Digital Music Libraries

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Introduction and Scope

This bibliography seeks to investigate the budding topic of digital music libraries. Many of the articles have a strong focus on music in academic libraries and how these institutions have dealt with copyright, information retrieval, user needs, metadata, and the overall logistics of digitization. One article on a Sony product was chosen because of the contrast it offered to the academic world and due to the overall relevance to the topic. Even though a music library is more than just a record collection and consists of scores, books on music and all other materials related to music, this bibliography intentionally emphasizes music in the audio format because of growing interest in digital recorded music in today’s mainstream culture.

Description

A digital music library can consist of many things. It can be almost identical to any other digital library where paper sources have simply been duplicated in digital format for their patrons to access over the Internet or through any of the library’s computers. It could also be as simple as the music stored in iTunes or on an iPod. Usually it is some mixture of the two. The most extensive and interesting examples of digital music libraries can be found in academic institutions that have embarked upon projects that digitized some aspect of their music collections. The reasons for digitizing are not any different from those of the microfilming projects performed in the 1980s (Griscom, 2003). Microfilming was done as a means of preservation, although the improved access was seen as a pleasant side effect. Today with digital formats, the emphasis seems to be on improving access.

Summary of Findings

It is important that libraries be proactive about changes in their users’ needs. Once the services offered are perceived as insufficient, the collections will no longer be relevant to the patrons’ needs and library usage will dwindle (Duffy, 2006). The patrons of today already immerse themselves with personal soundtracks using Apple’s iPod or other various digital media players. Digital media has created a divide between library holdings and the demand for better access to digital resources (Buczynski, 2006).
Libraries can no longer run on the assumption that the services they offered even ten years ago are sufficient to their users’ needs today (Duffy, 2006).

Published studies on electronic materials in libraries show a very positive response to these resources. Patrons appreciate the 24-hour access that digital music libraries offer (Phinney, 2006). Although libraries do want to offer the most up to date and relevant services available, and digital copies can be quickly reproduced, transmitted, and shared, the issue of copyright must first be addressed. Griscom (2003) describes a list of ground rules that must be followed in order to reap the benefits of digital media. The resources must be controlled through either library equipment or library-restricted networks. Access from beyond the scope of the library’s control must also be authenticated in some way. Griscom’s recommendation is that the works digitally reproduced be used for educational purposes and to only have the pieces of music available that are educationally necessary. Thus, once the course of study is over the access is revoked.

Conversely, virtual reference does not necessarily need to worry about copyright. This kind of reference is a service that often includes the use of e-mail, chat rooms, live voice chat, and other questions submitted via the web (Szymanski, 2005). These services are designed to be akin to going to a library’s reference desk. Such services have become more abundant and may even be more relevant to music students. Szymanski (2005) indicates that music students ask fewer questions that require further explanation, which are better resolved in a face-to-face meeting, and more questions about where and how to find specific materials, for which virtual reference is probably best suited.

Lai (2010) conducted a survey of the Hong Kong Baptist University Library’s users’ needs. What she found was that music students believe electronic resources, including the ability to listen to music online, were very influential in the success of their education. Even outside the academic world, music consumers have a definite preference for the flexibility of the Internet and its convenience (Walker, 2003). With more classrooms becoming computerized, the application of a digital music library in the classroom is quickly becoming utilized. Digital access also allows for other education resources, such as distance learning, to open up (Maple, 2000).
The Library at Winona State University combines two models into its digital music program: the e-reserve system that Griscom (2003) was outlining and that of the Variations model which is used at Indiana University. The Variations model retains copyright protection with the addition of music being available in the library and in the classroom using streamed audio. What Winona State does with the cataloging of their digital records is very interesting. They create individual web pages for each sound file and link the page to all other related records that a patron might find useful. For example, adding a link to the score of Beethoven’s *Fifth Symphony* on the entry for the audio of the piece. A link could be added to any books or article written about the symphony and/or Beethoven, as well (Sullivan, 2004). The Winona State project illustrates the nearly unlimited possibilities of a digital music library.

The University of Tennessee’s online reserve project experimented with delivering the digital audio to their History of Rock course. The University of Tennessee’s Libraries made 168 sound files available to students enrolled in the course and also added a play list function to the audio player. Authorization was only required at the beginning of the session to facilitate multiple listening choices until the user logged out of the system (Bayne, 2001). This feature allows for a listening experience more in tune with the music user’s needs.

