UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

A&M RECORDS, INC., a corporation, et al.

Plaintiffs,

v.

NAPSTER, INC., a corporation, and DOES 1 through 100,

Defendants.

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JERRY LEIBER, individually and doing business as JERRY LEIBER MUSIC, et al.

Plaintiffs,

v.

NAPSTER, INC.,

Defendants.

Case Nos. C 99-5183 MHP (ADR)

C 00-0074 MHP (ADR)

**EXPERT REPORT OF PROFESSOR LAWRENCE LESSIG PURSUANT TO FEDERAL RULE OF CIVIL PROCEDURE 26(a)(2)(B)**

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## I. Introduction

1. Napster, Inc. ("Napster") is alleged to have been contributorily and vicariously liable for copyright infringement committed by users of the Napster system. I have been asked to report about the nature of the Internet community, and about efforts at regulating behavior on the Internet.

## II. Qualifications and Scope of Testimony

2. I am a professor of law at Stanford Law School. During the past academic year, I was a fellow of the Wissenschaftskolleg zu Berlin. In 1983, I received a B.S. in management from the Wharton School, and a B.A. in economics from the University of Pennsylvania. I received an M.A. in philosophy from Cambridge University, graduating in 1986. I received a J.D. from Yale Law School in 1989. After completing law school, I clerked for Judge Richard Posner of the Seventh Circuit Court of Appeals, and for Justice Antonin Scalia of the United States Supreme Court. I was a professor of law at the University of Chicago Law School from 1991 to 1997, and from 1997 to 2000, the Jack N. and Lillian R. Berkman Professor for Entrepreneurial Legal Studies at the Harvard Law School.
3. I have written extensively in the field of Internet regulation. In addition to my recent book, *Code and Other Laws of Cyberspace* (Basic Books 1999), I have written over fifteen articles exploring the relationship between regulation and cyberspace, and have given many more lectures on the same topic. The focus of most of this work has been the interplay between technology and law, and on the use of law to effect changes in technology and, in particular, internet architectures. In addition to my scholarly work, I am a regular columnist for The Industry Standard. I have also contributed essays to the Wall Street Journal, the Washington Post, the LA Times, and the Boston Globe.
4. I have been a close observer of the Internet and its culture for the last seven years. I taught one of the first "Law of Cyberspace" classes at an academic law school in 1995 (Yale). Since then, I have taught five different Internet related classes. I have attended over eighty conferences about cyberspace and its

regulation, and I have consulted extensively with policy makers about the regulation of cyberspace.

5. I have been active in a number of Internet-related law suits and policy determinations. I testified before Congress on the Child Online Protection Act. I have met with the Justice Department and the F.C.C. on matters related to the merger of AT&T and MediaOne. In 1997, I was asked by Judge Thomas Penfield Jackson to serve as Special Master in the Justice Department's consent decree case against Microsoft Corporation. In February 2000, at the request of Judge Jackson, I filed an amicus brief in the current case against Microsoft. I filed an amicus brief before the First Circuit Court of Appeals in a case challenging an injunction against sites that carried software designed to crack the program "CyberPatrol." *Microsystems Software, Inc. v. Scandinavia Online*, No. 00-1503 (First Circuit Court of Appeals, 2000). I am currently representing a group of plaintiffs challenging Congress' Sonny Bono Copyright Term Extension Act. *Eldred v. Reno*, No. 99-5430 (D.C. Circuit Court of Appeals, 1999). My testimony in these cases is available on my web page,[1] and my full c.v. is attached as Exhibit 1.

6. I offer the following testimony not to explain the technology of computers or computer networks per se, nor to evaluate the strength of the technology at issue from the perspective of a computer scientist. Although I have written software, and have studied network design and technology extensively, I have not been formally trained in computer science or the art of programming. My expertise is in understanding the relationship between law and technology, and, in particular, the way in which law might affect the technologies of the Internet.

7. I have been asked by the defendant in this case, Napster, to provide evidence about the character of the Internet, and about the consequences of efforts to regulate the Internet to protect intellectual property rights. I am not being compensated for this testimony, beyond expenses incurred in its preparation.

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[1] <http://cyber.law.harvard.edu/lessig.html>.

## III. Scope of Work

8. In preparing this report, I have reviewed published material about Napster, in addition to the material provided to me by attorneys representing Napster. I have used a version of the Napster technology, as well as a version of the Gnutella technology. I base my conclusions upon that review, as well as upon my experience studying Internet culture and the regulation of the Internet over the past seven years.

9. My aim in this review has been to assess the feasibility and effectiveness of regulating the Internet through an injunction banning Napster-like technologies, in light of the values of the Internet, and the values the Supreme Court has identified for assessing regulations of the Internet. My analysis is unavoidably a mixture of legal and technological considerations. I take it as given both that the law has a proper role to play in protecting copyrighted works against violations of the Copyright Act's "exclusive rights," and that those protections must be secured through means that are consistent with other values that the Supreme Court has identified as relevant in this context. My objective has been to place this particular dispute in the context of a more general question: How the law, consistent with these other values, interacts with technology.

## IV. Summary of the Analysis

10. The Supreme Court has adopted a particular method for evaluating the application of law to the technologies of the Internet, as well as a consistent method for evaluating the application of copyright law to new technologies that might be used for copyright infringement. As evinced in *Reno v. ACLU*, 521 U.S. 844 (1997), before extending a law to the Internet, the Court has been careful to assess the impact of that regulation on the free flow of ideas that the decentralized, open network of the Internet creates. Likewise, the Court has been slow to restrict the development of new technologies, outside of the context of the Internet, that might be used to infringe copyrights. Here too, the Court has encouraged extensive and careful factual review before concluding that a technology can be banned merely because it can be used in connection with copyright infringement. In both contexts, the objective has been the same: to understand the interplay between law and technology before ban-

ning a particular technology. It is about that interplay that I offer evidence.

11. The Supreme Court's consistent approach has special relevance in the context of this case. It demonstrates the importance of considering the practical effect of a regulation upon the technologies of the Internet before directly applying that regulation through the use of injunctive power. In my view, a consideration of that effect weighs against a ban on the Napster technology. In particular, in my view (1) Napster has a potential for substantial, non-infringing use; (2) plaintiffs could take reasonable steps to minimize any harm to them caused by this technology; and (3) eliminating this particular technology — a step that no court has ever taken with respect to any Internet technology — is not likely to have any substantial effect in reducing any harm that plaintiffs suffer.

## V. The Regulation of Cyberspace

12. I approach the questions raised by this case against the background of certain assumptions. I take it as given that behavior in cyberspace, as in real space, is regulated by more than law. *Code and Other Laws of Cyberspace* 85-100 (Basic Books, 1999) ("Code"). Beyond law, social norms regulate behavior in cyberspace. So too does the market regulate behavior in cyberspace. And, of particular importance to this case, the *architecture* or design of cyberspace regulates behavior in cyberspace.

13. To understand the regulation of a particular kind of behavior in cyberspace, we must therefore account for the interaction among these different modalities of regulation. *Code,* 99. Restrictions imposed through law, for example, might be undermined by changes in technology; changes in technology, in turn, can reinforce the regulations sought through law. Therefore, the question in each case must be the interaction between the effects of law and technology on a particular behavior being regulated.

