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**Teaching Intellectual Property Law**
**Article**

# ***855** TEACHING CURRENT TRENDS AND FUTURE DEVELOPMENTS IN INTELLECTUAL PROPERTY

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## Introduction

This Article proceeds on the assumption that the ultimate goal of intellectual property law teaching--and legal education generally--is not simply to impart knowledge of the law, but rather to inculcate in students the necessary analytical skills to apply the law to new factual situations. Thus, one of the most important, and challenging, tasks for the intellectual property law teacher is helping law students develop the ability to identify emerging legal issues and predict future legal developments in intellectual property law and policy.

The challenge has become particularly daunting for intellectual property law teachers because of the increasingly dynamic nature of the subject matter. This dynamism is the product of rapid global developments in three overlapping fields: international law, technology, and commerce.

Until 1994, for example, the field of international intellectual property law was largely governed, as it had been for the past century, by the Paris Convention for the Protection of Industrial Property [FN1] and the Berne Convention for the Protection of Literary and Artistic Works. [FN2] The modest goals of these two conventions were: (1) to ensure that foreign nationals were provided "national [i.e., non-discriminatory] treatment" with respect to whatever intellectual property protection a member chose to grant its own ***856** nationals; [FN3] (2) to establish an international priority system for industrial property; [FN4] and (3) to establish some initially modest international minimum standards for the prevention of unfair competition and the protection of literary and artistic works. [FN5] In 1967, the administration of these two conventions was vested in a new international agency, the World Intellectual Property Organization (WIPO), which was also to promote the protection of intellectual property throughout the world. [FN6] In 1994, however, the field of international intellectual property law underwent a tectonic shift with the promulgation of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), [FN7] one of a bundle of agreements that were to be administered by the newly established World Trade Organization (WTO). [FN8]

The TRIPS Agreement essentially thrust the protection of intellectual property into the heart of international trade law by obligating all members of the WTO to comply with a detailed set of international minimum standards for intellectual property protection and enforcement, [FN9] and provided that any member disputes over TRIPS implementation were to be submitted to the WTO dispute settlement process. [FN10] Suddenly, the WIPO, which had unsuccessfully sought to develop a consensus among its members on international minimum standards for intellectual property protection, found itself cast in a new international role as the international agency responsible for keeping pace with rapid technological developments, identifying emerging intellectual property law issues, and developing appropriate international law and policies to deal with those emerging issues, while leaving it to the WTO to obtain compliance with the TRIPS international minimum standards for in-

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tellectual property protection and enforcement. [FN11]

***857** The two technology fields that have offered the most significant challenges for international intellectual property policy development are digital technology and biotechnology. For example, even as the TRIPS Agreement was being finalized, the Internet and biotechnology revolutions were gathering force, leading many commentators to criticize the TRIPS Agreement as an essentially backward-looking document that largely failed to address emerging technologies and associated intellectual property issues. [FN12] TRIPS did, of course, specify: (1) that computer programs are to be protected as literary works under the Berne Convention; [FN13] (2) that databases which by reason of the selection or arrangement of their contents constitute intellectual creations are to be protected as such; [FN14] (3) that micro-organisms and microbiological processes are patentable subject matter; [FN15] and (4) that plant varieties are to be protected either by patents or by an effective sui generis system or by any combination thereof. [FN16] At the same time, however, the TRIPS Agreement left unanswered many of the emerging intellectual property questions being spawned by the digital and biotechnology revolutions.

Just two years after the TRIPS Agreement was adopted, for example, the WIPO found it necessary to convene an international conference to address the digital revolution by drawing up a new pair of treaties, the WIPO Copyright Treaty [FN17] and the associated WIPO Performances and Phonograms Treaty. [FN18] The WIPO Copyright Treaty made it clear that computer programs are literary works under the Berne Convention; [FN19] recognized an exclusive rental right for computer programs, cinematographic works, and works embodied in phonograms; [FN20] and explicitly recognized an exclusive right to authorize communication to the public of a copyrighted work by wire or wireless means. [FN21] It also imposed two new "para-copyright" obligations to prevent circumvention of effective technological measures to prevent unauthorized use of copyrighted works and to provide effective remedies against the knowing removal or alteration of any electronic rights management information ***858** (including terms and conditions of use of the work) without authorization. The WIPO Performances and Phonograms Treaty created similar "para-copyright" obligations with respect to phonograms. [FN22] The WIPO also considered, but ultimately decided not to adopt, a proposed database protection treaty modeled on the European Union Database Directive, which mandates the creation of a new sui generis form of intellectual property protection for databases. [FN23]

Meanwhile, on the international trade front, the WTO by 1999 found itself confronting the unruly phenomenon of globalization and its discontents, as its Ministerial Conference in Seattle collapsed amidst violent and tear-gas beclouded anti-globalization protests. [FN24] This reversal stimulated the issuance of the Doha Declaration in 2001, [FN25] in which the WTO conceded that it needed to be more sensitive to the needs and interests of developing countries. Specifically, the Doha Declaration stressed that the TRIPS Agreement was to be interpreted in a manner supportive of public health, by promoting access to existing medicines and research and development into new medicines, as spelled out in a separate declaration acknowledging the gravity of the public health problems afflicting many developing and less developed countries. [FN26] Eventually, that separate WTO Declaration on the TRIPS Agreement and Public Health [FN27] led to the first modification of the TRIPS Agreement, relaxing Article 31's strict limitations on compulsory licensing to enable one member to supply another member with patented pharmaceuticals without the authorization of the patent holder. [FN28] In addition, at the urging of developing countries, the Doha Declaration specifically directed the TRIPS Council to ***859** examine the relationship between the TRIPS Agreement and the Convention on Biological Diversity, as well as the protection of traditional knowledge and folklore. [FN29] Notwithstanding the issuance of these two declarations, and the ambitious goals set for the Doha Round of multilateral trade negotiations, the accomplishments thus far have been modest, and the negotiations are in danger of deadlocking on agricultural subsidies and access to the

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agricultural markets in the industrialized world, and consequently imperiling implementation of the TRIPS Agreement in the developing world.

These, then, represent some of the emerging international intellectual property issues that intellectual property teachers will need to address. The objective of this Article is to suggest how intellectual property teachers can best do that.

One option, of course, is to include in each course devoted to a specific field of intellectual property law (patents, copyrights, trademarks, etc.) a component that specifically deals with emerging issues, particularly those issues involving international intellectual property law. If the experience of the Author of this Article is any guide, however, both emerging intellectual property issues and international intellectual property law tend to get short shrift in basic introductory intellectual property courses, particularly if they are tacked on as the final two topics to be covered in the course. A skilled teacher may be able to touch on one of these two topics in an introductory course, but seldom is there time to cover both adequately, particularly if the particular introductory course also covers an ancillary field of intellectual property or unfair competition law, such as utility models, industrial designs, trade secrets, semiconductor chip design, or plant variety protection. The challenge is still more daunting in a general introductory intellectual property course seeking to offer an across-the-board introduction to patent, copyright, and trademark law.

