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Introduction

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The authors within this volume originally presented their articles on April 6-7, 2001, at the 2001 Heart of America Intellectual Property Conference, jointly sponsored by Washington University School of Law and the Bar Association of Metropolitan St. Louis, with the cooperation of the St. Louis Technology Gateway Alliance and Thompson Coburn, L.L.P. Three keynote speakers introduced the three major themes of the conference: Marybeth Peters, Register of Copyrights at the U.S. Copyright Office, spoke on digital copyright issues; Commissioner Mozelle Thompson of the Federal Trade Commission, spoke on the regulation of electronic commerce; and Stephen Kunin, Deputy Commissioner for Patent Examination Policy, U.S. Patent and Trademark Office, spoke on the eligibility of business software applications for patent protection.

In keeping with these three themes, seven law professors and two economists each presented a paper on a personally selected topic. This volume includes these papers in addition to a related article. In

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total, three articles address digital copyright and database protection, four articles address the Uniform Computer Information Transactions Act (UCITA) and electronic commerce, and three articles focus on business method patents and bioinformatics.

DIGITAL COPYRIGHT AND DATABASE PROTECTION

The first three articles in this volume focus on the protection of database contents and the Digital Millennium Copyright Act.

In the first article, "The DMCA's Anti-Device Provisions: Impeding the Progress of the Useful Arts?", Professor Craig Nard, of Case Western Reserve Law School, discusses the interrelation between the Digital Millennium Copyright Act (DMCA) and federal patent law. He argues that the anti-circumvention provisions of the DMCA are inconsistent with the culture of intellectual property and undermine the constitutional mission of federal patent law to promote progress in the useful arts. In Part I, Professor Nard describes the DMCA's two-fold ban on circumvention and the production of and trafficking in devices that are primarily designed to circumvent protective technological efforts. Part II acknowledges that these anti-circumvention provisions encourage investment in secure systems to induce the disclosure of information in a digital environment, but also warns of the potential costs to society that may result from these provisions. First, there are costs to society in permitting the enclosure of works in the public domain or allowing copyright protection for works that cannot be used fairly because access is conditioned on the waiver of one's statutory privilege to make fair use of copyrighted works. Second, companies that produce circumvention devices capable of circumventing technological measures may face financial hardships. Nard argues that the restrictions on anti-circumvention technology may upset the balance achieved by federal patent law in seeking to promote both the advancement of technology and its dissemination. He then highlights two aspects of the patent law's ex post innovation theory. This theory seeks to promote further innovation as well as reward existing innovators by permitting, and thereby encouraging, second comers to: (1) improve on patented inventions, and (2) invent around the claims of a blocking patent. In Part III, Professor Nard uses a recent court decision explicitly dealing

with the interpretation of the DMCA to explain how the anti-device provisions of the DMCA serve as a disincentive with respect to both of these types of innovation.

In the second article, "Database Protection: The European Way," Dr. F. W. Grosheide, professor of law at the University of Utrecht, discusses an important development in the intellectual property law of the European Union (EU). In 1996, the European Parliament and the Council of the European Union promulgated Directive 96/9/EC on the Legal Protection of Databases, designed to address the growing risks that government and the private sector face in the absence of adequate protection for database contents. By way of introduction, Professor Grosheide examines the weaknesses of the three most common modes of database protection: copyright laws, unfair competition laws, and *sui generis* laws. He then traces the development and ultimate adoption of the current European two-tiered approach to protecting databases, as mandated by the EU Database Directive of 1996. Pursuant to this Directive, EU member countries must provide the producer of a database with both copyright protection for those aspects of the selection and arrangement of the database that constitute an author's own intellectual creation, and a novel *sui generis* right to prevent unauthorized extraction of the contents of the database whether protected by copyright or not.

