nature of the invention or disclose national security information, a United States application can be fleshed out for foreign filing without the delay and expense of first filing a U.S. continuation-in-part and applying for an export license.
3. **Section 337**: Be aware that you can now directly, and not through your licensee, petition the U.S. Trade Commission to block imports that infringe your U.S. patents, copyrights, registered trademarks and mask works.
4. **Section 301**: The government is information-hungry and cannot act in a vacuum. Evidence of international piracy of intellectual property should be provided to the U.S. Trade Representative.

THE BERNE CONVENTION

Kathleen R. Terry

A. INTRODUCTION

The field of arts and entertainment is one of the few in which the United States consistently has shown a trade surplus. For every one of the billion and a half dollar surplus generated annually by the export of copyrighted materials, it has been estimated that international copyright pirates siphon off at least an equal amount. With accession to the Berne Convention, the United States will gain more international protection for books, software programs, music and movies.

B. BACKGROUND

The United States adopted its first copyright laws at the birth of the nation. Protection for foreign works, or the protection of U.S. works overseas, was not contemplated or provided for. A certain insularity kept us from participating in the Berne Convention, a multinational copyright treaty that originated from meetings begun in 1886. Eventually the United

States copyright laws were revised to protect foreign works, but the U.S. decided to seek bilateral treaties with other countries rather than joining the Berne Convention. Over the years, about 50 treaties were signed.

Historically there was not a large foreign market for U.S. copyrighted products and not much interest in this country about reciprocity, until after World War I. The 1928 Rome revision of Berne, which added so-called "moral rights" provisions, discouraged U.S. accession just as interest in joining the Convention was beginning to grow.

The need for some mechanism for international copyright protection was eventually recognized. The United States sponsored a Universal Copyright Convention under UNESCO, and became a signatory in 1954. The U.S. has now withdrawn from UNESCO and has no vehicle for input into the management of the Universal Copyright Convention.

At the same time the United States copyright law of 1976 inched a little closer to the Berne standards. Interest in acceding to Berne quickened, with the "moral rights" issue remaining the major hurdle. A committee of international legal scholars and representatives of the U.S. State and Commerce Departments met and came to the conclusion that existing state, federal and common laws prohibiting distortion, mutilation, modification or derogatory action that would prejudice an author's honor or reputation, were sufficient to satisfy the Berne requirements.

In 1988, a House Committee chaired by Representative Kastenmeier and a Senate Committee chaired by Senator Leahy proposed and passed the necessary revisions to the Copyright Act to clear the way for accession to the Berne Convention.

C. THE PROCEDURE

The Berne Convention is not a self-executory treaty. That is, it is not a set of laws ready to insert into the national code, rather it is a set of minimal standards to be followed by each signatory. The Convention gives a great deal of leeway in some areas. Many of the clauses begin: "it shall be a matter for legislation in the countries of the Union . . . to exclude . . . to determine. . . ." Congress followed the minimalist approach, and made the fewest possible changes in order to comply with the Berne Convention.

The Senate, on October 5, 1988, and the House, on October 12, 1988, passed the Berne Convention Implementation Act of 1988. The Bill was signed into law as Public Law 100-568. The Senate ratified the Berne Convention on October 20,

1988, and President Reagan signed the documents of accession on October 31, 1988.

The accession provisions of Berne are simple. Instruments of ratification or accession are deposited with the Director General of the World Intellectual Property Organization in Geneva. Accession takes effect after three months or at any longer time specified by the acceding country. It was the intention of Congress that deposit would be made in November, to take effect in March, 1989. The revisions to the Copyright Act take effect the same date.

D. THE PROVISIONS

For each of these provisions, the language of Berne from the Paris Act of 1971 is presented and then revisions in the Copyright Act are discussed.

1. Scope of Protection . . .

> Berne Convention, Article 2 (1) The expression "literary and artistic works" shall include every production in the literary, scientific and artistic domain, whatever may be the mode of its expression such as . . . . works of drawing, painting, *architecture*, sculpture . . . and three-dimensional works relative to geography, topology, *architecture* and science. [emphasis added]

In the United States Copyright Act, the definition of scope has been modified to include architectural plans. Berne is based on French law, and in France copyright protection extends to the building itself: a copycat neighbor cannot build an identical house. The U.S. law would probably not be interpreted so broadly but would prohibit the copying of plans or the act of building from purloined or reconstructed plans.

2. No formalities

> Berne Convention, Article 5 (2) The enjoyment and the exercise of these rights shall not be subject to any formality.