On the other hand, conceptualizing courses devoted exclusively to emerging intellectual property law issues or to international intellectual property law presents its own challenges, as such courses can be unworkable or unwieldy as a practical matter. A teacher offering a course devoted exclusively to emerging intellectual property law issues will need to develop his or her own teaching materials and will probably need to require students to have taken one or more introductory intellectual property courses as a prerequisite. Even then such a course may be unworkable, as students will not necessarily have the same grounding in the same areas of basic intellectual property law. Teachers of international intellectual property law courses may likewise need to develop their own materials and establish prerequisites for the course. Here, too, the course may prove to be unworkable or unwieldy, particularly if the objective of the course is to provide students with a ***860** comprehensive introduction to all of the existing international intellectual property agreements.

However, the twin challenges of teaching emerging intellectual property issues and teaching international intellectual property law offer the potential for a single integrated solution to both challenges. The basic hypothesis that will guide the discussion in the remainder of this Article is that a workable approach to teaching emerging intellectual property issues is to utilize these issues as organizing themes or topics to give focus to a basic international intellectual property law course or seminar. Specifically, this Article will describe a basic international intellectual property course that the Author has successfully taught in a variety of contexts to a wide range of students, many of whom had no prior background in intellectual property law. [FN30] The educational objective of this course is to introduce students to intellectual property law generally and international intellectual property law in particular, while at the same time helping students identify and analyze emerging intellectual property law issues.

The course is organized around a number of topics and sub-topics, beginning with the general topic, intellectual property and international trade, followed by an examination of the specific legal issues raised by digital technology and biotechnology, respectively. The reading for the course consists entirely of primary international legal materials and selected secondary sources, most of which can be accessed online, and examples of which will be provided in footnotes throughout this Article. [FN31] The two primary pedagogical methods to be em-

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ployed in the course are: (1) engaging in a close reading and analysis of basic legal texts; and (2) utilizing these texts to identify and analyze specific emerging issues of international intellectual property law.

***861** I. Topic I: Intellectual Property and International Trade

The initial objective is to introduce students to the TRIPS Agreement and the intellectual property issues that it addresses, particularly those identified in the Doha Declaration. [FN32] Indeed, the TRIPS Agreement and the Doha Development Agenda provide the basic legal anatomy for the course as a whole. [FN33]

For example, Article 1.2 of the TRIPS Agreement offers students a working definition of what constitutes "intellectual property" for purposes of the TRIPS Agreement and simultaneously introduces students to the basic anatomy of Part II of TRIPS, which specifies the international minimum standards concerning the availability, scope, and use of seven discrete types of intellectual property and the control of anti-competitive practices in contractual licenses. [FN34] From these structural elements in the TRIPS Agreement, the teacher should be able to help students develop a matrix, or chart, for use throughout the course, integrating the various types of intellectual property law and the three basic phases of intellectual property practice (acquisition, enforcement, and licensing or transfer of rights). Across the top of the chart is the spectrum of intellectual property and related rights (copyrights and related rights, trademarks, geographical indications, industrial designs, patents, layout-designs of integrated circuits, and undisclosed information). Down the side of the chart are the three phases of intellectual property practice, which can be subdivided as follows:

1. Acquisition of rights:

(a) subject-matter protected; and

(b) substantive and procedural requirements for obtaining protection.

2. Enforcement of exclusive rights:

(a) scope and term of exclusive rights; and

(b) prima facie infringement (including ownership of rights, directly infringing acts, active inducement, contributory infringement, and vicarious liability); defenses; and remedies.

***862** 3. Licensing and Transfer of rights:

(a) licensing (voluntary and compulsory); and

(b) assignment (sale, gift, testamentary transfer). In short, this "IP Law and Practice" matrix offers a way for students to examine the law and practice of intellectual property as a whole and to fit the particular provisions of the TRIPS Agreement into a larger mosaic.

For example, an examination of the table of contents of the TRIPS Agreement will make it clear that, in addition to establishing minimum standards for the protection of intellectual property in Part II, the TRIPS Agreement also establishes minimum enforcement standards in Part III, minimum administrative and procedural standards for the acquisition and maintenance of intellectual property rights in Part IV, and at the same time establishes a system for international dispute settlement among its members in Part V, while addressing various transitional and institutional arrangements in Parts VI and VII. [FN35] Article 2, in turn, not only makes reference to Parts II, III, and IV of the TRIPS Agreement, [FN36] but also refers to the primary existing intellectual property agreements, namely the Paris Convention, the Berne Convention, and the Rome Convention. This provides the teacher with the opportunity to identify the basic subject matter protected by these Conventions, as suggested by their full titles in footnote two (i.e., industrial property, literary and artistic works, and "neighboring rights" with respect to performances, phonograms, and broadcasts). [FN37]

Likewise, Article 2, taken together with Articles 3, 4, and 5, offers an opportunity to introduce students to

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the concepts of national (or non-discriminatory) treatment and most-favored-nation treatment, and to the WTO's companion international agency, the World Intellectual Property Organization. This discussion, in turn, will enable the teacher to distinguish the limited objectives of the Paris, Berne, and Rome Conventions from the more ambitious objectives of the TRIPS Agreement. Examining Articles 2 through 5 of the TRIPS Agreement will also provide a springboard for introducing the role of the WIPO in administering the Paris, Berne, and Rome Conventions, as well as related supplementary treaties, such as the Patent Cooperation Treaty, the Madrid Agreement and Protocol on the International Registration of Marks, the Lisbon Agreement for the Protection for Appellations of Origin and their International Registration, etc. [FN38]

***863** The foregoing introduction will also lay the groundwork for an initial foray into Part II of the TRIPS Agreement, where Articles 9 and 10, respectively, offer an example of an intellectual property topic TRIPS specifically declines to address (i.e., moral rights of authors), thus deferring to the exclusive competence of the WIPO, [FN39] and an example of a more interventionist TRIPS provision, which specifies that computer programs, whether in source or object code, are to be protected as literary works under the Berne Convention. [FN40] It is worth pointing out to students that the latter provision amounts to a de facto "amendment" of the Berne Convention--an amendment that was given de jure status with the promulgation of the WIPO Copyright Treaty in 1996. The teacher can also ask students to consider why the TRIPS Agreement is deferential on the topic of moral rights, but not on the protection of computer programs, thus highlighting the fact that not all intellectual property issues are "trade-related."

A comparative analysis of the substantive international minimum standards for intellectual property protection contained in Part II, Sections 1 through 7 of the TRIPS Agreement, in turn, should enable the students to see that each section is organized in accordance with the "IP Law and Practice" matrix described above--i.e., each section enumerates the subject matter and standards for protection first, followed by articles specifying the scope, term, and limitations of exclusive rights, and concluding with any relevant articles concerning licensing and assignment, as further qualified by Section 8's single article permitting WTO members to control anticompetitive licensing practices. Likewise, an examination of Part III should provide the students with a basic understanding of the international minimum procedural and remedial standards for intellectual property protection.