Professor Grosheide describes the EU Database Directive as weak in two respects: (1) the Directive fails to define many of its own terms, thus limiting the likelihood that the Directive will succeed in harmonizing database protection within the EU; and (2) the Directive qualifies the geographic scope of database protection in two ways that are likely to be controversial internationally. First, the Directive does not adhere to the principle of national (i.e. non-discriminatory) treatment of non-EU database producers, but rather provides protection only if the government of the non-EU database producer provides comparable protection. Second, the Directive specifies that the first sale in the European community of a copy of a database exhausts the right to control resale of that database within the Community. Both of these provisions, he notes, are likely to ignite international trade disputes. He concludes by briefly describing the current status of the implementation of the Directive.

In the third article, "Property versus Misappropriation: Legal Protections for Databases in Korea," Professor Sang Jo Jong, professor of law at the College of Law, Seoul National University, and Dr. Junu Park, Senior Researcher at Yonsei University, discuss the urgent need for database protection in Korea. They note that Korea faces the daunting problem of selecting between two potential approaches to database protection, the *sui generis* property rights approach embodied in the Directive and the misappropriation approach that exists in the United States. Part II of the article identifies the chief obstacle preventing rapid growth of the Korean database industry, highlighting what the authors describe as a "vicious cycle" resulting from Korea's small domestic market size and insufficient investment. This cycle prevents the Korean database industry from competing on a global level and consequently must be addressed before foreign competition swamps the domestic market. Part III explains the current scope of database protection under Korean copyright law, which requires high levels of originality in the selection and arrangement of information to qualify a compilation of data for copyright protection. Part IV discusses the applicability of tort liability under the Korean Civil Code and the Unfair Competition Prevention and Trade Secret Protection Act (UTA). In particular, the authors note that, due to limitations in the subject matter protected and remedies provided, these two statutes fail to provide the database industry with adequate protection. Parts V and VI explain that because there is little to no statutory or civil law protection, most developers of databases tend to use contractual licenses and technological security measures to prevent unauthorized use of their information. While contracts are the best form of protection currently available, they fall short of the ideal form of security because most information theft involves third parties rather than contracting parties. Part VI discusses the technological fences erected by database developers and the tools used by third parties attempting to access the information. The authors describe the anti-circumvention measures adopted in the Computer Program Protection Act of Korea (CPPA), but explain that there is no basis for civil remedies provided in the CPPA, rendering it rather ineffective. Parts VII and VIII describe recent Korean legislative efforts to improve database protection. In Part VII, the authors point out that the first legislative attempt to

protect databases took a property approach, but was not adopted. In Part VIII, the authors describe a 2001 database protection proposal they believe will achieve a balance between promoting growth in the Korean database industry while making information available to the Korean public.

THE UNIFORM COMPUTER INFORMATION TRANSACTIONS ACT AND ELECTRONIC COMMERCE

The next four articles in this volume focus on the UCITA and the role of licensing in electronic commerce.

In the first article, "Licensing in the Contemporary Information Economy," Professor Raymond Nimmer, Reporter for the Uniform Computer Information Transactions Act and Leonard H. Childs Professor of Law at the University of Houston, examines the importance of licensing transactions in our economy and discusses misconceptions regarding licensing as a means of distributing digital information. In Part II, Professor Nimmer emphasizes the role that the computer and information industries play in the U.S. economy. He argues that the economic boom of the past five years was, in large part, a result of the growth of these industries, thus refuting the notion that licensing inhibits the free-flow of information and hurts the economy. He identifies a trend in both statutory and case law, pointing towards an expansion of intellectual property rights in intangible assets. However, Professor Nimmer emphasizes that licensing and UCITA do not deal with property rights as such. He also argues that information-based transactions are different from the goods-based transactions of older industries. Both UCITA and existing licensing practices generally recognize and build legal models on that fact. In Part III of his article, Professor Nimmer examines the legal definition of a license and compares the attributes of that type of transaction with other ways of disseminating information. He emphasizes that a license focuses directly on establishing what value is offered in the information marketplace and what value a transferee purchases. In Part IV, Professor Nimmer examines the legal foundations of the practice of licensing information. He argues that this practice is based on the idea of a person's right to control his or her own property as well as in the fact

that licensing enables parties to tailor values to fit markets in ways not possible in other forms of exchange. Finally, in Part V, Professor Nimmer discusses the benefits of choice and the positive market effects of licensing. He reiterates that licensing allow parties to tailor rights and resulting costs in ways that less nuanced deals cannot. This flexibility allows for what one author has called "mass customization." In conclusion, Professor Nimmer states that in consumer markets and elsewhere, the license is both the product and its description because the license defines what uses the licensee may make of the licensed information.

