THE DIGITAL DILEMMA:
A Perspective on Intellectual Property in the Information Age*

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INTRODUCTION

Advances in technology have often posed challenges for intellectual property (IP) law. Congress has, for instance, periodically amended copyright law to regulate new technology products (such as photographs, motion pictures, sound recordings, and cable television) or new uses of works made possible by advances of technology.[1] In addition, new technologies have often given rise to contentious copyright litigations, such as those involving photocopying of scientific articles and home videotaping.[2] Given this history, it should not be surprising that the advent of digital technologies and networks would bring about some perturbations in intellectual property law. The first set of battles over

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[1] Prior to 1976, U.S. copyright law named specific types of protectable subject matter, such that when new technologies produced new categories of works, the law had to be amended to be extended to them. See, e.g., Copyright Act of 1909, sec. 5 (superceded). In addition, Congress sometimes had to amend copyright law when new technologies enabled new uses of old works (e.g., mechanical recordings of musical works). The Copyright Act of 1976 provides that "copyright subsists in original works of authorship that have been fixed in a tangible medium of expression," thus obviating the need for amendments to make new technology products protectable. 17 U.S.C. sec. 102(a). However, new classes of works may still need special legislation to tailor copyright appropriately. See, e.g., 17 U.S.C. sec. 117 (OK to use computer program instructions in computer, make essential adaptations (e.g., fix a bug), and make backup copies).

[2] See, e.g., Williams & Wilkins v. National Institute of Health, 487 F.2d 1345 (Ct. Cl. 1973), aff'd by equally divided court, 420 U.S. 376 (1975) (photocopying of scientific articles); American Geophysical Union v. Texaco, 60 F.3d 913 (2d Cir. 1996) (photocopying of technical articles); Sony Corp. of America v. Universal City Studios, Inc., 464 U.S. 417 (1984) (home taping of television programs).

copyright and digital information focused on software copyrights and patents.[3] Intense in their day, these battles have now largely ended in a new status quo.[4] Equally or more intense have been more recent battles over the role of copyright on the Internet and the World Wide Web.[5] In recognition of both the difficulty and the significance of the problems that underlay these debates, the National Science Foundation, acting on a recommendation by the Federal Networking Council Advisory Committee, commissioned a study of intellectual property and new technology issues by the Computer Science and Telecommunications Board of the National Academies.[6]

In 1997, the Computer Science & Telecommunications Board of the National Research Council established a Committee on Intellectual Property Rights and the Emerging Information Infrastructure to consider policy implications of advances in information technologies for intellectual property law.[7] After two years of work, the Committee issued a report entitled *The Digital Dilemma: Intellectual Property in the Information Age*.[8] The report, summarized here, offers reasons why digital information

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[3] See, e.g., Computer Science & Telecommunications Board, *Intellectual Property Issues in Software* (National Academy of Sciences Press 1991) (discussing controversies).

[4] See, e.g., Mark A. Lemley, Convergence in the Law of Software Copyright?, 10 Berkeley Tech. L.J. 1, 32 (1995) (concluding that debates on software IP issues have now been largely resolved).

[5] In September 1995, the Intellectual Property Working Group of the National Information Infrastructure Initiative published a "White Paper" on "Intellectual Property and the National Information Infrastructure" which interpreted copyright law and proposed some legislation to adapt copyright to the digital age: U.S. DEP'T OF COMMERCE INFO. INFRASTRUCTURE TASK FORCE, INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE: THE REPORT OF THE WORKING GROUP ON INTELLECTUAL PROPERTY RIGHTS (1995) [hereinafter White Paper]. This report was highly controversial. Representative of differing views are these articles: Jane C. Ginsburg, Putting Cars on the "Information Superhighway": Authors, Exploiters, and Copyright in Cyberspace, 95 Colum. L. Rev. 1466 (1995)(supporting White Paper) and Pamela Samuelson, The Copyright Grab, 4.01 WIRED 134 (Jan. 1996) (critical of White Paper).

[6] See Preface to *Digital Dilemma* at ix-x.

[7] Id. at x-xii.

[8] The full text of the report is available on the Internet through http://www.cstb.org and http://books.nap.edu/html/digital_dilemma/. Paperback copies are also available for sale from the National Academy of Sciences Press.

has been particularly problematical for intellectual property law and draws some conclusions about what might be done to address the digital dilemma.

Committee membership was intentionally reflective of the wide variety of stakeholders in the issues, and included computer scientists, IP lawyers from both industry and academia, librarians, economists, publishers, editors, freelance authors, database specialists, and experts in networks, telecommunications, cryptography, and digital libraries.[9] In addition, the Committee heard from a wide range of industry, academic, and government experts.[10] The committee's deliberations were often intense, reflecting the strongly held positions on many of the issues.

We believe the report does several important things. It is, first of all, an objective assessment of and description of the issues, alerting the reader to those that will have enduring consequences. Where consensus was possible, it recommends steps to address the problems.[11] Where consensus was not possible, it provides an overview of the conflicting views and surfaces assumptions underlying the differing positions.[12] It identifies data that should be collected in order to inform future decisions and outlines an agenda for research in a number of areas.[13] Finally, it provides a framework for thinking about the quandaries posed by the digital dilemma, urging consideration of the wide range of stakeholders, the multiplicity of forces at work, and the variety of perspectives from which the problems should be viewed. The Committee regards the report as a foundation

[9] Appendix A to *Digital Dilemma* provides short biographical statements about Committee members.
[10] Appendix B to *Digital Dilemma* lists those who briefed the Committee.
[11] For example, the Committee reached consensus that Congress should legislate to permit more archiving of digital works, id. at 208-9, discussed infra note 59 and accompanying text.
[12] For example, the Committee did not reach consensus on some issues pertaining to proposed amendments to the Digital Millennium Copyright Act, *Digital Dilemma* at 222-3, discussed infra notes 74-80 and accompanying text.
[13] See *Digital Dilemma*, Chapter 6, especially at 225-35.

for a considerable amount of hard work that remains to be done, work that needs the participation of all of the affected constituencies.