With the completion of this basic introduction to the TRIPS Agreement and to international intellectual property law generally, the students are now equipped to consider some of the interpretive disputes that might be raised in the WTO dispute settlement process, incorporated by reference in Part V of the TRIPS Agreement, over the meaning of various TRIPS provisions. At this point, the teacher may ask students to read selected WTO dispute settlement decisions, as these decisions are readily accessible online. [FN41] Once the students have gotten a general overview of the types of disputes that have already been submitted for WTO resolution, the course can then turn to the first of two general categories of emerging legal issues to be considered in the remainder of the course--namely those generated by digital technology.

## ***864** II. Topic II: Digital Technology

As suggested above, an initial foray into Part II of the TRIPS Agreement will immediately confront students with a concrete example of a fundamental copyright issue arising as a result of the emergence of digital technology-- namely whether computer software in all of its forms should be classified and protected as literary works. The protection of computer programs is an ideal place to begin a discussion of emerging IP issues, as it offers a good example of a "hybrid" subject matter that might be protectable under more than one form of intellectual property law. [FN42]

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After all, a computer program in source-code (i.e., human-readable) form clearly appears to qualify as a copyrightable literary work, but that same program in object-code (i.e., machine-readable) form seems to perform more like a machine part, and when embedded in an integrated circuit, even looks more like a machine part than a literary work. Likewise, a computer program can be widely distributed in object-code form, while closely guarded as a trade secret in source-code form. Were trade secret law the only form of protection available for computer programs, it would clearly seem to be permissible to reverse engineer a publicly distributed computer program, as reverse engineering of publicly distributed products is a well-established permissible means of acquiring the trade secrets of others, but reverse engineering of software also amounts to reproducing, or at least translating, the program, which violates one or more of the exclusive rights conferred by copyright law. Finally, a computer program not only gives instructions to a machine, but also generates separate works on a computer screen, and those works, in turn, may be literary works, pictorial, graphic, or motion picture works, and may also be accompanied by musical works that are also generated by the computer program. Some elements of these screen displays may be so highly distinctive as to constitute trademarks, some elements may be highly functional (e.g., icons), and all are arguably a digital form of trade dress, in addition to being copyrightable subject matter.

If the teacher wishes to provide students with a comparative, as well as an international, introduction to intellectual property law, while exploring specific ***865** intellectual property issues that have been generated by digital technology, this may be accomplished by comparing the U.S. and European approaches to three specific controversies involving digital technology-- namely: (1) the interoperability debate; (2) the mass-market (shrink-wrap and click-wrap) licensing debate; and (3) the database protection debate. For example, the teacher may ask students to examine the E.C. Directive on the Legal Protection of Computer Programs [FN43] and assign readings that compare the U.S. and E.U. approaches to the software reverse engineering and interoperability debate. [FN44] Students may also be asked to read materials comparing the U.S. and E.U. approaches to mass-market licensing of computer programs. [FN45] Finally, the students may be asked to read the E.U. Database Directive, [FN46] which creates a new sui generis form of intellectual property protection for the non-copyrightable contents of databases, and read materials comparing the U.S. and E.U. approaches to database protection. [FN47]

This final topic offers a particularly good opportunity to explore the difference between "national treatment" and "material reciprocity," as the E.U. Database Directive contains a material reciprocity provision, limiting sui generis database protection to nationals or habitual residents of E.U. member countries, businesses having a registered office and ongoing and genuine business links to a E.U. member country, and those foreign nationals of countries that extend comparable protection to databases of nationals or habitual residents of E.U. member countries. [FN48] Whether and to what extent members of the WTO and/or members of the Paris or Berne Conventions can ***866** condition sui generis intellectual property protection for non-nationals on the basis of material reciprocity is an important (albeit abstruse) international intellectual property issue that the TRIPS Agreement itself does not explicitly address. [FN49]

With the emergence of the Internet, whole new congeries of trademark and copyright issues were generated, as savvy web page developers learned to attract "hits" (or develop opportunities for arbitrage) by registering and utilizing the marks of others as domain names ("cybersquatting"). They have also utilized the marks of others as meta-tags to attract the attention of Internet search engines, constructed web pages that "frame" other web pages, and have even adopted domain names consisting of well-known misspellings of the marks or domain names of others ("typosquatting"). Posing a hypothetical fact situation of the latter sort will provide the teacher with a good opportunity to introduce the distinction between consumer confusion as to the source of goods or services

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(the classic harm that trademark law seeks to prevent) and "initial interest" confusion, which merely imposes unwanted initial search costs on the consumer. [FN50]

The teacher may also wish to ask students to consider whether cybersquatting could be said to "dilute" famous marks, and whether, in extending the scope of Article 6bis of the Paris Convention, Article 16.3 of the TRIPS Agreement does or does not require WTO members to protect famous marks against dilution. [FN51] Another way to explore international domain name controversies, while at the same time introducing students to the technology generating these issues, is to assign a cybersquatting research assignment, requiring students to examine online actual domain name controversies decided by the WIPO Arbitration and Mediation Center. [FN52]

This would also be an appropriate point in the course to conduct a detailed study of the WIPO Copyright Treaty and explore national implementation of its two provisions on digital rights management, requiring members to provide ***867** adequate legal protection and effective legal remedies against: (1) the circumvention of effective technological measures designed to prevent copying of a copyrighted work; and (2) persons knowingly removing, altering or deleting electronic rights management information, including terms and conditions of use of the work. [FN53] It is important for students to understand how these requirements can operate in conjunction with mass-market licensing provisions prohibiting reverse engineering, etc., to create what might be called "para-copyright," or "electronic trade secret protection" for authors of digital works, thus making much of conventional copyright law simply irrelevant in a digital environment. [FN54] This particular proprietary approach to the distribution of digital content can also be compared with the burgeoning "open-source" software development model, and implications of the two models for developing countries can be discussed. [FN55] Introducing the concept of "open-source" technology development as a feasible alternative wherever consumers of intellectual property are also innovators is particularly useful at this point, as it will lay the groundwork for explaining the "common heritage" approach to agricultural innovation that is embodied in the "Multilateral System" established by the Food and Agricultural Organization's new International Treaty for Plant Genetic Resources for Food and Agriculture [FN56]--a potential topic of discussion in the second half of the course, as the focus of the course shifts from digital technology to biotechnology and the associated fields of biodiversity, traditional knowledge protection, and public health.