In the second article, "Recognizing Usages of Trade: Two Examples from Electronic Commerce," Professor David McGowan, of the University of Minnesota Law School, explores the role that social expectations, and specifically usages of trade, play in contract formation and discusses the degree to which courts should rely on market practices in their legal determinations. He argues that the treatment of usages of trade as a question of fact, which if proved can be used as a basis for either interpreting or supplementing contractual terms, is incomplete. Though usages are facts, a judge's decision to recognize a proffered usage as a valid interpretive tool is at least in part normative. In Part I, Professor McGowan discusses the concept of usage of trade as defined in the Uniform Commercial Code (U.C.C.) and the more recently promulgated UCITA. In Part II, he analyzes the role a judge's own beliefs and presumptions play in determining whether to recognize a usage of trade by studying some of the significant shrink-wrap licensing cases between 1991 and 2000. Professor McGowan suggests that judges became more willing to accept post-order shrink-wrap terms as a method of forming an agreement as they became more familiar with that method. However, Professor McGowan argues that evidence of widespread adoption by parties on one side of a transaction should not be considered enough, standing alone, to establish a usage of trade. Instead, courts should demand additional evidence or analysis to establish that the practice or term in question can be justified under the Kaldor-Hicks welfare criterion. This criterion is satisfied if the gains from an action or course of conduct exceed the losses such that winners could compensate the losers for their losses, though actual compensation is not required. As he observes, at the outset of Part III, the irony in the

case law that he surveys is that the case for recognizing either a course of performance or usage of trade justifying post-order shrink-wrap terms was actually much stronger in the first case, where the court refused to recognize the usage, than it was in the last, where the court found "an unquestioned use of such license agreements throughout the software industry." In the remainder of Part III, he discusses the warranty of non-infringement and the possibility of disclaiming it by trade usage as an example of the type of analysis courts should engage in when considering trade usages.

In the third article, "Balancing Issues and Overlapping Jurisdictions in the Global Electronic Marketplace: The UCITA Example," Dr. Catherine Mann, Senior Fellow at the Institute for International Economics in Washington, D.C., examines how advanced technology has affected commerce by changing the boundaries of the marketplace and the means for transacting in goods, services, and information. Challenged by a changing landscape, policymakers and the legal profession struggle to clarify old rules and write new ones. UCITA represents one such effort to clarify one aspect of this changing landscape, namely the default rules for commercial contracts involving computer information. However, Dr. Mann argues that UCITA cannot be legislated in a vacuum, with respect to the types of transactions or with respect to the global marketplace. The controversy over UCITA thus offers a microcosm of the whole range of issues facing policymakers in the brave new world of global Internet commerce.

In Part I of her article, Dr. Mann provides an overview of UCITA and explains why it is controversial. In her view, UCITA represents an overly simplistic treatment of transactions in information in products and services because it does not do justice to the increased complexity of, and overlap between, intellectual property and competition policy. Further, Dr. Mann argues that it does not address the economics of spillovers inherent in information aggregation and networks characteristic of the Internet marketplace. Finally, she claims that U.S. state governments are not alone in trying to create a consistent and uniform approach to rules of contracting in the Internet marketplace. In fact, the EU recently approved the EU E-Commerce Directive, the United Nations Commission on International Trade Law promulgated a model law on e-commerce, the World Intellectual

Property Organization has promulgated and is currently considering a number of multilateral treaties governing intellectual property protection, and the Organization for Economic Cooperation and Development issued numerous reports on issues of consumer protection, security, contracts, and privacy policy.