Collaboration is another means of bringing the music library into the digital world. There exist numerous commercial digital music services. A very easy way to deliver audio to the library via the Internet would be to subscribe to one of these services much like a library would to any other database (Walker, 2003). The Variations3 project at Indiana University partnered with DRAM, an online music subscription resource, to offer over 8,000 recordings, liner notes, artwork, and other pertinent material to their students (Krueger, 2008). The Variations3 project is more than a digital music library. It is a learning system. It seeks to offer a complete environment where students can “discover, listen to, view, annotate and interact with music” (Krueger, 2008, p. 70). The idea behind partnering with DRAM was to not only to give better access to the Indiana University students but to potentially bring the same access to anyone around the globe.

In response to the inadequacy of conventional search engines, Duke University began its DW3 project as a tool for academic research. With more students and library
users on the web, Duke University felt it necessary to find a “better way of collecting, organizing, and disseminating information” (Fineman, 2001, p. 283). DW3 is a classical music resource that is more about finding music and musical writings on the web than it is about organizing digital audio. Subject headings are organized hierarchically much like other directory sites such as Yahoo. Links to text, pictures, audio, and video can all be accessed through this resource (Fineman, 2001).

One non-university digital music library is the Maine Music Box. Rural Maine libraries have a rich history of collaboration that grew from a coordinated effort to utilize each library’s limited resources more effectively. Ultimately, the goal was to give users access to many of the same kinds of material sought in the DW3 project: music, scores, artwork, and video. With the completion of the project, rural Maine libraries were able to provide access to hard to find pieces of music, making them available to a broad audience of educators and students. Students can use the audio to study by playing along or manipulating the pitch and speed. Comparisons could easily be made between computer generated performances and real recordings of pieces in order to teach the value of expression, inflection, phrasing, and other music concepts (Lutz, 2004).

The Vaughan Williams Memorial Library in North London, a specialist in folk music, found that its digital music library brought a switch in the institution from a collection-centered library to one that is user-centered. Even though digitization empowers the user, they also found the role of the librarian to remain crucial to the institution. Even in a digital format, a library is a complex system than requires a specialist to help navigate the information (Inskip, 2008).

Another area of interest to digital music libraries is that of alternative methods of searching and information retrieval. Music is unique in that its metadata can contain sound, making melodies just as searchable as keywords, author name, or journal titles. Jin (2004) lists three ways in which this can be accomplished: textual input, graphic input, and audio input. Textual input requires the searcher to transcribe pieces of melody into the system, a consequence being that the user would need basic knowledge of music. Graphic input would utilize pitches created through some form of keyboard or Musical Instrument Digital Interface (MIDI) device. Unfortunately, the user would need to play relatively correctly to perform a good search. Probably the most intuitive method would
be audio input. The user would need to only sing or hum the melody into the system. Audio input probably has the most application in the library since it can be used by the most people. All would require effective and complex algorithms that used approximate matching in order to function well enough for practical application (Bainbridge, 2005).

The OMRAS Project and the University of Waikato in New Zealand have also done extensive research on melody retrieval. The OMRAS project sough to make melody retrieval more applicable in practice. Although the project felt that they had made progress in making such a system usable by analyzing the audio and symbolic structure of music, they admitted that there is still much work to be done (Dovey, 2004).

The University of Waikato, on the other hand, was able to make progress in this research with the addition of search filters. The user could add a keyword to his/her search and/or edit the transcription errors that may have occurred in pitch and duration in order to search more accurately. The use of pitch contour over exact intervals was also found to be useful in searching melodies more effectively (Bainbridge, 2004).

What is also interesting to note is the research being done on the commercial front in music libraries. The Sony Music Browser attempts to bring a more personalized assortment of music to its users. In the past a small number of hits were delivered to the masses. Today it is possible to bring music to people in a more refined manner through digital means. Peer-to-peer systems like Napster have displayed that people wish to look beyond their own collections for music. While it is illegal to share songs, the Sony Music Browser allows the sharing of musical information in order to support and create musical communities. It gives the masses more options when looking for music than just what is provided through mass media (Pachet, 2004).

With the increasing interest in the web and new digital technologies, people want everything delivered to their desktops, laptops, and other devices capable of web browsing. Libraries will always need to deliver the highest level of technology available in order to remain relevant in the market of their patrons’ needs (Fineman, 2002). Even with issues like copyright, access, and information retrieval, the needs of the library user make digital music libraries more and more of a necessity in today’s society.
BIBLIOGRAPHY

Entry 1:


**Abstract:** This article describes the digital music library work at the University of Waikato, New Zealand. At the heart of the project is a music information retrieval workbench for evaluating algorithms and performing experiments used in conjunction with four datasets of symbolic notation ranging from contemporary to classical pieces. The outcome of this experimentation is woven together with strands from our larger digital library project to form the Web-based music digital library MELDEX (short for melody index). An overview of the workbench software architecture is given along with a description of how this fits the larger digital library design, followed by several examples of MELDEX in use.