14. The regulation of "adult speech" in cyberspace is a familiar example. Cyberspace has made available a great deal of "adult speech" or speech considered "harmful to minors." It is difficult, however, to zone this speech from minors in cyberspace, primarily because the age of a user in cyberspace is not self-authenticating. Unlike real space, where the age of individuals is relatively easy to determine, the age of a user in cyberspace is

not easily verified. This makes it difficult to condition access upon age, and in turn, difficult for governments to require that speech deemed "harmful to minors" be kept from minors.

15. This difficulty was the focus of the Supreme Court's consideration of Congress's first direct regulation of cyberspace, the Communications Decency Act of 1996. Pub. L 104-104, Title V, 110 Stat. 56, 133-43. Congress sought to restrict the access of minors to speech deemed "indecent." In voiding that aspect of the CDA, the Supreme Court emphasized the burden such regulation would impose on those supporting or maintaining the architectures that constituted cyberspace. *Reno v. ACLU,* 521 U.S. 844 (1997). It would significantly, and unconstitutionally, burden Internet Service Providers, the Court observed, to enable code that would facilitate zoning based on age. *Id.*, at 877-79. Alternative, voluntary techniques, the Court suggested, would equally advance the government's interest without that burden on the Internet. *Id.,* at 877; *id.*, at 890 (O'Connor, J., concurring).

16. *Reno v. ACLU* follows a particular method: before enforcing a law regulating speech on the net in a way that might weaken or undermine free speech values, the Court considered the interaction between that law and the architecture of cyberspace. The Court was careful to assure that the regulation not interfere with the Internet's development. This was true even though the interest advanced by the CDA was, in the Court's view, "compelling." *Id.,* at 869. That interest, however important, did not relieve the Court of the requirement that it assure that state regulation not interfere with the free speech potential that the Internet has produced.

## VI. The Architecture of the Internet: End-to-End

17. The Internet is the world's fastest growing computer network. While it is not the first computer network, the Internet is the first large scale computer network to adopt a particular network design. Described recently by the Ninth Circuit Court of Appeals as "end-to-end,"[2] *AT&T v. City of Portland,* 2000 U.S.

[2] The phrase comes from the work of network architects Jerome Saltzer, David P. Reed, and David Clark. See *End to End Arguments in System Design*, http://web.mit.edu/Saltzer/www/publications/.

App. LEXIS 14383, *23 (9th Cir. June 22, 2000), this design has enabled extraordinary innovation on the Internet. By requiring that the network remain simple, and by counseling designers to place "intelligence" at the ends, or in the applications using the network, the Internet has offered innovators a neutral platform upon which to develop. Innovators realize that if they conform their applications to the basic Internet protocols, the Internet will run their application.

18. In my view, this principle of neutrality is largely responsible for the extraordinary growth that the network has seen. By keeping network controls simple, and by not optimizing the network to any single purpose, the network has invited new protocols and new uses that could not have been originally anticipated. Saltzer/Clark/Reed describe the relationship, for example, between this principle of neutrality and the birth of the World Wide Web. During the 1980s, as the authors describe, many debated optimizing the net for telephony, which was at that time, in the minds of many the expected use of Internet technology. Had the net been optimized on that design, however, in violation of the principle of end-to-end, it would not have been possible for Tim Berners-Lee to develop and implement the protocol supporting the World Wide Web.[3]

19. This principle of neutrality and simplicity in design continues to be relevant to the Internet's design, especially as the Internet becomes increasingly regulated. In my view, regulations of the Internet should be consistent with this fundamental architectural design, if the innovation and diversity of views that the original Internet protected is to be preserved.

## VII. The Architecture of the Internet: Protocols

20. Though people speak of "the Internet," the Internet is neither a single network, nor a single, permanent protocol implementing this end-to-end design. *Code*, 101-102. The Internet is constituted instead by many networks, all of which respect a common set of protocols. These protocols are not static. They instead

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[3] *Id.* at 70 (emphasis added). Note the initial ARPANET did not implement End-to-End perfectly into its design. It was because of changes in the 1970s suggested by Vint Cerf and David P. Reed that the network we now recognize as the Internet conformed to End-to-End.

evolve over time as new functionality gets added to the basic set. Networks "on" the Internet are those that respect these protocols. See Pete Loshin, *TCP/IP Clearly Explained* 19-20 (2d ed. 1997) (listing basic protocols).

21. These Internet protocols are commonly referred to as "TCP/IP." Among TCP/IP protocols are basic protocols facilitating transfer of packets of data among networks. *Code*, 101. But in addition to this basic set, the Internet also includes application protocols that enable familiar Internet functions. These include, among others, a "file transfer protocol" (FTP), that enables a file to be transferred between two computers; a "simple mail transport protocol" (SMTP), that enables email to be transferred; and a "hyper text transfer protocol" (HTTP), that enables the linking of documents across different machines. *Code,* 102.

22. These Internet protocols are used by a wide range of network applications to facilitate an extraordinary array of network activity. Though each is relatively simple, like DNA, they together facilitate an extraordinary diversity of applications and uses. By remaining committed to the neutrality of end-to-end, and by permitting a gradual evolution of protocols within the basic Internet set, the Internet has, through a decentralized process of development, become the most important communications network in history.

23. FTP is among the most important of the application protocols. It supported the earliest applications on the Internet, by facilitating the transfer of files between two computers. See Reply Comment of Andrew Oram, *Concerning the Copyright Office's Rulemaking on Exemptions from Prohibition on Circumvention of Technological Measures that Control Access to Copyrighted Works,* March 31, 2000 (available at <http://www.cpsr.org>). These files could be computer programs (so users can, for example, buy new software and download it from the Internet). They could be web pages produced by design software on a designer's computer, which then get transferred to a server where the web page will be accessed. Or they could be movie files, or music files, that would be transferred to permit a user to play that content on his own machine.

24. There are many applications that have been built upon this FTP protocol and extended its functionality. Napster is just one example. Other programs too facilitate the easy location and transfer of files among network servers. The program

"Fetch," for example, uses FTP to make it easy for a user to build a list of sites for downloading files. The Archie system is another example, building indices of files on Archie servers which can then be downloaded using an Archie client. Both are examples of applications that build upon the general file transfer protocol and thereby extend the functionality of the net.

25. These network application protocols are a tool box for developers to draw upon in building applications and uses for the Internet. They are general purpose protocols, though their bias is to enable the decentralized development of new applications. Unlike the original telephone network, no single institution or entity or government decides which applications will run on the Internet. Any application that complies with the protocols will run on the Internet.

## VIII. The Internet's Effect Upon Law

26. One unavoidable consequence of this decentralized, neutral design is that innovators will develop technologies that will affect legal rights or regulation. Sometimes this effect will be intended; other times it will be unintended. In both cases, regulators must decide how best to respond to this change in the effectiveness of a pre-existing legal protection or regulation. That decision must take account of the interplay between the technology and law.

27. The examples of this effect are many, and are usefully kept in view.

    · *The Internet's effect on speech regulations:* Because the network cannot discriminate among the content of speech uttered on the network, it rendered ineffective many of the regulations by governments over the content of speech. States that previously controlled the access by their citizens to certain political or cultural speech found it hard to effect that control after the deployment of the Internet. The Internet disabled content regulation because its architecture had no facility for distinguishing among different kinds of content. The consequence was an expansion of free speech internationally. See, e.g., Peng Hwa Ang, *Censorship and the Internet: A Singapore Perspective,* <http://info.isoc.org/HMP/PAPER/132/abst.html>.