## III. Topic III: Biotechnology, Biodiversity, Traditional Knowledge Protection, and Public Health

As noted earlier, the 2001 WTO Ministerial Conference, in its Doha Declaration, specifically directed the TRIPS Council to examine the relationship between the TRIPS Agreement and the Convention on Biological ***868** Diversity, as well as the protection of traditional knowledge and folklore. [FN57] Likewise, in 2000, the WIPO established an Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore to facilitate discussion of intellectual property issues that arise in the context of access to genetic resources and the fair and equitable sharing of benefits arising out of the utilization of same, as well as the protection of traditional knowledge, innovations, creativity, and expressions of folklore. [FN58] As these actions by the WTO and WIPO illustrate, a second fundamental emerging legal issue in international intellectual property law is the growing interface with international environmental law. Similarly, the separate WTO Declaration on the TRIPS Agreement and Public Health highlights the growing interface between international intellectual property and public health law. [FN59] Finally, the TRIPS requirement that WTO members protect plant varieties either by patents or by an effective sui generis system or some combination thereof, [FN60] together with the recent promulgation and entry into force of the FAO International Treaty on Plant Genetic Resources for Food and Agriculture, highlights the growing interface between international intellectual property and agri-

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cultural law. One or more of these emerging issues could provide a thematic focus for a third and final component of a basic international intellectual property law course or seminar.

One unfortunate consequence of the resort by the industrialized world to the rhetoric of "piracy" in the push to strengthen intellectual property protection in the developing world was that it stimulated a countervailing outcry in the developing world and elsewhere over what has come to be known--and vilified-- as "biopiracy." Biopiracy has been defined as the "appropriation of the knowledge and genetic resources of farming and indigenous communities by individuals or institutions who seek exclusive monopoly control (patents or intellectual property) over these resources and knowledge." [FN61] One response to the concern over biopiracy was the promulgation of the Convention on Biological Diversity (CBD), the objective of which was to affirm national sovereignty over genetic resources and promote the conservation, sustainable use, and facilitated access to and fair and equitable sharing of the benefits arising from utilization of genetic resources ***869** and any associated traditional knowledge. [FN62] Ironically, the practical effect of the CBD has been to inhibit, rather than to facilitate, access to genetic resources in the developing world, thus heightening the urgency of developing a more equitable system of benefit-sharing if medical and agricultural biotechnology is to continue to have access to genetic resources as a starting point for research and development. [FN63]

The biopiracy controversy has produced a number of specific proposals on the part of developing countries to modify the existing intellectual property regime to make it more responsive to developing country needs and interests, and particularly to promote more equitable benefit-sharing. [FN64] In response to these proposals, the Doha Declaration directed the TRIPS Council to examine the relationship between the TRIPS Agreement and the CBD, as well as the protection of traditional knowledge and folklore, [FN65] and the WIPO established the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. [FN66]

The specific intellectual property proposals that have surfaced in international discussions thus far can be divided into three categories: (1) proposals to provide more effective defensive protection of public domain genetic resources and traditional knowledge by expanding the definition of "prior art" and/or creating and improving access to documentation of public domain genetic resources and traditional knowledge in online databases and digital libraries; (2) proposals to promote a more fair and equitable sharing of the benefits of genetic resources and associated traditional knowledge, as mandated by the CBD, by requiring disclosure of origin of any relevant genetic resources and associated traditional knowledge and evidence of prior informed consent of the providers of same as a condition either for filing a patent application or for enforcing an otherwise valid patent; and (3) proposals to create a new sui generis form of affirmative intellectual property protection for ***870** traditional knowledge. [FN67] One or more of these specific proposals, together with the threshold question whether and to what extent existing intellectual property and unfair competition law in fact provides defensive and/or affirmative protection for traditional knowledge, could be the focus of a specific class assignment or research problem. Asking students to compare the potential impact of a disclosure of origin and evidence of prior informed consent requirement, based on whether it is imposed as a condition for acquiring a patent or as a condition for enforcing a patent, provides an opportunity to examine practical aspects of the patent acquisition and enforcement process. As a practical matter, imposing such a requirement as a condition for acquiring a patent would impose a crushing burden on patent offices lacking any expertise to judge the sufficiency of the disclosure, whereas imposing such a requirement as a condition for enforcing an otherwise valid patent would focus the patent system on those few biotechnology patents sufficiently valuable to be worth enforcing, and thus capable of generating benefits. [FN68]

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As we have seen, a second emerging issue with respect to intellectual property protection for medical biotechnology, and pharmaceutical products more generally, is the concern over TRIPS and public health. [FN69] This issue starkly reveals the inherent tension in a system for stimulating innovation through incentives based on the temporary grant of exclusive intellectual property rights. [FN70] The incentives provided by the patent system are arguably the most efficient means for promoting modern medical biotechnology and pharmaceutical research and development. At the same time, however, without some modification of the exclusive rights provided by the patent system, the benefits of modern medical biotechnology and pharmacology will be beyond the financial reach of much of the developing world. For that reason, one of the most controversial provisions in TRIPS is its requirement that patent protection be extended to pharmaceutical products. [FN71] Although ***871** Article 31 of the TRIPS Agreement in theory permits WTO members to resort to government-mandated compulsory licensing as a permissible response to a public health emergency, this tool has remained out of reach for developing countries that lack a domestic industrial capacity to respond to the health crisis, as compulsory licensing under Article 31(f) of TRIPS is permissible only where "predominantly for the supply of the domestic market of the Member authorizing such use." [FN72] Recognition of this shortcoming in Article 31 has produced the first modification in the TRIPS Agreement, [FN73] which was designed to make permanent the Decision of August 30, 2003, waiving the foregoing limitation on compulsory licensing. [FN74] Examination of the online materials tracing the negotiations that led to this modification thus offers an opportunity to study the role of the WTO's TRIPS Council in developing international intellectual property policy. [FN75]

A third emerging biotechnology-related international intellectual property issue involves agricultural biotechnology and plant variety protection. [FN76] While Article 27.3 of the TRIPS Agreement permits WTO members to exclude from patentability plants and animals other than micro-organisms, and essentially biological processes for the production of plants and animals other than non-biological and microbiological processes, it includes a proviso specifying that plant varieties are to be protected either by patents or by an effective sui generis system or by any combination thereof. [FN77]

The proviso in Article 27.3 clearly does not require WTO members to adhere to the latest (1991) revision (or for that matter any other version) of the International Convention for the Protection of New Varieties of Plants (UPOV), [FN78] but it does require WTO members to provide "effective" plant ***872** variety protection of some sort. A number of developing countries opted to adhere to the earlier and more limited 1978 revision of UPOV, and they were allowed to join UPOV just before UPOV 1978 was superseded by UPOV 1991. [FN79] However, because UPOV 1991 has superseded UPOV 1978, it could be argued under TRIPS Article 27.3 that UPOV 1978 does not in fact provide "effective" sui generis protection for plant varieties, thus suggesting a potential dispute as to what does and does not constitute "effective" sui generis plant variety protection.