THE PROMISE AND PERILS OF DIGITAL INFORMATION

The information age brings both promise and peril to content creators and content consumers alike. Putting information online makes it available to an unlimited audience, from anywhere there is a telephone or network connection.[14]

At first glance, this is wonderful news. For the information consumer, the electronic holdings of libraries around the world become continuously available from a home computer. For authors and publishers, information technologies provide new opportunities and markets.

But there is also a more troublesome side. For publishers and authors, the question is: How many copies of the work will be sold (or licensed) if networks make possible planet-wide access to any electronic copy of a work? Their nightmare is that the number is *one*. How many books (or movies, photographs, or musical pieces) will be created and published online if the entire market can be extinguished by the sale of the first electronic copy to a public library?

The nightmare for consumers is that author-publisher attempts to establish and protect new commercial marketplaces to exploit their works will lead to technical and legal protections that sharply reduce access to society's intellectual and cultural heritage.[15]

Today's information infrastructure is thus at once a remarkably powerful medium for publishing information and the world's largest reproduction facility, one that is

[14] Much of this section is taken from the Executive Summary of *Digital Dilemma*.
[15] Public access concerns are discussed infra notes 45-58 and accompanying text. See also *Digital Dilemma*, Chapter 4.

running largely unregulated, in fact, if not in principle. It is a technology that can enormously improve access to information, yet offers as well the possibility of inhibiting access in ways that were previously impracticable. It has the potential to be a vast leveler, providing access to the world's information resources to millions who had little or no prior access. Yet, it also has the potential to be a stratifier, deepening further the well-known divide between the information "haves" and "have-nots."

Today's information infrastructure may also have the potential to demolish a careful balancing of public good and private interest that has been at the core of U.S. intellectual property law over the past two hundred years. The public good is the betterment of society that results from promoting, as the Constitution says, "progress of science and the useful arts."[16] The private interest has arisen from the grant of a time-limited monopoly (a copyright or patent) to those who have made a contribution to that progress.[17] The classic challenge has been to strike and maintain a balance between these interests by offering enough control to motivate authors, inventors, and publishers to create and disseminate works, but not so much control as to threaten important public policy goals, such as the preservation of the cultural heritage of the nation, broad access to information, and promotion of education and scholarship. As usual, the devil is in the details, but by and large the past two hundred years of intellectual property history have seen a successful, albeit evolving, balancing of those details. But the information infrastructure presents a leap in technology that may well upset the current balance,

[16] See U.S. Constitution, Art. I, sec. 8, cl. 8 (empowering Congress to enact legislation to grant rights to authors and inventors in order to promote such progress).

[17] While the report principally comments on copyright issues, it also characterizes as "worrisome" the broad scope of patenting of information innovations by the U.S. Patent & Trademark Office. See, e.g., *Digital Dilemma*, at 192-98, 228.

perhaps requiring a re-evaluation of some of the fundamental premises and practices associated with intellectual property.

The stakes involved in all this are high, both economically and in social terms.[18] Decisions made now and in the near future will determine who will benefit from the technology and who will have access to what information on what terms—foundational elements of our future as an information society. To ensure that we are able to construct the kind of information society we want to have, we need, as a society, to ask whether the existing mechanisms still work, and if not, what should be done. What options exist for accomplishing the important goals of intellectual property law and policy in the digital age?

(WHY) IS THERE A PROBLEM?

Given the frequency with which someone suggests that IP is in trouble, and given the how successfully IP has adapted to two hundred years of technological change, it is important to be clear about the nature of the issues that motivate the current concern. Understanding the origins of the problem also helps ensure that proposed solutions are matched to the problem.

Two developments emerged as key explanatory factors in the course of the Committee's work.[19] First, a trio of technological advances has produced radical shifts in the economics of reproducing, distributing, controlling, and publishing information. Second, the information infrastructure has become a part of everyday life, and thereby run headlong into intellectual property law as never before.

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[18] For a discussion of the range of interests represented by different stakeholders in digital intellectual property debates and how this impedes reaching consensus, see *Digital Dilemma* at 51-75.

[19] Much of this section also derives from the report's Executive Summary. Chapter 1 of the *Digital*

The trio of technological advances that have led to radical shifts in the economics of information are these: (1) information in digital form has changed the economics of reproduction, (2) computer networks have changed the economics of distribution, and (3) the World Wide Web has changed the economics of publication.

Information in digital form radically reduces the difficulty and cost of reproduction. Moreover, it produces perfect replicas, each of which is a seed for further perfect copies. An obvious advantage of these characteristics for rights holders is reduced production costs. But infringers may also benefit from low cost, perfect digital copies. An important consequence of this is an erosion of what were previously natural barriers to infringement, namely, the expense of reproduction and the decreasing quality of successive generations of copies in analog media. This, in turn, upsets the balance struck by IP, which, like all laws, is built on implicit assumptions about the difficulty of violating the law and an expectation that large numbers of individuals will not have ready access to technologies that would enable infringement to be accomplished by a trivially easy act taking place in private.[20]

Another reason that information in digital form presents difficulties for IP law and policy is because access to digital information inevitably requires making copies, even if only ephemeral copies, of that information. Running a computer program, for example, occurs by copying the program from disk to memory. This action seems inconsequential to most computer scientists. Yet, courts have ruled that merely turning on a computer loaded with programs by a repair service not licensed to use the programs constituted

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Dilemma goes into more detail on these issues.

[20] See infra notes 60-61 and accompanying text for a discussion of the implications of the digital dilemma for private behavior.

copyright infringement because unauthorized copies of programs were made in the random access memory of the computer.[21] While Congress later legislatively overturned this specific ruling,[22] the copyright significance of temporary copies of digital works has continued to be a contentious issue in U.S. copyright law.[23]

Getting access to digital information by making ephemeral copies is, of course, deeply rooted in the way computers work: Use a computer to read a book, look at a picture, watch a movie, or listen to a song, and you inevitably make one or more copies.[24] Contrast this with the use of traditional media: Reading a book does not involve making a copy of it, nor does watching a movie, nor listening to a song.