**Annotation:** This article describes proposed ways of searching a digital music database. Instead of keywords, Bainbridge discusses adding actual music into the search. He discusses using music that is typed in to MIDI controller at the terminal, sung into a microphone, or using combinations of text and music to refine searches. Recognizing that not all users would have the ability to accurately navigate this kind of system, Bainbridge also discusses ways to enable the system to be user friendly. To eliminate frequent transcription error, searches could be accompanied by software that generalizes tunes, does not account for pitch but instead uses melodic contours, and has the ability to edit one’s music during the search.

**Search Strategy:** I chose INSPEC as part of a Dialog OneSearch strategy. My interest is specifically about music in libraries so I wanted to minimize false drops. I initially chose INFOSCI. Since my topic is regarding digitization, one of INPSEC’s subcategories is computers, which are crucial to digital libraries.

**Database:** INSPEC (Dialog), full-text through SFX

**Method of Searching:** Keyword

**Search String:**

s music?(w)librar? and digital
s s5 and information retrieval
t10/3,ab/all

Entry 2:

Abstract: There has been a recent explosion of interest in digital music libraries. In particular, interactive melody retrieval is a striking example of a search paradigm that differs radically from the standard full-text search. Many different techniques have been proposed for melody matching, but the area lacks standard databases that allow them to be compared on common grounds-and copyright issues have stymied attempts to develop such a corpus. This paper focuses on methods for evaluating different symbolic music matching strategies, and describes a series of experiments that compare and contrast results obtained using three dominant paradigms. Combining two of these paradigms yields a hybrid approach which is shown to have the best overall combination of efficiency and effectiveness.

Annotation: In this article, Bainbridge builds upon his previous writing about the various ways one could search a digital music library and delves into the technical nature of a melody-based retrieval system. This article is highly technical and deals heavily with the computer algorithms used and how they affect recall and precision. It has been cited once giving it slightly more authority over other articles having never been cited.

Search Strategy: I had found Bainbridge’s 2004 article very interesting and was interested to see if he had written anything else on the subject of digital music libraries.

Database: Social SciSearch (Dialog), full-text through SFX

Method of Searching: Author Search

Search String: S1 18 AU=BAINBRIDGE D S2 2 S1 AND DIGITAL(W)MUSIC

Entry 3:


Abstract: The University of Tennessee Libraries, USA, and the Division of Information Infrastructure collaborated on pilot projects from Jun 1999 through Dec 2000 to evaluate both the feasibility and suitability of delivering multimedia course reserves via the Internet using RealNetwork's SureStream technology and free plugin. Presents the procedures and findings of delivery of online audiovisual reserves to a very high enrolment course, The History of Rock. These projects are among the first to examine issues resulting from the deployment of a campus wide system designed for any teaching situation functioning in a heterogeneous network environment. Emphasizes collaboration among university entities as a critical factor for success.

Annotation: This article deals heavily with the problems associated with creating a digital music library, especially the big issue of copyright. In the article the authors discuss how they got around the problems they faced. Through collaboration with DII
and a commitment to serving their patrons, Bayne and Hodge lay down the format they used in creating their digital reserve program.

**Search Strategy:** Phinney’s 2006 article led me to look into some of the sources that it cited.

**Database:** LISA, full-text through SFX

**Method of Searching:** Citation Searching

**Search String:** Digital and reserves and audio

**Entry 4:**


**Abstract:** Ray Bradbury's 1950's imaginary view of society in the future, where everyone had audio devices in their ears all the time, listening to an "electronic ocean of sound, of music and talk," is here today. Although libraries have significant media collections, their growth and accessibility does not meet consumer demand. The absence of powerful and ubiquitous "digital rights management systems" is the biggest chasm between audio content vendors and libraries. Audio content solutions are emerging, despite the DRMS environment, to help libraries bridge the gap between their audio holdings and patron expectations. Solutions include: NetLibrary, OverDrive, iTunes, Naxos Music Library, Naxos Spoken Word Library, Classical Music Library, and various music site licenses: Rukus, Rhapsody, Napster, Cdigix, and Yahoo Music.

**Annotation:** While this article has actually very little to do with Ray Bradbury or science fiction, what it deals with specifically is how Bradbury’s concept of a personal audio universe is here. Buczynski discusses how libraries need to adapt to trends in audio listening in order to better serve their patron’s needs. One idea I find very interesting is how one library he discusses uses circulated iPods to connect with its patrons.

