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INSTITUTIONAL POLICIES ON INTELLECTUAL PROPERTY AND TECHNOLOGY
TRANSFER. 1) DEVELOPMENT OF INSTITUTIONAL POLICIES ON
INDUSTRIAL PROPERTY AND TECHNOLOGY TRANSFER

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* The opinions expressed in this paper are those of the author and do not necessarily reflect the position of WIPO and/or ECLAC.

I. INTRODUCTION

1. Universities have always been involved in the creation and dissemination of knowledge. Today, universities are at the heart of the knowledge economy. It has been demonstrated that universities have played a major role in wealth creation and economic development, and that university-industry technology transfer can be a stimulant, precursor or complement to building a “high-skills” economy. In its survey for the fiscal year 1999, the Association of University Technology Managers (AUTM) in the United States of America, found that the transfer of innovations to the market place by academic research institutions contributed \$40 billion to the economy and supported 270,000 jobs.¹

2. Traditionally, Universities have transferred the fruits of their inventiveness to the public in various ways, including:

- the publication of research results in scientific journals;
- the provision of extension services, particularly in the area of agriculture;
- technical consultancies, contract research and collaborative endeavours of researchers with companies and colleagues at other institutions; and
- seminars and conferences.

3. In one sense, all of these activities constitute technology transfer. However, over the last two decades, the term “technology transfer” when used in relation to universities, has come to mean the formal transfer to industry of technology as represented by the transfer of a property right as the result of ownership of the intellectual property generated during the conduct of research. In this sense, Universities transfer technology through licensing of technologies to private industry or the formation of spin-off companies to add value to the technology.

4. As universities world-wide become increasingly involved in the commercialization of research results, appropriate mechanisms for the management of technology transfer activities and processes have become essential. One such mechanism is a patent policy, a critical institutional management tool to guide administrators and researchers on the treatment of innovations and discoveries made within the academy. Such a policy would govern, *inter alia*: a) the respective rights and obligations of the University, researchers and third parties such as external sponsors, Governments and collaborating institutions; b) the sharing of proceeds from commercial exploitation of inventions; and c) the management of the Policy, including any conflicts occurring in its implementation. The management of technology transfer from universities also calls for institutional policy statements on how to deal with conflicts of interest that might arise as researchers engage with third parties.

5. The topic under discussion refers to “industrial property” which encompasses patents, trade marks, designs, trade secrets and know-how. While technology transfer activities might involve one or all of these types of property, patents are the drivers of technology transfer. This paper, therefore, seeks to examine the function of patent policies in technology transfer

¹ See Baxendale, J: *Transfer of technology from Academia to Business Drives Development in The Business Journal: Weekly Small Business Newsletter*, December 4, 2000.

from universities and to indicate some best practices in terms of the content and scope of such policies. The paper will also deal briefly with the experience of developing and implementing a policy on inventions and copyright at the University of the West Indies and the lessons learned to date. For the most part, references made by way of examples will be to policies developed by universities in the United States and Canada, the majority of which have in place patent and other policies to facilitate technology transfer.

II. THE CONTEXT OF POLICY FORMULATION

A. Legislative and Policy Context

6. Policies on Intellectual Property are designed within the context of applicable laws and national and regional policies. In all countries, therefore, the intellectual property law regime, in particular, those laws relating to patents and other industrial property, provide the necessary legal framework within which university policies relevant to technology transfer are formulated. National intellectual property laws reflect international obligations assumed by states under various conventions, treaties and agreements. Intellectual property laws confer on a right owner, subject to specified exceptions, certain exclusive rights, usually for a limited time, to use and authorize the use of their intellectual property. They also provide remedies for the infringement of such rights.

7. In some jurisdictions, legislative measures may be specifically designed to promote technology transfer. The Bayh-Dole Act, 1980 of the U.S. is often cited as a prime example of such a measure. The primary intent of the law was to foster the growth of technology-based businesses by allowing those receiving federal support to retain title to inventions arising out of federally-sponsored research. Universities were defined to fall within the definition of “small entities” which, under the Act, were given title to inventions made in whole or in part with the use of government-supplied funds. This paved the way for universities to use the patent system as a vehicle for technology transfer.² As a result, most universities in the U.S now have a technology transfer operation.

