

ONLINE MUSIC SERVICES AND ACADEMIC LIBRARIES

by Amanda Maple, Music Librarian, University Libraries, The Pennsylvania State University¹

As of fall 2005, nearly 70 colleges and universities had license agreements with online music providers such as Napster, Cdigix, Ruckus, Rhapsody, iTunes, and most recently, Yahoo! Music, to provide their students access to music audio files.² Penn State University was the first to announce such an agreement.

This paper reviews recent events related to electronic access to digital audio and their implications for academic institutions. For libraries, these events amplify a series of challenges regarding ownership, management of intellectual property, preservation, and the future of collection development—most of which are similar to questions raised by the distribution of electronic journals. But online music also raises some newer questions related to distribution models and the need for digital library planning to coordinate closely with other technological developments in higher education.

Widespread music file sharing started in 1999 when Shawn Fanning, with help from others, developed a way to find MP3 files on personal computers connected to the Internet, and share copies of those files between personal computers. This method of file-sharing between personal computers became known as peer-to-peer (P2P), and Fanning's program, called Napster, also incorporated technologies for chat rooms, instant messaging, hot lists, and message boards.

P2P software was rapidly adopted and, by 2004, Mark Katz was reporting the results of surveys of people who shared music using P2P networks. He identified the advantages of P2P networks for the large number of participants: the ability to find almost any music recording, learn about many different kinds of music, connect to other people with similar musical interests, and acquire or send files immediately. Katz also noted, "An entire generation of listeners will come of age not knowing of a world *without* such possibilities."³ These music users, now students and faculty at our colleges and universities, bring technological expectations to their academic classroom and library experiences.

The Impact of Napster on Campus

Napster transformed the music listening habits of a generation and set off changes within the music industry and in academic institutions. As college and university students began to use the Napster software to discover and exchange music files and create online musical communities, use of their schools' Internet bandwidth skyrocketed, causing problems for other network users

and the institutions' network managers. The copyright owners of much of the music content being exchanged also objected, because Napster users were obtaining content without paying anything to the copyright owners.⁴

Napster was shut down in 2001 as a result of a court decision in a lawsuit brought by sound recording publishers in a case known as A&M Records, Inc. v Napster, Inc. The court determined that by knowingly facilitating unauthorized sharing of copyrighted music, Napster violated the distribution and reproduction rights of the copyright holders.⁵ In November 2002, software company Roxio, Inc. bought Napster's name and intellectual property and, in December 2003, launched the revived Napster as a licensed streaming service plus single-purchase downloading service for music.⁶

In December 2002, higher education and the entertainment industry formed the Joint Committee of the Higher Education and Entertainment Communities, which is comprised of representatives from the recording industry, university administrators, EDUCAUSE, and the American Council on Education. Co-chaired by Graham Spanier, President of Penn State University, and Cary Sherman, President of the Recording Industry Association of America, the joint committee was formed to "examine ways to reduce the inappropriate use on campuses of P2P file sharing technologies" and "discuss [the two communities'] differences on federal intellectual property legislative issues."⁷

In August 2004, the joint committee reported to the US Congress about efforts during the preceding academic year to address inappropriate file sharing on college campuses. Spanier and Sherman reported that progress had been made in four areas: "legitimate online service, education, enforcement, and technological measures.... Colleges and universities have increasingly been offering new services and amenities to their students, such as free newspapers, special phone plans, and access to cable TV. Heeding the call for new sources of legal content, schools this past year began to introduce legitimate music services on campus."⁸

Penn State's Response

In the fall of 2003, Penn State University announced a license agreement to provide access to the revived Napster online music service for all Penn State students. Students are not charged for this service, which allows them access to free streaming content and tethered downloads (i.e., downloads that the student may retain on up to three computers). The university is paying for this service as part of its overall information technology services partially funded by the Information Technology Fee charged to students (the fee has not increased as a result of this service).⁹

During spring semester 2004, Penn State University tested Napster's new service in a pilot involving 18,000

P2P IN SUPPORT OF EDUCATION AND RESEARCH

One example of an adaptation of peer-to-peer (P2P) technology for education and scholarship is the Penn State LionShare project. Funded by The Andrew W. Mellon Foundation, this project followed upon Penn State's Visual Image User Study (VIUS) assessment of the scholarly use of digital images for teaching, research, and outreach in an academic setting.

