THE PLACE OF INTELLECTUAL PROPERTY TEACHING IN THE CURRICULA OF UNIVERSITIES AND TECHNICAL INSTITUTES

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1. INTRODUCTION

[This paper revisits the topic of the WIPO Arab Regional Seminar held in cooperation of the Egyptian Academy of Scioentific Research and Technology in Cairo in April of 1994.]

Consideration of the place for intellectual property teaching in the curriculum of universities and technical institutes must seek an accommodation between the traditions of university teaching, which in the past granted little recognition to intellectual property studies, and challenges of recent years to those traditions. Among the latter, there is the challenge of rapid changes in technologies (such as those in the computer, telecommunications, biotechnology, and environmental industries). Developments and commercial innovations in these technologies are perceived by most (if not all) authorities to be dependent on adequate and effective intellectual property protection. Second, there is the challenge of global encroachments on national borders and national sovereignty, abetted by the global technological revolution and expanded international trade in goods and services. These developments and influences have placed great strain on the territorial principles which form the basis of law teaching in general and intellectual property law teaching in particular in all countries -- both in the developed and the developing world. As a result of these developments, the place for intellectual property teaching in institutions of higher education has changed radically in recent years.

What is the place of intellectual property teaching in universities and technical institutes today? A proper consideration of the question must begin with an understanding of the traditions of university legal education and how the challenges to those traditions mentioned above have been met. The experience of the United States may serve an an illustration.

II. THE CURRENT SITUATION WITH REGARD TO THE TEACHING OF INTELLECTUAL PROPERTY IN UNIVERSITIES AND TECHNICAL INSTITUTES IN THE UNITED STATES IN THE CONTEXT OF THE GENERAL STRUCTURE OF U.S. HIGHER EDUCATION

In the United States, up until very recently, few universities and technical institutes offered training of any kind in intellectual property, outside of

the law schools. The reasons are many and varied. One reason why intellectual property was not taught in the undergraduate curriculums of the universities was that training in legal subjects -- especially in an extremely complex legal field such as intellectual property -- had been relegated entirely to the graduate professional schools -- particularly to the law schools, which have remained physically and institutionally separate from other disciplines of higher education. Even today, few graduate schools other than law schools offer courses in intellectual property.

In the United States, what is called Òhigher educationÓ or Òpost-secondary educationÓ takes place after 12 years of primary and secondary education. Traditionally, primary education takes 8 years and secondary education requires an additional 4 years. Following completion of secondary school, students who go on to higher education enter what is called the ÒundergraduateÓ curriculum in universities and technical institutes. Within the large universities, education is divided into the ÒundergraduateÓ curriculum and the ÒgraduateÓ curriculum. The term ÒcollegeÓ is generally used to describe an institute offering the undergraduate curriculum. Sometimes, a ÒcollegeÓ is an independent educational institution. At other times, an undergraduate college is part of a larger university which also has one or more graduate or professional achools under the same administrative umbrella.

Government-funded and Private Institutions In general, institutions of higher education in the United States may be funded and operated by state governments or privately. In the case of state colleges, universities, and technical institutes, salaries are paid by the state and professors are state employees. State governments also pay for the construction and maintenance of physical facilities. The costs of attending a state university are comparatively low (approximately one-half to one-fourth the cost of attending a private university), and facilities are generally quite good. There are no longer any state universities in the United States where students may attend for free. (The University of California system was one of the last systems in the United States to offer free education to state residents. The system of free higher education in the United States has been discontinued for budgetary reasons.) However, state universities and technical schools can be severely impacted by cuts in government funding, and have been so in recent years. The federal government of the United States has not established any universities or technical institutes. Such government-funded institutions of higher education as exist have all been established by individual states or municipalities. Examples of state universities are the University of California, the University of Michigan, the State University of New York, and the City University of New York. Every state in the United States has a state-operated university.

Private universities and other private teaching institutions in the United States are generally operated without any intervention by the state. The majority of universities and technical institutes in the United States are privately operated. Most are Ònot-for-profitÓ institutions; that is, the funds collected from student tuition payments and from charitable endowments are used to pay for salaries and physical facilities, with the entire remainder reinvested for the benefit of the institution. In exchange for maintaining not-for-profit status, private universities and technical institutes are granted considerable exemptions by state governments from taxation of the properties they own or of the charitable gifts donated to support their activities. In addition, many private institutions receive generous grants from federal government agencies to conduct teaching and

research. For example, the Massachusetts Institute of Technology receives over $500,000,000 from the United States government each year to conduct research. Some schools in the United States which appear by name to be public institutions are actually private: for example, Massachusetts Institute of Technology, The George Washington University, New York University, and the University of Chicago are all private, not-for-profit institutions which are not directly or indirectly controlled by any state agency.

Independent Graduate Institutions Although most graduate programs are affiliated with undergraduate programs in large universities, some graduate schools are entirely independent. Examples of private, independent graduate and professional schools are Jefferson Medical College in Philadelphia, Rockefeller University in New York City, Claremont Graduate School in California, John Marshall Law School in Chicago, and Franklin Pierce Law Center in New Hampshire. None of these schools offer programs in undergraduate curriculum and none are affiliated with universities. Students accepted into these schools must have already received a BachelorÕs degree from another university or technical institute before they can enroll.