**Search Strategy:** I found this article by using keywords learned through previous research. What attracted me to this article was the title. Having read *Fahrenheit 451*, I was interested to see what this article had to offer on the topic.

**Database:** LISA, full-text through SFX

**Method of Searching:** Keyword

**Search String:** digital and audio and library

**Entry 5:**

**Abstract:** Until recently, most research on music information retrieval concentrated on monophonic music. Online Music Retrieval and Searching (OMRAS) is a three-year project funded under the auspices of the JISC (Joint Information Systems Committee)/NSF (National Science Foundation) International Digital Library Initiative which began in 1999 and whose remit was to investigate the issues surrounding polyphonic music information retrieval. Here we outline the work OMRAS has achieved in pattern matching, document retrieval, and audio transcription, as well as some prototype work in how to implement these techniques into library systems.

**Annotation:** Dovey deals with the concept of music retrieval. He claims that there are two ways to represent music on a computer: a digital representation of the audio and one of the symbolic structure of music. This article proposes ways to search music as opposed to using conventional cataloged metadata. Dovey also claims that it is possible to add music data to a catalog without altering the existing metadata.

**Search Strategy:** Using the most basic form of my search, I chose LISA for its comprehensive nature and user-friendly interface.

**Database:** LISA, full-text through SFX

**Method of Searching:** Keyword

**Search String:** digital and music and Librar*

**Entry 6:**


**Abstract:** The climate of change in music reference represents a challenge to librarians. The three issues in the library literature that probably have the greatest impact on music reference service and are the subject of this paper are changes in users, sources, and modes of access to sources. These three issues are certainly related, as users need to use sources, and they need to know how to access them in order to use them. Reference librarians are called upon to mediate this process. Music library collections have their own peculiarities, however. Because they contain a wider variety of materials than many other kinds of library collections, reference librarians for music collections must be aware of the format, content, and intended uses of these materials, as well as the research patterns of their patrons. In the recent past, as cultural norms have changed with the paradigm of Western culture, users have wanted to use music libraries in new ways, and librarians are challenged to accommodate them. The musical genres used and requested by today's library patrons are different than they once were, both for listening and for
academic study. Musical reference sources are being issued in electronic formats, and this represents a challenge for some users. The expanded use of interlibrary loan and electronic access to materials represents new opportunities and challenges. Music librarians are being called upon to provide services to patrons they may never see.

Annotation: In this article Duffy describes why libraries must change with technology. To him it is an obligation that the library has to its patrons. As technology improves patrons will expect libraries to be up to date on them. If resources don’t remain current patrons will perceive library services as inadequate and use their resources more and more infrequently.

Search Strategy: Searching Dialog using its OneSearch feature using InfoSci and experimenting with keywords that I had learned through previous research.

Database: INSPEC (Dialog), full-text through SFX

Search Method: Keyword

Search String: MUSIC AND REFERENCE AND LIBRAR?
S4 AND (DIGITAL OR ELECTRONIC OR VIRTUAL)
RD (unique items)
Sort 8/ALL/PY
S9 AND DT=JOURNAL PAPER

Entry 7:


Abstract: This paper discusses the genesis and development of DW3 (Duke World Wide Web) Classical Music Resources, a vertical portal that comprises the most comprehensive collection of classical music resources on the Web with links to more than 2,800 carefully selected, non-commercial pages/sites in over a dozen languages.

Annotation: The DW3 classical music resource is a very interesting tool. The Duke University Librarians saw a need on the web for scholarly music resources and set about creating them. The only free-web music sources at the time the article was written were unreliable and had no authority in an educational setting. The DW3 is designed to be an educational tool and upon creation was added to the Duke music curriculum.

Search Strategy: Duffy’s 2006 article lead me to look into some of the sources that it cited. Of the references listed an article by Yale Fineman seemed relevant to my topic.

Database: LISA, full-text through SFX

Search Method: Footnote chasing
Search String: Fineman and Music

Entry 8:


Abstract: Describes the construction and contents of DW3 Classical Music Resources, a vertical index of over 3,000 carefully selected, non-commercial Web sites and Web pages in a dozen languages. The index was created by the Duke University, North Carolina, Department of Music Library, primarily to support the curriculum and perceived need for a collected, well-organized body of scholarly information derived from a wide range of resources. DW3 contains text, images, sound files and moving images (streaming media) and incorporates the Duke University Library online public access catalogue (OPAC), to which there are numerous links in the form of 'canned' subject and author searches, articles from GroveMusic and a number of proprietary databases and electronic periodicals to which the Library subscribes. DW3 is considered to be the most comprehensive collection of classical music resources on the World Wide Web.