Another potential dispute that could arise under TRIPS Article 27.3 stems from the fact that at least some developing country WTO members have interpreted Article 27.3 to permit the exclusion of "the whole or part of natural living beings and biological materials found in nature, or isolated therefrom, including the genome or germplasm of any natural living being." [FN80] That interpretation is likely to be challenged by industrialized WTO members as inconsistent with Article 27.1 and submitted to the WTO dispute settlement process for eventual resolution. [FN81]

Also relevant to the protection of agricultural biotechnology and plant varieties is the recently adopted FAO International Treaty on Plant Genetic Resources for Food and Agriculture, [FN82] which will govern access to most materials in national and international germplasm collections (more than 6 million accessions in some 1,300 collections around the world) as well as to in situ and on-farm sources. [FN83] The FAO International

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Treaty was negotiated with the understanding that it would be in harmony with the Convention on ***873** Biological Diversity, and is similar to the CBD in its overall objectives to promote the conservation, sustainable use, and equitable sharing of benefits arising out of the use of plant genetic resources for food and agriculture, as well as associated traditional agricultural knowledge, for sustainable use and food security. [FN84] However, the FAO Treaty also goes well beyond the CBD, in that it builds on an existing national and international system of ex situ germplasm collections of genetic resources for food and agriculture, namely the Consultative Group on International Agricultural Research (CGIAR), [FN85] and creates a formal "Multilateral System"--i.e., a system of "common-pool goods"--in thirty-six genera of crops and twenty-nine genera of forages, designed to provide "facilitated" (i.e., free or low cost) access to these genetic resources, and to ensure an equitable sharing of the benefits derived from any commercialized product that incorporates materials from the Multilateral System. [FN86]

A critical feature of the "facilitated access" that the FAO Treaty seeks to promote is that recipients of genetic plant genetic resources covered by the Multilateral System are not to "claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System." [FN87] The FAO Treaty also pays lip-service to the concept of "Farmers' Rights" [FN88] as well as to a corresponding farmers' privilege to save ***874** and sell farm-propagated seeds. [FN89] How the foregoing provisions are to be reconciled with the TRIPS requirement that all WTO members provide "for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof," [FN90] is not specified. However, the prohibition against claiming intellectual property rights is restricted to plant genetic resources, or their genetic parts, or components, "in the form received from the Multilateral System," [FN91] suggesting that plant variety protection can be sought for varieties derived from these starting materials. Moreover, the FAO Treaty specifies that germplasm from the Multilateral System is to be available under the terms of a standard material transfer agreement (MTA), which is to include provisions for benefit sharing in the event of commercialization of products developed using genetic resources received from the Multilateral System. [FN92] This, too, suggests that plant variety protection may be sought for plant varieties derived from genetic resources received from the Multilateral System, though subject to the Treaty's benefit-sharing requirements. In this respect, the FAO Treaty seems somewhat analogous to the "open-source" approach to software development, which requires source (i.e., human-readable) code to be distributed with the open-source software itself, but permits a programmer to modify the software and release the modified version under terms that are proprietary. [FN93]

The stronger the intellectual property protection provided for plant varieties (including those varieties developed by innovative farmers), the more market-produced economic benefits there will likely be available to share under the FAO Treaty's benefit-sharing provisions. Conversely, the broader the definition of any legally recognized "Farmers' Right" or farmers' privilege in plant variety protection legislation, the more likely it is that the benefits ***875** emanating from the Multilateral System will consist primarily of the publicly improved plant varieties as such. [FN94] In any event, the ultimate success or failure of benefit-sharing provisions of the FAO International Treaty will depend in significant part on the ability (and willingness) of participating germplasm collections to enforce benefit sharing terms in applicable MTAs and the ability of the Governing Body responsible for administering the Treaty to reach a consensus as to the level, form, and manner of payment of an "equitable" sharing of monetary benefits. [FN95]

In any event, a comparative study of the FAO International Treaty, UPOV, and the TRIPS Agreement, offers a good opportunity to compare several alternative systems for promoting agricultural innovation, ranging from "free" to "open-source" to purely proprietary systems, and will thus put in broader perspective the question

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as to what constitutes "effective" protection of plant varieties within the meaning of the TRIPS Agreement. Such a study also offers the opportunity to conclude the course with a comparative examination of the dynamics of software and plant innovation.

## Conclusion

This Article has sought to demonstrate that one effective way to introduce students to current trends and future developments in intellectual property law is by studying these trends and developments in the context of an introductory international intellectual property course organized around three general themes or topics: (1) intellectual property and international trade; (2) digital technology; and (3) biotechnology, biodiversity, traditional knowledge, and public health. There are a number of advantages to this approach. First, it will enable the teacher to focus on emerging issues of intellectual property law throughout a single introductory course, rather than addressing these issues in separate introductory patent, copyright, and trademark courses. Second, the course can be offered as an introductory course, without any need to require pre-requisite courses. Third, the course can be taught using materials that are largely, if not entirely, available online. Fourth and finally, it will provide a policy-based focus for the study of international intellectual property law.

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[FN1]. Mar. 20, 1883, 21 U.S.T. 1583, 828 U.N.T.S. 305, available at http://wipo.int/export/sites/www/treaties/en/ip/paris/pdf/trtdocs_wo020.pdf (last visited Jan. 15, 2008).

[FN2]. Concluded July 24, 1971, S. Treaty Doc. No. 99-27 (1986), 1161 U.N.T.S. 3, available at http://wipo.int/export/sites/www/treaties/en/ip/berne/pdf/trtdocs_wo001.pdf (last visited Jan. 15, 2008).

[FN3]. See Paris Convention, supra note 1, art. 2(1).

[FN4]. See id.

[FN5]. Id. art. 10bis.

[FN6]. See Convention Establishing the World Intellectual Property Organization art. 3, July 14, 1967, 21 U.S.T. 1749, 828 U.N.T.S. 3, available at http://wipo.int/export/sites/www/treaties/en/convention/pdf/trtdocs_wo029.pdf (last visited Jan. 15, 2008).

[FN7]. Concluded Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, available at http:// www.wto.org/english/docs_e/legal_e/27-trips.pdf (last visited Jan. 15, 2008) [hereinafter TRIPS Agreement].

[FN8]. For the Marrakesh Agreement Establishing the World Trade Organization, Apr. 15, 1994, 1867 U.N.T.S. 154 and related agreements to be administered by the WTO, see World Trade Organization, WTO Legal Texts, http:// www.wto.org/english/docs_e/legal_e/legal_e.htm (last visited Jan. 15, 2008).

[FN9]. See generally TRIPS Agreement, supra note 7.

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[FN10]. Id. art. 64.

[FN11]. See generally Agreement Between the World Intellectual Property Organization and the World Trade Organization, WIPO-WTO, Dec. 22, 1995, 35 I.L.M. 754, available at http:// wipo.int/export/sites/www/treaties/en/agreement/pdf/trtdocs_wo030.pdf (last visited Jan. 15, 2008).

