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J. H. Reichman

Pamela Samuelson

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Intellectual Property Rights in Data?

J.H. Reichman and Pamela Samuelson

50 Vand. L. Rev. 51 (1997)

The Authors trace the evolution of hybrid intellectual property rights protecting the contents of noncopyrightable databases from early European Commission proposals sounding in unfair competition law to the strong and potentially perpetual exclusive property right embodied in the final E.C. Directive on Databases adopted in March 1996. Also examined are parallel legislative proposals pending before Congress and the draft international treaty on the legal protection of databases to be considered at a Diplomatic Conference hosted by the World Intellectual Property Organization in December 1996.

*The Authors endorse the need to provide some ancillary legal relief for investors in the generation and distribution of digitized data over telecommunications networks, lest free-riders appropriate the fruits of these investments. They deplore, however, the creation of strong legal barriers to entry in a field of endeavor already characterized by a pronounced lack of competition and by the preponderance of sole-source database providers. They show that, under both the existing and proposed sui generis regimes, most commercially valuable compilations of data will never enter the public domain, despite the "Limited Times" Clause of the U.S. Constitution; that the dependence of the scientific and educational communities on plentiful and affordable supplies of data has been virtually ignored, despite the constitutional mandate "to promote the progress of science and [the] useful arts;" and that the very existence of value-adding use industries in this sector would be jeopardized, notwithstanding the Supreme Court's procompetitive mandate in *Feist* and *Bonito Boats*. For these and other reasons, the proposed regimes to protect investments in databases—though requiring no creative achievement as a precondition of eligibility—have paradoxically applied one of the strongest and most anti-competitive intellectual property rights ever conceived to the elementary particles and building blocks of knowledge.*

The Authors re-examine the economic and legal justifications for providing investors in information goods with a measure of artificial lead time that would enable them to recuperate their investments and turn a profit in a digitized environment. They conclude that a weak intellectual property right—consistent with first amendment values and with other constitutional constraints—could overcome the risk of market failure without creating legal barriers to entry. To this end, they propose two alternative models, one based on simple unfair competition principles, and the other on a more refined set of default liability principles. Either model could increase the level of investment in the production and distribution of databases, while stimulating, rather than discouraging, the formation of more competitive market segments. The Article ends with a detailed analysis of the exceptions and other measures favoring science and education that will become indispensable under any sui generis regime protecting the contents of databases if the United States is not to jeopardize its pre-eminent role in basic science and the downstream technological innovation to which it gives rise.

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*J.H. Reichman**
*Pamela Samuelson***

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** Professor of Law and of Information Management, University of California at Berkeley.

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I. INTRODUCTION

The international intellectual property system founded on the Paris and Berne Conventions in the late nineteenth century¹ has been dominated by the patent and copyright paradigms, which articulate the legal protection of technological inventions and of literary and artistic works, respectively. Although this patent-copyright dichot-

1. See Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, as last revised at Stockholm on July 14, 1967, 21 U.S.T. 1583, 828 U.N.T.S. 305 ("Paris Convention"); Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, as last revised at Paris, July 24, 1971, 828 U.N.T.S. 221 ("Berne Convention"). The international intellectual property system was recently strengthened and broadened by the Uruguay Round of multilateral trade negotiations whose intellectual property component, known as the "TRIPS Agreement," builds on the Paris and Berne Conventions. See Final Act Embodying the Results of the Uruguay Round of the Multilateral Negotiations, Marrakesh Agreement Establishing the World Trade Organization, signed at Marrakesh, Morocco, Apr. 15, 1994, Annex 1C, Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS Agreement"), in *Results of the Uruguay Round* 6-19, 365-403 (GATT Secretariat ed., 1994).

omy was never as strictly observed abroad as in the United States,² it nonetheless charted a relatively clear theoretical line of demarcation between legal incentives to create and the public interest in free competition.³ Any publicly disclosed technologies or information products that failed to meet the eligibility requirements of the domestic patent and copyright laws became public domain matter that anyone could freely appropriate.⁴

By the end of the twentieth century, in contrast, this line of demarcation had empirically broken down. The developed market economies, including the United States, enacted numerous special purpose intellectual property laws to protect industrial designs, plant varieties, integrated circuit designs, and other matter that typically failed to meet the eligibility requirements of either the patent or copyright models.⁵ The latest, and arguably most deviant, examples

2. J.H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigms*, 94 Colum. L. Rev. 2432, 2455-65 (1994) (discussing hybrid intellectual property regimes adopted outside the United States).

3. See J.H. Reichman, *Charting the Collapse of the Patent-Copyright Dichotomy: Premises for a Restructured International Intellectual Property System*, 13 Cardozo Arts & Enter. L. J. 475, 480-96 (1995) (explaining how the patent and copyright paradigms have historically balanced competition and innovation policies). For a different and more restrictive view of the economic function of copyright, see generally Glynn S. Lunney, Jr., *Reexamining Copyright's Incentives-Access Paradigm*, 49 Vand. L. Rev. 483 (1996).

4. Copyright law protects only original works of authorship that manifest some creative expression. See 17 U.S.C. § 102(a) (1994 ed.); *Feist Publications, Inc. v. Rural Telephone Service Co.*, 499 U.S. 340, 363-64 (1991) (holding that white-page listings of a telephone directory lacked sufficient creativity to qualify for copyright protection as an original work of authorship). Patent law requires that a technical device or process be novel and nonobvious. See 35 U.S.C. §§ 102-03 (1994 ed.) (discussing conditions for patentability). Devices or designs not meeting copyright or patent law standards that are disclosed in publicly distributed products are generally considered freely appropriable. See *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 167-68 (1989) (striking down Florida statute forbidding use of "plug molds" in the manufacture of boat parts as disruption of federal patent policy concerning subject matter Congress left in the public domain); *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 231-32 (1964) (preventing use of Illinois unfair competition law to block the free copying of an unpatentable "pole lamp"); *Compeco Corp. v. Day-Brite Lighting Inc.*, 376 U.S. 234, 237-38 (1964) (indicating that state unfair competition laws may not protect unpatented designs embodied in publicly available products in the absence of confusion about the source of origin). See also Reichman, 94 Colum. L. Rev. at 2448-53 (cited in note 2) (discussing positive and negative economic premises of the dominant paradigms).

5. See, for example, Semiconductor Chip Protection Act of 1984, Pub. L. No. 98-620, 98 Stat. 3347 (1984), codified at 17 U.S.C. § 901 et seq. (1994 ed.); Plant Variety Protection Act, Pub. L. No. 91-577, 84 Stat. 1542 (1970), amended by Pub. L. No. 96-574, 94 Stat. 3350 (1980) and by Pub. L. No. 103-349, 1087 Stat. 3136 (1994), codified as amended at 7 U.S.C. §§ 2321 et seq. (1994 ed.). See also Rochelle Cooper Dreyfuss, *Information Products: A Challenge to Intellectual Property Theory*, 20 N.Y.U. J. Int'l L. & Pol. 897, 899 (1988). The United States is the only developed country that has never enacted special laws to protect either industrial designs appealing to the eye or functionally determined industrial designs known as "utility models." See, for example, J.H. Reichman, *Industrial Designs and Utility Models Under the*

of this trend toward "*sui generis*" intellectual property rights⁶ are the European- and United States-sponsored initiatives in both national and international forums calling for creation of a new form of legal protection for the contents of databases.⁷

These initiatives aim to rescue database producers from the threat of market-destructive appropriations by free-riding competitors who contributed nothing to the costs of collecting or distributing the relevant data.⁸ Unlike the classical intellectual property models,

European Communities' Proposed Initiatives: A Critical Appraisal, paper presented to the Third Annual Conference on International Intellectual Property Law and Policy, Fordham University School of Law (Apr. 20-21, 1995) (on file with Vanderbilt Law Review). See generally Reichman, 94 Colum. L. Rev. at 2453-500 (cited in note 2).

6. *Sui generis* means "of its own kind or class." Black's Law Dictionary 1434 (West, 6th ed. 1990). The literature refers to special purpose intellectual property laws deviating from the patent and copyright paradigms as "*sui generis*" regimes. See, for example, Pamela Samuelson, *Creating a New Kind of Intellectual Property Law: Applying the Lessons of the Chip Law to Computer Programs*, 70 Minn. L. Rev. 471 (1985) (discussing the *sui generis* character of the Semiconductor Chip Protection Act).

7. See Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the Legal Protection of Databases, 1996 O.J. (L 77) 20 ("E.C. Directive on Databases" or "Final E.C. Directive"). Even before the E.C. Directive on Databases was finalized, the European Commission submitted a proposal based on the then-pending draft to the World Intellectual Property Organization ("WIPO") Committee of Experts for International Treaty Provisions on the Legal Protection of the Contents of Databases. See Proposal Submitted by the European Community and its Member States to the World Intellectual Property Organization Committee of Experts on a Possible Protocol to the Berne Convention, Sixth Session, Geneva, WIPO Doc. BCP/CE/VI/13, February 1-9, 1996 ("European Proposal on Databases"). The United States submitted a similar proposal to the WIPO Committee of Experts in May, 1996. See Committee of Experts on a Possible Protocol to the Berne Convention, Proposal of the United States of America on *Sui Generis* Protection of Databases, Geneva, May 22-24, 1996, WIPO Doc. BCP/CE/VII/2-INR/CE/VI/2, May 20, 1996 ("U.S. Proposal on Databases"). The U.S. proposal was submitted to WIPO even before Congressman Carlos Moorhead introduced legislation in Congress for a new form of legal protection for the contents of databases on May 23, 1996. See Database Investment and Intellectual Property Antipiracy Act of 1996, H.R. Rep. No. 3531, 104th Cong., 2d Sess. (1996). A draft treaty on the legal protection of databases was made public on August 30, 1996. See Basic Proposal for the Substantive Provisions of the Treaty on Intellectual Property in Respect of Databases, Memorandum Prepared by the Chairman of the Committee of Experts, August 30, 1996 ("WIPO Draft Database Treaty"), to be considered by the Diplomatic Conference on Certain Copyright and Neighboring Rights Questions, Geneva, Switzerland, December 2-20, 1996. The Conference postponed action on the Draft Database Treaty. See WIPO Doc. CRNR/DC/88, Dec. 20, 1996.

8. See, for example, E.C. Directive on Databases, 1996 O.J. (L 77) at 20 (cited in note 7) (noting, in Recital 7, the high cost of database development and the low cost of appropriating content as an important factor favoring *sui generis* protection). In the absence of special legislation, courts will sometimes stretch existing legal regimes to avoid such appropriations. Prior to the Supreme Court's decision in *Feist Publications, Inc. v. Rural Telephone Service Co.*, 499 U.S. 340 (1991), some federal courts had extended copyright protection to unoriginal data compilations on a "sweat of the brow" theory. See Jane C. Ginsburg, *Creation and Commercial Value: Copyright Protection of Works of Information*, 90 Colum. L. Rev. 1865, 1868-69 nn.13-14, 1895-1900 (1990) (citing cases where courts found works copyrightable due to the amount of labor expended by the plaintiff and discussing the history of "sweat work" as the basis for copyrightability). For the tensions in foreign law, see, for example, Alain Strowel, *Droit d'auteur et copyright: divergences et convergence—etude de droit comparé*, 29-30, 264-66, 391-474

which seek "[t]o promote the Progress of Science and [the] useful Arts,"⁹ the database laws do not condition protection on a showing of some creative or technical achievement. Rather, these laws would protect anyone who makes a substantial investment in the development of a database against unauthorized extractions, uses, and reuses of the whole or substantial parts of its contents.¹⁰

The Authors of this Article are not unsympathetic to many of the goals that the *sui generis* database regimes are meant to achieve. We have elsewhere argued that the traditional intellectual property models, as supplemented by classical trade secret laws, often fail to afford those who produce today's most commercially valuable information goods enough lead time to recoup their investments. The risk of market failure inherent in this state of chronic under-protection tends to keep the production of information goods at suboptimal levels.¹¹

While this Article accordingly agrees that database makers need a new form of legal protection, it contends that the current European and United States initiatives¹² are seriously flawed. Implementing these initiatives would confer a far broader and stronger monopoly on database developers than is needed to avert market failure. It would create an exclusive property rights regime of virtually unlimited duration¹³ that would be subject to few, if any, public policy limitations.¹⁴ It would jeopardize basic scientific research,¹⁵ eliminate competition in the markets for value-added products and services,¹⁶ and convert existing barriers to entry into insu-

(E. Bruylant, 1993); M. Frank Gotzen, *Grand orientations du droit d'auteur dans les États membres de la C.E.E. en matière de banques de données*, in *Banques de Données Droit et d'Auteur* 85-98 (IRPI ed., 1987).

9. U.S. Const., Art. I, § 8, cl. 8.

10. See, for example, E.C. Directive on Databases, 1996 O.J. (L 77) at 20-21 (cited in note 7) (Recitals 7-12). See also Charles Clark, General Counsel of the International Publishing Copyright Council, *The Copyright Environment for the Publisher in the Digital World* 7 (1996) (stressing present "legal vacuum" facing publishers and the importance of E.U. database protection laws for future investments).

11. See, for example, Reichman, 94 Colum. L. Rev. at 2525-27 (cited in note 2) (discussing this phenomenon generally); Pamela Samuelson, Randall Davis, Mitchell D. Kapur, and J.H. Reichman, *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 Colum. L. Rev. 2308, 2337-41 (1994) (discussing this phenomenon in relation to computer programs).

12. See E.C. Directive on Databases, 1996 O.J. (L 77) at 20-28 (cited in note 7); H.R. Rep. No. 3531 (cited in note 7).

13. See notes 143-66, 225-35 and accompanying text.

14. See notes 169-90, 248-65 and accompanying text.

15. See notes 282-329, 451-88 and accompanying text.

16. See notes 330-63 and accompanying text.

perable legal barriers to entry.¹⁷ The pending European and United States initiatives could thus lead to relatively high prices for the use of public goods. Economic efficiency, however, calls for very low prices for such use and favors minimum incentives to provide the needed investment and services.¹⁸ Serious questions also exist about the constitutionality of the pending U.S. legislation. By investing compilers of databases with absolute and virtually perpetual protection, this legislation would violate both the limited times proviso of the Enabling Clause of the Constitution¹⁹ and its express justification for grants of intellectual property rights in terms of the advancement of scientific and technical progress.²⁰ The pending U.S. legislation also undermines principles embodied in the First Amendment that courts applying copyright law have long sought to accommodate.²¹

This Article proposes either the use of unfair competition principles to protect database contents, or the adoption of an intellectual property regime based on more refined liability principles, rather than on exclusive property rights,²² that would reconcile the need for legal incentives to invest with a calculus of net social benefits. Either approach would provide those who develop commercial databases with enough lead time to recoup their investments and make sufficient profits to enable further investments. At the same time, these alternatives would not retard scientific research or educational activi-

17. See notes 293-97, 364-99 and accompanying text.

18. See, for example, Robert Cooter and Thomas Ulen, *Law and Economics*, 108-18 (Scott Foresman, 1988) (recognizing alternative theories based on nonintervention or restricting competition to single producers). See also Jeffrey K. Mackie-Mason and Hal R. Varian, *Economic FAQs About the Internet*, *J. Econ. Perspective* 75, 85-89 (1994).

19. U.S. Const., Art. I, § 8, cl. 8.

20. The authors generally favor a flexible interpretation of the Enabling Clause of the Constitution, such as that put forward in Rochelle Cooper Dreyfus, *A Wiseguy's Approach to Information Products: Muscling Copyright and Patent Into a Unitary Theory of Intellectual Property*, 1992 S. Ct. Rev. 195 (1993). The claim advanced in this Article is that the database proposals conflict with even this flexible approach.

21. See notes 50-55 and accompanying text.

22. See notes 410-50 and accompanying text. A property entitlement or right precludes third parties from appropriating the object of protection, whereas a liability rule regulates the means by which they can engage in certain potentially harmful acts on certain conditions. See generally Guido Calabresi and A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 Harv. L. Rev. 1089 (1972) (discussing the differences between property entitlements, liability rules, and inalienability rules). If one has "rightful possession of some thing—such as an automobile or a home under an exclusive property right another person ordinarily cannot take it without permission," but under a liability rule, others may engage in acts that "create risks of harm and thus constitute probabilistic invasions of property interests"—for example—nuisances, while obligating them to pay damages for harm under specified circumstances. Louis Kaplow and Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 Harv. L. Rev. 713, 716 (1996).

ties, impede the development of follow-on products and services, or otherwise create legal barriers to entry.

To understand why some form of legislative action is necessary, Part II of this Article will discuss the limited proprietary rights available to database compilers under existing legal regimes, whose rules were formulated in the pre-digital era. This Part will show how digital technologies have destabilized the status quo and why this threatens investments in compilations of data.²³ Part III will report on current initiatives to adopt a *sui generis* intellectual property regime covering noncopyrightable database contents.²⁴ This Part traces the evolution of the pending legislative initiatives from a modest set of early proposals sounding in unfair competition law to an absolute monopoly reinforced by ancillary technological means of enforcement.²⁵ It also shows that current proposals for international treaty provisions to protect database contents are consistent with other U.S. and E.U. initiatives that would confer ever broader and stronger protection on digital information products.²⁶

Part IV will analyze the adverse implications of current database protection proposals for science and education, for competition in the market for value-added information products and services, and for other socially desirable reuses of information.²⁷ It emphasizes the ways in which the current initiatives undervalue the abiding importance in the information age of a relatively free flow of information as a precondition for technological progress and democratic social discourse.²⁸

Part V will explain why the exclusive property rights approach embodied in current proposals should be abandoned in favor of either an appropriate unfair competition law or, preferably, the pro-competitive, market-enhancing principles of a more refined liability regime.²⁹ This Part will discuss the principal elements of such an alternative framework for protecting the contents of databases from market-destructive appropriations without creating legal barriers to entry or unduly interfering with the open exchange of data among sci-

23. See notes 30-94 and accompanying text.

24. See 95-281 and accompanying text.

25. See notes 108-90, 222-65 and accompanying text (stressing intensive lobbying efforts by U.S. and U.K. database producers to this end).

26. See notes 191-265 and accompanying text.

27. See notes 281-83 and accompanying text.

28. See also James Boyle, *Shamans, Software and Spleens: Law and the Construction of the Information Society* i-iv (Harvard U. Press, 1996).

29. See text accompanying notes 400-88.

entists. It will also show that a sound legal framework for protecting the contents of databases cannot be formulated without solid and continuing inputs from the scientific and educational communities.

II. HISTORICAL CONTEXT OF THE CURRENT INITIATIVES

The success of private-sector technological development in the United States has stemmed in good measure from massive public investments in basic research and development that were made after the late 1950s in response to cold war pressures and national security interests.³⁰ This strategy provided funding for academic institutions and specialized laboratories whose research products often paved the way for private industrial applications.³¹ That federal funding largely defrayed the costs of collecting and disseminating raw scientific data merits particular attention in this context.³² To the extent that this country became the world's leading producer of technological goods, the government's role in ensuring the free and open supply of data to the scientific community on favorable economic conditions was a constant, but seldom articulated, stabilizing factor.

A. Information Goods in the Pre-Digital Era

The government generates data in two ways: directly, as when agencies compile information in the course of their missions, and indirectly, through grants or other subsidies to researchers, particularly for scientific endeavors.³³ The resulting compilations have generally not been regulated by intellectual property norms. This observation follows in part because copyright rules forbid the U.S. govern-

30. See generally Carnegie Commission on Science, Technology and Government, *Technology and Economic Performance: Organizing the Executive Branch for a Stronger National Technology Base* (1991).

31. See, for example, Rebecca S. Eisenberg, *Patents and the Progress of Science: Exclusive Rights and Experimental Use*, 56 U. Chi. L. Rev. 1017, 1018 (1989) (recognizing that academic research has attracted and accelerated the commercial development of biomedical discoveries which could be marketed commercially).

32. See, for example, Committee on Issues in the Transborder Flow of Scientific Data, U.S. National Committee for CODATA, and National Research Council, *Bits of Power: Issues in Global Access to Scientific Data* 1-24 (National Academy Press) (forthcoming 1997) ("*Bits of Power*") (discussing technical, economic, and legal impediments to the free flow of scientific and technical data in electronic environments). Some government data compilations, of course, serve as "raw material" for value-adding providers who claim proprietary rights in the end products. See note 289 and accompanying text (discussing protection strategies of such firms).

33. See, for example, *Bits of Power* at ch. 4 (cited in note 32).

ment from copyrighting works generated by its employees,³⁴ and in part because norms widely shared by members of the scientific and educational communities favor relatively unfettered extractions and reuses of data.³⁵ Only in cases where members of these communities authored discursive scientific works or otherwise participated in applied technological innovation were they likely to encounter legal rules governing commercial applications of data.³⁶ In such cases, existing legal institutions proved relatively stable in the pre-digital epoch, and the scientific community, among others, has taken this stability largely for granted.

In the private sector, by contrast, commercial compilers of data have long suffered from a risk of market failure owing to the intangible, ubiquitous and, above all, indivisible nature of information goods.³⁷ Compilers could, of course, secure the commercial value of

34. See 17 U.S.C. § 105 (1994 ed.) ("Copyright protection under [Title 17] is not available for any work of the United States Government, but the United States Government is not precluded from receiving and holding copyrights transferred to it by assignment, bequest, or otherwise.").

35. See, for example, Anne W. Branscomb, *Who Owns Information? From Privacy to Public Access* 159-73 (Basic Books, 1994). See also Dorothy Nelkin, *Science as Intellectual Property: Who Controls Research?* 5-6 (Macmillan, 1983); Harvey Brooks, *The Research University: Doing Good, and Doing It Better*, *Issues in Sci. & Tech.* 49, 50-51 (Winter, 1988); J.H. Reichman, *Computer Programs as Applied Scientific Know-How: Implications of Copyright Protection for Commercialized University Research*, 42 *Vand. L. Rev.* 639, 641-48, 710-23 (1989).

Most compilers of scientific data have been more concerned about obtaining credit or recognition for their contributions than about securing the economic fruits of their efforts. Both international copyright law under the Berne Convention and the domestic laws of most developed countries require that authors of literary works obtain a "moral right" to proper attribution for their published creations. See, for example, Berne Convention, Art. 6bis (cited in note 1). Congress has so far declined to comply with this obligation except with regard to visual or graphic artists. See 17 U.S.C. § 106A (1994 ed.) (creating protection for the authors of visual art). This leaves the question of attribution largely to the vagaries of unfair competition law.

36. Until the 1980s, there was a fairly clear-cut distinction between theoretical and applied science in the universities, and the inclination to patent or otherwise commercialize research results was less pronounced than at present. Even where patenting had taken root, a well-established judicial tradition denied patent protection to mathematical formulas, mental steps, and data as such, including mathematical algorithms. See, for example, Robert P. Merges, *Property Rights Theory and the Commons: The Case of Scientific Research*, 13 *Social Phil. and Pol. Found.* 145 (1996); Pamela Samuelson, *Benson Revisited: The Case Against Patent Protection for Algorithms and Other Computer Program-Related Inventions*, 39 *Emory L. J.* 1025, 1028-29 (1990) (considering the patentability of mathematical algorithms).

37. Information goods have the properties of so-called public goods: they are ubiquitous, inexhaustible, and indivisible or nondepletable. A second comer's use of a new information good does not diminish or exhaust it. Once disclosed to the world, anyone can use an information good without the originator's permission and without reimbursing him or her for the costs of research and production. See, for example, Cooter and Ulen, *Law and Economics* at 108-18 (cited in note 18). Unless the state limits the ability of third parties to copy a given literary production and sell the copied good for less than the originator, neither the author nor the publisher may have sufficient incentives to create or invest in the dissemination of cultural and

some data sets by keeping them secret or by only revealing them in the course of a confidential relationship, as routinely occurs with regard to firms engaged in industrial applications of scientific discoveries. In such cases, trade secret laws or equivalent laws of confidential information provide innovators and investors with no exclusive property rights.³⁸ Rather, they permit third parties to reverse-engineer any unpatented industrial product by proper means in order to reveal the process by which it was obtained, and to use that process to manufacture equivalent goods.³⁹

To the extent that an innovative product derived from commercial applications of scientific data kept that were under actual or legal secrecy, a competitor always remained free to generate the same data and to apply them to similar products or uses. Legal liability attached only to third parties who engaged in improper means of reverse engineering, such as bribing employees or resorting to industrial espionage.⁴⁰ In such cases, the free-riding offender had to compensate the innovator only for lost profits likely to accrue during the hypothetical period that would have been required to reverse engineer the product in question by honest means.⁴¹

Trade secret law thus provides qualifying originators with no legal immunity from direct competition. It merely confers a "head start," that is, an uncertain period of natural lead time during which originators seek to recoup their investment in research and development while establishing their trademarks as symbols of quality that consumers recognize. In this and other respects, trade secret law operates as a liability regime that discourages certain types of con-

information goods. See, for example, Paul Goldstein, 1 *Copyright: Principles, Law and Practice* § 1.2 (Little, Brown, 2d ed. 1996); William Kingston, *Innovation, Creativity and Law* 83-85 (Kluwer Academic Publishers/Dordrecht, 1990). See also Ejan MacKaan, *Economics of Information and Law* 115-17 (Kluwer-Nijhoff, 1982) (noting market distortions ensuing from public good problems and uncertainties that would require a higher expected return).

38. See, for example, Restatement (Third) of Unfair Competition §§ 39-45 (1993) (restating the norms of trade secrecy law). Some countries that lacked trade secret laws as such would protect information disclosed in confidence against abuses of that confidence. See, for example, Allison Coleman, *The Legal Protection of Trade Secrets* 5-28 (Sweet & Maxwell, 1992); Eric Golaz, *L'imitation servile des produits et de leur présentation: étude comparée des droits français, allemand, belge et suisse* 267-79 (Librairie Droz, 1992).

39. See, for example, *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974); Uniform Trade Secrets Act, 14 ULA § 1(4) (1985) ("U.T.S.A."). See generally J.H. Reichman, *Overlapping Proprietary Rights in University-Generated Research Products: The Case of Computer Programs*, 17 Columbia-VLA J. L. & Arts 51, 93-98 (1992).

40. See, for example, Restatement (Third) of Unfair Competition § 43 (cited in note 38).

41. See, for example, *id.* § 45.

duct rather than as an exclusive property right that may create a legal barrier to entry.⁴²

Once data are disseminated to the public in print media, however, they normally forfeit even the limited protection of trade secret laws and related laws of confidentiality, except insofar as two-party contracts may otherwise provide.⁴³ Not surprisingly, commercial compilers in such cases have found it difficult to appropriate the fruits of their investment unless either copyright laws or unfair competition laws afford them a limited shelter against wholesale duplication.⁴⁴

Data compilers in the United States and the United Kingdom had, in the past, experienced some success in protecting their investments in publicly distributed compilations by means of copyright law.⁴⁵ One line of decisions expressed concern that without copyright protection there would be inadequate incentives to invest in socially

42. See note 22. For an analysis of trade secret law as a default liability regime governing relations between originators and borrowers of subpatentable innovations, see Reichman, 94 Colum. L. Rev. at 2334, 2335-44, 2519-29 (cited in note 2). The injunction available under trade secret law applies only to the party who improperly obtained the undisclosed know-how, but it never impedes other parties from reverse engineering that know-how by proper means. An injunction valid against the world would presumably be held unconstitutional in the absence of a patent. See, for example, *Rockwell Graphics Systems, Inc. v. D.E.V. Industries*, 925 F.2d 174 (7th Cir. 1991). See also David D. Friedman, William M. Landes, and Richard Posner, *Some Economics of Trade Secret Law*, 5 J. Econ. Persp. 61-62 (Winter 1991) (discussing the difference between patent and trade secret protection).

43. See notes 86-94 and accompanying text for further discussion of two-party contracts.

44. The classic American decision on unfair competition protection for compilations of information was *International News Service v. Associated Press*, 248 U.S. 215, 237-42 (1918) (enjoining news service from appropriating hot news from competing newspapers under certain circumstances). The extent to which state or federal unfair competition laws can still provide some supplementary relief against the unauthorized copying of commercially valuable data that are not protected by trade secret or copyright laws remains an unsettled question. See, for example, Jane C. Ginsburg, *No "Sweat"? Copyright and Other Protection of Works of Information After Feist v. Rural Telephone*, 92 Colum. L. Rev. 338, 367-74 (1992) (questioning Congress's constitutional authority to protect compiled data outside the limits of the Patent-Copyright Clause); Wendy J. Gordon, *On Owning Information: Intellectual Property and the Restitutionary Impulse*, 78 Va. L. Rev. 149, 165 (1992) (proposing the creation of a misappropriation tort for malcompetitive copying that would provide supplemental protection); Dennis S. Karjala, *Misappropriation as a Third Intellectual Property Paradigm*, 94 Colum. L. Rev. 2594, 2601-08 (1994) (focusing on misappropriation to fill the gap of protection between patent and copyright law). But see Leo J. Raskind, *The Misappropriation Doctrine as a Competitive Norm of Intellectual Property Law*, 75 U. Minn. L. Rev. 875 (1991) (identifying gaps in the analytical framework of the misappropriation doctrine). Unfair competition law has sometimes been available in Europe to protect data compilations. See, for example, J.H. Reichman, *Electronic Information Tools—The Outer Edge of World Intellectual Property Law*, 25 Int'l Rev. Indus. Prop. & Copyright L. 446, 450 nn. 2, 11-16 (1993). See also Golaz, *L'imitation Servile* at 239-55 (cited in note 38).

45. See Ginsburg, 90 Colum. L. Rev. at 1873-93 (cited in note 8) (discussing the historical protection of "low authorship" of works in the United Kingdom and the United States).

desirable compilations of data that require industrious effort to produce.⁴⁶ The decisions protecting compilations on a "sweat of the brow" rationale, however,⁴⁷ violate a basic premise of the mature copyright paradigm, which claims to protect only the original expression that authors embody in information products.⁴⁸ The U.S. Supreme Court recognized this principle in its 1991 decision in *Feist Publications, Inc. v. Rural Telephone Service Co.*, which repudiated the "sweat of the brow" rationale for protecting compilations of data.⁴⁹

Functionally dictated collections of data or other compilations that do not manifest a creative selection or arrangement are, therefore, at least in principle, ineligible for copyright protection.⁵⁰ Even when compilers of data satisfy the originality requirement, moreover, copyright law affords them only weak protection because ancillary rules exclude their ideas and factual discoveries⁵¹ from the scope of the copyright monopoly. In addition, numerous exceptions to and limitations on the copyright owner's exclusive rights also favor certain uses of protected works, such as those for face-to-face teaching activities, library and archival uses, and other public interest pursuits.⁵² In U.S. copyright law, there is also a general "fair use" excep-

46. See, for example, *Leon v. Pacific Telephone & Telegraph Co.*, 91 F.2d 484 (9th Cir. 1937) (protecting telephone listings). See also Robert C. Denicola, *Copyright in Collections of Facts: A Theory for the Protection of Nonfiction Literary Works*, 81 Colum. L. Rev. 516, 528, 539-40 (1981) (commenting on the need to encourage production of these works and to minimize unjust enrichment).

47. This rationale provides copyright protection based upon the labor expended by the compiler. See note 8.

48. See, for example, Paul Edward Geller, *Copyright in Factual Compilations: U.S. Supreme Court Decides Feist Case*, 22 Int'l Rev. Indus. Prop. & Copyright L. 802, (1991) (noting that the United Kingdom remains "the most significant exception to this consensus").

49. 499 U.S. at 359-60. The implications of *Feist* are explained generally in Dreyfuss, 20 N.Y.U. J. Int'l L. & Pol. 897 (cited in note 5), Ginsburg, 92 Colum. L. Rev. at 338 (cited in note 44), and Pamela Samuelson, *The Originality Standard for Literary Works Under U.S. Copyright Law*, 42 Am. J. Comp. L. 393 (Supp. 1994).

50. See 17 U.S.C. § 102(a), (b); *Feist*, 499 U.S. at 359-60 (finding that copyright protection extends only to those portions of a data compilation that are original to the author and not to the facts themselves); Guy Tritten, *Intellectual Property in Europe* 213-14 (Sweet & Maxwell, 1996) (noting the robust standard of originality in some E.U. countries, especially Germany). The E.C. Directive on Databases recognizes this same principle, and uses it as a point of departure for its *sui generis* regime. See E.C. Directive on Databases, 1996 O.J. (L 77) at 20, 25 (cited in note 7) (Recitals 4-12 and art. 3(1)).

51. See 17 U.S.C. § 102(b); *Feist*, 499 U.S. at 361-64 (allowing a second comer to use disparate data in value-adding directory of its own making).

52. See, for example, 17 U.S.C. §§ 108 (reproduction by libraries and archives), 109(a) (first-sale doctrine), 110(a) (face-to-face teaching activities), 110(b) (broadcasts of nondramatic literary or musical works for certain educational purposes), 114 (limiting rights and scope of protection in sound recordings), 115 (compulsory license for musical works recorded on sound recordings), 117 (archival uses of computer programs), 118 (exemptions for use by noncommercial broadcasters), 120 (right to photograph architectural works).

tion "for purposes such as criticism, comment, news reporting, teaching . . . scholarship, or research."⁵³

Taken together, these and other features of the mature copyright paradigm usually afford protection only against wholesale copying of the original selection and arrangement underlying any eligible compilation of data. This, in turn, greatly diminishes the value of copyright protection even to database publishers who satisfy the eligibility criteria. The exclusive reproduction and derivative work rights, as construed by the Supreme Court, will not normally prevent unauthorized extractions of disparate data for either competing or value-adding uses.⁵⁴ In the United States, this doctrine of weak or "thin" protection for factual works has been reinforced by first amendment concerns, which some courts and commentators view as further mandating broad access to the disparate facts that result from a compiler's efforts.⁵⁵

53. 17 U.S.C. § 107 (1994 ed.). While the availability of other statutory exceptions usually varies with the nature of the subject matter at issue, the fair use exception applies to all subject matter categories. Even so, overriding the copyright owner's exclusive rights in the name of fair use remains an atypical result contingent on a judicial evaluation of the special "purpose and character of the use," the "nature of the copyrighted work," the "amount and substantiality of the portion used" and the "effect of the use upon the potential market for or value of the copyrighted work." See, for example, 17 U.S.C. § 107 (listing factors to be considered); *Campbell v. Acuff-Rose Music, Inc.*, 114 S. Ct. 1164, 1169-79, 127 L. Ed. 2d 500, 525 (1994) (finding a commercial parody a fair use within the meaning of the § 107); *Harper & Row Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539, 569 (1985) (finding the use in question not fair under § 107).

54. See 17 U.S.C. §§ 106(1), (2) (1994 ed.); *Feist*, 499 U.S. at 349-51 (discussing the limitation of copyright of factual compilations); *Key Publications, Inc. v. Chinatown Today Publishing Enterprises, Inc.*, 945 F.2d 509, 514 (2d Cir. 1991) (noting that copyright protection with respect to factual compilations after *Feist* appears "thin"); *Kregos v. Associated Press*, 937 F.2d 700, 707 (2d Cir. 1991) (holding that a variant format for baseball game data did not infringe copyright in original format); *Victor Lalli Enterprises, Inc. v. Big Red Apple, Inc.*, 936 F.2d 671, 674 (2d Cir. 1991) (holding that charts of winning numbers from gambling activities did not meet standards for copyright protection); *Bellsouth Advertising & Publishing Corp. v. Donnelley Information Publishing, Inc.*, 999 F.2d 1436, 1446 (11th Cir., 1993) (holding that the use of a telephone directory as a guide for business solicitation did not violate copyright standards). If courts strictly apply *Feist* at both the eligibility and scope of protection phases, and thus continue to reject stronger protection based on "sweat-of-the-brow" investment theories, the effect is to "strip[] . . . away or sharply reduce[] . . . the copyright protection afforded a variety of 'information products,' from directories and mailing lists to computerized databases." Ginsburg, 92 Colum. L. Rev. at 339 (cited in note 44). See also Denicola, 81 Colum. L. Rev. at 516 (cited in note 46) (advocating compiler's copyright to overcome lack of incentives); Ginsburg, 90 Colum. L. Rev. at 1907, 1924 (cited in note 8) (advocating copyright protection of low-authorship factual works, including databases, but proposing compulsory license for derivative users of data).

55. See, for example, *Feist*, 499 U.S. at 354 (stressing adverse effects on free flow of information by "creat[ing] . . . monopol[ies] in public domain materials"); *Harper & Row v. Nation Enterprises*, 471 U.S. 539 (1985) (stressing first amendment interest in unrestricted availability of facts); *Financial Information, Inc. v. Moody's Investors Service, Inc.*, 808 F.2d 204, 207 (2d Cir. 1986) (stressing "risk [of] putting large areas of factual research material off limits and threaten[ing] the public's unrestrained access to information"). See also Philip H. Miller,

Lately, however, some federal appellate courts have begun to rebel against *Feist* and to reinstate stronger copyright protection for factual compilations and databases by subtle doctrinal manipulation.⁵⁶ As our previous work has shown, these cyclical fluctuations between states of under- and overprotection are a characteristic response to borderline subject matters that fit imperfectly within the classical patent and copyright paradigms.⁵⁷

B. Destabilizing Trends in the Information Age

By the late 1980s, digital technologies and new telecommunications networks had combined to produce "the greatest changes in the way information is distributed since the invention of printing by movable type in the fifteenth century."⁵⁸ The use of computers made it economically feasible to collect, store, manage, and deliver huge amounts of data at a time when continuously expanding databases have become the building blocks of knowledge, especially in the obser-

Note, *Life After Feist: Facts, the First Amendment, and the Copyright Status of Automated Databases*, 60 Fordham L. Rev. 507, 509 (1991) (discussing the relationship between the freedom guaranteed by the First Amendment and the author's right to copyright); Michael J. Haungs, *Copyright of Factual Compilations: Public Policy and the First Amendment*, 23 Colum. J. Law & Soc. Probs. 347, 364 (1990) (discussing "[t]he tension between copyright law and the First Amendment's protection of free exchange of ideas . . ."); Denicola, 81 Colum. L. Rev. at 540 (cited in note 46) ("Copyright does not significantly interfere with first amendment values . . ."). For the view that legal protection of facts and data as such is consistent with the First Amendment on certain conditions, such as the availability of noncommercial fair use and compulsory licenses, see Ginsburg, 92 Colum. L. Rev. at 384-87 (cited in note 44).