In Part II of her article, Dr. Mann discusses the key economic implications of the Internet and the global marketplace. The Internet reduces frictions in the marketplace in the three dimensions of time, geography, and information. The reduced frictions in time and geography combine with the information and network effects of the Internet marketplace to allow more ways for a business to create value. The Internet marketplace will increasingly offer product "bundles" of goods, services, and information, making it difficult to determine exactly where, in a geographic sense, or when, in terms of the stage of production and bundling, value is created. This marketplace will have important implications for trade, taxation, and law, where jurisdiction is often marked by political or geographic boundaries, rather than commercial or economic realities.

Part III of the article looks at two specific examples of how classifying transactions in e-commerce bundles will impinge further on government policymaking: (1) the implications for international trade negotiations and tax policies; and (2) the implications for protecting intellectual property, managing personal information, and promoting innovation.

The current trade agreements administered by the World Trade Organization (WTO) treat trade in goods and trade in services differently. The appropriate way to classify e-commerce transactions has already emerged as a sticking point in international trade negotiations. UCITA's characterization of e-commmerce transactions is more in keeping with the EU position than with the position of the U.S. trade negotiators.

Likewise, tax treatment of e-commerce transactions attracts the attention of policymakers concerned about the potential erosion of tax revenues. The most challenging issues relate to sales and value-added taxes, particularly where tax treatment of goods and services differs, where the characterization affects the determination of "permanent establishment," or where business profits are treated differently from taxation of income. UCITA implicates all of these

tax issues, and the issue of taxation of income as well, because it characterizes many transactions as transactions in services and the revenue from the same as lease or royalty income. This tax policy challenge is not limited to the treatment of domestic transactions, but additionally implicates cross-border transactions. Inconsistent tax treatment of transactions between the United States and EU have already surfaced. In short, UCITA's effort to clarify contracts makes domestic and cross-border tax issues less clear.

Finally, Dr. Mann discusses the difficulty of promoting innovation while protecting personal information and intellectual property rights on the Internet. She outlines two alternative methods for controlling the collection and use of personal data: (1) the EU approach, which mandates a comprehensive approach for how information aggregators will treat personal information; and (2) the U.S. approach, which encourages a market-driven approach of innovation and self-regulation. The primary effect on the Internet market is that under the mandate approach, the private sector has fewer incentives to innovate in order to resolve market imperfections.

Likewise, national and international policymakers must balance the need to protect intellectual property that is expensive to produce yet easy to replicate, against the need to promote competition and innovation that builds on existing knowledge. Dr. Mann concludes that UCITA is a narrowly conceived law that skirts these important economic, political, and social issues.

In the fourth article, "When Your Refrigerator Orders Groceries On-Line and Your Car Dials 911 after an Accident: Do We Really Need New Law for the World of Smart Goods?," Professor Jean Braucher, Roger Henderson Professor of Law at the University of Arizona, argues that: (1) the existing law of goods is largely adequate to control transactions in the burgeoning technology based economy, (2) freestanding software, even in an electronic file, should be treated as goods, and (3) one body of law should govern transactions in hardware and software. She argues that despite intensive efforts to amend the scope of Article 2 of the U.C.C., the statutory language of the scope provision will remain the same, "transactions in goods," with no comment on computer information or licenses, thus leaving it entirely to the courts to decide whether to apply Article 2 to software transactions. She notes that Article 2 could apply to software

transactions ranging from transactions in freestanding software to sales of household appliances equipped with digitally coded chips. In addition, UCITA is a controversial statute because, while it purports to embrace freedom of contract, it in fact creates a regulatory system that delegates to licensors the power to impose terms by delayed boilerplate. In any event, she argues, the use of contracts is an inadequate vehicle for developing competition and information policy.

In Part II, Professor Braucher offers a functional approach to classifying software as goods. She begins by noting that the software industry straddles the fence on whether software should be characterized as "tangible." She argues that for purposes of the Federal Copyright Act, copies of software in random access memory should be considered "material objects" entitled to copyright protection. Further, she argues that, for purposes of the U.C.C. and UCITA, copies of computer programs should not be treated as moveable, tangible things and thus do not fall within the scope of U.C.C. Article 2. She then explains that computer programs should be treated as goods, and discusses how software meets the technical requirement for a "thing" because software controls machines that are tangible, and because software is traded in the marketplace in the same way as other goods. One reason to reject UCITA, she notes, is to avoid reinventing existing consumer protection laws that currently supplement the U.C.C. yet are applicable only to consumer goods. She points out that while UCITA makes use of U.C.C. Article 2's approach to many issues, it bends the rules in favor of software producers in ways that would likewise be beneficial to other sellers.