The revisions in the Copyright Act consist largely of changing "shalls" to "mays." It is not now necessary to print the familiar copyright symbol, year and author, or to register the work. Congress has provided as part of the litigation procedure that works of U.S. origin must be registered before a suit on the copyright can be brought. Foreign works need not be registered.

It is a simple task to add a copyright notice, and it is the best policy to continue to do so, as the damages recoverable are significantly greater if an infringer is not able to assert lack of notice. Defective copyright notice is no longer a defense to charges of infringement. Even a notice without all the formalities is enough to notify the "innocent" infringer. "All rights reserved" should be added to any notice for those countries in which the definition of infringing acts is less comprehensive than in the United States.

3. Moral rights

> Berne Convention, Article 6 bis (1) *Independently of the author's economic rights, and even after the transfer of the said rights,* the author shall have the right to claim authorship of the work and to object to any distortion, mutilation or other modification of, or other derogatory action in relation to the said work, which would be prejudicial to his honor or reputation. [emphasis added]

This clause, above all others, historically kept the United States out of Berne. Note that moral rights are independent of ownership. An author may agree to let someone else hold the copyright and can still come back to claim moral rights at any time during the term of the copyright. There are two prongs to these moral rights: paternity, to be known as the author; and integrity, to prevent harm to honor and reputation. Berne does not forbid changes, or even "distortions and mutilations." It merely gives an author a day in court to object to changes. Knowing cultural differences among countries, one can easily see that offense to "honor and reputation" in one country is mere innocuous change in another country.

The Berne provision under 17 USCA, the United States Copyright Act, is:

> (b) CERTAIN RIGHTS NOT AFFECTED.
> Any right of an author of a work, whether claimed under Federal, State or common law, to claim authorship of the work, or to object to any distortion, mutilation, or other modification of, or other derogatory action in relation to the work, that would prejudice the author's honor or reputation, shall not be expanded or reduced by virtue of, or in reliance upon, the provisions of the Berne Convention . . .

There have already been *de facto* "moral rights" cases in this country. Plaintiffs have often prevailed under various

causes of action even as the courts have routinely rejected the moral rights concept *per se*. In France, moral rights are "perpetual, inalienable and imprescriptible," but Berne seems to allow the contracting away of moral rights, and many Berne countries such as the United Kingdom readily permit contractual waiver. The two prongs – paternity and integrity – are separable. Resolution of whether a University should require a waiver of one or both of an author's moral rights is probably a question to be debated in venues other than the technology management office. The right of paternity should not necessarily pose an impediment to licensing, but the right of integrity may cause concern.

E. IN THE BALANCE

1. What the United States Gets from Berne

A. Reciprocity with 76 Berne members (including 24 with which the U.S. have previously had no bilateral arrangement).
B. Participation in any future modification of Berne.
C. Access to the International Court of Justice to resolve copyright differences with other Berne countries.
D. Overall strengthening of the rights of *creators* of copyrighted materials.

2. What the United States Loses

A. Free copies of publications to the Library of Congress.
B. The security and confidence of copyright *buyers* that they can use the copyrighted materials in any way they choose.

F. WHAT THE FUTURE MAY HOLD

To date, the "minimalist" approach to accession to the Berne Convention has caused little significant change in U.S. law. However, accession may be a toe in the door for the very sticky moral rights question. As it was determined that existing federal, state and common law provided sufficient protection from distortion and mutilation of copyrighted work to satisfy Berne, Congress deferred explicit moral rights legislation in order to have the Convention accepted.

However, Senator Cochran of Mississippi plans to introduce a bill, S.1223, that would ensure improved protection for artists' rights by limiting the expansion of "work for hire," which gives an employer certain rights to own an employee's

copyright. The original definition of "work for hire" under the 1976 Copyright Act was work prepared by an "employee" in the scope of his or her "employment." That scope has been greatly widened lately so that in some cases, independent photographers cannot use a commissioned work in their own portfolio for the purposes of illustrating their talent. Senator Cochran's bill would define employment narrowly by specifying that only work arising from those relationships providing benefits such as health insurance, sick pay, unemployment insurance, the provision of a work place and materials would be entitled to "work for hire" status.

Explicit moral rights are already the law in the two leading copyright states, New York and California. California has adopted the French idea, *droit de suite*, whereby an artist may share in profits from resale of his work. Several New York cases have allowed an artist to sue to prevent changes to his work.

Opponents to moral rights maintain that such moral rights laws are unworkable; that publishers cannot and will not work under such restrictions, and that there will be extensive litigation over the extent of moral rights.