56. See, for example, *CCC Information Services, Inc. v. Maclean Hunter Market Reports, Inc.*, 44 F.3d 61, 65 (2d Cir. 1994) (noting the low threshold of originality required for copyright protection); *Warren Publishing, Inc. v. Microdos Data Corp.*, 52 F.3d 950, 956 (11th Cir. 1995) (holding that the high degree of correlation between compilations violated copyright law). See also Samuelson, 42 Am. J. Comp. L. at 397-413 (cited in note 49).

57. See, for example, Reichman, 13 Cardozo Arts & Enter. L. J. at 512-17, 513 n.176 (cited in note 3).

Factors pulling for over- or underprotection already exist on both sides of the classical line of demarcation [between the patent and copyright subsystems]. On the copyright side . . . for example, a broad derivative work right sometimes overprotects by favoring overlapping claims to incremental innovation while restricting access to ideas, methods and processes by indirect means and for a very long duration. . . . Yet, underprotection can result from the inability of copyright-like models to protect the internal dynamic features of technological innovation, in which idea and expression merge, and also from the lack of any exclusive right to control end use Similarly, on the industrial property side . . . , "overprotection results from the progressive monopolization of ever smaller aggregates of inventive activity, which elevate social costs in return for no clearly equilibrated social benefits. Yet, the nonobviousness standard and its variants can also induce states of chronic underprotection by excluding the bulk of the incremental innovations that underlie today's most promising technologies."

Id. (quoting Reichman, 94 Colum. L. Rev. at 2504 n.401 (cited in note 2)).

58. Leslie A. Kurtz, *Copyright and the National Information Infrastructure in the United States*, 18 Eur. Intell. Prop. Rev. 120 (1996).

vational sciences.⁵⁹ Electronic databases further blur the line between the collection and application functions by allowing users to make their own tailor-made extractions from the mass of data available in the collection as a whole. In other words, digital technologies break through the functional rigidities of print media by providing users with "extraction tools that enable them to sort and arrange data in ways meaningful to them."⁶⁰ By thus extending "the manipulative abilities of the information user's mind," these tools allow users to "add . . . immense value to what would otherwise be masses of incoherent, disparate data."⁶¹

Moreover, the latest value-adding data products, once disseminated worldwide via the Internet and other media, frequently lead to the rapid production of new technical innovations, which result in the generation of more data. Electronic publishing thus broadly advances the revolutionary process that computerization began, and it makes both data and research results potentially available at very low cost all over the world.⁶²

As this digital and telecommunications revolution created vast new markets for electronic information goods and tools,⁶³ it outpaced the legal infrastructure, which remains geared to the slower-moving print media.⁶⁴ This strain manifests itself in two contradictory ways.

59. See, for example, *Bits of Power* at ch. 4 (cited in note 32).

60. Gregory M. Hunsucker, *Raising a Toll Fence to Protect the "Noncreative" Labors of Database Makers: The European Database Directive*, Fordham Intell. Prop., Media & Enter. L. J. (forthcoming, 1997).

61. *Id.* See also text accompanying notes 328-54 (discussing these issues).

62. See, for example, Paul A. David and Dominique Foray, *Accessing and Expanding the Science and Technology Knowledge Base*, 16 Sci., Tech. & Ind. Rev. 3, 38-59 (OECD ed., 1995); Paul Ginsparg, *Winners and Losers in the Global Research Village*, paper presented to Conference held at UNESCO headquarters, Paris, Feb. 19-23, 1996 (1995) ("UNESCO Paper") (on file with the Authors). See also Cristiano Antonelli, *The Economic Theory of Information Networks*, in Cristiano Antonelli, ed., *The Economics of Information Networks* 5-28 (Elsevier Science Publishing Co., 1992).

63. See, for example, Hunsucker, *European Database Directive* (cited in note 60) (quoting sources that estimate the value of the global information industry will reach \$3 trillion by early in the next century); W. Joseph Melnick, *A Comparative Analysis of Proposals for the Legal Protection of Computerized Databases: NAFTA vs. the European Communities*, 26 Case W. Res. J. Int'l L. 57, 59 n.14 (1994) (quoting sources that estimate the E.C. database market at \$10.2 billion, which represented about 30% of the world market in 1994).

64. See, for example, *Intellectual Property and the National Information Infrastructure: The Report of the Working Group on Intellectual Property Rights* 211 (Sept. 1995) ("U.S. White Paper") (noting the difficulty in keeping intellectual property laws up-to-date with technology); Commission of the European Communities, *Green Paper on Copyright and the Challenge of Technology: Copyright Issues Requiring Immediate Action* COM (88) 172 Final (June 7, 1988).

The Authors have elsewhere argued that the legal problems presented by electronic databases are assimilable to those of industrial designs, computer programs, plant varieties, bioge-

Sometimes digital technology aggravates the basic market failure characteristic of information goods and thus deepens a chronic state of underprotection. This occurs, for example, when second comers download the originator's data and enter the market with a competing product that free-rides on the originator's investment.⁶⁵ At other times, however, digital technology so thoroughly overcomes the threat of market failure that it endows the initial investor with abnormal market power that can result in a chronic state of overprotection. This occurs, for example, when sole-source data providers charge monopolistic prices or oblige libraries and research institutions to accept terms and conditions that effectively waive both the special privileges and the fair use exceptions set out in the Copyright Act of 1976.⁶⁶

1. The Vulnerability of Publicly Distributed Electronic Databases

Only modest familiarity with the capabilities of digital technologies is required to understand the vulnerabilities of publicly distributed electronic databases to market-destructive appropriations.⁶⁷ Once compilations of data are electronically disseminated in

netically engineered products, and numerous other forms of design-dependent, subpatentable innovations that fall into a widening penumbra between the increasingly obsolete patent and copyright paradigms. See Reichman, 94 Colum. L. Rev. at 2504-58 (cited in note 2) (proposing a third intellectual property paradigm based on liability principles); Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2365-2420, 2429-31 (cited in note 11) (proposing such a regime for computer programs).

65. See, for example, *CCC Information Services Inc.*, 44 F.3d at 72 (stating that CCC took "virtually the entire compendium" of Maclean's used car valuations and "effectively offer[ed] to sell its customers Maclean's Red Book through CCC's database"); *Warren Publishing, Inc.*, 52 F.3d at 955 (indicating that statistically, Microdos's work contained from 96 to 99% of Warren's data on nationwide cable television services), vacated on other grounds, 67 F.3d 276 (11th Cir. 1995).

66. See, for example, U.S. Congress, Office of Technology Assessment, *Finding a Balance: Computer Software, Intellectual Property, and the Challenge of Technological Change* 166-79 (U.S. G.P.O., 1992) (describing controversy surrounding the conduct of software licensors in obliging libraries to abrogate "rights described in the copyright law"); U.S. Congress, Office of Technology Assessment, *Intellectual Property Rights in an Age of Electronics and Information* 163 (U.S. G.P.O., 1986) ("OTA Report"); William R. Cornish, *Copyright in Scientific Works (Scientific Communications, Computer Software, Data Banks): An Introduction*, in Max Planck Gesellschaft, ed., *European Research Structures—Changes and Challenges: The Role and Function of Intellectual Property Rights* 50 (1994) (despite case for a measure of free reprography for purposes of academic research, "academic institutions are regarded as relatively soft targets by publishing interests [in U.K.], which have looked at them as suitable points for inserting initial wedges"). See generally Reichman, 25 Int'l Rev. Indus. Prop. & Copyright L. at 461-68 (cited in note 44); Marshall Leaffer, *Engineering Competitive Policy and Copyright Misuse*, 19 U. Dayton L. Rev. 1087, 1094 (1994) (noting the judicial criticism of some software copyright plaintiffs for engaging in monopolistic practices).

67. See, for example, Final E.C. Directive, 1996 O.J. (L 77) at 20 (cited in note 7) (describing the need for granting legal protection to the makers of databases in Recitals 7-12);

databases that are made available to the public, second comers can easily and cheaply copy or manipulate the contents of such databases and disseminate the resulting products to large numbers of people.⁶⁸ With access to global information networks becoming ubiquitous in developed nations, compilers of publicly disseminated databases face diminishing prospects for commercial success unless they obtain the legal or technical means to thwart egregious forms of free-riding.⁶⁹

When, moreover, second comers employ existing technology to make different selections from, and arrangements of, the data⁷⁰ contained in electronically published databases, they may avoid infringing the originator's own copyrights, if any, and in some jurisdictions, even qualify for copyrights of their own in the resulting products. Second comers can then exploit their versions in competition with the database provider from whom they appropriated the data.⁷¹ Because of the widespread availability of scanning and other conversion equipment, even print compilations can readily be converted to electronic form and manipulated with the same electronic information tools.⁷²

To the extent that government-generated or university-generated data remain noncommercialized, their vulnerability to technically refined means of accessing, downloading, or duplication may be of relatively little importance. Presumably, the originators want the broadest possible distribution of their data sets. Even here, however, there are some concerns that are likely to grow over time. For example, governments may impose cost recovery conditions on the use

Information Industry Association, *Database Protection: An Industry Perspective on the Issues* (Aug. 1995) ("IIA Report").

68. IIA Report at 3 (cited in note 67).

69. See, for example, *id.* at 32. See also U.S. White Paper at 130-54, 177-90 (cited in note 64); Paul Heald, *The Vices of Originality*, 1991 Sup. Ct. Rev. 31 (1992).

70. See, for example, Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2414 (cited in note 11).

71. See, for example, Jessica Litman, *After Feist*, 17 U. Dayton L. Rev. 607, 609 (1992) ("Under the Supreme Court's analysis [in *Feist*], a competitor would be infringing no copyright if it simply stole the data and left the base."); Pamela Samuelson, *Legal Protection for Database Contents*, 39 Communications of the ACM (forthcoming Dec. 1996).

72. At first, the European Commission proposed a *sui generis* right only for electronic databases. See Commission of the European Communities, Proposal for a Council Directive on the Legal Protection of Databases, COM (92) 24 final—SYN 393, art. 1 (1992) ("First E.C. Proposal on Databases"). The Commission did not explain why later drafts of the database directive broadened the term "database" so that the *sui generis* right would apply to print data compilations as well as electronic databases. See E.C. Directive on Databases, art. 1(2), 1996 O.J. (L 77) at 24 (cited in note 7). It is reasonable to assume, however, that the publishing industries must have brought scanning technologies and the like to the Commission's attention.

of data that third parties who obtain unauthorized access could avoid.⁷³ Additionally, unauthorized users who introduce errors into a new product could also inadvertently corrupt the original database, perhaps leading to liability.⁷⁴

Over time, moreover, the distinction between "pure" or non-commercialized data and data applied to industrial pursuits seems likely to break down, as has routinely occurred in other disciplines, notably computer science and biotechnology.⁷⁵ Universities and other research institutions may view data compilations generated in the course of research as potential revenue sources, especially in an era of declining government support for research endeavors, just as they have done with regard to patentable inventions.⁷⁶ As more scientific data are commodified, the data collectors must necessarily distinguish between sources that are made publicly available without charge and those that are not.⁷⁷ Otherwise, even the providers that do not charge for data could disrupt contractually controlled applications of their own data downstream, not to mention the risk that the non-charging government or academic generator might inadvertently infringe on third parties' proprietary domains.

A related trend is for some governments around the world to commercialize their data, regardless of whether other governments follow suit.⁷⁸ As this occurs, the former will become concerned about the vulnerability of their data even if the latter are not. By the same token, the providers that still choose not to charge for their services will increasingly come into contact with—and, perhaps, conflict

73. See, for example, Executive Office of the President, Office of Management and Budget Memorandum by Alice M. Rivlin, *Implementing the Information Dissemination Provisions of the Paperwork Reduction Act of 1995* (Sept. 29, 1995) ("OMB Implementing Memo"); notes 307-09 and accompanying text.

74. See, for example, *Bits of Power* at ch. 3 (cited in note 32).

75. See, for example, Allen Newell, *Response: The Models Are Broken! The Models Are Broken!*, 47 U. Pitt. L. Rev. 1023, 1026 (1986) (discussing the lack of a gap between basic and applied science as regards computer program algorithms and noting that the patent system has traditionally rewarded only industrial applications of scientific discoveries). See also Joseph Straus and Rainier Moufang, *Deposit and Release of Biotechnological Material for the Purpose of Patent Procedure* 95 (Nomos Verlagsgesellschaft, 1990) (discussing biotechnological research and development); Dan L. Burk, *Biotechnology and Patent Law: Fitting Innovation to the Procrustean Bed*, 17 Rutgers Comp. & Tech. L. J. 1, 33-34 (1991) (noting the difficulty in distinguishing products from processes for patentable biotechnological inventions).

76. See notes 283-97 and accompanying text (discussing hypothetical benefits to science from commodifying data collections).

77. See, for example, John Browning, *Cyber View: Playing Facts and Loose*, Sci. American 30, 32 (June 1996) (warning about unintended effects of legal restrictions on searching and gathering data).

78. See *Bits of Power* at ch. 4 (cited in note 32) ("The Trend Toward Markets: Good or Bad for Science").

with—the legal and technical fences that states bent on commercializing data may erect. As one observer put it, “the division between the two regimes” could become “a dam over which information will not easily flow,” whereas worldwide economic growth seems to require that “[m]ore than perhaps any other commodity, data must be allowed to move without barriers.”⁷⁹

To the extent that databases are commercialized, whatever their origin, the refined digital technologies that enhance the compiler's power to collect and disseminate the data contained in the database have equally enhanced the free-riding competitor's power to appropriate the fruits of the compiler's investment.⁸⁰ The second comer who purchases the originator's product, say, in the form of a CD-ROM, may electronically extract and recompile the data in question at a fraction of the originator's collection and distribution costs. The second product may then be sold for less than the first, because its publisher has contributed nothing directly or indirectly to the costs of research and production. Digital technology also enables second comers to extract and recombine the originator's data into value-adding products that improve on the original or that compete in different and sometimes distant market segments.⁸¹ In some cases, third parties may simply extract the compiler's data in order to make them available over telecommunications networks, a gesture that can destroy any residual incentives to invest.⁸²

79. Charles von Simson, *Feist or Famine: American Database Copyright as an Economic Model for the European Union*, 20 Brooklyn J. Int'l L. 729, 768 (1994). In this context, governments that have not commercialized data in the past may decide to do so in order to have rights to trade when seeking access to data collections that are commodified elsewhere. The asymmetry likely to occur if one government can take all of another's data while restricting the appropriation of its own data may give rise to data trade wars.

80. If the second comer independently generates its own data, or combines its inputs with the first comer's data to produce value-adding applications, the former contributes knowledge, capital, and skilled efforts to the data-generating communities' overall endeavor. These second comers who do not merely duplicate or “clone” the first comer's product are hardly free-riders even when they do not contribute directly to the first comer's production costs under a licensed royalty transaction. See generally Reichman, 94 Colum. L. Rev. at 2521-23, 2535-39 (cited in note 2).

81. See generally Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2417-20 (cited in note 11) (proposing a market-oriented legal regime for protection of industrial designs of software).

82. In one recent case, for example, a database maker spent about \$10 million to compile some ninety-five million residential and commercial listings from some 3,000 telephone directories. A purchaser who paid a minimal amount for compact discs of these listings electronically extracted the data and then made their listing available over the Internet. *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447 (7th Cir. 1996). See also Hunsucker, *European Database Directive* (cited in note 60).

2. Relative Invulnerability of Many Privately Controlled Electronic Databases

While none of the legislative initiatives under review have spawned an empirical study of the economics of the database industry, all the anecdotal evidence—including evidence recently collected by the National Research Council—suggests that the market for commercially distributed databases is almost universally characterized by a distinct absence of competition.⁸³ The reasons for this phenomenon have yet to be clarified. Perhaps the most plausible explanation is that startup and servicing costs have typically proved so high in relation to the relatively small size of specialized user markets that it has discouraged second comers from hazarding the risks of entry.⁸⁴ Whatever the truth of this hypothesis, once the threshold level of investment has been crossed, the first comer tends to take the relevant market segment as a whole. The private database industry is thus largely characterized by niche marketers who supply and dominate specific market segments.⁸⁵

When a database maker is the sole source for the data in question, and substitute databases cannot readily be compiled from public domain sources, digital technology can greatly strengthen a supplier's already formidable market power. By restricting access to identifiable online subscribers, for example, and by "placing conditions on access and [using technology] to monitor . . . customer usage," the publisher can largely restore the power of the two-party contractual deal that the advent of the printing press had appeared to destroy.⁸⁶ In effect, publishers in this position may not need copyright law at all, even if they qualify for protection. They may prefer contractually to reject the state-imposed cultural bargain⁸⁷ and override both its fair-

83. See National Research Council, *Bits of Power* at ch. 4 (cited in note 32).

84. See *id.*

85. See *id.*

86. Litman, 17 U. Dayton L. Rev. at 611 (cited in note 71) ("Indeed, a large number of on-line database . . . [publishers] availed themselves of those strategies well before the *Feist* decision.").

87. See, for example, Peter A. Jaszi, *Goodbye to All That—A Reluctant (and Perhaps Premature) Adieu to a Constitutionally-Grounded Discourse of Public Interest in Copyright Law*, 29 Vand. J. Transnat'l L. 595, 599-600 (1996) (stressing the "economic and cultural bargain between authors and users . . . at the heart of U.S. [copyright] law, as reflected in the Patent and Copyright Clause [of the Constitution], and a parade of Supreme Court precedents . . ."). See also Robert A. Kreiss, *Accessibility and Commercialization in Copyright Theory*, 43 UCLA L. Rev. 1, 6-22 (1995) (discussing the incentive structure of copyright law).

use provisions and its specific exemptions favoring the public interest in teaching and research.⁸⁸

Moreover, electronic publishers may have virtually no transaction cost problems to overcome because digital technology enables them to track and charge for every instance of electronic access, even for browsing and scientific uses that were previously exempt.⁸⁹ The resulting market power then allows the publisher to impose monopoly prices and potentially oppressive terms on users, including libraries, academies, institutes, and research centers, and to ignore the social consequences that ensue from the inability of research organizations to pay for such access.⁹⁰

Whether contractual attempts to reduce users' access to scientific and cultural products that copyright laws had promoted in the past will survive legal challenges on such grounds as federal preemption of state law or misuses of copyright (allied to antitrust law) remains to be seen.⁹¹ Equally unclear is the role that libraries will play once information providers "can connect directly to the user" via digital transmission over telecommunications networks.⁹² Some observers see the changing role of libraries as grounds for allowing publishers virtually unfettered discretion to impose contractual conditions on libraries' access to networked transmissions.⁹³ Others see the

88. See notes 52-53 and accompanying text; Reichman, 25 *Intl. Rev. Ind., Prop. & Copyright. L.* at 461-67 (cited in note 44) ("Public Interest at Odds" with the "Two-Party Deal"); Jane C. Ginsburg, *Copyright Without Walls?: Speculations on Literary Property in the Library of the Future*, 42 *Representations* 53, 60-63 (Spring 1993). The resulting social harm is magnified by the absence of competition.

89. Paul Goldstein, *Copyright's Highway—From Gutenberg to the Celestial Jukebox* 223-24 (Hill & Wang, 1994); Jessica Litman, *The Exclusive Right to Read*, 13 *Cardozo Arts & Enter. L. J.* 29, 31-32 (1994) (reviewing the National Information Infrastructure Task Force Draft Report and arguing that its recommendations would enhance copyright owners' control over uses of digitalized works).

90. See OTA Report (cited in note 66) (stressing similar concerns); Kurtz, 18 *Eur. Intell. Prop. Rev.* at 124 (cited in note 58). See also notes 298-319 and accompanying text.

91. See, for example, Kreiss, 43 *UCLA L. Rev.* at 32-34 (cited in note 87) (discussing the argument that all copyrighted works should be accessible); Leaffer, 19 *U. Dayton L. Rev.* at 1106-07 (cited in note 66) (arguing antitrust law is properly the "sole regulator" of anti-competitive conduct in copyright cases); David A. Rice, *Public Goods, Private Contract and Public Policy: Federal Preemption of Software License Prohibitions Against Reverse Engineering*, 53 *U. Pitt. L. Rev.* 543, 622-28 (1992) (considering whether preemption analysis is affected by contract context or relationship). See also Tritton, *Intellectual Property in Europe* at 411-35, 635-63 (cited in note 50). But see 17 U.S.C. § 108(f)(4) (allowing contractual obligations to override specified library privileges).

92. Ginsburg, 42 *Representations* at 60 (cited in note 88).

93. See, for example, *id.* at 60-63 (suggesting that publishers may condition libraries' access to digitally delivered information on compliance with a variety of restrictions, regardless of principles such as fair use, and that information providers need not resort to libraries as

dependence of users on digital transmissions for the future acquisition of scientific knowledge as grounds for generalizing some of today's library and fair use privileges to online users everywhere.⁹⁴ In any event, the foregoing analysis shows that digitalized transmission of data over telecommunications networks may do more than expose originators to free-riding duplication. In many other cases, it may foster the potential abuse of market power or the misuse of an intellectual property right.

III. THE DRIVE FOR LEGAL PROTECTION OF DATABASES

The copyright laws of most developed countries exclude functionally determined databases and do not protect disparate data even when a given compilation as a whole happens to satisfy the eligibility requirements of those laws.⁹⁵ This leaves a perceived gap in the worldwide intellectual property system, at least to the extent that commercial data providers cannot rely on contracts and encryption devices to prevent the technically refined forms of free-riding discussed above.⁹⁶ Proposals are, therefore, being put forward to protect

conduits for digital information in the future except, perhaps, as a "full-service 'help-line'". But see Jane C. Ginsburg, *Surveying the Borders of Copyright*, 41 J. Copyright Soc'y, 322, 325-26 (arguing for some legal restraints on such contractual conditions).

94. See, for example, Goldstein, *Celestial Jukebox* at 230 (cited in note 89) ("Exemptions and compulsory licenses for research and educational uses recognize the transcendent claim these uses have on a copyright system whose founding premise is that a culture can be built only if toilers in the vineyard are free to draw on the works of their predecessors."); Marci A. Hamilton, *The TRIPS Agreement: Imperialistic, Outdated, and Overprotective*, 27 Vand. J. Transnat'l L. 613, 623-33 (1996) (emphasizing the need to construct a "free-use zone . . . in the on-line era"). For the view that developing countries should formulate tailor-made doctrines of misuse to govern information providers' contracts, see J.H. Reichman, *From Free Riders to Fair Followers: Global Competition Under the TRIPS Agreement*, N.Y.U. J. Int'l L. & Pol. (forthcoming 1997).

95. See notes 50-57 and accompanying text. This principle was incorporated into the TRIPS Agreement of 1994, art. 10, in *Results of the Uruguay Round* at 370-71 (cited in note 1), which requires copyright protection when "the selection or arrangement of . . . contents constitute intellectual creations," but stipulates that such protection "shall not extend to the data or material itself." *Id.*

96. The extent of the "gap" is controversial, in part because the U.S. dominates the world market, despite its lack of legal protection for the contents of databases. The U.K., which is the only country in Europe that confers full copyright protection on virtually all databases, dominates the market in the European Union. See, for example, Debra B. Rosler, *The European Union's Proposed Directive for the Legal Protection of Databases: A New Threat to the Free Flow of Information*, 10 High Tech. L. J. 105, 139 (1995) (identifying the growing regional disparity within the European information industry). Increasingly, moreover, "a vigorous contract regime may afford the information provider the incentive to seek, develop, and commercialize information that, under a copyright regime might not have been worth pursuing." Ginsburg, 41 J. Copyright Soc'y at 325-26 (cited in note 93). In the absence of empirical data to clarify the underlying economic realities the need for database protection remains speculative. Compare

noncopyrightable databases under *ad hoc* or *sui generis* intellectual property regimes that deviate from the classical patent and copyright models underlying the Paris and Berne Conventions.⁹⁷ These proposals are, in turn, logical constituents of a larger project to create a national and global information infrastructure that is pending at both the domestic and international levels.⁹⁸

The impetus for the database initiative came from the Commission of the European Communities, whose member states have embraced a policy of commercializing government-generated data.⁹⁹ This policy is diametrically opposed to the traditional policy of the United States, which has favored free and open access to scientific data.¹⁰⁰

Starting in the 1990s, the Commission of the European Communities began to reevaluate the legal status of databases, especially electronic databases, in the process of formulating an overall strategy for information technologies known as the Information Market Policy Action Program (IMPACT).¹⁰¹ The Commission found

Laurence M. Kaye, *The Proposed E.U. Directive for the Legal Protection of Databases: A Cornerstone of the Information Society?*, 12 Eur. Intell. Prop. Rev. 583 (1985) (viewing legal protection as economically indispensable) with von Simson, 20 Brooklyn J. Int'l L. at 767-68 (cited in note 79) (predicting that protected database producers will lose ground on the world market to producers operating under more competitive conditions).

97. See notes 5-11 and accompanying text. For the official line of demarcation between "writings" and "products" that underlies the Paris and Berne Conventions, see note 1, and its gradual disintegration under pressure from a proliferating set of hybrid (i.e., *sui generis*) regimes that deviate from the patent and copyright models, see Reichman, 13 Cardozo Arts & Ent. L. J. at 480-551 (cited in note 3). See also Reichman, 94 Colum. L. Rev. at 2448-2519 (cited in note 2).

98. See notes 202-21 and accompanying text.

99. While the Commission claims that a key motive is the need to harmonize E.U. law, critics debunk this claim because Article 10 of the TRIPS Agreement partly performed this function, and because the E.C.'s database regime, as finally adopted, actually discourages harmonization on the crucial issue of fair use. See, for example, Charles R. McManis, *International Intellectual Property Protection and Emerging Computer Technology: Taking TRIPS on the Information Superhighway*, Vill. L. Rev. (forthcoming 1996). The predominant objective, among those stated, is to increase the share of European database producers in the world market. See, for example, First E.C. Proposal on Databases at 2-14 (cited in note 72) (Explanatory Memorandum emphasizing goal of promoting E.C. database industries). See also E.C. Directive on Databases, 1996 O.J. (L 77) at 20 (cited in note 7) (noting in Recital 11 that "there is at present a very great imbalance in the level of investment in the database sector").

100. See, for example, *Bits of Power* at 1 (cited in note 32). See also notes 33-36 and accompanying text.

101. See, for example, Commission of the European Communities, 1991 Report on the IMPACT Program: Main Events and Developments in the Electronic Information Services Market, COM (93) 156 final (1991); Commission of the European Communities, Working Program of the Commission in the Field of Copyright and Neighboring Rights, COM (90) 584 final (1990); Rosler, 10 High Tech. L. J. at 105, 107, 110-13 (cited in note 96). The IMPACT program specifically addressed the goal of improving the position of the European Union's

that European database producers had to overcome several comparative disadvantages in order to expand their share of the world market and to catch up with the U.S. industry, which dominated the market and was growing at a faster rate than its European counterpart. To overcome these disadvantages, the Commission stressed the need for a single, integrated market, undistorted by differing regulatory approaches, and for higher levels of intellectual property protection, tailored to the needs of potential investors in database production, which might stimulate additional investment in this sector.¹⁰² Another unstated premise in the Commission's thinking was, perhaps, that privatizing the government's role in the collection and distribution of data might also generate income streams that could help to offset the shrinking availability of public funds for research and development.

The Commission decided both to harmonize the domestic copyright laws insofar as they applied to compilations of data and to require that the member states also adopt *sui generis* intellectual property laws to protect the contents of noncopyrightable electronic databases.¹⁰³ In this regard, the Nordic countries had already experimented with short-term, copyright-like protection of noncopyrightable compilations—known as the Nordic “catalogue rule”—with a view to curbing commercial piracy without extending full copyright protection to borderline literary productions that lacked creative authorship.¹⁰⁴

member countries in the emerging global market for information goods. Among the strategies it endorsed were proposals to strengthen intellectual property rights, to protect new technologies, and to stimulate both international trade and European economic development.

102. See, for example, First E.C. Proposal on Databases at 2-4 (cited in note 72); Rosler, 10 High Tech. L. J. at 109-10, 133-39 (cited in note 96) (citing authorities). The Commission stressed the vulnerability of database publishers to market failure, but devoted little or no published attention to the countervailing risk of technologically induced overprotection. The Commission did nonetheless attempt to avert overprotection of database contents by a requirement that sole-source database providers license their data on fair and non-discriminatory terms. See First E.C. Proposal on Databases at art. 8(1) (cited in note 72). But, this plan was foiled by the Council of Ministers at the last moment. See notes 133, 187-88 and accompanying text.

103. See E.C. Directive on Databases, 1996 O.J. (L 77) at 25-27 (cited in note 7) (arts 3-6 (copyright), 7-11 (*sui generis* right)). For earlier versions, see First E.C. Proposal on Databases (cited in note 72); Commission of the European Communities, Amended Proposal for a Council Directive on the Legal Protection of Databases, COM (93) 464 final—SYN 393 (1993) (“Amended E.C. Proposal on Databases”); Common Position (E.C.) No. 20/95, adopted 10 July 1995, with a view to adopting Directive 95/ /E.C. of the European Parliament and of the Council of the European Union on the Legal Protection of Databases (95/C/288/02), 1995 O.J. (C 288) 14, 14-21 (“E.C. Common Position”).

104. See, for example, Gunnar Karnell, *The Nordic Catalogue Rule*, in E.J. Dommering and P.B. Hugenholtz, eds., *Protecting Works of Fact* 67-72 (Klüwer Law & Taxation, 1991) (analyzing the history and scope of protections of the Nordic Catalogue Rule). Laws implementing this regime “prohibit slavish reproduction, in whole or in part, of ‘catalogues, tables, and

Accordingly, in 1992, the Commission proposed an innovative directive to protect such databases that was "loosely modelled on the Nordic catalogue rule, [and] more directly and strongly protects electronic information tools."¹⁰⁵ A greatly amended version of this proposal was adopted by the Council of Ministers and the European Parliament in July 1995¹⁰⁶ which, with only modest, technical changes, took effect on March 11, 1996.¹⁰⁷

In the following Sections, we track the evolution of the European Database Directive ("E.C. Directive" or "Final E.C. Directive") in considerable detail, for two principal reasons. First, this legislative history illustrates how a modest, pro-competitive initial proposal for *sui generis* protection has been transformed into a virtually absolute monopoly by the backdoor lobbying efforts of publishers and by the coordinated efforts of U.S. and E.U. officials to propagate a protectionist strategy for the global information infrastructure. As will become apparent in Part IV, there was wisdom in earlier drafts of the E.C. Directive upon which we think a better *sui generis* law could be built. Second, this legislative history also reveals how radically the world intellectual property policymaking arena has

similar compilations in which a large number of particulars have been summarized,' including databases, for ten years after first publication. . . . [I]ndustrious effort and investment rather than creativity are the prerequisites. . . ." Reichman, 94 Colum. L. Rev. at 2492-93 (cited in note 2) (quoting Karnell, *The Nordic Catalogue Rule* in Dommering & Hugenholtz eds., *Protecting Works of Fact* at 67-72 and noting pre-digital ambiguities of this law).

105. Reichman, 94 Colum. L. Rev. at 2493 (cited in note 2). See also Jean Hughes and Elizabeth Weightman, *E.C. Database Protection: Fine Tuning the Commission's Proposal*, 14 Eur. Intell. Prop. Rev. 147, 148 (1992) (indicating that the Directive goes beyond the Nordic rule and protects against re-use of the data compiled).

106. See generally E.C. Common Position, 1995 O.J. (C 288) at 14-29 (cited in note 103).

107. See E.C. Directive on Databases, 1996 O.J. (L77) at 25 (cited in note 7). The Directive as finally adopted may be subdivided into five parts: (1) a list of sixty "Recitals" or premises that underlie this legislation; (2) a small group of definitional articles that apply across the board (arts. 1-2); (3) a set of provisions regulating the treatment of databases under the member states' domestic copyright laws (arts. 3-6); (4) a set of provisions requiring these same states to provide the new, *sui generis* intellectual property right for noncopyrightable databases (arts. 7-11); and (5) a final group of "common provisions" that apply to both copyright and the *sui generis* laws (arts. 12-16). The copyright provisions in the E.C. Directive on Databases reserve full copyright protection only for those databases in which "the selection or arrangement of . . . contents . . . constitutes the author's own intellectual creation," and they forbid states to apply other eligibility criteria, such as the "industrious effort" (or "sweat-of-the-brow") criterion heretofore recognized by courts in the United Kingdom. See E.C. Directive on Databases, art 3(1), 1996 O.J. (L 77) at 25 (cited in note 7). The drafters also specify that copyright protection extends only to the author's creative selection and arrangement, and not to the contents of the database as such. *Id.* art. 3(2). These eligibility and scope of protection clauses thus restate familiar doctrines recognized in most domestic copyright systems (except for that of the United Kingdom, where broad copyright protection of electronic databases will be cut back) and pose fewer new questions than the *sui generis* regime.

changed in the last several years. In this climate, it is literally possible for an as yet unimplemented legislative initiative of one government to become an international minimum standard for other governments before most people affected by it, including the scientific and educational communities, even know that proposals for new intellectual property rights have been put on the table.

A. *The European Union's Initial Project*

Collections of data, including those relatively unstructured collections of primary interest to science, have never fit comfortably within the romantic notion of authorship that once dominated European copyright law or even within the more pragmatic conceptions of "originality" that pervade modern copyright laws, such as that of the United States. Behind this conceptual resistance there lies a profound concern that facts and ideas constitute building blocks of intellectual discourse that should not (and some contend cannot constitutionally) be removed from the public domain.¹⁰⁸ In this context, the scientific community's own commitment to the free and unrestricted flow of data¹⁰⁹ represents an important subchapter in a larger discourse that, in this country, at least, is rooted in the First Amendment.¹¹⁰

With these constraints in mind, the Commission of the European Communities pursued two objectives. One was to harmonize the rules of the member states with regard to copyrightable databases. The other was to fill a perceived gap in existing intellectual property regimes with regard to electronic compilations of data, which appeared particularly vulnerable to market-destructive appropriations.

1. The Copyright Provisions

The copyright provisions in the E.C. Directive are, at first glance, less remarkable than the *sui generis* regime that it attempts to introduce for the first time. The most obvious change was the adoption of an "intellectual creation" standard for copyrightable data-

108. See, for example, *Bits of Power* at ch. 3 (cited in note 32) ("Data in science are like bricks, and the theoretical concepts are the mortar that connects them to give the subject its structure."). See also notes 50-55 and accompanying text.

109. See *Bits of Power* at ch. 4 (cited in note 32).

110. See notes 50-55 and accompanying text. See also Ginsburg, 92 Colum. L. Rev. at 338 (cited in note 44); Litman, 17 U. Dayton L. Rev. at 607 (cited in note 71); Melvin B. Nimmer and David Nimmer, 1 *Nimmer on Copyright* §§ 1.10[C][2] and 1.10 [D] (Matthew Bender, 1996).

bases marketed anywhere within the European Union, and rejection of the United Kingdom's "sweat of the brow" standard of eligibility for future databases.¹¹¹ But the E.C. Directive's copyright component also extended database authors' exclusive rights to encompass temporary reproductions, online transmissions, and certain other uses, while later drafts authorized member states to adopt some restrictions on the scope of these exclusive rights.¹¹² A closer look at this last provision suggests that its real intent was to limit the power of member states to apply, let alone extend, traditional copyright exceptions, including exceptions for private or research uses,¹¹³ on which the scientific and educational communities have long relied.¹¹⁴

111. See E.C. Directive on Databases, art. 3(1), 1996 O.J. (L77) at 25 (cited in note 7). See note 48 above concerning the U.K. standard. In the final E.C. Directive on Databases, the copyright owner's exclusive rights are broadened to include "temporary or permanent reproduction by any means and in any form, in whole or in part" as well as "any communication, display or performance to the public" either of the original database or of "the results of . . . [any] translation, adaption, arrangement and any other alteration." See E.C. Directive on Databases, art. 5(a), (b), (d), (e), 1996 O.J. (L 77) at 25 (cited in note 7).