Undergraduate Curriculum in the U.S.A.The undergraduate curriculum is traditionally 4 years long, and leads to the award of the BachelorÕs Degree. The BachelorÕs Degree in the United States is awarded in Liberal Arts (Business, Economics, Language and Literature, History, Social Science, Art, Mathematics, etc.), in the Natural Sciences (Biology, Chemistry, Physics, etc.), and in Engineering (Mechanical, Electrical, Chemical, etc.); however, the BachelorÕs degree is not awarded in Law in the United States. A student must receive a BachelorÕs degree in some other subject before being admitted to the study of law. The only institutions where intellectual property has been taught are graduate schools of law. Therefore, there has traditionally been no intellectual property ÒcurriculumÓ in most U.S. universities and technical institutes for undergraduate students..

Graduate Curriculum: Academic ProgramsUpon completion of the undergraduate curriculum and receipt of the BachelorÕs Degree, students in the United States may continue on in the graduate curriculum. Graduate programs are generally located in the universities along with undergraduate programs. The graduate curriculum is divided into [1] academic programs to prepare students for careers in teaching and research, leading to the award of the Doctor of Philosophy (Ph.D.) and [2] professional programs. The professional programs are primarily concentrated in law, business and medicine. Because intellectual property traditionally was strongly associated with law rather than with science or business, there are no academic programs in intellectual property in the United States other than Òacademic lawÓ programs in the law schools. Therefore, it is impossible to enroll in a Ph.D. program in intellectual property studies in the United States because there are virtually no schools which offer the Ph.D. degree in law in the United States.

Graduate Curriculum: Professional Programs Medical schools offer the professional degree of Doctor of Medicine (M.D; and in order to practice medicine in the United States, the M.D. degree is required. Business schools offer the Master or Doctor of Business Administration (M.B.A. or D.B.A.). The majority of M.B.A. graduates assume management positions in corporations. D.B.A. graduates generally become teachers of business in graduate business schools and in business programs in undergraduate institutions. Textbooks on business law for business students tend to devote little time or space to

intellectual property studies. A survey of business law textbooks for undergraduate and graduate business students done recently at Franklin Pierce Law Center shows little attention to intellectual property matters in general textbooks in business law. Where such textbooks devote a few pages to intellectual property issues, rarely does the discussion go beyond a general consideration of trademark registration requirements. Because of advances in the biomedical sciences, interest in intellectual property is growing among faculty and students at medical schools, where significant research in biotechnology, diagnostics, and therapeutics is being conducted -- research which may lead to significant social benefits by reducing both the economic costs of illness and medical treatment but the non-quantifiable costs of human suffering. However, to this writerÕs knowledge, no courses in intellectual property are offered at any U.S. medical school.

In the past, colleges of engineering and technical institutes in the United States rarely offered courses in intellectual property. Colleges of engineering generally award BachelorÕs, MasterÕs, and Ph.D. degrees in engineering. Colleges of Engineering are sometimes called Òtechnical institutesÓ; however, this appellation can be deceiving. For example, the Massachusets Institute of Technology (MIT) is actually a large private university with an undergraduate and graduate curriculum in arts as well as sciences. The Sloan School of Business at MIT, awarding the Master of Business Administration [M.B.A.] and Master of Managment in Technology [M.O.T.] degrees, The latter is an illustration of the growing trend toward institutional convergence between different academic disciplines. One practical reason why colleges of engineering and technical institutes in the United States rarely offered courses in intellectual property was that there was almost never any member of the faculty who was qualified to teach the subject. A second reason was that the engineering curriculum at most schools of engineering and technical institutes is very concentrated and focused on acquisition of the knowledge professional skills needed to become licensed as engineers. Since none of the professional engineering organizations required an understanding of intellectual property as an area of knowledge within the discipline of engineering, intellectual property was not taught at such technical institutes.

Basic and Advanced Professional Programs in Intellectual Property Law

As has been mentioned above, students who wish to study law in the United States must receive a BachelorÕs degree in some other subject before entering law school. Law schools award the Doctor of Law (Juris Doctor or ÒJ.D.Ó) degree as a general professional degree, and most states of the United States (48 out of 50) require a person to obtain the J.D. degree before he or she can be admitted practice law. Thus, the J.D. degree is the ÒbasicÓ law degree in the United States. Some law schools also offer ÒadvancedÓ law degrees for persons who have already received the J.D. Examples of Ògraduate lawÓ degrees are the Master of Laws (LL.M.), Master of Comparative Law (M.C.L.) and Doctor of Juridical Sciences (S.J.D.) in specialized subjects (international law, corporate law, tax law, etc.).

The majority of both lawyers and law professors in the United States possess only the basic law degree, the J.D. degree. Only a minority of U.S. law professors have advanced law degrees, although an increasing number also have academic credentials in other subjects such as technology, economics, and international relations.

