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A PRIMER ON U.S. INTELLECTUAL PROPERTY RIGHTS APPLICABLE TO MUSIC INFORMATION RETRIEVAL SYSTEMS

Michael W. Carroll*

[Note to reader: Pagination for this article is accurate, although the page breaks are sometimes in awkward places due to typeface constraints.]

Digital technology has had a significant impact on the ways in which music information can be stored, transmitted, and used. Within the information sciences, music information retrieval has become an increasingly important and complex field. This brief article is addressed primarily to those involved in the design and implementation of systems for storing and retrieving digital files containing musical notation, recorded music, and relevant metadata – hereinafter referred to as a Music Information Retrieval System (“MIRS”). In particular, this group includes information specialists, software engineers, and the attorneys who advise them. Although peer-to-peer computer applications, such as Napster’s MusicShare or the Kazaa Media Desktop, can be conceived of as creating a MIRS, my analysis focuses on MIRS designed or operated by an entity that takes responsibility for choosing and controlling the music information stored in the system. Examples would include digital music collections stored in research libraries or on university intranets, as well as commercial systems with similar design features.

This article describes how certain provisions of U. S. intellectual property law apply to MIRSs and mentions relevant law in the European Union for purposes of comparison. The focus is on U. S. copyright law, with very brief mention of U.S. patent and trade secret law. Additionally, the article mentions proposed legislation for database protection, which already exists in the European Union. Enactment of such legislation could be very significant for developers and operators of MIRS.

* Assistant Professor of Law, Villanova University School of Law. Thanks go to the anonymous referee for helpful comments. Any mistakes, of course, remain mine. This Article is licensed under a Creative Commons Attribution License. See <http://creativecommons.org/licenses/by/2.0/>.

I. COPYRIGHT LAW

Copyright is important to those involved in designing and operating MIRS for two different reasons. First, copyright law constrains the uses of the data in MIRS because the law grants creators of data and their assigns exclusive rights in the music information.¹ Designers, and users of MIRS need permission from the owners of the rights in the music information for many uses.² Second, those who build MIRS receive rights from copyright law in the original selection and arrangement of musical information stored in the MIRS, as well as in software designed for use in MIRS. For these reasons, the discussion of copyright covers both rights in musical information and rights in MIRS.

A. What is Copyrightable?

The U. S. Constitution permits Congress to grant to “authors” exclusive rights to their respective “writings” for “limited times.”³ As interpreted by the Supreme Court, this provision gives Congress considerable flexibility in determining the scope and duration of copyright protection.⁴

1. Originality

A work must be “original,” meaning that the work must have been independently created by the author and it must reflect a minimal spark of creativity.⁵ In the field of music information, two different copyrightable works are recognized.

First, the underlying composition, called the “musical work,” is comprised of the original expression in the music and lyrics.⁶ Almost all musical compositions satisfy the originality requirement. Even compositions that are highly derivative of prior works usually contain some original material.⁷ Copyright protection is limited to the original material added by the composer or publisher.⁸

1. 17 U.S.C. § 106 (2000); *Kelly v. Arriba Soft Corp.*, 336 F.3d 811, 817 (9th Cir. 2003) (“An owner of a copyright has the exclusive right to reproduce, distribute, and publicly display copies of the work.”).

2. *See, e.g., A&M Records, Inc. v. Napster, Inc.*, 239 F.3d 1004, 1014, 1022, 1024 (9th Cir. 2001) (holding users directly liable and Napster contributorily and vicariously liable for the infringement of copyrights in both musical works and sound recordings).

3. U.S. CONST. art. I, § 8, cl. 8.

4. *See, e.g., Eldred v. Ashcroft*, 537 U.S. 186, 200-04 (2003) (retrospective extension of copyright does not violate the “limited Times” restriction); *Goldstein v. California*, 412 U.S. 546, 561-62 (1973) (stating Congress has broad discretion to identify protectible “writings”).

5. *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991).

6. *See* 17 U.S.C. § 102(a)(2) (2000).

7. *Cf. Newton v. Diamond*, 349 F.3d 591, 594 (9th Cir. 2003) (assuming that a three-note sequence was a protectable musical work).

8. *See Entm't Research Group v. Genesis Creative Group*, 122 F.3d 1211, 1218-19 (9th Cir. 1997) (“[C]opyright protection afforded to derivative works is more limited than it is for original works of authorship. Specifically, Section 103(b) provides that the copyright in a derivative work ‘extends only to the

Second, since 1972, federal law has recognized that original expression also goes into the recorded version of a musical work.⁹ The creative decisions made by the performers, sound engineers, and producers collectively are captured in the “sound recording” of the musical works.¹⁰ Thus, even if a MIRS comprises only recorded renditions of musical works whose copyright has expired – say, a collection of Mozart’s works – the orchestra or its recording company likely owns the copyright in the sound recording of those musical works that are in the public domain.

