Finding Movies with FRBR & Facets

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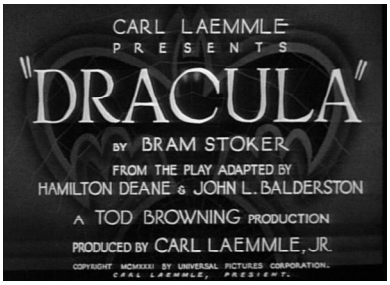
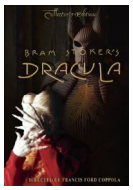
I'd like to talk about a project that I've been involved in that uses the Functional Requirements for Bibliographic Records (FRBR) model and faceted navigation to try to make it easier to find videos in libraries.

Users are looking for movies



The typical person who comes to a library looking for a video is usually really looking for a movie, either a particular movie, such as the 1931 English-language *Dracula*, or a category of movies, such as early horror films or documentaries on the history of horror films.

Libraries describe publications



Libraries, however, catalog publications. For example, a catalog record might represent the set of DVDs issued by Warner Bros. Home Entertainment beginning in 2008 and with a particular ISBN.

Libraries describe publications

Dracula [videorecording] / Columbia Pictures ; directed by Francis Ford Coppola …

2-disc special ed.

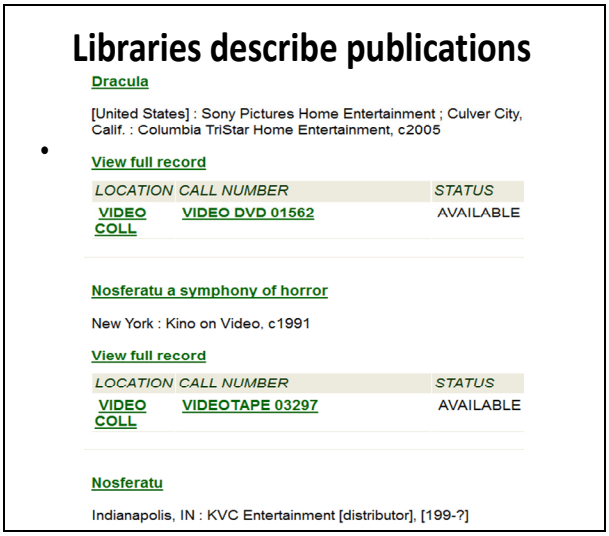
Culver City, Calif. : Columbia TriStar Home Entertainment, c2005.

2 videodiscs (ca. 130 min.) : sd., col. ; 4 3/4 in. + 1 booklet.

Horror film series

The heart of the description in a catalog record reflects this emphasis on publications. The parts in red could possibly be interpreted as describing the movie, but everything else here clearly describes the publication—the edition statement, the publication statement, much of the physical description and the series statement. Most of the information about the movie is in notes and much of it is not even required by cataloging rules. The information about the movie and the publication is all jumbled up so it's hard to pick out the data elements that relate to the movie.

Libraries describe publications



Dracula

[United States] : Sony Pictures Home Entertainment ; Culver City, Calif. : Columbia TriStar Home Entertainment, c2005

View full record

LOCATION	CALL NUMBER	STATUS
VIDEO COLL	VIDEO DVD 01562	AVAILABLE

Nosferatu a symphony of horror

New York : Kino on Video, c1991

View full record

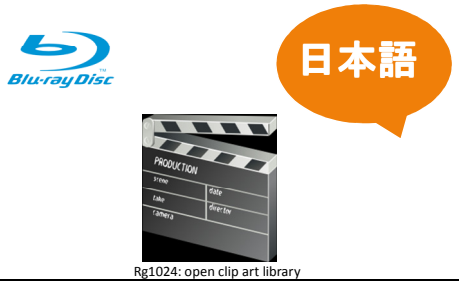
LOCATION	CALL NUMBER	STATUS
VIDEO COLL	VIDEOTAPE 03297	AVAILABLE

Nosferatu

Indianapolis, IN : KVC Entertainment [distributor], [199-?]

Library hit lists also reflect the emphasis on publications. The information that is given to help identify a title usually describes the publication, as in this example. The date of publication, which is the date that displays here and is the one used for sorting and limiting in library catalogs, goes with the DVD and not the movie. Because the hits are for publications, there can be more than one for the same movie. Can you tell which Dracula movie the first hit is describing or if the different hits represent the same or different movies?