LionShare is a P2P networking technology intended to enable community knowledge pools. It "merges secure and expanded electronic file-exchange capabilities with information gathering tools into a single, open source application." The flexibility of P2P provides a basis for enabling all types of research files and learning objects to be stored close to both originators and users.

Decentralized P2P "gives individuals the ability to locally hold, organize, control, and contribute their personal collections for the benefit of a larger community. This does not rule out the long standing archival and distribution roles of centralized knowledge repositories, such as libraries or portal-style repositories. However, extending a knowledge framework to every member of a community means going beyond simply giving everyone a library card; it means enabling everyone to be a collector and a contributor to their personal and community knowledge pool."¹

A question for academic libraries today is how to facilitate the development of such community knowledge pools, including developing and contributing specific types of learning objects (including music files) sourced from collections built by or licensed through the library, proactively or on demand. Students in online music courses and teachers looking for images, music, and texts for a variety of interdisciplinary topics would all benefit from the involvement of librarians who can match content to teaching goals. Active involvement requires a re-envisioning of academic library services, and stronger partnerships across the institution.

—Amanda Maple

¹ "LionShare: Connecting and Extending Peer-to-Peer Networks" (October 2004): 1, 3, <http://lionshare.its.psu.edu/main/info/docspresentation/LionShareWP.pdf>.

students living in residence halls at the University Park campus. Service for all students (over 80,000) was rolled out in fall semester 2004.

Interested in exploring the teaching and learning potential of Napster, President Spanier in early summer 2004 invited the Dean of the University Libraries, Nancy Eaton, to participate with a group of other administrators and faculty in planning ways to facilitate the use of Napster in teaching. Dean Eaton asked the office of Digital Library Technologies to assess the technical issues, and the Music Librarian to help assess the relevance of Napster content to music assignments used in Penn State's academic programs. We compared the list of musical works and performances that are used for teaching by faculty who use the University Libraries' course reserves services¹⁰ to music provided by Napster. Because the Penn State University Libraries also initiated license agreements during the summer of 2004 with Classical Music Library¹¹ and Naxos Music Library,¹² we compared the content of all three online music services with the list of recordings on reserve for courses.

Analysis of Content in Napster & Other Online Music Services

Audio databases tend to be described in terms of the number of tracks they contain. One work in several movements equates to several tracks. As of May 2005, each of the three music services contained roughly half of the tracks that were on reserve for courses.¹³ There was substantial overlap across these services in the representation of works by famous and prolific composers. When checking for specific performances, Napster provided 12% of the performances on our reserve list, Classical Music Library provided about 5%, and Naxos Music Library about 3%. This does not mean however, that the other performances provided by Napster, Naxos, and Classical do not substitute for the purposes of the faculty. Based on our experience so far, the performances available via these services are acceptable to our faculty much of the time.

The types of music on our reserve lists that are not fully represented in these three music services include computer and electronic music, art song, 20th-century composers, medieval and Renaissance music, opera, and world music. We concluded during our initial assessment that faculty would want to select from several sources of music for their teaching: Napster, Naxos Music Library, Classical Music Library, and the University Libraries' collection of sound recordings.

This analysis of Napster's content in relation to the teaching needs of the faculty helped our university administration understand the continuing role of the University Libraries in providing content. The importance to faculty of the specific content in digital services was also reported in the findings of the Visual

Image User Study (VIUS), a 29-month study funded by The Andrew W. Mellon Foundation that assessed needs for digital image delivery at Penn State University. The study, undertaken from 2001 to 2003, concluded that “content is the most important factor when students and faculty consider the value of a digital image delivery system.”¹⁴

Searchability and Metadata

Searching in Napster is similar to that of other online music services developed after the original Napster and P2P file-sharing systems. Napster provides search indexes for track title, album title, and artist, and, as of November 2005, provides an “all” search that enables searching for terms across those three indexes. Browsing is available by genre (such as alternative, blues, Christian, classical, country, dance/electronic, easy listening, folk, hip-hop, jazz, Latin, pop, R&B, reggae, rock, world).

When assessing the effectiveness of Napster’s interface for finding Western art music, which comprises most of the music on course reserve in the library, we observed that searchable terms are not standardized, for example, the personal name of one individual is input in a variety of ways and a composer’s name is frequently in the track title but not in the artist title (this problem should be alleviated by the new “all” index). In other cases it is impossible to tell which work movements derive from, for example, individual movements of Beethoven’s piano trios are listed, but in some cases not which trio they are from. Sometimes the performer is not identified at all. However, a professor who teaches a world music course at Penn State mentioned that her students are able to find music in Napster that helps them fulfill the course’s learning objectives, and they are comfortable with the search interface.