It should not be surprising that most music information in MIRS will be original. However, the generous originality standard also means that the MIRS itself may constitute one or more original works of authorship. The selection and arrangement of information in a compilation or collection may be sufficiently original to be copyrightable.¹¹ The key is whether the judgments made by the person(s) selecting and arranging the data require the exercise of sufficient discretion to make the selection or arrangement “original.”¹² In *Feist Publications, Inc. v. Rural Telephone Service Company*, which announced the originality requirement, the Court held that a white pages telephone directory could not be copyrighted.¹³ The data—the telephone numbers and addresses—were “facts” which were not original because they had no “author.”¹⁴ Also, the selection and arrangement of the facts did not meet the originality requirement because the decision to alphabetize all the numbers and addresses in a certain geographic area did not reflect the “minimal spark” of creativity needed.¹⁵

The selection and arrangement of music information stored in a MIRS can be sufficiently original to satisfy copyright law’s requirement. If the other copyrightability requirements are satisfied, the creator of the MIRS may have a right to claim infringement against anyone who copies the MIRS database without authorization. Adding a layer of complexity, original expression in a MIRS may include the selection and arrangement of the metadata describing the music information. For example, if the MIRS designer makes sufficiently original choices about

material contributed by the author of such work, as distinguished from the preexisting material employed in the work.”) (quoting 17 U.S.C. § 103(b) (1994)); see also *Russell v. Price*, 612 F.2d 1123, 1128 (9th Cir. 1979).

9. See 17 U.S.C. § 102(a)(2), (7) (2000); *Agee v. Paramount Communications, Inc.*, 59 F.3d 317, 322 (2d Cir. 1995) (discussing the legislative history of the sound recording amendment).

10. *E.g.*, *Sys. XIX, Inc. v. Parker*, 30 F. Supp. 2d 1225, 1228 (N.D. Cal. 1998) (citing legislative history for the proposition that authorship of a sound recording is likely to include the creative contributions of performers and record producers).

11. See *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 362 (1991).

12. See *Id.* at 360.

13. *Id.* at 361.

14. *Id.* at 361-62.

15. *Id.* at 362-63.

how to classify the music information or how to describe the music information, the metadata may also constitute a copyrightable work.¹⁶

To the extent that software is used in a MIRS, software is protectable as a “literary work.”¹⁷ So long as the code reflects the exercise of editorial discretion, it is protectable. As is discussed below, the scope of protection is limited.¹⁸

2. Fixation

A work must also be “fixed” in any medium permitting the work to be “perceived, reproduced, or otherwise communicated for a period of more than a transitory duration.”¹⁹ An original musical composition is not copyrighted until it is recorded in some way—in musical notation or in a recorded performance. Sound recordings are by definition recorded and thus are copyrighted so long as the decisions going into the recording reflect the requisite originality.²⁰ Finally, the structure and arrangement of a MIRS may be fixed any time that it is written down or implemented. Fixation of the work is a momentous occasion for works created after January 1, 1978, because exclusive rights under copyright shower down upon the creator at the moment of fixation.²¹ Previously, rights in published works attached only when registered and published with notice.²²

B. What Rights Does Copyright Grant?

What are the rights that attach to a creator at the moment the work is fixed? With regard to musical information and MIRS, it depends. The owner of any copyright has: (1) the right “to reproduce the copyrighted work

16. Copyright protection would not, however, be appropriate if the metadata is not sufficiently original. For example, metadata that merely identifies the names of composers or performers, dates of composition, publication, and performance would probably not be sufficiently original, however such data were arranged. But if the metadata also included information about musical sources that inspired a particular work or information about other recordings on which performers had played, then the metadata would more likely be sufficiently original to be copyrightable. An example of a complex metadatabase describing music information is the community-compilation, MusicBrainz, at <http://www.musicbrainz.org> (last visited Mar. 5, 2004).

17. *Dun & Bradstreet Software Servs. v. Grace Consulting, Inc.*, 307 F.3d 197, 206 (3d Cir. 2002) (“Computer programs are entitled to copyright protection as ‘literary works.’”); *Computer Mgmt. Assistance Co. v. Robert F. DeCastro, Inc.*, 220 F.3d 396, 400 (5th Cir. 2000) (“Computer programs are entitled to copyright protection.”); see also *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255, 259 (5th Cir. 1988) (noting that the Copyright Act was amended in 1976 “to include computer programs in the definition of protectable literary works”).

18. A caveat for MIRS protection is that when functional considerations essentially dictate the design of either the data structure or the software, the work will not be deemed original. Functional considerations can include the decision to adopt an “industry standard” structure. Cf. *Kregos v. Associated Press*, 937 F.2d 700, 707 (2d Cir. 1991) (explaining and applying merger doctrine).

19. 17 U.S.C. §§ 101, 102(a) (2000).

20. See, e.g., *Staggers v. Real Authentic Sound*, 77 F. Supp. 2d 57, 61 n.6 (D.D.C. 1999).

21. See 17 U.S.C. § 301(a) (2000).

22. See *Baltimore Orioles, Inc. v. Major League Baseball Players Ass’n*, 805 F.2d 663, 674 n.20 (7th Cir. 1986); see also H.R. REP. NO. 94-1476 (1976).

in copies or phonorecords;”²³ (2) the right “to prepare derivative works based upon the copyrighted work;”²⁴ and (3) the right “to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending.”²⁵ In addition the owners of musical and literary works—which would include software and, potentially, a MIRS data structure—have (4) the right to perform the copyrighted work publicly²⁶ and (5) the right to display the copyrighted work publicly.²⁷ Sound recordings have a more limited performance right, which is (6) the right to perform the copyrighted work publicly by means of a digital audio transmission.²⁸ The rights in musical information most relevant to the use of a MIRS are the rights of reproduction, distribution, and performance.