This intimate connection between access and copying has considerable significance in the context of intellectual property protection because the right to control reproductions of protected works in copies has been a hallmark of the law of copyright (as the name of this law alone indicates).[25] In the world of traditional media, there is an obvious distinction between access and reproduction, such that the copyright owner's control of reproduction does not generally provide control over access. But if access requires reproduction, the law has a quandary. Some copyright owners and professionals

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[21] MAI Systems Corp. v. Peak Computer, Inc., 991 F.2d 511 (9th Cir. 1993). The White Paper, supra note 5, interpreted this ruling broadly to apply to all temporary copies in the random access memory of a computer. See id. at 64-5. Some commentators have been highly critical both of *MAI v. Peak* and of the White Paper's interpretation of it. See, e.g., David Nimmer, *Brains and Other Paraphernalia of the Digital Age*, 10 Harv. J. L. & Tech. 1 (1996) (critical of *MAI v. Peak*) and Jessica Litman, *The Exclusive Right to Read*, 13 CARDOZO ARTS & ENT. L. 29 (1994) (critical of White Paper's interpretation). But see Ginsburg, supra note 5 (supporting the White Paper's interpretation of *MAI v. Peak*).

[22] This occurred as part of the Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998).

[23] See, e.g., Pamela Samuelson, The U.S. Digital Agenda at WIPO, 37 Va. J. Int'l L. 369 (1997) (discussing controversy about control of temporary copies at diplomatic conference on copyright issues).

[24] This led the Committee to consider whether "copying" was still the right focus for copyright regulation. See infra notes 62-64 and accompanying text.

[25] Copyright law confers on authors an exclusive right to control the reproduction of their work in copies. See 17 U.S.C. sec. 106(1).

think that rights holders should have a right to control digital access because it involves reproduction.[26] Others are concerned that granting such rights will undermine traditional public access to information in unprecedented ways.[27]

Digital information also creates difficulties because it has changed the way information products are distributed. For more than two hundred years, the dominant model of IP transaction has been the sale of a physical copy of a work.[28] However, digital information is often licensed rather than sold. There is a substantial difference between the two types of transactions. Sales involve the complete transfer of ownership rights in a copy from the vendor to the purchaser. Copyright law explicitly anticipates the sale of intellectual property products and, by its "first-sale rule,"[29] this law prevents copyright owners from controlling publicly distributed copies once sold into the marketplace. The purchaser is thereafter free to lend, rent, or resell the purchased copy.[30] In that sense, copyright law follows IP products into the marketplace and promotes the continued dissemination of the information they contain. The first sale rule thus enables bookstores and libraries to operate free from copyright owner control.

Licensing, however, constitutes a limited transfer of rights to use an item on stated terms and conditions. Licenses are governed by contract law and, as such, are essentially a private agreement between two parties. Whether or to what extent such licenses can

[26] See, e.g., Ginsburg, supra note 5.
[27] See, e.g., Litman, supra note 21.
[28] A second widespread IP transaction is the licensing of public performances of certain copyrighted works (e.g., music or dramatic plays). See 17 U.S.C. sec. 106(4) (exclusive right to control public performances).
[29] 17 U.S.C. sec. 109. Although section 106(3) gives copyright owners a right to control distribution of copies of the work to the public, that right is "exhausted" upon the first sale of the copy to a member of the public, whether a library, a bookstore, or an individual under the limitation provided by section 109.
[30] Section 109 contains an exception to this general rule, outlawing rental of computer programs and sound recordings on the theory that such rentals would lead to the proliferation of infringing copies.

override public policy considerations is a matter of contention.[31] The report explains in more detail the advantages and drawbacks of licensing as compared with sales.[32] The point here is simply that the difference in transaction type is significant.

The second significant technological development—computer networks—has radically changed the economics of distribution. Networks enable people to send digital information worldwide, cheaply and almost instantaneously. As a consequence, it is easier and less expensive not only for a rights holder to distribute its work to the public, but also for individuals or commercial infringers to distribute unauthorized copies.

The third development—the World Wide Web—has radically changed the economics of publication, allowing everyone to be a publisher with worldwide reach. The astonishing variety of documents, opinions, articles, and works of all sorts on the Web demonstrate that millions of people worldwide are making use of that capability. This, too, has a dual character, bringing both promise (e.g., the vastly increased ease of publication) and challenge (the current upheaval in the publishing industry).

As the Internet and World Wide Web became a mass phenomenon, the information infrastructure became a part of everyday life. In so doing, it ran headlong into IP law. Certain actions undertaken casually by an ordinary person, such as up- or downloading scanned copies of Playboy bunny photos on a website or sharing embroidery patterns on a listserv, may violate intellectual property laws because they make available consumable copies of these works that may displace sales over which the copyright owner should have control. Other actions, such as sending a copy of an article posted on the

[31] See infra notes 55-57 and accompanying text for a discussion of this and other public access issues raised by the proliferation of license transactions.
[32] See *Digital Dilemma*, at 100-04 for the fuller discussion.

Internet to a friend, may require subtle and difficult interpretation of copyright law's fair use doctrine simply to determine their legality. Today the average individual can easily do with his or her own computer a kind and extent of copying that would have required a significant investment (and perhaps criminal intent) only a few years ago.[33] Few people seem to have a clear picture of what is acceptable or legal in copying or sharing information on the Internet. Nor is it easy to supply a clear, "bright-line" answer, because (among other things) current intellectual property law is subtle and complex.

One consequence of the expansion of the information infrastructure into everyday life is the growing significance of IP law in daily life. Debates about what's acceptable and legal on copyright matters used to be the exclusive domain of corporate battles among highly trained lawyers; however, such debates are today increasingly encountered in the living room and the popular press.[34] Among rights holders there is a growing concern about IP enforcement with respect to behavior of private individuals. For the most part, copyright has focused on controlling public exploitations of protected works, such as making sure that copyright owners have consented to the public performances of music or to the distribution of their works. It mainly regulated businesses or organizations whose actions had large-scale public consequences. Very little attention has been paid to small-scale actions of ordinary persons. But with computer and communication equipment becoming commonplace in the home, rights holders are now concerned that the proliferation of small-scale infringements by private individuals may

[33] With the aid of Napster software (which Napster currently makes available for free), for example, individuals can compile hundreds or thousands of MP3 files at virtually no cost.
[34] See, e.g., Steven Levy, *A Little Program Called Napster Could Shake, Rattle And Roll The Music Industry—And The Net*, Newsweek, March 27, 2000 available at http://som.csudh.edu/cis/lpress/471/links/readings/napster.htm.

now threaten their markets.[35] As a consequence, rights holders have a growing interest in regulating private uses of copyrighted works. This represents an important consequence of the technology's emergence into everyday life and presents another social and policy challenge in managing the IP balance.