Curiously, until recently, few law schools offered advanced programs in intellectual property. In the United States, only five law schools offer the Master of Laws degree (LL.M.) in intellectual property law: Franklin Pierce

Law Center, The National Law Center of The George Washington University, New York University, John Marshall Law School, and the University of Houston Law Center in Texas. While three of these programs are old and well-established, the programs at Franklin Pierce and the University of Houston are relatively new. Furthermore, of the 175 remaining accredited law schools in the United States, only a few offer a more than one or two courses in intellectual property for J.D. students. Among the latter are Chicago-Kent Law School, Dickinson Law School, the University of Baltimore Law School, Georgetown Law School, and George Mason Law School, In addition, Franklin Pierce Law Center offers an advanced interdisciplinary degree in intellectual property [M.I.P.] for law and other graduates, which is discussed below.

The reasons for a lack of emphasis on intellectual property teaching in the traditional law school curriculum are several. First, because of the fact that in the United States, an attorney who wishes to practice patent law is required by government regulation to have training in a scientific or technical subject, this area of legal practice was not available to most students in law, who tended to have undergraduate degrees in political science, government, or history. As a result, the law professors in the law schools, who rarely had such technical training, were also unfamiliar with patent law, if not downright suspicious of the ability of technically trained patent lawyers to deal with general legal questions of broad scope and import. Patent lawyers were (and still are!) often perceived by general legal practitioners as legal technicians or specialists to be consulted for legal advice narrowly, and only to draft patent applications or to construe minutiae of the patent law. Since patent law was not taught in the law school curriculum, persons with technical training who attended law school were required to wait until they began to work in a law firm before they could receive on-the-job training in patent law. There are many so-called Òcontinuing legal educationÓ or ÒCLEÓ courses in the United States in intellectual property subjects. Until recently, such courses were offered primarily by professional associations rather than law schools. Recently, a number of law schools have begun to offer ÒCLEÓ programs to practicing lawyers in intellectual property subjects. However, there programs are not available to persons who are not lawyers.

Second, a large number of patent practitioners were formerly patent examiners who chose to attend law school to become patent attorneys. (The term ÒattorneyÓ and the term ÒlawyerÓ mean the same thing in the United States.) Because former patent examiners were thought to already understand patent office procedures, it was perceived (often incorrectly) that such individuals did not need academic training in intellectual property. Such an attitude furthered the perception that intellectual property was an inappropriate topic for the general law school curriculum.

Third, in the United States, the practice of trademark law was traditionally a preserve of the patent attorneys who deal regularly with the Patent and Trademark Office. There are no Òtrademark agentsÓ who are not also attorneys in the United States. Even today, many general legal practitioners are under the misconception that a lawyer must have technical training to practice trademark law in the United States.

Finally, the practice of copyright law, when not practiced by patent and trademark attorneys, was generally the preserve of lawyers who dealt with the literary, publishing, and artistic communities. Copyright law was perceived as a small and relatively unimportant area of practice for the general legal practitioner.

As a consequence of the large gap between the traditional law school curriculum and intellectual property teaching, on the one hand, and between general legal practice and intellectual property practice, on the other, copyright, patent and trademark attorneys in the past (and still today) often practice in specialized firms separate from general practice law firms. General practitioners remained little aware of the nature of intellectual property practice until recently. These trends, fortunately, have begun to change.

III. THE GENERAL TREND TOWARD INTEGRATION OF INTELLECTUAL PROPERTY STUDIES INTO THE CURRICULUM OF UNIVERSITIES AND TECHNICAL INSTITUTES

Intellectual property training in U.S. law schools The challenges of rapidly changing technologies and increased international cooperation in intellectual property matters have had a genuinely positive impact on intellectual property training in U.S. law schools. In 1990, the Association of American Law Schools [AALS] established an Intellectual Property Committee to raise the general familiarity of law school professors with intellectual property issues. The most recent issue of the ÒAALS Directory of Law TeachersÓ in the United States lists almost 300 law professors in the United States who now teach intellectual property subjects. While it is quite difficult for general law faculty members unfamiliar with the time-honored and established traditions of intellectual property studies to become familiar with intellectual property, the trend is toward more teaching of intellectual property in the law schools. In addition, because general law professors bring a fresh perspective to the subject of intellectual property scholarship, the study of intellectual property gains prestige in and utility to the general study of law. Unfortunately, few law schools which have a resident faculty member who teaches intellectual property expect that faculty member to devote themselves full time to the study of intellectual property. Rarely does a law school have more than a single resident faculty member who teaches intellectual property. Franklin Pierce Law Center has the largest resident intellectual property faculty among U.S. law schools. Currently, five full-time professors teach primarily courses in intellectual property at Franklin Pierce. The University of California Boalt Hall School of Law has three. In the near future, the number of law faculty positions in intellectual property in the United States is likely to increase dramatically.

A second gratifying trend is that an increasing number of intellectual property practitioners in the United States with a wealth of experience in intellectual property practice have entered the teaching profession, from ÒadjunctÓ professors who continue to practice law and devote themselves to teaching one or two courses to full-time tenured professors of law in the general faculties of law schools. Professional associations such as the American Intellectual Property Law Association [AIPLA], the International Trademark Association [INTA], the Copyright Society of the United States,and the Licensing Executives Society [LES] also have established education committees to study ways of improving the teaching of intellectual property in the United States and elsewhere. One of the roles of these professional committees is to encourage practicing intellectual property attorneys to become interested in teaching intellectual property as ÒadjunctÓ professors in law schools and, increasingly, in technical and business schools as well.