Users care about versions



Rg1024: open clip art library

People do care about what I think of as versions. They have preferences or requirements as to how they want to access a particular movie. If I don't have a Blu-ray player, it does me no good to borrow a Blu-ray disc. If I just bought a Blu-ray player, maybe all I want to look at are Blu-rays so I can try one. If I don't speak Japanese, I don't want to borrow a video in Japanese with no English subtitles. Maybe I only want to see the director's cut or the unrated version of a movie.

Prototype: Movies & Versions

Funded: OLAC (Online Audiovisual Catalogers)

Developed by Chris Fitzpatrick

Small scale (limited data, few fields and records, simplified data model)

http://blazing-sunset-24.heroku.com

We built a prototype discovery interface that focuses on movies and versions rather than publications to experiment with what that might look like.

http://blazing-sunset-24.heroku.com

Movie (mostly work) facets

Limit By Movie or Program:

Genre: Horror (12) [remove] Fiction (11) Experimental (6) Feature (6) Short (6) Ballet (1) Dance (1) more »

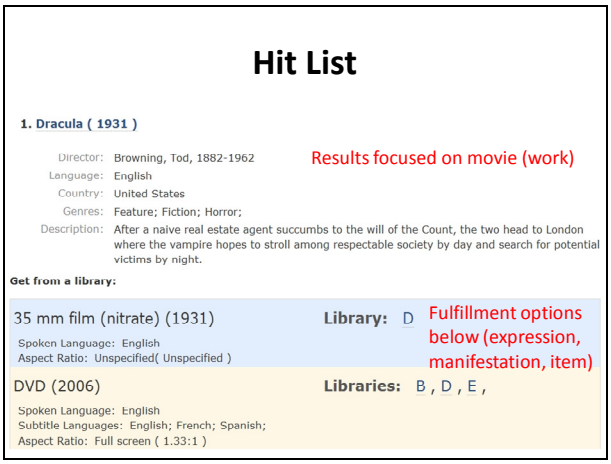
Dates: 1960s (3) 1990s (3) 2000s (2) 1920s (1) 1930s (1) 1950s (1) 1980s (1)

Original Language: English (8) Unknown (2) German (1) None (1)

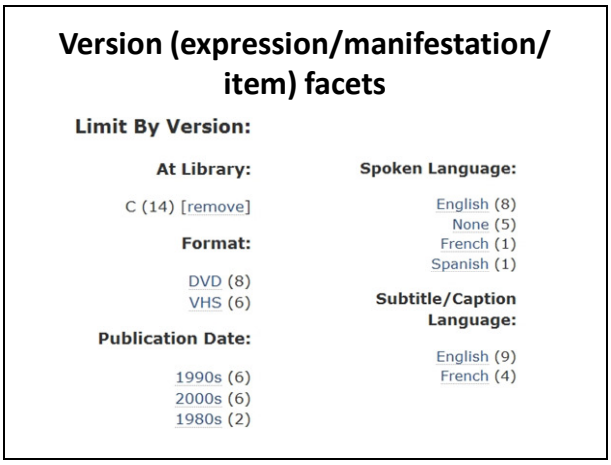
Country: Unspecified (5) United Kingdom (2) United States (2) Austria (1) Canada (1) Germany (1)

Director: Fisher, Terence, 1904-1980 (2) Browning, Tod, 1882-1962 (1) Coppola, Francis Ford, 1939- (1) Laitala, Kerry (1) Maddin, Guy (1) Murnau, F. W. (Friedrich Wilhelm), 1888-1931 (1) Packard, Damon (1) more »

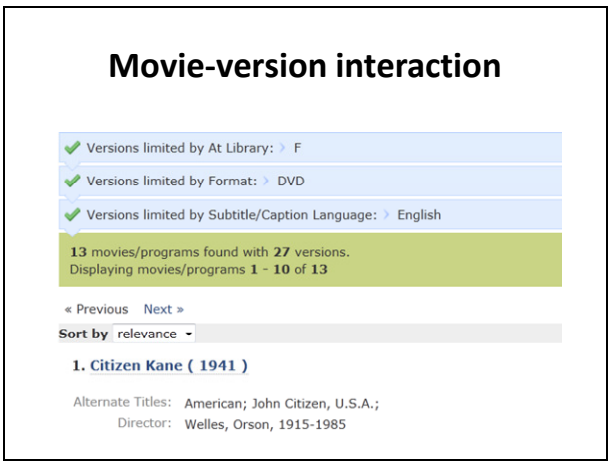
In addition to a search box, the prototype UI provides facets for important attributes of movies like genre and original date. This supports browsing of movies from many angles.