[FN12]. See, e.g., J.H. Reichman, The Know-How Gap in the TRIPS Agreement: Why Software Fared Badly, and What Are the Solutions, 17 Hastings Comm. & Ent. L.J. 763, 765-66 (1995).

[FN13]. TRIPS Agreement, supra note 7, art. 10.1.

[FN14]. Id. art 10.2.

[FN15]. Id. art. 27.

[FN16]. Id. art. 27.3(b).

[FN17]. Dec. 20, 1996, S. Treaty Doc. No. 105-17, at 1 (1997), 36 I.L.M. 65, available at http:// wipo.int/export/sites/www/treaties/en/ip/wct/pdf/trtdocs_wo033.pdf (last visited Jan. 15, 2008).

[FN18]. Dec. 20, 1996, S. Treaty Doc. No. 105-17, at 18 (1997), 36 I.L.M. 76, available at http:// wipo.int/export/sites/www/treaties/en/ip/wppt/pdf/trtdocs_wo034.pdf (last visited Jan. 15, 2008).

[FN19]. WIPO Copyright Treaty, supra note 17, art. 4.

[FN20]. Id. art. 7.

[FN21]. Id. art. 8.

[FN22]. WIPO Performances and Phonograms Treaty, supra note 18, arts. 18-19.

[FN23]. World Intellectual Property Organization, Basic Proposal for the Substantive Provision of the Treaty on Intellectual Property in Respect of Databases To Be Considered by the Diplomatic Conference, WIPO Doc. CRNR/DC/6 (Dec. 2-20, 1996), available at http:// www.wipo.int/documents/en/diplconf/pdf/6dc_e.pdf (last visited Jan. 15, 2008); World Intellectual Property Organization, Recommendation Concerning Databases, at 2, WIPO Doc. CRNR/DC/100 (Dec. 2-20, 1995), available at http:// www.wipo.int/documents/en/diplconf/distrib/pdf/100dc.pdf (last visited Jan. 15, 2008).

[FN24]. See Sam Howe Verhovek & Steven Greenhouse, Seattle Is Under Curfew After Disruptions, N.Y. Times, Dec. 1, 1999, at A1.

[FN25]. World Trade Organization, Ministerial Declaration of 14 November 2001, WT/MIN(01)/DEC/1, 41 I.L.M. 746 (2002), available at http:// www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.pdf (last visited Jan. 15, 2008) [hereinafter Doha Declaration].

[FN26]. Id. ¶ 17.

[FN27]. World Trade Organization, Declaration on the TRIPS Agreement and Public Health of 14 November 2001, WT/MIN(01)DEC/2, 41 I.L.M 755 (2002), available at ht-

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tp://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_ trips_e.pdf (last visited Oct. 25, 2007).

[FN28]. See Press Release, World Trade Organization, Members OK Amendment to Make Health Flexibility Permanent, (Dec. 6, 2005), http:// www.wto.org/english/news_e/pres05_e/pr426_e.htm.

[FN29]. Doha Declaration, supra note 25, ¶ 19.

[FN30]. In addition to teaching the course as a basic introductory intellectual property law course to rising second year students at Washington University, the Author has also taught the course to a combination of U.S. and European law students enrolled in two different summer law programs in Europe-- the University of San Diego 2001 London Institute on International and Comparative Law and the 2006 Summer Institute for Global Justice, jointly sponsored by Washington University School of Law in St. Louis, Case Western Reserve University School of Law, and Utrecht University. See Summer Institute for Global Justice in the Netherlands, http://law.case.edu/summer-institute (last visited Oct. 25, 2007).

[FN31]. For a comprehensive set of online materials that can be employed to teach the course described in this Article, see the Final Report of the Commission on Intellectual Property Rights and accompanying study papers and other documents. Commission on Intellectual Property Rights, Integrating Intellectual Property Rights and Development Policy (2002), available at http://www.iprcommission.org/graphic/documents.htm (last visited Oct. 25, 2007) [hereinafter IPR Commission Final Report].

[FN32]. See supra notes 24-29 and accompanying text.

[FN33]. In addition to the TRIPS Agreement itself, reading materials for this segment of the course could consist of Chapter 1: Intellectual Property and Development, IPR Commission Final Report, supra note 31, at 11-28.

[FN34]. See TRIPS Agreement, supra note 7, arts. 1.2, 9-40.

[FN35]. TRIPS Agreement, supra note 7.

[FN36]. See id. art. 2.

[FN37]. See id. art. 1, n.2.

[FN38]. For the texts of the twenty-four treaties administered by the WIPO, see World Intellectual Property Organization, WIPO-Administered Treaties, http://www.wipo.int/treaties/en/ (last visited Oct. 25, 2007).

[FN39]. See TRIPS Agreement, supra note 7, art. 9.

[FN40]. See id. art. 10.

[FN41]. See World Trade Organization, Index of Disputes Issues, TRIPS section, http://www.wto.org/english/tratop_e/dispu_e/dispu_subjects_index_e.htm #trips (last visited Jan. 15, 2008).

[FN42]. For possible introductory readings on this topic, see Chapter 5: Copyright, Software and the Internet, IPR Commission Final Report, supra note 31, at 95-110; Charles R. McManis, Taking TRIPS on the Information Superhighway: International Intellectual Property Protection and Emerging Computer Technology, 41 Vill. L. Rev. 207 (1996) [hereinafter McManis, Taking TRIPS on the Information Superhighway]. For a discussion of what industries will benefit most and least from the TRIPS Agreement, see Charles R. McManis, Intellectual

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Property and International Mergers and Acquisitions, 66 U. Cin. L. Rev. 1283 (1998). For a discussion of the challenges confronting the WIPO and WTO in regulating intellectual property rights in the information age, see Pamela Samuelson, Challenges for the World Intellectual Property Organization and the Trade-related Aspects of Intellectual Property Rights Council in Regulating Intellectual Property Rights in the Information Age, Eur. Intell. Prop. Rev., Nov. 1999, at 578.

[FN43]. Council Directive 91/250/EEC, 1991 O.J. (L 122) 41 (EC), available at http://wiretap.area.com/Gopher/Gov/Other/copyrigh.ec (last visited Jan. 15, 2008).

[FN44]. For possible introductory readings on this topic, see Charles R. McManis, Intellectual Property Protection and Reverse Engineering of Computer Programs in the United States and the European Community, 1993 High Tech. L.J. 25 (1993); McManis, Taking TRIPS on the Information Superhighway, supra note 42.

[FN45]. For possible introductory readings on this topic, see Catherine L. Mann, Balancing Issues and Overlapping Jurisdictions in the Global Electronic Marketplace: The UCITA Example, 8 Wash. U. J.L. & Pol'y 215 (2002); McManis, Taking TRIPS on the Information Superhighway, supra note 42; Pamela Samuelson & Kurt Opsahl, Licensing Information in the Global Information Market: Freedom of Contract Meets Public Policy, Eur. Intell. Prop. Rev., Aug. 1999, at 386.