Impact of Technological Changes on the Substance of Intellectual Property Teaching and Research in U.S. Law Schools

Because of the expansion of the economic sectors the growth of which is tied to intellectual property protection (such as computer technology, telecommunications, biotechnology, and environmental technology), the teaching of intellectual property subjects in U.S. law schools has developed rapidly over the past decade. Certain law schools have established new specialized scholarly journals to study intellectual property issues. This is a very welcome trend, especially since these rapid-growth technologies are perceived by some legal scholars to be inadequately served by the traditional concepts and categories of intellectual property (such as patents, trademarks, and copyrights). New issues such as intellectual property protection for information in computer databases, for collections of genetic information and Òbiodiversity,Ó for electronic information networks, and for new digital telecommunications and media technologies are now receiving attention from eminent legal scholars. Furthermore, as the economic importance of intellectual property has grown, there is a growing recognition within the law faculties that all lawyers who deal with business, commercial, and technological clients must not merely be familiar with intellectual property concepts, but well-versed in them. The central role of information, technology, and Òknow-howÓ to the modern competitive business in the global economy requires heightened awareness of intellectual property among all members of the commercial legal community. Therefore, it is receiving increased attention among law faculty.

Cooperative and Interdisciplinary Programs between the Law Schools and other branches of Universities and Technical Institutes

Another recent trend has been the growth of cooperative and interdisciplinary programs between intellectual property professors and practitioners in numerous arenas. As an example, a paper entitled ÒTeaching Intellectual Property Law and Practice: Business School and Law School CooperationÓ by Professors Fryer and Herron of the Schools of Law and Business at the University of Baltimore was presented to the 1993 Annual Meeting of the International Association for the Advancement of Teaching and Research in Intellectual Property [ATRIP]sponsored by WIPO in July 1993.

Colleges of engineering are also beginning to offer programs for engineering students in intellectual property law. In order to do so, it is necessary to find a faculty member qualified to teach such a course. This has become an easier task than in the past, as faculty members of technical institutes become more knowledgeable in intellectual property law and practice. For example, Dr. Steven Grossman, who is Professor of Chemical Engineering at the University of Massachusetts-Lowell and is also a practicing intellectual property attorney, offers a series of one-day seminars to engineering students. According to Professor Grossman, a similar course is now offered at Columbia UniversityÕs College of Engineering in New York. Professor Edward Coleman of Franklin Pierce Law Center also teaches a course in patent law at the Worcester Polytechnical Institute in Worcester, Massachusetts.

Master of Science in Management of Technology and Related MasterÕs Degrees

Schools of law, management, and technology have begun establishing programs in intellectual property and technology transfer. The Center for Entrepreneurship and Innovation at Franklin Pierce Law Center, under the leadership of Professors Homer Blair and Karl Jorda, established the first interdisciplinary degree in intellectual property, the Master of Intellectual Property (MIP) degree, in 1986. The MIP degree is not a law degree but an interdisciplinary degree which brings together participants with training in

science and technology, business, and government administration, as well as those with training in law. No other law school offers such a program; however, tin addition to the program at Franklin Pierce, he following programs have been established at schools of management and engineering.

Master Degree Programs

Master of Intellectual Property Program
Franklin Pierce Law Center

Georgia Institute of Technology
Master of Science in the Management of Technology Program

MIT/ Sloan School of Management
Master of Science in the Management of Technology Program

National Technological University
Master of Science in the Management of Technology Program

Oregon Institute of Science & Technology
Master of Science in Management in Science and Technology

Polytechnic University
Master of Science of Management of Technology

Portland State University
Master of Science in Engineering Management

Rensselaer Polytechnic Institute
Technology & Management MBA

Stevens Institute of Technology
Master of Science of Technology

University of Minnesota
Master of Science in the Management of Technology

University of Phoenix
MBA in Technology Management

University of Texas at Austin & IC2 Institute
Executive Master of Science in Commercialization of Science and Technology

University of Texas at San Antonio
Master of Technology Management

University of Waterloo
Master of Applied Science - Management of Technology

Washington University in St. Louis
Master of Science in Management of Technology

Wheeling Jesuit College
Master of Science in Commercialization and Technology Transfer

The National Technical University of Fort Collins Colorado program offers such courses as Technology and Economic Analysis, Manufacturing Systems and Technology Strategy, Managing and Leading Technical People, R&D Management, Taking Technology to Market, Strategic Management of Technological Innovation, and Analysis of Emerging Technologies.
glory
In the trademark area, the Information Services Committee of the International Trademark Association [INTA] is conducting a number of programs to increase awareness of the importance of trademark law in law schools and universities both in and outside the United States. Based upon INTA surveys, a number of two-year Òjunior collegesÓ have begun to offer courses in paralegal studies, some of which prepare students for careers in the growing area of trademark prosecution. The Education Committee of INTA has prepared materials for basic education in trademark law and practice which are available for use by the public.