However, the Constitution was written to secure to the *creator*, not to the *investors*, certain rights. Perhaps the present work-for-hire doctrine unduly favors the employer. Dr. Arpad Bogsch, the Director General of WIPO, does not understand the opposition: "Many magazines are published in Europe, notwithstanding moral rights, so why the concern?"

The concern to university intellectual property managers may be that they must know what rights are transferred when copyrighted materials as tests and software are licensed. Some contractual agreement with the creators of university-copyrighted materials may be necessary so that headaches are not inadvertently transferred to the licensees.

PATENT LAW HARMONIZATION

Warren D. Woessner

A. INTRODUCTION

Foreign filing a U.S. patent application these days is like carrying an egg through a mine field. The patent attorney for the university has to dodge the printed abstract, the talk at a symposium, or the full paper, to deliver the egg intact to the nests of the foreign patent offices — often, only to be told that he brought the wrong kind of egg. "Sorry, we don't give patents for white eggs, only brown." In other words, the application has

claimed the wrong subject matter. For example, the U.S. allows patent protection for pharmaceuticals, but Spain and Greece do not. The mine field must also be traversed in the dark. Overseas patent attorneys and agents jealously guard their knowledge of their country's patent prosecution. While any number of U.S. organizations offer two- to eight-day courses aimed at educating all comers as to what those words in those laws really mean, such instruction is seldom available abroad. At the same time filing decisions must be made, with attendant expenses that rise as the dollar weakens, the market has gone global from the "Pacific rim" to the European Economic Community (EEC). In some cases it is not possible to license an invention that is covered only by a United States patent.

B. THE HARMONIZATION TREATY AND THE U.S. RESPONSE

The World Intellectual Property Organization (WIPO), that originated the Patent Cooperation Treaty (PCT), has been holding biennial meetings since 1986 in order to draft a "Treaty on the Harmonization of Certain Provisions in Laws for the Protection of Inventions." WIPO has prepared a preliminary draft treaty and the U.S. Patent Office (PTO), under Commissioner Donald Quigg, has prepared a document paper stating that the United States would be willing to make certain changes in its patent laws if foreign countries are willing to make reciprocal changes. A diplomatic conference is scheduled for June, 1991, to consider the final draft treaty, which is in preparation. If ratified by the United States, the treaty in present form would provoke changes as extensive, if not more so, than the 1952 Patent Act. See, WIPO, Report, Committee of Experts on the Harmonization of Certain Provisions in Laws for the Protection of Inventions, 7th Session, Geneva, November 13-24, 1989, HL/CE VII/28 (November 24, 1989).

The latest draft treaty includes 22 "articles," so only the major issues and their impact on universities will be discussed here. In parentheses after each title, it is indicated whether the proposal is provisionally approved by WIPO, the U.S. PTO, or both.

1. First-to-File (WIPO and U.S. PTO)

When two or more inventors each apply for a patent for the same invention, the inventor first to apply will receive the patent. If an inventor is entitled to the right of priority because

of an earlier foreign filing date, the right to a patent would be based on the earlier date.

Under current U.S. law, the first to *invent* can claim the right to a patent, even if he or she is not the first to *file*. The procedure for resolving conflicting rights is known as "interference." It was felt that the first-to-invent approach gave a needed advantage for the small business or independent inventor who lacked the funds and savvy to get a patent application expeditiously on file. This edge has proved illusory. An interference is an expensive and time-consuming procedure, as each side must present documentary evidence to prove ill-defined issues such as "conception" and "reduction to practice." An individual inventor or small business often does not have the funds to fight an interference and must bow out of the race.

However, if a small entity loses patent rights one time under a first-to-file system, its patent policy becomes focused very sharply; the application on the next invention will be filed earlier. In the first-to-invent system, no amount of learning can cure the problem. A small entity will have to face an interference proceeding, and its costs, whenever it is forced to prove the date of invention. If a small entity chooses to fight, it is unlikely to have invention documentation sufficient to prove its position, while the big company opponent is likely to have more extensive experimental data, all the lab books signed, witnessed and dated, and is more likely ultimately to win the patent.

A first-to-file rule will eliminate one advantage U.S. applicants now have. When establishing the invention date, only those activities actually or constructively taking place within the U.S. are considered. A U.S. inventor can rely on his lab notebooks, while the foreign inventor is stuck with his or her effective U.S. filing date. It should be noted that opponents of harmonization argue that the Constitution requires a first-to-invent system, as the Patent Act of 1790 mandates issuance of a patent to the "first and true inventor." However, "first inventor" language is not in the Constitution; Article I, Section 8, simply refers to "inventors."