- *The Internet's effect on privacy:* Under the initial architecture of the Internet, it was relatively difficult to collect information about Internet users. The effect of this architectural feature was that privacy was generally protected. With the release of Netscape Enterprise Server 2.0, however, and the general rise in the use of "cookie" technologies, it has become much easier to monitor and track user behavior on the Internet. The consequence of this change in technology has been to render less effective protections for privacy. *Code*, 142-163.

- *The Internet's effect on copyright*. An early Internet protocol — NNTP — enabled "USENET." USENET is a public messaging system, where users post messages to "newsgroups" that can then be read by millions of viewers across the world. While the number of "newsgroups" in USENET is extremely large, among the most popular are newsgroups that carry binary files of erotic pictures. A large percentage of these pictures are scanned images from Playboy and Penthouse magazines, plainly posted without regard to rights of the original copyright holders. The consequence of the emergence of this protocol, enabling anyone anywhere to become a "publisher," has been the weakening of copyright protection of commercial publishers. See, e.g., *Penthouse.com Moves Against Massive Copyright Infringement*, Business Wire (May 2, 2000).

- *The Internet's effect on limits on fraud*. Email enables the low cost delivery of apparently personal messages. Unlike regular post, which can cost more than a dollar per message, email is essentially free to the sender. Programs for gathering email addresses from public postings (such as USENET) have generated lists of millions of email address which are often sold for less than $100.00. The consequence is that a commercial message can be delivered to millions at essentially no cost. Such economics have led to a dramatic rise in the quantity of "spam" sent by email. And as much of this spam is fraudulent, this has meant a dramatic increase in the burden of fraudulent commercial practices on consumers. Lawrence Lessig & Paul Resnick, *Zoning Speech on the Internet: A Legal and Technical Model*, 98 Mich. L. Rev. 395, 427-29 (1999) (discussing the

control of "spam") ; Federal Trade Commission, Fighting Consumer Fraud: New Tools of the Trade(April 1998).

- *The Internet's effect on regulations protecting children.* A relatively recent technology enabled by the Internet has been web based chat services. These make it easy for individuals to engage in real time conversation with others located around the world. Users of these services enter a virtual room, and converse with others in that room by typing messages that get associated with a user's identity. Some of these services allow two individuals to choose to "leave" the "public" room for a "private" room where conversation can occur without others viewing it. This technology has increased the exposure of children to sexual abuse. Because adults can pretend to be children, they can lure young children into conversations that then expose the children to risks with the posing adult. Without this technology, it would be relatively hard for the same adults to engage in such conversations with kids (thirty-five year old men roaming playgrounds are usually easily noticed); with the technology, this criminal activity is increased. See, e.g., Richard Green, *Pedophiles Prowling Streets of Cyberspace,* The Post and Courier (Charleston, SC) (June 18, 2000).

28. In each case, the technology of the Internet has had a consequence for particular kinds of legal regulation or legal protection. Whether that regulation was a control of speech, the protection of privacy, the defense of copyright, the protection against fraud, or the protection of children, the technology of the Internet has weakened the effect of the legal regime that existed prior to the Internet. The Internet changed the balance of protection afforded by law, by enabling behaviors that weaken the protections of a legal regime.

29. Governments have responded in different ways to this change in the effectiveness of real space regulation. In some countries, governments have banned or directly interfered with Internet technologies. This interference has been effected either by restricting use of the Internet, or by requiring that Internet activity pass through government controlled sites. See, e.g., Geremie R. Barme and Sang Ye, *The Great Firewall of China*, Wired 5.06 (June 1997). In other countries, the response has

been to target illegal behavior on the Internet, and to push for new technologies that might help limit the effect of this illegal behavior. See, for example, the policy of Hong Kong, at <http://www.hkispa.org.hk/>.

30. The United States, and with few exceptions,[4] has opted for the second strategy. While acknowledging that behavior in cyberspace is subject to legal regulation, in cases where the technology of the Internet has made legal rules less effective, and where the technology has had some legitimate use, the response of the United States government has been to find ways to better enforce the legal rule, rather than to disable, or ban, an Internet technology. The general question has been how best to counteract any illegitimate effect, given the range of tools for regulating behavior: What mix of law and technology, in other words, will best protect the legitimate state interests at stake, without undermining the free speech and creativity that the Internet makes possible?

31. This response of the U.S. government is not simply an abstract question of public policy. In my view, the Supreme Court has in effect mandated this response when legal regulations would have a dramatic, or terminating, effect on an Internet technology. That mandate flows from the Supreme Court's opinion in *Reno v. ACLU*. No doubt the legitimate state interest implicated in *Reno* (protecting children from material "harmful to minors") is great. Indeed, in the view of many, this interest is stronger than the interest in protecting copyright holders from uncontrolled access to their speech. Yet before the regulation of the CDA was permitted, the Court in *Reno* required an analysis of how the state regulation would burden the technologies

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[4] I do not intend to overstate this characterization. The response of the United States government has not been consistent, and the response of state governments has been much less careful. The United States government has banned, for example, the export of certain encryption technologies, even though those technologies, were they integrated into the network, would plainly facilitate many legitimate uses of the network. See Bernstein v. U.S. Department of Justice, 176 F.3d 1132 (9th Cir 1999), withdrawn 1999 U.S. App. LEXIS 24324. So too has the United States government regulated unauthorized access to computer systems, even though an argument favoring access could well be made. Harold Smith Reeves, *Property in Cyberspace*, 63 U. Chi. L. Rev. 761 (1996). At this stage, however, the attitude of the Supreme Court is just beginning to work its way through the legal system. It is therefore not surprising that there is some inconsistency among different branches of the government.

of the Internet. Compare *United States v. Playboy Entertainment Group, Inc.,* 120 S. Ct. 1878 (2000) (similar approach applied to cable regulation). And where alternative, less drastic requirements would effect the same state end, the Court invalidated a statute that did not use those less restrictive means. At least during an initial period of Internet development, the question is not just whether a regulation that affects speech on the net advances a state end, but whether it advances that end with the least possible burden on the technologies of the Internet.

32. The same conclusion follows from the Supreme Court's treatment of VCR technology in the 1970s and 1980s. While copyright holders considered the VCR to be an illegal technology—as MPA President Jack Valenti described the technology, "the VCR is to the American film producer and the American public as the Boston Strangler is to the woman alone,"[5]—the Supreme Court was extraordinarily reluctant to use copyright law to restrict VCR use or production. *Sony Corporation v. Universal City Studios,* 464 U.S. 417 (1984). Instead, in evaluating whether a technology could be banned because it could be illegally used, the Court said that "the public interest in access to that article of commerce is necessarily implicated." *Id.* at 440. So long as a technology is "merely … capable of substantial noninfringing uses," *id.* at 442, the technology would be protected.

## IX. Copyright and the Internet

33. Many have argued that no threat to legal protection on the Internet is greater than the threat the Internet presents for copyright. For the same reason that cyberspace strengthens free speech, it simultaneously renders the protection of copyrighted material particularly vulnerable. In both cases, the original architecture of cyberspace made it extremely hard to control exchange based on the content of the speech exchanged. In both cases, controlling exchange based on the content of the speech exchanged is the essence of the regulation. See the analysis in Pamela Samuelson, *The Copyright Grab*, Wired 1.34 (1996).