The Innovation Clinic at Franklin Pierce Law Center, under the direction of Professor Thomas G. Field, has prepared a series of informational pamphlets on patent, trademark, and copyright law which are distributed by organizations including the United States Department of Commerce,
Summer Intellectual Property Training Institutes for Law Students and Non-law Students

Summer Intellectual Property Training Institutes for both lawyers and non-lawyers have been offered by Franklin Pierce Law Center since 1987. In 1996, 120 law students, university and corporate technical people, business executivs, practicing attorneys, and government officials attended this program. A new summer institute has been established at the University of Washington-Seattle and another at Santa Clara Law School in Santa Clara, California under the direction of the eminent scholar of U.S. patent law, Professor Donald Chisum. These programs are open to both lawyers and non-lawyers who have technical or business backgrounds. The modern trend is for intellectual property to be viewed increasingly as an area of interest to persons with training and business and technology as well as those with training in law. It is important to create an atmosphere for intellectual property teaching in which both lawyers and non-lawyers in technical, business, or government positions can participate together. In this way, the theory and practice of intellectual property can be integrated.

Another important advantage of such summer programs is that students from universities and technical institutes which cannot devote a faculty member to teach intellectual property can take advantage of well-taught courses by professional intellectual property teachers. This, of course, is no substitute for a more general integration of intellectual property teaching into the curriculum of such institutions. Many participants in interdisciplinary programs who are not lawyers can become qualified to teach intellectual property subjects themselves in business and technical programs.

Cooperation between Universities and Technical Institutes in Different Countries in Improving the Teaching of Intellectual Property A further development is the increasing number of programs which encourage cooperation between educational institutions in different countries concerning the teaching of intellectual property. Foremost among these is the International Association for the Advancement of Teaching and Research in Intellectual Property [ATRIP], founded under the auspices of WIPO in 1981. The ATRIP meeting each year is the premier forum for teachers of intellectual property in universities and technical institutes from around the world to develop

mutual understanding and to improve the general level of intellectual property teaching in developed and developing countries. In the ATRIP meetings, teachers from many different cultural and political systems can share insights and commiserate about common problems. The level of cameraderie among intellectual property teachers from various countries is greatly enhanced by such gatherings. Every participant in such meetings returns to the classroom with fresh insights on how to teach intellectual property more effectively.

A cooperative program was established between Franklin Pierce Law Center and the International Intellectual Property Training Institute [IIPTI] in Daeduk, Korea. IIPTI is not a law faculty but an institute devoted to the training of persons with technical or other background in intellectual property. Many faculty members from IIPTI have engaged in scholarly exchange programs at Franklin Pierce Law Center and several Franklin Pierce faculty members have visited IIPTI as well. One professor from Franklin Pierce has visited Plovdiv University in Bulgaria in 1992 and one professor from Plovdiv University visited Franklin Pierce in 1993.

Another interesting development is the offering of courses in the United States by scholars from other countries in intellectual property. Several researchers from the Max Planck Institute for International Patent, Copyright, and Unfair Competition Law in Munich have offered courses at U.S. law schools, including John Marshall Law School and Franklin Pierce Law Center. Courses in international and comparative intellectual property are regularly taught by scholars from other countries, including Germany, Spain and Switzerland. It is to be hoped that more U.S. law schools will establish scholarly exchange programs in intellectual property with foreign universities and technical institutes in the near future. The American Association of Law Schools [AALS] is also engaged in developing a program of scholarly exchange with law professors in different countries.

The recent trend in higher education in the United States is that artificial barriers between the disciplines of civil law, commercial law, business administration, public administration, technology management, and finance that had been allowed to persist because of entrenched interests of constituent groups are crumbling rapidly. Internationally, despite political and cultural differences, the world economy is rapidly becoming integrated. Intellectual property is a field of study which requires an understanding of and facility in dealing with all these areas. Therefore, it is suggested that intellectual property teaching should moving rapidly into more and more areas of the curriculum of universities and technical institutes in engineering and business courses. At the same time, the law schools should remain the major source of knowledge and of innovation in intellectual property teaching and research.

In the modern Òvalue-addedÓ concept of organization, knowledge and expertise from diverse sectors, when effectively combined, increase the capacity of economic entities to adapt rapidly to changing circumstances in local and distant markets. Organizations which maintain rigid separations of disciplines will be unable to compete effectively in such an environment. Investment in human resources (education) is as important -- if not more important -- than investment in research parks, laboratories, and manufacturing facilities. Effective organization requires effective cooperation between business, academic, legal, technical, and government sectors to create intellectual property protection which adds value to the contribution of all participating sectors. Effective intellectual property

teaching -- whether in law faculties or in technical or business school environments -- is emerging as a key component in adding value to the fruits of human creativity, innovation, and organization, thereby promoting a more general social well-being.