In Part III, Professor Braucher addresses what she concedes to be the more difficult issue surrounding software transactions: the extent to which such transactions, often denominated as "licenses," are like sales and the extent to which they are legitimately viewed as different. She distinguishes the two kinds of software licenses lumped together in UCITA. One is the license of intellectual property rights as a part of a commercial distribution system that uses intermediaries. The other is known as an End User License Agreement (EULA). It is a more recent legal innovation, and raises novel competition and information policy issues. She points out that most software is distributed with an EULA, which is essentially a contract between the

producer and the consumer. Software producers use EULAs rather than selling or authorizing the sale of copies for a variety of reasons, some legitimate and some not.

A perpetual license of a particular copy of software enables the licensor to restrict transfer and use. One legitimate reason for this restriction is to enable the licensor to price discriminate, charging different prices for different levels of use. Another, more controversial use, however, is to change the balance struck by federal copyright law between the rights of copyright holders and the rights of users of copyrighted works by imposing contractual restrictions on the exercise of the statutory fair use privilege or other statutorily permitted uses of copyrighted materials.

Even using EULAs to price discriminate has potentially adverse side effects, such as reduced access to expression and information that might otherwise be available on the second-hand market, in the public domain, or by shared use through libraries and educational institutions. While the "license" form of transaction is not now commonly used for goods other than software, licensing of software elements in goods could lead to use of transfer restrictions on software elements in goods, thereby reducing second-hand markets in a wide variety of consumer products. Not only does this pose a potential threat to fair use and competition it also creates a potential solid waste disposal problem.

At a minimum, Professor Braucher argues, the law should make unenforceable transfer restrictions that operate against the same category of user whether the transfer is direct or through an intermediary. Other limits may be necessary to protect gifts, even across use categories. Finally, in consumer contracts, UCITA's contracting model, by permitting post-transaction disclosure of material terms, including transfer and use restrictions which thereby discourage the development of a market for licensing terms, is indefensible. It could subject software companies to enforcement actions under the Federal Trade Commission Act and state equivalents.

BUSINESS METHOD PATENTS AND BIOINFORMATICS

The last three articles in this symposium focus on the propriety of patenting individual business methods and the role of bioinformatics in securing property interests in genetic research.

In the first article, "The Unblazed Trail: Bioinformatics and the Protection of Genetic Knowledge," Professor Lawrence Sung, formerly of Lewis and Clark Northwestern College of Law, and currently on the law faculty at the University of Maryland, discusses the role that bioinformatics and proteomics will play in producing better, faster, and cheaper routes to drug discovery and advances in medical practice. He predicts that these two technologies will produce legal and public debates over intellectual property protection that will rival the current debate over biotechnology patent protection for genetic discoveries generally and for expressed sequence tags (ESTs) and single nucleotide polymorphisms (SNPs) in particular. In Part I of his article, Professor Sung reviews the legal treatment of biotechnology patents involving genetic information and identifies the current issues facing the federal courts and U.S. Patent and Trademark Office (USPTO). He points out that the essence of nucleic acids as both chemical compounds and information reservoirs fosters a dichotomy that federal patent law is ill-equipped to reconcile. Recent patent applications for certain genetic discoveries, such as ESTs and SNPs, disclose chemical structure but little, if any, genetic knowledge. Given the reactive nature of the patent system, the development of legal authority trails years, if not decades, behind technological developments. This delay results in the absence of any applicable precedent to guide the USPTO. Part II of the article outlines the requirements for securing a patent on an invention, and then discusses five decisions of the Court of Appeals for the Federal Circuit (CAFC) at length, each dealing with the various requirements for securing patent protection. These cases suggest that the CAFC may encounter difficulties when attempting to make determinations as to novelty, non-obviousness, the existing state of the art, utility, and, in particular, the sufficiency of the applicant's disclosures in patent applications involving ESTs and SNPs. As Professor Sung goes on to point out in Part III, these cases provide virtually no guidance with respect to the genomic, bioinformatic, or proteomic

