“Discovery” has become a library buzzword, but it refers to a traditional concept: enabling users to find library information and materials. The discovery environment is changing rapidly today, both within libraries and externally. Today, we’ll examine where the unique needs of music materials fit into this environment.
First, we’ll explore the topic of music discovery. Next, we’ll learn about the Music Discovery Requirements document. Finally, we’ll dig into two problematic areas of music discovery, as examples of how to face today’s challenges.
In this first section, we’ll look at cataloging’s historical bias towards the book, start thinking about what attributes are important to music, and examine the “puzzle pieces” for successful discovery.
Library cataloging has long been biased towards the book, reflecting the preeminence of written and spoken language in our society.

Indeed, we can go all the way back to Cutter’s 3 access points (1876): author, title, subject.
Let’s consider these three access points, using a well-known musical work I’ll call for now “Beethoven’s 9th Symphony.”

The author, Beethoven, is clear, and, indeed, personal name is frequently used as an access point for music. However, due to prolific composers and the multiple expressions and manifestations libraries regularly hold of each musical work, personal name alone is an insufficiently precise access point.

There are many options for the title, thus the development of uniform titles which in actuality frequently combine many attributes like form, medium, work numbers, etc. Subject is a problematic concept for music, because many musical works are arguably not “about” anything. Indeed, music “subject headings” often reflect attributes other than subject. The 9th Symphony probably is about something, but that’s an interesting topic for musicological debate, not a good access point.

So, we see that author, title, and subject alone, though they may work fairly well for books, are insufficient access points for music.
Many attributes are important for identifying musical works, as listed here. Users seeking a musical work frequently start with attributes other than author or title, or with a title which is not the same one found in the library catalog.
This is backed up by research.

In 2007, David King summarized and synthesized the research to that date regarding user search strategies for printed music and recordings, and concluded that music searching differs in specific ways from general searching, particularly in that known-item searching is more common for music materials and personal name is used more frequently as an access point. Similarly, a study of music reference service found that, in comparison to general reference, music questions "focus much more heavily on locating specific, known items" and were answered via different means, with music reference employees relying on "their local catalogs, the circulating collection and their own knowledge much more frequently than librarians in general reference situations."


Jin Ha Lee’s study is particularly interesting because it goes beyond Western Art Music. Lee harvested queries from Google Answers’ music category in 2005. Google Answers was a service, now discontinued, where people could post their queries and then a “Google researcher” tried to supply an answer. These questions tended to be about “popular” music. Example: “I heard this song by a female singer in an ARBY’s. I believe it is from the 70s or early 80s. The main chorus of the song says, “over and over again.” Kind of a sad, slow, easy listening love song.” Lee then broke these queries apart into the attributes desired, similar to what librarians do in a reference interview. Lee found that, though “known item” queries were common, users often didn’t “know” a lot about the item sought and especially lacked commonly recorded bibliographic information.
For a successful discovery interface, three major pieces of the puzzle must work together: formulating data, encoding the data thus formulated, and indexing and displaying that formulated, encoded data. A problem or breakdown in any piece can cause the system to fail, creating difficulties for users in finding materials and information.
No score for the *Surprise Symphony*? And the only recordings we have are on LP? What’s wrong with this library?!!

When a puzzle piece breaks down, users won’t know which one it is. They’ll just know it doesn’t work. But, as librarians, it’s our job to understand the pieces, pinpoint the problem, and fix it.
To help understand the puzzle pieces, I’ve listed some standards currently used for each.

AACR2, and now RDA, provide the rules for formulating data—determining what bits of information to record down and how to express them.

Once that data is formulated we encode it in “metadata format” like MARC. The metadata formats listed here are the ones for which we provided mappings in the Music Discovery Requirements.

Finally, we present the data in a user interface. Since the card catalog died, this has been largely a free-for-all without a recognized standard. Furthermore, interface designers regularly operate from a book-centric mindset, leaving music poorly served. The Music Discovery Requirements’ purpose is to provide the final piece of this puzzle.
Let’s examine the Music Discovery Requirements: its background, goals, and organization
Due to today’s rapidly changing bibliographic landscape, and the urgent need for a document to aid in discovery implementations, the Music Discovery Requirements is not a standard but a set of “recommendations and possible best practices.” While the work was in many ways precipitated by the onslaught of faceted and web-scale discovery tools, and strongly informed by AACR2, RDA, and MARC, the MDR can be used with any recorded and encoded data.