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[5] Home Recording of Copyrighted Works, Hearings, Subcommittee of the Judiciary Committee, 97th Cong., 2d Sess., Serial No. 97, pt 1, p. 8.

34. Copyright holders have feared the threat posed by the Internet; opponents of copyright have celebrated it. Both sides have based their response upon a fact about the early architectures of cyberspace: That the architecture enabled perfect copies of digital content to be made for free, and that the early architecture of the net made it possible for these perfect copies to be distributed also essentially for free. These two features of the initial architecture meant that digital content (unprotected by technological protection measures) was extremely vulnerable in cyberspace.

35. But in my view, based on a consideration of the interaction between law and technology, both perspectives miss an important point. At the same time that cyberspace presents a threat to copyrighted material, it also offers a much greater opportunity to control the access and use of copyrighted materials. *Code,* 130-138. Technologies are being developed that can radically increase the protection and control that copyright holders have over their copyrighted material. These technologies will in turn, in my view, make it possible for copyright holders to exercise more control over the use of copyrighted material than they could in real space.

36. The best example of this technology is often referred to as "trusted systems." *Code,* 127-29. Xerox PARC's Mark Stefik is a leading researcher in this field. Stefik describes systems where the copyright holders would not only be able to control the duplication of copyrighted materials, but would also be able to control the actual use of copyrighted materials. Trusted systems could control, for example, how often a text was accessed, or read. It could control whether the user had the ability to cut parts of the text and paste them into other texts. It could control whether the text could be printed, and how many times. It could control whether the text could be shared. The technology, in other words, would give the copyright holder a kind of power over the user of copyrighted material that the copyright holder has never before had. See Mark Stefik, *Shifting the Possible: How Trusted Systems and Digital Property Rights Challenge Us to Rethink Digital Publishing,* 12 Berkeley Tech. L.J. 137 (1997).

37. Trusted systems are not the only technology that would enable copyright holders to better control their content. Technologies for watermarking copyrighted material are proliferating; technologies for tagging copyrighted material are common; tech-

nologies for making copyrighted material uncopiable are emerging. In each case, these technologies would enable the copyright holders to regain a degree of control over their material on the that the original architecture of the Internet removed. There represent a change in the technologies of the Internet that would strengthen the protection of law.

38. This increase in control implicates important copyright interests. As the Supreme Court noted in *Sony*, "the law has never recognized an author's right to absolute control of his work…". 464 U.S., at 433 n.13. Yet these technologies could in effect give an author "absolute control of his work." This has led many to worry that the architecture of cyberspace will create too much, rather than too little, control over the distribution of content. In other words, that the technology of cyberspace, in combination with the protections of law, will produce greater control over the use of copyrighted material than the balance intended by the Copyright Act.

39. In this context, given (1) the ambiguous effect of Internet technologies on copyrighted speech, (2) the Supreme Court's strong protection for the free speech values embedded in the original net, and (3) the Supreme Court's rejection of "an author's right to absolute control of his work…" *id.*, it is important, in my view, that society not act too quickly to skew legal protection without a careful review of the actual effects of any particular technology on the legal interests at stake.

40. This conclusion gains support from the free speech interests that the Court relied upon in *Reno.* Copyright law, like the regulation on "indecent speech" in *Reno*, is a regulation of speech. Unlike the speech regulation in *Reno,* it may well be a content neutral regulation of speech.[6] But whether content neutral or content based, copyright law is still a regulation of speech demanding heightened judicial scrutiny. Courts have been instructed to move carefully in the context of speech regulations that affect the Internet. If that caution was required in the context of legislation aimed at protecting children, it

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[6] A number of influential scholars have argued that copyright is a content based regulation of speech. See, e.g., Mark A. Lemley & Eugene Volokh, *Freedom of Speech and Injunctions in Intellectual Property Cases,* 48 Duke L.J. 147 (1998). But *see*, *e.g.*, *Dr. Seuss Enters. v. Penguin Books USA, Inc.*, 109 F.3d 1394, 1403 n.11 (9th Cir. 1997) (treating it as content-neutral).

should be no less required in the context of legislation aimed at protecting copyright holders. If there is a balance to be struck judicially, it is to be struck only after an extensive hearing about the effects of any such judicial regulation on net architecture.

## X. Music and the Internet

41. The Internet has become an important mode for distributing music. Through the use of compression technologies such as the MP3 format, individuals are able to locate and download relatively high fidelity copies of music from a practically endless array of sources. A large number of businesses have been formed based upon this new mode of distribution. Among these include eMusic.com and MP3.com.

42. These emerging businesses have a distinctive model for distributing content on the Internet that differs from the traditional model for distributing music content in real space. Rather than a few concentrated content distributors, the technology of the Internet makes feasible many content providers, whose content is identified and linked through sophisticated search and preference matching engines. As the cost of distribution would be slight, and the cost of promotion and support thus less, this model of distribution could well facilitate a greater diversity in copyrighted content and musical sources. It could also, in the view of many, facilitate a greater return to authors—the intended beneficiaries of the Constitution's Copyright Clause.

43. Some of the traditional record companies apparently resist this change. They have responded to the possibilities of this different model of distribution by selectively deploying the law to weaken this emerging alternative to their method of distributing content. Rather than taking steps to protect their own content, while leaving other content to be freely exchanged in this new mode of distribution, many of these companies have sought to make illegal the technologies that support this new mode of distribution. Their apparent aim is to use the law to fit the Internet into their traditional business model.

44. It is perfectly legitimate, in my view, for these corporations to lobby Congress to effect this end. But where the net benefit to society of a new technology is uncertain, and where a balance among competing interests must therefore be struck, it is beyond the judicial scope, as the Supreme Court indicated in *Sony*, for courts to engage in a balancing of interests. Courts are

not to pick sides in a battle over modes of distribution for music. Instead, if a new technology emerges that presents new threats to an existing model of doing business, it has been the practice of the Supreme Court to leave to Congress the task of redrawing an appropriate balance.

45. This conclusion follows directly from the Supreme Court's treatment of the alleged threat presented by the VCR in *Sony*. After considering a careful and extensive record provided by District Court Judge Ferguson, 480 F. Supp. 429 (C.D. CA. 1979), the Court determined that so long as a technology was "capable" of a "substantial noninfringing" use, it would not, without more direction from Congress, ban the technology. The issue was not whether the majority of actual uses of VCRs were "fair uses" or not. The issue was whether the VCR was "merely … capable of substantial noninfringing uses." 464 U.S., at 442. As I explain below, there can be no doubt, in my view, that the technologies at issue in this case are "capable of substantial noninfringing uses," and that these uses are themselves central to evolution of important technologies on the Internet.

46. As the Court indicated in *Sony*, Congress frequently is called upon to redraw the balance between the rights of copyright holders and consumers in light of the emergence of new technologies. In light of the practice of home recording, for example, Congress recently did draw a balance in the Audio Home Recording Act. 17 U.S.C. § 1002. The express intent of Congress in that act was to leave private, noncommercial home recording unregulated by copyright law.[7] If that is the proper interpretation of the Act, and if the behavior of users of the Napster system fall within that category, then a great deal of the activity using the Napster technology would be noninfringing uses.[8] If in light of the changes that the Internet has created, Congress now wants to draw a different boundary — banning the production and distribution of MP3 files, even for

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[7] Congress did however regulate equipment to help protect copyright interests. See Code, 46-47.