inventions that confront the USPTO today. Therefore, he turns to the USPTO's own controversial policy position. In 1997, USPTO announced the likely grant of patent claims to ESTs and SNPs, despite minimal disclosure of their biological significance. On January 5, 2001, it retreated from that position in the examination guidelines on the patentability requirements of utility and written description, which ended an almost four year moratorium on the issuance of patent claims to ESTs and SNPs. In Part IV of his article, Professor Sung notes that the USPTO recognizes that inventions involving nucleic acids possess distinct characteristics and function that cannot easily be divorced from one other. While the judicial treatment of this technology may be stormy, its resolution, Professor Sung believes, might owe as much to the progress of science as it will to actions by the USPTO and the federal courts with respect to that science, given the likelihood that increased competency in computer predictive modeling will develop bioinformatics and proteomics to the point that a bare nucleotide sequence can reveal its biological significance. In conclusion, Professor Sung argues that the USPTO and the CAFC should take the position that a patent claim to a bare nucleotide sequence, devoid of any indication of biological association or function, lacks utility. Similarly, a patent claim to a desired biological association or function, without the disclosure of a specific nucleic acid as defined by its nucleotide sequence, is not supported by an adequate written description. Under this interpretation, the patentability of a nucleic acid depends on proper disclosure reflecting the merger between its characteristics as a chemical compound and a storage medium for biological information.

The last two articles in this symposium deal with the rapidly growing phenomenon of business method patenting. In the first of these articles, "Searching for Economic Balance in Business Method Patents," Professor Keith Maskus, professor of economics at the University of Colorado, and Eina Wong, a doctoral candidate, define a business method patent as one awarded to inventors of novel techniques that perform commercial functions and are not embodied in specific physical inventions. Frequently, these techniques are expressed in computer programs that achieve a particular business application. Maskus and Wong identify the four largest categories of

services and organizational techniques covered by the business method patent and note that the recent expansion of e-commerce transactions accounts for an increase in this type of patenting, with Internet-related patents increasing over 500% from 1996 to 1999. Even so, Internet patents still only account for approximately 1% of all patent applications.

Maskus and Wong note that an equally important catalyst in the explosion of business method patents was the decision of the CAFC in *State Street Bank and Trust Co. v. Signature Financial Group, Inc.*,[1] which upheld a patent on a "hub and spoke" system for making financial resource allocations and managing mutual funds. The court also rejected arguments that the system, an application of a mathematical algorithm, and a computerized business method, was not patentable subject matter. This decision is controversial, both for limiting the terms under which mathematical algorithms can be excluded from patentable subject matter and for abolishing the so-called business method exception to patentability. Even after *State Street Bank and Trust Co.*, business method patents remain controversial, because the patents are thought to provide broad and lengthy exclusivity on inventions that may not be particularly novel or non-obvious. Yet, precisely because business method patents are new, economists pay them little attention. Thus, Maskus's and Wong's paper is designed to shed light on the issue by considering economic arguments for awarding patents for business methods.

In Part II of the article, Markus and Wong discuss the structural problems in U.S. patent law that lead to overbroad patent protection. These include a shortage of both qualified examiners and a formal stock of prior art, procedural obstacles to challenging patents, and patent applications, for obviousness, and the perennial danger of "capture" of the USPTO by commercial interests.

Part III provides an economic analysis of business method patents. The authors begin their discussion by conceding that there is no compelling economic argument that would support a blanket ban on business method patents. Rather, the critical issue is whether the patent system, as currently structured, embodies an undesirable

1. 149 F.3d 1368 (Fed. Cir. 1998), *cert denied*, 525 U.S. 1090 (1999).

imbalance in favor of over-protecting inventors in ways that threaten to impede innovation and competition in business techniques, and in particular, on the Internet. Business methods accomplish two types of goals: (1) reducing costs and raising productivity by improving techniques for managing processes, typically of a financial nature, and (2) reducing transaction costs between firms and consumers. E-commerce is likewise a powerful tool for reducing distribution costs and is, thus, likely to expand rapidly as a channel for commercial activity. The question is whether business method patents will advance or retard this development.