8. China provides another example of the use of legislation as catalyst and incentive. During the last decade, the Government of China promulgated several measures aimed at stimulating university technology transfer.³ Among these were provisions mandating the establishment of “high tech” gardens at universities, the encouragement of teaching staff to engage in “high tech” transfer, and the offering of attractive incentives and rewards to those engaged in technology transfer activities.

9. In addition to the legal framework, attention must be paid to national policies on science and technology and those relating to economic and industrial development. In many developing countries specific policies may exist with respect to the stimulation of growth in, for example, small business sector or in a particular sector of the economy, such as energy or

² For an assessment on the impact of the Bayh-Dole Act see Bremer, Howard: *The First Two Decades of the Bayh-Dole Act as Public Policy* 2001: http://www.nasulgc.org/COTT/Bayh-Dohl/Bremer_speech.htm.

³ Law on Science and Technology Progress, 1993; Regulations for the Promotion of High Technology Transfer, 1998; Decision on Strengthening Technology Innovation, Promoting High Technology and Implementing Production, 1999.

agriculture. Such policies often give an indication of the existing technological needs and gaps which universities could fill and, possibly, the research areas for which grant funds may be available.

B. Cultural Context

10. Academic institutions have a peculiar culture, a fact that policy makers should acknowledge and take into account when formulating policies, including those relating to industrial property and technology transfer. Many researchers in an academic environment are not oriented towards the commercialization of their research results and lack the appetite for trading rights in the marketplace. They are accustomed to receiving grants from certain institutions for specific research activities and tend to have a passive approach to technology transfer even if the results have development potential.

11. Speaking in the context of Japan, Hong (2002) observes, “University professors do not believe it is proper to bargain for personal royalties, and they lack the experience and the psychological mind-set to bargain for the development commitments. They are more interested in maintaining stable long-term relationships with particular companies which provide them with low but steady levels of donation to support their research and which provide employment for their graduate students”.⁴ Some academics are suspicious of links with the commercial sector fearing that such links might restrict their academic freedom. They shun intimacy with industry, concerned that their research agenda might be dictated by commercial interests. They worry that their involvement in applied research could be to the detriment of their engagement in basic research and could negatively affect their ability to publish. The restriction on the publication of research results (although temporary) until patent protection is applied for, might irk some academics in light of the academic culture of information sharing and the fact that an academic’s publication record affects his or her prestige and standing in the scholarly community.

12. The issues in the preceding paragraphs of this Section are raised to underscore the point that policy development does not occur in a vacuum. Policies are organically connected to the environment in which they are created. The laws, policies and institutional culture are important aspects of that environment and must be taken in account in the policy formulation process.

III. PATENT POLICIES: RATIONALE, SCOPE AND CONTENT

13. Over the last decade, many Universities have developed patent policies or upgraded existing ones in light of the development of new technologies, relating, for example, to biotechnology, and their increased involvement in technology transfer activities. This section of the paper gives an overview of the essential elements of a modern patent policy, including some that have been identified as “best practices”.⁵

⁴ Zhang Hong (2000): *Comparative Study of Technology Transfer by Universities in the U.S.A., China and Japan* in CASRIP Newsletter, Autumn 2000.

⁵ See Hersey, Karen: *Intellectual Property Policies*, NACUA Advanced Workshop, November 12, 1998.

A. Mission

14. Most patent policies anchor themselves to the mission of their universities. Typically, this is done in an introduction or preambular provision that speaks to the university's mission in terms of its engagement in teaching, research and scholarship for the generation and expansion of knowledge for the benefit of society. As most universities have some level of public funding, the public benefit element is important. Many a policy document is careful to point out that the university in question does not undertake research or development work using university funds and facilities, principally for the purpose of developing patents or for commercial gain. Invariably, the document goes on to point out that research activities often yield up results which have commercial value and that the University wishes to ensure that such results should be utilized for public benefit.⁶ By securing patent protection of research results, where possible, Universities are able to make available to industry for development, technology to which secure property rights attach. Some Universities take the view that seeking patent protection and actively engaging in technology transfer are obligations implicit in the "public benefit" element of their mission. The declaration of mission at the outset and its relationship to the policy is an appropriate starting point for the policy as it provides the philosophical context for its subsequent provisions.