Our hit list features only one hit per movie and includes enough information to identify the movie. We also clearly present version information that is important for decision-making to enable easy selection.



We also include version-related facets, such as format and soundtrack and subtitle options.



The records and facets for movies and versions interact. This allows users to explore from the top down, say starting with horror films, or from the bottom up with Blu-rays at their local library. With each selection, the resulting movies and versions are appropriately narrowed. This was the part of the prototype that was most technically challenging to implement.

Prototype

Prototype http://blazing-sunset-24.heroku.com

Sample searches and use cases http://blazing-sunset-24.heroku.com/page/samples

Code http://github.com/cfitz/olac

Because there isn't a lot of data in the prototype, I recommend checking out the sample searches to get a fuller sense of the possibilities. We're hoping to build on the prototype and eventually create a functional system. Contact me at kelleym@uoregon.edu if you're interested in contributing to this project.

Prototype: http://blazing-sunset-24.heroku.com

Sample searches: http://blazing-sunset-24.heroku.com/page/samples

Code: http://github.com/cfitz/olac

Bonus slides

1. **Develop end-user interface to take advantage of FRBR and facets**
2. **MARC → normalized, FRBR-based data**
3. **Support functions**
   1. **Backend interface for managing metadata**
   2. **Guidelines and documentation for catalogers**

In my five-minute lightning talk I focused on the main features of our desired end-user discovery interface. This left an incomplete impression of the scope of the whole project, which I would like to expand on with these bonus slides. This slide lists the main components of the overall project.

Extracting data from MARC

Faceted navigation based on the FRBR group 1 entities requires structured, normalized data.

We are experimenting with the XC Metadata Services Toolkit to extract data from MARC bibliographic records.

We plan to harvest data from MARC records from multiple institutions, cluster records for the same movie and create preliminary work/movie records by primarily automated means.

Identify data in MARC records

008 DtTp	008 Date1	008 Date2	500 Note
s	1998		Originally *broadcast* as a CBS *television* special on June 16, **1998**.
p	2004	**1935**	Originally *produced* as a *motion* picture in **1935** … Special features: … on the Hy Gardner Show **1961** *broadcast*
s	2004		DVD *release* of the **1935** *motion* picture…
p	**1935**	1992	

The two primary challenges for identifying and extracting data about movies from MARC bibliographic records can be seen in this table of selected strategies for identifying the original date of a movie.

- There are often multiple potential sources for the same data element in MARC records. The original date of a movie may be found in 008 Date2. Although not correct MARC, this date may also appear in 008 Date1. The most common place to find the original date is in a free text note, usually tagged 500.

- Much data is in free text fields where it may be possible to develop heuristics to extract normalized values, but accuracy will inevitably be less that 100%. Since 500 fields are used for other purposes, in this example we have looked for years (18xx, 19xx or 20xx) in combination with a keyword that suggests that it is a note about the original date, such as broadcast, motion or produced.

Identify data in MARC records

- **Originally produced as motion picture in 1947 and restored in 1956**
- **1999 videodisc release of a series of cartoons released between 1943- and 1946**
- **Originally produced in the 1930s and 1940s**
- **Originally telecast Oct. 23, 1958 (Aida) and Oct. 3, 1982 (concert)**
- **Premiered on PBS stations on November 5 and 12, 2003**

Although the data given in the table on the previous slide is largely straightforward to process, a great many more complicated variations exist in the wild. These are all real examples.

Identify best values

Title	008 Year	500 Year
AFI's 100 years, 100 movies	NULL	1998
A night at the opera	1935	1935 ; 1961→ 1935
A night at the opera	NULL	1935
A night at the opera	1935	NULL

Once we have extracted various potential values for a specific data element, we propose to rank the possibilities in order to obtain a single likeliest value. Here we have considered the 008 date to be more reliable than the 500 note and when there are multiple dates in 500, we have chosen the earliest one. Both of these rules can lead to incorrect conclusions, but they work more often than not.