112. For restrictions on the scope of protection, see *id.* art. 6(2).

113. The Directive, authorizes member states to exempt "reproduction for private purposes of a non-electronic database." *Id.* art. 6(2)(a). This would seem to mean that this same exemption does not apply to *electronic* databases, even though academic institutions and research organizations have long taken it for granted with respect to print media. To be sure, a "lawful user of a database" (i.e., a subscriber, licensee or purchaser of a CD-ROM) will "not require the authorization of the author" for acts inherently "necessary for the purposes of access to the contents of the database and normal use of the contents." *Id.* art. 6(1). Moreover, private use via networked transmissions constitutes the primary market for any electronic databases, whether or not copyrightable. Yet, the absence of any "private use" exception for electronic databases covered by copyright laws, however logical, makes other exceptions for teaching and research activities correspondingly more important. The Directive expressly confines these to "use for the sole purpose of illustration for teaching or scientific research . . . to the extent justified by the non-commercial purpose to be achieved." *Id.* art. 6(3). Lest there be any doubts about the drafters' true intentions, the Directive expressly denies states the right to derogate from this provision when implementing "other exceptions to copyright which are traditionally authorized under national laws." *Id.* art. 6(2)(d). It then ups the ante by paraphrasing the Berne Convention's own strictures against so-called public-interest exceptions that unreasonably prejudice the rightholder's legitimate interests or that conflict with a normal exploitation of the database. *Id.* art. 6(3).

114. The advent of a number of new technologies, including photocopying machines, computer programs, and optical scanners, have unsettled the public policy limitations on copyrights, such as the fair use doctrine, in recent years. See generally *American Geophysical Union v. Texaco, Inc.*, 60 F.3d 913 (2d Cir. 1995) (holding that systematic photocopying of articles for commercial research purposes infringed copyright); *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992); Pamela Samuelson, *Fair Use for Computer Programs and Other Copyrightable Works in Digital Form: The Implications of Sony, Galoob, and Sega*, 1 J. Intell. Prop. L. 49 (1993). These technologies enable copies for private research uses to displace commercial markets. See, for example, Goldstein, *Celestial Jukebox* at 129-30 (cited in note 89) ("[T]he risk has grown that 'private' copies will displace the retail sales and rentals of the authorized originals from which publishers, record companies, and motion picture producers earn their revenues."). The extent to which private photocopying of journals for research

While the precise mesh of these provisions in administrative and judicial practice remains to be seen, the drafter's protectionist thrust is unmistakable. Prior to the E.C. Directive, the broad exemptions and immunities afforded copies made for teaching and research activities under most domestic copyright laws were engrafted onto the Berne Convention's exclusive reproduction right and, within limits, appeared to lie outside the normal range of exploitative activities reserved to authors.¹¹⁵ A separate provision in Article 10(2) of the Berne Convention then authorized certain other uses of works "by way of illustration for teaching," such as face-to-face teaching activities and educational broadcasts, which did not apply to "mere scientific research."¹¹⁶ These uses were roughly analogous to "annotations," which are permitted by article 10(1) of the Berne Convention.¹¹⁷

In contrast, the copyright provisions of the E.C. Directive seem to recognize "illustration for teaching or scientific research" as the "sole purpose" for which the educational and scientific communities may invoke "fair use."¹¹⁸ In other words, the E.C. Directive expands

purposes without compensation remains a fair use, however, is controversial from a global perspective. See, for example, Cornish, *Copyright in Scientific Works*, in Gesellschaft, ed., *European Research Structures* at 47-50 (cited in note 66) (stressing that academics "who are also authors, find their interests . . . and . . . judgment . . . pulled in two directions on these issues" and no settled solution has emerged); Jane C. Ginsburg, *Reproductions of Protected Works for University Research or Teaching*, 39 J. Copyright Soc'y 181, 188-89, 192-211 (1992) (discussing legal license regimes and collection societies). But see L. Ray Patterson & Stanley W. Lindberg, *The Nature of Copyright: A Law of User's Rights* 191-96 (U. Georgia, 1991) (arguing that private use for nonprofit purposes is always allowed).

Digital technologies may make it possible to overcome most of the transaction cost problems that have lately been used to justify application of the fair use exception in practice. See, for example, Wendy J. Gordon, *Fair Use as Market Failure: A Structural and Economic Analysis of the Betamax Case and Its Predecessors*, 82 Colum. L. Rev. 1600 (1982); Goldstein, *Celestial Jukebox* at 16 (cited in note 89) (evaluating public and private benefits test of fair use in terms of transaction costs). See also *id.* at 223-24, 230 (while "celestial jukebox may reduce transaction costs" and lessen "perceived need for a safety valve such as fair use," the enduring importance of "exemptions or compulsory licenses for educational and research uses" remains clear).

115. Under the relevant provisions of the Berne Convention, an author's exclusive reproduction right (as set out in Article 9(1)) is subordinated to domestic legislation "permit[ting] the reproduction of such works in certain special cases" (by dint of Article 9(2)). The Article 9(2) exceptions should not, in principle, conflict with "normal exploitation" or "unreasonably prejudice the legitimate interests of the author" (as also required by Article 9(2)). See Berne Convention, arts. 9(1), (2) (cited in note 1). See also *World Intellectual Property Organization Guide to the Berne Convention* 56-57 (1978) ("*WIPO Guide*") (suggesting a system of compulsory licensing with equitable remuneration when "fair uses" unduly harm the copyright owner; and stressing freedom of each country to provide for educational, cultural, social, and economic needs.)

116. See Berne Convention, art. 10(2) (cited in note 1); *WIPO Guide* at 60 (cited in note 115).

117. See Berne Convention, art. 10(1) (cited in note 1).

118. See E.C. Directive on Databases, arts. 6(2)(b), (d), 6(3), 1996 O.J. (L 77) at 25 (cited in note 7). Article 6(2)(d) allows states to make "other exceptions to copyright which are traditionally authorized under national law . . . without prejudice to points (a), (b), and (c)." *Id.*

the limited exception for annotations and educational performances, drawn from Article 10(2) of the Berne Convention, to *scientific research*.¹¹⁹ It then avoids any general fair use provision, analogous to Article 9(2), which applied to copies "for personal or scientific use,"¹²⁰ and which, in the context of databases, should permit scientific use of the content, without permission and on favorable terms.¹²¹ On the contrary, the Directive also implies that any other claim of fair use by these communities would inherently "prejudice . . . the rightholder's legitimate interests or conflict with normal exploitation of the database."¹²²

The inescapable conclusion is that, in the drafters' minds, these provisions should narrow the educational and scientific communities' ability to invoke "fair use" with respect to copyrightable databases under prior law. In this and other respects, the E.C. Directive's copyright provisions are thus the first concrete measures in a larger project for the recasting of copyright law as applied to transmissions over networked systems of telecommunications¹²³ that would greatly reduce the pre-existing public interest exceptions of particular interest to the educational and scientific communities.¹²⁴

119. Berne Convention, art. 10(2) (cited in note 1) (permitting "quotations" and other uses of literary and artistic works "by way of illustration in publications, broadcasts or sound or visual recordings for teaching, provided such utilization is compatible with fair practice.")

120. *WIPO Guide* at 56 (cited in note 115).

121. The drafters of the Directive have thus singled out one of the numerous exceptions recognized by the Berne Convention (whose language was narrowly drawn lest it overshadow the others) and converted it into the sole exception allowed for science and education under the Directive's copyright provisions. The same procedure will then be carried over to the *sui generis* regime. See notes 170-179 and accompanying text.

122. See note 118.

123. In effect, these provisions implement, with respect to eligible databases, the Commission's pending and highly protectionist approach to online transmissions of copyrightable works in general, which are on the agenda for a diplomatic conference, hosted by the World Intellectual Property Organization (WIPO), scheduled for December 1996. See text accompanying notes 209-14. With due regard for differences in legal technique, they also reflect the goals expressed in the Information Infrastructure Task Force's White Paper on the National Information Infrastructure and in the pending amendments to United States copyright law that it has inspired. See note 64.

124. The appropriateness of the copyright law's traditional "economic and cultural bargain," see notes 50-55 and accompanying text, for the digital environment has been called into question, given that publishers in this medium can electronically monitor and track most uses without high transaction costs. See, for example, U.S. White Paper at 82 (cited in note 64). See also *American Geophysical Union v. Texaco, Inc.*, 37 F.3d 92 (2d Cir. 1994) (finding that the availability of a licensing scheme affected the fair use determination). Trade-driven economic policies have further weakened the consensus on which that cultural bargain previously depended. See Jaszi, 29 Vand. J. Transnat'l L. at 599 (cited in note 87) (criticizing replacements of "cultural bargain" theory of copyright law with new, trade-driven goal, which seeks to "enhance . . . the wealth and overall financial well-being of companies which invest in the

2. The *Sui Generis* Provisions

Having resolved these copyright issues more or less to their satisfaction, the Commission initially approached the database industry's demands for *sui generis* legal incentives with commendable caution. It did not, for example, uncritically propose yet another hybrid exclusive property right based on modified patent and copyright principles, like those that have increasingly challenged both classical intellectual property theory and the competitive ethos from which it arose.¹²⁵ Rather, the Commission affirmed its preference for a regime based on modified liability principles—one that would deter certain types of socially undesirable conduct without vesting exclusive property rights in data as such.¹²⁶ Unfortunately, even the

production of and distribution of copyrighted works"). See also David Nimmer, *The End of Copyright*, 49 Vand. L. Rev. 1385 (1995).

The U.S. Register of Copyright may be right in observing that "[l]icense or access fee structures may be developed that will take into account the proportion of total uses that qualify as fair use . . . [and] certain acts of decryption may be excused if the ultimate purpose is to make fair use of the work." Marybeth Peters, *The National Information Infrastructure: A Copyright Office Perspective*, 20 Colum.-VLA J. L. & Arts 341, 354 (1996). But the impetus to enter voluntary agreements that provide preferential treatment to certain users depends in part on the legal constraints otherwise applicable as baseline rules. If these rules tend to create or reinforce powerful monopolies, there is little reason to expect that "consumers will be charged lower prices in exchange for giving up fair use, first sale, and other rights" or that the grant of strong copyright protection for digital works will ensure that the scientific and educational communities can access digital works at affordable rates. See, for example, Hamilton, 27 Vand. J. Transnat'l. L. at 628-29 (cited in note 94) (stressing need to recreate cyberspace parallels to fair use lest "the limited monopoly currently afforded copyright owners . . . become an 'absolute monopoly' over the distribution of and access to copyrighted information once such information is routinely transmitted online") (quoting Association of Research Libraries, *Intellectual Property: An Association of Research Libraries Statement of Principles* 1 (May 1994)); Pamela Samuelson, *Copyright Grab*, *Wired* 4.01 at 134, 191 (Jan. 1996). See also Kurtz, 18 Eur. Intell. Prop. Rev. at 134 (cited in note 58). From this perspective, the single most troubling aspect of the White Paper (and the legislative proposals it has spawned) is that so many qualified observers reach the conclusion that it favors "reducing the application and scope of the fair use doctrine in cyberspace." McManis, *International Intellectual Property Protection* (cited in note 99) (citing authorities).

125. See generally Reichman, 13 *Cardozo Arts & Enter. L. J.* at 512-17 (cited in note 3). See also John H. Barton, *Adapting the Intellectual Property System to New Technologies*, in Mitchel B. Wallerstein, Mary Ellen Mogee, and Robert A. Schoen, eds., *The Global Dimensions of Intellectual Property Rights in Science and Technology* 249 (National Academy Press, 1993) (evaluating more positively the emergence of hybrid intellectual property rights).

126. See First E.C. Proposal on Databases at arts. 1(1), 2(5) (cited in note 72); Commission of the European Communities, Explanatory Memorandum to the Proposal for a Council Directive on the Legal Protection of Databases, COM (92) 24 final—SYN 393 21-22, 25, 35, 41 (1992); Amended E.C. Directive on Databases at arts. 2.2, 6 (cited in note 103) (all stressing the goal of protecting the compiler's industrious effort and investment against parasitic appropriation by competitors). A true liability regime aims primarily to restore and preserve the bases for healthy competition by discouraging certain market-distorting forms of conduct that prevent innovators from appropriating the fruits of their investment. See, for example,

Commission's earliest proposals along these lines were flawed by contradictory elements drawn from the exclusive rights model,¹²⁷ while overwhelming lobbying pressures converted the final version into one of the least balanced and most potentially anti-competitive intellectual property rights ever created.

The Commission's initial approach was premised on the absence of a harmonized system of unfair competition legislation to safeguard "the investment of considerable human, technical and financial resources" in the making of databases that "can be copied or accessed at a fraction of the cost needed to design them independently."¹²⁸ The logical solution was, therefore, to codify a new type of unfair competition law. Such a law, loosely modelled on existing laws that protected trade secrets or confidential information, would repress conduct amounting to the "misappropriation" of an electronic database producer's investment without imposing either legal barriers to entry or the social costs of actual or legal secrecy.¹²⁹ To this end, the Commission proposed simply to forbid the "unfair extraction" of data from an electronic database for commercial purposes without the second comer's having expended independent effort to collect and verify similar information. The first proposed draft E.C. Directive accordingly provided a ten-year period of lead time in which the database maker could recoup his or her investment in a noncopyrightable electronic database while preventing copiers from engaging in for-profit extraction or reutilization of the factual contents, in whole or in substantial part.¹³⁰

Reichman, 94 Colum. L. Rev. at 2434-42, 2495-96, 2504-558 (cited in note 2); text accompanying notes 431-50.

127. For example, the definition of "in substantial part" in early drafts of the E.C. Directive on Databases was heavily reliant on the exclusive rights concepts of copyright law. See First E.C. Proposal on Databases at art. 1(3) (cited in note 72); Amended Proposal on Databases at art. 11(8) (cited in note 103). See also note 130.

128. First E.C. Proposal on Databases (recitals 5-6) (cited in note 72).

129. Compare Restatement (Third) of Unfair Competition at §§ 39-45 (cited in note 38) (restating the norms of trade secrecy law); Gordon, 78 Va. L. Rev. at 221-24 (cited in note 44) (proposing the tort of "malcompetitive copying").

130. See First E.C. Proposal on Databases at arts. 1(1), 2(5), 9(3) (cited in note 72). Technically, the right arose with the creation of the database and lapsed ten (now fifteen) years from the date it was first lawfully made available to the public. The provision forbidding unauthorized reuse of the compiler's factual contents closed a gap in the Nordic catalogue rules, which case law had not yet resolved. See notes 104-105 and text accompanying. Already at this first draft stage, however, the language chosen to implement the Commission's "unfair competition" approach was contradicted by other language describing the database maker's "exclusive right to prevent unauthorized extraction and reutilization" of contents.

The Commission's "unfair extraction" criterion seemed to invite case-by-case judicial distinctions between pro-competitive activities, especially independent investment in the generation of a competing electronic database (which was roughly analogous to reverse engineering by honest means), and market distorting forms of electronic copying (which were roughly comparable to industrial espionage, commercial bribery, and other types of "parasitical" or free-riding behavior that unfair competition laws interdict). It may also have opened the door to case-by-case judicial evaluation of unauthorized extractions deemed "fair" because they advanced non-commercial educational and scientific pursuits, although neither the draft E.C. Directive nor the Commission's Explanatory Memorandum about it specifically endorsed this proposition. In any event, the drafters further diluted the database maker's new right against "unfair extraction" by engrafting some express user's rights upon it and by adopting explicit measures to safeguard the public interest in free competition.

For example, the drafters apparently envisioned that lawful users of an electronic database could make a limited reuse of its contents even for some commercial purposes, as might occur in value-adding uses.¹³¹ There was also no clear means for database creators to extend control over the initial compilation by making subsequent changes to it, although the extent to which this omission resulted from a drafting oversight remains unclear.¹³² Above all, price competition was directly encouraged. Second comers could choose between independently compiling their own databases from scratch or invoking a statutory compulsory license against any sole-source provider of data in electronic databases, with a view to competing against that provider while paying reasonable royalties for the use of the extracted data.¹³³

Of course, if multiple data providers serviced a given market segment, the draft E.C. Directive's pro-competitive thrust was satisfied without recourse to a compulsory license. The opportunity to choose among providers, however, seems rarely to occur in practice because the bulk of all electronic compilations of data reportedly emanates from sole-source providers, and this "niche" marketing appears characteristic of both the private and public sectors.¹³⁴ In all

131. See First E.C. Proposal on Databases at art. § 8(4) (cited in note 72).

132. For the possibility of perpetual protection introduced in later versions, see notes 147-48 and accompanying text.

133. See First E.C. Proposal on Databases at art. 8(1), (2) (cited in note 72). See also Amended E.C. Proposal on Databases at art. 11(1), (2) (cited in note 103).

134. See notes 83-94 and accompanying text.

such cases, the compulsory license would lie, and originators, including public bodies benefitting from a natural monopoly, would be obliged to grant licenses for commercial reexploitation of the data in question on fair and nondiscriminatory terms.¹³⁵ The liability principles loosely embodied in the first draft of the E.C. Directive thus created no legal barriers to entry. Arguably these principles may even have lessened existing economic barriers to entry by empowering would-be competitors to borrow data at reasonable rates when the cost of independently regenerating them appeared too costly or otherwise inefficient as a business strategy.¹³⁶

Absent from this framework, however, were any explicit exceptions favoring educational and scientific users, assuming these were not implicitly "fair" uses under the basic "unfair extraction" criterion of the draft E.C. Directive, an omission that the European Parliament singled out for criticism. Although the legislative history does not explain why the drafters ultimately rejected this criticism,¹³⁷ a reasonable inference from all the evidence is that the Commission believed further exceptions and immunities would unduly weaken database publishers' incentives to invest under a regime that already implemented a pro-competitive strategy. If so, the Commission erred in at least two respects.

First, the Commission seems to have assumed that a more competitive market would intrinsically satisfy the needs of the scientific and educational communities. A National Research Council Report shows, however, that basic science has organizational and operational needs that often differ from those a competitive market is geared to meet.¹³⁸ Experience demonstrates, indeed, that basic science may not be able to pay the market rate for data even when it is competitively determined. Important research projects may consequently languish for lack of affordable data unless non-market

135. First E.C. Proposal on Databases at art. 8(1), 8(2) (cited in note 72).

136. In this respect, the early draft seems to have anticipated some of the findings concerning the pro-competitive characteristics of liability-based intellectual property regimes that legal theory was investigating at about the same period of time. See, for example, Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2308 (cited in note 11) (proposing a market-oriented approach); Reichman, 94 Colum. L. Rev. at 2432 (cited in note 2) (discussing pro-competitive characteristics of liability based regimes).

137. See Commission of the European Communities, Amended Proposal for a Council Directive on the Legal Protection of Databases, COM (93) 464 final—SYN 393 4 (1993) ("Second Explanatory Memorandum") (declining to accept parliamentary request for special exemptions in favor of education and research).

138. See *Bits of Power* at ch. 4 (cited in note 32).

mechanisms (such as subsidies) or legal constraints on publishers (such as fair use exceptions) close the gap.¹³⁹

Second, the drafters optimistically assumed that their concern for the public interest in free competition was still a paramount legislative value in developed market economies. They thus underestimated the ability of powerful lobbies, working largely behind closed doors, to convert their rudimentary liability framework into a potent exclusive property right from which their preferred public interest safeguards would be totally excised.

B. The European Union's Final Product

The European Commission's ingenious project had already suffered considerable erosion by the time the Amended Proposals were put forward in 1993.¹⁴⁰ The project's conversion from a relatively weak liability regime to a strong exclusive property right, however, occurred during the closed proceedings of the European Council of Ministers, which produced the Common Position of July 10, 1995.¹⁴¹ This version, with minor technical alterations, became the final E.C. Directive on Databases, adopted on March 11, 1996, which the European Union member states must promptly convert into domestic intellectual property laws and regulations.¹⁴²

1. Abolishing the Public Domain

As finally enacted, the *sui generis* right conferred on qualifying database makers is no longer couched in terms of "unfair" or even "unauthorized" acts or uses.¹⁴³ Rather, the database maker obtains an exclusive "right to prevent extraction and/or reutilization of the whole or of a substantial part, evaluated qualitatively and/or quantitatively,

139. *Id.* See notes 301-15 and accompanying text.

140. For example, the Amended Proposal seemed to grant the same exclusive rights to makers of noncopyrightable databases as those granted to copyrightable databases. See Amended E.C. Proposal on Databases (cited in note 103); Reichman, 94 Colum. L. Rev. at 2494-98 (cited in note 2) (analyzing and criticizing these proposals).

141. See E.C. Common Position, 1995 O.J. (C 288) (cited in note 103). See also Kaye, 12 Eur. Intell. Prop. Rev. at 583 (cited in note 96) (approving this version); Hunsaker, *European Database Directive* (cited in note 60) (approving this version).

142. See E.C. Directive on Databases, arts. 7(1), 1996 O.J. (L 77) at 25 (cited in note 7) ("Member States shall provide for a right for the maker of a database . . ."); *id.* art. 16(1), 1996 O.J. (L 77) at 27 (requiring Member States "to comply with this Directive before 1 January 1998").

143. See notes 129-30 and accompanying text.

of the contents of that database.”¹⁴⁴ This two-pronged exclusive right, which now applies to both electronic and nonelectronic databases,¹⁴⁵ lasts for an initial period of at least fifteen years. Any compiler who makes a database available to the public, however, may continually renew that right for additional fifteen-year terms if the compiler has made additional investments in the database.¹⁴⁶

The Final E.C. Directive does not condition *sui generis* protection on any showing of a creative achievement or of a novel contribution to the prior art, the classical bases for justifying legal derogation from free competition. Rather, it merely requires the database maker to prove that “there has been qualitatively and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents” or in “any substantial change resulting from the accumulation of successive additions, deletions or alterations.”¹⁴⁷ Because the E.C. Directive itself provides no further guidelines for evaluating the requisite level of investment in either case, this threshold will remain uncertain, pending decisions by European courts applying the still to be drafted domestic database laws. Nevertheless, there are no limits to the number of quantitative

144. E.C. Directive on Databases, art. 7(1), 1996 O.J. (L 77) at 25 (cited in note 7). As compared to earlier drafts, the Final E.C. Directive seems to strengthen publisher rights by omitting two provisions that were present in earlier drafts: one that would have permitted brief quotations from database contents, and another that would have allowed database makers to include in their databases biographical references, abstracts, or brief quotations from another database without permission. See First E.C. Proposal on Databases at art. 4(1), 7(1), 1996 O.J. (L 77) at 25-26 (cited in note 72); Amended E.C. Proposal on Databases at art. 4(2), 7(1) (cited in note 103). Also seeming to strengthen publisher rights in databases is a recital in the Final E.C. Directive indicating that users who obtain database contents by online transmission will not have acquired a copy in which rights of the database owner would be exhausted. Final E.C. Directive on Databases, 1996 O.J. (L 77) at 23 (cited in note 7) (Recital 43).

145. See E.C. Directive on Databases at art. 1(1), 1996 O.J. (L77) at 24 (cited in note 7) (“This Directive concerns the legal protection of databases in any form.”). Both the First E.C. Proposal on Databases, art. 1(1) (cited in note 72) and Amended E.C. Proposal on Databases at art. 1(1) (cited in note 103) covered only electronic databases. The Common Position found this distinction unworkable, and could not justify differing levels of protection on this basis. See, for example, Hunsaker, *European Database Directive* (cited in note 60) (citing authorities and adding that “today’s high speed scanners and optical character recognition software make electronic conversion of non-electronic databases almost as easy as electronic conversion of electronic databases”).

146. See E.C. Directive on Databases, art. 7(1), 1996 O.J. (L 77) at 25 (cited in note 7) (providing initial fifteen-year term from date of completion), art. 7(2), 1996 O.J. (L 77) at 26 (extending protection for an additional fifteen years if the database “is made available to the public in whatever manner” before expiration of the initial term), and art. 7(3), 1996 O.J. (L 77) at 26 (allowing fifteen-year renewals for “[a]ny substantial change, evaluated qualitatively or quantitatively, to the contents of a database . . . from the accumulation of successive additions, deletions or alterations, which . . . result in . . . a substantial new investment”).

147. See *id.* at art. 7.

or qualitative changes that will qualify for such extensions, and any publisher who continues to make a substantial investment in updating, improving, or expanding an existing database can look forward to perpetual protection.¹⁴⁸

Although the *sui generis* right depends on mere investment rather than on some palpable creative contribution, the scope of protection that the Final E.C. Directive affords investors in noncopyrightable databases now appears roughly equivalent to that afforded authors of copyrightable compilations.¹⁴⁹ This conclusion follows from both the definitions of the exclusive rights set out in the E.C. Directive itself and from the Council of Ministers' closed-door decision to delete the initial proposal's compulsory license requirement for sole-source providers from the Common Position formulated in 1995.¹⁵⁰

As defined in Article 7(2) of the Final E.C. Directive, the investor's *sui generis* "extraction right" covers even temporary transfers to on-line receivers, much like the author's broadened reproduction rights in copyright law under Article 5(a).¹⁵¹ The investor's "reutilization right" covers online use or transmissions of data, including those in value-adding or derivative formats, much like the author's broadened "communications" rights under article 5 (b), (d), and (e).¹⁵² In this and other respects, including the omission of any re-

148. The current quest for perpetual protection has an historical antecedent in the crown privileges and guild monopolies of the medieval period. Prior to enactment of the first modern copyright statute in the United Kingdom, members of the Stationers' Company recognized copyrights in publishers, not in authors. These rights were said to be necessary to protect publisher investments. See, for example, Mark Rose, *Authors and Owners: The Invention of Copyright* 12 (Harvard U., 1993). During this period, publishers also claimed perpetual exclusive copyrights in works printed by them. *Id.* at 4. The E.C. Directive, like the Stationers' copyright, recognizes rights in publishers, and its broadened renewal-of-term provisions in the final version of the European Directive may have the effect of providing database owners with virtually perpetual rights to the data in their databases. See also Clark, *The Copyright Environment for the Publisher in the Digital World* at 5 (cited in note 10) (stressing importance of a publishers' right as such).

149. See E.C. Directive on Databases, arts. 3 and 5, 1996 O.J. (L 77) at 25 (cited in note 7). See also notes 118-24 and accompanying text (noting that such protection is greater than that traditionally afforded to authors.)

150. See E.C. Common Position, arts. 8-9, 16(3), 1995 O.J. (C 288) at 20, 22 (cited in note 103).

151. Compare E.C. Directive on Databases at art. 7(2)(a), 1996 O.J. (L 77) at 26 (cited in note 7) (defining "extraction" to mean "the permanent or temporary transfer of all or a substantial part of the contents of a database to another medium by any means or in any form") with *id.* art. 5(a) (discussed in note 111 and accompanying text).

152. Compare *id.* art. 7(2)(b) at 26 (defining "re-utilization" as "any form of making available to the public all or a substantial part of the contents of a database by the distribution of copies, by renting, by online or other forms of transmission") with *id.* arts. 5(b), (d), (e) at 25 (discussed in notes 111-12 and accompanying text) (discussing author's right to alter or display to the public a copyrightable database). A database embodied in a hard copy and sold as such

quirement for compulsory licenses against sole source providers,¹⁵³ the drafters of the Final E.C. Directive have integrated its *sui generis* regime into the broader regulatory framework for national and international information infrastructures that the E.U. and U.S. intellectual property authorities are now jointly promoting.¹⁵⁴

On closer inspection, indeed, the investor's scope of protection under the hybrid extraction right appears paradoxically to exceed even that afforded authors of traditional literary and artistic works under the classical copyright paradigm of the Berne Convention¹⁵⁵ in at least three important respects. First, it ignores the important distinction that copyright law makes between "ideas" (a legal metaphor for the noncopyrightable components of protected works, including among other things, the facts or data they contain) and the author's "expression" (a legal metaphor for the protectable elements of style in an otherwise eligible work).¹⁵⁶ The TRIPS Agreement makes this distinction universally applicable to all copyrightable works,

remains subject to the first-sale doctrine even under the *sui generis* right. This means that the database maker cannot "control resale of that copy [by the vendee] within the Community." *Id.*, art. 7(2)(b) at 26. Moreover, public lending of such a copy, say, by a library, "is not an act of extraction or re-utilization." *Id.*

153. A two-pronged strategy by lobbyists opposed to the compulsory license provisions of the first two drafts of the Directive may have succeeded in wooing the Commission away from the automatic license provision. One prong relied on the European Court of Justice's recent decision in *Radio Telefis Eireann v. Commission of the European Communities*, 1 C.E.C. 400 (1995) (widely known as the *Magill* decision), which illustrated the use of competition law to deal with the abuse of a dominant position when a sole source provider of information refused to license a competitor. In *Magill*, the Court affirmed the Commission's finding of abuse because the owner of a U.K. copyright in television program listings refused to license the listings to a firm that wished to publish a weekly guide for television viewers. See, for example, Tritton, *Intellectual Property in Europe* at 638-48 (cited in note 50) (stressing that refusal to permit independent compilations by willing third parties transformed qualified monopoly of copyright law to abusive, absolute monopoly). See also Sasha Haines, *Copyright Takes a Dominant Position*, 16 *Eur. Intell. Prop. Rev.* 401, 401 (1994) (noting that publishers who claimed that the refusal to license in *Magill* was not abusive ironically used *Magill* to argue no compulsory license was needed even in the case of sole-source providers). The other prong was to argue for a several-year test period during which compulsory licenses would not be available so that the Commission could gather evidence about licensing practices to determine if there were sufficient abuses to warrant reintroducing compulsory license provisions. See E.C. Directive on Databases, art. 16 (3), 1996 O.J. (L 77) at 27 (cited in note 7).

154. See note 7 and accompanying text (citing 1996 WIPO documents favoring both an international database regime similar to that proposed by the U.S. and international copyright reforms concerning online transmissions similar to that proposed by the E.U.).

155. See, for example, Reichman, 13 *Cardozo Arts & Ent. L. J.* at 485-86, 492-96 (cited in note 3) (summarizing the changes in copyright protection of literary and artistic works since the 19th century with an emphasis on the economic effects). See also Sam Ricketson, *The Berne Convention for the Protection of Literary and Artistic Works 1886-1986* at 231-32 (Queen Mary College, 1987).

156. See 17 U.S.C. § 102(b). See also note 51 and accompanying text.

including such borderline works as computer programs and factual compilations.¹⁵⁷ Yet, the database law contains no such distinction. This means that, in the universe of data generators, there is no evolving public domain substratum from which either research workers or second comers are progressively entitled to withdraw previously generated data¹⁵⁸ without seeking licenses that may or may not be granted.

On the contrary, every independent generation of data, however mundane or commonplace, will obtain protection if it costs money, and every regeneration or reutilization of the same data in updates, additions, and extensions that cost money will extend that protection without limit as to time.¹⁵⁹ As a consequence, third parties can rarely avoid the expense of regenerating pre-existing data—in the way that they could always use previously generated ideas, however much it cost to develop them—unless the originator of the relevant database has abandoned it or declined to exercise his or her proprietary rights, much as occurs under trademark laws.¹⁶⁰ To be sure, data providers, including members of the scientific community, could decide not to exercise proprietary rights in certain databases, for example, those funded by government agencies. This would not, however, change the legal situation with respect to scientifically important data located in privately owned databases or in those funded by public agencies, especially foreign agencies, that had opted to commercialize their data.¹⁶¹

157. See TRIPS Agreement, arts. 9(2), 10(1), in *Results of the Uruguay Round* at 370 (cited in note 1); J.H. Reichman, *The Know-How Gap in the TRIPS Agreement: Why Software Fared Badly, and What Are the Solutions?*, 17 *Hastings Comm. & Enter. L. J.* 763, 773-84 (1995) (discussing the effects of the Berne Convention and the TRIPS agreement on the copyright protection of computer software).

158. See Jaszi, 29 *Vand. J. Transnat'l L.* at 596 (cited in note 87) (expressing concern about lack of attention to the public domain in current copyright policy initiatives); Jessica Litman, *The Public Domain*, 39 *Emory L. J.* 965, 967 (1990) (arguing that the public domain has been undervalued in recent copyright case law); David L. Lange, *Recognizing the Public Domain*, 44 *Law & Contemp. Probs.* 147, 171-73 (1981) (arguing that the public domain has been undervalued in recent trademark and unfair competition case law).

159. See notes 147-48 and accompanying text.

160. See Lanham Trademark Act, 15 U.S.C. §§ 1052, 1059 (1994 ed.) (setting forth requirements for registration of trademarks and renewal of registration). However, there is an infinite array of trademarks, and the use of marks to distinguish quality producers inherently promotes competition without creating legal barriers to entry. See generally William M. Landes and Richard A. Posner, *Trademark Law: An Economic Perspective*, 30 *J. L. & Econ.* 265 (1987). See also Paul J. Heald, *Trademarks and Geographical Indications: Exploring the Contours of the TRIPS Agreement*, 29 *Vand. J. Transnat'l L.* 635 (1996) (focusing on the trademark provisions of TRIPS).

161. OMB Implementing Memo at 95-22 (cited in note 73).

The absence of any equivalent to the idea-expression doctrine under the new *sui generis* regime means that investors, in effect, obtain proprietary rights in data as such, a type of ownership that the copyright paradigm expressly precludes. Proponents of the *sui generis* right downplay this finding by insisting that third parties always remain free to generate their own databases.¹⁶² But this opportunity exists only for data that are legally available from public sources and whose cost of independent regeneration is not prohibitively high in relation to the gains expected from the exercise. As for proprietary data not legally available for second comers to exploit, there is no opportunity to avoid the originator's exclusive rights to prevent extraction or re-use of existing data. Even the most avid apologists for the E.C. Directive concede that in such cases the investor's exclusive rights necessarily vest in the data as such.¹⁶³

A deeper point is that, regardless of whether it is theoretically possible to regenerate the data from publicly available sources, investors in database production can always deny third parties the right to use pre-existing data in value-adding applications,¹⁶⁴ even when the latter are willing to pay royalty-bearing licenses; and there is no escaping such licenses unless the database publisher either declines to exercise his or her rights or engages in an abusive exercise of market power.¹⁶⁵ In other words, except when the new proprietary rights are abandoned or misused, the concept of incremental or "cumulative and sequential innovation," which is central to the development of modern technological paradigms,¹⁶⁶ has been banished from the universe of

162. See, for example, IIA Report at 29 (cited in note 67). See also Hunsucker, *European Database Directive* (cited in note 60).

163. See, for example, IIA Report at 29 (cited in note 67) ("Admittedly, there may be situations in which it could be claimed that granting non-copyright protection to compilations amounts to a monopoly on the facts contained therein."). See also Hunsucker, *European Database Directive* (cited in note 60).

164. See notes 159-61 and accompanying text.

165. A refusal to license, however, coupled with a dominant position in the marketplace, could trigger an antitrust violation or a related charge of abuse of intellectual property rights. See, for example, E.C. Directive on Databases, art. 16(3), 1996 O.J. (L 77) at 27 (cited in note 7). See also note 153 (discussing the *Magill* decision).

166. See, for example, Richard R. Nelson and Sidney G. Winter, *An Evolutionary Theory of Economic Change* 255-62 (Harvard U., 1982) (discussing the cumulative nature of technological advancements); Richard R. Nelson, *Intellectual Property Protection for Cumulative Systems Technology*, 94 Colum. L. Rev. 2674, 2676 (1994) (discussing the central concerns surrounding the copying of computer software). See also Robert P. Merges and Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 Colum. L. Rev. 839, 881 (1990) (discussing how the "scope doctrine can be used to approximate the 'tailoring' function proposed by economists.").

database production, despite the economic waste and inefficiency inherent in such policies.

2. Establishing Legal Barriers to Entry

A second, and closely related, way in which the database investor's scope of protection under the E.C. Directive exceeds that of authors under the classical copyright paradigm is seen in the treatment of derivative works. Under copyright laws, the scope of an author's exclusive right to create a derivative work extends only to the original, expressive matter added to the underlying work. One does not infringe an author's derivative work right by copying ideas or information that it (or the underlying work) contains or by appropriating from the derivative work any pre-existing expressive matter that has entered the public domain owing to the expiration of the terms of protection.¹⁶⁷

The E.C. Directive recognizes no such legal distinctions. As previously explained, it harbors no working conception of a public domain whatsoever. Unless local European courts, applying the domestic laws that implement the E.C. Directive, take pains to limit this omission, the upshot will be that each new extension of the database maker's exclusive rights by dint of his or her "substantial investment" in updates, additions, and revisions¹⁶⁸ will, in effect, re-qualify that investor for protection of the database as a whole for additional fifteen year periods. In other words, this extended protection is not limited to the revised or added matter—the "derivative work"—as would occur under the copyright laws. This, in turn, reinforces the monopolistic effects inherent in the originator's ability to deny third parties the right to build incrementally and sequentially upon pre-existing scientific and technical knowledge, and it creates a further barrier to entry.

A third way in which the scope of protection for investors in database production exceeds that afforded authors of copyrightable literary and artistic works results from the much narrower range of applicable public interest exceptions.¹⁶⁹ In effect, the sole important exception available to all users of noncopyrightable electronic databases under the E.C. Directive is the right to extract or reutilize

167. See, for example, 17 U.S.C. §§ 101, 102, 103, 106, 501 (setting forth the subject matter requirements and scope of copyright protection for derivative works).

168. See notes 147-48 and accompanying text.

169. For the general range of public-interest exceptions under copyright laws, see notes 52-53 and accompanying text.

“insubstantial parts of the database.”¹⁷⁰ Reinforcing this privilege is a provision nullifying any contractual override of it.¹⁷¹

Yet, given that courts must judge the substantiality of any extraction or reuse in qualitative as well as quantitative terms, it remains to be seen whether the formal right to take insubstantial parts will actually benefit users.¹⁷² For example, if the data extracted by the user are the data responsive to his or her online query, one can always argue that the extraction was qualitatively substantial.¹⁷³ Because this exception applies only to “lawful users” of the database (presumably subscribers to an online service or purchasers of a CD-ROM), in most cases it may merely validate acts incidental to the uses for which one has paid. Although the E.C. Directive’s copyright provisions spell out an elementary proposition of this sort, there is no parallel to it in the *sui generis* provisions.¹⁷⁴ The possibility therefore exists that publishers may assert the right to control uses of noncopyrightable components of databases that would otherwise have been subsumed within the general right to use the same database had it qualified for copyright protection.