Annotation: A large portion of this article refers to the research done in his 2001 article on DW3. What he describes here though is why there was a need for DW3 to be created and what voids are still left on the web for scholarly music research. With this article Fineman seems to encourage other academic libraries to fill these voids in other musical genres besides classical music which DW3’s resources address. Other institutions have some resources that index several genres but none come close to the depth DW3 achieves. Having been cited three times this article has the most authority in the bibliography.

Search Strategy: Fineman’s 2001 article led me to look into any other articles he may have written on music.

Database: LISA, full-text through SFX

Method of Searching: Author search

Search String: Fineman and Music

Entry 9:


Abstract: Reports results of a questionnaire survey, undertaken via the Music Library Association electronic mailing list (MLA) [mailto:mla-l@listserv.indiana.edu], to determine the current state of digital music library projects in US academic libraries.
Particular emphasis is given to the digitization of music materials for preservation and the use of streaming media for the networking of the electronic media via the Internet.

Annotation: This article discusses the purpose of having a digital music library. The two functions Griscom claims that they serve are to reformat rare recordings and to make high-demand recordings more accessible. He goes on to say that music digitization is similar to the microfilming projects libraries embarked on in the 1980s. The biggest problem digital music libraries face, according to Griscom, is that of copyrights. Even with rigorous preventative measures to adhere to copyright laws, libraries can make it difficult to use the library to illegally copy music, but not impossible. It is slightly authoritative having been cited once.

Search Strategy: I chose Dialog’s Onsearch option to get a broad retrieval of library information using Infosci. I knew the journal Notes would be a good resource since it is published by the MLA (Music Library Association) so I searched inside only that journal. Then proceeded to look for articles relating to my topic.

Database: Library Literature and Information Science (Dialog), full-text through SFX

Method of Searching: Keywords, descriptors, and additional indexes

Search String:  
s jn=notes and internet  
s s1 and (conservation and electronic)/de  
t3/3/all

Entry 10:


Abstract: A qualitative study of user information needs is reported, based on a purposive sample of users and potential users of the Vaughan Williams Memorial Library, a small specialist folk music library in North London. The study set out to establish what the users (both existing and potential) information needs are, so that the library’s online service may take them into account with its design. The information needs framework proposed by Nicholas [Nicholas, D. (2000) Assessing information needs: tools, techniques and concepts for the internet age. London: ASLIB] is used as an analytical tool to achieve this end. The demographics of the users were examined in order to establish four user groups: Performer, Academic, Professional and Enthusiast. Important information needs were found to be based on social interaction, and key resources of the library were its staff, the concentration of the collection and the library’s social nature. A collection of broad design requirements are proposed based on the analysis and this study also provides some insights into the issue of musical relevance, which are discussed.
Annotation: Inskip et al. discuss what the social needs for a digital music library are and how that affects the role of the librarian. What a digital library does is switch the library from being collection centered to user centered. Where the librarian fits in is that even in a fully digitized environment, a library is a very complex space. An information professional is needed to facilitate the navigation of that space. Other factors they discuss include emotional involvement patrons have with music and how to incorporate that into the search process.

Search Strategy: I chose INSPEC as part of a Dialog OneSearch strategy. My interest is specifically about music in libraries so I wanted to minimize false drops. I initially chose INFOSCI. Since my topic is regarding digitization, one of INPSEC’s subcategories is computers, which are crucial to digital libraries.

Database: INSPEC (Dialog), full-text through SFX

Method of Searching: Keyword

Search String: s music?(w)librar? and digital
t5/ti,ab,de/1-20
t5/9/2,4,5,9,12,15,17,19

Entry 11:


Abstract: Nowadays, available music information is increasing rapidly from fast growing digital libraries and the Internet. How to effectively retrieve music data is a challenging task and content-based retrieval of music is a relatively large area. Much work that aims at creating acoustical waveforms of music has been carried out. But to many people, the most important and useful feature of music is the melody. This paper focuses on the melody-based retrieval of music, which can be regarded as a kind of content-based retrieval of music but much closer to the actual nature of music. It can be divided into three parts for studying: the extraction of melodic attributes, the melody input methods and the matching methods.

Annotation: What the authors Jin and Huang recognize in this article is that melody based retrieval requires at least a basic understanding of music to operate the system. They discuss three methods of melody retrieval: Textual input, Graphical Input, and Audio Input. What they also acknowledge is the inability of users to input music into a computer correctly, thus illustrating the need for approximate string matching.