Cluster works

Work ID	Title	Director	Year
1	AFI's 100 years, 100 movies	Smith, Gary	1998
2	**A night at the opera**	**Wood, Sam, $d 1883-1949**	**1935**
2	**A night at the opera**	NULL	**1935**
2	In der Oper	**Wood, Sam, $d 1883-1949**	**1935**

We then propose to cluster records describing the same work/movie based on data describing movies. Title, director and original year are examples of good candidate data elements for clustering.

An alternative approach would be to take these identifying elements and match them against an external service such as Freebase. We could then cluster on the IDs provided by the external service. This might be more effective if done with all the possible variations of extracted data elements prior to picking a best value as was done in the previous step. A drawback of this approach would be the incomplete overlap between works/movies held by libraries and those described by an external service.

Create provisional work records

Work ID	Title	Director	Year
1	AFI's 100 years, 100 movies	Smith, Gary	1998
2	A night at the opera	Wood, Sam, $d 1883-1949	1935

The clustered data would be used to populate provisional movie/work records. Provisional movie/work records could be selectively targeted for manual clean up.

Centralized discovery interface

End-user discovery interface that incorporates:

- **The FRBR model**
- **Faceted navigation**

Based on a centralized, collaboratively-maintained data store

Intended to interact with local ILS's item status information much as WorldCat Local does

As described earlier, we plan to build an end-user discovery interface that uses the FRBR model and faceted navigation to support the needs of users looking for moving image materials in libraries. Our discovery interface will be based on a centrally-maintained data store initially derived from records supplied by participating institutions. We intend for the discovery interface to interact with local ILS's item status information much as WorldCat Local does. We hope to be able to support local views of this interface for institutions and consortiums and to be able to make the underlying data available for download or via API.

Ongoing metadata creation and maintenance

TOOLS and FORMS for

- **Inputting or importing records directly into the new system**
- **Editing records**
- **Deleting records**
- **Mass updating of data and records**

We need tools for the performing the functions described here on the data extracted from MARC and for creating new bibliographic records. Although in the short run it will be necessary to extract data from existing MARC bibliographic records, this is an inefficient and error-prone process. Since it is easier to derive human-comprehensible text from controlled values than vice versa, a more viable approach would be to enter and maintain data about movies and versions directly in a new system and derive MARC records from that.

Ongoing metadata creation and maintenance

DOCUMENTATION for

- **Data elements**
- **Data sources**
- **Input standards**
- **Using the tools for data input and maintenance**

In order to remove redundancy and improve quality, movie records must be centrally stored and maintained, as the Library of Congress/NACO Authority File is today. These movie records must be editable by a broad community so it will be essential to have easily-understood definitions of the data elements and other content editing guidelines, as well as input forms that support accurate, efficient metadata entry and import.

Some initial work on the first two topics has been done. See parts 1-3 at http://www.olacinc.org/drupal/?q=node/27

Ongoing metadata creation and maintenance

SUSTAINABLE BUSINESS MODEL

We need to identify and leverage appropriate economic and workflow efficiency incentives to support a sustainable model of collaborative maintenance of centrally-stored data about movies.

Why the FRBR model?

- **to focus displays on original movies while supporting users in selecting and obtaining appropriate versions**
- **to enable shared maintenance of discrete movie-level records and reduce data redundancy, thereby supporting efficient production of more complete and accurate metadata**

Why faceted navigation?

- **to support exploratory search, expose the content of collections, and allow easy limiting**
- **to enable flexible rather than hierarchical access to the FRBR group 1 entities**

Why normalized, machine-actionable data?

- **automatically derived from existing bibliographic data where possible**
- **to support faceted access and the creation of more readable, grid-like displays**
- **to enable more effective sharing of library data with other services, as well as supporting easier incorporation of data from other information providers, including linked data providers such as Freebase and DBpedia**

More info

OLAC Moving Image Work-Level Records Task Force Reports
http://www.olacinc.org/drupal/?q=node/27

OLAC discussion group (lit review)
http://www.olacinc.org/drupal/?q=node/434

McGrath & Bisko. “Identifying FRBR Work-Level Data in MARC Bibliographic Records for Manifestations of Moving Images”
http://journal.code4lib.org/articles/775