B. Purpose and Objectives

15. Patent Policies usually set out their objectives. Common objectives⁷ include the following:

- to establish a proper basis for the transfer of technology from the University to the wider community;
- to facilitate the commercial application and utilization of inventions in a manner that is consistent with the mission of the University;
- to provide an incentive for research and the creation of new knowledge;
- to ensure that the rights and interests of all parties concerned are fairly determined by establishing principles and uniform procedures for the sharing of income derived from the commercialisation of research results;
- to attract industry commitment to supporting both basic and applied research in the university; and
- to produce funds for further scientific investigation and research and for the overall needs of the University.

⁶ See e.g. Policy on Patents and Copyrights, Ohio State University, 2000 at A: *Purpose and Scope*; *Cornell University Patent Policy, 1995, General Statement*.

⁷ See e.g. Introduction to *Statement of Policy in Regard to Inventions, Patents and Copyrights*, Harvard University, 1975 (as amended in 1998); Policy on Patents and Copyrights, 1998, *Section 1 Objective* The University of Illinois; *A Policy on Intellectual Property For the University of the West Indies, 1998, Section B: Purpose and Scope of Policy*".

C. Scope

16. It is important for the Policy to indicate the categories of staff within the academic community to which it applies. While it is clear that the academic inventor would be covered, it needs to be made explicit whether the Policy extends to administrative staff, visiting personnel and students. Sometimes this point is addressed by way of a statement in the policy document. It might also be dealt with by the appropriate definition of a term such as “inventor” or “researcher”.

D. Ownership of Inventions

17. A key aspect of any Patent Policy is, undoubtedly, its provisions concerning ownership rights to inventions. The Policy must address the ownership issue in the context of the circumstances in which the invention is made and the stakeholders involved. In general, Universities assert rights according to the extent to which their resources are used in the creation of the intellectual property right and the nature of the contractual arrangement between them and the inventor(s). It should be noted that, in relation to inventions made by persons who are employees, an institution may be entitled to claim ownership of proprietary rights in the invention based on the provisions of law, for example the “work-for-hire” or course of employment principle of patent law, or on the basis of contract. However, in relation to students, universities have no automatic claim to the intellectual property generated by them. Universities need to bear this latter point in mind when crafting their policies, especially since much university research is likely to involve both staff and post-graduate students.

18. Typically, policies set out the following guidelines for a determination of ownership rights:

- *Inventor Ownership*: the inventor owns the rights in inventions resulting from research conducted wholly on his or her own time and without use of University funds or facilities. Many policies give inventors the option to offer the invention to the University for protection and exploitation in return for a share in any proceeds derived;

- *Inventor Ownership with University Interest*: in some universities, where the inventor conducts research wholly on his or her own time, with some, but not significant or substantial use of, university funds or facilities, the inventor retains ownership of the rights in the invention, but the university might claim a percentage of the returns with reference to the use of its resources;

- *University Ownership*: the university owns the rights in inventions resulting from research or other work conducted in whole or in part on university time or with significant or substantial funds or facilities of the university. The institution usually owns the property rights in an invention made by persons who are specifically hired, commissioned or retained for the purpose of developing inventions. This does not necessarily exclude the inventor from participating in royalty distributions resulting from the commercialization of the invention. The Policy of the University should state whether there is an entitlement in such a case and the percentage of income payable to the inventor. The Policy should make it explicit that, where the University owns the rights to an invention, the inventor is required to assign to the University all rights to the invention and supporting technology;

- *Ownership of Sponsored Research*: where inventions result from sponsored research the ownership of rights is governed by the agreement under which the support was provided. In default of any agreement on the matter, the guidelines above would apply; and
- *Government Ownership*: ownership of rights in inventions arising from the use of Government grants are usually controlled by the terms of the grant or in default of specific terms in the grant by the ownership guidelines specified in the Policy.