Search Strategy: Using Dialog’s OneSearch and InfoSci, I began exploring the databases looking for articles on digital music libraries using keywords that had been gleaned from my previous research.

Database: Social SciSearch (Dialog), full-text through SFX
**Method of Searching:** Keyword

**Search String:**
- MUSIC AND RETRIEVAL
- S1 AND LIBRAR?
- S2 AND DIGITAL
- Sort 3/ALL/PY
- S4 AND MELODY

**Entry 12:**


**Abstract:** Purpose - The objective of this article is to describe how two small non-profit, primarily grant-funded music projects are working to provide solutions for scholars and students in an environment dominated by for-profit companies and aggressive rights regimes. Technology in some ways levels the playing field for organizations such as ours while at the same time forcing a more rapid pace of innovation because of heightened user expectations.

**Annotation:** This article deals with a concept in digital music libraries of utilizing pre-existing subscription based commercial music libraries on the web to bring access to their students and patrons through the library. Consequently, the article also deals with copyright. In order to bring the DRAM resources into Indiana University an authentication system was developed to manage content and access.

**Search Strategy:** Using a variation on my initial search string “digital and music and library” in LISA to find additional articles that may be related but not initially retrieved due to the use of different terminology.

**Database:** LISA, full-text through SFX

**Method of Searching:** Keyword

**Search String:** music and tech* and librar*

**Entry 13:**


**Abstract:** While many surveys aim primarily at measuring general user satisfaction, this survey is dedicated to understanding music users' needs, usage patterns, and preferences towards various collections. Findings showed dissimilar use behavior and perceived
importance of materials between academic- and performance-oriented music users. Needs for different score genres (formats) were also identified.

**Annotation:** While Lai’s article deals mostly with non-digital resources, what it does add about users’ preference for the kind of resources a library offers is very relevant. One of the findings of the survey conducted was that resources like “electronic journal databases, books, and online music listening were ‘very important’” (p. 65) to students’ academic success. Respondents of the survey even comment that they felt CD resources “were rather old” (p. 68) hinting at the fact that the modern library user now expects a digital format.

**Search Strategy:** As a search experiment I decided to add the keyword “use” to my search to hopefully retrieve articles on why patrons would want a digital music library over the conventional recorded collection.

**Database:** LISA, full-text through SFX

**Method or Searching:** Keyword

**Search String:** music and librar* and use

**Entry 14:**


**Abstract:** The Maine Music Box is an interactive, multimedia digital music library that enables users to view images of sheet music, scores and cover art, play back audio and video renditions, and manipulate the arrangement of selected pieces by changing the key and instrumentation. In this pilot project the partners are exploring the feasibility and obstacles of combining collections, digital library infrastructure, and technical and pedagogical expertise from different institutions to implement a digital music library and integrate it into Maine's classrooms. This paper describes the methodology for digitizing, processing and providing access to electronic resources owned by two libraries and hosted by another, and the use of those collections to develop an instructional tool keyed to the digital library.

**Annotation:** The Maine Music Box is a fascinating project designed to address a very unique problem in Maine. The largely rural nature of Maine forces its citizens to rely on small libraries inside their communities. The libraries consequently rely heavily on interlibrary loan in between these smaller branches to give greater access to the larger community. In the Music Box program they have utilized the digitizing of numerous smaller recorded collections to create a large digital collection.
Search Strategy: Here I wanted to see how my results would vary using the same keywords but in a different database. I decided to use the OCLC’s databases and chose ArticleFirst for its relevance on the kind of article I was seeking.

Database: ArticleFirst (FirstSearch), full-text through SFX

Method of Searching: Keyword

Search String: digital and music and librar*

Entry 15:


Abstract: The three significant factors in planning and implementing a digital music initiative are infrastructure, collections, and human resources, with a fourth factor, funding, affecting all decisions. By examining these issues it is possible to describe the Penn State experience in the initial stages of creating a digital music library and offer suggestions and experiences that may assist others in planning, developing, and evaluating a similar service. The benefits of digitizing the music collection include increased access and the potential for enhanced preservation. At Pennsylvania State University, collection decisions have been based on course-related needs.

Annotation: This article does an excellent job of laying down the framework necessary for a digital music library. Maple and Henderson list the hardware, software, and all other various needs that accompany this kind of library. They also deal with the topic of access, and ask the question of who will be able to access this library. This is a necessary question to ask in order to navigate the issues of copyright law. It has been cited twice.