[8] Regardless of how the Audio Home Recording Act is interpreted, a great many uses of Napster are clearly non-infringing, including for example the distribution of authorized works and the distribution of works in the public domain.

home or noncommercial use — Congress is free, subject to constitutional limitations, to legislate in that direction. But the admonition of the Court in *Sony* is that courts alone do not make such amendments to the copyright laws.

47. This conclusion is especially strong when, as in this case, the very plaintiffs bringing the action have themselves facilitated the distribution of copyrighted music without technologies for enabling the control by the copyright holder. Sony Corporation, for example, has pushed technologies that enable and encourage users to "rip" or copy the content of copyrighted CDs, and to make that content available in a form that can be easily exchanged. They have done this even though there are many technologies for enabling the distribution of music in a more controlled format. ("LiquidAudio" is an example.) Thus, these plaintiffs, on the one hand, are adding fuel to the fire of this revolution in distribution, while, on the other hand, attempting to shut down any avenue of distribution that they cannot control. This is an effort to extend the reach of their state-granted monopoly rights. And while they are free to petition Congress to extend their monopoly rights in this way, courts are not the venue for such an extension.

## XI. Napster and Internet Architecture

48. Napster represents an evolution in Internet technologies. It is a technology for facilitating more efficient searches for content on peer systems, and for more efficiently transferring content from peer systems. Neither of these two components alone represents a radical advance in Internet technology: the first is simply a directory service, or "name space," Erik Nilsson, *Napster: Popular Program Raises Devilish Issues*, The O'Reilly Network <http://www.oreillynet.com>; the second simply uses the file transfer protocol (FTP) to transfer located content. Reply Comment of Andrew Oram, *Concerning the Copyright Office's Rulemaking on Exemptions from Prohibition on Circumvention of Technological Measures that Control Access to Copyrighted Works,* March 31, 2000 (available at <http://www.cpsr.org>). But Napster does combine these two functionalities in an innovative way that results in making it much easier to locate and collect content from participating users.

49. In this ability to facilitate better peer-to-peer searching, Napster is among a set of new technologies that present the opportunity for a radical change in the nature of Internet search

technologies. As the Internet itself advances, and as the World Wide Web adopts more sophisticated designs (including dynamic pages), traditional search technologies become less useful. Search engines that rely upon "bots" to spider the web and index its content cannot index these dynamic pages. Better technologies for facilitating searching are therefore increasingly needed.

50. The most promising of these new technologies is a cousin of Napster, Gnutella. Unlike Napster (which relies upon a central server to coordinate its name space), Gnutella enables simultaneous searching on literally thousands of machines, according to the search protocols set by those machines, without the necessity of coordinating those searches at a central server. The protocol lets "sites query one another in a chain." Andy Oram, *The Value of Gnutella and Freenet*, Webreview.com (May 12, 2000). This is, as network architects have noted, a revolutionary advance in searching technology. *Id.* Thus, just as with Napster, a user of Gnutella can simply enter the name of an artist, or a particular kind of content, and the system will search all cooperating sites to locate that content, and facilitate its transfer.

51. In this respect, Gnutella is a significantly more important, and far less controllable, technology than Napster. As technologist Andy Oram describes it,

> One of the most worrisome developments on the Web is the inadequacy of existing search tools to work in an era when Web sites increasingly depend on database queries and dynamically-generated temporary URLs. Many sites have their own sophisticated searches, but you have to visit the site and enter the string manually—or study the site's HTML form and write a customized LWP script—in any case, you have to narrow your search to that single site. …
>
> Gnutella offers the path forward. It governs how sites exchange information, but says nothing about what each site does with the information. A site can plug the user's search string into a database query or perform any other processing it finds useful. Search engines adapted to use Gnutella would thus become the union of all searches provided by all sites. A merger of the most advanced technologies available (standard formats like XML for data exchange, database-driven content

provision, and distributed computing) could take the Internet to new levels.[9]

52. While I am aware of no good statistics on the usage of Gnutella, it is clear that much of its current use is similar to the current use of Napster. Both are presently enabling the location and easy transfer of MP3 files, many of which (indeed, the majority of which probably) are copyrighted material. But both Napster and Gnutella have potential uses that extend far beyond this single potentially troubling use.[10] Both, that is, could facilitate a much more efficient technology for peer-to-peer relations about content generally.

53. The improved peer-to-peer searching functionality that is enabled by Napster and by Gnutella plainly has many substantial, noninfringing uses. My own interest in the technology arose because of a discussion with a colleague at Harvard, Professor Jonathan Zittrain, about using Napster or Gnutella to enable students in our respective classes to share notes of material while teaching parallel courses. This is just one potential noninfringing use of this technology. Other uses include libraries that could share information in a much more decentralized way, see Daniel Chudnov, *docster: instant document delivery,* <http://www.oss4lib.org/read-ings/docster.php>; antique shops that might facilitate the exchange of wanted but obscure items; and auction sites that might enable global "flea markets" from inventories indexed on individual computers. In each case, the technology would enable a better peer-to-peer connection among Internet users, for uses that are not now fully imagined or expected.

54. In extending the ability of "many" to work with "many," the technology is simply an extension of the fundamentally decentralizing principle of the Internet itself—facilitating not the "one to many" communication of broadcasting, or the "many to one" communication of voting, or polls, but the "many to many" communication unique to this medium.

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[9] See <http://www.webreview.com/pub/2000/05/12/platform/index.html>.

[10] Again, the use is only troubling under existing law if home recording is deemed to be an infringing use. See *supra* ¶ 46.

55. The improved peer-to-peer searching has also, in my view, plainly endangered copyright interests. There can be no doubt that Napster could be used for making copies of copyrighted material for resale ("piracy") and—depending upon how the doctrine of fair use is applied, and upon how the Audio Home Recording Act is interpreted, see *supra* ¶ 46—that it has facilitated the sharing of content in a way the law may prohibit. While I have no evidence about the proportion of material exchanged that is exchanged in violation of copyright laws, I would not be surprised if that amount was as high as the highest estimate that the Supreme Court imagined occurred in the context of VCRs.

56. It would be a mistake, however, to judge an Internet technology based on its current use, or to ban a technology based on its initial use, even if significant violations of copyright were enabled. If that had been the test, then many of the early Internet technologies would have been banned. Likewise would the VCR have been banned, and possibly even the Xerox machine. Instead, as the Supreme Court has indicated both in *Sony* and in *Reno*, important constitutional values counsel a much more balanced and informed response. An early use of an Internet technology often has very little relation to its ultimate use.

57. It has often been observed, for example, that the strongest force driving the early development of many stages of communication technology has been pornography: 1-900 services, the ability to transfer photographs across networks, real-time chat, streaming video, interactive video—in each case, the early use of the technology was the distribution of porn. But early use notwithstanding, as each technology matured, other uses became significant. To infer from the early use some conclusion about ultimate use would, in these cases at least, have been a mistake.

## XII. Factors Relevant to the Existing Legal Standards

58. The Supreme Court has articulated three tests that may be relevant for evaluating a technology that might enable copyright infringement on the Internet. In this part, I sketch those tests and how the facts as I have described them might apply. My purpose is not to argue for the relevance or validity of these particular tests. Whether they are ultimately relevant is of course a matter for the Court.

59. These factors are: First, what is the technology's potential for substantial noninfringing uses. *Sony*, 464 U.S., at 442. Second, what steps can individuals take on their own to protect against the relevant harm. *Reno*, 521 U.S., at 877. And third, what is the likelihood that regulation will actually be effective against the alleged harm. 521 U.S., at 877 n.43.