Maskus and Wong identify four fundamental characteristics of computerized business methods that make them controversial as a subject matter for patent protection. First, computerized business methods may find application across wide swaths of business activity, thus fundamentally distinguishing them from inventions aimed at solving specific engineering problems. Second, computerized business methods appear to be familiar commercial practices effectuated for electronic markets simply by being incorporated into computer programs. Third, many of the processes and services for which patent protection might be sought are subject to short life cycles. Fourth, computerized business methods will accentuate and solidify network effects that exist when the advantage of joining a network, linking to a system, or purchasing a particular piece of software rises with the number of users. Thus, a broad patent issued for a distribution technique with comprehensive appeal poses a considerable entry barrier for second comers. Notwithstanding the *State Street Bank and Trust Co.* decision, which ignores the economics of business method patents, Maskus and Wong state that there is no direct evidence suggesting that business method patents will promote invention and commercialization of business techniques on the Internet and that the indirect evidence is decidedly mixed. They conclude that the patent system, as it is currently structured, is imbalanced in favor of assigning extensive property rights to inventions of questionable novelty and limited non-obviousness. They propose reform of the PTO's examination process, the patent opposition procedures, and the scope and duration of patent grants.

In the final article, "On Business Method Patents and Patent Floods," Professor Michael Meurer, professor at Boston University

School of Law, argues that the *State Street Bank and Trust Co.* decision will increase the frequency of patent floods. He notes that a large number of related patents in a new field create special problems for competition beyond the market power that might arise from individual patents. Patent floods strain the resources of the USPTO and adversely affect the quality of issued patents, thereby creating uncertainty and costly litigation. Start-up companies may be particularly vulnerable to strategic patent litigation. In addition, a thicket of patents may stultify development of technology because of the cost of securing patent licenses.

Cross-licensing agreements and patent pools can mitigate these problems. However, these agreements and pools sometimes cause anti-competitive problems of their own. Thus, Professor Meurer argues that doctrinal patent law, namely subject matter and non-obviousness standards, should be employed to reduce these problems. He argues that reversal of *State Street Bank and Trust Co.* is the solution. In the alternative, he argues for a narrow reading of the *State Street Bank and Trust Co.* case and rigorous application of the non-obviousness standard.

In Part II of his article, Professor Meurer identifies two types of business methods that firms typically attempt to patent: administrative methods and customer service methods. He describes the various forms that an administrative method, or back-office management technique, can take and the implications of granting such a broad patent. He also describes the customer service method, which includes advertising, pricing, and other marketing techniques, and the types of patents sought under this general category. In Part III, Professor Meurer argues that patenting customer service methods is more problematic than patenting administrative methods. He begins with a description of a patent flood, using past patent floods in the motion picture, airplane, petroleum refining, and gene patenting industries as examples. These earlier floods, however, were set off by a technical breakthrough, which will continue to occur and continue to cause patent floods. After *State Street Bank and Trust Co.*, technological breakthroughs will no longer be a precondition for a patent flood. Additionally, any technological breakthrough might now set off two different patent floods, one on the relevant technology and one in the new market created by the breakthrough.

Part IV describes three problems caused by patent floods, namely high litigation and settlement costs, exclusionary misuse of patents, and a retarding effect on diffusion and cumulative innovation. In Part V, he details the shortcomings of patent pooling and cross-licensing as solutions to the problems generated by patent floods. In Part VI, he points out even if *State Street Bank and Trust Co.* is not eventually reversed, the decision leaves open questions that might limit its scope. First, are business methods lacking a software implementation patentable? Second, what kinds of methods are sufficiently useful, tangible, and concrete to warrant patent protection? He also notes that even if *State Street Bank and Trust Co.* were reversed, business methods would still enjoy a measure of patent protection where they have applications in technical fields and may be protected as trade secrets.