WHY THE PROBLEMS ARE DIFFICULT

The problems information technology raises for IP law are difficult to resolve for several reasons. For one thing, intellectual property law is complex. It is a compendium of general principles (e.g., the exclusive right to reproduction),[36] subtle distinctions (e.g., "idea" versus "expression"),[37] and numerous special-case exceptions (e.g., the right to play background music, royalty free, at agricultural fairs).[38] Complexity arises in part because the law deals with intangible rights in intangible subject matters, in part because it regulates the activities of a wide variety of industries, and in part because it reflects the results of hard-fought negotiations and industry-specific compromises.[39] Even though the issues have emerged into the mainstream of daily life, the populace is woefully unprepared to deal with the complexities of intellectual property law. For instance, ordinary people really don't know if it is legal to install one copy of a software package on two different computers they have at home or whether it's legal to make a private copy

[35] See, e.g., A&M Records, Inc. v. Napster, Inc., No. C 99-5183 MHP, No. C 00-0074 MHP at 15 (N.D. Cal., August 11, 2000) available at http://www.cand.uscourts.gov/cand/tentrule.nsf/4f9d4c4a03b0cf70882567980073b2e4/74bf2867dde99f0f88256938007a1205/$FILE/NapsterF%26C2.pdf (discussing evidence attributing a decline in sales of CDs near campuses to the use of Napster software for "sharing" MP3 files).
[36] See 17 U.S.C. sec. 106(1).
[37] See 17 U.S.C. sec. 102(b).
[38] See 17 U.S.C. sec. 110(6).
[39] See, e.g., Jessica Litman, *Copyright, Compromise, and Legislative History*, 72 Cornell L. Rev. 857 (1987).

of a music CD. At times even legal professionals disagree about the answers to such questions.

A related difficulty arises from the fact that fundamental legal concepts can be interpreted differently. For example, significantly different (and emphatic) views exist on whether the "fair use" doctrine of copyright law is merely a defense against a charge of infringement or an affirmative right that allows copying in specific circumstances.[40] The difference matters, for both theoretical and pragmatic reasons. If fair use is an affirmative right, for instance, then it ought to be acceptable to take positive actions, such as circumventing technical protection mechanisms (e.g., decoding an encrypted file), in order to exercise fair use. However, if fair use is merely a defense against infringement, the same action may be unjustifiable. The basic point is very controversial. While one legal scholar has labeled as "absurd" the notion that fair use could be an affirmative right, other scholars suggest a constitutional basis for affirmative fair use rights.[41]

The problems are also difficult because so many different stakeholders have such diverse and at times opposing interests. The debate over intellectual property includes almost everyone, from authors and publishers (who do not always have coincident

[40] When one author quotes portions of another author's work, some literal copying of the other author's expression has occurred, but this may not be infringing if it is a fair use of the other author's work. See 17 U.S.C. sec. 107. The "defense" view of fair use holds that the author who made the copy may defend against a charge of infringement by arguing—and indeed proving—that the copying is excused by fair use because this use furthers important public policy goals of copyright (namely, that society benefits from authors building on and critiquing previous work, even if they have to copy some part of it). The affirmative view of fair use, by contrast, regards subsequent authors as having a "right" to make fair uses of an earlier author's work. In this view, the public policy goal of allowing criticism and commentary to promote new authorship is central.

[41] One of the reviewers of the Committee's report offered the "absurd" characterization of the affirmative right position. See *Digital Dilemma*, at 133, n. 20. Other scholars, however, disagree. See, e.g., Julie E. Cohen, Copyright and the Jurisprudence of Self-Help, 13 Berkeley Tech. L.J. (1998). See also Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569, 575 (fair use has constitutional dimensions).

interests), to consumers (e.g., the reading, listening, and viewing public), to libraries and educational institutions, to governmental and standards bodies.

A further difficulty arises from the fact that content creators have a variety of motivations, different notions of what constitutes a return on their investment, and as a consequence, different strategies for handling intellectual property. The traditional model—content produced and sold, either directly or with advertiser support—is the most familiar and encourages a view of IP law as the foundation that provides exclusive rights. But other models include giving intellectual property away in the expectation of obtaining indirect benefit in a related market (e.g., distributing free Web browser software in the expectation of building a market for Web server software), sharing IP to enhance the community (e.g., providing open source software such as Linux and the Apache Web server), or keeping it private (e.g., trade secrets).

The multiplicity of actors, motivations, returns, and strategies matters because discussions concerning intellectual property (e.g., the effects of changes in levels of IP protection) are often set in the context of a single model, suggesting that all parties are affected equally by any change in IP law or policy. However, authors are not an homogenous lot, and the consequences of IP policy decisions may not be uniform.[42]

Also contributing to the complexity is the variety of threads intertwined in this policy. Each thread has its own perspective for analyzing the problems and evaluating possible solutions. While the discourse on intellectual property is often framed in legal terms, the appropriate discourse should be far broader than that. At least five

[42] Yochai Benkler develops the idea that changes in copyright law and policy affect different classes of authors differently in an unpublished manuscript entitled "Intellectual Property and the Organization of Information Production" to which the Committee had access.

perspectives are highly important: technology, law, economics, psychology and sociology, and public policy. Each comes with its own conception of and mind-set for analyzing the problems, each is useful in unraveling the complexities encountered and should be kept in mind when evaluating solutions. A technical mechanism, for example, may seem promising but turn out to be intolerably awkward for the average user (as, for example, early attempts at copy protection for software). Similarly, economics can exert powerful forces capable of defeating the good intentions of a law (as, for example, with rent control rules, intended to preserve low-cost housing, which in some cities led to conversion of many rental spaces to condominiums and resulted in a reduced stock of rental housing).[43]

Then there is the international nature of the problem: The information infrastructure is global and yet intellectual property laws are local to each nation. And there is considerable variation around the world in laws, enforcement policies, and even cultural attitudes toward IP.[44] The *Digital Dilemma* report focused on U.S. law and practices, but acknowledges that larger global issues are important and in many ways unavoidable.