The search interfaces of Classical Music Library and Naxos Music Library, in contrast to that of Napster, were designed to search and retrieve Western art music and provide several additional access points (such as composer, conductor, soloist, work/track title, work/opus number, catalog number, year composed, key, instrument, period, genre, country, moods, label).

Napster’s tool for creating embedded Web links to specific tracks facilitates the integration of Napster content with other course content via electronic course reserves or course management software. Classical Music Library and Naxos Music Library provide similar static URL features.

Technical Issues for Napster in a Networked Environment

Listening to audio from Napster requires installation of the Napster client on the end-user’s computer. The

ONLINE MUSIC SERVICES CONTENT AS A PERCENT OF PENN STATE LIBRARY COURSE RESERVES, MAY 2005

Tracks

Naxos Music Library	52%
Classical Music Library	49%
Napster	45%

Works

Napster	36%
Classical Music Library	35%
Naxos Music Library	34%

Performances

Napster	12%
Classical Music Library	5%
Naxos Music Library	3%

Napster client is compatible with Windows 2000 and Windows XP operating systems. It does not work with earlier versions of Windows or with Macintosh or Linux operating systems. Users must also have the Internet Explorer browser and Windows Media Player. Not all students and faculty at Penn State have computers whose operating systems are compatible with the Napster client. To ensure access to Napster for their learning and teaching, the Digital Library Technologies and Classroom and Lab Computing units of Information Technology Services agreed to install the Napster client on public workstations in the libraries and student computing labs at the University Park campus. In doing so, we learned that the client is not designed to be used in a multi-user networked environment.

Penn State’s license with Napster allows each student access to free streaming content and “tethered” downloads (downloads that students may retain on up to three computers). The library and computing labs decided to block downloads on the public workstations so students would not waste one of their downloads at a public workstation.

The testing and troubleshooting involved in this process took many weeks, but with technical support from Napster, our computer analysts were able to adapt the security already in place on public workstations to accommodate the client and enable streaming from Napster at the public workstations while blocking downloads. When Napster releases a new version of

THE IMPORTANCE OF FAIR USE FOR TEACHING & RESEARCH

Teachers and researchers are creative forces who promote learning and scholarly communication with new and old content in exciting ways. In the Copyright Act, the US Congress “provides that certain kinds of uses of copyrighted works, called fair uses, are not an infringement of copyright.”¹

Fair use is a provision in the copyright law that allows, under certain circumstances, anyone to copy, publish, or distribute parts and sometimes even all of a copyrighted work without permission for purposes such as commentary, news reporting, education, or scholarship. In the world of academic institutions, fair use is an important legal doctrine for teaching and research.

In 2002, Congress enacted another exemption in the copyright law that is important to educational applications. The TEACH Act updated the copyright law pertaining to transmissions of performances and displays of copyrighted materials. The TEACH Toolkit at North Carolina State University explains that the law says “it is not copyright infringement for teachers and students at an accredited, nonprofit educational institution to transmit performances and displays of copyrighted works as part of a course if certain conditions are met. If these conditions are not or cannot be met, use of the material will have to qualify as a fair use or permission from the copyright holder(s) must be obtained.”²

According to Kenneth Crews, because the TEACH Act’s language is tightly limited, “an ironic result is that fair use—with all of its uncertainty and flexibility—becomes of growing importance. Indeed, reports and studies leading to the drafting and passage of the new law have made clear that fair use continues to apply to the scanning, uploading, and transmission of copyrighted materials for distance education, even after enactment of the TEACH Act.”³

—Amanda Maple

¹ Lydia Pallas Loren, “The Purpose of Copyright,” *Open Spaces Magazine* 2, no. 1 (February 1999), <http://www.openspaces.com/article-v2n1-loren.php>.

² Peggy E. Hoon, “The TEACH Toolkit: An Online Resource for Understanding Copyright and Distance Education,” <http://www.lib.ncsu.edu/scc/legislative/teachkit/overview.html>.