2. Grace Period (WIPO and U.S. PTO)

Patent rights in nearly every foreign country are lost if a publication discloses the invention before the patent application is filed. This is the most serious problem that university patent administrators face. It can be difficult to license a United States patent when no corresponding foreign patents can be filed. An impending "absolute novelty" bar date can lead

to filing on an invention that in the hindsight of post-filing contemplation was not worth the costs.

Under the proposed treaty a one-year grace period would be granted to patent applicants. A patent could not be invalidated on the basis of information from or activity by the *inventor*, or by a person active on the inventor's behalf, or by a third party who derived information from the inventor, within one year prior to the filing.

This is different from the current U.S. law: The current one-year grace period includes *anyone's* publication; under the proposed treaty, the grace period only extends to the inventor's *own* publication. Another's publication, even one day before filing, will destroy the inventor's rights. Critics of harmonization point out that the grace period, combined with a first-to-file system, can result in anomalous situations. If both parties file on the same invention on the same day, they are both entitled to patents. If "A" publishes a paper describing his invention but files after "B," neither gets a patent, "A" because he was not first to file and "B" because he is barred by "A's" paper. However this type of conflict is not as likely as it seems, because to destroy "absolute novelty" the publication must describe the identical invention, not simply an obvious variant.

3. Assignee Filing (WIPO and U.S. PTO)

The U.S. is virtually alone in requiring that the inventor must be the actual applicant and, sooner or later, must sign the Declaration and Power of Attorney. In every other country the owner of the invention files the application and appoints the attorney or agent to prosecute it. The inventors are simply named. Under the treaty, the assignee (or assignee of right) would be able to apply for and enforce a patent.

4. Senior Rights (WIPO and U.S. PTO) and 18 Month Publication (WIPO only)

In the U.S. PTO, pending applications are held in secret. This "secret prior art" often becomes manifest when the patent issues, and becomes available for citation as Section 102(e) or Sections 102(e)/103 prior art against a later-filed application. If the later-filed application has been pending for a long time, the applicant may lose substantial preparation and prosecution costs.

In most foreign countries an application is published 18 months after its first effective filing date (the priority date). The U.S. has accepted this as an option for U.S. inventors. The policy rationale for publication is that it advances the state of the art. The incentive is that publication would be necessary to entitle an applicant to his or her foreign priority date. Also, prior published applications would only be prior art as of their filing dates with respect to evaluating novelty, not obviousness. Coupled with eighteen months publication, a university can be somewhat more certain of not being blind-sided.

5. Extension of Scope of Patentable Subject Matter (U.S. PTO only)

The U.S. PTO would like to have the treaty adopt the U.S. language with respect to patentable subject matter, which is broadly interpreted in this country. This would make patent protection available for all useful processes, machines, manufactures or compositions of matter, or improvements thereof, including many types of subject matter that are barred or restricted overseas, e.g., pharmaceuticals, plants, and animals and their parts (including genes), food products and therapeutic or diagnostic methods for treating humans or animals. This would open up direct foreign patent protection for new uses for old drugs, which is a very common and potentially a very lucrative type of invention that arises at universities. For example, the new use for an old compound, Cisplatin, invented at Michigan State, is said to have yielded more royalties than any other university invention. (That is, to date, since the Cohen-Boyer patent on basic gene-splicing technology will probably surpass it.)

WIPO is very unlikely to extend the scope of patentable subject matter as far as the United States, especially as many national laws specifically deny patent protection to at least one of the art areas noted above. However, recently some countries have allowed a second medical use for a compound if the claims are couched in "method of manufacturing a drug" terms. It is possible, but not probable, that the treaty drafters might relax slightly on this point.

C. CURRENT STATE OF NEGOTIATIONS

The WIPO Harmonization Committees of Experts began meeting in 1986 and have targeted 1992 for completion of their work. The Conferences are attended by representatives of many of the members of the Paris Convention, including all the developed countries, the Eastern Bloc, and some of the Third World.

It is questionable whether a final draft will be adopted by the Committee. Behind the curtains at the Experts' meetings, and in at least two separate meetings each year, the big three – the Japanese Patent Office, the European Patent Office, and the United States Patent Office – are negotiating a trilateral agreement. It is likely that these meetings will result in agreement among the three, leaving the rest of the world to fall in line or not, as they see fit.

The U.S. is firmly committed to linking any first-to-file system to a grace period. Some countries, such as Japan, have limited and very technical grace periods. Therefore, there may be some room to compromise in this area. There is considerable opposition in this country to giving up our advantage of our senior-rights system which favors U.S. inventors via a first-to-invent system combined with activities-in-this-country. However, from the standpoint of the university, having a worldwide grace period would solve one of the thorniest problems a university patent administrator encounters.

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