Finally, the issues raised by the digital dilemma are difficult in no small part because of the intensity with which positions on all sides are held and exposed. Feelings run deep on issues that invoke elements of ownership, power balance, and economic well being of the stakeholders.

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[43] See, e.g., Richard F. Muth, *Redistribution of Income Through Regulation In Housing*, 32 Emory L.J. 691, 695 (1983).

[44] The Committee was aware that the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) offers hope for more harmony in IP laws and enforcement internationally and that the WIPO Copyright Treaty, in particular, addresses digital copyright issues. Yet, even the WIPO agreement did not

The problems are inherently multi-dimensional and thus should not be viewed solely as a legal issue or indeed through any other single lens. One of the Committee's contributions is to urge an appropriately broad framework to addressing intellectual property policy issues, one that acknowledges the full breadth of the elements discussed above. Sound public policy requires taking account of the full spectrum of stakeholders and their sometimes conflicting goals. Effective public policy construction requires seeing the dilemma in terms broader than the law alone; it requires an understanding of the full range of forces involved. The analyses necessary for policy creation will come from using all of the variety of perspectives needed in thinking about the issues, requiring the ability to think like lawyers, technologists, economists, psychologists, and policy makers.

CONSENSUS AND NONCONSENSUS ON PUBLIC ACCESS CONCERNS

Public access to published information is an important goal of copyright law.[45] The traditional model of publication—the distribution of physical copies of a work—has been effective as a fundamental enabler of public access. A sufficient number of copies of a published work are generally purchased (e.g., through libraries and other institutions and by private individuals) that it becomes part of the social, cultural, and intellectual record and is thus accessible to sufficiently motivated members of the public. A concomitant long-standing (if not always explicitly articulated) understanding exists that this social and cultural record will continue to accumulate, be preserved, and be available for consultation. At least since the modern era of public libraries, broad access to a

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result in harmonization on all contentious issues. See, e.g., Samuelson, supra note 23.

[45] The importance of public access as a goal of copyright law is recognized in Chapter 4 of *Digital Dilemma*, especially at 97-99.

college education, and mass media, such information has become increasingly available. Some aspects of the information infrastructure promise to vastly increase access to information, yet others have the potential to diminish public access.

Given that a single online copy of a work made available in an open access digital library could have disastrous consequences for the market for the work, publishers are understandably reluctant to make some works available to libraries in digital form.[46] This may result in a net decrease in the accessibility of information.

Public access challenges also arise from the changing nature of publication, the increasing use of licenses rather than sale of works, and the nascent but growing use of technical mechanisms to protect digital information products.

In the physical world publication is public, irrevocable, and inevitably involves the distribution of one or more fixed copies of the work. In the digital world, none of these may be true. Publication has traditionally been public in the sense that copies are widely distributed and become part of the cultural record. Publication has been irrevocable in the sense that works may go out of print, but once published can never subsequently be effectively withdrawn from circulation and become "unpublished." Publication also implies a stability of the work: Copies distributed provide a stable snapshot of the work at a particular moment; subsequent editions only add to this record.[47]

In the digital world, however, documents published by being posted on the public Internet can be removed from scrutiny at the pleasure of the rights holder.[48] Access can

[46] Simon & Schuster, for example, declined to make an electronic version of a Stephen King novella available to libraries because this violated the publisher's "single user license" policy.
[47] The larger implications of this and related characteristics of print information are considered in Elizabeth Eisenstein, *The Printing Press as an Agent of Social Change* (1979).
[48] Individuals may have made local copies of the document before it was removed, but those are rarely

be controlled to allow many gradations of access and dissemination. In addition, older versions of a document can be (and are routinely) replaced by newer ones, thereby obliterating an historical record of its various iterations. This contributes to a blurring of the once firm distinction between published and private information, a distinction that matters because the facts and ideas in a published document are available for use by anyone (while those that are private may not be).

The widespread use of licensing and technical protection services (TPSs) also has important implications for public access. Licensing has become a familiar mechanism for providing access to some types of digital information (e.g., software), but is relatively new for other types (e.g., research journals). Even where the practice is familiar, it has often stirred controversy, as in the still-developing notion of shrink-wrap licenses.[49] By offering a distribution model different from that represented by copyright and sale, licensing has the potential to open new markets. But licensing also raises concerns about public access and the maintenance of a healthy corpus of materials in the public domain, particularly where license restrictions differ from legal rules that would otherwise apply. The libraries' role as a permanent repository of material that constitutes a cultural heritage is challenged by a change in the model of distribution from sale to licensing. Libraries may become transient, temporary points of access to collections of information: available today but gone tomorrow when licenses expire. Additional concerns arise from

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accessible to anyone else.

[49] The Committee did not take a position on the Uniform Computer Information Transactions Act (formerly known as Article 2B of the Uniform Commercial Code), although it was aware of differing perspectives on it. For a range of views on this model law, see, e.g., Symposium, *Intellectual Property and Contract Law in the Information Age: The Impact of Article 2B of the Uniform Commercial Code on the Future of Transactions in Information and Electronic Commerce*, 13 BERKELEY TECH. L.J. 809 (1998) and 87 CALIF. L. REV. 1 (1999).

the fact that material distributed by license may not become a part of the long-term public record.

Publishers are also beginning to use technical protection systems (TPSs) to confront the key problem of distributing digital information without the risk of large-scale unauthorized copying and redistribution.[50] TPSs offer rights holders some assurance that distributing a single copy of a digital work need not result in subsequent unlimited and uncontrollable dissemination. By enabling network distribution of information products that otherwise would never have been distributed digitally, TPSs could open new markets and substantially increase dissemination of and access to works. Otherwise, some rights holders may decide to avoid digital distribution entirely for some works.

But technical protection services may also permit limitations on the distribution of content such that most consumers can only view but not share it. Some content developers now plan to distribute digital information that users can view but not save or print. The inability to share information may substantially defeat the role of publication as an act that eventually leads to a contribution to the shared, permanent social and cultural heritage. Time- and audience-limited distribution could increase.[51]

Some members of the Committee expressed concern that highly constrained TPS models of distribution undermine the fundamental pact between society and authors that is embodied in copyright, a pact that encourages the creation and dissemination of information for society's ultimate benefit. These individuals are concerned that a limited-distribution model of publication may undermine a constitutional intent, namely that

[50] For example, a2b and Liquid Audio offer mechanisms for protecting audio files, while IBM, InterTrust, and Xerox have each developed suites of tools for digital content protection.

rights be granted to authors for a limited time in exchange for assurance that materials will pass eventually into the public domain and the public record.