The MDR was created under the auspices of the Music Library Association’s Emerging Technologies and Services Committee and bears the official endorsement of MLA’s Board of Directors.
It is available on MLA’s web site and published in the March 2013 issue of MLA’s journal, Notes. An abbreviated version in German translation is published in Forum Musikbibliothek.
The MDR’s target audience moves beyond music specialists to include those people who often design and control the systems we all use: vendors, programmers, system administrators, etc.
The MDR focuses on musical works, and their expressions and manifestations in scores and recordings, rather than secondary literature about music, because musical works present the most unique discovery needs.
The MDR consists of a main document plus 3 appendixes. The appendixes are designed to be practical: three spreadsheets containing mapping guidelines which came out of the committee members’ own experiences and frustrations creating similar documents for our institutions’ discovery implementations. Discovery systems’ “default” indexing and display recommendations frequently appear to be guesses made by a programmer without a music background. Not surprisingly, errors are common. That’s a major reason for the MDR’s appendixes – to provide guidance to non-music people. So, if you don’t think your vendor/system administrator/developers will read the whole document and appendixes – point them to the appendixes.
The MDR is based on FRBR, with section II focusing on attributes & relationships for musical works, and section III on attributes and relationships for expressions and manifestations. For each attribute or item, the MDR begins with a discussion of the needs for discovery and challenges to meeting those needs. This is followed with a summary recommendation and proposed best practices for indexing, display, and use in facets/limits. When applicable, relevant MARC authority fields are listed.
As you saw in the outline, the Music Discovery Requirements covers a lot of ground. Today, we’ll examine just two attributes, as examples. Both are problematic, but the first is relatively solvable while the second is more complex.
First, format, or, in FRBR terminology, content and carrier.
I – and the Music Discovery Requirements - use FRBR terminology, not just because FRBR is integral to RDA, but because the vocabulary is so useful for talking precisely about these issues. Here are the FRBR definitions of content and carrier type. In common language: content type is what distinguishes between a score, a recording, and a book. Carrier type is a subcategory which distinguishes between, for example, a CD, an LP, and online audio.
Music users need to search and sort by content type and by carrier type. My experience with multiple systems has shown it is crucial to pay attention to this discovery need. The problem comes when vendors group content and carrier type into a single facet, making it impossible to, for example, find any kind of sound recording in one search, and then, in another search, find just CDs. I’ve even encountered a vendor whose default was to lump recordings and scores together under the generic term “music.”
From MDR III.B Format: Content & Carrier

- User needs: find, identify, and select content type as well as specific carriers
- Problems with existing data formulation/encoding:
  - Ex.: RDA’s “performed music, audio, audio disc”
- Proposes solutions:
  - MARC coding as best way
  - Detailed in Appendix 3

The MDR addresses content & carrier from a discovery interface perspective. After examining user needs, the MDR explores problems and possibilities given existing data formulation and encoding standards. For example, RDA’s “performed music, audio, audio disc” is insufficient to distinguish between CDs and LPs.

Finally, the MDR proposes solutions for the current environment, suggesting MARC coding as the best way to facilitate searching and sorting by both content and carrier. In this particular case, appendix 3 details recommended mapping.
The MDR rarely cites specific systems, but today I’ve included examples (not endorsements), identifying the systems for those who might want to take a further look.

Here are a few examples of facets and limits which allow searching by both content type and specific carriers. They all do it a bit differently. #1 uses post-search facets in a hierarchical layout. #2 uses a similar hierarchy, but in a pre-search limit. #3 uses two completely separate facets.
In addition to limiting to specific content or carriers, users need to identify the content/carrier in results lists. Icons are frequently useful for this task, as shown here.

In summary: content & carrier problems are solvable, particularly if needed functionality is built into systems from the ground up. Though it is often problematic, systems exist which meet this need well. It is also an area where meeting music users’ needs will help general users. The same infrastructure that allows searching for both “sound recording” and “CD” will allow searching for “book” (this would be any format, electronic or print) and “e-book.”
Medium of Performance
(MDR II.D)

Let’s move on to the second example: medium of performance.
Unlike format, medium of performance is unique to music. That is, many kinds of materials have creators, titles, publishers, etc. But only music has a medium of performance. Therefore, general library standards often address it poorly, or not at all. We have many ways which “sort of” get at medium of performance, none that works really well. Using U.S. cataloging as an example, let’s consider how librarians have tried to provide medium of performance access, examining each method listed on this slide....
...using this bibliographic record as an example. I’ve circled in red all the places in this record that try to get at medium of performance.
First, the title and uniform title, in fields 240 and 245, created according to AACR2. Under AACR2, medium of performance is sometimes used in the process of creating unique text strings -- uniform titles -- to identify musical works. But, medium of performance is not always required for uniform titles; broadly speaking, it is only recorded in generically titled works (like sonata, symphony, or quartet), not in distinctively titled works (like *Appalachian Spring* or *Die Winterreise*). In addition, a note about medium of performance might be added, if the medium was not apparent from the rest of the bibliographic record. The end result is that a human who has found a bibliographic record can determine the medium of performance, but the attribute is not optimized for computerized searching, since neither the location of the data nor the vocabulary are standardized.
Library of Congress Subject Headings provide one way of getting at medium via standardized vocabulary. Music librarians have co-opted subject headings – which usually represent what an item is about - to represent what music materials actually are: the medium of performance, form, and genre. But, mixing of medium with form/genre is problematic in a computerized environment.