IV. DEVELOPMENT OF CURRICULA AND TEACHING MATERIALS ON INTELLECTUAL PROPERTY

The development of curricula and teaching materials on intellectual property is a critically important aspect of an effective teaching program. It is not something which can be done overnight. As in the case of an inventor attempting to reduce the concept of an invention to practice, a writer struggling over the creation of a work of literature, or an entrepreneur attempting to establish a successful business from nothing, we who teach intellectual property can learn how to develop curricula and teaching materials only by trial and error, constant experimentation and inquiry, and, inevitably, by making many mistakes. Also, the development of curricula and teaching materials on intellectual property at one institution must be able to profit by the experiences, successes, and failures of other institutions who have gone before in developing such curricula and teaching materials. This paper is an attempt to describe the process of the development of curricula and teaching materials on intellectual property over the course of 20 years in a United States law school. Among the important considerations in development of curricula and teaching materials on intellectual property are the scope of the careers for which students are being trained,the educational level and background of students, the special characteristics of the law and practice of intellectual property in a particular country, various methods of teaching the subject matter, the availability of seasoned and knowledgeable intellectual property teachers, and the nature of the intellectual property subject matter,

CONSIDERING THE SCOPE OF THE CAREERS FOR WHICH STUDENTS OF A COURSE ON INTELLECTUAL PROPERTY ARE BEING TRAINED

A primary consideration in developing curricula and teaching materials on intellectual property is the scope of the career paths for which students in the course of study are being trained. The subject area of intellectual property is very broad. Patents, copyrights and neighboring rights, trademarks and unfair competition, trade secrets, and technology transfer (licensing) are among the major areas of study. Skills which may be critical for one career path may be less useful for another. Study of one subject may be influenced by whether or not a student has been exposed to other subjects. In general, the potential careers for students of intellectual property may be divided into several areas.

The first such area, of course, includes future intellectual property lawyers and legal workers. As used here, ÒlawyerÓ and Òlegal workerÓ are not synonymous terms. In many countries, the term ÒlawyerÓ refers to a person who is admitted to represent parties before the courts. Oftentimes, there are many graduates of law faculties who do not become admitted to practice before the courts but who nonetheless do engage in legal work. Most specifically, in the area of intellectual property practice, there are legal workers who perform such services as representing clients to apply for patent or trademark application, assist lawyers in preparing documents for use in court proceedings, or assume positions in government agencies as trademark examiners, legal advisors to patent or trademark offices, international trade

agencies, or government prosecutors involved in enforcing intellectual property rights, etc.

A second core group of potential participants in intellectual property courses are persons with training in technology who have no legal training. Primary, of course, are prospective patent examiners. In the United States, less than one-half of all patent examiners have any training in intellectual property law. This is true in most other countries as well. Patent examiners are chosen for their technical skills and are trained by their patent offices to apply the legal standards of utility, novelty, and inventive step or nonobviousness through training courses usually conducted within the respective offices. In addition to patent examiners, however, there are also the many engineers and technical people who may find careers working closely with patent attorneys in law firms or in patent departments in corporations who assume primarily responsibility for drafting patent applications. Rarely do these technically trained individuals undergo significant substantive training in intellectual property.

A third group of potential participants in intellectual property courses are persons in government service who have not received formal training either in law or in technology. Most such individuals have a university education in liberal subjects such as languages, public administration and public policy, or political science.

Preparation of curricula and teaching materials on intellectual property must take the career goals of all these potential recipients of intellectual property education into account.

CONSIDERING THE EDUCATIONAL LEVEL AND BACKGROUND OF STUDENTS OF A COURSE IN INTELLECTUAL PROPERTY

A second consideration when developing curricula and teaching materials on intellectual property is the level of education and the subject matter of such education for those who will be the students in the course. In most civil law countries, students of law are university students who have not yet received the BachelorÕs degree. In the countries which have adopted the British system, including Canada and Australia, the study of law is usually integrated with other courses in the university curriculum in a five-year program. By contrast, in United States and India, for example, the program in law is a three-year program which does not begin until after the student has already acquired the bachelorÕs degree. Thus, the level of education of a first or second-year university student is quite different from that of a university graduate.

In the United States, most, but not all, intellectual property curricula and course materials are developed for use by students at the post-university graduate level -- primarily in law schools. Thus, no matter what the major area of undergraduate study, a program has been developed for general applicability to students no matter what the subject area of their univerisity degree. Law graduates and technology graduates are at a similar level of educational development, and should be able to enroll in courses side by side without undue frustration. In the eight years of experience with graduate students with backgrounds in law, technology, business, languages, and public administration taking classes together, while there have been certain differences between the expectations of the various disciplines, this is more than compensated for by the degree to which diverse

viewpoints expressed by differently-prepared participants contributes to an overall understanding of the materials.

Programs can be offered to university students in legal or technical studies as well, but must take into account the capabilities of the class of individuals enrolling in the courses. For example, it seems likely that undergraduate students in law and others trained in technology could conceivably take the same courses in intellectual property, it is to be expected that the level of frustration caused by different expectations would make such a course more difficult than at the graduate level.

CONSIDERING OF THE RELATION BETWEEN THE EDUCATIONAL AND INTELLECTUAL PROPERTY SYSTEMS IN A PARTICULAR COUNTRY AND OF VARIOUS METHODS OF TEACHING INTELLECTUAL PROPERTY SUBJECT MATTER

A third important consideration in development of curricula and teaching materials on intellectual property concerns the special characteristics of the educational and intellectual property systems in a particular country. For example, in countries which have followed the British system of law -- and particularly in the United States -- the Òcase methodÓ of teaching is prevalent.