The Committee as a whole reached consensus on the following points:

> Conclusion: The tradition of providing for a limited degree of access to published materials that was established in the world of physical artifacts must be continued in the digital context. The mechanisms for achieving this access and the definition of "limited degree" will need to evolve in response to the attributes of digital intellectual property and the information infrastructure.[52]
>
> Recommendation: The concept of publication should be reevaluated and clarified (or reconceptualized) by the various stakeholder groups in response to the fundamental changes caused by the information infrastructure. The public policy implications of a new concept of publication should also be determined.[53]
>
> Conclusion: The confluence of three developments—the changing nature of publication in the digital world, the increasing use of licensing rather than sale, and the use of technical protection services—creates unprecedented opportunities for individuals to access information in improved and novel ways, but also could have a negative impact on public access to information. Developments over time should be monitored closely.[54]

Public access concerns also arise from non-negotiated licenses mass-market for digital information. The principal issue is whether the terms of mass market licenses offered on a take-it-or leave-it basis should override fair use or other limiting policies of copyright law. The question is controversial and as yet unresolved in the law.[55] The public policies associated with intellectual property law may sometimes be seen as sufficiently important that mass-market license terms should not be permitted to override them. For example, public policy favoring competition and innovation may call into

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[51] Time- and audience-limited access has been commonplace for some kinds of IP for many years (e.g., movies exhibited in a theater), but this is a new phenomenon for traditionally published IP.
[52] *Digital Dilemma*, at 202.
[53] Id. at 205
[54] Id. at 204.
[55] See, e.g., Mark A. Lemley, *Beyond Preemption: The Law and Policy of Intellectual Property Licensing*, 87 Calif. L. Rev. 111, 115 (1999) ("the law of preemption is a mess").

question the enforceability of a term in a mass-market license for computer software that forbids reverse engineering the software.[56] Similarly, concerns related to free speech may arise if mass-market licenses forbid criticism of a digital information product or disclosure of its flaws.[57] Fair use encourages critical analysis. However, if works are licensed, it is unclear whether fair use should apply.

On this set of issues, the Committee did not reach consensus. Some Committee members thought that mass market licenses should be subject to fair use limitations, viewing fair use and other limiting doctrines of copyright as having an affirmative character (i.e., as providing a right for users under copyright law, rather than simply a defense to infringement). According to this view, mass-market license should not override fair use (even though other rights are generally waivable by agreement). Those members of the Committee who did not favor subjecting mass market licenses to fair use conditions generally perceived copyright as providing default rules that the parties could override by contract in free market transactions. Yet, the Committee could agree on this:

> Conclusion: The committee as a whole points out the important underlying legal and philosophical issue—the question of whether fair use is an affirmative right or a defense—and emphasizes that consequences for public access to information follow from taking one position or the other on this issue.[58]

Archiving our cultural heritage and ensuring a record of intellectual discourse are critical tasks for society, yet this too faces challenges from the nature of digital information and from the use of licensing rather than sale of information products.

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[56] See, e.g., Mark A. Lemley, *Intellectual Property and Shrinkwrap Licenses*, 68 S. Cal. L. Rev. 1239 (1995).

[57] Consider the hypothetical case of an electronic commerce software package and an authorized user who discovers a security problem with the software. The vendor may wish to issue licenses that prohibit the authorized user from disclosing such information to third parties. Yet the public has an interest in knowing of this weakness.

Conclusion: Significant economic, technical, and legal issues need to be resolved if libraries and archiving institutions are to be as successful with digital information as they have been with hardcopy information.

Recommendation: Congress should enact legislation to permit copying of digital information for archival purposes, whether the copy is in the same format or migrated to a new format. In addition, a task force on electronic deposit should be chartered to determine the desirability, feasibility, shape, and funding requirements of a system for the deposit of digital files in multiple depositories. [59]

CONSENSUS AND NONCONCENSUS ON COPYRIGHT ISSUES INVOLVING INDIVIDUAL BEHAVIOR

Little is known about how frequently individuals duplicate copyrighted materials and whether they pause to question whether this activity might be illegal. It is likely that a large number of people assume that they have the right to make private copies and that their view of appropriate conduct is not shaped by any substantive knowledge of intellectual property law. While members of the Committee were not in agreement about the scope of private use copying that occurred or was (or should be considered lawful), the Committee did agree on this:

Conclusion: A better understanding is needed of the public's perception and behavior concerning digital intellectual property.

Recommendation: Research and data collection should be pursued to develop a better understanding of what types of digital copying people think are permissible, what they regard as infringements, and what they regard as falling into murky ill-defined areas. Such research should address how these views differ from one community to another, how they differ according to type of material (e.g., software, recorded music, online documents), how user behavior follows user beliefs, and to what extent further knowledge about copyright law is likely to change user behavior.

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[58] *Digital Dilemma*, at 206.
[59] Id. at 208-9.

Without a better understanding of these issues, it is difficult to know how best to address the challenges posed by the emergence of intellectual property law and policy into the ordinary lives of individuals. Although the issue of whether or to what extent private use copying of copyrighted materials can be justified as fair use is not unique to digital intellectual property, the ease with which digital copies can be made and distributed makes private use copying far more extensive in the digital environment and a more significant problem for content owners. The Committee was able to reach consensus that neither extreme position on the private use copying issue—either that it is always (or virtually always) legal or that it never (or almost never) is—is correct. The report sets forth arguments for and against the private-use-as-fair-use position, although taking no position on which is the more correct, as Committee members differed among themselves on the issues. Yet the Committee did offer these conclusions and recommendations:

> Conclusion: A widespread belief prevails in society that private use copying is always or almost always lawful. This viewpoint is difficult to support on either legal or ethical grounds. It is important to find ways to convince the public to consider thoughtfully the legality, ethics, and economic implications of their acts of private copying.[60]
>
> Conclusion: Fair use and other exceptions to copyright law derive from the fundamental purpose of copyright law and the concomitant balancing of competing interests among stakeholder groups. Although the evolving information infrastructure affects the processes by which fair use and other exceptions to copyright are achieved, it does not challenge the underlying public policy motivations. Thus, fair use and other exceptions to copyright law should continue to play a role in the digital environment.
>
> Conclusion: Providing additional statutory limitations and/or additional statutory protections on copyright may be necessary over time to adapt copyright

[60] Id. at 214.

appropriately to the digital environment. The fair use doctrine may also prove useful as a flexible mechanism for adapting copyright to the digital environment.

