Building Chopin Early Editions

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ISMIR 2003, Baltimore, MD
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Introduction

- 420+ physical scores, published 1830-1880
- 370+ scanned and online
- Site live in March, 2003
- Nearly 100 hits/day avg.
- 30% traffic is international, all continents
- Highest international use: Argentina and Brazil
Production stream

Catalog records

Scanned Images

Structural metadata

METS

XSLT

Greenstone Archive Format

Greenstone Dig. Library Software

Human processing

XML-based automated processing
Catalog records

Bib #: 1561329

LDR 01253ccm 2200337 a 4500
008 981117q18481856enkncz n c
100 1 ‡a Chopin, Frédéric, ‡d 1810-1849.
240 10 ‡a Nocturnes, ‡m piano, ‡n op. 55
245 10 ‡a 15me. & 16me. nocturno / ‡c [composé par Frederic Chopin].
246 3 ‡a Quinzième et seizième nocturno
260 ‡a London (No. 229, Regent Street, corner of Hanover Street) :
‡b Wessel & Co., importers and publishers of foreign music,
‡c [between 1848 and 1856]
300 ‡a 10 p. of music ; ‡c 33 cm.
490 1 ‡a Wessel & Co.'s complete collection of the compositions of
Frederic Chopin for the piano forte ; ‡v no. 59
500 ‡a "Dédié à Mademoiselle J.W. Stirling"--Caption.
650 0 ‡a Piano music.
800 1 ‡a Chopin, Frédéric, ‡d 1810-1849. ‡t Piano
music (London, England) ; ‡v no. 59.
Catalog records

1. Descriptive metadata
   - Describe scores
   - Distinguish between similar scores
   - Provide access to scores
   - Shows how one score relates to rest of collection

2. Information taken primarily from physical score: title, composer, publisher, place published, dedication, etc.

3. Some information taken from other sources
   Example: few scores have publication dates printed, take these from outside research
Inconsistent use of descriptive terms

E.g., same work published under different titles:
15me. & 16me. nocturno
2 nocturnes pour le piano, op. 55
Deux nocturnes pour le pianoforte, op. 55
Gather all versions together by uniform title (rules for uniform titles codified by AACR2):
Nocturnes, piano, op. 55

Related work: Functional Requirements for Bibliographic Records (FRBR) establishes a shallow hierarchical grouping of “sameness” for organizing multiply published works, see http://www.ifla.org/.
Scanned images

- Created according to National Archives and Records Administration guidelines.
- 400dpi, 24-bit color, uncompressed TIFF
- No touchups, rescan rather than retouch
- Produce two JPEG files from each TIFF, 2000- and 700-pixel wide
- Testing underway for DjVu versions.
- Files stored by naming convention based on score and image sequence.
Significant details in scores are preserved:

1 in. 1/4 in.
## Structural metadata

Document = score, object = image within score

<table>
<thead>
<tr>
<th>document</th>
<th>object</th>
<th>page</th>
<th>project</th>
<th>milestone</th>
<th>filesize</th>
<th>imagewidth</th>
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<td>6765</td>
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</table>
Structural metadata

- Proper sequence of images for each score
- Features from score image
  - Page number as printed
  - Milestones: cover, title page, piece within score, etc.

- Technical and administrative metadata: files sizes, image dimensions, software and settings
  - Do not yet use this data
Metadata Encoding & Transmission Standard (METS)

- Digital library standard for encapsulating objects with their metadata
- OAIS lingo: use METS for SIP, AIP, DIP
- Share digital objects between institutions
- Share work of building tools to produce, store, display digital objects
METS structure

Seven sections:

- METS Header
- Descriptive metadata*
- Administrative metadata
- File list*
- Link structure
- Structure map*
- Behavioral section

* Chopin Early Editions currently uses only 3 sections
Metadata Object Description Schema (MODS)

- METS does not prescribe a descriptive metadata encoding, uses extension schemas
- Flexible XML encoding of library data
- Maintained by LoC: [http://www.loc.gov/standards/mods/](http://www.loc.gov/standards/mods/)

```xml
<mdWrap MDTYPE="OTHER" OTHERMDTYPE="MODS">
  <xmlData>
    <mods:mods>
      <mods:titleInfo type="uniform">
        <mods:title>Nocturnes, piano,</mods:title>
        <mods:partNumber>op. 55</mods:partNumber>
      </mods:titleInfo>
      <mods:name type="personal">
        <mods:namePart>Chopin, Frédéric,</mods:namePart>
        <mods:namePart type="date">1810-1849.</mods:namePart>
      </mods:name>
    </mods:mods>
  </xmlData>
</mdWrap>
```
METS file list

Files can be carried internally, or linked to externally.