E. Distribution of Proceeds Derived From Patent Exploitation

19. Another core element of Patent Policies is the enunciation of the principles that should govern the distributions of proceeds derived from the exploitation of patents. A review of some existing University patent policies indicates that there are two broad approaches.

20. One approach is to allocate a fixed percentage of the income to the inventor and a fixed percentage to the institution, irrespective of the level of the income.⁸ The portion allocated to the University is usually further broken down into varying percentages allocated to the department, faculty and/or campus from which the invention originates, with a portion for the University itself (in its corporate capacity) or a university-related body such as a research foundation. The Policy of the University of the West Indies (UWI) prescribes payment of 50% of net income to the inventor with the other 50% being divided up among the inventor's department, the originating campus (it is a multi-campus institution) and the University or its assignee. Net income relates to the amount remaining after the allowable expenses are deducted from the gross income derived from exploitation.

21. Another approach is the allocation of funds on the basis of percentage levels which vary according to the amount of revenues available for distribution (i.e net revenue). In this model, exemplified by Indiana University, the University of Toronto and others, a variable percentage of the income is payable and is based on a graduated scale at the lower income level (but early in the commercialization of the invention) the inventor's percentage is at its highest and the university's portion is at its lowest. As income increases, so does the University's share with a commensurate decrease in what the inventor receives.

F. Management of the Policy

22. Provisions concerning the administration of the Policy should be set out in the Policy. In many university policies, overall responsibility for policy management is assigned to a high level university officer such as a Vice President or Pro Vice Chancellor, usually, with responsibility for research.. Many institutions have a dedicated senior level employee such as a technology transfer director or officer (TTO) who is responsible for the day-to-day operations of an Office that deals with technology transfer or university/industry links. In addition, a Standing University Committee is often established.

⁸ This is the approach adopted, for example, in the policies of the University of the West Indies, the University of Minnesota and Temple University.

23. Among the functions which would be assigned to a TTO are to:
- liaise with government and private-sector sponsors of research to ensure compliance with the terms of research agreements;
 - receive disclosures of inventions submitted under the Policy;
 - determine ownership and other interests in inventions;
 - determine whether inventions in which the University has ownership rights are patentable;
 - in consultation with the inventor(s), evaluate potential commercial use of an invention and undertake activities with respect to its patenting and marketing; and
 - service and provide information to the Standing Committee.

24. A review of policies indicates that the functions of the Standing Committee differs according to whether or not a TTO is in place. Where such an Officer is employed, the Committee's functions may be confined to receiving and reviewing annual reports submitted by the TTO, hearing appeals from decisions made by the Officer, resolving any conflicts which might arise in implementing the policy and dealing with questions relating to the interpretation of the policy. In the absence of a TTO, all the functions falling with the job description of that Officer, are performed by the Standing Committee.

25. It is submitted that, within Universities, the technology transfer function is best served by the recruitment of at least one dedicated staff member. While the involvement of a University Committee is essential from the point of view of accountability and institutional oversight, the nature of the activities involved in the technology transfer process and the need for timely action and quick decision-making, all suggest that a university committee is perhaps not the best mechanism for the management of day-to-day technology transfer activities.

G. Responsibilities of the Researcher

26. Policies invariably require:
- that inventions conceived or first reduced to practice in the University resulting from research conducted in the university or by university personnel including students, must be promptly disclosed to the university, usually by means of the University-approved Invention Disclosure Form;
 - that the researcher should not file or permit others to file a patent application in his or her name without first giving the university notice in writing of a prescribed period (such as 30 days) along with a statement of the circumstances in which the invention was developed;

– as disclosure of an invention destroys the novelty criterion required for the grant of a patent, that researchers must not disclose the invention by way of teaching, publication or otherwise until decisions have been made about its patentability, or as to whether a patent application will be made by the University; and

– that the researcher should co-operate in executing assignments and other documents necessary for perfecting patents or other rights and in identifying prospective licensees, meeting with them and providing samples, data and general support in the university's commercialising efforts.