1. *Reproduction*

The reproduction right covers both exact duplicates of a work and works that are “substantially similar” to the copyrighted work when it can be shown that the alleged copyist had access to the copyrighted work.²⁹ Digital technology has broadened the scope of the reproduction right because computers necessarily make exact duplicates of data when processing or transmitting it. The courts have held that even a temporary copy of a copyrighted work stored in a computer’s random access memory (“RAM”) exercises the right to reproduce the work.³⁰

Consequently, the operator of a MIRS with digital data must have permission not only to store a copy of the musical work and/or sound recording on a hard disk or other similar medium, but also permission to make the copies that a user will make to view the musical information while stored in RAM and any copies the user will receive when accessing the MIRS through a computer network.

Reproductions of sound recordings necessarily involve the reproduction of the underlying musical work. Thus, in many cases,

23. 17 U.S.C. § 106(1) (2000).

24. *Id.* § 106(2).

25. *Id.* § 106(3).

26. *Id.* § 106(4).

27. *Id.* § 106(5).

28. *Id.* § 106(6).

29. *See, e.g.*, *Repp v. Webber*, 132 F.3d 882, 892 (2d Cir. 1997) (stating that the song “Till You” did not infringe copyright for the song “Close Every Door”); *Benson v. Coca-Cola Co.*, 795 F.2d 973, 975 (11th Cir. 1986) (stating that the song “I’d Like to Buy the World a Coke” was an independent creation and did not infringe on the copyright of the song “Don’t Cha Know”); *Selle v. Gibb*, 741 F.2d 896, 905 (7th Cir. 1984) (stating that the plaintiff failed to show that the musical group the Bee Gees had access to plaintiff’s song “Let It End” before they composed “How Deep Is Your Love”); *Tisi v. Patrick*, 97 F. Supp. 2d 539, 548 (S.D.N.Y. 2000) (stating that the composer failed to show both that the performer had access to “Sell Your Soul” and the necessary “striking similarity” between the songs).

30. *See, e.g.*, *MAI Sys. Corp. v. Peak Computer, Inc.*, 991 F.2d 511, 518 (9th Cir. 1993). *See generally* Joseph P. Liu, *Owning Digital Copies: Copyright Law and the Incidents of Copy Ownership*, 42 WM. & MARY L. REV. 1245 (2001) (arguing that ownership of physical copy is a hidden presumption in copyright law that should be updated with respect to digital copies).

permission to reproduce both the musical work and the sound recording must be obtained.

A more vexing question arises with regard to the scope of the reproduction right with respect to streaming audio files. If a MIRS permits users to stream audio files without receiving a permanent copy, what rights must the operator of the MIRS have? Audio streaming involves the making of temporary buffer copies during transmission. It remains uncertain whether these copies are sufficiently permanent to implicate the reproduction right.³¹ The European Union has made explicit that temporary buffer copies do not implicate the right of reproduction.³²

2. Distribution

The distribution right applies to the distribution of copies to the public. In the off-line world, the distribution right would be the basis for a recording company's lawsuit against the sellers of unauthorized recordings. In the digital context, one could argue that the distribution right does not apply because computers do not distribute a single copy from point A to point B; instead, they generate new copies.³³ Thus far, the courts have not adopted this interpretation and have also given the distribution right a broad reading. Some courts, including the appeals court in the *Napster* case, have held that merely exposing an MP3 file to the Internet is a public distribution of the file.³⁴ Consequently, in any license agreement for the musical information stored in a MIRS, the operator will need permission to distribute the copyrighted works—the musical works and the sound recordings (where applicable)—if the system permits users to download copies.

The harder case would involve systems that permit streaming-only access to recorded music. If a system operator would need a license to reproduce the musical information because of the buffer and cache copies made during the streaming process, then the system operator probably also needs a license to publicly distribute those evanescent copies.

31. See R. Anthony Reese, *Copyright and Internet Music Transmissions: Existing Law, Major Controversies, Possible Solutions*, 55 U. MIAMI L. REV. 237, 252 (2001). An agreement between the music publishers and the recording industry treats these ephemeral copies as "copies" requiring a license. *Id.*

32. See INTERNATIONAL CONFEDERATION OF MUSIC PUBLISHERS, SECOND WIPO INTERNATIONAL CONFERENCE ON ELECTRONIC COMMERCE AND INTELLECTUAL PROPERTY (2001), available at <http://ecommerce.wipo.int/meetings/2001/conference/presentations/pdf/vacher.pdf>.

33. See, e.g., Michael W. Carroll, *Disruptive Technology and Common Law Lawmaking: A Brief Analysis of A&M Records, Inc. v. Napster, Inc.*, 9 VILL. SPORTS & ENT. L.J. 5, 16 n.52 (2002).

34. *A&M Records, Inc. v. Napster, Inc.*, 239 F.3d 1004, 1014 (9th Cir. 2001).