Recommendation: Legal, economic, and public policy research should be undertaken to help determine the extent to which fair use and other exceptions and limitations to copyright should apply in the digital environment. As public policy research, legal developments, and the marketplace shape the scope of fair use and other limitations on copyright, and/or demonstrate a need for additional protections, any additional actions that may be needed to adapt the law, educate the public about it, or enforce the law may become clearer. [61]

CONSENSUS ON A QUESTION: IS "COPY" STILL AN APPROPRIATE BOTTLENECK FOR COPYRIGHT?

Perhaps the most radical question the Committee considered was the possibility that the notion of copy may no longer be an appropriate foundation for copyright law in the digital age.[62] Legitimate copies of digital information are made so routinely that the act of copying has lost much of its predictive power as a bottleneck for determining which uses copyright owners should be able to control or not control.[63] So many copies are made in using a computer that the fact that a copy has been made tells us little about the legitimacy of the behavior. In the digital world, copying is also an essential action, so bound up with the way computers work that control of copying provides unexpectedly broad powers, considerably beyond those intended by the copyright law.

Recommendation: The committee suggests exploring whether the notion of copy is an appropriate foundation for copyright law in the information age, and whether a new foundation can be constructed for copyright, based on the goal set forth in

[61] Id. at 215. The Committee also recommended that "[r]esearch should [] be undertaken in the areas that are most likely to intersect with intellectual property law, namely, contract law, communications policy, privacy policy, and First Amendment policy. The interaction of intellectual property law and contract law is likely to be of particular significance in the relatively near future, as licensing becomes a more common means of information distribution, leading to potential conflicts with the goals of IP law." Id. at 232.
[62] See id. at 140-45.
[63] There is a special provision of the copyright law recognizing that copies made in the process of using a program should not be considered as infringements (unless, of course, the copy from which they were made was itself illegal) and recognizing the legitimacy of backup copying. See 17 U.S.C. sec. 117. No equivalent provision has been adopted in respect of other digital information.

> the Constitution ("promote the progress of science and the useful arts") and a tactic by which it is achieved, namely, providing incentive to authors and publishers. In this framework, the question would not be whether a copy had been made, but whether a use of a work was consistent with the goal and tactic of copyright (i.e., did it contribute to the desired "progress"?) or was it destructive of copyright purposes (either considered alone or aggregated with other similar copies) of an author's incentive.[64]

The Committee recognized that such an undertaking would be both difficult and controversial. However, it thought that such an investigation would prove both theoretically revealing and pragmatically useful.

CONSENSUS THAT BUSINESS MODELS AND TECHNICAL MEASURES MAY BE USEFUL AS A WAY TO PROTECT DIGITAL INFORMATION

The law of copyright needn't do all the "heavy lifting" to protect digital information and allow rights holders to realize the commercial value of their intellectual property assets. Both business models and technical protection measures have a role to play in the digital networked environment.

Indeed, a good business model may be the best way for rights holders to avert the perils of digital information and realize the commercial value of their digital assets.[65] Thinking about business models as a way to protect digital information is helpful because it expands the options available. The traditional business model of selling digital information as a product may still work for some products (e.g., sales of CDs of musical recordings are substantially up, even though they are digital information products). Other viable business models may de-emphasize or forgo attempting to control digital

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[64] *Digital Dilemma*, at 232.

[65] See, e.g., Carl Shapiro and Hal R. Varian. *Information Rules: A Strategic Guide to the Networked Economy* (Boston: Harvard Business School Press 1998). One author has recommended that publishers "protect revenues, not bits." See Branko Geravac et al., Electronic Commerce and Intellectual Property—Protect Revenues, Not Bits, 2 *IMA Intell. Prop. Proc*. 111 (1996).

information and focus instead on other products or services for which the digital IP is complementary.[66] In addition, business models can be developed by considering what forms of value can be derived from the IP that are not so easily reproduced,[67] or even what forms of value can be derived from those very properties that make digital IP so easily copied and shared.[68] The Committee offered this conclusion and recommendation:

> Conclusion: Both technology and business models can serve as effective means for deriving value from digital intellectual property. An appropriate business model can sometimes sharply reduce the need for technical or legal protection, yet provide a way to derive substantial value from IP. Models that can accomplish this objective range from a traditional sales model (low-priced, mass market distribution with convenient purchasing, where the low price and ease of purchase make buying more attractive than copying), to the more radical step of giving away an information product and selling a complementary product or service (e.g., open source software).
>
> Recommendation: Rights holders should give careful consideration to the power that business models offer for dealing with distribution of digital information. But the model must be carefully matched to the product: While the appropriate business model can for some products obviate the need for technical protection, for others (e.g., first-run movies) substantial protection may be necessary (and even the strongest protection mechanisms likely to be available soon may be inadequate).[69]

Technical protection for intellectual property products can play a variety of roles: from helping rights holders collect revenue, to safeguarding user privacy, to helping ensure information authenticity.[70] These measures obviously cannot resolve legal, social, or economic issues underlying intellectual property, but they can help to enforce certain rights, rules, constraints, and responsibilities. The Committee pointed out:

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[66] For example, some open source software companies give away software, selling instead customization or support services to clients.
[67] For example, lawyers exploit their intellectual property by charging clients by the hour.
[68] For example, one may want to provide low resolution images available for free or virtually so and charge for higher resolution instantiations of the images.
[69] *Digital Dilemma*, at 224.
[70] The role of technical protection measures in protecting copyrighted works is discussed at length in the report. See id., Chapter 5; Appendix E.