Search Strategy: I chose ERIC as part of a Dialog OneSearch strategy. My interest is specifically about music in libraries so I wanted to minimize false drops. I initially chose INFOSCI. The educational nature of music digitization is consistent with ERIC’s overall subject matter.

Database: ERIC (Dialog), full-text through SFX

Method of Searching: Keyword searching

Search String: s music?(w)librar? and digital
    t5/ti,ab,de/1-20
    t5/9/2,4,5,9,12,15,17,19

Entry 16:

**Abstract:** The intentionally ambiguous expression "Popular Music Browser" reflects the two main goals of this project, which started in 1998, at Sony Computer Science Laboratories. First, we are interested in human-centered issues related to browsing "Popular Music." Popular here means that the music accessed is distributed widely and known to many listeners. Second, we consider "popular browsing" of music, i.e., making music accessible to nonspecialists (music lovers) and allowing sharing of musical tastes and information within communities, departing from the usual, single-user view of digital libraries. This research project covers all areas of the music-to-listener chain, from music description, descriptor extraction from the music signal, or data mining techniques, similarity-based access, and novel music retrieval methods such as automatic sequence generation, and to user interface issues. This article describes the scientific and technical issues at stake and the results obtained, and is illustrated by prototypes developed within the European IST project Cuidado.

**Annotation:** The idea behind this article is to bring music to the masses and organize musical information in a way that no longer requires a specialist to sift through it. Traditionally the music delivered to the masses was the just small “hits” that had a strong commercial backing. With today’s technology it is possible to deliver a more personalized assortment of music to everyone. With the success of peer-to-peer technologies, it is clear that the majority of people desire to have access to music beyond their own catalogs. Having been cited twice it has a moderate amount of authority.

**Search Strategy:** Using a variation on my initial search string “digital and music and library” in LISA to find additional articles that may be related but not initially retrieved due to the use of different terminology. I chose this article because I wanted a perspective on the topic outside the library field.

**Database:** LISA, full-text through SFX

**Method of Searching:** Keyword

**Search String:** music and tech* and librar*

**Entry 17:**


**Abstract:** There has been little published research on the use of electronic audio reserves and music libraries. There have been several studies published to date regarding the use of electronic print document reserves. User responses in these studies are very positive in that they appreciate 24-hour access from any computer with an Internet connection. It is
likely that what holds true for electronic print resources will also hold true for electronic audio reserves. This paper seeks to determine how electronic audio reserves are being used now and what their use might mean for the future of the physical musical library. This and other questions are addressed through analysis of written surveys given to students at the University of North Carolina at Chapel Hill who use electronic access to audio and analysis of usage statistics on the audio file server. It was determined that students greatly prefer to use electronic audio reserves to those physical sound recordings found on reserve in the Music Library. Twenty-four-hour access was indeed the largest factor in choosing a preference, though the ability to listen to reserve recordings from a location other than the Music Library was also a factor.

Annotation: This article addresses why there is a need for libraries to have their recordings available online. Using a survey of students, Phinney finds that 89.4% of students would rather listen online. The reason for this is because student lifestyle is not on the same schedule as the library building. Students desire 24-hour access, and often the time limit on library materials wasn’t conducive to their studying habits. Students often study late at night so it is important to be able to use any computer while having the recordings always available. Phinney also determines that the demand for electronic access will continue to increase.

Search Strategy: With this search I had initially tried using specific databases that had been giving me good results on the topic. After unsatisfactory results I switch to InfoSci (OneSearch) and found Library Lit. & Info. Science, in which I hadn’t previously found results. From there I kept trying to get more specific results by looking at descriptors and adding more elements to my search string.

Database: Library Lit. & Info. Science (Dialog), full-text through SFX

Method of Searching: Keyword

Search String: ONLINE AND MUSIC(W)LIBRAR? 1392 RD (unique items) S2 NOT (APPLE OR ITUNES OR IPOD?) S3 AND AUDIO S4 AND (COLLEGE OR UNIVERSITY)

Entry 18:


Abstract: In 2001 Winona State University Library (WSUL) began a digital music project to enhance access for students and faculty to the music CDs held at the library. This article examines other digital music models and details the steps in cataloging and processing the CDs.
**Annotation:** This article is a good model to use if one was trying to plan a project on music library digitization. It is concise and talks about all the individual elements needed to achieve such a project. What is interesting about this article is that it often describes the labor involved in the process, which is missing from other research and writing done on the topic of digital music libraries. The topic of labor in general would be very important to include in something like a grant proposal for such a project.

**Search Strategy:** Since I was looking more into the academic realm of digital music libraries, I tried experimenting with keywords gleaned from previous searches to narrow down articles that would talk about a college or university digital music library.