<fileSec>
  <fileGrp> <!-- 2000 pixel wide JPEGs -->
    <file ID="JPGH108002" MIMETYPE="image/jpeg">
      <FLocat LOCTYPE="URL" xlink:href="http://.../chopin108-002r.jpg"/>
    </file>
    <file ID="JPGH108003" MIMETYPE="image/jpeg">
      <FLocat LOCTYPE="URL" xlink:href="http://.../chopin108-003r.jpg"/>
    </file>
  </fileGrp>
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      <FLocat LOCTYPE="URL" xlink:href="http://.../chopin108-003q.jpg"/>
    </file>
  </fileGrp>
</fileSec>
METS Chopin structure

Descriptive metadata
15me. & 16me. Nocturno composé par Frederic Chopin

File list
2000pix wide JPEGs
image 1
image 2
image 3
...
700pix wide JPEGs
image 1
image 2
image 3
...

Structure map

- div TYPE="score"
  - div ORDER="1"
  - div ORDER="2"
  - div ORDER="3"
    ORDERLABEL="Page 1"
    LABEL="Nocturne, no.15"
Example from LoC: sound records (45’s)

Structure map
- `div TYPE=“simple record”`
  - `div ORDER=“1” ORDERLABEL=“Side A”`
  - `div ORDER=“2” ORDERLABEL=“Side B”`

Descriptive metadata
- Columbia Records, no. C1234
- Jelly Roll Morton
- King Porter Stomp
- Wolverine Blues

File list
- king.mpg
- song2.mpg
Example from NYU: video w/ transcript

Structure map

- div TYPE="video"
  - div ORDER="1"
    LABEL="Introduction"
  - div ORDER="2"
    LABEL="Section 1"
  - div ORDER="3"
    LABEL="Section 2"

File list

QuickTime video, 5 min.

- 0:00 - 1:28
- 1:29 - 2:33
- 2:34 - 4:29
...

Transcript (XML)

- Introduction
- Section 1
- Section 2
...

Greenstone

- Handles arbitrary descriptive metadata
- Supports hierarchical document structure
- Configurable user interface
- http://www.greenstone.org/
Greenstone Archive Format

• Matches METS hierarchical object structure
• METS transformed to GSAF via XSLT
• Metadata normalized for US keyboards:
  Title: Quinzième et seizième nocturno
  TitleIdx: Quinzieme et seizieme nocturno

• Place names modified for improved retrieval:
  Place: London
  Placeldx: London London Londres
Descriptive metadata for navigating collection

Chopin Early Editions

<table>
<thead>
<tr>
<th>Search</th>
<th>Titles</th>
<th>Uniform Titles</th>
<th>Genres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballades, (16 scores)</td>
<td>Barcarolle, (2 scores)</td>
<td>Berceuse, (6 scores)</td>
<td>Bolero, (5 scores)</td>
</tr>
<tr>
<td>Concertos, (16 scores)</td>
<td>Etudes, (16 scores)</td>
<td>Ecossaises, (2 scores)</td>
<td>Fantasia, (6 scores)</td>
</tr>
<tr>
<td>Mazurkas, (65 scores)</td>
<td>Nocturnes, (40 scores)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Descriptive metadata for navigating collection

Nocturnes, (38 scores)

13e, et 14e. nocturne pour piano, op. 48 /,
Paris (Rue Richelieu, 97) : Chez Maurice Schlesinger ; [1841]
Nocturnes, piano, op. 48. No. 1

13e, et 14e. nocturne pour piano, op. 48 /,
Paris : Chez Maurice Schlesinger (Rue Richelieu, 97) ; [1841]
Nocturnes, piano, op. 48. No. 2

13e, et 14e. nocturne pour piano, op. 48 /,
Paris (Rue Richelieu, 97) : Chez Maurice Schlesinger ; [1841]
Nocturnes, piano, op. 48. No. 1

15me, & 16me. nocturno /,
Structural metadata for navigating document

Chopin | Early Editions

search titles uniform titles genres dedicatees

15me. & 16me. nocturno /

unnumbered page

Wessel & Co.'s Complete Collection of the Compositions of Frederick Chopin for the Piano Forte.

HELP PREFERENCES

view score bibliographic description

Page 1: Nocturne, no.15
Page 2
Page 3
Page 4
Page 5
Page 6: Nocturne, no.16
Page 7
Page 8
Page 9
Page 10
Benefits

• **Flexibility/extensibility**
  – Accommodate different descriptive metadata sources (e.g., Dublin Core)
  – Accommodate additional types of data (e.g. sound files)

• **Reuse**
  – Of production stream for other projects
  – Of METS objects for different applications (e.g. OAI harvesting)
Future

- Integrate sound-based indexing (Meldex?)
- Add representative performances
- OMR?
- User interface
  - Usability testing
  - Content-based thumbnails?
    - Sound? Piano scroll?
- ???