**a) Potential for "substantial noninfringing uses"**

60. As the Supreme Court has indicated, the question that contributory infringement raises is not whether a substantial portion of its existing use is "fair" or legitimate, but "merely" whether the technology is "… capable of substantial noninfringing uses." *Sony,* 464 U.S., at 442. On that standard it is clear that Napster, and Gnutella, plainly make possible a kind of sharing of information (1) that the Internet has not to date fully enabled, (2) that would vastly improve the functionality of the Internet, and (3) that would not even arguably violate any copyright law.

61. These uses could include the sharing of non-copyrighted music, the sharing of copyrighted music that had been authorized for sharing (for example, for purposes of sampling), and the sharing of other non-copyrighted content on the net in a peer-to-peer manner. Given the wide range of interaction that the Internet has created, the potential for non-infringing use is vast — indeed, far greater than the potential non-infringing use of VCRs.

**b) Available Self-help**

62. The second possibly relevant test, drawn from *Reno*, asks what steps plaintiffs might take to avoid the harm they allege. This factor too tends, in my view, in Napster's favor. There are plenty of technologies that copyright holders might use to better enable the control of their content on the Internet. Some of these technologies would make it harder for music to be "ripped" from a CD and copied on the Internet. This is the effect, for example, of the Cactus Data Shield, produced by Midbartech. See <http://www.midbartech.com>. Other technologies would make it easier to track illegal copying. This is the effect, for example, of watermarking technologies. Other technologies would make it possible for sites to identify more easily properly copyrighted material.

63. These technologies would enable copyright holders to better self-protect their content. They would make it easier to selectively attack users of the Napster system who are engaging in illegal behavior, without attacking the Napster technology itself. As in *Reno*, if implemented, they would eliminate much of the need for state control of the technology.

64. No doubt these steps alone will not eliminate the copyright infringement that might be accomplished using the Napster technology. They would not, for example, affect music already released. This infringement may well be significant, and is obviously relevant to the facts reviewed by this Court. It might be significant as well, however, that the recording industry has been aware of these technologies for more than a decade, yet has not taken steps effectively to implement them. See OTA, *Copyright and Home Copying: Technology Challenges the Law* 52-61 (October 1989).

**c) Effectiveness of remedy**

65. A final possibly relevant factor drawn from *Reno* most plainly tilts in Napster's favor. This test asks whether the remedy would be effective. In my view, eliminating the Napster technology would not substantially change the behavior that plaintiffs complain about. This is the implication of the existence of competing standards for peer-to-peer sharing, such as Gnutella, and the difficulty that any court would have in regulating this alternative technology.

66. Gnutella is a simple substitute for Napster. It facilitates a better peer-to-peer searching capability, and is operated in a far more decentralized manner. Because of this architecture, there would be no way, under the present architecture of the net, for a court to stop the deployment of Gnutella without essentially shutting down a substantial portion of the Internet. Gnutella is simply an application that runs on the net; there is no central server for this application; links are made in a chain that itself is not consistent or easily tracked.

67. Thus, the existence of Gnutella means that any regulation of Napster is likely ultimately to be ineffective. There is no barrier to limit consumers switching from Napster to Gnutella. Like Napster, Gnutella technologies are free, and there are many different Gnutella clients freely available. The effect of banning this one technology, Napster, would therefore be as effective as

banning one of the 50,000 newsgroups on the USENET. As in that case, the ban would simply move the conduct into a different channel.

68. Viewed from the perspective of the interplay between legal regulation and technology, this fact about Gnutella would render, in my view, an injunction against Napster technologies ineffective. This fact may in turn be relevant to the Court's ultimate resolution of the case.

## XIII. Conclusion

69. The essence of the Internet is its decentralized, open design. It has flourished because new technologies can easily be adapted to the existing protocol base. This neutrality has produced extraordinary innovation in the past; it will produce more innovation in the future.

70. The design will also produce technologies that threaten important legal values, such as copyright. An appropriate and effective response to such threats is hard to determine in the abstract. A court, in my view, can properly consider the interaction between its rule and the behavior regulated. This interaction can only be understood by adopting a perspective broader than the doctrine of any one area of law.

71. If a court must be convinced that a technology has no capacity for substantial non-infringing use before, on the basis of existing law, it bans that technology, then as Napster does have the potential for substantial non-infringing uses, it would follow that it should not, through injunction, be banned. This conclusion is only strengthened when, as in this case, the effect of banning the technology on the harm alleged is so speculative.

I declare, under penalty of perjury, under laws of the United States of America, that the foregoing is true and correct.

_____

Lawrence Lessig

Signed this ____ day of June, 2000 in Berlin, Germany.

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## EMPLOYMENT AND POSITIONS

**Stanford Law School; Stanford University**
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**Harvard Law School; Harvard University**
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**Penn National Commission on Society, Culture and Community, University of Pennsylvania, Philadelphia, Pennsylvania**
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**Program on Ethics and the Professions, Harvard University, Cambridge, MA.**
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**The Yale Law School, Yale University.**
*Visiting Professor of Law, Spring term, 1995. The Law of Cyberspace; Antitrust.*

**Lexis-Nexis Electronic Authors Press.**
*Member of the Editorial Advisory Board.(1995-1997)*

**Lexis Counsel Connect.**
*Moderator, Constitutional Law Discussion Group, 1994-95.*

**Legal Studies Programme, CEU Budapest**

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**Justice Antonin Scalia; United States Supreme Court.**
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**Judge Richard Posner; U.S. Court of Appeals, Seventh Circuit.**
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*Versailles, France*
*Lecture: "Innovation"*

**Conference on New Institutional Economics**
*June, 2000*
*Dresden, Germany*
*Comment*

**Free Software: A Model for Society?**
*May, 2000*
*Tützing, Germany*
*Lecture: Open Code and Open Societies*

**Institut für die Wissenschaften vom Menschen**
*May, 2000*
*Vienna, Austria*
*Lecture: The Law in Code*

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*May, 2000*
*Barcelona, Spain*
*Panel*

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*Budapest, Hungary*
*Comment*

**www9**
*May, 2000*
*Amsterdam, Holland*

*Keynote:* ***Cyberspace's Architectural Constitution***

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*Cambridge, UK*
*Keynote: Law and Power in Cyberspace*

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*May, 2000*
*New York, NY*
*Panel: Business and the Internet*

**Brightmail SPAM Summit**
*May, 2000*
*Washington, DC*
*Keynote: e2e Regulation*

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*May, 2000*
*Chicago, IL*
*Keynote: Regulating Cyberspace*

**Ninth Circuit Judicial Conference**
*April, 2000*
*Dana Point, CA*
*Panel: IP in Cyberspace*

**New University of Lisbon**
*April, 2000*
*Lisbon, Portugal*
*Lecture: Innovation and Regulation*

**A Free Information Ecology in the Digital Environment**
*April, 2000*
*New York, NY*
*Presentation: Cyberspace's Philosophy and Philosopher*

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*March, 2000*
*St. Moritz, Switzerland*
*Lecture: The Regulations of Cyberspace*

**Hewlett Packard Science Lecture**
*March, 2000*
*Bristol, UK*
*Lecture: The Constitution of Cyberspace*

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*Vienna, Austria*
*Lecture: The Limits of Copyright*