1. The ÒCase MethodÓ Under the Òcase methodÓ, the principles and application of intellectual property law are taught by having the students read actual judicial and administrative decisions and then requiring them to abstract the relevant legal principles from the way the substantive standards of law were applied by the court to the specific facts of the case. Use of the Òcase methodÓ in intellectual property education may be less appropriate in civil law jurisdictions. For one thing, court opinions on specific cases in such jurisdictions are rarely available. Where such decisions are available, they carry no precedential effect. Therefore, use of the Òcase methodÓ of teaching intellectual property may be inappropriate for many countries and lead students more to frustration than to enlightenment.

Nevertheless, for example in teaching admiralty law, the Òcase methodÓ is used throughout the world. This is because the applicable legal principles have generally been adopted from the British system. Moreover, the European Court of Justice has adopted a modified version of application of legal precedent which makes the Òcase methodÓ useful for understanding its jurisprudence -- including in intellectual property cases. Therefore, the extent to which the Òcase methodÓ could be extended to the study of both European and United States intellectual property law requires further examination and reflection.

2. The Problem-solving Method In the United States, the Òcase methodÓ of teaching is predominant; however it is not the only method of teaching. A second method of teaching is the Òhypothetical problemÓ approach. The instructor crafts a hypothetical problem and asks the students to craft a solution to the problem which correctly analyzes the facts of the problem and correctly applies the applicable intellectual property law. Sometimes the problems are interspersed with relevant readings, and the hypothetical problems provide comparatively brief situations which are intended to make the purpose and relevance of the readings clear. The clear advantage of the problem-oriented approach over the Òcase methodÓ is that the facts of real cases are very messy. Often, several disparate and perhaps unrelated areas of law may be implicated an a single set of facts. In their attempts to analyze these facts, several legal considerations may overlap, which leads

the student to more frustration. Therefore, in particular situations, the problem-solving method may be more appropriate. On the other hand, the strong argument in favor of the Òcase methodÓ over the problem-solving method lies in that very factual complexity and frustration experienced by the students: that is, upon completion of the course, the student will not be inexperienced in facing the fact that real-life legal situations are always messy and difficult to solve. Problem-solving is a good approach to evaluating the studentÕs understanding of the materials covered in any course in intellectual property.

3. The Simulation Method The simulation method attempts to teach in a classroom atmosphere the same skills and thought processes which are taught to an apprentice by a mentor in more traditional educational systems. In the modern world, students often have little opportunity to locate a mentor actually in the practice of intellectual property. Moreover, because of the strains and pressures of competition in both developed and developing societies with respect to the efficient use of time, experienced practitioners are often so busy with their work that they have little time to devote to a young apprentice. A resolution of the problem of the lack of availability of experienced mentors for the growing flock of potential apprentices is to conduct a class in which several or many students are given the same exercise by the instructor, who explains to them how the problem should be solved. The simulation method is related to the problem-solving approach, but is more effective where actual skills are being taught and the correction process consists in gently and persistently monitoring the acquisition of skills by the student so that the student can develop some of the natural instincts and intuitions of the master. A particularly fruitful application of the simulation method is useful in teaching patent prosecution skills. Students can be given a patent specification with no claims attached and asked to write a set of claims specifically setting forth the content and scope of the invention. The master-teacher then can assume the role of the patent examiner and ÒrejectÓ the studentÕs claims. Perhaps the students can be provided with references to the prior art which make the invention according to the claims Òunpatentable Ó, and then request the student to amend the previously drafted claims to overcome the ÒexaminerÕsÓ rejection. The simulation method is used to teach patent prosecution skills at Franklin Pierce Law Center. It is can be used to teach trademark prosecution skills.

4. The Doctrinal Method A fourth method is to present the student with the applicable legal standards and to illuminate the doctrine with an explication of how the law is applied. The clear advantage of the doctrinal method is that the principles of intellectual property can be explained with great clarity and theoretical precision. Secondly, students absorb materials much more readily when they are presented in a straightforward and logically organized way. However, there are two related disadvantages to the doctrinal approach -- particularly for students who must leave the academy to apply the knowledge learned to actual situations in the real world. One is that students have not been taught to analyze or identify the true nature of the legal issue present in a complicated factual situation. Students may understand the substance of the intellectual property law but may not be adept at identifying the specific factual situations in which the law should be applied. Second, because of rapid changes in the subject matter of intellectual property protection, particularly in connection with such rapidly-developing areas as biotechnology, computer technology, information databases, telecommunications and electronic media, and environmental technology, the subject categories of the prior law may have little relevance to new areas of potential intellectual property subject matter. Doctrinal

purity has its price. Furthermore, giving students an examination which asks them to recite doctrine is not conducive to understanding the content of intellectual property or how to apply intellectual property principles. Rote memorization of doctrine is not a suitable method for teaching intellectual property.