[FN46]. Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, 1996 O.J. (L 77) 20 (EU), available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31996L0009:EN:HTML (last visited Jan. 15, 2008) [hereinafter EU Database Directive].

[FN47]. For possible introductory readings on this issue, see F.W. Grosheide, Database Protection--The European Way, 8 Wash. U. J.L. & Pol'y 39 (2002); Charles R. McManis, Database Protection in the Digital Information Age, 7 Roger Williams U. L. Rev. 7 (2001) [hereinafter, McManis, Database Protection].

[FN48]. See EU Database Directive, supra note 46, art. 11, recital 56.

[FN49]. For a discussion of this issue, see McManis, Taking TRIPS on the Information Superhighway, supra note 42, at 258-59, and authorities cited therein.

[FN50]. See, e.g., Elecs. Boutique Holdings Corp. v. Zuccarini, 56 U.S.P.Q.2d 1705, 1708, 1711-12 (2000), No. Civ.A 00-4055, 2000 WL 1622760, at * 2, *6 (E.D. Pa., Oct. 30, 2000) (finding sufficient consumer injury where a consumer mistakenly types a misspelled domain name and is "mousetrapped," i.e., subjected to a barrage of advertising windows which cannot be exited without clicking through the entire succession of advertisements).

[FN51]. See TRIPS Agreement, supra note 7, art. 16.3. For possible introductory readings on this issue, see Daniel Gervais, The TRIPS Agreement: Drafting History and Analysis 111 (Street & Maxwell Ltd. 1998); Paul J. Heald, Mowing the Playing Field: Addressing Information Distortion and Asymmetry in the TRIPS Game, 88 Minn. L. Rev. 249 (2003); J. Thomas McCarthy, Dilution of a Trademark: European and United States Law Compared, 94 Trademark Rep. 1163 (2004).

[FN52]. WIPO Domain Name Decisions, http:// arbiter.wipo.int/domains/decisions/index.html (last visited Jan. 15, 2008).

[FN53]. See WIPO Copyright Treaty, supra note 17, arts. 11-12. For a possible introductory reading on the

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WIPO Copyright Treaty, see Thomas C. Vinje, The New WIPO Copyright Treaty: A Happy Result in Geneva, 5 Eur. Intell. Prop. Rev. 230 (1997).

[FN54]. For possible introductory readings on this point, see McManis, Database Protection, supra note 47; McManis, Taking TRIPS on the Information Superhighway, supra note 42.

[FN55]. For a possible introductory reading on this point, see Chapter 5: Copyright, Software and the Internet, IPR Commission Final Report, supra note 31, 95-110; United Nations Conference on Trade and Development, Chapter 4, Free and Open-source Software: Implications for ICT Policy and Development, in E-Commerce and Development Report 2003 [hereinafter UNCTAD E-Commerce Report], available at http://www.unctad.org/en/docs/ecdr2003_en.pdf (last visited Jan. 15, 2008).

[FN56]. International Treaty on Plant Genetic Resources for Food and Agriculture, June 29, 2004, available at ftp:// ftp.fao.org/ag/cgrfa/it/ITPGRe.pdf (last visited Jan. 15, 2008) [hereinafter FAO Treaty], discussed infra notes 82-95 and accompanying text.

[FN57]. See supra note 29 and accompanying text.

[FN58]. World Intellectual Property Organization, Intergovernmental Committee, http://www.wipo.int/tk/en/igc/ (last visited Jan. 15, 2008).

[FN59]. See WTO Declaration on the TRIPS Agreement and Public Health, supra note 27.

[FN60]. TRIPS Agreement, supra note 7, art. 27.3(b).

[FN61]. See ETC Group, The Issues, http://www.etcgroup.org/en/issues (last visited Jan. 15, 2008). This is the definition of biopiracy espoused by the ETC Group (formerly known as RAFI--the Rural Advancement Foundation International), an advocacy organization that believes that "intellectual property is predatory on the rights and knowledge of farming communities and indigenous peoples." Id.

[FN62]. Convention on Biological Diversity preamble, concluded on June 5, 1992, 1760 U.N.T.S. 79. For possible readings on traditional knowledge protection and the relationship between TRIPS and the CBD, see Chapter 4: Traditional Knowledge and Geographical Indications, IPR Commission Final Report, supra note 31, at 73-94; Charles R. McManis, The Interface Between International Intellectual Property and Environmental Protection: Biodiversity and Biotechnology, 76 Wash. U. L.Q. 255 (1998).

[FN63]. See UNCTAD-ICTSD Project on IPRs and Sustainable Development, Intellectual Property Rights: Implications for Development 54 (2003), available at http://www.ictsd.org/pubs/ictsd_series/iprs/PP.htm (last visited Nov. 9, 2007),

[FN64]. See infra note 66 and accompanying text.

[FN65]. Doha Declaration, supra note 25, ¶ 19.

[FN66]. See supra text accompanying note 58. For a possible reading on these developments, see Charles R. McManis, Intellectual Property, Genetic Resources and Traditional Knowledge Protection: Thinking Globally, Acting Locally, 11 Cardozo J. Int'l & Comp. L. 547 (2003).

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[FN67]. For possible readings on these proposals, see Nuno Pires de Carvalho, From the Shaman's Hut to the Patent Office: In Search of a TRIPS-Consistent Requirement to Disclose the Origin of Genetic Resources and Prior Informed Consent, 17 Wash. U. J.L. & Pol'y 111 (2005); Charles R. McManis, Fitting Traditional Knowledge Protection and Biopiracy Claims into the Existing Intellectual Property and Unfair Competition Framework, in Intellectual Property and Biological Resources 425 (Burton Ong, ed., Marshall Cavendish Int'l 2004); Angela R. Riley, "Straight Stealing": Towards an Indigenous System of Cultural Property Protection, 80 Wash. L. Rev. 69 (2005); Sabine Sand, Sui Generis Laws For The Protection Of Indigenous Expressions of Culture and Traditional Knowledge, 22 U. Queensland L.J. 188 (2003).

[FN68]. See generally Carvalho, supra note 67.

[FN69]. See supra notes 27-28 and accompanying text.

[FN70]. For a possible reading on this point, see Chapter 6: Patent Reform, IPR Commission Final Report, supra note 31, at 111-36.

[FN71]. This requirement can be extrapolated from Article 27.1, which requires that patent protection be available for any inventions, whether products or processes, in all fields of technology, and Article 65.4, extending the transitional period for developing countries. TRIPS Agreement, supra note 7, arts. 27.1, 65.4. For a possible reading on this point, see Chapter 2: Health, IPR Commission Final Report, supra note 31, at 29-56.

[FN72]. TRIPS Agreement, supra note 7, art. 31(f).