Conclusion: Technical protection services need not be perfect to be useful. Most people are not technically knowledgeable enough to defeat even moderately sophisticated systems and, in any case, are law-abiding citizens rather than determined adversaries….[Technical measures] can deter the average user from engaging in illegal behavior….[71]

Conclusion: As cryptography is frequently a crucial enabling technology for technical protection services, continued advances in TPSs require a productive and leading-edge community of cryptography and security researchers and developers.

Recommendation: Rights holders might consider using technical protection services to help manage digital intellectual property but should also bear in mind the costs involved, some of which are imposed on customers and society, and the potential for diminished public access.[72]

Not every information product may be suitable for distribution via digital networks, given the availability of alternative mechanisms offering many advantages and fewer risks. It may be sensible for rights holders to consider withholding high-value, long-lived commercial products (e.g., classic movies like *The Wizard of Oz*) from digital networks such as the Internet while protected by copyright because the risk and consequences of someone capturing the bits for redistribution are simply too great. The technical, legal, and social enforcement costs of ensuring that such losses do not happen may well be prohibitive. Simply put, the information infrastructure need not be made safe for mass marketing of every form of content. The Committee's conclusion is simply stated: "Some digital information may be distributed more securely using physical substrates rather than by computer networks."[73]

[71] Id. at 218.
[72] Id. at 220.
[73] Id. at 221.

CONSENSUS AND NONCONSENSUS ON ANTI-CIRCUMVENTION REGULATIONS

It is no secret among computing professionals that any technical measure that can be used to protect copyrighted works can be circumvented by another technology. Once the technical protection measure has been bypassed, digital works will be as vulnerable to piratical copying as if they had not been technically protected at all. Once copyright industries recognized this as well, they successfully sought legislation to regulate both the act of circumventing certain kinds of technical measures and the sale or distribution of so-called circumvention technologies.

A complex provision of the Digital Millennium Copyright Act (DMCA), enacted by the U.S. Congress in 1998,[74] now makes illegal the circumvention of technical protection mechanisms used by copyright owners to control access to a work.[75] It also outlaws the manufacture and distribution of technologies if the primary purpose of the technology is to circumvent technical protection measures, if there is no commercially significant use of the technology except to circumvent technical protection measures, or if the technology is marketed as a circumvention device.[76]

The Committee agreed that the anti-circumvention regulations need to be clarified to be more technologically sound and more sharply targeted to the problems the regulations were designed to address. In particular, the Committee stated:

> Conclusion: More legitimate reasons to circumvent access control systems exist than are currently recognized in the DMCA. For example, a copyright owner might need to circumvent an access control system to investigate whether someone else is

[74] Pub. L. No. 105-304, 112 Stat. 2860 (1998).
[75] 17 U.S.C. sec. 1201 (a)(1)(A).
[76] 17 U.S.C. sec. 1201(a)(2) (regulating technologies that circumvent access controls), 1201(b)(1) (regulating technologies that circumvent other technical measures).

hiding infringement by encrypting a copy of that owner's works, or a firm might need to circumvent an access control system to determine whether a computer virus was about to infect its computer system.[77]

Point of Discussion: Many members of the committee believe in the need to add to the DMCA an exception that would permit circumvention of access controls for "other legitimate purposes." This change would enable judicial discretion in interpreting exceptions to anti-circumvention provisions, and would provide needed flexibility in the statute for dealing with legitimate circumvention activities not anticipated by Congress.[78]

A deeper split existed within the Committee on the anti-device provisions:

> Some members of the committee were highly critical of the DMCA's antidevice provisions and suggested that they be repealed; others thought that the provisions should be narrowed in scope…. However, other members of the committee felt strongly that section 1201 provides adequately for the use of legitimate devices by responsible persons and that if a larger class of circumvention devices were legitimized, they would inevitably be distributed widely and used for copyright infringement.[79]

Yet the Committee could agree that the DMCA's anti-circumvention rules as whole should be carefully studied "because of their unprecedented character; their breadth; and widespread concerns about their potential for negative impacts on public access to information, on the ability of legitimate users to make noninfringing uses of copyrighted works, on research and development in security technology, and on competition and innovation in the high technology sector."[80]

CONSENSUS ON PRINCIPLES TO GUIDE POLICYMAKING

Society is still in the early stages of the ferment brought about by the information infrastructure and still has much to learn about the multiplicity of forces that affect

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[77] The report refers readers for additional examples to Pamela Samuelson, Intellectual Property and the Digital Economy: Why the Anti-Circumvention Regulations Need to Be Revised, 14 Berkeley Technology Law Journal 519 (1999), available online at <http://sims.berkeley.edu/pam/papers/dmcapaper.pdf>. See *Digital Dilemma*, at 222, n. 25.

[78] Id.

intellectual property. In addition, rapid technological change is likely to continue, raising new sets of questions for the law to contend with. No one can foresee with any precision all of the legal or policy actions that will be needed. The committee articulated a set of general guiding principles to assist in effective formulation and revision of law and policy for the myriad of issues that remain.[81]

> Conclusion: Policy makers must conceive of and analyze issues in a manner that is as technology-independent as possible, drafting policies and legislation in a similar fashion. The question to focus on is not so much exactly what device is causing the problem today, as what the underlying issue is. In addition, policy makers should not base their decisions on the specifics of any particular business model.
>
> Conclusion: Public compliance with intellectual property law requires a high degree of simplicity, clarity, straightforwardness, and comprehensibility for all aspects of copyright law that deal with individual behavior. New or revised IP laws should be drafted accordingly.
>
> Conclusion: The movement toward clarity and specificity in the law must also preserve a sufficient flexibility and adaptability so that the law can accommodate technologies and behaviors that may evolve in the future.[82]

CONCLUSION

Intellectual property law will surely survive the digital age. It is clear, however, that this law will have to be adapted to ensure sufficient protection for content creators and rights holders, thereby helping to ensure that an extensive and diverse supply of informational works are available to the public. Other adaptations will also be needed to ensure that the important public purposes embodied in copyright law, such as providing public access to a wide range of information, are fulfilled in the digital context. Those

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[79] Id. at 223.
[80] Id.
[81] See id. at 236-38, Box 6.2 (setting forth principles).
[82] Id. at 234-35.

adaptations remain to be designed. Doing these important tasks well will require the participation of all the stakeholders.