3. *Public Performance*

With regard to musical information, two different performance rights apply. For underlying musical works, the copyright owner has the exclusive right to authorize any public performance, subject to the fair use privilege and certain statutory exceptions.³⁵ The right of public performance applies whenever the copyrighted work can be listened to or watched by members of the public at large, such as during a live performance or recorded performance made available by broadcast or digital streaming.³⁶ Copyright owners in sound recordings, by contrast, have an exclusive right only in public performances done by “digital audio transmission.”³⁷ Digital streaming of an audio file would be a digital audio transmission of a sound recording. One practical effect of the distinct performance rights is to treat broadcasters and webcasters differently—broadcasters need a license only from the composers or publishers whereas webcasters need a license from both the composers or publishers and from the sound recording copyright owners. The operators of a MIRS that permits digital audio streaming of copyrighted musical works or sound recordings similarly would need licenses from both the composers’ representatives and the sound recording owners’ representatives.

Adding another layer of complexity and uncertainty is the alternative to applying reproduction and distribution rights to streaming-only audio. In that case, the question is whether the unambiguous public performance also is a reproduction and distribution. With respect to MIRS that permit downloading of audio files, which unambiguously exercise at least the right of reproduction, arguments have been made that public performance rights also are exercised because the file often can be listened to as the download takes place.³⁸

4. *Public Display*

The owner of the copyright in a musical work also has the exclusive right to publicly display the work.³⁹ To the author’s knowledge, this right has not been the subject of much dispute or attention because musical works traditionally have been copied and distributed in sheet music form or have been performed. The

35. See 17 U.S.C. § 106(4) (2000).

36. *Id.* at § 101; *Home Box Office, Inc. v. Corinth Motel, Inc.*, 647 F. Supp. 1186, 1190 (N.D. Miss. 1986) (“Public performance [of copyrighted material] occurs when a work is transmitted with any device to the public for reception in separate places.”); *Entm’t & Sports Programming Network, Inc. v. Edinburg Cmty. Hotel, Inc.*, 735 F. Supp. 1334, 1340 (S.D. Tex. 1986) (“A public performance [of a copyrighted work] also occurs when a work is transmitted with any device to the public for reception in separate places.”).

37. 17 U.S.C. §§ 101, 106(6), 114(j)(5) (2000)

38. See, e.g., Samval Fifer, *Changing Horses in Mid-Stream: The Copyright Office’s New Rule Makes Broadcasters Pay for “Streaming” Their Signals Over the Internet*, 3 VAND. J. ENT. L. & PRAC. 182 (2001).

39. See 17 U.S.C. § 106(5) (2000).

Internet and other digital networks may increase attention on the display right because posting a musical score to an online location from which it can be viewed by the general public almost certainly would be considered a public display of the work.⁴⁰ Indeed, because a musical work is defined to include lyrics, the many Web sites that publish lyrics are likely engaged in the public display of those musical works. Operators of MIRS that permit online display of music and/or lyrics should obtain permission to publicly display the musical work.

5. *Prepare Derivative Works*

“A ‘derivative work’ is work based upon one or more preexisting works” that consists of elaborations or modifications that, taken as whole, are themselves original works of authorship.⁴¹ That is, a derivative work has two characteristics: (1) it incorporates a pre-existing copyrighted work; and (2) it has sufficiently original modifications to allow for recognition of a new copyrighted work.⁴² With regard to music information, some easy examples are sound recordings (the editorial decisions involved in rendering the musical work create a new work), musical arrangements (same), and parodies (e.g., the *oeuvre* of Weird Al Yankovic is comprised of derivative works). Within the music industry, the right to make derivative works is implicated most often by new compositions based on pre-existing compositions (including samples of prior recordings), sound recordings of pre-existing compositions, and use of recorded music in audiovisual works, such as movies, television shows, and advertisements.⁴³

For those who build MIRS, more subtle forms of the derivative works right may be implicated. If a MIRS designer must make discretionary decisions in choosing how to translate music information in analog form into digital form, the MIRS designer may have a “thin” copyright in the digital version. The same may be said for the decisions involved in translating a work from one digital format to another. The digital work would be a derivative work comprised of the underlying

40. Cf. *Kelly v. Arriba Soft Corp.*, 336 F.3d 811, 817 (9th Cir. 2003) (parties conceded that posting photographs to an online location implicated both the right of reproduction and right of display).

41. 17 U.S.C. §§ 101, 103, 106(2) (2000).

42. See *Stewart v. Abend*, 495 U.S. 207, 223 (1990) (noting that “aspects of a derivative work added by the derivative author are that author’s property, but the element drawn from the pre-existing work remains on grant from the owner of the pre-existing work”); see also *Russell v. Price*, 612 F.2d 1123, 1128 (9th Cir. 1979).

43. See, e.g., *Broadcast Music, Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1, 10, 24 (1979) (holding that the issuance by ASCAP and BMI of blanket licenses for television networks to use copyrighted musical works is not per se unlawful under antitrust laws); *Newton v. Diamond*, 349 F.3d 591, 597-98 (9th Cir. 2003) (The Beastie Boys did not exceed the scope of their license to “sample” plaintiff’s composition.); *Carte v. Evans*, 27 F. 861, 864-65 (C.C.D. Mass. 1886) (Piano-forte arrangement of an opera orchestral score is an original musical composition and subject to copyright.).

copyrighted work and the new work embodied in the digital object. This “thin” copyrighted work would be similar to the copyright claimed by those who reformat movies to be shown on television.⁴⁴ The copyright is “thin” because it is limited to that particular form of digitization and can be asserted against only those who copy that particular form of digitization.⁴⁵ This right could have economic importance if, for example, a competitor copied digital files of public domain sound recordings from a MIRS. The only potential copyright claimant in such a case would be the MIRS designer. To create such a derivative work, however, the decisions involved in translating the copyrighted work would have to be more involved than the mere choice to encode a file in .mp3 format rather than .wav format.