H. Responsibilities of the University

27. In its patent policy a university usually imposes on itself the following obligations:

– within a reasonable time of the disclosure of the invention, to make a determination as to the ownership rights, (i.e. as to whether they are owned solely by University, staff member or student, outside sponsor or jointly owned and by whom);

– where the University owns the rights in the invention, to decide within a reasonable time whether, at its own expense, it will seek to evaluate the invention to determine its commercial potential, file and prosecute patents for its protection and seek options for licensing and other contractual arrangements for its exploitation; and

– to indicate whether, if the decision is that the University will not proceed with the commercial exploitation of the invention, the university will assign its rights to the researcher(s) who will then be free to exploit it.

I. Resolution of Conflicts

28. In the implementation of policies concerning inventions and technology transfer, disputes might arise among the stakeholders about various matters. These could involve issues relating to the identity of the person or persons who made an invention, ownership of rights in an invention and the division of income derived from exploiting it. Policies must, therefore, make provision as to how such disputes will be dealt with. Usually, policies provide an internal institutional mechanism, such as reference to the University Standing Committee on Intellectual Property, for the resolution of conflicts. Some policies allow for reference of the matter to arbitration in the event that the matter is not settled by the internal institutional mechanism.⁹

J. Conflict of Interests

29. Active management of a university's portfolio of patents and other intellectual property rights could lead to conflict of interests. The Policy of one UK university acknowledges the reality that "increasing demands are placed upon universities to engage with for-profit organisations in order to discharge their responsibilities towards economic development and

⁹ The approach adopted by UWI and the University of Toronto, for example.

in order to generate funds to support their research and related activities. In this environment, University members are placed in situations where potential conflict of interest may arise between their personal and professional interests and the interest of the university at large.”¹⁰

30. Conflicts could arise in different ways. Over-involvement of the researcher with a collaborating company could occur to the detriment of teaching and university research obligations. Commercial pressures might inhibit the free flow of information within the research community. Partnership with commercial organizations to exploit university inventions could compromise or be seen to compromise the status of universities as providers of independent advice. Staff members who provide consulting services may, whether deliberately or inadvertently, give away university intellectual property on a platter to third parties, to the detriment of the university’s interests. Further, the researcher could use the university’s resources for the benefit of an external entity with which he or she is engaged or the researcher might hold equity in a company that the University has licensed to market and distribute the invention.

31. Recognizing these issues, universities have sought to address the matter through statements in their patent or technology transfer policies or in separate policy document on conflict of interest. Some universities deal with the conflict that might arise from consulting activities by including in their patent policy a statement making it explicit that staff members providing consulting services and those charged with approving consulting activities on behalf of the University are responsible for ensuring that any related agreements with external entities are not in conflict with the Policy and further, providing that staff members should make their obligations to the University clear to third parties.¹¹

32. Some Universities choose to make an overarching statement supported by administrative guidelines. Such is the approach of the University of Glasgow which declares in its policy on Conflict of Interest that “its officers, staff and others acting on its behalf have the obligation to avoid ethical, legal, financial or other conflicts of interest, and to ensure that their activities and interests do not conflict with their obligations to the University or its welfare.” The policy statement is supported by 3 key administrative elements: a) a disclosure requirement in the form of an Annual Return to be made to the appropriate authority by all members of staff in a position to make or influence decisions, and also by all academic staff; b) the establishment of a Committee on Conflict of Interests to advise on ambiguous or complex situations; c) the setting out of particular activities that should lead to scrutiny; and d) the provisions of guidelines for staff on how to think about conflicts that can arise, and what action to take.

¹⁰ University of Glasgow’s Conflict of Interest Policy, 2001.

¹¹ See e.g. UWI IP Policy :Part III paragraph 6; University of Illinois Policy on Patents and Copyrights 1998 Section 7 (h).

K. Compliance

33. The enforceability of the Policy by affected parties will be dependent on whether it forms part of their contractual arrangements. Where, under arrangements with staff associations and unions, university policies form part of staff member's contracts, then failure on the part of staff to act in accordance with policy prescriptions could activate disciplinary proceedings. Observance of the policy might also form part of the arrangement under which a student is admitted to the institution.