[FN73]. See World Trade Organization General Council, Amendment of the TRIPS Agreement, WT/L/641 (Dec. 6, 2005), available at http:// www.wto.org/english/tratop_e/trips_e/wtl641_e.htm (last visited Jan. 15, 2008).

[FN74]. See World Trade Organization General Council, Implementation of Paragraph 6 of the Doha Declaration on the TRIPS Agreement and Public Health, WT/L/540 and Corr.1 (Aug. 30, 2003), available at http:// www.wto.org/english/tratop_e/trips_e/implem_para6_e.htm (last visited Jan. 15, 2008).

[FN75]. See generally World Trade Organization, Doha Development Agenda: Negotiations, Implementation and Development, http:// www.wto.org/english/tratop_e/dda_e/dda_e.htm (last visited Jan. 15, 2008).

[FN76]. For a suggested reading on this topic, see Chapter 3: Agriculture and Genetic Resources, IPR Commission Final Report, supra note 31, at 57-72.

[FN77]. TRIPS Agreement, supra note 7, art. 27.3(b).

[FN78]. See International Convention for the Protection of New Varieties of Plants, opened for signature Dec. 2, 1961, as revised on Mar. 19, 1991, S. Treaty Doc. No. 104-17 (1991), available at http:// www.upov.int/en/publications/conventions/1991/act1991.htm (last visited Jan. 15, 2008) [hereinafter UPOV Convention].

[FN79]. For the members of UPOV 1978 and 1991, see Members of the International Union for the Protection of New Varieties of Plants, http:// www.upov.int/en/about/members/pdf/pub423.pdf (last visited Jan. 15, 2008). UPOV 1991 entered into force on April 24, 1998. Press Release No. 30, International Union For The Protection of New Varieties of Plants, The 1991 Act of the International Convention for Protection of New Varieties of

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Plants (The UPOV Convention) Enters Into Force (Apr. 21, 1998), http://www.upov.int/en/news/pressroom/30.htm (last visited Jan. 15, 2008). Under Article 37(3) of UPOV 1991, no instrument of accession to UPOV 1978 may be deposited after the entry into force of UPOV 1991. UPOV Convention, supra note 78, art. 37(3). Apparently, developing countries that had begun the process of joining UPOV prior to the date of the entry into force of UPOV 1991 were allowed to adhere to UPOV 1978.

[FN80]. Carlos M. Correa, Intellectual Property Rights, the WTO and Developing Countries: The TRIPS Agreement and Policy Options 54 (Zed Books Ltd. 2000) (citing Brazilian Patent Law Article 10.1X, Law 9,279 (1996)).

[FN81]. For a possible reading on this issue, see Charles R. McManis, Patenting Genetic Products and Processes: A TRIPS Perspective, in Perspectives on Properties of the Human Genome Project 79, 87-95 (F. Scott Kieff, ed., Elsevier Academic Press 2003).

[FN82]. See FAO Treaty, supra note 56.

[FN83]. See Cary Fowler, Accessing Genetic Resources: International Law Establishes Multilateral System, 51 Genetic Res. & Crop Evolution 609, 609 (2004).

[FN84]. FAO Treaty, supra note 56, preamble, arts. 1.1, 9.

[FN85]. See Consultative Group on International Agricultural Research, http://www.cgiar.org (last visited Jan. 15, 2008).

[FN86]. See Stephen B. Brush, Protecting Traditional Agricultural Knowledge, 17 Wash. U. J.L. & Pol'y 59, 81-83 (2005).

[FN87]. See FAO Treaty, supra note 56, art. 12.3(d).

[FN88]. Id. art. 9.1-9.2. The concept of "Farmers' Rights" was originally embraced in a 1989 FAO resolution, appended as an annex to the FAO's 1983 International Undertaking on Plant Genetic Resources. International Undertaking on Plant Genetic Resources, Annex II Resolution 5/89: Farmers' Rights, available at ftp://ftp.fao.org/ag/cgrfa/iu/iutextE.pdf (last visited Jan. 15, 2008). The concept of "Farmers' Rights" represented a political reaction to another FAO resolution, also appended as an annex to the Undertaking, that first purported to recognize plant genetic resources as a "common heritage" of mankind to be preserved, and to be "freely available" for use, for the benefit of present and future generations, but then acknowledged that plant breeders' rights, as provided for by UPOV, FAO Treaty, supra note 56, were not incompatible with the Undertaking. International Undertaking on Plant Genetic Resources, Annex I Resolution 4/89: Agreed Interpretation of the International Undertaking. The concept of "Farmers' Rights" was thus apparently conceived of as an analogous and offsetting affirmative legal right that farmers should be able to assert against plant breeders, just as plant breeders could assert the sui generis plant breeder's right against farmers (subject, of course, to any "farmers' privilege" recognized in the relevant plant variety protection legislation). Article 9.2 of the FAO Treaty, however, merely states that the responsibility for realizing Farmers' Rights "rests with national governments." FAO Treaty, supra note 56, art. 9. For a detailed discussion of Farmers' Rights, see Brush, supra note 86, at 85-93.

[FN89]. FAO Treaty, supra note 56, art. 9.3 ("Nothing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and

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as appropriate."). For members of UPOV, however, this farmer's privilege must be spelled out in the member's plant variety protection legislation as a limit on the sui generis plant breeders' right. Article 15(2) of UPOV 1991 makes clear that recognition of a farmer's privilege is optional, not mandatory, and that any such privilege is to be limited to permitting farmers to use for propagating purposes, on their own holdings, the product of the harvest they obtain by planting a protected variety or an essentially derived version thereof on their own holdings. UPOV Convention, supra note 78, art. 15(2). This privilege is substantially narrower than the privilege alluded to in Article 9.3 of the FAO Treaty.

[FN90]. TRIPS Agreement, supra note 7, art. 27.3(b).

[FN91]. FAO Treaty, supra note 56, art. 12.1(d).

[FN92]. Id. arts. 12.4, 13.2(d)(ii).

[FN93]. See UNCTAD E-Commerce Report, supra note 55, at 100, which distinguishes between "open-source" software and software distributed under the "copyleft" terms of the GNU General Public License, which requires any redistribution of GPL software to be released only under the GPL to prevent the "closing" of the code and deter its use in a proprietary commercial development environment.

[FN94]. For a discussion of how Farmers' Rights have been implemented at the national level, see Brush, supra note 86, at 93-98.

[FN95]. Article 13.2(d)(ii) of the FAO Treaty specifies that the "Governing Body shall, at its first meeting, determine the level, form and manner of payment" of any monetary benefits, "in line with commercial practice." The first meeting of the Governing Body took place on June 12-16, 2006. For the draft provisional agenda and other documents for this meeting, see Documents of the First Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, June 12-16, 2006, http://www.fao.org/ag/cgrfa/gb1.htm (last visited Jan. 15, 2008).

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