The derivative works right also could be implicated if a MIRS were designed so as to permit users to edit or rearrange musical works or sound recordings. Were that possible, the user could be directly liable for exercising the derivative works right without authorization. The MIRS designer or operator, however, could also be held liable under theories of third-party liability for copyright infringement discussed immediately below.

C. Theories of Third Party Liability

Those who build or operate MIRS also have to be aware of theories of third party liability that could be asserted against them if their systems or software enable others to infringe copyrights. Music publishers and record labels have asserted these theories against Napster and other developers of peer-to-peer networking software.⁴⁶

1. Contributory Infringement

To contributorily infringe a copyright, one must (1) have actual or constructive knowledge of the direct infringer’s infringing conduct; and (2) substantially participate in, or materially contribute to, the infringing conduct.⁴⁷ For builders or operators of MIRS, the second requirement likely will be met when the MIRS is used to accomplish the infringement.

The harder question will be under what conditions the manufacturer or operator of a MIRS knows, or should know, that users are engaged in infringing conduct? Evidence of actual knowledge would

44. See, e.g., *Maljack Prods., Inc. v. UAV Corp.*, 964 F. Supp. 1416, 1426-28 (C.D. Cal. 1997) (finding sufficient originality in pan-and-scan reformatting of public domain film for television to create copyrighted work in edited version).

45. See generally *Satava v. Lowry*, 323 F.3d 805, 812 (9th Cir. 2003) (“[A] thin copyright . . . protects against only virtually identical copying.”).

46. See, e.g., *In re Aimster Copyright Litig.*, 334 F.3d 643 (7th Cir. 2003) (upholding a preliminary injunction against the distribution of Aimster software and the operation of the Aimster system).

47. See, e.g., *A&M Records, Inc. v. Napster, Inc.*, 239 F.3d 1004, 1020 (9th Cir. 2001).

include discovering infringing conduct and then doing nothing to stop it.⁴⁸ Constructive knowledge could be shown when a reasonable person is aware of facts causing the person to inquire further as to whether infringement was occurring in connection with the MIRS, or when the facts would lead a reasonable person to infer in specific instances that the MIRS was being used for infringement of copyrights.

One defense available to the manufacturer of a MIRS that can respond to an allegation of infringing conduct is the so-called *Sony* defense, announced by the Supreme Court in *Sony Corporation v. Universal City Studios, Inc.*⁴⁹ There, the Court did not impose contributory liability on the manufacturers of VCRs for infringing copies of television shows made by VCR owners.⁵⁰ This defense articulates the common-sense reasoning that we do not hold the manufacturers of photocopiers liable when users make infringing copies of books or sheet music, even though the manufacturers know that this is one likely use of the technology.⁵¹ Under the *Sony* defense, the manufacturer of a technology that can be put to infringing use cannot be held to have constructive knowledge of infringement and, therefore, cannot be held liable for contributory infringement as long as the technology is capable of “substantial non-infringing uses.”⁵²

2. Vicarious Liability for Copyright Infringement

Vicarious liability will apply whenever (1) one has control or supervisory power over the direct infringer’s infringing conduct and (2) one receives a direct financial benefit from the infringing conduct.⁵³ Recent cases have expanded the scope of this kind of liability. In the *Napster* case, the court held that Napster had control over its users because it could refuse them access to the Napster server and, pursuant to the Terms of Service Agreements entered into with users, could terminate access if infringing conduct was discovered.⁵⁴ Other courts have required a greater showing of actual control over the infringing conduct,⁵⁵ but operators of MIRS should be aware that by merely asserting contractual rights to terminate access to the MIRS for infringing conduct may be sufficient to satisfy the control requirement.⁵⁶

48. See *id.* at 1022 n.6 (stating that Napster executives had actual knowledge of users’ infringing conduct).

49. 464 U.S. 417 (1984).

50. *Id.*

51. See *In re Aimster*, 334 F.3d at 650-51.

52. *Napster*, 239 F.3d at 1020-22.

53. *Id.* at 1022.

54. *Id.* at 1023-24.

55. See, e.g., *Sony Corp.*, 464 U.S. at 437 n.18.

56. For an extended discussion and criticism of the expansive view of control, see Carroll, *supra* note 33, at 25-29.

Similarly, a direct financial benefit is not limited to a share of the infringer's profits. The *Napster* court held that Napster received a direct financial benefit from infringing file trading because users' ability to obtain infringing audio files drew them to the service. Additionally, Napster could potentially receive a financial benefit from having attracted a larger user base to the service.⁵⁷

D. How Long Does Copyright Last?

Use of most MIRS will involve the exercise of some of the rights of copyright owners. Therefore, the operator of a MIRS will need a license to exercise those rights unless the music information is in the public domain. Determining whether music information contained in a MIRS is under copyright protection will not be an easy task.⁵⁸ The only hard and fast rule is that musical works—that is, musical scores—are in the public domain in the United States if they were published prior to 1923.⁵⁹

Regrettably, the same cannot be said for early recorded music. Sound recordings were not protected by federal copyright until 1972.⁶⁰ These recordings cannot truly be considered to be in the public domain, however, because a number of states have anti-bootlegging laws that apply to the unauthorized sale or distribution of sound recordings. These laws are not consistent. Some limit the claim to those who seek to profit from the sale or rental of sound recordings, others provide express exemptions for non-profit institutions, and some place time limits on protection.⁶¹ Federal law will not preempt the effect of these state laws until 2067.⁶² Thus, even when the underlying musical work—say a Scott Joplin rag—has entered the public domain, early recordings of that work have not. This is in stark contrast to the approach taken in the European

57. *Napster*, 239 F.3d at 1023.