IV. POLICY DEVELOPMENT AT THE UNIVERSITY OF THE WEST INDIES

34. The University of the West Indies (UWI) is a regional institution serving the English-speaking Caribbean.¹² UWI is supported primarily by public funds provided by the Governments of 15 English-speaking Caribbean countries. It has 3 campuses, one each in Barbados, Jamaica and Trinidad and Tobago as well as University centres in all its non-campus countries. Its multi-campus, multi-jurisdictional character presents special management challenges. One such is the development of policies that have application on all campuses and are consistent with the legislative and policy framework of all the jurisdictions in which they will be interpreted and applied.

35. In 1998, the University's Finance and General Purposes Committee approved a "*Policy on Intellectual Property for the University of the West Indies*". This was the UWI's first formal policy on the management of intellectual property. It covers copyright and patents. One of its stated objectives is "to establish a proper basis for the transfer of technology from the University to the wider community".¹³ In terms of its content, the UWI policy as it relates to patents contains provisions covering most of the matters discussed above.

A. The Process

36. The development of the policy involved different phases. In the first phase, informal discussions with key personnel were held on each campus in order to determine, as a matter of fact, the types of intellectual property that were being created in UWI departments, laboratories, schools and centres and to get a sense of the attitudes to intellectual property within the academy and the treatment of intellectual property in arrangements made between the institution and sponsors and others outside of the institution. All 3 campuses were visited and discussions held with several key researchers and administrators. The intention during this phase was to obtain a sense of the situation that actually obtained in the institution (instead of being speculative) so as to ensure that the policy would be relevant and appropriate. It was intended to prepare the way for members of the academic community to "buy in" to the Policy and its objectives.

¹² UWI was established in 1948 as a College of the University of London, England. In 1952, by Royal Charter, it was granted full status as an independent degree-granting institution.

¹³ See Section B (b).

37. The next phase was an extensive review of the policies of other universities located in English-speaking countries. The intellectual property policies of over 50 universities in the U.S., Canada, the United Kingdom and Australia were examined. The availability of many of these policies on the World Wide Web greatly facilitated the work in this phase. The growing literature on the role of intellectual property in higher education was also reviewed.

38. A third phase was a study visit to selected States to discuss with intellectual property managers and technology transfer personnel the implementation aspects of their IP policy, including their modalities for technology transfer. Next, a draft of the policy document was prepared and circulated to departments on all campuses for review and feedback. Thereafter, a committee was convened to consider the comments and to finalize the document, after which it was presented to the University Finance and General Purposes Committee by which it was approved on behalf of the University Council.

39. Over the four years that it has been in effect, the Policy has exerted a positive influence, especially on contracts being made between the UWI and third parties. University personnel have shown more care in protecting UWI's intellectual property and they recognize the policy as an essential frame of reference when negotiating research grants and collaborative agreements. However, although several seminars have been held throughout the University community to explain intellectual property principles and to provide information on the content and application of the Policy, many academics and students still remain unaware of the Policy or its contents. The Policy has been reprinted in a handy booklet form for ease of distribution. It will also be put on the University's web site.

40. The technology transfer function needs to be strengthened at UWI by the appointment of dedicated staff, including a manager/director to technology transfer. The absence of appropriate staff has impeded the development of the technology transfer capabilities of the University, an institution which has been engaged in several innovative and critical research activities and notably in petroleum technology and the treatment of sickle cell anaemia and diabetes. Significant work is also being done in cancer research, computer technology agricultural and horticultural. The UWI Policy is being kept under review to ensure that it remains current so that it will be an effective tool in the management of intellectual property and the transfer of technology.

V. CONCLUSION

41. A well-crafted patent policy that conduces to technology transfer is essential for universities if they are to successfully undertake technology transfer activities. But such a policy, while necessary is not sufficient. Experience teaches that other ingredients are also vital, among them:

- the ability to hold title to inventions;
- a clear national and sectoral developmental policy framework;
- an institutional culture that accommodates technology transfer as part of the University's mission to generate and make available new knowledge and ideas for public benefit;

- an adequate and consistent stream of funds for research; and
- dedicated personnel with the requisite skills to manage the technology transfer function.

42. Universities in developing countries need to strategize to see how they can bring about the conditions, resources and attitudes that are necessary to enable them to organize and equip themselves to generate valuable intellectual property and, through technology transfer, to become significant players in the social and economic development of the societies which sustain them.

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