The final version of the E.C. Directive also provides that a lawful user of a noncopyrightable database cannot extract or re-use even insubstantial parts of its contents in “repeated and systematic” ways that “conflict with a normal exploitation of that database or . . . unreasonably prejudice the legitimate interests of the maker.”¹⁷⁵ Arguably, this too could preclude most value-adding uses of an insubstantial part of the database, regardless of their commercial or noncommercial purpose.

Unlike previous versions of the E.C. Directive, the final version also gives E.U. member states the option of allowing certain limita-

170. See E.C. Directive on Databases, art. 8(1), 1996 O.J. (L 77) at 26 (cited in note 7). Member states, however, may allow “extraction for private purposes of the contents of a *non-electronic* database.” Id. art. 9(a) (emphasis added).

171. Id. art. 15 at 27.

172. Id. art. 8(1) at 26.

173. Another factor affecting a determination as to whether an appropriation is substantial is whether it impedes normal exploitation of the database. Id. art. 8(2). If database owners are prepared to charge for every unit that a user might want, is there any taking so insubstantial that a database owner could not argue that it unreasonably interfered with its normal exploitation of the market?

174. See id. art. 6(1) at 25 (incidental to lawful use provisions).

175. Id. art. 7(5). See also id. art. 8(2) at 26 (forbidding any acts by lawful users that “conflict with normal exploitation” or “unreasonably prejudice the legitimate interests” of its maker).

tions on the *sui generis* right.¹⁷⁶ In particular, member states may authorize extraction of a substantial part of a noncopyrightable database “for the purposes of illustration for teaching or scientific research, as long as the source is indicated and to the extent justified by the non-commercial purpose to be achieved.”¹⁷⁷ This exception is available only to “lawful user[s]” and it only applies to “extraction[s]” for such purposes, not to reutilizations. Thin as it is, this exemption will become available only in those member states that opt to enact it.¹⁷⁸

This limited exception, drawn from Article 10(2) of the Berne Convention concerning “quotations” and “use of work[s] by way of illustration for teaching,”¹⁷⁹ yields a perverse effect in the realm of *sui generis* database laws where data, facts, and other noncopyrightable contents are the real objects of protection. As applied to traditional scientific works covered by copyright law, such an exception made sense because only the author’s individual style was protected, and not his or her data, findings, or ideas. Hence, teachers who made

176. *Id.*, art. 9 at 26. The first two drafts of the E.C. Directive on Databases contained no authorization for the granting of any public policy exceptions to the *sui generis* right. First E.C. Proposal on Databases at art. 6 (cited in note 72); Amended E.C. Proposal on Databases at art. 7 (cited in note 103). Although the European Commission’s Explanatory Memorandum on the Amended Directive indicates that the European Parliament had pressed for exemptions for educational, scientific, and other nonprofit users, see Second Explanatory Memorandum (cited in note 137), it was not until the Common Position that member states were authorized to enact any limitations on the *sui generis* right. Even so, there is evidence of residual concern within the Council about the potential negative impact of the *sui generis* right on information flows. The Italian delegation, which decided to vote in favor of the Common Position version of the Directive, drew attention to

the importance of the problems—which are already in existence and will probably increase in [the] future as a result of technological developments—surrounding the issue of compulsory licenses as the only mechanism able to contain the possibility of abuse of dominant positions, not only between competitive undertakings, but also, in particular, in respect of science, education and the freedom of information, which could be subjected to undue restrictions.

Memorandum from the Council Secretariat to the Permanent Representatives Committee/Council, Brussels, 16 June 1995, Annex 1.

There are two other features to be noted about the restriction of rights provision of the E.C. Directive on Databases. One is that member states were given at least nominal authority to apply some limited but traditional copyright exceptions to protected databases, see text accompanying notes 118-24, yet they were not given any authority to extend traditional exceptions of this sort to noncopyrightable databases. See E.C. Directive on Databases, art. 6(2)(d), 9, 1996 O.J. (L 77) at 25 (cited in note 7). The other is that, although the Directive was intended to harmonize the laws of member states concerning database protection, *id.* at 20 (Recitals (1) and (3)), it leaves to the discretion of member states whether to adopt one or more of the three exceptions to the *sui generis* right, *id.* art. 9 at 26, thus seeming to promote disharmony in national laws.

177. *Id.* art. 9(b).

178. See *id.* arts. 9, 9(b).

179. See notes 115-17 and accompanying text.

excessive use of the first author's stylistic features clearly infringed because they could extract the data and other noncopyrightable components at will. As applied to the contents of databases, in contrast, the exception permits a limited use of "quotations" by both *teachers* and *scientific researchers* for purposes of illustration.¹⁸⁰ But it excludes any broader "fair use" right to extract or reutilize the data or facts for nonprofit scientific or educational pursuits, as would have been possible in appropriate cases under Article 9(2) of the Berne Convention.¹⁸¹ In this respect, the Final E.C. Directive aligns both its copyright and *sui generis* provisions in cutting back on the fair use doctrine under prior law.¹⁸²

Even if a member state enacts this provision, a scientific or educational user's exempted extraction must satisfy the non-commercial purpose test, and it must not exceed the quantum necessary to accomplish that purpose lest it violate the general obligation "not [to] perform acts which conflict with normal exploitation or [that] unreasonably prejudice [the maker's] legitimate interests."¹⁸³ Because normal uses of educational or scientific databases in academic and research institutions may not meet these tests, the optional exemption for scientific and educational purposes looks like a kind of fool's gold that merely permits illustration of conclusions reached. On this reading, the exemption would not extend to uses for other scientific or educational purposes, such as browsing, extraction, or use of the data for the purpose of reaching the conclusions that one may then freely "illustrate."¹⁸⁴

Of course, local legislatures could manufacture loopholes through which to widen this exception,¹⁸⁵ and database publishers

180. E.C. Directive on Databases art. 9. See also notes 118-19 and accompanying text.

181. E.C. Directive on Databases, arts. 8(2), 9(2); Berne Convention, art. 9(2). See note 114 and accompanying text.

182. See notes 115-24 and accompanying text.

183. See E.C. Directive on Databases at arts. 8(2), 9(b) (cited in note 7).

184. See, for example, McManis, *International Intellectual Property Protection* (cited in note 99) (stating that "[a]ny other substantial extraction from an electronic database [besides illustration for teaching or scientific research] will be infringing, irrespective of whether the extraction is for a commercial purpose, such as market research or private investment decisions, or for a wholly non-commercial purpose, such as religious canvassing, political polling, geneological research, or pursuit of any . . . hobby or avocation."). Professor McManis contrasts this provision unfavorably with "the exceptions and limitations that safeguard the public interest in copyright law." *Id.*

185. See, for example, Hunsucker, *European Database Directive* (cited in note 60) (stressing fact that article 9(b) speaks of extraction for the *purposes* of illustration for teaching or scientific research, whereas article 6, concerning copyrightable databases, speaks of "the sole purpose of illustration for teaching or scientific research").

might refrain from imposing harsh or oppressive terms and conditions that unduly impinge upon scientific and educational uses. The fact remains, however, that nothing in the E.C. Directive as finally enacted requires such accommodations. Its *sui generis* provisions contain no real equivalents of the private use, fair use, and related exceptions that traditional copyright laws afford scientific and educational users of core literary and artistic works. This is despite the fact that database publishers who acquire market power through restricted online transmissions have reportedly imposed questionable contractual conditions on libraries and academic subscribers in the past.¹⁸⁶

It follows that, under the E.C. Directive, the most borderline and suspect of all the objects of protection ever to enter the universe of intellectual property discourse—raw data, scientific or otherwise—paradoxically obtains the strongest scope of protection available from any intellectual property regime except, perhaps, for the classical patent paradigm itself.¹⁸⁷ Nor are the breadth of protection, and the monopolistic power it tends to breed, likely to be offset by greater competition in the market for electronic databases, especially now that the E.C. Directive as finally adopted no longer contains the compulsory license requirement that had initially been devised for this purpose.

Formally, of course, third parties still remain free to compile a database exactly like one already in commerce, because independent generation of the relevant data at one's own time and expense is always permitted. In practice, this option ignores the economic realities of the database industry. Startup costs are relatively high, the prospects for market-sharing have seldom been realized, much valuable data is unavailable from public sources, and the existence of one complex database seems empirically to constitute a *de facto* barrier to entry that is seldom overcome. This lack of effective competition, with its inherent possibilities for discouraging add-on products and for encouraging abuses of market power, was downplayed by the Council of Ministers, even though it had been uppermost in the minds of the European Commission's own drafters a short while earlier. Article 16 of the Final E.C. Directive thus merely calls for three-year reviews to determine whether existing antitrust laws prove inadequate to deal with the "abuse of a dominant position or other

186. See note 90 and accompanying text.

187. See generally Reichman, 13 *Cardozo Arts & Enter. L. J.* at 488-89 (cited in note 3) (discussing economic implications and contradictions of such paradoxes).

interference with free competition," in which case proposals for "non-voluntary licensing" may once again be considered.¹⁸⁸

The fear of market failure and of chronic underprotection that initially motivated the quest for a *sui generis* regime to protect electronic databases has thus given way to the creation of "mini-monopolies over information."¹⁸⁹ This fear has also given rise to a rent-seeking logic impervious to the public interest in the full and unrestricted flow of scientific data. The original goal of providing some incentives to augment the publishers' investment in compiling electronic databases has generated a set of norms that could render many scientific and technological undertakings prohibitively expensive. As explained below, the short-term social benefits of the E.C. Directive's "extraction right" may thus conceal the long-term social costs of diminished research and development capabilities at scientific and educational institutions, including public and semi-public institutions that are already indirectly subsidizing private research and development.¹⁹⁰

C. *The United States and International Models*

When the European Commission began its deliberations concerning database protection in the early 1990s, the climate in which intellectual property policy discussions at both the national and international levels took place differed from that prevailing today. The fate of the Uruguay Round of Multilateral Trade Negotiations and its intellectual property component, the TRIPS Agreement, remained uncertain. The U.S. intellectual property authorities had not yet begun to survey the issues posed by widespread transmission of digitized information over telecommunications networks.¹⁹¹ The Supreme Court had just denied copyright protection to telephone directories in *Feist*,¹⁹² and had recently invalidated state protection of subpatentable industrial designs.¹⁹³ These decisions proclaimed re-

188. See E.C. Directive on Databases, art. 16(3), 1996 O.J. (L 77) at 27 (cited in note 7).

189. Rosler, 10 High Tech. L. J. at 138, 140 (cited in note 96) (stressing tendencies of "[m]onopolists typically [to] charge large premiums for their goods").

190. See, for example, *id.* at 141-43; Reichman, 94 Colum. L. Rev. at 2496-98 (cited in note 2).

191. The United States did not begin to study, in any systematic fashion, the impact of digital technologies on copyright law until mid-1993 when the Clinton Administration formed the National Information Infrastructure Task Force which established a Working Group on Intellectual Property Rights. The Working Group's report was not finalized until September, 1995. See U.S. White Paper at 1 (cited in note 64).

192. See *Feist Publications*, 499 U.S. at 363.

193. See *Bonito Boats*, 489 U.S. at 168.

newed faith in a nineteenth century vision of the competitive ethos without recognizing, let alone addressing, the unresolved problems of appropriating returns from investments in subpatentable information goods under twenty-first century conditions.¹⁹⁴ Indeed, only a few years earlier, the chairman of the House Subcommittee on Intellectual Property had set very high standards that would have to be met before Congress would consider special interest pleas for additional forms of *sui generis* intellectual property protection that deviated from the classical patent and copyright paradigms.¹⁹⁵

Against this background, the European Commission's early drafts of a Directive concerning the legal protection of databases adopted a defensive posture with respect to foreign publishers whose principle base of operations was outside the European Union. In lieu of the national treatment clause that had become the international standard prior to the 1980s,¹⁹⁶ the Commission proposed a strict criterion of material reciprocity.¹⁹⁷ Member states of the European Union would, accordingly, extend the *sui generis* right to databases owned by foreign nationals only if the nations from which they hailed adopted equivalent laws. Databases made in countries having no similar legislation would remain vulnerable to wholesale copying within the European Union itself.¹⁹⁸ The decision to discriminate against foreign nationals operating in non-harmonizing states was modelled on the earlier and equally controversial decision by the United States to impose a material reciprocity clause under the Semiconductor Chip Protection Act of 1984.¹⁹⁹ Although both decisions rested on dubious

194. See, for example, Reichman, 25 *Int'l Rev. Indus., Prop. & Copyright L.* at 466-67, 472-75 (cited in note 44) (suggesting that *Feist* raises legitimate fears that those who disseminate information in hard copies may suffer from a chronic state of underprotection that discourages investment).

195. See Robert W. Kastenmeier and Michael J. Remington, *The Semiconductor Chip Protection Act of 1984: A Swamp or Firm Ground?*, 70 *Minn. L. Rev.* 417, 438-42 (1985) (stating that proponents of new intellectual property laws have the burden to "show . . . that a meritorious public purpose is served by . . . proposed congressional action," and setting forth a four-pronged test of public interest that should be met in each case).

196. See, for example, Berne Convention at art. 5(1) (cited in note 1); Paris Convention at art. 2(1) (cited in note 1).

197. See First E.C. Proposal on Databases at art. 11(1) (cited in note 72) (making protection available to E.U. nationals and nationals of countries with equivalent laws); E.C. Directive on Databases, art. 11, 1996 O.J. (L 77) at 26-27 (cited in note 7).

198. See Simon Chalton, *The Amended Database Directive Proposal: A Commentary and Synopsis*, 16 *Eur. Intell. Prop. Rev.* 94, 99 (1994) (stressing that national treatment would apply to copyrightable databases, but not to the extraction right). U.S. commentators on the E.C. Directive on Databases have almost uniformly condemned its reciprocity provision. See, for example, IIA Report at 2, 25 (cited in note 67).

199. See 17 U.S.C. §§ 902(a)(1)(A)-(C), 913, 914; Jay A. Erstling, *The Semiconductor Chip Protection Act and Its Impact on the International Protection of Chip Designs*, 15 *Rutgers Comp. & Tech. L. J.* 303, 310 (1989) (discussing section 902(a) of the Act which provides two means by

legal grounds even before the TRIPS Agreement was adopted, and even though the Agreement rejects this approach at least in spirit,²⁰⁰ a version of the reciprocity provision nonetheless entered the Final E.C. Directive.²⁰¹

1. A Coordinated High-Protectionist Strategy

By 1995, however, when the European Union's Council of Ministers met to adopt its Common Position on the pending E.C. Directive, the climate surrounding worldwide intellectual property policymaking had profoundly changed. Universal intellectual property standards embodied in the TRIPS Agreement had become enforceable within the framework of a World Trade Organization,²⁰² largely as the result of sustained pressures by a coalition of powerful manufacturing associations in Europe, the United States, and Japan.²⁰³ The success of this venture presages further alignments of interests by U.S. and E.U. officials with a view to forging a common,

which a foreign nation may qualify for reciprocal treatment); Charles R. McManis, *International Protection for Semiconductor Chip Designs and the Standard of Judicial Review of Presidential Proclamations Issued Pursuant to the Semiconductor Chip Protection Act of 1984*, 22 Geo. Wash. J. Int'l L. & Econ. 331, 347-52 (1988) (describing different interpretations of the Act's requirement that a foreign nation provide non-discriminatory treatment for works of U.S. citizens or domiciliaries).

200. See TRIPS Agreement, arts. 1(2), (3), 2(1), 3(1), 4, 9(1), 39, in *Results of the Uruguay Round* at 367-70, 385 (cited in note 1); McManis, *International Intellectual Property Protection* (cited in note 99); Paul Edward Geller, *Intellectual Property in the Global Marketplace: Impact of TRIPS Dispute Settlement?*, 29 Int'l. Law. 99, 109-10 (1995).

201. See E.C. Directive on Databases, art. 11, 1996 O.J. (L 77) at 26-27 (cited in note 7). See also *id.* at 24 (Recital 56). At public meetings, officials of the European Commission have stated that they retained the reciprocity provision so that it would prod other countries to adopt equivalent laws. Statement of Jens Gaster, Knowright '95, Vienna, Austria (Aug. 26, 1996).

202. See, for example, Adrian Otten and Hannu Wager, *Compliance with TRIPS: The Emerging World View*, 29 Vand. J. Transnat'l L. 391, 393 (1996) ("As a result of the TRIPS Agreement . . . the protection of intellectual property has become an integral part of the multilateral trading system, as embodied in the World Trade Organization . . ."); J.H. Reichman, *Universal Minimum Standards of Intellectual Property Protection Under the TRIPS Component of the WTO Agreement*, 29 Int'l Law. 345, 347-51 (1995) ("Beyond these equal-treatment obligations, states must accord to the nationals of other member states those international minimum standards of intellectual property protection that are comprised within the treatment provided for in this [TRIPS] agreement.").

203. See, for example, Intellectual Property Committee (USA), Keidanren (Japan), and UNICE (Western Europe), *Basic Framework on Intellectual Property: Statement of the Views of the European, Japanese and United States Business Communities* (1988). See also R. Michael Gadbow, *Intellectual Property and International Trade: Merger or Marriage of Convenience?*, 22 Vand. J. Transnat'l L. 223, 235-37 (1989) (discussing efforts to protect the intellectual property rights of semiconductor producers).

high-protectionist strategy for intellectual goods in the post-TRIPS environment.²⁰⁴

Besides coordinating their efforts in support of treaties that would expand or supplement the 1971 Revision of the Berne Convention, the United States and European Union both submitted proposals for worldwide protection of the contents of databases under *sui generis* intellectual property regimes akin to that embodied in the E.C. Directive.²⁰⁵ They have also proposed treaty language²⁰⁶ to conform international copyright law to the regulatory framework for a global information infrastructure that was set forth in a controversial White Paper recently prepared for the U.S. administration,²⁰⁷ and a

204. See, for example, Hanns Ullrich, *TRIPS: Adequate Protection, Inadequate Trade, Adequate Competition Policy*, in John O. Haley and Hiroshi Iyori, eds., *Antitrust: A New International Trade Remedy?* 153, 184-207 (Pacific Rim Law & Policy Assoc., 1995); Ralph Oman, *Intellectual Property After the Uruguay Round*, 42 J. Copyright Soc'y 18 (1994) (approving this trend). See generally Reichman, *From Free Riders to Fair Followers* (cited in note 94) ("Competitive Role of the Developing Countries in an Integrated World Market").

205. See U.S. Proposal on Databases (cited in note 7); European Proposal on Databases (cited in note 7). See also Mark Powell, *The European Union's Database Directive: An International Antidote to the Side-Effects of Feist* (paper presented to the Fourth Annual Conference on International Intellectual Property Law & Policy, Fordham University School of Law, Apr. 11-12, 1996) ("Fourth Fordham Conference") (on file with the Authors). Powell notes that the E.C. Directive will be incorporated into the laws of Norway, Iceland, and Liechtenstein under existing trade agreements with the European Union; that "the Commission will encourage Central and Eastern European countries to adopt similar legislation" in their Association Agreements; that the E.U.-Turkey Customs Union Decision explicitly obliged Turkey to align its legislation on databases with the Directive; and that its reciprocity clause "will be used by the Commission as a bargaining chip" in dealing with third world countries. See *id.* at 52-53.

206. See Proposals of the European Community and Its Member States to the Committee of Experts on a Possible Protocol to the Berne Convention, Geneva, May 22-24, 1996, WIPO Doc. BCP/CE/VII/1-INR/CE/VI/1, May 20, 1996 ("E.U. Proposals for GII"); Proposals of the United States on a Possible Protocol to the Berne Convention, Geneva, May 22-24, 1996, WIPO Doc. BCP/CE/VII/ — ("U.S. Proposal to WIPO").

207. In its White Paper on Intellectual Property and the NII, the Clinton Administration sought a number of amendments to the Copyright Act of 1976 that would strengthen the rights of copyright owners. See U.S. White Paper, Appendix 1 (cited in note 64); National Information Infrastructure Copyright Protection Act of 1995, S. Rep. No. 1284, 104th Cong., 1st Sess. (1995); H.R. Rep. No. 2441, 10th Cong., 1st Sess (1995). These would grant to copyright owners a new "exclusive right of transmission," see U.S. White Paper at 212 (cited in note 64); a provision to prohibit the development of technologies or services useful for decoding encrypted transmissions (or the tampering with other electronic safeguards) as a kind of copyright infringement; and a provision outlawing any alterations to "copyright management information, including the terms and conditions for access to online transmissions." See, for example, White Paper at 230-34. Very similar provisions are part of the Administration's proposal for international treaty language to WIPO. See U.S. Proposal to WIPO (cited in note 206).

Despite the innocuous appearance of these and related proposals, they are very broadly drafted, perhaps with a view to indirectly overruling numerous judicial precedents, including some that permit reverse-engineering of the noncopyrightable components of computer programs. See, for example, Samuelson, *Wired 4.01* at 190 (cited in note 124); McManis, *International Intellectual Property Protection* (cited in note 99).

version of these proposals was embodied in a Draft Copyright Treaty.²⁰⁸

A diplomatic conference hosted by the World Intellectual Property Organization ("WIPO") convened to consider these proposals in December 1996.²⁰⁹ The delegations to this conference were thus asked to convert the WIPO Draft Database Treaty, prepared by a Committee of Experts,²¹⁰ into a norm of international intellectual property law, even though the United States lacked any corresponding domestic regime as of the time of writing;²¹¹ there has been no empirical test of the controversial E.C. Directive in actual practice;²¹² and no preliminary reports or studies evaluating even the

Adoption of these proposals might also help to immunize copyright owners from claims of misuse for imposing harsh or oppressive conditions on users in the form of non-negotiable electronic contracts. See, for example, McManis, *International Intellectual Property Protection* (cited in note 99) (stressing proposal to limit removal of electronic "shrink wrap licenses" as component of White Paper's overall efforts "to reduce . . . application and scope of fair use doctrine"). For judicial and scholarly opposition to such licenses, see Charles R. McManis, *Intellectual Property Protection and Reverse Engineering of Computer Programs in the United States and European Community*, 8 High Tech. L. J. 25, 88-96 (1993) (concluding that contracts, or at least shrink-wrap licenses, that prohibit reverse engineering are preempted by federal intellectual property law); Julie E. Cohen, *Reverse Engineering and the Rise of Electronic Vigilantism: Intellectual Property Implications of "Lock-out" Programs*, 68 S. Cal. L. Rev. 1091 (1995). But see Raymond T. Nimmer, Reporter for the Drafting Committee on Uniform Commercial Code, Article 2B (licenses), *U.C.C. Revision: Information A.S.E. in Contracts* (April 15, 1996) (arguing that proposed Art. 2B of U.C.C. should make such licenses presumptively valid); *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447 (7th Cir. 1996) (validating such licenses).

208. See WIPO, Basic Proposal on the Substantive Provisions of the Treaty on Certain Questions Concerning the Protection of Literary and Artistic Works to be Considered by the Diplomatic Conference, WIPO doc. CRNR/DC/4, August 30, 1996 ("WIPO Draft Copyright Treaty").

209. See note 7. For a discussion of the proposals, underlying these draft treaties, see, for example, Morton David Goldberg, *The Digital Agenda in the U.S. and WIPO* (paper presented to the Fourth Annual Conference on International Intellectual Property Law & Policy, Fordham University School of Law, Apr. 11-12, 1996) ("Fourth Fordham Conference") (on file with the Authors); Paul Waterschoot (Director, DG XV/E, European Commission), *Intellectual Property and the Global Information Infrastructure—The E.U. Perspective*, paper presented to the Fourth Annual Conference on International Intellectual Property Law & Policy, Fordham University School of Law, Apr. 11-12, 1996) ("Fourth Fordham Conference"). See also Shira Perlmutter (Associate Register for Policy and International Affairs, U.S. Copyright Office), *Developments in WIPO: A Status Report on the New Instrument and Protocol*, paper presented to the Fourth Annual Conference on International Intellectual property Law & Policy, Fordham University School of Law (Apr. 11-12, 1996) ("Fourth Fordham Conference").

210. See WIPO Draft Database Treaty (cited in note 7).

211. See notes 222-23 and accompanying text.

212. See, for example, Powell, Fourth Fordham Conference at 2-3 (cited in note 196) (objecting that "it is questionable whether an international instrument should be founded on a legal measure with no proven track record and which contains such novel legal concepts . . . especially since . . . [n]either database makers nor users were satisfied with the compromise reached in the Directive"). See also Samuelson, *The N.I.I. Intellectual Property Report*, 37 Communications of the ACM at 17 (1994) (finding it "peculiar that the WIPO experts

economic justification for such measures have been issued by WIPO or any other reputable international institution.²¹³ This same conference considered the adoption of a supplementary agreement to the Berne Convention that would convert the White Paper's vision of a global information infrastructure into binding international minimum standards, even though these controversial proposals have yet to be endorsed by the pertinent congressional committees.²¹⁴

Against this background, the changes to the E.C. Directive wrought in the Council of Ministers' Common Position of 1995, including deletion of the compulsory license provision (to which United States publishers had objected) and other measures that strengthened the exclusive rights apparatus,²¹⁵ evidence the coordinated strategies that the Commission and the United States intellectual property authorities are now jointly pursuing.²¹⁶ If successful, these strategies

should even consider recommending a treaty on database protection when the idea for such a law is so new and untested").

213. See, for example, Powell, Fourth Fordham Conference at 196 (cited in note 205) (stating that the "economic case for the creation of a right to prevent extraction and/or reutilization of non-original contents by users has never been satisfactorily explained").

214. See notes 270-81 and accompanying text. However, the delegations to the Geneva Diplomatic Conference in December, 1996, rejected or modified many of these proposals, and a more socially balanced treaty was actually adopted. See Draft WIPO Copyright Treaty, WIPO Doc. No. CRNR/DC/89, December 20, 1996, adopted by the Geneva Diplomatic Conference on the same date.

215. See, for example, Jens L. Gaster (Principal Administrator, DG XV-E-4, European Commission), *The New E.U. Directive Concerning the Legal Protection of Data Bases* (paper presented to the Fourth Annual Conference on International Intellectual Property Law & Policy, Fordham University School of Law, Apr. 11-12, 1996) ("Fourth Fordham Conference") (on file with the Authors) (conceding that "the *sui generis* right was considerably strengthened during the legislative process," and that attacks on the right to extract even insubstantial parts of a protected database were barely repelled).

216. Besides proposing statutory amendments to copyright law, the U.S. White Paper seeks to extend the rights of copyright owners by, among other things, interpreting the Copyright Act of 1976 as favoring strong protectionist positions, particularly with regard to the right to control unauthorized browsing of works in digital form (said to be temporary copying from a computer memory), to the inapplicability of the "first sale" doctrine in the digital environment, and to limitations on fair use in digital networked environments. See U.S. White Paper at 64-95 (cited in note 64); 17 U.S.C. §§ 101 (definition of "copies"), 107 (codification of fair use in terms of market interest), 109 (a) (first sale doctrine). Among the critics of the White Paper's interpretations of existing law are Litman, 13 *Cardozo Arts & Enter. L. J.* at 40-41 (cited in note 89); McManis, 8 *High Tech. L. J.* at 63-73 (cited in note 207); Samuelson, 37 *Communications of the A.C.M.* at 23 (cited in note 212). The White Paper also takes the view that online providers are, or should be, strictly liable for digital transmissions of copyrighted works, even if this obliges providers to serve as "copyright police" without regard to their ability to perform such functions. See, for example, U.S. White Paper at 114-24 (cited in note 64); Samuelson, *Wired* 4.01 at 136, 190-91 (cited in note 124); McManis, 13 *Cardozo Arts & Enter. L. J.* at 68-70 (criticizing the view of the U.S. White Paper).

The important question for the future is not how to construe existing law so that it covers "electronic browsing," "electronic lending," or the right to make "copies for private use," a concept that is less established in U.S. copyright law than in some foreign laws. See, for example, Jane C. Ginsburg, *Putting Cars on the "Information Superhighway."* *Authors, Exploiters,*

would gradually extend international norms concerning the legal protection of databases from the Berne Convention (or related instruments) to the TRIPS Agreement itself, which could give them worldwide effect.²¹⁷ This is made expressly possible by Article 71(1) of the Agreement, which empowers the Council for TRIPS to “undertake reviews in the light of any relevant new developments which might warrant modification or amendment of this Agreement.”²¹⁸ If and

and Copyright in Cyberspace, 95 Colum. L. Rev. 1466, 1477 nn. 44-45 (1995). It may be that one cannot simply transfer these and other exceptions to the national information infrastructure without unintended and possibly harmful effects on copyright owners, including those scientists and academics whose own proprietary rights are at stake. See, for example, Peters, 20 Colum.-VLA J. Law & Arts at 349-51 (cited in note 124). See also Ginsburg, 95 Colum. L. Rev. at 1468 (cited in this note) (stating that “the perspective of user rights . . . should remain secondary. Without authors, there are no works to use”); Hugh C. Hansen, *International Copyright: An Unorthodox Analysis*, 29 Vand. J. Transnat'l L. 579, 584 (1996) (criticizing those who would sacrifice the cause of author's rights to the generic category of “users,” including “[I]nternet users, developing nations, consumers, small competitors, and creators of derivative works”). Arguably, for example, “the entire concept of ‘private copying’ makes little sense in a world where the work is predominantly marketed directly to the end users[,] . . . [and] the market for, or ‘normal exploitation of,’ the work will by and large be the private copying market.” Ginsburg, 95 Colum. L. Rev. at 1477-78 (cited in this note).

The important question is how to recreate a “fair use” zone in cyberspace that protects the strong public interest in ensuring that certain uses and certain users, notably the scientific and educational communities, are not priced out of the market or forced to cut back upon the kind of basic research that has heretofore played a crucial rule in U.S. economic and technological growth. See, for example, Goldstein, *Celestial Jukebox* at 230 (cited in note 89) (stressing need for exemptions and compulsory licenses favoring “research and educational uses” as transcendent claim rooted in cumulative progress of knowledge); Hamilton, 27 Vand. J. Transnat'l L. at 628-29 (cited in note 94).

217. In the meantime, the WIPO Draft Database Treaty proposes to implement, in one form or another, “the enforcement provisions of Part III, Articles 41-61, of the TRIPS Agreement.” See WIPO Draft Database Treaty at 20-21 (cited in note 7) (“Notes on Article 13”); *id.* at 21-28 (“Annex” reproducing TRIPS Agreement rules).

218. TRIPS Agreement, art. 71, in *Results of the Uruguay Round* at 402 (cited in note 1). See also *id.* arts. 68-69 at 400 (stating that the Council for TRIPS shall “afford Members the opportunity of consulting on matters relating to the trade-related aspects of intellectual property rights” and that “[m]embers agree to cooperate with each other with a view to eliminating international trade in goods infringing intellectual property rights”). While parties to the Berne Convention remain free to adopt higher copyright standards among themselves, see Berne Convention at art. 20 (cited in note 1) (“The Governments of the countries of the Union reserve the right to enter into special arrangements among themselves, in so far as such agreements grant to authors more extensive rights than those granted by the Convention, or certain other provisions not contrary to this Convention.”), these arrangements would not become binding on other Berne Convention members in the absence of a unanimous decision. See *id.* at art. 27(3). Unless such standards were incorporated into the TRIPS Agreement, parties to a special arrangement under, or related to, the Berne Convention would run some risk of having to extend the higher standards to nonsignatory members of the WTO, under the most-favored-nation clause of the TRIPS Agreement. See TRIPS Agreement, art. 4, in *Results of the Uruguay Round* at 369 (cited in note 1). While applications of Article 4 remain inherently uncertain, and this outcome would depend on the interpretation of various provisions in both the TRIPS Agreement and prior international agreements, see note 1 and accompanying text, the goal is clearly to develop “a model in the search for a global solution regarding the protection of

when the Council decided that the proposals embodied in the WIPO Draft Database Treaty (if finally adopted)²¹⁹ had become norms of international intellectual property law, it would legitimize pressures on other WTO member states to recognize similar measures in their domestic laws and lead eventually to their formal incorporation into the TRIPS Agreement.²²⁰ This, in turn, would obviate the long-term effects of the reciprocity clause in the E.C. Directive by replacing it with a set of harmonized norms binding on all WTO member states, like those already adopted for semiconductor chip designs in articles 35-38 of the TRIPS Agreement.²²¹

2. The Pending United States Bill

The United States delegation submitted its proposed treaty language concerning *sui generis* protection of database contents to a duly constituted WIPO Committee of Experts before any legislation to create such a right had been placed before Congress.²²² By the time the WIPO experts met to consider the U.S. proposal, this embarrassing omission had been rectified.²²³ The congressional bill ("H.R. 3531" or "the Bill") proposing a domestic regime for noncopyrightable databases articulates a far more protectionist strategy than that of the E.C. Directive, however. This protectionist bias then influenced the Draft Database Treaty that the WIPO Experts recommended for consideration at the Diplomatic Conference held December 1996.²²⁴

databases which is presently discussed at WIPO." Gaster, Fourth Fordham Conference (cited in note 215).

219. See note 7.

220. See TRIPS Agreement, art. 71(1) (cited in note 1).

221. See *id.* arts. 1(3), 2(2), 3(1), 35-38, in *Results of the Uruguay Round* at 367-68, 384-85 (cited in note 1); Reichman, 29 *Int'l Law.* at 374-75 (cited in note 202). See also WIPO Draft Copyright Treaty at 1-2 (cited in note 208) (indicating that the Committee of Experts considering the various draft treaties anticipates such a result).

222. U.S. database legislation was introduced on May 23, 1996, see note 7, long after the U.S. had submitted its proposed treaty language for consideration at the WIPO Committee of Experts meeting, scheduled for May 22-24, 1997. The head of this delegation also headed the NII Working Group, whose U.S. White Paper on Intellectual Property and the NII had anticipated the need for legislation to protect the contents of databases. See U.S. White Paper at 153 (cited in note 64). Was it merely a coincidence that the European Commission submitted draft treaty language for the proposed Berne Protocol mirroring the White Paper's recommendations on contentious digital copyright issues at the same time that the U.S. submitted draft treaty language on protecting the contents of databases? See U.S. Proposal on Databases (cited in note 7); Proposals of the the European Community and its Member States to the Committee of Experts on a Possible Protocol to the Berne Convention, Seventh Sess., May 22-24, 1996, WIPO Doc. BCP/CE/1-INR/CE/VI/1 (May 20, 1996) at 3-5 ("E.C. Protocol to the Berne Convention").

223. H.R. Rep. No. 3531 § 1 (cited in note 7).

224. WIPO Draft Database Treaty (cited in note 7). However, the Conference postponed action on this Draft Treaty to a later date. See note 7.

a. Towards Broader and Stronger Exclusive Rights

Under the Bill, as under the Final E.C. Directive, a compiler would qualify for exclusive rights to prevent extractions and reuses of the whole or substantial parts of a database by dint of his or her having made substantial investments in the collection, assembly, verification, organization, or presentation of its contents.²²⁵ These exclusive rights would attach automatically upon the expenditure of resources, and if the owner continued to invest in updating or otherwise maintaining the database in question, its twenty-five year initial term of protection could be continually renewed without limit.²²⁶ These provisions thus ignore the constitutional Enabling Clause, which requires intellectual property rights to be limited in time.²²⁷

When scrutinizing the details of the pending U.S. proposal, moreover, one first finds that its definition of "database" is much broader than that of the E.C. Directive.²²⁸ It contemplates, for example, that noncopyrightable components of computer programs could qualify for protection as databases,²²⁹ and it provides no apparent criteria for excluding even facts or data compiled for scientific and historical works.²³⁰ Furthermore, H.R. 3531, like the U.S. proposal to WIPO, would grant database makers a twenty-five year initial term, which reflects the dissatisfaction of U.S. industry groups with the shorter duration of the E.C. Directive.²³¹

The U.S. legislation also recognizes an exclusive right to control the *uses* of database contents, not just extractions and reuses of

225. See H.R. Rep. No. 3531 §§ 2, 3(a) (cited in note 7); U.S. Proposal on Databases at 1.3, 3.1 (cited in note 7).

226. See H.R. Rep. No. 3531 §§ 2, 3(a), (b), 6 (cited in note 7).

227. U.S. Const., Art. I, § 8, cl. 8.

228. Compare, for example, H.R. Rep. No. 3531 § 2 (cited in note 7) (defining "database" as "a collection, assembly, or compilation, in any form or medium now or later known or developed, of works, data or other materials, arranged in a systematic or methodical way") with E.C. Directive on Databases, art. 1(2), 1996 O.J. (L 77) at 24 (cited in note 7).

229. Both the European Directive and H.R. Rep. No. 3531 appear to exclude computer programs from database rights. See E.C. Directive, art. 1(3), 1996 O.J. (L 77) at 24 (cited in note 7); H.R. Rep. No. 3531 § 3(d) (cited in note 7). But the U.S. legislation indicates that insofar as the contents of a program include material that satisfies the definition of database, those contents can be protected by the database law. See notes 370-85 and accompanying text for further discussion of this issue.

230. But see E.C. Directive on Databases, 1996 O.J. (L 77) at 23 (cited in note 7) (indicating, in Recital 45, that the *sui generis* right should not protect "mere facts or data"). For further discussion of the implications of the U.S. legislation for scientific and historical works, see notes 386-94 and accompanying text.