³ Kenneth D. Crews, “New Copyright Law for Distance Education: The Meaning and Importance of the TEACH Act,” at the American Library Association’s Web page “Distance Education and the TEACH Act,” <http://www.ala.org/ala/washoff/WOissues/copyrightb/distanced/Default3685.htm>.

their client, Napster content becomes unavailable to users of our public workstations until our technical support staff is able to test the new version, adapt it to our security environment, and install it at each public workstation. This process takes time. Because Classical Music Library and Naxos Music Library do not require unique clients for access and playback (they function with the widely available Windows Media Player and, in the case of Classical Music Library, Macromedia Flash Player) or offer tethered downloads, they do not present the same challenges in our multi-user networked workstation environment.

Library Services

Via the Penn State University Libraries’ electronic reserve service for audio, we point to audio files from Classical Music Library and Naxos Music Library for many courses. After consulting with the instructor, we sometimes point to files from Napster. When the musical work and, when specified, performance requested by faculty is not available from these three services, we provide streamed audio derived from the University Libraries’ collection of sound recordings. Seventy-five percent of the works placed on course reserve during fall semester 2004 are represented in either Naxos Music Library, Classical Music Library, or Napster, though not always in the manifestation needed for the course.

Libraries at other institutions are using portable digital music players, such as iPods, to enhance their services. The Crouch Fine Arts Library at Baylor University supplements its course reserve service for audio by loading a semester’s worth of listening assignments for all music courses onto iPods, which are checked out for a 12-hour loan period.¹⁵ Another academic library reported to an electronic discussion list for music librarians that they reformat fragile or rare sound recordings into the MP4 file format on demand and load the reformatted files onto an iPod to provide access for users, protect the original, and create a preservation file for their library’s digital repository.

New Strategies for Academic Music Libraries

New Preservation Strategies

Academic libraries serve an archival function by developing collections over time for the use of current and future scholars. In the world of electronic journals, projects such as JSTOR,¹⁶ the Electronic Journal Archiving Program,¹⁷ LOCKSS,¹⁸ and Portico,¹⁹ all funded by The Andrew W. Mellon Foundation, are parts of a solution for long-term access to journal content that our libraries pay annually to lease but not to own.

The library community faces the same challenge of guaranteeing preservation of licensed music content for future generations. Diane Parr Walker observed, “If subscriptions to recorded music are the wave of the future,

it is unrealistic to expect an industry motivated by financial profit and driven by consumer market forces to guarantee perpetual access for the benefit of libraries and scholarship."²⁰ The framework for addressing this challenge is now being built.

In 2003, the Council on Information and Library Resources began to study the national picture for audio preservation²¹ and the library community convened a national symposium to assess needs and develop an action agenda.²² In February 2005, the National Endowment for the Humanities funded Sound Directions, an 18-month joint technical archiving project between the Indiana University Archives of Traditional Music and the Archive of World Music at Harvard University.²³ One of the goals of Sound Directions is to "develop best practices and test emerging standards for archival audio preservation and storage in the digital domain." The Sound Directions "Project Narrative" provides an overview of existing standards and related audio digitization projects.²⁴

New Collecting Strategies

The "streaming audio via license" model of access presents other issues similar to those found with e-journals. With aggregator licenses, the library loses its ability through individual selection of works to tailor the collection to the curricular and research needs of its own students and faculty. As in all disciplines, much more music is going to be available through online services than a given library will be able to acquire. We must begin to balance the licensed and the owned content. In this new environment, strategies for developing representative music collections may need to refocus on collecting content that is not easily available through licensed sources.

New Access Strategies

In the digital world, even if all or much of the music content our academic users need is available via aggregated online services, how will our users find it? Do we rely on the varying search interfaces offered by each music service? Will there be a locus for searching in the online library catalog or via a different federated search engine? Bibliographic descriptions of sound recordings in library catalogs are not currently designed to provide track-level access to online music, but the development of new standards for description based on the International Federation of Library Associations and Institutions' "Functional Requirements for Bibliographic Records" (FRBR) promises to enable library catalogs to greatly enhance access to music, including parts of larger works.²⁵ In the commercial arena, a Web search engine called GoFish has recently been developed to provide a federated search across the growing number of online music services such as Napster and iTunes.²⁶ Libraries

need to assess their options for providing users accurate and transparent access to the variety of online music content they license on their users' behalf.

Balancing Institutional Motivations & the Rights of Users of Copyrighted Works

The reasons a college or university administration might decide to promote a license agreement for providing an online music service to its students are understandable: reduce stress on campus network bandwidth; reduce vulnerability to computer viruses spread through file sharing; promote the extracurricular education of students about topics such as ethical behavior, computer viruses, campus network bandwidth, and intellectual property; contribute to a defensible position in court if the institution is sued.