58. See Lolly Gasaway, *When U.S. Works Pass Into the Public Domain*, at <http://www.unc.edu/~unclng/public-d.htm> (last updated Nov. 14, 2003) (showing a helpful chart for determining when works pass into the public domain).

59. See U.S. COPYRIGHT OFFICE, EXTENSION OF COPYRIGHT TERMS (2003), available at <http://www.copyright.gov/circs/circ15t.pdf> ("Works published before January 1, 1923 have fallen into the public domain . . ."). If the data in a MIRS consist solely of digital copies of public domain sheet music, the copyright status of the musical works still must be investigated. Some publishers of public domain compositions claim they have added original material in the arrangement or in the way that they typeset or otherwise present the composition. See *Life Music, Inc. v. Broadcast Music, Inc.*, 31 F.R.D. 3, 19 (S.D.N.Y. 1962). In many cases these are dubious claims.

60. See, e.g., Robert W. Clarida, *Pre-1972 Sound Recordings*, LEGAL LANGUAGE SERV., at <http://www.legallanguage.com/lawarticles/Clarida007.html> (Dec. 2000) (describing copyright issues surrounding the ownership, duration, and restoration of sound recordings first fixed before February 15, 1972).

61. See, e.g., CAL. PENAL CODE § 653h(a) (1999) (requiring that use of early recorded sounds must be for profit to be actionable.); FLA. STAT. ch. 540.11(6)(c) (2002) (providing express exemption for non-profit institutions); COLO. REV. STAT. § 18-4-601 (1999) (Rights to pre-1972 sound recordings are defined in terms of a "common law copyright" which expires after fifty-six years. So, as of January 1, 2004, sound recordings made on or before December 31, 1947 were recognized by the State of Colorado as public domain.).

62. See 17 U.S.C. § 301(c) (2000).

Union⁶³—which generally has a more protective copyright regime—where sound recordings enter the public domain 50 years after publication.⁶⁴ The effect of this provision is becoming more pronounced as popular music from the 1950s begins to enter the public domain in Europe.⁶⁵

For post-1923 musical works and post-1972 sound recordings, measuring the length of copyright requires knowing whether the author is a known individual or the creator's employer, whether the work was created before or after January 1, 1978, and if created before 1978, whether the work was published.⁶⁶ Works created after 1978 are under copyright for the life of the author plus 70 years. If the work was created as a "work made for hire," the term is 95 years from the date of publication or 120 years from the date of creation if not published.

Prior to 1978, copyright lasted for one term of twenty-eight years, which could be renewed for another twenty-eight years. A work published prior to 1978 will be in the public domain if it was published without a copyright notice. Alternatively, if a work published before 1978 did not have its copyright renewed, it is in the public domain. Otherwise, for works still under copyright on January 1, 1978, the term of copyright is effectively ninety-five years from the date the copyright was secured.

E. Ownership and Transfer of Copyright

Most of the music information in a MIRS will be copyrighted and almost all MIRS will exercise at least some of the copyright owners' rights. Consequently, creators and operators of MIRS will likely need to seek permission to use the copyrighted music information. From whom does one seek permission?

As a practical matter, in most cases, licenses should be sought from the music publisher for musical works and from the recording company for sound recordings. If a MIRS includes the ability to stream audio works to the public, performance licenses will be required.⁶⁷ For the

63. Council Decision 2000/278, art. 1, 2000 O.J. (L89) 2 (adopting treaty by European Community).

64. See World Intellectual Property Organization: Performances and Phonograms Treaty, Dec. 20, 1997, art. 17, 36 I.L.M. 76.

65. As of February 2004, Congress was considering proposed responses to this discrepancy in copyright protection, to protect American copyright owners from the European public domain. See *Piracy Deterrence and Education Act of 2003: Hearing on H.R. 2517 Before the Subcommittee on Courts, the Internet, and Intellectual Property of the Committee on the Judiciary*, 108th Cong. (2003) (proposing to amend federal copyright law to prohibit importation of sound recordings which have entered the public domain under the European standard, but which are still under copyright in the United States).

66. See, e.g., Richard D. Rose, *Connecting the Dots: Navigating the Laws and Licensing Requirements of the Internet Music Revolution*, 42 IDEA 313, 327 (2002) (providing a helpful chart of copyright status of sound recordings by date of fixation and publication).