**Database:** LISA, full-text through SFX

**Method of Searching:** Keyword

**Search String:** digital music and university

**Entry 19:**


**Abstract:** In December 2002, the Information Sharing Subcommittee(n1) of the Music Library Association's Reference and Public Services Committee (RAPS) created and conducted a survey of virtual reference activity in music libraries. This survey was linked from the MLA-L electronic discussion list with the request that it be completed for each institution where one or more music librarians participate in or actively plan to participate in virtual reference services. For purposes of the survey, virtual reference was defined to include e-mail reference, queries via a Web-based form, live chat, live voice chat, and any other electronically mediated reference interaction between a music librarian and a library patron. Responses to the survey were received from forty-five librarians representing thirty-nine institutions of higher education, five public libraries, and one special library. Following a discussion of the published literature on the topic, this article reports the survey findings.

**Annotation:** What is interesting to note about this article is what it concludes about the work music librarians find themselves doing. As a library specialist, one would assume most, if not all of, ones work would be related to music. But the article’s findings are quite to the contrary. Szymanski reports that 1.9% of weekly reference questions are music related. Even with these shocking results he goes on to say that virtual reference is better suited to music than most professions. He theorizes that the reason may be that music students ask less broad questions that need a face-to-face interaction. Their questions tend to be very specific and can effectively be answered via chat or other virtual resources. It has been cited once.
**Search Strategy:** In my research I had come across the term “virtual reference” as a synonym for e-reserves or digital libraries. Here I sought to see if I could get results with that keyword.

**Database:** ECO (FirstSearch), full-text through SFX

**Method of Searching:** keyword

**Search String:** virtual reference and music

**Entry 20:**


**Abstract:** The basic principles and well-tried techniques of developing electronic library media for digital libraries are adapted to the music library at Virginia University. The digitization of music materials is discussed with particular reference to periodicals, audio materials, scores and the main elements of copyright involved are noted. In each case, reference is made to the work of other librarians in the development of such collections in academic libraries.

**Annotation:** Although this article has only been cited once, it offers the best justification for a digital music library: “Paper cannot sing!” (p. 822). It also goes on to offer hard evidence that the listening behavior of library patrons has switched to a digital format, implying that the library must switch as well. Walker notes that according to *Consumer Reports*, Internet song sites are now the recommended places to go for audio and compact disc retailers are not. One option they list to give easy access to digital music in libraries is for them to subscribe to these Internet sites much like a library would any other database. Walker ends by saying libraries must “exploit the opportunities digital technology offers” (p. 827).

**Search Strategy:** Using a variation on my initial search string “digital and music and library” in LISA to find additional articles that may be related but not initially retrieved due to the use of different terminology.

**Database:** LISA, full-text through SFX

**Method of Searching:** Keyword

**Search String:** music and tech* and librar*
Conclusion and Personal Statement

Before embarking on this project, I had assumed that digital music libraries were hampered with the cloud of copyright hanging over their heads. Interestingly enough, the same technology that makes digital audio copyright such a tricky situation, also makes libraries able to effectively navigate it. Streaming audio and password protected authentication systems seem to be all that is needed in most educational settings. Digital technology ensures that the audio files only be used for educational purposes, protecting copyright under fair use. Copyright is not the slippery slope I had once thought.

The most difficult challenge I faced while searching was finding the full-text for the sources I had uncovered. Many potentially good sources had to be thrown out because I did not have access to a full-text source. Some of my first searches in Dialog turned up a lot of potentially good articles, but I had to settle for the ones that were available through SFX. This is definitely one feature of databases like LISA and FirstSearch that make them more convenient. The SFX link is on the record page, so I can find out if I can use it right away and do not have to interrupt my research to search for full-text.

When comparing the Dialog model to webpage based databases like LISA, I find that newer, Internet based sources are more visually accessible. Dialog results can be frustrating because without further commands to view results, all results are just numbers. This does illustrate the thought process behind the computer search engine, but the addition of visuals, links, tabs, menus, and actual cited results makes web-based structures more apparent. I do not have to ask myself the question of which sources are peer-reviewed in LISA. It has a tab for that.

At first the application of this project in the real world seemed vague at best. Come end of the semester cram-time, it became very clear why an annotated bibliography is useful. With my current interest in digital music libraries I had to write a grant proposal for a different class and decided to write one to fund a digitization project for a university’s music collection. Strangely enough, I knew exactly how to construct one, manage the problem of copyright, and what research had been done on the topic without having to worry about a trial and error aspect to the project. Writing an annotated bibliography made me feel like an expert on the topic.