231. H.R. Rep. No. 3531 § 6(a) (cited in note 7); U.S. Proposal on Databases at art. 6.1 (cited in note 7). See IIA Report at 23 (cited in note 67).

them.²³² In addition, it reinforces all these exclusive rights by allowing database makers further to control any use that "adversely affects the actual or potential market for that database" in addition to uses that otherwise "conflict with the database owner's normal exploitation."²³³ This specification, which is not found in the E.C. Directive, has the potential for impeding virtually any judge-made exceptions analogous to "fair use" under copyright laws, because any such exception would almost certainly affect the "potential market" for any given database.²³⁴ At the same time, the database owner's potentially perpetual derivative work right flowing from continuous updates, which is subject to no public domain exceptions whatsoever, becomes even easier to obtain than under the E.C. Directive. This is because H.R. 3531 would condition the renewal right merely upon "any change of commercial significance" to the database contents and not solely on additional "substantial investments."²³⁵

The pending bill subtly and powerfully expands the database owner's scope of protection well beyond that of the E.C. Directive's *sui generis* regime by introducing an array of measures that, when read together, produce formidable anticompetitive effects. For example, the E.C. Directive's principal concession to users—the exception for extractions of insubstantial parts²³⁶—is ostensibly broadened in H.R. 3531 to permit uses or reuses of insubstantial parts,²³⁷ but it is then drastically narrowed in at least two ways. First, there is a new provision that not only forbids "repeated or systematic use or reuse of insubstantial parts" (like the comparable provision of the E.C. Directive),²³⁸ but also expressly forbids extraction or uses even of insubstantial parts "that cumulatively conflict . . . with . . . normal exploitation . . . or adversely affect . . . the actual or potential market."²³⁹ This latter clause acquires further teeth by means of still other provisions that seem to outlaw extraction or reuse of even in-

232. See H.R. Rep. No. 3531 § 4(a)(i) (cited in note 7); U.S. Proposal on Databases, art. 3.1, (cited in note 7).

233. H.R. Rep. No. 3531 § 4(b) (cited in note 7).

234. This provision is thus consonant with several other key provisions that greatly strengthen the scope of protection in general. See notes 236-253 and accompanying text.

235. See H.R. Rep. No. 3531, § 6(b) (cited in note 7); note 147 and accompanying text.

236. See E.C. Directive on Databases, art. 8(1), 1996 O.J. (L 77) at 26 (cited in note 7). Gaster, Fourth Fordham Conference (cited in note 215) (indicating that protection of the right to extract—but not to reuse—an insubstantial component was an integral part of the compromise that led to otherwise strengthened protection).

237. See H.R. Rep. No. 3531 § 4(a)(ii) (cited in note 7).

238. *Id.*; E.C. Directive on Databases, art. 7(g), 1996 O.J. (L 77) at 25-26 (cited in note 7). See note 175 and accompanying text.

239. See H.R. Rep. No. 3531 §§ 4(a)(i), (ii), 5(a) (cited in note 7).

substantial parts of a protected database in any product or service that directly or indirectly competes with the database from which it was extracted in any market, however distant.²⁴⁰ Also forbidden are extraction, use, or reuse of even insubstantial parts "by or for multiple persons within an organization or entity in lieu of . . . authorized additional use or reuse . . . by license, purchase, or otherwise."²⁴¹

Given such restrictions, one is hard pressed to imagine unauthorized uses of an insubstantial component that the drafters of the United States model would deem legitimate. To forestall even this remote possibility, H.R. 3531 allows publishers contractually to override even the formal right of lawful users to extract or use insubstantial parts in contrast with the express nullification of similar contractual provisions in the E.C. Directive.²⁴² One knowledgeable source reports that United States database publishers, angered by the presence of this constraint in the E.C. Directive, have every intention of exercising permissible contractual overrides in practice.²⁴³ A similar intention seems manifest in the clause allowing publishers to impose separate licenses for networked use of a database within organizations, including nonprofit academic and scientific institutions, which can be construed as covering the extraction, use, or reuse even of insubstantial parts.²⁴⁴

Taken together, these and other provisions of H.R. 3531 reinforce the single most disturbing aspect of the E.C. Directive, namely, that it precludes formation of an evolving public domain from which third parties can freely draw.²⁴⁵ To this end, the bill expressly confines permissible acts of "independent creation" to data or materials not found in a database subject to the proposed *sui generis*

240. See *id.* §§ 4(a)(ii), 4(b). This restriction covers markets in which the database owner has a demonstrable interest or expectation in licensing or otherwise reusing the database, as well as markets in which owners might reasonably expect to find customers for the database. *Id.*

241. *Id.* § 4(b)(iv).

242. See E.C. Directive on Databases, art. 15, 1996 O.J. (L 77) at 27 (cited in note 7) (expressly voiding contractual provisions to this effect). See also IIA Report at 19-20 (cited in note 67) (criticizing this provision from the U.S. perspective).

243. See Powell, Fourth Fordham Conference (cited in note 205). See also U.S. Proposal on Databases at art. 7(2) (cited in note 7) ("No Contracting Party shall impair the ability to vary by contract the rights and exceptions to rights set forth herein.").

244. See H.R. Rep. No. 3531 §§ 4(a)(ii) (cited in note 7) (requiring authorization for repeated or systematic extraction, use, or reuse of insubstantial parts of a database in a way that conflicts with the owner's normal exploitation), 4(b)(iv) (prohibiting multiple persons within an organization from using a database in a way that conflicts with the owner's normal exploitation without authorization through license or otherwise).

245. See notes 155-66 and accompanying text.

regime.²⁴⁶ This restriction applies regardless of whether the unauthorized extraction or use is made for purposes of noncommercial scientific endeavor or for commercially important value-adding products that build incrementally on existing compilations of data. Every unauthorized use or reuse of existing data thus potentially violates the database owner's unbounded derivative work right. Furthermore, the existence of this potential violation is determined without regard to the substantiality of the second comer's own expenditure of effort or resources, to the similarity or differences of the latter's product or service, or to the public good aspects of the activities undertaken.²⁴⁷

b. Perfecting an Absolute Monopoly

The absolute monopoly conferred on database owners under the pending U.S. legislation is then perfected by recognizing no public interest exceptions whatsoever. Even the weak exception for extraction (but not reuse) of database contents "for the purposes of illustration for teaching or scientific research" that the E.C. Directive allows E.U. member states to enact²⁴⁸ is omitted from both H.R. 3531 and from the U.S. submission to WIPO.²⁴⁹

The sole sop to science and education in H.R. 3531 is a provision not found in the E.C. Directive that expressly denies coverage to "a database made by a government entity."²⁵⁰ Because most databases

246. See, for example, H.R. Rep. No. 3531 § 5(b) (cited in note 7) ("Nothing in this Act shall in any way restrict any person from independently collecting, assembling or compiling works, data or materials from sources other than a database subject to this Act.").

247. *Id.* §§ 4 (outlining the prohibitions of the Act), 5 (carving out two exceptions without regard to the user's purpose, effort, or resulting product), and 6.

248. See E.C. Directive on Databases, art. 9(b), 1996 O.J. (L 77) at 26 (cited in note 7). See also *id.* at arts. 9(a) (allowing extraction for private purposes from non-electronic databases), 9(c) (allowing extraction and reuse for purposes of "public security or an administrative or judicial procedure").

249. See H.R. Rep. No. 3531 § 5 (cited in note 7) (providing exceptions only for lawful users to extract, use, or reuse insubstantial parts of public or commercially-used databases and for use of data from sources not subject to the Act); U.S. Proposal on Databases at art. 5 (cited in note 7). The U.S. Proposal to WIPO appears less watertight, because it does permit contracting parties, "in their domestic legislation, [te] provide for exceptions to or limitations on the rights," so long as such exceptions or limitations "do not unreasonably conflict with a normal exploitation . . . and do not unreasonably prejudice the legitimate interests of the rightholder." U.S. Proposal to WIPO at art. 5.3 (cited in note 206). Because the U.S. Proposal links this exception to the notion of a "substantial" taking for purposes of infringement and also to the express notion that use of pre-existing protected matter is not an independent creation, see *id.* at arts. 3.1, 3.2, the drafters clearly aim to forbid any exceptions that permit extraction or use of a substantial part of the database for any purpose.

250. See H.R. Rep. No. 3531 § 3(c) (cited in note 7) ("Except for a database made by a governmental entity, any database otherwise subject to this Act, is not excluded herefrom

of primary importance to science are funded by government agencies, this provision appears to recognize that such databases merit different treatment from those normally covered by the proposed *sui generis* regime. The message is rendered ambiguous, however, by language in the same provision to the effect that "any database otherwise subject to this Act . . . is not excluded herefrom because its contents have been obtained from a governmental entity."²⁵¹ This provision seems to clarify that private firms that invest in data appropriated from government sources will still qualify for protection. It can also be read, however, as implicitly inviting governmental agencies to derogate from the traditional U.S. position, reiterated in a recent Office of Management and Budget Directive, which limits such agencies to the recovery of dissemination costs from commercial applications of government-funded data by the private sector.²⁵² If government entities moved beyond cost-recovery principles, the continued ability of scientists to access such data on favorable terms, which current policy seeks to guarantee, could then be called into question.²⁵³

Disregarding the status of databases made by governmental entities, H.R. 3531 would render virtually any act of "collecting, assembling, or compiling . . . data . . . from . . . a database subject to this Act" a prohibited or infringing act. The perpetrator can never justify such acts as incidental to other acts of independent creation, or as incidental to recognized public interest exceptions, or even as legitimate means of building on preexisting data sets.²⁵⁴ Nor does H.R. 3531 express any concern that application of its exclusive rights might lead to abuse of a dominant position or to other anticompetitive acts that might require "nonvoluntary licensing" at some point in the fu-

because its contents have been obtained from a governmental entity."). This provision has no counterpart in the E.C. Directive on Databases because E.U. governments expect to commercialize their databases. See note 78 above. See also WIPO Draft Database Treaty at art. 5(2) (cited in note 7) (allowing national legislation to determine the level of protection for databases made by government entities).

251. H.R. Rep. No. 3531 § 3(c) (cited in note 7).

252. See OMB Implementing Memo (cited in note 73) (cautioning agencies that use the services of private contractors not to impose, or permit the intermediary to impose, restrictions that interfere with the agencies' own dissemination responsibilities; and reiterating "the basic standard that agencies shall not charge use fees for government information which exceed the cost of dissemination").

253. See notes 293-94, 302-10 and accompanying text.

254. See H.R. Rep. No. 3531 §§ 4, 5(a)(b) (cited in note 7). See notes 237-44 and accompanying text (stressing built-in restrictions on claiming use of an insubstantial part in practice).

ture.²⁵⁵ On the contrary, the bill expressly empowers publishers contractually to override even the nominal right of subscribers to use or reuse insubstantial parts of the database and to require "multiple persons within an organization or entity"—presumably including scientific and educational entities—to acquire additional licenses or copies for authorized additional uses or reuses beyond their initial access rights.²⁵⁶

Ancillary provisions of H.R. 3531 also embody some of the present administration's most controversial proposals concerning the regulation of national and global information infrastructures.²⁵⁷ For example, it includes a provision akin to that found in the White Paper that would outlaw making or distributing any technical device (or performing any technical service) the primary purpose or effect of which was to circumvent self-help technological security measures that publishers may rely on to protect the contents of their databases.²⁵⁸ Another provision inspired by the White Paper would forbid tampering with database management information attached to digital copies of the database contents or otherwise distributing contents in a form that bears false information about ownership or other aspects of managing the relevant proprietary rights.²⁵⁹

Self-help measures, such as encryption for networked transmissions, often serve valid commercial purposes, and they may become indispensable for the protection of privacy.²⁶⁰ Such measures may also, however, unduly reinforce the publisher's power to impose harsh contractual terms in two-party deals,²⁶¹ a prospect that H.R.

255. See E.C. Directive on Databases, art. 16(3), 1996 O.J. (L 77) at 27 (cited in note 7) (requiring E.C. Commission to report, at three-year intervals, concerning these issues and the need to establish "non-voluntary licensing arrangements").

256. See notes 242-44 and accompanying text. See also H.R. Rep. No. 3531 § 4(b)(iv) (cited in note 7).

257. See note 207 and accompanying text.

258. See, for example, H.R. Rep. No. 3531 § 10 (cited in note 7) ("Circumvention of Database Protection Systems"); U.S. Proposal on Databases at art. 8 (cited in note 7) (Prohibition of Protection—Defeating Devices). See also U.S. White Paper, Appendix 1 at 5 (cited in note 64); Pamela Samuelson, *Technological Protection for Copyrighted Works*, paper presented to the Thrower Symposium, Emory Law School (Feb. 22, 1996) (on file with the Authors) (stating that, although digital technology "poses a serious challenge for copyright owners because works in digital form are vulnerable to uncontrolled replication and dissemination in networked environments," it is "not just part of the problem; it may also be part of the solution").

259. See, for example, H.R. Rep. No. 3531 § 11 (cited in note 7) ("Integrity of Database Management Information"). See also U.S. White Paper, Appendix 2 at 5 (cited in note 64).

260. See, for example, Branscomb, *Who Owns Information?* at 175-77 (cited in note 35).

261. See notes 85-88 and accompanying text. A solid body of scholarly opinion holds that "a combination of technological restrictions (such as encryption), contractual arrangements and criminal sanctions (for unauthorized decryption)" raises a far greater risk of overprotection than that of underprotection. McManis, *International Intellectual Property Protection* (cited in note

3531 completely ignores. There is also reason to fear that publishers will use these measures to fend off legitimate public interest challenges to the scope of protection obtained under the proposed *sui generis* regime. If, for example, decrypting a coded transmission is necessary to extract part of a database for noncommercial scientific purposes, and the act of decryption itself constitutes a tort,²⁶² researchers are unlikely to explore the possible availability of judge-made public interest exceptions to the exclusive rights conferred by the new regime.²⁶³

In sum, by providing a longer period of protection, more powerful exclusive rights, no public interest exceptions or privileges, harsh criminal penalties (as well as treble damages for willful infringements),²⁶⁴ and ancillary rules reinforcing self-help policing of online transmissions, the proposed U.S. law would grant database owners a more absolute monopoly than that emanating from the E.C. Directive. In so doing, the drafters of H.R. 3531 take no notice of the role that affordable, unrestricted flows of data have traditionally played in U.S. science policy or in other domains. The proposed regime thus risks triggering a chain of unintended consequences that could ultimately compromise both the foundations of basic science and the technological superiority of the national innovation system.²⁶⁵

3. The "Digital Agenda" at the World Intellectual Property Organization

Although WIPO's Draft Database Treaty left the Diplomatic Conference a choice between the fifteen and twenty-five year terms for database rights proposed by the European Union and the U.S.,

99); Kurtz, 18 Eur. Intell. Prop. Rev. at 120, 121, 124 (cited in note 58) (stressing risk that a chronic state of overprotection could "choke off opportunities for academic research and educational uses of intellectual property").

262. See H.R. Rep. No. 3531 §§ 10 (cited in note 7) (prohibiting circumvention of database protections without the database owner's authorization), 12 (prescribing remedies, including damage awards, for violation of § 10).

263. See notes 234-35 and accompanying text.

264. See H.R. Rep. No. 3531 §§ 7(1), 8 (cited in note 7) (prescribing fines of up to \$250,000 and up to five years imprisonment for certain first offense willful violations of the prohibited acts under § 4; *id.* §§ 12, 13 (prescribing fine of up to \$500,000 and up to five years imprisonment for violations of § 11 with intent to defraud).

265. David and Foray, 16 Sci. Tech. & Ind. Rev. at 38-59 (cited in note 62) (national systems of innovation studies).

respectively,²⁶⁶ in most respects it adhered more closely to the United States model than to the European model. For example, the treaty, like the proposed U.S. legislation, would regulate uses (not just reuses) of database contents;²⁶⁷ provide no public policy exceptions or privileges;²⁶⁸ and limit avoidance of circumvention technologies.²⁶⁹ Even so, there is probably enough of the European Union model in the Draft Treaty to satisfy eventually the European Union, even if they cavil on some details during the treaty negotiation process. By their coordinated efforts, the U.S. and E.U. delegations have thus largely succeeded in focusing attention on the details of their proposals rather than on whether there is really a need for such a regime in the first place or whether a melded United States-European Union model law is the best solution to whatever problem might exist.

From the international perspective, the WIPO Draft Database Treaty is best understood as an integral part of the larger "digital agenda" put forward in the White Paper and other policy statements. Taking these proposals directly to the international level, as reorganized by the TRIPS Agreement, may accelerate the process of implementation and, at the same time, circumvent the task of reconciling private and public interests in the domestic legislative processes.²⁷⁰ In other words, by pursuing its "digital agenda," and including the *sui generis* protection scheme,²⁷¹ at the international level with the cooperation of European colleagues, U.S. officials are on their way to converting the White Paper's controversial "reform proposals" into international standards of intellectual property protection that would eventually become binding on all signatories to the Berne Conven-

266. WIPO Draft Database Treaty, art. 8 (cited in note 7). Another issue of contention between the United States and the European Union on which the draft treaty takes no position concerns the entitlement of governments to claim database rights. *Id.* at art. 5(2).

267. *Id.* at art. 3(1). The WIPO Draft Database Treaty does not even contain a provision that would give lawful users the right to take insubstantial parts of database contents.

268. The draft WIPO Draft Database Treaty would, however, permit nations to enact exceptions or limitations on rights "in certain special cases that do not conflict with the normal exploitation of the database and do not unreasonably prejudice the legitimate interests of the rightsholder." *Id.* at art. 5(1). At the time of this writing, some U.S. authorities advocated adding a new paragraph 3 to Article 5, as follows: "Subject to the provisions of paragraph (1) above, contracting parties shall provide appropriate exceptions to or limitations of the rights provided in this treaty for uses of databases for non-commercial scientific or educational purposes." Such language is a response to concerns expressed by the National Research Council. See Memorandum of Keith Kopferschmid to Mike Nelson of Nov. 9, 1996 (on file with the Authors).

269. WIPO Draft Database Treaty, art. 10 (cited in note 7).

270. See notes 215-21 and accompanying text (discussing potential impact of the TRIPS agreement).

271. See notes 266-70 and accompanying text.

tion.²⁷² This “whiplash effect,” coupled with the E.C. Directive’s reciprocity clause,²⁷³ would then oblige the United States to implement these same standards in its domestic laws even if Congress had not already adopted similar legislation in the interim.²⁷⁴

While the advent of new technologies has always created a degree of legal uncertainty in intellectual property law, the tendency in the past was to allow the law slowly to catch up, despite the risk of some short-term obsolescence.²⁷⁵ This applied with particular force to international intellectual property law, which evolved slowly from a bottom-up consensus among states that experimented with different solutions to new problems in their domestic laws.²⁷⁶ In contrast, powerful interests contend that the opposite course of action is needed with respect to digitally conveyed knowledge and information goods, and the major reforms set out in the White Paper further this view.²⁷⁷

272. See notes 196-201 and accompanying text. Although the White Paper legislation is more restrictive in some ways than the WIPO Draft Database Treaty (for example, in the draft treaty’s insertion of a scienter requirement in the anti-circumvention provision, WIPO Draft Database Treaty at art. 10(1) (cited in note 7), this would not clash significantly with the treaty. See Berne Convention at art. 20 (cited in note 1) (authorizing member states “to enter into special agreements among themselves . . . [that] grant to authors more extensive rights than those granted by the Convention”).

273. See notes 197-98 and accompanying text.

274. See notes 99, 200, 202-04 and accompanying text (discussing obligation of all WTO members to adopt both the universal minimum standards of the Berne Convention, whether or not they adhere to that Convention, and the additional standards concerning computer programs, compilations, and related subject matter set out in the TRIPS Agreement itself, including modifications that take account of new developments). See also Reichman, 29 Int’l Law. at 347-51, 365-73 (cited in note 202). The formal ability of developing countries to opt out of such proposed international norms has so far been limited by their need for market access in, and economic assistance from, the developed countries.

275. If one believes that the federal courts can apply existing copyright law to the new technologies with relatively little friction, then one has implicitly opted for a wait-and-see approach or at least for a minimalist approach, based on case-by-case judicial decisions and a minimum amount of tinkering with the statute as it stands. For a detailed and cogent exposition of this view, see generally Joseph V. Myers III, Note, *Speaking Frankly About Copyright Infringement on Computer Bulletin Boards: Lessons to be Learned from Frank Music, Netcom, and the White Paper*, 49 Vand. L. Rev. 439 (1996). This approach leaves the traditional exemptions for scientific and educational users intact, but subject to case-by-case evaluation. If, in contrast, one believes that gaps in the law leave online publishers too much at risk, then proposals for statutory reform easily escalate into a campaign to rid the emerging information infrastructure of allegedly anachronistic vestiges of the cultural bargain that had heretofore protected users and second comers of works in print and other media. See, for example, McManis, *International Intellectual Property Protection* (cited in note 99).

276. See, for example, Stephen Ladas, *Patents, Trademarks and Related Rights: National and International Protection* 59-94 (Harvard U., 1975).

277. See, for example, U.S. White Paper at 17 (cited in note 64) (characterizing its proposed amendments as “the fine tuning that technological advances necessitate, in order to maintain the balance of the law in the face of onrushing technology”). But see, for example, Kurtz, 18 Eur. Intell. Prop. Rev. at 120 (cited in note 58) (criticizing White Paper’s biased review of

Yet, the level of disagreement about even the most rudimentary components of the proposed reforms is very great, and an impartial evaluation of them is further complicated by the larger (but often unstated) policy implications of even the most seemingly innocuous technical proposals.²⁷⁸ Under these circumstances, the unseemly haste with which both the U.S.²⁷⁹ and E.U. authorities²⁸⁰ have moved

existing law as a partisan brief that adopts the position of publishers on almost every controversial issue, without acknowledging contrary arguments or authority).

278. See, for example, Samuelson, *Wired* 4.01 at 135 (cited in note 124) (characterizing proposed White Paper amendments as a "copyright grab" that will profoundly change the historic balance of copyright law by maximizing the protection of digital works with no corresponding consideration of the need for public access to and use of such works).

279. The Administration's main argument for moving so far and so fast rests largely on the supposed difficulties of enforcing territorially grounded intellectual property rights in cyberspace, see, for example, McManis, *International Intellectual Property Protection* (cited in note 99), and on the "detach[ment of] information from the physical plane, where property law of all sorts has always found definition." John Perry Barlow, *The Economy of Ideas: A Framework for Rethinking Patents and Copyrights in the Digital Age (Everything You Know About Intellectual Property is Wrong)*, *Wired* 2.03 at 84 (March 1994). From a legal perspective, these developments raise daunting problems of conflicts of law, a field that has never found it easy to accommodate intangible property. See, for example, I. Trotter Hardy, *The Proper Legal Regime for "Cyberspace,"* 55 *U. Pitt. L. Rev.* 993 (1994); Jane C. Ginsburg, *Global Use/Territorial Rights: Private International Law Questions of the Global Information Infrastructure*, 42 *J. Copyright Soc'y* 318 (1995); Paul Edward Geller, *Conflicts of Law in Cyberspace: Rethinking International Copyright in a Digitally Networked World*, 20 *Colum.-VLA J. L. & Arts* 571 (1996).

The Administration's haste in pushing these initiatives without domestic debate, including inputs from the scientific and educational communities, reinforces the impression that the real goal of the campaign is to rid cyberspace of the pre-existing cultural bargain, including manifold applications of the fair use doctrine on which those communities depended in the past. See Jaszi, 29 *Vand. J. Transnat'l L.* at 599 (cited in note 87); Samuelson, *Wired* 4.01 at 135 (cited in note 124).

280. See, for example, Waterschoot, Fourth Fordham Conference (cited in note 209). European officials seem eager to adopt digital agenda policy proposals at the international level without much time for public hearings or for consultations with national science groups and other interested parties. See, for example, Dirk J. G. Visser, *Copyright in Cyberspace—National Dutch Report* (paper presented to the International Association for Literary and Artistic Property (ALAI) Study Days, Amsterdam, June 4-8, 1996) ("*Copyright in Cyberspace*"). This paper quoted the Dutch Federation of Organizations in the Library, Information and Documentation Fields' (FOBID) recent complaint to the Minister of Justice:

To its unpleasant surprise FOBID has found that in the [E.C.] Green Paper little or no attention is paid to the statutory limitations on copyright, such as library privileges and rules on educational, scientific and private use. Many existing limitations are technology dependent. It has to be examined whether and to what extent these limitations should be maintained or adapted in the digital environment.

Id.

To this and similar complaints, Professor Visser's report makes the following reply:

[M]any limitations are the result of successful "lobbying." Intermediaries and users applying for specific limitations must realize that right owners, who will oppose any limitation as a matter of principle, are generally very well represented at the (national and international) legislative level. Thus, the extent to which copyright limitations will be preserved or extended in the digital environment will eventually be determined by the ability of intermediaries and users to have their voice heard on the political level.

Id. at 13 (quoting P. B. Hugenholtz and D. J. G. Visser, *Copyright Problems of Electronic Document Delivery: A Comparative Analysis*, Report to the Commission of the European

to implement these measures at the international level raises troubling and still unanswered questions about the extent to which the public interest has been sacrificed to the private interests of "right owners, who . . . are generally very well-represented at the (national and international) legislative level."²⁸¹

IV. IMPLICATIONS OF A *SUI GENERIS* DATABASE REGIME

The use of either raw or elaborated data sets in scientific and technological pursuits is so prevalent that, under the best of circumstances, the adoption of any new proprietary rights in databases was bound to have broad repercussions on numerous and apparently unrelated fields. As matters stand, the E.C. Directive and its counterpart proposals were deliberately drawn as broadly as possible, which magnifies the social costs (or benefits) likely to derive from them. The foregoing analysis reflects our pessimistic view of that cost/benefit analysis. In the sections that follow, we spell out the probable implications for science, for value-adding information providers, and for other important user groups. Given the possibilities for mischief this survey reveals, we then reconsider the database project as a whole with a view to identifying alternative solutions likely to provide real social benefits at a more acceptable social cost.

A. *Putting Basic Science at Risk*

Enactment of a U.S. version of the E.U.'s *sui generis* regime to protect noncopyrightable databases will significantly affect the scientific and educational communities in this country, if only because it would introduce the factors of prospective privatization and

Communities (DG XIII), Brussels/Luxembourg 62 (1995)). See also Robert J. Hart, *Intellectual Property and the Global Information Infrastructure—The Perspective in Japan, Australia, and Canada* (paper presented to the Fourth Annual Conference on International Intellectual Property Law & Policy, Fordham University School of Law, Apr. 11-12, 1996) ("Fourth Fordham Conference") (stressing that only Australia's proposals concerning regulation of national information infrastructures have so far reflected concerns for "fair use" and related exceptions).

281. Visser, *Copyright in Cyberspace* at 12 (cited in note 280). Professor Samuelson has put it more bluntly:

[N]ot since the King of England in the 16th century gave a group of printers exclusive rights to print books in exchange for the printer's agreement not to print heretical or seditious material has a government copyright policy been so skewed in favor of publisher interests and so detrimental to the public interest.

Samuelson, 37 *Communications of ACM* at 22 (1994) (cited in note 212).

commercialization into a universe of discourse whose supplies of both raw and elaborated data have largely been funded by the government and shared by all interested investigators.²⁸² If, in the future, the acquisition of scientific data depended on the payment of prices set by the market and became subject to licensing and other legal constraints, it could represent a wrenching change from current practices and procedures.

1. Hypothetical Benefits to Science from the Commodification of Data

The proponents of database protection have commissioned no studies concerning the implications of their *sui generis* intellectual property regimes for science and education, and nothing in the literature suggests that this topic has received serious consideration at the legislative level. On the contrary, the domestic and international institutions that normally represent the interests of the scientific community were not consulted on the draft proposals, and until a Commission of the National Research Council ("NRC") began to look into the matter last year,²⁸³ most scientists and educators were unaware of the pending legislative agenda. For this and other reasons, the presidents of the National Academy of Sciences ("NAS"), the National Academy of Engineering, and the Institute of Medicine petitioned the Administration to postpone action on the WIPO Draft Database Treaty in order to allow time for the scientific and educational communities to express their concerns in the appropriate domestic legislative fora.²⁸⁴

As an abstract proposition, nonetheless, one may construct a seemingly plausible scenario according to which the scientific community might suffer no harm from the pending legislative initiatives and could even benefit significantly from them. While such a theory

282. See, for example, *Bits of Power* at ch. 4 (cited in note 32); OMB Implementing Memo (cited in note 73).

283. See *Bits of Power* at ch. 1 and Executive Summary (cited in note 32).

284. Letter to the Secretary of Commerce from the Presidents of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine (Oct. 9, 1996) (on file with the Authors) ("Academy Presidents' Letter"). The Academy Presidents deplore proposed changes to intellectual property law that "could seriously undermine the ability of researchers and educators to access and use scientific data, and . . . have a deleterious long-term impact on our nation's research capabilities . . . [and be] broadly antithetical to the principles of full and open exchange of scientific data." The Academies' Presidents find it "especially disconcerting . . . that . . . radical legal changes have been proposed . . . for . . . negotiation at the WIPO Diplomatic Conference this December, without any debate or analysis of the law's potentially harmful implications for our Nation's scientific and technological development."

must be tested against the countervailing evidence discussed below, it would rest on the following (often questionable) premises.

First, the scientific community might arguably suffer no harm if its members continued to operate in a noncommercial universe that enjoyed strong government support. Indeed, governments that lacked funds for basic scientific research might look to revenues from the generation and distribution of databases to augment, rather than reduce, prior levels of funding. Within their noncommercialized space, meanwhile, the continued adherence of the scientific community to deeply entrenched norms that favor the sharing of data²⁸⁵ would further immunize it from the private sector in which commercial providers, fortified by new proprietary rights, were operating.

Alternatively, those scientists who so desired could look to data collections as a source of revenue if, as seems likely, government support declined, and new markets for specific collections arose. Self-help commodification would, of course, intensify a breakdown of the sharing ethos, as individual scientists increasingly felt the need to protect their data, either out of a sense of unfairness or simply to have something to trade. Even so, scientists might devise new ways of shifting part of the costs of acquiring data under changed conditions to private and public funding.²⁸⁶ Moreover, economists would argue that these costs—including the transaction costs of adaptation—might be offset by corresponding gains in efficiency that would occur if database production and distribution took place under competitive, free-market conditions.²⁸⁷

On this view, if competitive markets formed in the database sector as a whole, an intellectual property right that prevented free-riding appropriation of an investor's returns would provide a catalyst to the further growth and development of such markets.²⁸⁸ To the extent that markets arose even for scientific databases or for applications derived from them,²⁸⁹ the existence of a new intellectual property

285. See *Bits of Power* at chs. 3-4 (cited in note 32).

286. *Id.* at ch. 4.

287. See *id.* See also Merges, 13 *Social Philo. and Pol. Found.* at 147, 157-58 (cited in note 36).

288. See generally Hunsucker, *European Database Directive* (cited in note 60).

289. The evidence gathered for the *Bits of Power* study showed very few examples of commercial databases of interest to science. The main examples pertained to databases in materials science and chemistry, such as those whose access is maintained by STN International. Some of these (accessed by STN) were actually developed by U.S. government sources, for example, databases compiled by the National Institute for Standards Technology (NIST). See, for example, Letter from Dr. Jolie A. Cizewski to the Committee on Issues in the

right could, in principle, lead to more and better products utilizing and applying the relevant data, to lower prices for the use of such data, or both. Scientists might also find novel ways to internalize costs in a more competitive environment or to recuperate them from applications to industry, while data suppliers would have more incentives to favor academic users through product differentiation and price discrimination.²⁹⁰ There is, of course, always a concomitant risk that, even under competitive conditions, providers might price their data beyond the capacity of basic science to pay, which would lead to under-funding and other consequences discussed below.²⁹¹ But healthy competition might itself spawn corrective measures to overcome this risk.²⁹²

The problem, of course, is that competition remains a chimerical concept insofar as the generation of most databases under real world conditions is concerned. This applies with even greater force to the bulk of scientific databases. As noted above, the high start-up costs and limited economies of scale available to most database makers have in the past combined to produce mostly niche markets dominated by a single source.²⁹³ As regards the important databases on which basic science relies, they are usually cooperative in nature, government controlled, and geared to a relatively small and selected band of users who benefit from the principle of free and open access to data.²⁹⁴

Only a small fraction of all the data generated around the world is directly compiled for basic scientific pursuits. Much of the

Transborder Flow of Scientific data (Apr. 30, 1996) ("Letter from Dr. Cizewski") (on file with the Authors). Another example is that of a database run by the International Union of Crystallography, which profits from information about crystal structures that is of interest to the research community and pharmaceutical companies. See, for example, Letter from Dr. William E. Gordon to the Committee on Issues in the Transborder Flow of Scientific Data (Jun. 13, 1996) (on file with the Authors). Most other scientific databases are generated and maintained by groups or government agencies that have not heretofore engaged in for-profit activities. See *Bits of Power* at ch. 4 (cited in note 32).

290. See *Bits of Power* at ch. 4 (cited in note 32).

291. Other non-economic factors could adversely affect scientific activities in a more competitive environment, and these must be taken into account. There is, for example, the problem of evaluating which among several offerings, are the "best value" files. NIST has reportedly earned income by establishing standards or "best values" that scientists respect, and this trust, in turn, creates something of a barrier to entry for would-be competitors, even if such a competitor has repackaged the NIST numbers. See, for example, Letter from Dr. Cizewski (cited in note 289). While second products may afford new and cheaper tools, the second comer who uses a file be or she does not fully understand may introduce errors when downloading it. For an example, see *Bits of Power* at ch. 3 (cited in note 32).

292. See, for example, National Research Council, *Bits of Power* at ch. 4 (cited in note 32). See also Hunsucker, *European Database Directive* (cited in note 60).

293. See notes 83-85 and accompanying text.

294. See, for example, *Bits of Power* at chs. 2-4 and Executive Summary (cited in note 32).

data that fuels some scientific disciplines is collected by governments to foster public safety (for example, providing timely warnings of potential disasters, such as floods, tornadoes and the like).²⁹⁵ The study of this data often leads to advances that improve public safety mechanisms. The public good aspects of science thus overlap with the larger public good aspects inherent in the generation of raw data.

It is true that government agencies have sometimes relied on private intermediaries for downstream delivery of publicly funded data,²⁹⁶ and this practice could become more common in the presence of stronger legal protection. Even so, the sole-source structure that characterizes the generation of many databases, including scientific databases, appears unlikely to change, at least as long as entry fees remain disproportionately high in relation to the small size of the user market segments. Indeed, under these conditions, the existence of even one database-generating unit may constitute a singular social achievement.

It follows, therefore, that in most cases the proposed *sui generis* regimes will simply engraft a strong legal monopoly onto the pre-existing natural monopolies that are typical of the database industry. It is the social costs of these double-barreled monopolies to the public at large that must actually be taken into account,²⁹⁷ along with their overall impact on a scientific community whose leading role in world technological production is linked in still unexplored ways to the traditional funding of scientific data by government.

2. Retarding the Progress of Science

Some segments of the United States scientific community might at first feel little or no impact if the pending legislative initiatives become law. So long as the government continues to fund the acquisition and dissemination of relevant data, those branches of science that remain willing and able to carry on as before may simply opt out of the commercialization process. H.R. 3531 expressly recognizes this option,²⁹⁸ unlike the E.C. Directive, which emanates in

295. See, for example, *id.*

296. See, for example, OMB Implementing Memo (cited in note 73)

297. See *Bits of Power* at Executive Summary (cited in note 32) ("A fundamental principle must be that where privatization is likely to lead to monopoly supply, it is not good public policy, and especially not good for science.") See generally *id.* at ch. 4 ("Privatization: When Does it Make Sense").

298. See note 250.

part from a political drive to protect and commercialize publicly funded databases.²⁹⁹

In practice, however, the possibilities for opting out of a commercialized universe of discourse would probably shrink over time, even if the United States government retained its present policies.³⁰⁰ Under section 3 of H.R. 3531, for example, a private firm could assert rights in a database funded by the government after making an investment in, say, converting the data to a different format, if the investor "intends to use or reuse the database in commerce."³⁰¹ While the investment would need to be "substantial," the statute provides no standard other than that substantiality is to be evaluated in qualitative as well as quantitative terms.³⁰² It might not, for example, exclude simply merging two or more government databases into a single whole.³⁰³

Over time the problem of integrated data sets derived from different sources could become acute if some were protected under the database laws and others were provided by scientific groups or government entities that had opted out of the statute.³⁰⁴ Unless countervailing legal measures were made available at both the domestic and international levels, the trend towards commercialization in other countries, especially within the European Union, coupled with the new intellectual property rights, could thus become a serious im-

299. See notes 99-101 and accompanying text.

300. See, for example, Merges, 13 *Social Philo. and Pol. Found.* at 157-58 (cited in note 36) (discussing game-theory reasons for this result).

301. See H.R. Rep. No. 3531 § 3(a)(i) (cited in note 7).

302. H.R. Rep. No. 3531 speaks of "a qualitatively or quantitatively substantial investment of human, technical, financial or other resources in the . . . assembly . . . or presentation of . . . contents." *Id.* This "substantial investment" test is more elastic than the E.C. Directive's test. See E.C. Directive on Databases, art. 10(3), 1996 O.J. (L77) at 26 (cited in note 7).