Here are just three of the many subject headings under which users might find music for solo piano.

Also, instruments are not always explicitly listed. For example, the heading “Symphonies” implies orchestral music and “String quartets” implies music for 2 violins, viola, and violoncello, or (less commonly) collections of music for various combinations of 4 string instruments.
The MARC 048 field can be coded for instrumentation. For example, here we see sa02 |a sb01 |sc01 = music for string quartet. But not all libraries code 048, so it is not always present and only a few discovery systems have exploited the field. In a moment, We’ll look at two interfaces which have exploited 048.
Classification is frequently a very useful way of getting at instrumentation. In the Library of Congress classification system, instrumentation is the primary organizing factor. However, classification numbers are code-like and thus better for facilitating shelf browsing than for facilitating computerized searching. Also, LC classification is not regularly used for recordings.
Finally (finally!), RDA, following FRBR, has recognized Medium of Performance as its own, separately coded attribute. MARC21 field 382 has been defined to contain medium of performance. However, wide-scale US implementation of RDA has only just begun, and many questions remain, including:

- 382 is defined for both bibliographic and authority records: where will it be recorded?
- Second, the vocabulary is still being developed via the Library of Congress Medium of Performance Thesaurus. This vocabulary will replace LCSH.
- Finally, how will discovery interfaces actually full exploit medium of performance data?

The Music Discovery Requirements addresses medium as follows:
First, it identifies medium of performance as an important attribute, something developers of library discovery interfaces often forget or ignore. Next, it analyzes and summarizes the current situation, as I’ve just done today, noting the importance of “recording medium in a way that permits machine actionable, granular description of expressions.”
Finally, it gives concrete recommendations for indexing and display of existing fields, given the current state of affairs.
Now, some real-life examples of medium of performance in discovery interfaces.
The University of Virginia’s Blacklight instance uses MARC 048 data to allow faceting by instrument. With proper programming, many systems could do this now. However, there is a data encoding problem with this approach due to the prevalence in music of manifestations with multiple expressions, particularly among sound recordings. That is, a CD often has several pieces on it, with differing instrumentations. Historically, we have not tied each instrumentation to the relevant work/expression, so, for example, narrowing to piano, and then to violin, would find a CD that had a piano and violin somewhere, but not necessarily playing together or without other instruments.
Ball State’s media finder also uses 048 data and gets around this problem somewhat with more sophisticated programming. Notice the options for “exact instrumentation” and “including these instruments.”

As a side note, the Ball State Chamber Music Finder uses IAML medium of performance codes, which are more specific than the MARC medium of performance codes more commonly used in the United States.
Beyond libraries – but not far beyond: JW Pepper, a commercial vendor of sheet music, provides 3 facets that address medium of performance: “department” “voicing” and “instrument”. Obviously, medium is a very important attribute for Pepper’s customers, many of whom are also our music library users.

Alexander Street Press’ new “Music Online” interface brings us back to the library world. “Music Online” is a subscription resource for online audio, video, and scores (plus non-music resources). Notice how you can drill down through the facets using instrument families. Another innovative – at least for libraries – feature is that the facets available change based on your search, meaning that the music facets show up when people search for music, but won’t be there to “clutter things up” in non-music searches.
Finally, the MT-Katalog, which you’ll be hearing more about later, provides an example of facets based on combined medium of performance and genre/form data.

In summary, Medium of Performance is a problematic attribute for discovery interfaces. Data is not uniformly present to easily support the discovery our users want, and the attribute is often ignored because it is unique to music.

Obviously, the Music Discovery Requirements covers many more attributes. I encourage you to read the document in its entirety and to pass it along, especially outside the music library community.

The Music Discovery Requirements is only a starting point to improve music discovery. The real benefit comes with implementation, and here we all come in. The Music Discovery Requirements is a guide for music librarians advocating for better interfaces, yes, but even more it’s a guide for non-music people, so systems can be built from the ground up to consider music, rather than retrofitted. It’s often said that “if you can catalog music, you can catalog anything” and I’d argue that a discovery system that works well for music will work well for other materials also. I urge you to bring up these important issues with your vendor/system administrator/developers. Especially with vendor-based products, it is important for vendors to hear about concerns from
many customers. Every successful implementation gives another example to point to, and more guidance to follow, and moves us closer to our ultimate goal: systems which easily, accurately connect our users to music information and materials.