67. See, e.g., Reese, *supra* note 31, at 244-45.

musical works, these licenses can be obtained from the following performing rights organizations: The American Society of Composers, Authors and Publishers (ASCAP),⁶⁸ Broadcast Music, Inc. (BMI),⁶⁹ and SESAC, Inc. (formerly the Society of European State Authors and Composers).⁷⁰ Licenses for sound recordings can currently be obtained from SoundExchange.⁷¹ However, the U.S. Copyright Office has received petitions to allow other performing rights organizations to also play this role.⁷²

As a background matter, copyrights vest initially with the author(s).⁷³ For musical works, this will usually be the composer(s). Sound recordings often have multiple authors, so tracing the rights can be quite complex. Under the “work made for hire” doctrine, the employer will be treated as the author when the work was created by an employee acting within the scope of employment, or by an independent contractor when there has been a written agreement and the work falls within one of nine classes.⁷⁴

Copyrights are transferable by contract.⁷⁵ Under standard business practices within the music industry, composers transfer the rights in their compositions to the publisher, and those involved in the creation of sound recordings transfer their rights to the record label.⁷⁶ Some powerful artists retain their copyrights, and in these cases licenses must be obtained from the artists’ representatives.

II. LEGAL PROTECTION OF DIGITAL RIGHTS MANAGEMENT

The Digital Millennium Copyright Act (“DMCA”) creates an obligation to respect the technological protection that a copyright owner has placed on copies of his or her work.⁷⁷ For those who own or operate MIRS, these provisions require the MIRS not to circumvent technological controls that limit access or the ability to exercise one of the exclusive rights—such as the right to make copies—attached to the musical information within the MIRS.⁷⁸ Additionally, the MIRS must

68. THE AMERICAN SOCIETY OF COMPOSERS, AUTHORS AND PUBLISHERS, ASCAP INTEREST LICENSE AGREEMENT, at <http://www.ascap.com/weblicense> (last visited Mar. 3, 2004).

69. BMI, DIGITAL LICENSING CENTER, at <https://dlc.bmi.com/dlcmenu.asp> (last visited Mar. 3, 2004).

70. SESAC, LICENSING, at <http://www.sesac.com/licensing/licensing1.asp> (last visited Mar. 3, 2004).

71. See SoundExchange, at <http://soundexchange.com> (last visited Mar. 3, 2004); U.S. COPYRIGHT OFFICE, WEBCASTING RATES, at http://www.copyright.gov/carp/webcasting_rates.html (last visited Mar. 3, 2004) [hereinafter WEBCASTING RATES].

72. WEBCASTING RATES, *supra* note 71.

73. 17 U.S.C. § 201(a) (2000).

74. See *id.* §§ 101, 201(b).

75. See *id.* § 204(a).

76. See M. WILLIAM KRASILOVSKY & SIDNEY SHEMEL, THIS BUSINESS OF MUSIC, 293-305 (8th ed. 2000).

77. Universal City Studios, Inc. v. Corley, 273 F.3d 429, 441 (2d Cir. 2001).

78. *Id.* at 440.

not remove or alter “copyright management information” which could include information identifying the artist and/or publisher of a musical work or sound recording.⁷⁹ These provisions also provide protection to the owner or operator of a MIRS against unauthorized access to technologically protected, copyrightable MIRS.

Section 1201 of the DMCA creates three claims that a copyright owner can make with regard to access and copy control technologies: (1) unauthorized circumvention of a “technological measure that effectively controls access” to a copyrighted work; (2) unauthorized manufacture or trafficking in a technology that circumvents a copyright owner’s access control technology; and (3) unauthorized manufacture or trafficking in a technology that circumvents a copyright owner’s technology that protects one of the owner’s exclusive rights.⁸⁰ The copyright owner’s technology “effectively controls access” if the technology requires the application of information (such as a password), application of a process, or treatment in order to acquire access to a copy of the work.⁸¹ A person or a technology “circumvent[s] a technological measure” by descrambling, decrypting, or otherwise bypassing, removing, deactivating, or impairing the copyright owner’s technology.⁸²

Some limited exemptions from these claims exist for non-profit libraries, archives, and educational institutions; for law enforcement and intelligence-gathering agencies; those who reverse engineer computer programs; those doing research on encryption; those doing security testing; and those who circumvent access controls that gather personally identifiable information.⁸³

Section 1202 of the DMCA sets forth a series of obligations to ensure the integrity of so-called “copyright management information,” which the copyright owner has associated with the copyrighted work.⁸⁴ The simplest example of such information would be a copyright notice, but the statute also includes information identifying the composer, performer, and/or the copyright owner, as well as any “terms and conditions for use of the work” within the definition of “copyright management information.”⁸⁵ Section 1202 creates a cause of action against someone who makes copies but removes the notice.⁸⁶ Digital file formats permit far more extensive forms of metadata to be associated

79. See 17 U.S.C. § 1202 (2000).

80. *Id.* §§ 1201(a), (b).

81. *Id.* § 1201(a)(3)(B).

82. See *id.* § 1201(a)(3)(A); see also *Corley*, 273 F.3d at 441.

83. See 17 U.S.C. §§ 1201(d)-(j) (2000).

84. See *id.* § 1202(b) (prohibiting the removal or alteration of copyright management information); see also *id.* § 1202(c) (defining “copyright management information” as including nearly all “information conveyed in connection with copies or phonorecords of a work or performances or displays of a work, including in digital form, except that such term does not include any personally identifying information about a user of a work or of a copy, phonorecord, performance, or display of a work”).