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*March, 2000*
*Scottsdale, AZ*
*Lecture: The Code in Law and the Law in Code*

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*February, 2000*
*New York, NY*
*Panel: The Open Source Revolution*

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*February, 2000*
*Berlin, DE*
*Lecture: Cyberspace's Constitution*

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*February, 2000*
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*Stanford, CA*

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*December, 1999*
*Byron Bay, AU*
*Teaching: The Law of Cyberspace*

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*November, 1999*
*Copenhagen, Denmark*
*Lecture: Open Content, Open Values*

**1984 Fifty Years Later**
*November, 1999*
*Chicago, IL*
*Paper: The Refreshing Code of 1984*

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*November, 1999*
*Oxford, England*
*Paper: IP and Cyberspace*

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*October, 1999*
*Turin, Italy*
*Paper: How Lawyers Will Kill the Net*

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*Paris, France*
*Conference organized by Deputy Christian Paul, of the French National Assembly*

**MacArthur Conference on the New Law and Economics**
*October, 1999*
*Chicago, IL*
*Conference to explore empirical approaches to the study of social norms and social meaning*

**Tucker Lecture; Washington & Lee University Law School**
*October, 1999*
*Lexington, VA*
*Lecture: The Death of Cyberspace*

**The 1999 Forbes CEO Forum: Corporate Darwinism, Forbes Inc.**
*June, 1999*
*Atlanta, Georgia*
*Roundtable discussion: Survival of the*

*fittest? A Darwinian take on Microsoft, regulation and competition.*

**Open Code/Open Content/ Open Law**
*May, 1999*
*Cambridge Massachusetts*
*Keynote*

**Committee on University Resources (COUR) Conference, Harvard University**
*April, 1999*
*Cambridge, Massachusetts*
*Session: "CyberEthics: The Moral Challenge of the Internet"*

**Roxbury Schools Deliberative Forum, DoSomething, Inc.**
**April, 1999**
*Cambridge, Massachusetts*
*Forum subject: "fairness" in the context of high school policies*

**Computers, Freedom and Privacy 1999 Conference: The Global Internet**
**April, 1999**
*Washington, D.C.*
*Panel: Self-Regulation Reconsidered*

**Private Censorship/ Perfect Choice Conference, Yale Law School**
**April, 1999**
*New Haven, Connecticut*
*Paper: The Values in Open Code*

**Henry J. Miller Distinguished Lecture, Georgia State University College of Law**
**April, 1999**
*Atlanta, Georgia*
*Paper: Open Code, Open Society*

**Competing Competition Laws: Do We Need a Global Standard?, New England**

**School of Law**
**March, 1999**
*Boston, Massachusetts*
*Panel: Is Reconciliation Possible?*

**Conference on Access to U.S. Capital Markets for Israeli High Tech Companies**
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*Tel Aviv, Israel*
*Panel: Issues facing high technology firms in the current economic and legal climate*

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**March, 1999**
*Berkeley, California*
*Panel: Setting (and Choosing) Global Technical Standards*

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**March, 1999**
*Washington, D.C.*
*Topic: Uniform Commercial Code (UCC) and Spread Spectrum*

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**February, 1999**
*Williamsburg, Virginia*
*Paper: Contestable Rights*

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**February, 1999**
*Cambridge, Massachusetts*

**The John A. Sibley Lecture, University of Georgia School of Law,**
**February, 1999**
*Athens, Georgia*
*Keynote: Internet Governance and the Open Source Software Movement*

**The 1999 Forbes Forum on Management and Policy for Chief Marketing and Chief Communications Officers, February, 1999**
*Carlsbad, California*
*Conference: Brand in an Era of Disruptive Technologies*
*Panel: Privacy: What's Public? What's Private? And Who Says?*

**Fordham Spring 1999 Symposium on Media Convergence, February, 1999**
*New York, New York*
*Conference: Media Convergence: Necessary, Evil or Both? The Legal, Economic and Cultural Impacts of Mega Media Mergers*
*Keynote address: Code and the Commons*

**The 7th Annual Charles Green Lecture in Law and Technology, Chicago-Kent College of Law Chicago, Illinois**
*Colloquium: Kent: The School, the Life and the Legacy*
*Keynote: Overcoming Antitrust: Internet Governance and the Free Software Movement*

**Representing the New Media Company Conference, Practicing Law Institute (PLI), January, 1999**
*New York, New York*
*Keynote: Copyright's Commons*

**Graduate Legal Studies Program in Georgia Planning Meeting, Constitutional and Legal Policy Institute, December, 1998**
*Budapest, Hungary*

**Digital Directions Speakers Series, University of Virginia Law School, November, 1998**
*Charlottesville, Virginia*
*Conference: Information Literacy*
*Paper: Cyberlaw: The New Frontier*

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*Washington, D.C.*
*Panel: Property Rights in the 21st Century*
*Paper: Property in cSpace*

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*Durham, North Carolina*
*Paper: Internet Governance*

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*Baltimore, Maryland*
*Seminar: Paparazzi and Privacy*

**Seventh Annual Lavender Law Conference, National Lesbian and Gay Association, October, 1998**
*Boston, Massachusetts*
*Panel: Issues in Communications Law*

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*Cambridge, Massachusetts*
*Conference: One Planet, One Net: The Public Interest in Internet Governance*
*Keynote: Governance*

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**October, 1998**
*Chicago, Illinois*
*Commentator on Prof. Owen Fiss's "Regulating Television: A New Turn in the Law?"*

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**October, 1998**
*Alexandria, Virginia*
*Seminar: Content Controls*
*Paper: The Architectures of Mandated Access Controls*

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**September, 1998**
*Berkeley, California*

**Being Connected Conference, Vanguard Program**
**September, 1998**
*McLean, Virginia*
*Presentation: Code as Law*

**The Program in Ethics and the Professions, Harvard University,**
**September, 1998**
*Cambridge, Massachusetts*
*Keynote: Attention Spam*

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**August, 1998**
*Aspen, Colorado*
*Keynote: Governance*

**Wasatch Weekend, Do Something, Inc.,**
**August, 1998**
*Deer Valley, Utah*

**The Aspen Institute Internet Policy Project**
**July, 1998**
*Aspen, Colorado*

**Conference on Constitutionalism and Democracy, New York University School of Law,**
**July, 1998**
*Florence, Italy*

**Internet: Towards a New Society?, The International University Menéndez y Pelayo of Valencia,**
**July, 1998**
*Valencia, Spain*
*Keynote: Internet y la proteccion de los derechos de la personalidad*

**Marshall Symposium. The Information Revolution in Midstream: An Anglo-American Perspective, University of Michigan Law School,**
**May, 1998**
*Ann Arbor, MI*
*Panel: Law and Public Policy*

**Conference on the Internet & Society, Harvard University,**
**May, 1998**
*Cambridge, MA*

**Taiwan Net '98**
**March, 1998**
*Taipei, Taiwan*
*Keynote: The Laws of Cyberspace*
*Seminar: The Architecture of Privacy*
*http://cyber.harvard.edu/lessigcurres.html*

**Textualism and the Constitution, George Washington School of Law**
**February, 1998**
*Washington, DC*
*Paper: Textualism and Federalism*

**AALS Annual Meeting,**
**January, 1998.**
*San Francisco, CA.*
*Paper: Law and Interpretation Section: Interpreting 1937..*