303. See, for example, Letter from Professor Shelton Alexander to the Committee on Issues in the Transborder Flow of Scientific Data (Jun. 15, 1996) (on file with the Authors). This result would become especially likely if the broad criterion for extending protection for derivative works—"any change of potential commercial value"—were judicially imported into the substantial investment test. See H.R. Rep. No. 3531 §§ 3(a), 6(b) (cited in note 7).

304. See Letter from Professor Shelton Alexander (cited in note 303). Professor Alexander asks:

Would these providers or users be subject to penalties/jail/unexpected costs if protected data were improperly included in the integrated database? (Apparently no action could be taken against the Federal government, if they were the provider, but what about non-government users?) In fields like Global Change where many different types of global data are relevant and where a scientist might not know the legacy of a lot of the data, avoiding a breach of the Act could be very difficult.

Id.

pediment to the study of global observations (nearly all of the earth science disciplines).³⁰⁵

Furthermore, funding for the acquisition of scientific data is likely to become scarcer, in keeping with overall trends, while pressures for privatizing the distribution of data seem certain to increase.³⁰⁶ Indeed, a recent OMB circular suggests that pressures to privatize the distribution of government-funded data were already a problem before the advent of the proposed database law in the United States. The circular also indicates that OMB was finding it hard to hold the line on its cost-recovery pricing policy.³⁰⁷

Because the *sui generis* database laws are meant to stimulate investment in the generation and distribution of for-profit data, there is even greater reason to doubt the ability or willingness of governments, including that of the United States, to maintain a cost-recovery formula over time. As pointed out above, H.R. 3531 may even invite this change of course by insisting that "any database otherwise subject to this Act . . . is not excluded herefrom because its contents have been obtained from a government entity."³⁰⁸ If, as is logical to suppose, a cost-recovery formula were gradually replaced with profit-based prices, then the many reuses of data in basic science (and in its applications) would become increasingly contingent upon the scientific community's ability to pay those prices, absent some more favorable

305. See generally *Bits of Power* at chs. 3-4 and Executive Summary (cited in note 32). There is some evidence that the creation of "mini-monopolies" under the Directive on Databases was viewed as a desirable strategic response to the rivalry between states in the global market for information products. See, for example, Rosler, 10 High Tech. L. J. at 138-39, 141-43 (cited in note 96) (discussing perceived advantages, as well as possible disadvantages, of the E.C. Directive on Databases). In this connection, a unilateral decision not to profit from the acquisition, distribution, or use of data taken by a segment of the U.S. scientific community would not bind foreign segments of the same community. These communities might decline to supply data needed for local research without payments under the rate schedule applicable abroad. In such cases, the willingness of the U.S. government to defray the costs of acquiring and distributing foreign data without passing these costs on to local researchers would actually determine the extent to which a given scientific sector could carry on as before.

306. See *Bits of Power* at ch. 4 (cited in note 32).

307. See OMB Implementing Memo (cited in note 73). See generally *Bits of Power* at ch. 4 (cited in note 32).

308. H.R. Rep. No. 3531 § 3(c) (cited in note 7). See also id. § 3(a)(i) (stating that an otherwise qualifying database remains subject to the Act if "the database owner intends to use or reuse the database in commerce"). This could permit any scientific database to fall under the Act whenever the putative owner declared an intention to use it at some unspecified time in the future. "Presumably, this could include data collected at government expense via grants and contracts to the private sector [or to] . . . universities." Letter from Professor Shelton Alexander (cited in note 303).

legal disposition, such as a "fair use" exception, or favorable price discrimination.³⁰⁹

The moment one begins seriously to ponder the implications of detaching the scientific community from the cost-recovery formula on which it has thrived, the more disquieting become the monopolistic effects built into both the E.C. Directive and H.R. 3531. If natural monopolies are to become converted into self-perpetuating legal monopolies, with little likelihood of direct or indirect competition (even by means of value-adding products), with no evolving public domain, and with no serious public-interest exceptions favoring science and education, then the publishers' capacity to maximize profits at the expense of overall social benefits is limited only by what the market will bear.³¹⁰

Unfortunately, a calculus of net social benefits was never a factor of any importance to either the European Union's Council of Ministers or to the drafters of H.R. 3531. The former, at least, acknowledge the prospects of real-world anticompetitive consequences, which they ultimately relegated to the clumsy embrace of competition law.³¹¹ In the United States, however, the role of competition (or anti-trust) law in minimizing abusive exercises of intellectual property rights is quite limited as compared with even that of the European Community. For example, both monopoly pricing and the refusal of a sole-source provider to license add-on products could violate the European Union's competition law, but such practices would almost never constitute antitrust violations under U.S. law.³¹² In general, the high costs and cumbersome procedures of proving an abuse of market power under the "rule of reason" approach to United States antitrust

309. Scientists seeking to study weather patterns in order to develop early warning systems reuse data collected for more immediate forecasting purposes. Commodifying this data without offsetting measures to support scientific research could slow or shut down this activity. See *Bits of Power* at ch. 4 (cited in note 32).

310. *Id.*

311. See E.C. Directive on Databases, art. 16(3), 1996 O.J. (L 77) at 27 (cited in note 7) (leaving open the door to the imposition of compulsory licensing if triennial reviews show that "application of this right has led to abuse of a dominant position or other interference with free competition" that would justify such actions). See also note 153 (discussing the *Magill* decision).

312. See, for example, Eleanor M. Fox, *Trade, Competition, and Intellectual Property—TRIPS and Its Antitrust Counterparts*, 29 Vand. J. Transnat'l L. 481, 494 (1996) (discussing the effect of the TRIPS Agreement on national antitrust law). See also Spencer Weber Waller and Noel J. Byrne, *Changing Views of Intellectual Property and Competition Law in the European Community and the United States of America*, 20 Brooklyn J. Int'l. L. 1, 2-9, 9-21 (1993) (comparing the interaction between intellectual property law and laws protecting competitors in both the United States and the European Community). The recent *Magill* decision in the E.U., see note 153, was held out as proof that competition law sufficed to protect the public interest in sole-source databases without need for involuntary licenses. This case might, however, have come out differently under U.S. antitrust law.

violations,³¹³ make it an ineffective constraint on the ability of the sole-source provider to charge whatever the market will bear.

An overly protective, socially unbalanced database law thus aggravates the problems that science would face, even under more competitive conditions. Basic science needs abundant, unrestricted flows of both raw and elaborated data at prices it can afford. Indeed, the evidence suggests that "efficient" use of data is a concept antithetical to the norms and practice of basic science.³¹⁴ On the contrary, by absorbing cheap data in ways that encourage serendipity and playful exploration, basic science arrives at precisely those breakthroughs that lend themselves to more efficiently organized technical applications later on.³¹⁵ When, instead, data become too expensive, scientific research suffers irremediable harm.

For example, when data from the Landsat series of remote sensing satellites were privatized in the 1980s, the prices charged to most users, including academic and federal government users increased from \$400 to \$4,400 per image.³¹⁶ When the research community pressed to use Landsat data for global exchange research in the early 1990s, complaints about high prices persuaded Congress to return the Landsat system to the public sector. Consequently, there was a negotiated price reduction to \$425 per image for U.S. government and affiliated users only.³¹⁷ This result nonetheless left non-government researchers, including the academic community, to pay \$4,400 per image, a ten to one price differential that severely limits the use of Landsat data by most non-government U.S. scientists, who cannot afford to pay these prices from their limited research budgets.³¹⁸ While one cannot know which scientific advances were delayed or prevented by this practice, evidence gathered by the

313. Current U.S. antitrust enforcement policies seldom treat intellectual property licensing or other practices as "per se" violations. Normally, such licensing practices are viewed as prima facie pro-competitive. To overcome this, a challenger must show market power, coupled with a sufficient anticompetitive effect as to constitute an unreasonable restraint of trade under the rule of reason. Fox, 29 Vand. J. Transnat'l L. at 459 (cited in note 312).

314. See, for example, *Bits of Power* at ch. 4 (cited in note 32).

315. See *id.* This playfulness is an important component of the "progress of science," which intellectual property law supposedly promotes via the constitutional Enabling Clause. See U.S. Const., Art. I, § 8, cl. 8.

316. See, for example, *Bits of Power* at ch. 4, Box 4.1 and 4.2 (cited in note 32) ("The Failed Privatization of Landsat" and "The Impact of Landsat Privatization on Research," respectively).

317. *Id.* The compromise that favored "U.S. Government and Affiliated Users" (USGAU) had thus deviated from the policy of providing data for the "cost of fulfilling a user request" (COFUR), which normally applies to all users. See, for example, OMB Implementing Memorandum (cited in note 73) (discussing government information dissemination practices).

318. See note 316.

National Research Council presents a sobering picture of the social costs of this lost potential.³¹⁹

The experience with Landsat is also indicative of transnational problems likely to arise when states adopting different policies may invoke exclusive property rights to buttress their respective positions. For example, the international ground stations that receive Landsat data reportedly object to the traditional U.S. policy of making data available at the cost of fulfilling a request.³²⁰ The likely result is that this cost-recovery formula will not be extended to ground station agreements, which would leave academics and other non-governmental users to pay exorbitant prices.³²¹ This, in turn, tends severely to limit scientific use by non-governmental U.S. scientists³²² and, given the weak dollar, may place the U.S. scientific community at a disadvantage with respect to scientists in other technologically advanced countries.

In these cases, the adverse effects on the scientific community were easy to document, although the value of lost research opportunities remains hard to quantify in terms of objective social costs. In other cases, however, it will prove harder to show the negative effects on science. This will be especially true if the commercialized database has many downstream users who are better able to afford the rates, and there is no powerful upstream user community—akin to the federal users of Landsat data—capable of voicing its distress in terms that cannot be ignored. In such cases, the high cost of data may simply inhibit project formulation when there is no realistic possibility of funding that cost. Because academic scientists are relatively few in number and not typically a presence in day-to-day decisionmaking at the policy level, their lost research opportunities may simply go unreported and unrecorded.³²³

319. *Bits of Power* at ch. 4, Box 4.2 "The Impact of Landsat Privatization on Research" (cited in note 32) (showing that efforts to "map and monitor" terrestrial ecosystems and to develop models to assess land quality, soil productivity, and degradation, and erosion hazards" came to a "complete halt," while other major areas of research were set back for years).

320. "They want to continue to charge whatever the market will bear and they are bringing pressure for the U.S. to change" its policy and laws, with effect from Landsat 7. Letter from Joanne Irene Gabrynowicz to the Committee on Issues in the Transborder Flow of Scientific Data (June 25, 1996) ("Letter from Professor Gabrynowicz") (on file with the Authors).

321. See notes 317-19.

322. See note 319.

323. See Academy Presidents' Letter (cited in note 284). See also Kurtz, 18 *Eur. Intell. Prop. Rev.* at 121 (cited in note 58) (stating that overprotective legal monopolies "can . . . be as stifling to creation as underprotection . . . [and they] can choke off opportunities for academic research and educational uses of intellectual property"). Even though the sole-source provider may not wish to price itself out of the market, this will be cold comfort to "those who cannot afford to pay, and [could thus] lead to a society of information haves and have nots"). *Id.*

Of course, the law of diminishing returns also applies, and commercial providers may find that no one will access their files if they charge too much. Before this point is reached, however, the more likely result—as suggested by the Landsat example—is that the provider may charge just enough for the better funded scientists to afford access. This would ignore the problems of general access for those unable to pay, including both students and scholars with limited grant funds, not to mention scientists in poorer communities.³²⁴

If the commercialization of data under hybrid intellectual property rights did diminish the research capabilities of basic science, the long-term social costs could be very high indeed. It might even backfire on the U.S. database industry itself, which currently dominates the world market for databases despite the lack of any *sui generis* intellectual property protection. This follows because some observers link the success of the U.S. database industry to applications of basic scientific databases that are almost always government funded. If, in the wake of database legislation, there were a reduction of funding or a diminished capacity to generate scientific data, it could lessen the competitive edge that the U.S. database industry now enjoys.³²⁵

More generally, the drive to commercialize data has ignored the contribution of basic science to the ability of U.S. firms to predominate in markets for technology and information goods. Despite a consensus on the need for sustained levels of investment in research and development,³²⁶ the proposed database laws could change the status quo—without anyone's intending it to happen—by elevating the price of the one raw material that U.S. science has always had ready access to. The extent to which government funding of data as a public good freely available to the scientific community compensates for the lack of other, more interventionist industrial policies might then become painfully clear. If less scientific knowledge translated to fewer applications of economic importance, the end result would be a loss of American technological competitiveness in an integrated world market.³²⁷

324. See *Bits of Power* at ch. 4 (cited in note 32).

325. See Academy Presidents' Letter (cited in note 284). In this connection, it is worth pondering that the E.C. Commission believed that its *sui generis* database regime would increase the market share of E.U. providers compared to that of both U.S. and U.K. providers. See, for example, First E.C. Proposal on Databases (cited in note 72).

326. See, for example, *U.S. R and D Spending Continues Fairly Brisk*, Wall St. J. A1 (Aug. 19, 1996) (discussing need for and benefits of research and development spending in the United States).

327. See Reichman, *From Free Riders to Fair Followers* (cited in note 94).

Clearly, United States policymakers should not incur such risks without evaluating in advance the possible repercussions of *sui generis* database laws on the scientific community, and without taking measures to alleviate them before embarking on such an uncharted course. By the same token, the scientific community has a vital stake in the formulation of new database laws.³²⁸ This community should take steps to ensure that legal incentives to stimulate investment in the production and distribution of data do not end by impeding the full and unrestricted flow of that same data to basic science.³²⁹

B. Impeding Competition in the Market for Value-Adding Products and Services

In assessing the implications of current proposals to protect the contents of databases for the information industry, one should recall that this industry consists not only of firms that sell information they have compiled, but also of many firms that add value to existing information products.³³⁰ Though some value-adding enterprises license the right to extract and reuse data from the initial compilers,³³¹ others do not.³³² Value-adding providers sometimes compete with the initial compiler in one or more segments of the market for value-added products, and often the former perceive a market opportunity for value-added products and services that the latter either overlooked or did not wish to provide.³³³ Needless to say, consumers benefit from the existence of competitive markets for products and services that add value to existing data or information.

The market for products that add value to digital data may become more lucrative and competitive than the market for value-

328. See Academy Presidents' Letter (cited in note 284).

329. *Id.* See notes 451-88 and accompanying text.

330. Indexing services are an example of value-adding information providers. When West Publishing Company adds key numbers and case synopses to court decisions it reports on-line, it becomes a value-added provider. Shepard's Citations are also value-added services to existing information.

331. After losing the first round of copyright litigation regarding its insertion of page numbers from West reporters, see *West Pub. Co. v. Mead Data Central, Inc.*, 799 F.2d 1219 (8th Cir. 1986), Mead licensed pagination rights from West. See L. Ray Patterson and Craig Joyce, *Monopolizing the Law: The Scope of Copyright Protection for Law Reports and Statutory Compilations*, 36 UCLA L. Rev. 719, 722 (1989) (discussing the West Publishing litigation).

332. For example, Feist Publications did not license the right to extract white-page listings from Rural's telephone directory. See *Feist Publications*, 499 U.S. at 363-64 (rejecting copyright claim in the white pages of a telephone directory).

333. For example, Feist's area-wide directory was an example of a new information product not offered by existing information providers. See note 341 and accompanying text.

adding print products, for two reasons. One is that digital technologies facilitate the disaggregation of value-adding functions that, because of technological and economic constraints, were once the exclusive prerogative of publishers of print compilations.³³⁴ As Professor Perritt has pointed out, “[n]ew information technologies permit separation of information and its value-added features from physical formats, making it possible for multiple suppliers to add different types of value to what ultimately becomes a single information product.”³³⁵

Second, digital technologies foster new functions, such as re-formatting, filtering, and hot-linking,³³⁶ which have no counterparts in print media. These new value-adding functions can also be disaggregated and provided by different vendors.³³⁷ So long as it remains possible to interoperate different layers of digital documents,³³⁸ consumers may mix and match different combinations of value-adding products and services in a manner that optimizes the usefulness of digital data for their particular purposes. Any legal or policy initiatives that could weaken the ability of second comers to enter and compete effectively in markets for products that add value to existing data should, therefore, be carefully scrutinized, lest they impede competition without offsetting benefits to the public.

Under existing law, second comers can usually extract and reuse published data from another firm’s compilation, especially when the second comers add substantial value to the data and use it to

334. Professor Perritt identifies ten kinds of value that have traditionally been associated with information products:

1. authorship
2. chunking and tagging (delineating sections, paragraphs, other boundaries)
3. internal pointers (tables of contents and indices)
4. external pointers (bibliographies, footnotes)
5. presentation of information
6. duplication of information product
7. distribution of information product
8. promotion of product
9. billing for products
10. integrity assurance

Publishers usually performed most of these value-adding functions once a work of authorship was created. See Henry H. Perritt, Jr., *Tort Liability, The First Amendment, and Equal Access to Electronic Networks*, 5 Harv. J. L. & Tech. 65, 68-69 (1992) (discussing the role of the “modern print publisher”).

335. *Id.* at 65.

336. See, for example, Samuelson, 1 J. Intell. Prop. L. at 104-16 (cited in note 114) (discussing the technology enabling such functions).

337. Perritt, 5 Harv. J. L. & Tech. at 65-66 (cited in note 334).

338. Interoperability issues are discussed at notes 374-83 and accompanying text.

develop a product different in kind from the first firm's product.³³⁹ To defend this pro-competitive bias, the United States Supreme Court took the appeal and ultimately reversed the lower court's holding of copyright infringement in *Feist Publications, Inc. v. Rural Telephone Service Co.*³⁴⁰ Feist had made a substantial investment in the development of a new area-wide directory of white-page listings that consumers could previously obtain only by looking at eleven separate directories published by telephone companies servicing different parts of northwest Kansas.³⁴¹

One can better discern the threat that the current database protection schemes pose to value-adding enterprises by considering how these proposals might have applied to the facts of *Feist*. Having appropriated almost two-thirds of the white-page listings from Rural's directory,³⁴² Feist could hardly persuade a court that it had taken a quantitatively insubstantial part of Rural's database.

Under the proposed database protection laws, moreover, quantity alone is not determinative.³⁴³ Market impact is also a supposed factor in determining if a taking was substantial or insubstantial.

Of course, Feist might argue that its area-wide directory had no adverse effect on the market for Rural's white-page directory because Rural distributed copies of its product without charge as a condition of operating a monopoly franchise for telephone service in that area.³⁴⁴ But Rural might respond by pointing out that the license fees Feist paid to other telephone companies demonstrated the exis-

339. See, for example, *New York Times Co. v. Roxbury Data Interface, Inc.*, 434 F. Supp. 217, 226-27 (D.N.J. 1977) (holding it to be fair use to produce an index to New York Times indices because the defendant's derivative product was the result of considerable independent effort and did not displace sales of the Times's indices); *Miller v. Universal City Studios, Inc.*, 650 F.2d 1365, 1372 (5th Cir. 1981) (determining that motion picture did not infringe copyright in book depicting facts that screenwriters extracted and reused from this book). Most of the factual compilation cases in which courts imposed copyright liability involved copying of the whole or a substantial part of the data and its reuse in competing products without substantial independent investment. See, for example, *Shroeder v. William Morrow & Co.*, 566 F.2d 3 (7th Cir. 1977) (copying names and addresses of gardening supplies without independent effort).

340. 499 U.S. 340 (1991).

341. *Id.* at 343 (discussing the facts of the case). Also favoring Feist was evidence that it had tried to license the white-page data from the eleven telephone companies that published them. All but Rural agreed to license Feist to use their data. *Id.*

342. The Feist directory contained about 1300 listings that were identical to the listings in Rural's directory and approximately 3600 other listings that overlapped with Rural's listings. The listings appropriated by Feist constituted almost two-thirds of the white-page listings in the Rural directory. Feist omitted the remaining listings because they were not within the area Feist's directory covered. *Id.* at 343-44.

343. See notes 147-48, 239-41 and accompanying text.

344. *Feist*, 499 U.S. at 342.

tence of a commercial market for white-page listings,³⁴⁵ even if this was a market that Rural had not yet exploited.

The proposed U.S. database law makes explicit what may be implicit in the E.C. Directive, namely, that courts should consider the effects of an unauthorized appropriation not only on markets in which a data compiler actually operates, but also on potential markets for that data.³⁴⁶ Feist's use of listings from Rural's directory would adversely affect Rural's potential market for license fees. It would also affect other potential markets. Rural, for example, might have planned to recoup a considerable investment in compiling and maintaining its database of listings by charging substantial fees to advertisers in the contiguous market for value-added yellow-page directories.³⁴⁷ If so, Rural would consider Feist's use of its listings as an interference with its ability to recoup its investments in this market. Because it could make plausible arguments about the potential market impact of Feist's appropriation, current database protection schemes might enable Rural to persuade a court that Feist had impermissibly extracted and reused a substantial part of Rural's database.³⁴⁸

Viewed from an economic perspective, the facts in *Feist* do not support the case for granting exclusive property rights to the first compiler. Where the costs of the initial gathering of the data and of copying it are roughly the same, there is less chance that copying will produce market failure, and a grant of proprietary rights may not be needed to stimulate investment.³⁴⁹ Feist was not a free-rider who

345. *Id.*

346. H.R. Rep. No. 3531 § 4(b) (cited in note 7).

347. The Supreme Court's opinion in *Feist* indicates that Rural denied Feist's request for a license because it did not want a competitor in the market for yellow-page directories. *Feist Publications, Inc.*, 499 U.S. at 343.

348. Under an earlier draft of the E.C. Directive on Databases, Rural might have been subject to a compulsory licensing provision to be imposed on "firms or entities enjoying a monopoly status by virtue of an exclusive concession by a public body." Amended E.C. Proposal on Databases at art. 11(2)(b) (cited in note 103). Under this provision, Rural might have been required to license the data to Feist on fair and nondiscriminatory terms. Rural might have challenged the application of this provision on the ground that the governmental body from which Rural held its franchise had granted it a monopoly for providing *telephone service*, not for operating a database business. Courts might have construed Article 11(2) as applicable only to those entities having a monopoly franchise for engaging in the database business from a governmental body. Rural might also have challenged the application of the "sole source" compulsory license provisions of the Amended E.C. Proposal because it was economically feasible (however undesirable) for Feist to canvass Rural's customers to obtain the names, addresses, and telephone numbers it needed. See *id.* at art. 11(1).

349. Wendy J. Gordon, *Asymmetric Market Failure and Prisoner's Dilemma in Intellectual Property*, 17 U. Dayton L. Rev. 853, 867 (1992).

threatened the viability of Rural's database business because Feist incurred substantial costs in preparing its new product,³⁵⁰ and probably spent far more than the license fee it paid to other providers for comparable quantities of data.

Giving Rural fifteen or twenty-five years of exclusive rights in white-page listings, as the database regimes propose to do,³⁵¹ would deprive the public of access to an ingenious area-wide directory conceived by Feist even though Feist was willing to incur a considerable amount of expense. It would also deprive those who buy advertising for yellow-page directories of the benefits of competition in this market. Indeed, protecting this market was Rural's reason for denying Feist's request for a license.³⁵²

Besides these anticompetitive policy implications for value-adding providers who extract and reuse the content of other firms' databases, an important category of value-adding software producers may also be affected if Congress adopts H.R. 3531 in its current form. The U.S. legislation would forbid not only unauthorized extractions and reuses of substantial parts of protected databases, but also unauthorized *uses* of such parts.³⁵³ Add-on software products often interact with and use parts of existing databases or the database components of other programs, such as look-up tables.³⁵⁴ If makers of the underlying database or software product wish to control the market for such add-on products,³⁵⁵ they may seize upon the database legislation's exclusive "right to use" provision to block unauthorized

350. Feist had to select which of the white-page listings in the Rural directory fell within the territory Feist had carved out, hire people to verify the information in the listings, and rekey the data into its own database before producing its area-wide directory. Feist also incurred extra costs because it chose to provide additional information about some listings. *Feist*, 499 U.S. at 343-44.

351. See note 266 and accompanying text.

352. The trial court had found that Rural's refusal to license its listings to Feist "was motivated by an unlawful purpose 'to extend its monopoly in telephone service to a monopoly in yellow pages advertising.'" *Feist*, 499 U.S. at 343.

353. H.R. Rep. No. 3531 § 4(a) (cited in note 7).

354. See, for example, Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2404-05 (cited in note 11) (giving examples and discussing competitive significance).

355. Nintendo, for example, tried to stop the unlicensed distribution of add-on software that enabled purchasers to change the play of Nintendo videogames. *Lewis Galoob Toys, Inc. v. Nintendo of America, Inc.*, 964 F.2d 965, 968 (9th Cir. 1992). The court decided that distribution of this add-on software did not infringe Nintendo's copyrights. *Id.* at 972. Though some commentators concur with this ruling, see, for example, Samuelson, 1 J. Intell. Prop. L. at 74-78 (cited in note 114), others challenge it, see, for example, Ginsburg, 95 Colum. L. Rev. at 1484-85 (cited in note 216). See also Christian H. Nadan, Comment, *A Proposal to Recognize Component Works: How a Teddy Bears on the Competing End of Copyright Law*, 78 Cal. L. Rev. 1633 (1990).

entry to the market for add-on products.³⁵⁶ The database protection laws may thus undermine competition in the market for software products that interact with data from other digital information products.

These competition policy concerns are not the only troubling aspects of the overly broad derivative work rights that current proposals would seem to grant to database owners. In *Feist*, the Supreme Court recognized that extraction and reuse of data serves important social functions:

It may seem unfair that much of the fruit of a compiler's labor may be used by others without compensation. As Justice Brennan has correctly observed, however, this is not 'some unforeseen byproduct of [the] statutory scheme [of copyright].' It is, rather, the essence of copyright, and a constitutional requirement This result [that facts may be copied at will from another's work] is neither unfair nor unfortunate. It is the means by which copyright advances the progress of science and art.³⁵⁷

The Court points out that extraction, use, and reuse of information from pre-existing works is essential to achieving the constitutional goal of copyright law. Scientists and historians, of course, are not the only groups that need to reuse data in order to advance this purpose. Nor are they the only groups that contribute to the advancement of knowledge. Those who add value to existing information products may do so as well.³⁵⁸ In any event, permitting the appropriation of information for such uses also promotes first amendment values, while the prospects for legal constraints on these values

356. Not only do many add-on products use selected data from the program with which they interact, but they must also incorporate at least some interface information from the first program in order to interact with it at all. See, for example, Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2404-05 (cited in note 11) (discussing add-on software and the necessity of interoperation with the original programs). For the implications of the Database Directive for interface components of programs, see notes 370-85 and accompanying text.

357. *Feist*, 499 U.S. at 349 (citations omitted). See also von Simson, 20 Brooklyn J. Int'l L. at 758-59 (cited in note 79) (arguing that the market for information products will be more competitive if information is free for use by subsequent compilers). But see text accompanying notes 430-50 (arguing that the "unfairness" is in fact a form of inefficiency to be overcome by a modified liability regime that obligates second comers who make value-adding uses to contribute to the original compiler's production costs for a reasonable period).

358. Suppose, for example, that West Publishing Co. sold CD-ROMs containing all federal copyright decisions to lawyers. If a law professor constructed an add-on product that, when used in conjunction with those CD-ROMs, provided users with a path through the CD-ROM, as a surrogate casebook, the add-on would contribute to knowledge, even if it involved use of a substantial part of the contents of the CD-ROM product.

outside the copyright matrix have so far received little attention from experts in constitutional analysis.³⁵⁹

The Supreme Court in *Feist* was not so sentimental about constitutional values favoring reuses of information as to ignore legitimate concerns about the need to preserve appropriate incentives to invest in database development. The Court recognized that unbridled appropriations of data that were costly to compile are sometimes potentially market-destructive and warrant liability on unfair competition grounds.³⁶⁰ It just did not regard *Feist* as such a case.³⁶¹

A well-crafted law to protect the contents of databases would provide a means for mediating the tensions between the competing goals of advancing knowledge and protecting investments in database development.³⁶² Such a law would also address the need to promote competition in the market for value-adding products and services in a manner consistent with the Supreme Court's directions in *Feist*.³⁶³ Current database protection proposals altogether ignore this sort of balancing exercise.

C. Other Implications

Many other groups, besides scientists and value-adding providers, rely on existing legal norms that favor extraction, use, and reuse of the data, facts, and information found in publicly available

359. Compare *National Basketball Association v. Motorola, Inc.*, 931 F. Supp. 1124 (S.D.N.Y. 1996). After a successful lawsuit to prevent Motorola from appropriating basketball game scores for dissemination via Motorola's pager device, the NBA next sued America Online for appropriating the same information. These cases have clear first amendment implications for publishers of hot news. See, for example, Editorial, *The N.B.A. Foils Free Speech*, N.Y. Times A26 (Oct. 22, 1996).

360. *Feist*, 499 U.S. at 354. The classic case of such unfair competition is the *INS* case discussed in notes 411-14 and accompanying text.

361. Indeed, had Kansas adopted a database protection law modeled on the E.C. Directive on Databases after the Supreme Court's decision in *Feist*, and had Rural sued Feist for appropriations from its listings under this law, the Supreme Court might well have struck it down for interfering with the copyright policy of promoting public access to knowledge. See, for example, *Bonito Boats*, 489 U.S. at 141 (1989) (pre-empting state unfair competition law prohibiting plug mold method of duplicating boat parts because it interfered with federal patent policy). See also Samuelson, 42 Am. J. Comparative L. at 398-99 (cited in note 49) (making a similar argument).

362. Focusing a law solely on the protection of investment may inadvertently encourage either inflated estimates of the value of such investments or socially wasteful expenditures, such as investments made principally for the purpose of extending intellectual property rights. Any *sui generis* intellectual property right that would protect the contents of databases should be geared to market forces and actual business strategies. See notes 430-50 and accompanying text.

363. See notes 410-50 and accompanying text (discussing unfair competition and modified liability approaches).

compilations. Current database protection proposals will almost certainly affect the work of educators,³⁶⁴ researchers outside the field of science,³⁶⁵ public interest organizations,³⁶⁶ and even governments.³⁶⁷ While it would be fruitful to explore the consequences of current database proposals for these other groups, the consequences they face are similar enough in kind and scope to be inferable from the earlier discussion of the implications of database protection for science and for value-adding providers. By the same token, even the most ardent American supporters of database protection admit that these proposals have first amendment implications that one cannot lightly dismiss, particularly when the facts in a compilation cannot be independently collected by someone willing to recompile them.³⁶⁸

These and other implications have largely escaped notice in the rush to adopt trade-driven intellectual property rights in the post-TRIPS environment.³⁶⁹ The one-dimensional focus of current proposals on the effects of an unauthorized appropriation on actual or potential markets for database contents further obfuscates such analysis

364. The European Union recognized this to some degree and would permit extraction, although apparently not reuse, of substantial parts of databases "for the purposes of illustration for teaching . . . as long as the source is indicated and to the extent justified by the non-commercial purpose to be achieved." E.C. Directive on Databases, art. 9(b), 1996 O.J. (L 77) at 26 (cited in note 7).

365. The E.C. Directive on Databases extends the privilege to teachers and scientific researchers, but not to other researchers. Yet many other research workers, including historians, may also need to extract and reuse the contents of databases to carry out their work. The threat of litigation under poorly conceived database laws could chill some of these research activities.

366. Certain public interest organizations analyze data published by corporations or by other public interest organizations in the course of making policy recommendations or challenging industry practices. Public interest organizations have also been known to feud about unauthorized extractions and reuses of another's data or information. See, for example, *National Rifle Association of America v. Handgun Control Federation of Ohio*, 15 F.3d 559, 559 (6th Cir. 1994) (finding against infringement on fair use grounds); *Consumers Union of the U.S., Inc. v. New Regina Corp.*, 664 F. Supp. 753 (S.D.N.Y. 1987) (challenging extraction of Consumer Union recommendation and reuse in advertisement as a copyright infringement).

367. The E.C. Directive on Databases, art. 9(c), 1996 O.J. (L 77) at 26 (cited in note 7) authorizes member states to adopt an exception to extract and reuse data "for purposes of public security or an administrative or judicial procedure." This suggests that, unless they adopt such a limitation on database owner rights, governments may be constrained in acquiring data or information from the private sector when a plausible argument can be made that the extraction of this data would harm actual or potential markets for the data.

368. See, for example, IIA Report at 29 (cited in note 67). See also Ginsburg, 92 Colum. L. Rev. at 384-87 (cited in note 44) (discussing generally the first amendment ramifications of patent or copyright protection for compiled information). IIA likes to think that these concerns are generally satisfied by the ability of second comers to compile the same data independently and by the general notion that the incentives built into a database law would advance first amendment interests by inducing more compilations of data. IIA Report at 29 (cited in note 67).

369. See notes 270-81 and accompanying text.

and favors database owners' interests far beyond the kind of measures needed to overcome market failure. Once one seriously begins to contemplate the potential ramifications of current proposals for competition in sectors other than those pertaining to databases as such, one also perceives the extent to which database protection schemes could gradually undermine the integrity of the worldwide intellectual property system. Some of these less obvious consequences are briefly explored in the remainder of this section.

The pending U.S. legislation broadly defines "database" as "a collection, assembly or compilation of works, data, information or other materials arranged in a systematic or methodical way."³⁷⁰ Like the E.C. Directive, the U.S. legislation excludes computer programs from the scope of protection.³⁷¹ Yet, it makes explicit what may be implicit in the E.C. Directive: that insofar as computer programs incorporate any identifiable database components, the database law would independently protect those components.³⁷²

This qualification may provide those who have long favored overly strong legal protection of computer programs with an opportunity to relitigate many issues that courts, especially the U.S. federal appellate courts, had resolved against them in the copyright milieu. This observation follows because it is fair to characterize many of the most commercially valuable components of computer programs as "industrial compilations of applied know-how."³⁷³ Program interfaces, for example, can usefully be characterized this way.³⁷⁴

The protracted debate about the proper level of protection for interfaces has generally focused on the question of whether copyright law does, or should, cover the compilation of information that constitutes the internal interface of a computer program.³⁷⁵ The issue has

370. H.R. Rep. No. 3531 § 2 (cited in note 7); U.S. Proposal to WIPO at art. 2.1 (cited in note 206). See also E.C. Directive on Databases, art. 1(2), 1996 O.J. (L 77) at 24 (cited in note 7); WIPO Draft Database Treaty at art. 2(1) (cited in note 7).

371. H.R. Rep. No. 3531, § 3(d) (cited in note 7).

372. *Id.* Compare E.C. Directive on Databases, art. 1(3), 1996 O.J. (L 77) at 24 (cited in note 7); U.S. Proposal to WIPO, art. 1(4) (cited in note 206); WIPO Draft Database Treaty, art. 1(4) (cited in note 7).

373. Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2326 (cited in note 11).

374. *Id.* at 2401-44.

375. Compare William T. Lake, John H. Harwood II, and Thomas P. Olson, *Tampering with Fundamentals: A Critique of Proposed Changes in E.C. Software Protection*, 6 Comp. Law. 1 (Dec. 1989) (arguing for copyright protection of interfaces) and Arthur Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?*, 106 Harv. L. Rev. 977, 1013-34 (1993) (arguing in favor of copyright protection for interfaces) with McManis, 8 High Tech. L. J. at 25 (cited in note 207); Cohen, 68 S. Cal. L. Rev. at 1104-35 (cited in note 207) (arguing against copyright protection for interfaces).

considerable competitive significance because reuse of this information is necessary in order for a second programmer to develop a program that can successfully interoperate with another firm's program.³⁷⁶ While some software developers license interface information from the developer of the first program,³⁷⁷ other firms appropriate such information without a license when developing interoperable programs of their own, and the federal appellate courts have generally upheld the legitimacy of this practice under copyright law.³⁷⁸ The courts reasoned that interface information was an external factor constraining the design choices of subsequent programmers, and that it lacked sufficient expressive content to qualify for copyright protection.³⁷⁹

If the pending U.S. database legislation passes, the developer of a computer program who wants to control unlicensed appropriations of its interface information might well argue that such information constitutes a database component of the program falling within the purview of that law. On this view, the interface constitutes "a collection . . . of . . . information . . . arranged in a systematic or methodical way."³⁸⁰ As long as the software producer can demonstrate a substantial investment in developing the interface, proprietary rights would arguably arise automatically by operation of law. An unlicensed appropriator of this interface information could hardly argue that he or she had extracted and reused only an insubstantial part of that database component. Moreover, there is nothing in H.R. 3531 that would limit the scope of database rights for components that had become standards in the trade or that otherwise constrained subsequent design choices.³⁸¹ The avowed goal is, after all, to protect investments in compiling data.

376. Cohen, 68 Cal. L. Rev. at 1104-35 (cited in note 207).

377. See, for example, Samuelson, Davis, Kapur, and Reichman, 94 Colum. L. Rev. at 2403 (cited in note 11).

378. See, for example, *Computer Associates Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 715 (2d Cir. 1992) (holding that the intermediate copying of computer program code to gain understanding of factual elements was fair use); *Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 1523 (9th Cir. 1992) (holding that the use of certain elements of computer program necessary to achieve compatibility was not copyright infringement).