85. See *id.* § 1202(c).

86. See *id.* § 1202(b)(1).

with copyrighted works. Section 1202 gives the copyright owner a basis for insisting that this information be replicated in all copies of the work and for pursuing those who associate false metadata with the music information.⁸⁷

III. PATENT AND TRADE SECRET

If an invention is novel, non-obvious, and useful, it is patentable in the United States.⁸⁸ Patentable inventions include not only new and useful things (i.e. end products), but also new and useful processes or methods. Judicial decisions in the late 1990s have greatly broadened the scope of patent coverage, particularly with respect to software and methods of doing business.⁸⁹ As a result, developers of MIRS or software used in MIRS should investigate whether the processes embodied in their software infringe an existing patent or are themselves patentable. Obtaining a patent (or “prosecuting” a patent) can be an expensive endeavor. A defensive maneuver for software developers, for whom patent protection is not cost-justified, is to publish a description of their novel and non-obvious processes. By making the invention public, a developer reduces the risk that another party will claim patent protection for the developer’s invention.

In the European Union, software patents have been more difficult to obtain, although about 30,000 such patents have been issued.⁹⁰ In the wake of considerable controversy,⁹¹ the European Parliament has adopted an amended directive restricting the patentability of software.⁹²

The downside of publication is the forfeiture of trade secret protection. Trade secrets are protected by state law in the United States.⁹³ A trade secret is usually defined as information that derives actual or potential economic value from not being generally known or readily ascertainable and is subject to reasonable efforts to maintain its secrecy.⁹⁴ Trade secret protection for software embodying trade secrets remains in place as long as the software is released to the public in object

87. *See id.* §§ 1202(a), (b).

88. 35 U.S.C. §§ 101-103 (2000).

89. *See, e.g.,* AT&T Corp. v. Excel Comm., Inc., 172 F.3d 1352 (Fed. Cir. 1999); State St. Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1374-75 (Fed. Cir. 1998).

90. FFII: Software Patents in Europe, at <http://swpat.ffii.org> (last visited Mar. 5, 2004).

91. The proposed directive has been very controversial. *See, e.g.,* Matthew Broersma, *Patent Battle to Culminate in Brussels*, CNET News.com, at http://news.com.com/2100-1012_3-5068007.html (Aug. 26, 2003).

92. *See* FFII: Software Patents in Europe, Europarl 2003-09-24: Amended Software Patent Directive, at <http://swpat.ffii.org/papers/euoparl0309> (last visited Mar. 5, 2004).

93. *See* MELVIN F. JAGER, TRADE SECRETS LAW § 2:3 (2003); Christopher Rebel J. Pace, *The Case for a Federal Trade Secrets Act*, 8 HARV. J.L. & TECH. 427, 429-35 (1995). Although state law is the source, protection is fairly uniform because most jurisdictions have adopted the Uniform Trade Secrets Act. THE NAT’L CONFERENCE OF COMMISSIONERS ON UNIFORM STATE LAWS, A FEW FACTS ABOUT THE UNIFORM TRADE SECRETS ACT, at http://www.nccusl.org/nccusl/uniformact_factsheets/uniformacts-fs-utsa.asp (last visited Mar. 5, 2004).

94. *See* UNIF. TRADE SECRETS ACT § 1(4) (1985).

code form.⁹⁵ However, reverse engineering generally is not regarded as theft of a trade secret,⁹⁶ and if a party reverse engineers such software and publicly discloses the trade secret(s) contained therein, the information is no longer a protected trade secret.

IV. DATABASE PROTECTION

The European Union has created a distinct right in otherwise uncopyrightable databases,⁹⁷ and proposals to create a similar right in the United States have been considered by Congress over the past six years or so. Creation of such a right could have a significant impact on those who design, operate, and use MIRS. Many databases include information from other databases, and a right of protection for databases could cause the need for far more extensive licensing of current practices. As of this writing, Congress is considering proposed legislation that would provide protection from misappropriation likely to harm the market for those databases requiring substantial investments to create or maintain.⁹⁸

With respect to MIRS, the effect of database legislation would be to protect even factual music information, such as bibliographic or other metadata. For example, a complete bibliography or discography of a particular artist arranged in alphabetical or chronological order probably would not be an original work of authorship protected by copyright. However, under the proposed legislation, such a collection of information would be protected.

V. CONCLUSION

Intellectual property law in the United States is designed to provide incentives for investments of time, energy and financial resources in innovation. Necessary trade-offs are made between the rights of innovators, follow-on innovators, and users. In the field of music information, the multiplicity of rights holders and licensing agents makes costly the aggregation of necessary rights to build or operate a MIRS. Those who build MIRS also should be aware of their own rights bestowed under U.S. intellectual property law.

95. See *Stargate Software Int'l, Inc. v. Rumph*, 482 S.E.2d 498, 502 (Ga. Ct. App. 1997) (the term "trade secret" applies to data or a program); *Jostens, Inc. v. Nat'l Computer Sys., Inc.*, 318 N.W.2d 691, 698 (Minn. 1982) ("unique principles, engineering, logic and coherence in computer software may be accorded trade secret status").

96. See UNIF. TRADE SECRETS ACT § 1(2) (comments) (1985).

97. Council Directive 96/9, 1996 O.J. (L 77) 20.

98. See generally Database and Collections of Information Misappropriation Act, H.R. 3261, 108th Cong. (2003) (provides civil liability, subject to exceptions, for those who misappropriate information contained in another's database).