These reasons may not relate to the curricular and research aspects of the institution's mission. Though there are added benefits to teaching that result from such a license agreement, there is also the potential for rhetorical and real limitations that might unintentionally diminish teaching or research by not recognizing the rights of users of copyrighted works, as expressed by the United States Congress.

When initiating license agreements with music copyright holders, educational institutions and libraries must do so in ways that do not dismiss the fair use and TEACH Act rights made available by the copyright law. Licensed audio can be a valuable resource for teaching, learning, and research by providing convenient access for users and enabling access to content that some libraries are not otherwise able to provide. However, depending on the outcome of the fair use analysis, a license may not be necessary for using copyrighted music for learning, teaching, or research, and rhetoric that implies otherwise must be guarded against. An institutional or library license, when negotiated well, will complement rather than narrow a user's rights for use of the content.

As our universities move forward in the digital environment and enter into licensing agreements for access to content—music, images, or text—the rights of faculty and students under copyright law must be protected. Libraries have developed considerable expertise in managing intellectual property rights and responsibilities through their experience with licensed e-journals, expertise that is of value in putting other institutional agreements into place. Library involvement in institutional discussions about license agreements for music is an example of how libraries can contribute to a university's continuous review of policies and development of information services.

—Copyright 2006 Amanda Maple

- 1 The author thanks her Penn State colleagues Nancy Eaton, Dean, University Libraries, and Henry Pisciotta, Arts and Architecture Librarian, for their assistance with this paper, and gratefully acknowledges the contributions of G. Jaia Barrett, Deputy Executive Director, ARL, and Peggy E. Hoon, Scholarly Communication Librarian, North Carolina State University. This paper was made possible by a Penn State University Libraries faculty research grant, 2004–05.
- 2 "A Report to the Subcommittee on Courts, the Internet, and Intellectual Property, House Judiciary Committee, on Progress during the Past Academic Year Addressing Illegal File Sharing on College Campuses," Joint Committee of the Higher Education and Entertainment Communities, September 21, 2005, <http://www.riaa.com/news/newsletter/pdf/JointCmteReportCardFINAL092105.pdf>; Brock Read, "More Colleges Strike Up Music-Sharing Deals, Despite Lukewarm Response," *Chronicle of Higher Education* 52, no. 2 (September 2, 2005): A41, <http://chronicle.com/weekly/v52/i02/02a04101.htm>; Dan Carnevale, "In a New Deal, Stanford U. Students Will Get Yahoo's Music Service Free for a Year," *Chronicle of Higher Education* 52, no. 10 (October 28, 2005): A42, <http://chronicle.com/weekly/v52/i10/10a04201.htm>.
- 3 Mark Katz, *Capturing Sound: How Technology Has Changed Music* (Berkeley: University of California Press, 2004): 159.
- 4 Trevor Merriden, *Irresistible Forces: The Business Legacy of Napster & The Growth of the Underground Internet* (Oxford: Capstone, 2001): 3–6, 16–17.
- 5 Sarah Holthusen, "The Napster Decision: Implications for Copyright Law in the Digital Age," *University of Queensland Law Journal* 21, no. 2 (2001): 245–50; Matthew Antonelli et al., "Unanimous Ninth Circuit Substantially Affirms Lower Court Injunction Against Napster," *Intellectual Property & Technology Law Journal* 13, no. 55 (May 2001): 16–19.
- 6 "Napster Lives Again As Legal Distributor of Music on the Web," *Wall Street Journal*, eastern ed. (February 25, 2003): A10; Eric Schumacher-Rasmussen, "Napster Wakes Up," *Emedia* 16, no. 12 (December 2003): 8.
- 7 Graham B. Spanier, "Purpose and Scope of the Joint Committee of the Higher Education and Entertainment Communities," statement by higher education members of the committee, December 10, 2002, posted from a link imbedded in the online version of Scott Carlson, "Recording Industry Plans to Accelerate Complaints about Illegal File Sharing," *Chronicle of Higher Education* 49, no. 17 (January 3, 2003): A38, <http://chronicle.com/weekly/v49/i17/17a03801.htm>.