379. See, for example, *Altai*, 982 F.2d at 693.

380. H.R. Rep. No. 3531 § 2 (cited in note 7) (definition of "database").

381. Litigation over interface information under the database law is less likely to occur in the European Union because the European Directive on the Legal Protection of Computer Programs, Council Directive 91/250, arts. 1, 6, 1991 O.J. (L 122) 42, explicitly permits reuse of information necessary to achieve interoperability. See also McManis, 8 High Tech. L. J. at 49-50 (cited in note 207). Nevertheless, some may press the issue because rights under the E.C.

Many other aspects of user interfaces can also be characterized as independently protectable database components. For example, for the purposes of copyright law, the First Circuit Court of Appeals may have decided that the command hierarchy of Lotus 1-2-3 was an unprotectable method of directing a computer to perform spreadsheet functions.³⁸² This ruling would not, however, preclude Lotus or other developers of user interfaces from claiming that command hierarchies are also separately identifiable database components of computer programs. A command hierarchy is, after all, "a collection . . . of . . . information . . . arranged in a systematic or methodical way."³⁸³ From this perspective, the extraction and reuse of a command hierarchy readily becomes an illicit appropriation of a substantial part of a protected database, rather than a legal act of reverse engineering.

Those who invest in developing both computer programs and databases arguably do need a new form of intellectual property protection that would protect the industrial compilations of applied know-how embodied in these products against market-destructive appropriations that existing legal regimes are ill-suited to remedy.³⁸⁴ It would be imprudent, however, to apply current database protection schemes to aspects of computer programs that copyright law cannot protect.³⁸⁵ If anything, the database protection schemes would overprotect software developers as much as they would overprotect database developers, with the same baleful consequences for competition in the market for follow-on products and services. In both the software and database markets, second comers inevitably borrow from and build upon previously available information. To require every software developer or every value-adding information provider to develop every product from scratch would lessen the growth rate of both industries and burden consumers with unwarranted social costs.

If, moreover, interface specifications and command hierarchies were actually considered database components of computer programs, these precedents could justify applying the database law to other

Directive on Databases are meant to be cumulative. See E.C. Directive on Databases, art. 13, 1996 O.J. (L 77) at 27 (cited in note 7).

382. *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 49 F.3d 807 (1st Cir. 1995), aff'd, 116 S. Ct. 804, 133 L. Ed. 2d 610 (1996); *Mitek Holdings, Inc. v. ARCE Engineering Co., Inc.*, 89 F.3d 1548 (11th Cir. 1996) (following the First Circuit's holding in *Lotus*).

383. H.R. Rep. No. 3531 § 2 (cited in note 7).

384. See, for example, Reichman, 94 Colum. L. Rev. at 2434-448 (cited in note 2); Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2314-315 (cited in note 11).

385. In principle, it conflicts with H.R. Rep. No. 3531 § 3(d) (cited in note 7), which otherwise purports to exclude computer programs from the scope of the database law.

products that existing legal regimes decline to protect. It might, for example, portend the concurrent application of the database legislation to other classes of copyrightable works, such as the facts and theories set out in historical works.³⁸⁶ If a subsequent historian extracts and reuses these component parts in a later work, he or she might incur liability under the database law notwithstanding the immunity that copyright law currently affords.³⁸⁷ While the reuse of facts and theories has long been thought to promote the principal purpose of copyright laws—to advance knowledge³⁸⁸—the purpose of a database law is to protect investments.³⁸⁹ One wonders which should prevail when the two purposes conflict and the pending database legislation does not envision the possibility of such a conflict.³⁹⁰

Conceivably, unpatented machines and genetically engineered life forms could also fall within the broad definition of database in that they are “assembl[ies] . . . of . . . materials arranged in a methodical or systematic way.”³⁹¹ Even if this language were tightened to exclude machines, that would not prevent application of the database law to biogenetically engineered products because they are legitimately characterized as functionally determined compilations of genetic information.³⁹² So long as investments in the development process were quantitatively or qualitatively substantial,³⁹³ the database law could arguably apply to such products and render the unauthorized use or reuse of the whole or substantial parts of the pertinent information illegal for a twenty-five year period.³⁹⁴ Extending database protection to software components could even provide

386. See, for example, Jane C. Ginsburg, *Sabotaging and Reconstructing History: A Comment on the Scope of Copyright Protection in Works of History After Hoehling v. Universal City Studios*, 29 J. Copyright Soc’y 647 (1982) (discussing precedents that reject copyright protection for research, but asserting that “historical theories and narrations satisfy the threshold copyright requirement[s]”).

387. See *Feist*, 499 U.S. at 345-46.

388. See, for example, *id.* at 349. See also *Hoehling v. Universal City Studios*, 618 F.2d 972, 980 (2d Cir. 1980) (stating that historical works “may make significant use of prior work”).

389. See note 102 and accompanying text.

390. For the view that both the First Amendment and Enabling Clause of the U.S. Constitution would and should limit the applicability of a database protection act, see notes 54-55, 227 and accompanying text.

391. H.R. Rep. No. 3531 § 2 (cited in note 7).

392. See, for example, Reichman, 94 Colum. L. Rev. at 2465-72 (cited in note 2).

393. See note 225 and accompanying text.

394. The Bonito Boats Company might, for instance, find such a law a useful weapon with which to attack Thunder Craft’s continued use of plug-molds to make competing boat hulls, since the federal character of the database legislation would ensure the law would not be preempted. *Bonito Boats*, 489 U.S. at 168 (striking down a Florida law prohibiting the use of plug molds to make competing boat parts because of a conflict with federal objectives).

precedents enabling the database law to become a functional equivalent of the industrial design law that Congress never got around to passing.³⁹⁵

Although this parade of horrors is consistent with the generic goal of "protecting incentives to invest," it conflicts with a long line of Supreme Court decisions that defend a second comer's right to exploit publicly accessible unpatented innovations. As the Court's *Bonito Boats* decision recently explained,³⁹⁶ making it easy to get a lengthy period of exclusive rights in products not qualifying for patent protection would upset the balance between competition and innovation that Congress struck when devising the patent system.³⁹⁷ "The attractiveness [of the patent] bargain, and its effectiveness in inducing creative effort and disclosure of the results of that effort, depend almost entirely on a backdrop of free competition in the exploitation of unpatented designs and innovations."³⁹⁸ An expansive interpretation of the database law in the manner outlined above would thus undermine the integrity of the classical intellectual property system and contradict core principles that induce courts to treat unpatentable, non-copyrightable applications of know-how to publicly distributed industrial products as public domain matter.³⁹⁹

One may concede that protecting the database industry from market-destructive appropriations constitutes a socially desirable goal. It is equally important, however, to achieve that goal in a manner that preserves the balancing principles inherent in existing intellectual property regimes, which promote both competition and investments in new products and services.

395. See, for example, *id.* at 167 (noting that Congress has not passed an industrial design protection law despite repeated proposals for one); J.H. Reichman, *Design Protection in Domestic and Foreign Copyright Law From the Berne Revision of 1948 to the Copyright Act of 1976*, 1983 Duke L. J. 1143, 1145-70 (discussing the American industrial design proposals).

396. *Bonito Boats*, 489 U.S. at 177.

397. *Id.*

398. *Id.*

399. Some might argue that allowing the database law to apply to unpatented machines and the like would not undermine incentives to use the patent system because many would use that system to protect against independent invention of the same thing. See 35 U.S.C. § 171 (1994 ed.) (patents confer exclusive rights to make, use, and sell the invention). Like copyright and trade secrecy law, the database law would protect only against appropriations from the protected information product. See notes 246-47 and accompanying text. As the *Bonito Boats* opinion makes clear, however, this underestimates the negative economic purpose of the federal patent law, which opens sub-patentable innovation to competition.

V. RECALCULATING THE BALANCE OF PRIVATE AND PUBLIC INTERESTS

The core idea underlying current *sui generis* proposals to protect database contents is sound, even if the mechanisms proposed to address the problem are flawed. Firms that make the contents of databases accessible to the public often become vulnerable to market-destructive appropriations that existing laws do not adequately remedy.⁴⁰⁰ Trade secret laws cannot protect database developers who make the contents of their databases accessible to the public.⁴⁰¹ Copyright laws do not protect disparate facts, data, or information as such, even when assembled in large quantities. Nor do they protect unoriginal and functionally constrained selections and arrangements.⁴⁰² Patents are seldom available for database contents on subject matter grounds and also, because of the largely incremental character of database development, database contents would typically fail the requirement of nonobviousness.⁴⁰³ Even contract law has significant limitations when mass-marketed information products are sold to persons not in privity with the makers.⁴⁰⁴

While the need for some legal regime to avert market failure seems relatively clear, current database proposals seek to cure the database developers' appropriability problem in ways that distort or disrupt the innovation and competition policies underlying existing intellectual property regimes. By focusing too much on private benefits and not enough on social costs, these proposals would substitute a chronic state of overprotection for a potential state of underprotection. They do not provide adequate mechanisms for balancing public and private interests; they do not favor minimum incentives (consistent with the public-good nature of data) to provide the needed investment and services; and they largely ignore the over-arching public interest

400. Reichman, 94 Colum. L. Rev. at 2443-44, 2480-88, 2490-98 (cited in note 2). See also Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2342-64 (cited in note 11) (discussing same vulnerabilities of software).

401. See notes 38-44 and accompanying text. See also Reichman, 94 Colum. L. Rev. at 2512-18 (cited in note 2).

402. See notes 50-57 and accompanying text.

403. See notes 88-92 and accompanying text; Reichman, 94 Colum. L. Rev. at 2451-52, 2512 (cited in note 2).

404. See notes 86-94 and accompanying text; Reichman, 25 Int'l Rev. Indus. Prop. & Copyright L. at 450 (cited in note 44) (discussing limits of two-party deal in period between invention of printing press and invention of digital media conveyed by telecommunications networks).

in the free flow of information as a factor in the progress of "science and the useful arts."⁴⁰⁵

A plan of action is needed to resolve the database maker's appropriability problem in a manner that yields net social benefits over time without irreparably damaging basic science and other important user community interests. As an interim measure, policymakers should recognize the shortcomings of existing *sui generis* proposals, hold off on national and international initiatives modeled on them, and begin work on a more balanced approach to the legal protection of database contents.⁴⁰⁶

In the rest of this Article, we examine two ways of achieving this goal. One approach draws upon principles of unfair competition law to determine when users impermissibly free-ride on the contents of noncopyrightable databases. While we ordinarily dislike an unfair competition approach because of its inherent unpredictability, we nonetheless view judicial application of unfair competition principles on a case-by-case basis as a means of providing interim relief at an acceptable social cost. This approach would cause far less harm to competition in follow-on markets, as well as to science, education, and other socially important pursuits, than will the exclusive rights regimes embodied in current proposals. Given the monopolistic character of so many database markets, moreover, the very uncertainty it engenders concerning the scope of a database owner's rights might favor negotiated terms that approximate those of a more competitive market.

A second, and in our view preferable, approach entails constructing a new legal regime for databases premised on liability principles more refined than those set out in the first draft of the E.C. Directive. That draft protected investors against "unfair extractions" and required sole-source providers and government agencies to license extractions and reuses of their database contents on fair and nondiscriminatory terms.⁴⁰⁷ The goal of refining these principles is to ensure that database compilers can recoup the costs of producing and main-

405. See notes 18, 314-315 and accompanying text; von Simson, 20 Brooklyn J. Intl. L. at 758-59 (cited in note 79) (arguing that the market for electronic information will grow more quickly and be more competitive "if the underlying data is free to subsequent compilers"). Compare Reichman, 94 Colum. L. Rev. at 2450-55, 2497-98 (cited in note 2) (indicating the need for balanced protection of know-how in general); Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2366-68 (cited in note 11) (stating the need for balanced protection of know-how embodied in computer programs).

406. See, for example, *Bits of Power* at Executive Summary (cited in note 32); Academy Presidents' Letter at 102 (cited in note 284).

407. See notes 126-30, 133 and accompanying text.

taining their databases without impeding the development of follow-on products and services and without harming science and education. Such a regime could overcome the investor's fear of market failure without suffocating either science or competition, and it could even help to break down the barriers to entry that currently inhibit competition on most market segments.

Regardless of which approach is taken, the scientific and educational communities, which have a critical stake in the outcome, must actively participate in the process of formulating a workable database protection scheme. Policymakers responsible for formulating the current proposals have neglected to consult with these groups.⁴⁰⁸ Yet, science and education are not just major consumers of databases and other information products, but integral components of the social and economic fabric upon which high levels of innovation and technological progress ultimately depend. Under the United States Constitution, indeed, the very purpose of intellectual property law is "to promote the progress of Science and [the] useful Arts," a stricture with which any viable database protection regime—like the patent and copyright laws themselves—must ultimately comply.⁴⁰⁹

A. *The Unfair Competition Approach*

Both foreign and domestic courts have invoked unfair competition law to protect gatherers of information against free-riding appropriations that produce market-destructive effects.⁴¹⁰ The classic American case in this tradition is *International News Service, Inc. v. Associated Press* ("INS").⁴¹¹

In this case, the Associated Press ("AP") successfully challenged the practice of International News Service ("INS") agents who bought early editions of newspapers affiliated with AP and read the war news these papers contained via telephones to INS agents in California. The latter then published this news in competition with AP-affiliated newspapers.⁴¹² Although there was no established cause

408. See Academy Presidents' Letter at 1-2 (cited in note 284).

409. U.S. Const., Art. I, § 8, cl. 8.

410. See note 102 and accompanying text. See also Jean-Marc Mousseron, *La protection du savoir-faire*, in M. Goudreau, et al., eds., *Exporting Our Technology: International Protection and Transfers of Industrial Innovations* 259, 270-73 (1995) (explaining and approving spread of "parasitic copying" as new common law cause of action in European unfair competition laws)

411. 248 U.S. 215 (1918).

412. *Id.* at 231. The AP did not, and could not, claim copyright infringement because INS had mainly appropriated news that, as history of the day, was outside the scope of protection

of action to deal with such practices,⁴¹³ the Supreme Court invoked unfair competition principles to enjoin INS from appropriating AP's news until it had lost its value as fresh news.⁴¹⁴ The Court perceived that AP could not recoup its substantial investment in news gathering and distribution if other firms instantly appropriated that news without compensation or permission and sold it in competition with AP and its affiliated papers. A grant of injunctive relief thus forestalled a market-failure resulting from the inability of the compiler to appropriate the fruits of its own investment.

Despite widespread skepticism about extending this "misappropriation" doctrine too far afield,⁴¹⁵ many American commentators regard *INS* as presenting a persuasive case for a legal remedy in appropriate circumstances.⁴¹⁶ Especially helpful is the analysis of Professor Wendy Gordon, who thinks *INS* satisfied the criteria courts should use to decide whether the facts in any given case justify

available to written works under copyright law. *Id.* at 235. A second, and more serious, problem with a copyright claim in the case was that neither AP nor its affiliated newspapers had complied with the formalities necessary to qualify for copyright protection at the time the case arose. *Id.* at 234. Hence, even when INS papers had published the AP stories word for word, no copyright claim could be asserted.

413. Justice Brandeis, in dissent, analyzed at length the limitations of existing legal categories as applied to the facts of the *INS* case, and found that any legal remedy to plug this gap should come from Congress, not the courts. *Id.* at 250-61. "The rule for which the plaintiff contends would effect an important extension of property rights and a corresponding curtailment of the free use of knowledge and information." *Id.* at 264. Justice Brandeis recognized that Congress might decide "it was impossible to put an end to the obvious injustice involved in such appropriation of news, without opening the door to other evils, greater than that sought to be remedied." *Id.* at 265. Or Congress might decide that INS should pay AP for appropriation of its news instead of being enjoined from the appropriation. *Id.* at 266.

In a concurring opinion, Justice Holmes thought that the only legally remediable wrong in the case arose from the implied misrepresentation that the news derived from INS when in fact it had been gathered by AP. He would have enjoined INS from appropriating the news unless it gave proper attribution to AP as the source. *Id.* at 247-49. Justice Pitney, writing for the majority, agreed that there was an implied misrepresentation in the case, but did not regard this as the essence of the wrong in the case. Nor did he think attribution was a sufficient remedy for this wrong. *Id.* at 243.

414. *Id.* at 246. The trial court had declined to enjoin INS's appropriation of AP news from early publications on the ground that the case involved an issue of first impression that should await resolution on appeal. The Court of Appeals ordered the issuance of an injunction to stop INS personnel from "any bodily taking of the words or substance of complainant's news until its commercial value as news had passed away." *Id.* at 233.

415. See, for example, Restatement (Third) of Unfair Competition §§ 38 (cited in note 38); Ralph S. Brown, *Design Protection: An Overview*, 34 *UCLA L. Rev.* 1341 (1987); Raskind, 75 *Minn. L. Rev.* at 881-82 (cited in note 44).

416. See, for example, Gordon, 78 *Va. L. Rev.* at 266-73 (cited in note 44); L. Ray Patterson, *Copyright Overextended: A Preliminary Inquiry Into the Need for a Federal Statute of Unfair Competition*, 17 *U. Dayton L. Rev.* 385 (1992). See also C. Owen Paepke, *An Economic Interpretation of the Misappropriation Doctrine: Common Law Protection for Investments in Innovation*, 2 *High Tech. L. J.* 55 (1987); Andrew Terry, *Unfair Competition and the Misappropriation of a Competitor's Trade Values*, 51 *Modern L. Rev.* 296 (1988).

some legal protection of the producer's investment in information goods. She argues that courts should defend the incentive to invest when: (1) the costs of developing an information product are high; (2) the costs of copying are low; (3) copying yields a substantially identical product; (4) which a copyist can price cheaply, not having substantial research and development costs to recoup; and (5) when consumers, believing the two products are substantially identical, decide to purchase the cheaper one, thereby inducing market failure because the first comer is unable to recoup its expenses; and when (6) such a market failure could have been averted by a period of protection that would allow the first comer to recoup its expenses and justify its investment in developing the information product.⁴¹⁷

Despite its inherent lack of clear boundaries, Professor Gordon and others want to refine this doctrine of "misappropriation" so that courts can use it more predictably to protect investors against the kinds of market-destructive appropriations to which today's most commercially valuable information products are susceptible.⁴¹⁸ Like other torts sounding in unfair competition law, including trademark infringement, this approach to judging the fairness of extractions and reuses of database contents would inevitably depend on a multiplicity of factors. The uncertainty inherent in these variables is, however, properly bounded by an appropriate conception of the minimalist, market-preserving goal of the exercise. From this perspective, database makers need a market-preserving period of lead time during which unfair competition law may protect them against "cloning" or "partial cloning," that is, against the wholesale reproduction of all or a substantial component of database contents.⁴¹⁹

Under this framework, INS would remain liable for appropriating AP's news because it produced a partial clone of the AP product—a substantially identical subcompilation of a substantial portion of AP's data—which it sold in direct and nearly simultaneous competition with AP-affiliated products. Moreover, INS engaged in no inde-

417. See Gordon, 17 U. Dayton L. Rev. at 863-65 (cited in note 416). As Professor Reichman has elsewhere pointed out, the grant of a proprietary right to overcome market failure need not be accomplished through the grant of exclusive property rights. A right to compensation may cure the market failure just as well or better. See Reichman, 94 Colum. L. Rev. at 2548 (cited in note 2).

418. See, for example, Gordon, 78 Va. L. Rev. at 221-24 (cited in note 44).

419. For an elaboration of a similar approach to the legal protection of computer programs as industrial compilations of applied know-how, see Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2399-401 (cited in note 11).

pendent development efforts of its own, and took the AP news when its commercial value was at its peak.⁴²⁰

Even if AP had no affiliated news distributors in the territories serviced by INS newspapers, so that INS could be said to operate in an adjacent rather than a directly competing market, it should not relieve INS of liability on the particular facts of this case. Because INS's product was a partial clone of the AP product that reflected no independent creation, it would substantially interfere with AP's ability to extend into the adjacent market through a licensing arrangement with an existing or newly created independent newspaper. In this sense, the appropriation retained its market-destroying potential, without any redeeming contribution to transform free-riding into fair following.

The unfair competition criteria set out above thus suggest that the Supreme Court properly blocked INS from appropriating AP's news until it had less commercial value as fresh news. AP obtained the relief it needed from the Supreme Court: enough artificial lead-time to enable it to recoup its investment.⁴²¹ AP would not, however, need fifteen, let alone twenty-five, years of exclusive rights to control extraction and reuse of this information as an incentive to compile and publish news about World War I.⁴²² Indeed, AP actually compiled such news without any legal incentives at all.

To a similar end, courts invoking unfair competition law in cases concerning the contents of noncopyrightable databases could use market-oriented criteria for determining when a second comer had engaged in an "unfair extraction." Useful factors to consider are: (1)

420. See notes 415-17 and accompanying text.

421. See Reichman, 94 Colum. L. Rev. at 2539-544 (cited in note 2) ("The Fair Followers Menu of Pro-Competitive Legal Options"); Reichman, *From Free Riders to Fair Followers* (cited in note 94) (outlining strategy for the acquisition of technical knowledge that would convert developing countries under TRIPS Agreement from free riders to fair followers).

422. See, for example, Litman, 17 U. Dayton L. Rev. at 613-14 (cited in note 71) (skeptically viewing claims that database producers need additional legal protection for data, and stressing that facts have long been regarded as basic building blocks of knowledge); Reichman, 94 Colum. L. Rev. at 2496 (cited in note 2) (criticizing the Database Directive for failing to "create analogues to the many exceptions and limitations that otherwise safeguard the public interest under copyright laws"). But see Ginsburg, 29 J. Copyright Soc'y at 647 (cited in note 386) (arguing that copyright protection should be available for detailed research).

Protecting data, facts, and information too long gives rise to socially harmful temptations that publishers may find hard to resist. For example, under the broadly drawn subject matter clause of the U.S. database protection bill, see notes 386-89, an historian might be barred from writing a history of the war depicted in the AP stories, or about AP's coverage of the war, if preparing this work required an extraction or reuse of what AP would regard as a qualitatively substantial part of the data or information it had compiled. Furthermore, a scientist who wanted to verify the accuracy of another scientist's data could be barred from doing so for fifteen, or twenty-five years under the current initiatives.

the quantum of data appropriated by the user; (2) the nature of the data appropriated; (3) the purpose for which the user appropriated them; (4) the degree of investment initially required to bring that data into being; (5) the degree of dependence or independence of the user's own development effort and the substantiality of the user's own investments in these efforts; (6) the degree of similarity between the contents of the database and a product developed by the user (even if only privately consumed); (7) the proximity or remoteness of the markets in which the database owner and the user are operating; and (8) how quickly the user was able to come into the market with his or her product as compared with the time required to develop the original database.⁴²³

By the same token, these criteria would dissuade courts from holding an historian who studies the manner in which AP covered the war liable for appropriating AP's news.⁴²⁴ The historian would not produce a partial clone of AP's product, but rather a new information good representing a substantial additional investment of time and energy. Her product would appear after the war news had lost its

423. A resort to these factors would reveal the ways in which database suppliers are sometimes less vulnerable to free-riding injury than appears from superficial claims for relief. See notes 85-94 and accompanying text. For example, a second comer who downloaded a substantial portion of the contents of a previously updated database would not always be able to compete effectively with the firm that initially developed the database because much of the value in the database would likely reside in its currency. The second comer might not attract any significant quantum of customers of the database from which it made the appropriation if these customers placed a high value on obtaining constant updates, which the free-riding appropriator might not provide. "Stealing" last month's news may not, in fact, be market-destructive, if the market is focused on the sale of today's news and all the "thief" has is what the news gatherer published last month. By the same token, there may be good economic reasons why the second comer should compensate the original compiler for such uses even if they are not market-destroying. While these considerations exceed the blunt capabilities of the unfair competition approach, they fit neatly into the modified liability approach discussed below. See notes 430-50 and accompanying text.

424. It requires only a small twist on the facts of these examples to illustrate the disturbing potential for private censorship inherent in all the database protection proposals. If, for example, AP suspected that the historian would be critical of its coverage of the war (or if a scientist wanted to verify her chief rival's results), the data compiler might be tempted to use the data protection law to block extraction and reuse of data needed to prepare these works. See note 387. In this connection, Feist exemplifies the situation in which a database maker had a financial reason not to license white-page listings to the defendant. Feist Publishing Company's control over white-page listings gave Rural a monopoly on yellow-page listings as well. See *Feist Publishing Co.*, 499 U.S. at 342-43. See also *National Rifle Ass'n v. Handgun Control Federation*, 15 F.3d 559 (6th Cir. 1994) (NRA lost action against HCF for copyright infringement arising from the latter's use of a three page list of Ohio legislators from NRA newsletter; appropriation held fair use); L. Ray Patterson, *Copyright in Historical Perspective* ch. 6 (Vanderbilt U., 1968) (providing historical examples of publishers using copyright as a form of private censorship).

commercial value as hot news. It would also be distributed in a market segment remote from that in which AP operated so that no social benefit would accrue from blocking publication of her product, even if it appeared shortly after the AP stories from which she extracted her information. Allowing the historian to publish this book would also foster first amendment values and fulfill the goal of the constitutional Enabling Clause, which favors free exchanges of information that are not market-destructive.

The unfair competition approach is also consistent with the Supreme Court's narrow ruling in *Feist*. In that decision, indeed, the Court recognized that free-riding appropriations of data may sometimes warrant liability on unfair competition grounds. The Court, however, expressly did not perceive *Feist* to be such a case.⁴²⁵ On the contrary, had the state of Kansas adopted an exclusive-rights regime to protect databases after the Supreme Court's decision, and had Rural sued Feist for new appropriations from its white-page listings under that law, the Supreme Court would probably have struck the state law down for interfering with the federal copyright policy of promoting public access to knowledge.⁴²⁶

Feist recognized that the public's right to appropriate data and information from copyrighted works implemented an important constitutional principle.⁴²⁷ Under the Commerce Clause of the Constitution, one might nonetheless reconcile this principle with a minimalist approach to regulating data appropriations that sounded in unfair competition law. In contrast, an exclusive intellectual property right in data that interfered with the underlying purposes of both copyright law and the First Amendment appears to violate the Constitution on its face.⁴²⁸ This tension with the purpose and subject matter limitations of the constitutional Enabling Clause is then magnified by the prospects for perpetual protection of databases

425. *Feist Publishing Co.*, 499 U.S. at 354.

426. See, for example, *Bonito Boats*, 489 U.S. at 156. See also Samuelson, 42 Am. J. Comp. L. at 399 (cited in note 49) (making a similar argument to that set forth in the text).

In contrast, a more refined market-oriented approach to database protection than unfair competition law could reach more interesting results. For example, had Feist (without attempting to buy a license) simply made a digital version of Rural's listings by scanning Rural's print directory or downloading the listings from a CD-ROM of the directory (without verifying the listings, or adding any new information, or making his own new selection of data from Rural's compilation), and had Feist thereafter produced a clone or partial clone of Rural's directory, Rural might invoke a properly crafted database protection law built on modified liability principles to slow down Feist's entry into the market and to require Feist to pay Rural for the eventually permissible use of its listings. See text accompanying notes 430-50.

427. See *Feist Publishing Co.*, 499 U.S. at 349.

428. See notes 20-21, 55 and accompanying text.

under all the current protection schemes, which violate the "limited times" provision of that same clause.⁴²⁹

B. A Modified Liability Approach

An alternative approach that would protect the contents of databases on modified liability principles draws upon studies that perceive an affinity between the needs of the database industry and those of other producers of commercially important information products. The common denominator facing all these industries is that the fruits of their investment usually consist of aggregates of valuable information that are embodied on or near the face of products sold in the open market.⁴³⁰ Because trade secret law does not normally cover such products, third parties who rapidly duplicate the embodied information they contain deprive innovators of the lead time needed to recoup their investments, without contributing, directly or indirectly, to the overall costs of research and development. Investors in information goods thus may lack any functional equivalent of the lead-time protection that trade secrecy laws historically conferred on compilations of applied know-how in the manufacturing era.⁴³¹

A legal regime devised to fill this gap would emulate the economic functions of the liability principles that underlie classical trade secret law, and would not grant exclusive property rights in data. It would instead provide

those who invest in industrial applications of advanced technical know-how with artificial lead-time to overcome market failure, with a menu of users' fees that sensibly allocates contributions to the costs of research and development among members of the relevant technical community, and with a common set of pro-competitive ground rules that also make it possible for the relevant technical communities to take collective action to enforce and adjust the liability framework eventually adopted.⁴³²

Applying these principles to the domain of data generation and distribution would combine two basic mechanisms for providing a market-preserving form of relief. The first consists of a "blocking period" made available to the database providers from the first com-

429. See note 19 and accompanying text.

430. Reichman, 94 Colum. L. Rev. at 2512-18 (cited in note 2).

431. *Id.* at 2506-11.

432. *Id.* at 2545. See also *id.* at 2505; Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2369-71 (cited in note 11).

mercial distribution of their products or from each relevant substantial update. During this period, no second comer could appropriate the contents of the database as a whole or of any component substantial enough to represent a threat of market failure. The database provider, meanwhile, would freely determine the rates charged for other uses during this same period, subject to public interest limitations favoring science and education that would likely become mandatory in this environment.⁴³³ Further investigation, however, might persuade policymakers not to award an initial blocking period to certain databases of great public interest at all. They might also decide to confine it to those databases that were distributed in markets that are, or would readily become, competitive.

The second mechanism consists of an automatic license built into the modified liability right itself.⁴³⁴ In the database milieu, one can plausibly implement this device in different ways. For example, the European Commission initially proposed putting sole-source database producers under an obligation to license their data to second comers on fair and nondiscriminatory terms.⁴³⁵ This solution included provisions calling for arbitration to resolve disputes in the event that the parties to the nonvoluntary license could not agree on terms.⁴³⁶

433. See notes 466-88 and accompanying text.

434. See Reichman, 94 Colum. L. Rev. at 2539-44, 2548-51 (cited in note 2); Ginsburg, 92 Colum. L. Rev. at 386-87 (cited in note 44) (also suggesting that liability principles might be used to regulate appropriations of data in a manner that avoids unduly disrupting the principle of freedom of information).

435. Under an automatic licensing provision, such as that proposed in early drafts of the E.C. Directive on Databases for entities holding a monopoly franchise from a public body, see note 133, Feist might have been more successful in persuading Rural to license the listings on fair and reasonable terms. Or if the parties could not agree on price or other terms (perhaps in part because Rural wanted to maintain its monopoly on its yellow-page directory), Feist could have sought arbitration to resolve their dispute. An arbitrator might have looked to the terms of the licenses Feist had obtained from other telephone companies for guidance about what price and other terms were appropriate for such a license. The automatic license might have produced a similar outcome on facts like those in the *Magill* case. See note 153.

However, there should not be any prohibition on discriminatory prices as such, because publishers *should* discriminate in favor of scientific and educational bodies. See, for example, National Research Council, *Bits of Power* at ch. 4 (cited in note 32) (discussing price discrimination and product differentiation). The better solution is to require licenses to be made on "fair and reasonable terms and conditions," and to treat discriminatory pricing as unreasonably anti-competitive in some circumstances.

436. The draft Directive's linkage of an automatic license, a duty to negotiate terms, and a resort to arbitration in case the parties fail to agree has parallels in U.S. law. See, for example, Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) § 3, 7 U.S.C. § 136a (1988 ed.) (providing a right of reasonable compensation when a second comer uses a first comer's data concerning the safety of a pesticide). The U.S. Supreme Court upheld the constitutionality of this provision in *Ruckelshaus v. Monsanto Co.*, 467 U.S. 986, 1019-20 (1984). See also *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 578 (1994) (suggesting that courts employ liability rules and withhold injunctive relief in close fair use cases); Eisenberg, 56 U. Chi. L. Rev. at 1077

Alternatively, the automatic license could become universally available at the end of the initial blocking period, in which case it would last for a second period to be determined.⁴³⁷

Policymakers would thus need to choose between reinstating the initial European proposal or instituting a wider-ranging automatic license. In any event, this mechanism would entitle users and second comers to extract or use the data after the initial blocking period for any purpose, including direct competition with the database compiler, in return for payment of reasonable compensation according to a menu of user options vetted by the industry with user and government inputs.⁴³⁸

Because the goal of a modified liability regime is to provide artificial lead time while precluding opportunities for rent-seeking, it is preferable to adopt short rather than long blocking periods in most technological sectors. The database environment presents a more complex set of variables than some other industries, however, because entry costs often appear formidable and the sole-source market structure is deeply ingrained.⁴³⁹ An initial blocking period must, therefore, not be so short as further to discourage existing entrants. At the same time, assuming that the existence of multiple providers is otherwise feasible, both the existing entrant and would-be or potential competitors know that an automatic license will ultimately facilitate direct competition on the same market segment, subject to the second comer's payment of reasonable royalties for the second period. Assessing the optimum length of these periods requires further empirical and theoretical analysis, although they would probably be

n.230 (cited in note 31) (citing examples where relief was denied because infringement furthered the public interest).

437. See, for example, Reichman, 94 Colum. L. Rev. at 2448-49 (cited in note 2).

438. See *id.* at 2536-37, 2539-44, 2548-51 (cited in note 2) (discussing the operation of a menu of user's options and fees); Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2414-18 (cited in note 11).

439. See *Bits of Power* at ch. 4 (cited in note 32); notes 83-94 and accompanying text. The database industry is also atypical because of the interrelations between the entities that fund the collection of data (often governments), users (often scientists, as well as governmental and affiliated users), and firms that apply the data to other industrial uses. This industry is not like the community of innovators and borrowers in, say, the realm of computer programs or industrial designs, where firms are likely to be both innovators and borrowers, which would tend to curb rent-seeking in any collective body's establishment of licenses for appropriating protected material. See Reichman, 94 Colum. L. Rev. at 2548-49 (cited in note 2). But it is also true that, on balance, these respective communities or constituent groups are more interdependent than in other industries, if only because of the overlapping public good aspects that characterize the generation of raw and elaborated data.

shorter than under existing proposals, and there would be no opportunity to perpetuate protection of pre-existing data.

While experience with compulsory licenses that undermine strong exclusive rights regimes, notably patents, elicits mixed reviews,⁴⁴⁰ a built-in automatic license is ideally suited to weak regimes seeking no more than a minimalist, pro-competitive cure for chronically insufficient lead time. Experience demonstrates, moreover, that innovators and borrowers within a given sector will bargain around liability rules, if the law itself clearly establishes a baseline obligation. For example, section 115 of the U.S. Copyright Act of 1976 supplies a compulsory license for the use of musical works on phonorecords after their first recordings.⁴⁴¹ Under this section, the Harry Fox Agency, a private entity that operates as a *de facto* collection society, administers some 200,000 voluntary licenses for the recording of musical works. This contrasts with the twenty or so involuntary licenses invoked under the statute.⁴⁴² Of course, the statutory baseline under section 115 is crystal clear,⁴⁴³ but it should not escape notice that the baseline was itself the product of industry negotiations.⁴⁴⁴

In the realm of data protection schemes, baseline prices may be determined by recourse to at least two known criteria. The first is the cost-recovery principle long used by scientific agencies,⁴⁴⁵ which would focus attention on the reasonableness of any given profit margins put forward within the framework of an apposite collection society. The second criterion focuses attention on the value added to the free rider's product as a measure of liability for any taking permitted by the automatic license. The quantum of equitable compensation would then vary with the substantiality of the borrowed component, with the amount of the borrower's own investment in research and

440. See, for example, Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property Law*, 94 Colum. L. Rev. 2655 (1994).

441. 17 U.S.C. § 115.

442. M. William Krasilovsky and Sidney Shemel, *This Business of Music* 237-38 (Billboard Books, 7th ed. 1995).

443. "When phonorecords of a nondramatic musical work have been distributed to the public in the United States under the authority of the copyright owners, any other person may, by complying with the provisions of this section, obtain a compulsory license to make and distribute phonorecords of the work." 17 U.S.C. § 115(a).

444. A clear statutory imposition of liability for unfair extraction or use, see notes 433-39 and accompanying text, coupled with an automatic license that kicks in after a specified period, should suffice to induce negotiations between the interested parties. Nevertheless, the atypical market structure could skew these negotiations in still unexplored ways, and it makes leveraged public interest exceptions akin to fair use essential, as explained below. See notes 474-88 and accompanying text.

445. See, for example, *Bits of Power* at ch. 4 (cited in note 2); OMB Implementing Memo (cited in note 73) (discussing government information dissemination practices).

development, and with other factors identified above. Italian courts and arbitrators have successfully used this second criterion under the modified liability regime that country enacted in the 1930s to protect novel engineering project designs that are ineligible for copyright protection.⁴⁴⁶ A moment's thought should convince even the most skeptical reader that prices derived from bargaining around either criteria would prove inherently less arbitrary and socially harmful than those devised by sole-source providers who also enjoyed an absolute legal monopoly.

The task, therefore, is to bring the different constituent groups to an ongoing bargaining session within the framework of a collection society set up to implement the baseline rules of the modified liability regime. In the absence of a real market, something like reasonable prices should emerge from within this framework, with due regard for the needs of different categories of users. Over time, moreover, the institution of a minimalist, pro-competitive liability regime may induce more parties to enter the market, either by way of direct competition or by virtue of value-adding uses. In that event, the need to bargain around the baseline rules—or to have a court decide the reasonable royalty that the parties neglected to negotiate—should produce the same kind of voluntary transactions that now occur under section 115 of the copyright law.⁴⁴⁷

Within the ongoing relationship that a collection society makes possible, moreover, the parties can voluntarily agree to a more nuanced schedule of royalties—"a menu of liability options"⁴⁴⁸—than a statute could or should attempt to institute. The statute need only establish the clear baseline rules mentioned above, remove any antitrust barrier that stands in the way of forming a collection society, and carve out a role for government representation in the workings of the society. Within this framework, however, one would expect the rates set under the menu of user options to be proportionately higher for certain uses. For example, the rates for directly competing uses by means of a comparable compilation or subcompilation of data would logically exceed those for add-on uses in

446. See Italian Copyright Law, Law No. 633 of April 22, 1941, as amended through July 29, 1989, art. 99 (*sui generis* right protecting technical drawings and engineering projects under provisions related to copyright law); Mario Fabiani, *Italy*, in Paul Edward Geller, ed., 2 *International Copyright Law and Practice* §§ 2(4)(f)(ii), 3(2)(g), 8(d)(vi) (1995); Reichman, 94 *Colum. L. Rev.* at 2477-78 (cited in note 2).