**Enforcing Constitutional Court Judgments,**
**Constitutional Court of the Republic of Georgia**
**November, 1997**
*Tbilisi, Georgia*
*Paper: The History of Enforcement of Supreme Court Judgments (with Tim Wu).*

**State Bar of Arizona, CLE,**
**November, 1997**
*Tempe, AZ*
*Paper: The Laws of Cyberspace*

**DeWitt Higgs Memorial Lecture, Warren College, University of California, San Diego,**
**October, 1997**
*San Diego, CA*
*Address: The Laws of Cyberspace*

**Telecommunications Policy Research Conference**
**September, 1997**
*Washington, D.C.*
*Paper: What Things Regulate Speech*

**Academy of European Law,**
**June, 1997**
*Florence, Italy*
*Teaching Course in Cyberspace*

**Boston University Law School Faculty Workshop,**
**April, 1997**
*Boston, MA*
*Paper: The Law of the Horse: What Cyberlaw Might Teach.*

**Vanderbilt School of Law,**
**April, 1997**
*Nashville, TN*
*Paper: The Law of the Horse: What Cyberlaw Might Teach.*

**Local Values and Global Telecommunications,**
**National Research Council,**
**April, 1997**
*Washington, DC.*

**Stanford University Law School,**
**April, 1997**
*Stanford, CA*
*Paper: The Law of the Horse: What Cyberlaw Might Teach.*

**Case Western Reserve University Law School,**
**April, 1997**
*Cleveland, OH*
*Conference: Presidential Power*
*Paper: Lessons from a Line Item Veto Law.*

**Digital Library Initiative, University of Michigan,**
**March, 1997**
*Santa Fe, NM.*

**Computers, Freedom, Privacy 1997,**
**March, 1997**
*San Francisco, CA*
*Paper: Law, Norms and Code.*

**Media Institute, Catholic University,**
**March, 1997**
*Washington, DC*
*Paper: The Constitution As Code.*

**G.W. U. Law School Legal Theory Workshop,**
**March, 1997**
*Washington, DC*
*Paper: Law, Norms, Code.*

**Harvard Law School Faculty Workshop, February, 1997**
*Cambridge, MA*
*Paper: Reading the Constitution in Cyberspace.*

**Columbia Law School, February, 1997**
*New York, NY*
*Paper: Fidelity and Constraint.*

**Quinnipiac School of Law, February, 1997**
*Hamden, CT*
*Paper: Law, Norms, Code.*

**Hartman Institute, December, 1996**
*Jerusalem, Israel*
*Paper: Change in Constitutional Interpretation*

**Cordell Hull Speaker's Forum, Cumberland School of Law, November, 1996**
*Birmingham, AL*
*Paper: Constitution and Code.*

**American Society of Comparative Law, September, 1996**
*Detroit, MI*

**Fidelity in Constitutional Theory, Fordham Law School, September, 1996**
*New York, NY*
*Paper: Fidelity as Translation.*

**Legal Theory Workshop, U. of Colorado at Boulder, September, 1996**
*Boulder, CO*
*Paper: The Erie-Effect.*

**Law and Cyberspace, ACLU Panel,**
**May, 1996**
*Chicago, IL*
*Panel discussion.*

**Digital Library Initiative, University of Michigan,**
**May, 1996**
*Ann Arbor, MI*
*Paper: Intellectual Property in Cyberspace.*

**NCAIR Virtual Magistrate Project,**
**May, 1996**
*Washington, DC*
*Paper: Grounding the Virtual Magistrate (co-authored).*

**Virtue and Virtuality: Gender, Law and Cyberspace,**
**April, 1996**
*MIT Program in Women's Studies*
*Cambridge, MA*
*Paper: Zoning Porn and People in Cyberspace.*

**Cyberspace and the Law, Symposium,**
**April, 1996**
*St. John's Journal of Legal Commentary*
*Jamaica, NY*
*Paper: Intellectual Property in Cyberspace.*

**Legal Studies Workshop, University of Virginia,**
**April, 1996**
*Charlottesville, VA*
*Presented Paper: The Erie-effect.*

**Colloquium on Constitutional Theory, NYU Law School, April, 1996**
*New York, NY*
*Presented Paper: The Erie-effect.*

**Kellogg Foundation, Workshop on Technology,**
**March, 1996**
*Santa Fe, NM*
*Participant.*

**Thrower Symposium, Emory Law School,**
**February, 1996**
*Atlanta, GA*
*Paper: Reading the Constitution in Cyberspace.*

**Law and Borders, Stanford Law School,**
**February, 1996**
*Palo Alto, CA*
*Comment: Borders in Cyberspace.*

**Law, Economics, and Norms,**
**February, 1996**
*Philadelphia, PA*
*Comment: The regulation of social norms.*

**Constitutional Courts in Eastern Europe,**
**February, 1996**
*Chicago, IL*

**Workshop on Media, Technology and the Law,**
**December, 1996**
*Harvard University, Cambridge, MA*
*Discussing emerging media technology.*

**International Association of Constitutional Law,**
**September, 1995**
*Tokyo, Japan*
*Discussing comparative constitutional law.*

**Society of Professional Journalism,**
**March, 1995**
*Stamford, CT*
*Discussing Cyberspace and Libel.*

**Harvard Law School,**
**February, 1995**
*Law and Economics Workshop*
*Paper: Judicial Reputation.*

**Cyberspace and the First Amendment,**
**December, 1995**
*Yale Law School, New Haven Ct*
*Paper: The Path of Cyberlaw.*

**Address to the Class of 1997,**
**October, 1994.**
*Chicago, IL.*

**Constitutional Courts in Transition,**
**September, 1994.**
*Warsaw, Poland.*

**International Congress of Comparative Law,**
**September, 1994**
*Athens, Greece.*

**Workshop on Constitutionalism in Post-Communist Russia, June, 1994.**
*Novosibirsk, Russia.*

**Rights in Post-Communist Europe,**
**June, 1994.**
*Central European University, Budapest, Hungary.*

**AALS Annual Meeting,**
**January, 1994.**
*Orlando, FL*
*Paper: Internet and the Law School, Computer Law Section.*
*Paper: Outsiders' Perspectives on Contracts, Contract Law Section.*

**Media Rights, and Restitution in Eastern Europe,**
**June, 1993.**
*Central European University, Budapest*

*Hungary.*

**Conference on Richard Epstein's Forbidden Ground,**
**May, 1993.**
*University of California at San Diego, San Diego, CA.*

**Rights and Responsibilities in Electronic Community,**
**February, 1993.**
*National Research Council, Washington, DC.*

**Workshops on the Republic of Georgia's Constitution.**
*Tblisi, Georgia; March, 1993; June, 1994.*

**AALS Annual Meeting,**
**January, 1993.**
*San Francisco, CA.*
*Paper: The President and the Administration, Administrative Law.*

**Interpretation and the Unitary Executive,**
**December, 1992.**
*Cardozo Law School, New York, NY.*
*Paper: Readings by Our Unitary Executive.*

**Constitutional Drafting Workshop, Georgia and Belarus, December 1992.**
*Central European University, Budapest Hungary.*
*Paper: Constitutional Amending Processes.*

**Law and Economics at Chicago,**
**May, 1992.**
*University of Chicago, Chicago, IL.*
*Paper: Counting with Landes and Posner.*

**2000 National Law Journal's "100 Most Influential Lawyers"**

**2000 Business Week "25 Top eBiz Leaders"**