Variations2

Towards Visual Interfaces for Digital Music Libraries

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Variations2 Project Goals

“Variations2: The Indiana University Digital Music Library Project”

• Establish a digital library testbed system for music
• Develop user interface applications: music library, music instruction
• Conduct research: usability, metadata, intellectual property
Variations2 Project Goals

“Variations2: The Indiana University Digital Music Library Project”

• Establish a digital library testbed system for music

Boxed:

• Develop user interface applications: music library, music instruction

• Conduct research: usability, metadata, intellectual property
Variations2, Version 1.0
Issues with Musical Data

- Music exists in multiple physical and logical dimensions
- Musical works may be manifested in various performances and printed editions
- Instantiations of a work may exist in multiple formats (score, recording, video, text)
Variations2 Metadata

- WORK
  - is created by CONTRIBUTOR
  - is manifested in INSTANTIATION
  - is enclosed in CONTAINER
  - is represented by MEDIA OBJECT

- CONTRIBUTOR
  - represents people or groups that contribute to a work, instantiation, or container

- INSTANTIATION
  - represents a manifestation of a work as a recorded performance or a score

- CONTAINER
  - represents the physical item or set of items on which one or more instantiations of works can be found (e.g., CD, score)

- MEDIA OBJECT
  - represents a piece of digital media content (e.g., sound file, score image)
Spotfire Experiments

Used Spotfire DecisionSite tool with 20,000+ item database of musical works from classical.net.
Spotfire Results

• DecisionSite is for expert users
• Only works with flat table of data—no way to navigate hierarchical relationships
• No “date” data type
• Requires complete database on local system
• No inexpensive pricing model
Variations2 Visualization Scenarios

- Two examples
- Based on common music DL usage scenarios
- Take advantage of the richness of the Variations2 data model
- Concept stage--no implementation yet
Scenario 1: Search Results

What would this search produce today?
Scenario 1: Today

Search Results: found 769 records.

Display
Scenario 1: Search Results

<table>
<thead>
<tr>
<th>Creator:</th>
<th>Beethoven or Martinu or Brahms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumentation:</td>
<td>cello</td>
</tr>
</tbody>
</table>

Is there a better way?
## Visualizing Search Results

<table>
<thead>
<tr>
<th></th>
<th>Orchestral</th>
<th>Sonata</th>
<th>Variations</th>
<th>Other</th>
</tr>
</thead>
</table>
| **Beethoven** | ![Orchestral](image) | ![Sonata](image) | ![Variations](image) | Sonata for cello and piano ...  
Variations on a theme ... |
| **Brahms**   | ![Orchestral](image) | ![Sonata](image) | ![Variations](image) | Cello sonata no.1 ...  
Variations in E flat ...  
3 pieces, op. 8 ... |
| **Martinu**  | ![Orchestral](image) | ![Sonata](image) | ![Variations](image) | Trio sonata in G major  
Cello Concerto no. 1 ...  
Sonata no. 1 for piano and ...  
2 pieces, op. 10 ...  
Variations on a theme ... |

*Image: Cello Concerto no. 1 [Student Recital], performed by Jack Sprat*
Visualizing Work Details

Beethoven

Sonata for cello and piano...
Variations on a theme...

Brahms

Cello sonata no.1...
Variations in E flat...
3 pieces, op. 8...

Martinu

Trio sonata in G major
Cello Concerto no. 1...
Sonata no. 1 for piano and...
2 pieces, op. 10...
Variations on a theme...

Related Resources
New Grove Dictionary of Music and Musicians
Online list of chamber works by Martinu is available
Bohuslav Martinu Foundation website
Offers list of works (in Czech) and many other resources
## Visualizing Search Results

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Variations on a theme ...

| **Brahms** | ![Orchestral Icon] | ![Sonata Icon] | ![Variations Icon] | Cello sonata no.1 ...
Variations in E flat ...
3 pieces, op. 8 ...

| **Martinu** | ![Orchestral Icon] | ![Sonata Icon] | ![Variations Icon] | Trio sonata in G major
Cello Concerto no. 1 ...
Sonata no. 1 for piano and...
2 pieces, op. 10 ...
Variations on a theme ...

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**Cello Concerto no. 1 [Student Recital], performed by Jack Sprat**
# Visualizing Contributor Details

**Bohuslav Martinu**

- **Born:** 8 December 1890, in Policka, Bohemia
- **Died:** 28 August, 1959

### Works by Martinu

<table>
<thead>
<tr>
<th>Composed</th>
<th>Chamber</th>
<th>Operas</th>
<th>Orchestral</th>
</tr>
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<tbody>
<tr>
<td>1928</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1930</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1936</td>
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<td>1</td>
<td></td>
</tr>
<tr>
<td>1938</td>
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<td></td>
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<tr>
<td>1942</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1953</td>
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</tbody>
</table>

- **Cello Concerto no. 1**

### Related Resources

- [New Grove Dictionary of Music and Musicians](#)
- [Bohuslav Martinu Foundation website](#)

**Orchestral**

- Sonata for cello and piano...
- Variations on a theme...

**Sonata**

- Cello sonata no.1...
- Variations in E flat...
- 3 pieces, op. 8...

**Variations**

- Trio sonata in G major
- Cello Concerto no. 1...
- Sonata no. 1 for piano and...
- 2 pieces, op. 10...
- Variations on a theme...
### Scenario 2: Course Reserves

**William and Gayle Cook Music Library**

<table>
<thead>
<tr>
<th>Author/Composer</th>
<th>Tuesday, Nov. 5</th>
<th>Thursday, Nov. 7</th>
<th>Tuesday, Nov. 12</th>
<th>Thursday, Nov. 14</th>
<th>Tuesday, Nov. 19</th>
<th>Thursday, Nov. 21</th>
<th>Tuesday, Nov. 26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schubert</td>
<td></td>
<td>The Mendelssohns</td>
<td>The Schumanns</td>
<td>Brahms</td>
<td>Wolf</td>
<td>The Mahlers</td>
<td>Strauss</td>
</tr>
<tr>
<td>Strauss</td>
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<tr>
<td>Strauss</td>
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<td></td>
<td>Strauss</td>
<td></td>
<td>Strauss</td>
</tr>
</tbody>
</table>

Is there a better way?
Visual Reserve List

- **Week 8**
  - L’Incoronazione di Poppea, opera (excerpt), 1642, NAWM 57
  - Cavalieri, Emilio de'
  - Caccini, Giulio
  - Peri, Jacopo
  - Monteverdi, Claudio

- **Week 9**
  - Schütz, Heinrich
  - Lully, Jean Baptiste
  - Scarlatti, Alessandro
  - Purcell, Henri

- **Week 10**
  - 1600

- **Week 11**
  - 1650
  - 1700
Variations2 Future Work

• Evolve prototypes via field studies
• Design simple tools to meet identified needs for walk-up users
• Experiment with other visualization tools
• Investigate ways to show collection results in context of the universe of data
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Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.
Backup slides…
Variations2 System

Integrated access to music in all formats
• Digital audio recordings
• Score images
• Score notation
• Video

Delivery to wide range of users
• Faculty: teaching, course design, research
• Students: coursework, independent study
• Music librarians, other library users