447. See notes 441-44 and accompanying text.

448. Reichman, 94 *Colum. L. Rev.* at 2429-60 (cited in note 2).

a different market segment, not to mention the need for preferential rates for pure scientific research in an academic laboratory.

The likelihood that these rates will bear a realistic correlation with actual conditions is secured by the obligation of providers, users, and second comers to bargain out their respective needs. This bargaining process necessarily transpires with the knowledge that providers cannot prevent borrowers from using the data after the initial blocking period (because no exclusive right is conferred) and borrowers cannot use the data without contributing a reasonable royalty to the provider's costs of compilation and dissemination based on the intended use. All sides also know that arbitration under the aegis of the industry's collection agency becomes inevitable if they fail to agree, and judicial determination of reasonable royalties remains a last resort.

The framework outlined above also lends itself to the socially important goal of stimulating value-adding uses of protected data without depriving compilers of a fair return on their investment. The basic set of default rules can be refined, indeed, to provide more favorable treatment to second comers who enter the market with value-adding uses of protected compilations than would be available for other competing uses. For example, the scheme can allow such users to enter the market earlier, in derogation of the blocking period that initially restricts direct competitors. Nevertheless, these value-adding users must pay reasonable royalties for their reuse of any borrowed subcompilations of data under the standard, automatic licensing provisions for the full term of protection.

A more detailed discussion of these modified liability principles exceeds the scope of this Article, although we pause to reaffirm our belief that this extended framework has sufficient generality to serve as the basis for a new paradigm of intellectual property law.⁴⁴⁹ For present purposes, we emphasize that a resort to liability rules stimulates competition and avoids the top-down market distortions characteristic of other *sui generis* intellectual property rights because it allows single firms to choose from a menu of inherently pro-competitive options in the light of their own business needs and strategies.⁴⁵⁰

449. See generally Symposium, *Towards a Third Intellectual Property Paradigm*, 94 Colum. L. Rev. 2307-2667 (1994).

450. See, for example, Reichman, 17 *Hastings Comm. & Enter. J.* at 791-94 (cited in note 157) (explaining the workings of a market-oriented liability regime for computer programs); Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2409-12 (cited in note 11) (discussing how a market-oriented legal regime would allow innovators and borrowers to maximize their individual interests). See generally Reichman, 94 Colum. L. Rev. at 2534-39,

This pro-competitive function could grow more important over time, precisely because the database industry itself might find more room for value-adding competitors under a liability regime. In contrast, the adoption of overly strong exclusive property rights could further ossify existing structural rigidities. If the industry did become more competitive, then another advantage of a liability regime is that it leaves investors free to decide when they should defray the costs of borrowing from existing databases and when they should independently generate their own. This could elevate the level of investment in compilations of data as an industrial activity while further fostering the kind of competition that liberates the price structure from the grip of legal or natural monopolists. At the same time, the introduction of market forces into the realm of data collection must be carefully monitored, with a view to ensuring that the special needs of science, education and other socially important uses are not inadvertently trampled under foot.

C. *Putting Science and Education into the Picture*

To date, neither the scientific nor the educational communities have played any part in the relevant deliberations concerning the legal protection of databases. Nor have these communities been consulted on any official basis.⁴⁵¹ Without such inputs from these communities, Congress might enact the proposed *sui generis* database regime, despite the risk that "it would allow a limited group of database creators to control the dissemination of information" and that the "resulting restrictions on the transfer of knowledge would be detrimental to society, as information lies at the core of social advancement."⁴⁵²

The scientific community, in particular, can ill afford to ignore database protection schemes if only because its whole *modus operandi* has been based on the principle of full and unrestricted exchanges of data.⁴⁵³ This principle is indirectly undermined by the pending proposals concerning legal regulation of national and global information

2548-51 (cited in note 2) (advocating the insitution of a market-oriented liability regime as the most efficient for technological communities that develop subpatentable innovations).

451. See Academy Presidents' Letter (cited in note 284); Rosler, 10 High Tech, L. J. at 136-37 (cited in note 96).

452. Rosler, 10 High Tech, L. J. at 136-37 (cited in note 96).

453. See, for example, National Research Council, *Bits of Power* at 1 (cited in note 32). While scientists could, in theory, continue to operate on non-proprietary principles, the ethos of sharing data will in fact come under severe strain. See notes 299-306 and accompanying text.

infrastructures⁴⁵⁴ and directly threatened by the drive to institute *sui generis* intellectual property rights in the contents of electronic and other databases. As regards the latter set of issues, the foregoing analysis suggests that science has two paramount concerns that need to be considered in the course of future legislative deliberations. One is that *sui generis* laws to protect databases should, on the whole, reflect a proper balance between public and private interests, including the public interest in free competition. The other is that such laws should contain measures specifically designed to preserve and promote the scientific enterprise.

1. Reconciling the Needs of Science with a Competitive Market

While, at first glance, the scientific community's stake in a more pro-competitive legal framework might seem marginal under present conditions, this community should look beyond the static dimension of the problem in order to head off the most troubling implications of the current proposals for the legal protection of databases. The advent of new proprietary rights where none previously existed will influence the collection and distribution policies of all data providers, including government-funded providers and other sources that currently follow non-profit pricing policies. As funding sources shrink and foreign governments operating under the E.C. Directive shift to profit-oriented policies, more and more data of interest to science will be covered by proprietary rights and less of it will be made available to science on a cost-recovery basis. The tensions already reflected in the recent OMB Circular and in the Landsat examples, which were discussed above,⁴⁵⁵ will become more generalized, even though different disciplines will experience different degrees of hardship.

These prospects do not necessarily mean that the interests of science and education are best served by the absence of legal protection for the contents of databases. A socially balanced, pro-competitive database protection regime might indirectly help science to contain costs by bringing market forces to bear on some of the pressure points. It would provide a greater stimulus to third-party investors who might compete with sole-source data generators or distributors (when the market segment can feasibly support multiple sources) or who might adapt sole-source data sets to applications of particular

454. See notes 316-19 and accompanying text.

455. See notes 73, 315-32 and accompanying text.

interest to science. While this stimulus might not change the overall market structure or significantly reduce the formation of natural monopolies, it could help to trigger countervailing tendencies and thus, at least in the short term, lead to lower prices and fewer restrictions on access, particularly if novel, value-adding products became of greater importance to science over time.⁴⁵⁶

Conversely, if a socially imbalanced, overly protective database law converts existing impediments into insuperable legal barriers to entry, the adverse effects on science—absent offsetting legal safeguards—would soon manifest themselves. The database owner's absolute monopoly could disincline him or her to allow scientists access to certain files, especially if the owner feared that the uses in question could lead to value-adding products that diminished his or her market power.⁴⁵⁷ Providers and distributors would also be likely to charge higher prices for all uses, to demand payment for certain uses that were previously free, and to resist pressures for price discrimination favoring scientific users.

As matters stand, the electronic publisher's growing capacity to charge for each and every use of online data (or at least for every "hit" that accesses such data), and to track and monitor every user potentially liable for these charges, means that it becomes increasingly capable of serving "as its own collection society, subject to no consent decrees, no membership controls and no external regulation."⁴⁵⁸ In this milieu, even blanket licenses can be priced unrealistically high for large-scale nonprofit users, such as libraries, universities, and research institutions, and the net impact of the licensing fees will further depend on other contractual conditions that accompany the licenses. Even when a blanket license fee is relatively low, for example, if the institution is obliged to purchase many licenses for different researchers or groups of researchers, the total cost may still become prohibitive. The existing tendencies of publishers to approach academic and scientific users one by one, and to impose harsh or oppressive terms,⁴⁵⁹ could only be strengthened by the enactment of

456. See, for example, *Bits of Power* at ch. 4 (cited in note 32).

457. See notes 328-44 and accompanying text. Here one would expect further tensions stemming from the scientific community's own efforts to internalize electronic publication of research results at the expense of both commercial publishers and professional societies. See also Ginsparg, UNESCO Paper (cited in note 62).

458. Reichman, 25 *Int'l Rev. Indus. Prop. & Copyright L.* at 464 (cited in note 44).

459. See OTA Report at 8 (cited in note 66) (discussing problems facing academic institutions under intellectual property systems); Reichman, 25 *Int'l Rev. Indus. Prop. & Copyright L.* at 464 (cited in note 44) (noting that licensing agreements "may consequently require libraries

a new and powerful intellectual property right covering the contents of electronic databases as such.

In this context, the scientific and educational communities—like value-adding users and second comers in general⁴⁶⁰—would arguably fare better either under a simple unfair competition law that prohibited gross copying or under a *sui generis* regime built on more refined liability principles than under the regimes based on exclusive property rights.⁴⁶¹ A liability model would create no legal barriers to entry in its own right, nor need it significantly strengthen the sole-source data provider's market power. On the contrary, a properly crafted liability regime stimulates competition both through lead-time incentives to invest and through an automatic license, which serves to break down existing economic impediments to entry and favors investment in value-adding products that may be more efficient than those of the primary provider.⁴⁶²

A liability regime can also eliminate the "refusal to deal" problem by addressing the serious concerns of those who fear the power of sole-source data providers to restrict access to data on a variety of grounds. When an automatic license is built into a modern liability regime, it tends inherently to solve the problem of abuse without recourse to antitrust law.⁴⁶³ At the same time, the use of appositely formed collection societies would provide a forum in which publishers, academics, and government agencies could negotiate fair and reasonable licenses and resolve potential disputes.⁴⁶⁴ For all these reasons, the European Commission's initial preference for a liability regime, rather than an exclusive property right,⁴⁶⁵ merits careful consideration by the United States scientific community as a possible response

to waive privileges" under new or existing laws, including copyright law, "and to limit users' access to . . . [the protected] matter beyond what their own understanding of the . . . [laws] would require. Aggressive licensing of electronic information tools could thus distort the public service mission of libraries by making them involuntary collection agents for publishers"). Compare *American Geophysical Union v. Texaco, Inc.*, 60 F.3d 913, 931-32 (2d Cir. 1994) (holding that oil company's unauthorized copying of articles from its own library's technical journals for archival use by its own research scientists was not fair use under copyright statute where blanket licensing schemes were available); Patterson and Lindberg, *The Nature of Copyright* at 159, 181-90 (cited in note 114).

460. See notes 328-44 and accompanying text.

461. See notes 292-327 and accompanying text.

462. See Reichman, 94 Colum. L. Rev. at 2548 (cited in note 2).

463. See notes 187-88, 310-11 and accompanying text.

464. See notes 468-79 and accompanying text (applying liability model to database projects). See also Reichman, 94 Colum. L. Rev. at 2533-58 (cited in note 2) (proposing general-purpose innovation law to implement new intellectual property paradigm based on modified liability principles).

465. See notes 123-31 and accompanying text.

to the overall challenge posed by the drive for *sui generis* database laws.

2. Promoting the Public Good

With or without the more pro-competitive conceptual framework of a liability model, a socially balanced database law should preserve and promote the public-good aspects of science and education. This goal requires careful crafting of its technical legal machinery, as well as the inclusion of safeguards that address the specific needs of the scientific and educational communities.

For example, exclusive control over data, like exclusive control over ideas, raises serious concerns, including first amendment issues, that are particularly germane to open scientific inquiry.⁴⁶⁶ While meeting these concerns does not necessarily imply that data should become available without charge or proprietary interests, it does mean that the law itself should define the parameters of an evolving public domain from which investigators can freely extract and use data for certain purposes. The law must also guarantee scientific and educational users access to that domain. To this end, the definition of a protectible database should be narrowed so as to exclude ideas and contents of scientific theories, and database owners should never possess the right to preclude access to otherwise publicly accessible data when sought for purposes of basic scientific research. The terms of access would then depend in part on the size and scope of any free use and fair use zones built into a proper *sui generis* law for the benefit of scientific and educational users.⁴⁶⁷

Publishers will oppose such exceptions because they represent a *de facto* subsidy to educational and scientific users, which in an online environment can no longer be hidden behind the ancillary need to overcome transaction costs.⁴⁶⁸ Nevertheless, the case for maintaining such exceptions seems even stronger in the database milieu than

466. See, for example, Ginsburg, 92 Colum. L. Rev. at 384-87 (cited in note 44) (considering proprietary interests and possible incursions on speech interests in information).

467. The ambivalence of the Final E.C. Directive on this score is explained in part by the fact that no serious fair use provisions had previously been developed in the presence of the compulsory license that the Council of Ministers deleted at the last moment, and in part by the growing disinclination of both the European Union's and the United States' intellectual property authorities to recognize fair use in the digital environment. See notes 144-66 and accompanying text.

468. See Goldstein, *Celestial Jukebox* at 220-22 (cited in note 89); Gordon, 82 Colum. L. Rev. at 1622-27 (cited in note 114).

with respect to other objects of intellectual property protection. As in other cases, publishers require state intervention in the marketplace to enforce the fictitious portable fences on which the protection of intangible literary productions depends. In this case, however, the objects of protection—raw or elaborated data—are functionally determined elements or particles of knowledge that fall well below the “grain size” threshold of existing intellectual property laws.⁴⁶⁹ While database publishers contribute no intellectual achievement for which a reward is justifiable in terms of social costs, they have now staked a claim to subject matter that world intellectual property law had left unprotected as a building block of scientific and technological progress.

In seeking an unprecedented level of state intervention, therefore, it seems only logical that publishers exchange a measure of support for the public-good uses of scientific data for lessened risk aversion and for a measure of artificial lead time in which to recoup their investments and turn a profit. This logic is reinforced by the fact that much, if not most of the data likely to be commercialized under a *sui generis* regime will, at some stage, have been a product of public-good undertakings funded largely by governments. Requiring publishers to further the public-good aspects of scientific data hardly seems unreasonable in this context, especially in view of the potential for rent-seeking that inheres in a market structure dominated by sole-source providers.

At the same time, one cannot push the concept of fair use to the point of requiring the private sector to make up for diminished government support of scientific research in general and of the generation of data in particular. Policymakers must, indeed, take pains to avoid a worst-of-both-worlds outcome, in which government support for the production of scientific data declines, while private investment in the generation, distribution, and application of data languishes for lack of adequate incentives. To the extent that private industry develops electronic information tools specifically to promote scientific investigation or other educational endeavors, the imposition of a subsidy favoring science becomes harder to justify and even counterproductive, given that scientific and educational institutions must pay for the other tools they use. This said, raw or elaborated data nonetheless constitutes a peculiar kind of tool, and no amount of

469. See Samuelson, Davis, Kapor, and Reichman, 94 Colum. L. Rev. at 2385-86 (cited in note 11) (discussing limits of legal protection for single features of computer programs).

investment can justify its removal from the domain of scientific inquiry.

Appropriate fair use provisions should thus be seen as part of a new cultural bargain that responds to serious concerns about the ability of data publishers to control access to scientific data as such. Implementing this bargain will require careful distinctions between uses that are “free” and those that providers must permit, but on fair and reasonable terms and conditions.⁴⁷⁰

Ascertaining fair uses that database owners must permit the scientific and educational communities to make on more favorable terms than those applicable to ordinary commercial users constitutes a more delicate task. Discussions with scientists have at least identified a sensible point of departure for this analysis. In principle, whenever a given database is substantially funded by government, a bedrock concept of fair use should require that the scientific and educational communities have access to its contents on the basis of traditional cost-recovery formulas, irrespective of the prices that providers and distributors may charge other users for other purposes.⁴⁷¹

In other words, data generated by public funds should come freighted with a built-in, cost-based discount for science and education as a condition of its further commercialization by others. This principle mainly preserves the status quo, at least for U.S. scientists, without shifting the costs of generating and distributing raw or elaborated scientific data onto private publishers. So long as enlightened government policy continued to favor substantial funding of the data-generating processes, this principle would promote science and education by preserving the public-good aspects of the data thus

470. For example, scientists must freely be able to use the data underlying existing scientific theories to verify or challenge those theories and to develop new ones. Similarly, researchers should have completely free use of their own notes and working files in the conduct of their investigations, regardless of whether these files are embodied in electronic or print media. See, for example, Letter from Ronald Wiggington (Jun. 31, 1996) (on file with the Authors). By the same token, a scientist who creates a new database while using another lawfully obtained database covered by a *sui generis* law, along with other data, should owe nothing but use or access charges to the proprietary rightholder if he or she did not reproduce a substantial component of the protected data in the new database. See, for example, Letter from Professor Shelton Alexander (cited in note 303). Indeed, a *sui generis* law should never prevent any scientist from reproducing or using an *insubstantial* part of the contents of a protected database for any purpose whatsoever. In these and other cases, the public interest in scientific progress trumps all other considerations.

471. See *Bits of Power* at ch. 4 (cited in note 32); OMB Implementing Memo (cited in note 73). See also notes 302-03 and accompanying text. For the problem of leakage as a limit on price discrimination, see *Bits of Power* at ch. 4 (cited in note 32).

collected, without unduly inhibiting private incentives to invest. By the same token, it would prevent the private sector from displacing (or appropriating) the public-good aspects of government-funded data merely because *sui generis* legislation had been enacted to stimulate investment in distribution or value-adding applications. While such a policy may conflict with the E.C. Directive, depending on how the European Union member states choose to implement the relevant provisions, its adoption in the United States could influence other countries, especially the European Union member states, which might decide to exercise their implementing options in precisely this way.⁴⁷²

Conversely, when the private sector or other nongovernmental entities fund the generation or distribution of data, a different fair use calculus should come into play. Here the problem is that the ability of science to pay the going, commercial rates is not commensurate with its resources or with the public interest in a strong, basic scientific establishment. The solution is not to shunt the problems of science onto publishers, who have their own business risks to manage, but to ensure that publishers charge scientific and educational users fair and reasonable prices that take account of the overriding public interest at stake.

Achieving this goal, however, is complicated by the difficulties of weaning sole-source providers from the rent-seekers' mentality if market forces themselves do not compel more favorable treatment of scientific and educational users. The appropriate response is to incorporate legal standards into the database law that can create sufficient leverage for scientific and educational users to obtain such treatment. The gentlest and least market-distorting form of leverage, in turn, is the legal uncertainty with which legislatures can endow the relevant fair use provisions. This strategy gives both sides the maximum incentives to negotiate their own licenses providing for price discrimination, product differentiation,⁴⁷³ and other forms of relief on terms that seek to reconcile the different interests at stake.

472. See E.C. Directive on Databases, art. 6(2), 1996 O.J. (L 77) at 25 (cited in note 7) (stating that Member States may opt to limit Article 5 reproduction, alteration, distribution, communication, display, or performance rights in certain cases). See also notes 176-78 and accompanying text.

473. See National Research Council, *Bits of Power* at ch. 4 (cited in note 32). For example, "NASA and Orbital Sciences . . . reached an agreement regarding the sea wifs mission for ocean color data," a private endeavor "for which NASA provided upfront money for a data purchase . . . [so that] the companies . . . [could] get financial backing." Under this Agreement, "the company had exclusive rights to exploit the data for a number of days, after which the data went to NASA for scientific purposes." Letter from Professor Gabrynowicz (cited in note 320). Reportedly, this agreement was possible because of the perishability of ocean color data for commercial purposes. *Id.*

Various technical devices, adopted singly or in combination, can be employed to bring about this result. For example, a general clause governing licenses in the database law can expressly provide that all licensing and distribution agreements effected under such a regime must be made "on fair and reasonable terms, with due regard for the needs of the scientific and educational communities, for the public interest in preserving competition, and for the needs of national economic development."⁴⁷⁴ Such clauses, which have already been used in some database transactions,⁴⁷⁵ would then be construed in the light of other provisions favoring publishers, so as not unduly to impair the commercial value of the database or the owner's return on his or her investment.⁴⁷⁶ This approach should at least induce publishers to develop favorable subscription rates for academic and research institutions rather than insisting on per use (or per access) charges that may or may not apply in other circumstances.

A resort to compulsory licensing can also increase the bargaining power of privileged users. As previously observed, a properly crafted liability regime protecting investment in databases should itself incorporate an automatic license favoring second comers and value-adding users, which would kick in after an initial period of guaranteed lead time.⁴⁷⁷ A refinement of this mechanism could then allow the scientific and educational communities to license data for essential needs in the event that publishers fail to supply the data on

NASA has not recently used this agreement as a model, however. *Id.* Moreover, for some scientific disciplines, which depend on real-time observations, delay as a form of product differentiation is not feasible. See, for example, *Bits of Power* at ch. 3 (cited in note 32). This, in turn, suggests the importance of legal measures that permit providers and users to adjust the concept of fair use (or fair and reasonable terms) to the needs of different categories of users.

474. For the general importance of such a clause in the post-TRIPS environment, especially with regard to transfer of technology agreements, see Reichman, *From Free Riders to Fair Followers* (cited in note 94).

475. For example, licenses "issued pursuant to federal law for private remote sensing systems require that system operators make their commercially obsolete data available to the National Data Archive on 'reasonable terms and conditions.' The government does not require that they [be] give[n] . . . the data, nor does it set the criteria by which the decision is made. But if, and when, a company decides to purge data, it triggers the requirement, [which] . . . amounts to the government having the right of first refusal." Letter from Dr. Gahrynowicz (cited in note 473). See also notes 288-90.

476. See, for example, E.C. Directive on Databases, arts. 7(5), 8(2), 1996 O.J. (L 77) at 26 (cited in note 7) (forbidding lawful user of database to perform acts that "conflict with normal exploitation" or that "unreasonably prejudice [the maker's] legitimate interests"). See also H.R. Rep. No. 3531 § 4(a), (b), 5 (cited in note 7) (listing prohibited acts and exceptions thereto).

477. See notes 436-42 and accompanying text.

reasonable terms and conditions.⁴⁷⁸ Should Congress ultimately adopt an exclusive rights regime for database owners, rather than the unfair competition or modified liability models suggested above, such a regime could nonetheless include non-voluntary license provisions to meet the needs of these communities. In theory, this would permit either side to seek a judicial decision triggering or blocking the compulsory license for privileged uses. In practice, a built-in duty to negotiate before seeking such a license,⁴⁷⁹ coupled with the uncertainty inherent in the applicable legal standards (and the well-known limits of judicial capability), should almost invariably lead to an accommodation between publishers and scientists that would remove the bone of contention.

Ideally, the database legislation should institutionalize these and other fair-use related issues, together with an overall dispute-resolution mechanism, within the larger framework of an apposite collection society, which would mediate between funders, providers, distributors, and users.⁴⁸⁰ Despite the appearance of an extra layer of bureaucracy this creates, experience shows that the collection society is the most efficient tool for overcoming the costs of countless single transactions and also for representing the interests of different classes of users.⁴⁸¹ Digital technologies then make collection societies

478. See Goldstein, *Celestial Jukebox* at 230 (quoted in note 94). See also Ginsburg, 92 Colum. L. Rev. at 386-87 (cited in note 44) (deeming compulsory licenses indispensable under a non-copyright protection scheme).

479. See TRIPS Agreement, art. 31(b), in *Results of the Uruguay Round* at 381 (cited in note 1) (allowing states to impose compulsory licenses on foreign patentees only if, prior to the grant, "the proposed user has made efforts to obtain authorization from the rightholder on reasonable commercial terms and conditions").

480. There is reason to believe that collection societies have become indispensable instruments for administering proprietary rights in information goods generally. See, for example, Stanley M. Besen, Sheila N. Kirby, and Steven C. Salop, *An Economic Analysis of Copyright Collectives*, 78 U. Va. L. Rev. 383 (1992); Stanley M. Besen and Sheila N. Kirby, *Compensating Creators of Intellectual Property: Collectives That Collect*, Rand Doc. R-3751-MF (March 1989); Zentaro Kitagawa, *Copymart: A New Concept—An Application of Digital Technology to the Collective Management of Copyright*, in *WIPO Worldwide Symposium on the Impact of Digital Technology on Copyright and Neighboring Rights* 139 (1993) ("WIPO Worldwide Symposium"); WIPO, *Collective Administration of Copyright and Neighboring Rights* (1990). Studies also suggest that there is an integral connection between a liability regime that protects subpatentable innovation and a collection society to mediate between the shifting interests of innovators and borrowers. See, for example, Reichman, 94 Colum. L. Rev. at 2555-57 (cited in note 2) (explaining the increasing importance of agencies responsible for collective action where potential returns to innovators and cost to borrowers from networked application of successful embodiments of know-how become great and where blanket licensing needs result from the evolution of technique repertoires).

481. See, for example, Besen, Kirby, and Salop, *Compensating Creators* at 2-13 (cited in note 480). For refinements in Nordic law, which extend the benefits of collection societies to nonmembers on an "extended family" concept, see, for example, G. Karnell, *The Nordic*

even more necessary while providing the technical means of cutting both transaction costs and bureaucratic disruption.⁴⁸² Because members of the user community should be permanently represented in the administration and governance of such a collection society, moreover, scientists and educators would find themselves well-positioned to resolve internally those questions about pricing, fair use and other issues that courts would find taxing to adjudicate.

3. Long Term Considerations

The attention of the scientific and educational communities must remain focused on the operational consequences of a *sui generis* database law long after the above-mentioned issues have been resolved. The introduction of new legal instruments, and a shift toward the commercialization of data, may profoundly change current institutions, especially those bearing on the funding of scientific research, and the effects of these changes need to be assessed and monitored over time.

In this context, steps must be taken to ensure that new institutions suited to the maintenance of scientific progress are set in place before existing institutions are undermined or eliminated. The public funding of basic scientific data should remain sufficiently robust as to support the level of technological applications that has enabled U.S. firms to retain a competitive edge in the global marketplace. If conciliatory efforts fail to dissuade foreign funding agencies from overcharging for essential scientific data, countervailing pricing strategies and other tactics may become unavoidable.⁴⁸³ In any event, government agencies, the research communities, and database makers will have to cooperate at the implementation stage, with a view to

Catalogue Rule, in Dommering and Hugenholtz, eds., *Protecting Works of Fact* at 67-72 (cited in note 104).

482. See, for example, Goldstein, *Celestial Jukebox* at 223-30 (cited in note 94). See also Kitagawa, *Copyart*, in *WIPO Worldwide Symposium* at 143-47 (cited in note 480). The extension of the collection society principle to the photocopying of books and journals has proved a boon to academic users, although its long-run implications for fair use in copyright law remain to be seen.

483. "Overcharging" in this context means charging more than would be allowed under different cost-recovery formulas, including incremental and marginal cost pricing strategies. See, for example, *Bits of Power* at ch. 4 (cited in note 32). Because foreign users are far more dependant on U.S. data than U.S. scientists are on foreign data—for the moment, at least—discriminatory pricing against foreign users becomes feasible. The U.S. government agencies could pass these surcharges on to U.S. scientists, until the foreign providers come to their senses.

reconciling the greater role of the private sector with the public-good aspects of national science policy.

From a long-term perspective, the research communities must face up to the fact that new technologies for generating, evaluating, and distributing data—especially digital technologies—may change many institutions on which basic science has traditionally relied. While certain to be disruptive, such changes need not produce wholly undesirable outcomes and could foster new opportunities, provided that the scientific and educational communities move to meet the challenges in a timely and sustained fashion.

For example, new modes of organizing and distributing the funds needed to generate data may be devised, while the prospects for internalizing transmission and publication costs through the use of electronic communications networks merit careful study.⁴⁸⁴ To the extent that widespread commercialization of data does result from the adoption of new intellectual property laws, it could stimulate the scientific community to organize its own institutions for the collection or dissemination of scientific data, which could operate outside the commercial arena. Because the research communities are both producers and consumers of data, collective action along these lines could make science itself an increasingly important player in the market for databases generally, as well as a stabilizing force in determining the balance between public and private interests.⁴⁸⁵ How to organize such large-scale undertakings, leading perhaps to universal data archives,⁴⁸⁶ will require careful thought and study in order to avoid sacrificing other goals of scientific endeavor or compromising traditional norms of science that emphasize objective pursuit of knowledge based on the free and open exchange of information.

Meanwhile, the adoption of different legal regimes to protect database makers by countries with different agendas and at varying stages of economic development could further complicate the full and unrestricted flow of scientific data across international frontiers. Measures to harmonize the domestic database-protection laws, or at least their effects on the transborder flows of scientific data, will, therefore, require study, as will measures and proposals affecting the regulation of national and global information infrastructures.⁴⁸⁷

484. See, for example, *id.* at ch. 4 (cited in note 32); Ginsparg, UNESCO Paper (cited in note 62).

485. See, for example, Hunsaker, *European Database Directive* (cited in note 60).

486. See, for example, *Bits of Power* at ch. 3 (cited in note 32).

487. See, for example, Academy Presidents' Letter at 1-2 (cited in note 284). See also notes 268-78 and accompanying text.

Pressures to integrate these and other international intellectual property standards ever more deeply into the global trade apparatus will certainly mount as countries move to implement and expand the TRIPS Agreement and related international conventions within the framework of the World Trade Organization.⁴⁸⁸

VI. CONCLUSION

Most intellectual property laws have been formulated under the myth that they do not protect investment as such. Rather, these laws are supposed to implement the goal of encouraging or rewarding some socially important form of creative contribution or achievement. Until recently, when some countries, notably Switzerland and Japan, began experimentally to bring subpatentable technological innovation within reformed unfair competition laws based on modified liability principles,⁴⁸⁹ the direct protection of investment had not been deemed a sufficient justification for derogating from the norms of free competition.⁴⁹⁰

The standard mythology, however, leaves investment in subpatentable know-how largely at the mercy of trade secret laws, which tend to break down under present-day conditions. This occurs because information goods, such as databases, typically bear design-rich applications of know-how on their face, which makes it easy for free-riders to duplicate the know-how without contributing to the costs of research and development. The more that subpatentable innovation falls through the cracks of the classical intellectual property system, which rests on the mature patent and copyright paradigms, the more governments multiply hybrid *sui generis* regimes of exclusive property rights. The real purpose of these regimes is to protect investors against the risk of market failure that results from a chronic shortage of natural lead time. This proliferation of poorly conceived, hybrid intellectual property rights has cumulatively begun to undermine the competitive ethos on which market economies depend,⁴⁹¹ and the

488. See notes 202-04 and accompanying text.

489. See, for example, Reichman, 94 Colum. L. Rev. at 2472-76 (cited in note 2).

490. But see generally William Kingston, ed., *Direct Protection of Innovation* (Kluwer Academic Press, 1987). Professor Kingston was one of the first to call for a new approach. See also Rochelle C. Dreyfuss, *Information Products: A Challenge to Intellectual Property Theory*, 20 N.Y.U. J. Int'l L. & Pol. 897 (1988).

491. See, for example, Reichman, 94 Colum. L. Rev. at 2527-29 (cited in note 2) ("The Public Interest Overwhelmed"). For a demonstration that all the hybrid regimes violate car-

current database proposals represent the most recent (and perhaps the most extreme) instance of this trend. Yet, protecting investment in subpatentable innovation has become both a business priority and an essential component of national innovation systems.

Against this background, the European Commission's frank acknowledgment that its *sui generis* database law would protect investment as such amounts to a refreshing act of legal candor. The Commission's early proposals were also a product of enlightened legal tinkering, which manifested both a certain reluctance to interfere unnecessarily with free competition and some concern for the larger public interest. Unfortunately, these proposals were not accompanied by any legal and economic analysis of what an investment-protection law should consist, or how it should differ from regimes of exclusive property rights based on modified patent and copyright principles. Nor was there any explicit awareness that economic efficiency with respect to public goods calls for minimalist incentives to invest that will yield the lowest possible prices to users.

Because these proposals lacked any solid theoretical foundation, the Commission's foray into liability principles was easily overcome by special interest pressures, which produced the anomalous database protection schemes analyzed in this Article. These schemes are a monstrous caricature of true intellectual property laws.⁴⁹² Unlike the other hybrid regimes that have cropped up in recent years, which experimentally merge some innovative features with other, obsolete components, the database laws set a new milestone for mischief by virtually abolishing even the concept of a public domain⁴⁹³ and by abrogating the public interest components of intellectual property policymaking.⁴⁹⁴ While it is true that legislative commitment to balance the public and private interests has weakened everywhere since the collapse of the patent-copyright dichotomy on which the nineteenth century intellectual property system was once firmly anchored,⁴⁹⁵ the current database schemes represent a low point in the history of intellectual property law.

dinal economic principles of the classical intellectual property system and most substitute overprotection for underprotection, see Reichman, 13 *Cardozo Arts & Enter. L. J.* at 512-17 (cited in note 3).

492. For a discussion of how these proposals harken back to medieval crown privileges and guild monopolies, see note 281.

493. See note 146 and accompanying text (showing that the perpetual-exclusive-rights potential of the E.C. Directive on Databases and the U.S. Proposal is perfected by protection of previously compiled public domain material).

494. See notes 52-53 and accompanying text.

495. See, for example, Reichman, 13 *Cardozo Arts & Enter. L. J.* at 512-17 (cited in note 3) (arguing that the breakdown of the classical trade secret approach has led to a system wherein

Nevertheless, the problems these schemes were meant to address will not go away, which is why it becomes more necessary than ever to consider what the proper foundation for an intellectual property regime to protect investment in subpatentable information goods should really be. The right question, in other words, is how to overcome the investor's risk of market failure without undermining either the general public interest in competition or the special public interest in promoting science and education. Approached this way, the crucial differences between a law to reward intellectual creations and a law to stimulate investment in intellectual goods begin to surface.

Classical intellectual property laws are meant to stimulate certain forms of creative endeavor that would not ordinarily have seen the light, or at least would not have been achieved so fast or so efficiently, without a decision to derogate from the norms of free competition by instituting exclusive property rights.⁴⁹⁶ The difficulty inherent in the creative or technical enterprise, or the social importance of the ensuing creative contribution, thus induced governments to suffer the short-term social costs of legal monopolies in return for these and other long-term benefits.

In contrast, laws protecting investment as such deal with situations in which both the requisite level of creativity and the needed quantum of investment would have been available as a matter of self-interest and sound business strategy were it not for the risk that free riders might appropriate the fruits of these investments without contributing, directly or indirectly, to the costs of production. Removing these obstacles from the entrepreneur's path presents a very different and far more delicate problem than that of stimulating a technological community to reach new heights. An investment law seeks to ensure that those members of the relevant technical community that are already at work on known technological paradigms will not suffer from an artificial shortage of working capital. To achieve this result, however, there is no need or justification for suspending the normal principles of free competition. On the contrary, the goal is merely to

every new non-traditional object of legal protection receives its own ad hoc monopoly without regard to the public interests involved).

496. See, for example, Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J. L. & Econ. 265 (1977); Edmund W. Kitch, *Patents: Monopolies or Property Rights?*, 8 Research in L. & Econ. 31 (1986); A. Samuel Oddi, *Un-unified Economic Theories of Patents—The Not-Quite-Holy Grail*, 71 Notre Dame L. Rev. 267 (1996) (discussing the "reward" and "patent-induced" theories underlying classical intellectual property laws). See generally Lunney, 49 Vand. L. Rev. 483 (cited in note 3).

remove those obstacles that prevent market principles from operating in a fashion that engenders the fewest social costs.

This Article has offered two models for recasting *sui generis* proposals concerning the legal protection of databases, either of which would produce more social benefits with fewer social costs than the exclusive property rights approach of current proposals. The more modest solution would refine known principles of unfair competition law to protect database contents. The more ambitious solution would build on recent legal scholarship that seeks to clarify the conceptual foundations of a modified liability approach to the legal protection of subpatentable know-how that becomes embodied in mass-produced information products. These studies suggest that a market-enhancing liability regime can emulate some of the positive economic functions of trade secret laws, which were used to regulate appropriations of data throughout the Industrial Revolution, without imposing the social costs of actual or legal secrecy and without creating legal barriers to entry.⁴⁹⁷

The unusual nature of the database market, with its ingrained sole-source structure, its traditional reliance on government funding, and its importance for science, makes the application of liability principles to solve the problem of market failure more delicate than it would be under more competitive conditions. Nevertheless, the basic principle remains that of "doing no harm," that is, of not substituting a disproportionate level of overprotection, with its attendant social costs, for a state of chronic underprotection. The exclusive property rights regimes under review would create real barriers to entry and ignore the public interest in competition and in the scientific and educational enterprises. In contrast, a modified liability regime creates no barriers to entry, stimulates competition, and facilitates the implementation of public interest goals, such as the promotion of science and education.

Making the wrong choice could compromise the basic scientific enterprise on which U.S. technological dominance has long depended. Fortunately, the United States Constitution, with its insistence that intellectual property rights be "limited in time" and advance "science and the useful arts," points the way for basic Enlightenment principles to prevail over narrow special-interest legislation.

497. See generally Reichman, 94 Colum. L. Rev. at 2519-44 (cited in note 2) ("Portable Trade Secrets"); Samuelson, Davis, Kapur, and Reichman, 94 Colum. L. Rev. 2378-429 (cited in note 11).