- 8 Cary H. Sherman and Graham B. Spanier, "A Report to the Subcommittee on Courts, the Internet, and Intellectual Property by the Joint Committee of the Higher Education and Entertainment Communities on Progress during the Past Academic Year Addressing Illegal File Sharing on College Campuses" (August 23, 2004), <http://live.psu.edu/index.php?sec=vs&story=7776&pf=1>.
- 9 Joint Committee of the Higher Education and Entertainment Committees, Education Task Force, "University Policies and Practices Addressing Improper Peer-to-Peer File sharing" (March 19, 2004): 6, <http://www.educate.edu/ir/library/pdf/CSD3092.pdf>; "Napster, Your Source for Online Music at Penn State: FAQ," <http://napster.psu.edu/faq.html>.
- 10 The Penn State University Libraries provide both traditional and electronic course reserve services for sound recordings. The electronic course reserve service for audio employs streaming technology to provide Penn State students and instructors access to audio being studied in courses at Penn State University. The service is available to instructors at any Penn State campus location, and is hosted by the Music and Media Center in the Arts and Humanities Library at University Park campus.
- 11 Classical Music Library, distributed by Alexander Street Press, is a database of licensed classical music recordings from major labels, developed specifically for libraries, <http://www.alexanderstreetpress.com/products/clmu.htm>.
- 12 Naxos Music Library is a database of licensed music recordings from the Naxos label and other independent record labels, providing mostly classical music, with some jazz and world music, <http://www.naxosmusiclibrary.com/>.
- 13 We learned from Naxos that they had licensed their content to Napster and other music services. However, all the Naxos content is not accessible through Napster.
- 14 Visual Image User Study, "Summary Report," p. 2, <http://www.libraries.psu.edu/vius/summary.html>.
- 15 "AudioReserves2Go," Crouch Fine Arts Library, Baylor University, <http://www.baylor.edu/lib/finearts/index.php?id=30624>.
- 16 "JSTOR Establishes Paper Repositories," *JSTORNEWS* 8, no. 3 (December 2004), <http://www.jstor.org/news/2004.12/repositories.html>.
- 17 Linda Cantara, ed., *Archiving Electronic Journals: Research Funded by the Andrew W. Mellon Foundation* (Washington, DC: Digital Library Federation, Council on Library and Information Resources, 2003), <http://www.diglib.org/preserve/ejp.htm>.
- 18 LOCKSS (Lots of Copies Keep Stuff Safe), <http://lockss.stanford.edu/>.
- 19 Portico began as the Electronic-Archiving Initiative launched by JSTOR in 2002. See <http://www.portico.org/about/>.
- 20 Diane Parr Walker, "Music in the Academic Library of Tomorrow," *Notes* 59, no. 4 (June 2003): 824–25.
- 21 Council on Library and Information Resources, "Audio Preservation," <http://www.clir.org/activities/details/audiopres.html>; Abby Smith, David Randal Allen, and Karen Allen, *Survey of the State of Audio Collections in Academic Libraries* (Washington, DC: Council on Information and Library Resources, August 2004), <http://www.clir.org/pubs/abstract/publ28abst.html>.
- 22 Judith Matz, ed., "Sound Savings: Preserving Audio Collections: Proceedings from the Symposium" (Washington, DC: Association of Research Libraries, 2004), http://www.arl.org/preserv/sound_savings_proceedings/.
- 23 "Sound Directions: Digital Preservation and Access for Global Audio Heritage," Indiana University Digital Library Program, <http://dlib.indiana.edu/projects/sounddirections/>; "IU Archives of Traditional Music Awarded NEH Grant to Digitally Preserve Endangered Sound Recordings," Indiana University Media Relations, <http://newsinfo.iu.edu/news/page/normal/1854.html>.
- 24 "Sound Directions Proposal: Project Narrative," <http://dlib.indiana.edu/projects/sounddirections/projectDoc/admin/grant.shtml#other>.
- 25 Harriette Hemmasi, "Why Not MARC?" presented at ISMIR 2002, Third International Conference on Music Information Retrieval, Paris, France, October 2002, <http://variations2.indiana.edu/pdf/hemmasi-ismir2002.pdf>; IFLA Study Group on the Functional Requirements for Bibliographic Records, *Functional Requirements for Bibliographic Records* (Munich: Saur, 1998), <http://www.ifla.org/VII/s13/frbr/frbr.pdf>.
- 26 "About GoFish Technologies Inc.," <http://www.gofish.com/about.html>.