5. The Clinical Method A final method sometimes used to teach intellectual property is the so-called clinical method. In the ideal clinical method, the approach used is identical to the traditional master-apprentice approach mentioned above; however, the students work on real client problems rather than simulations. Students are allowed to observe actual interactions between inventors and patent attorneys and assist the master to provide legal services at low cost. The clinical method also can take place in a teaching institution, in which actual persons with actual intellectual property problems seek the advice of the master-mentor while the actual services are provided for by the apprentice-student. At all times, of course, the instructor must maintain adequate supervision over the work of students or else the persons seeking assistance may suffer. Moreover, this method only works effectively with a very small number of students in a situation where services can actually be provided. At Franklin Pierce Law Center, the clinical method is used at present to teach intellectual property through an ÒInventors Assistance ProgramÓ conducted in cooperation between the Law Center and the Department of Economic Development of the State of New Hampshire. The use of the clinical method is contemplated in connection with a small Òmaster classÓ to provide certain parties with assistance with their intellectual property assets which do not implicate the rights of third parties. A great disadvantage of the Òclinical methodÓ is that in order to be effective, only a very small number of students can be involved. Despite the disadvantages of the clinical method, the learning experience for those students lucky enough to find a mentor is profound.

In summary of teaching methods, the best curricula tend to combine a number of different approaches into the courses. At Franklin Pierce Law Center, courses in Copyright Law are taught by a strict case method. Courses in survey of intellectual property, in trademarks, and in patent and trade secret law, modify the case method with lectures and problem-solving. Courses in patent practice and in licensing (technology transfer) combine a study of doctrinal approach, problem-solving, and simulation. The only way of finding out which method works best in a particular situation is to experiment with several methods.

D. CONSIDERING THE AVAILABILITY OF INTELLECTUAL PROPERTY TEACHERS

Consideration must also be given to the availability of trained intellectual property teachers. Because university budgets are often strained, development of the intellectual property curriculum must take into account the feasibility of hiring instructors who are seasoned and knowledgeable. The first, and most expensive method, is to identify bright law graduates who are interested in devoting their careers to teaching and then sending them for several years to steep themselves in intellectual property courses and research. The ideal curriculum for an intellectual property program would bring together several such instructors versed in different aspects of intellectual property studies. Such a program is not feasible for many institutions.
A second method is to designate a single faculty member as responsible for the intellectual property curriculum. This has the advantage of maintaining a resident presence for students to tap for counsel and advice. The

disadvantage is that no one individual can possibly become an expert on all areas of intellectual property studies. Where a resident faculty member is designated to teach intellectual property, it is critically important to allow the teacher to devote time to the subject over a period of several years rather than to have a different person selected to teach a course each year or every other year. From my own experience in teaching intellectual property, the instructor does not begin to develop a true mastery of the subject until it has been taught a number of times. The wealth of knowledge which comes from continual exposure to the materials more than outweighs the expenditure in human resources inherent therein.

For most institutions, however, full-time instructors in intellectual property may not be feasible. In such situations, universities and technical institutes may well consider hiring experienced practitioners, senior patent or trademark examiners, or others with extensive experience in intellectual property to develop and teach courses as ÒadjunctÓ or ÒvisitingÓ teachers. In this regard, even though such persons may be excellent and knowledgeable practitioners, they may not have the requisite teaching skills or familiarity with how to communicate effectively with students. Not only are communication skills important; but effective teachers must be able to inspire their students to excel in their studies. They must present proper role models to students; and they must learn how to evaluate the progress of those in their charge.

As was mentioned above, these are not skills which a teacher develops overnight. In our experience, sometimes a teacher who is highly motivated is very unsuccessful the first time. However, if given enough time, that teacher may develop skills to a highly effective level. Conversely, a teacher who has effective communications skills but is lacking in enthusiasm for the subject matter or the student will be found out by the students. Keeping such a person in the classroom is not advisable. Finally, older practitioners may be highly motivated to participate as teachers of intellectual property and should be given every consideration. In addition to their wealth of knowledge, older practitioners who have the time, are motivated to teach, and genuinely care for the welfare of their students will be the most excellent role models for students.

DEVELOPMENT OF INTELLECTUAL PROPERTY TEACHING MATERIALS

Development of effective intellectual property teaching materials also takes time. The teaching materials must be Òuser friendlyÓ to both the instructor and to the students of a course in intellectual property. Materials prepared for some other instructor or some other group of students may be partially or wholly inappropriate for a different instructor or a different type of students. In the appendix are provided syllabi of courses in intellectual property taught in the United States to law and graduate students who already have a university degree. These materials are suitable for a teacher and an audience in the United States but are perhaps not so suitable for teachers in other countries, such as the countries present at this Regional Workshop.

It is important to find talented individuals in every country who have a a deep respect for teaching and who also have sufficient experience with intellectual property to assist students to be effective outside the classroom when they complete their studies. Such individuals should be encouraged to communicate broadly with colleagues who teach intellectual property both at home and in other countries and to seek advice from experienced intellectual property teachers about how to select, adapt, and

organize teaching materials. It is only through such cooperation that the quality of teaching of intellectual property can be promoted efficiently without considerable waste of effort through duplication of the mistakes of others.

In the United States, law school textbooks are available in all substantive areas of intellectual property law, including patents, trademarks and unfair competition, and copyright law. Other materials being prepared at Franklin Pierce Law Center for use in courses in its Graduate Program and Summer Institute include materials in International and Comparative Patent Law, International and Comparative Copyright Law, International and Comparative Trademark Law, Intellectual Property Valuation and Finance, Licensing (Technology Transfer), Intellectual Property Management, and International Trade Regulation.

[The appendix of this paper includes syllabi from Franklin Pierce Law Center for courses in the 1995-96 academic year.]