

# MusicXML & the MEI

John Ashley Burgoyne

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# Music in XML

- Musical scores suggest gestures to musicians.
- MIDI is fundamentally a gestural interface.
- It is impossible to map performed gestures back onto musical directions precisely.
- We need other standards for scores.

# Outline

- two standards using XML DTDs:
  - MusicXML
  - Music Encoding Initiative (MEI)
- common limitations

# MusicXML

- developed by Michael Good (Recordare)
- strives to be a universal interchange format
- “designed to be sufficient, not optimal”
- replacement for Humdrum or MuseData?
- lacks a stand-alone viewer

# MusicXML Example

```
<attributes>
  <divisions>4</divisions>
  <key>
    <fifths>-1</fifths>
    <mode>major</mode>
  </key>
  <time>
    <beats>2</beats>
    <beat-type>4</beat-type>
  </time>
  <staves>2</staves>
  <clef number="1">
    <sign>G</sign>
    <line>2</line>
  </clef>
  <clef number="2">
    <sign>F</sign>
    <line>4</line>
  </clef>
</attributes>
<note default-x="111">
  <pitch>
    <step>C</step>
```

# Typical Musical Score

Es muß ein Wunderbares sein

Franz Liszt

**Schwebend**

Voice

Piano

*pp*

*p*

Es muß ein Wun - der - ba - res

Figure 3: Original Music as Entered in Sibelius 4.1

# Limitations of MIDI

[Title]

[Composer]

Voice

Piano

Figure 4: Music as Transferred to Finale 2007 via Standard MIDI File

# MusicXML Transfer

## Es muß ein Wunderbares sein

Franz Liszt

The image displays a musical score for the piece "Es muß ein Wunderbares sein" by Franz Liszt. The score is presented in two staves: Voice and Piano. The Voice staff is in the upper register, featuring a treble clef and a common time signature (C). The tempo marking "Schwebend" is placed above the first measure. The lyrics "Es muß ein Wunderbares sein" are written below the notes. The Piano staff is in the lower register, featuring a grand staff with both treble and bass clefs and a common time signature. The piano part begins with a *pp* (pianissimo) dynamic marking. The score shows the first four measures of the piece, with the voice part starting on the second measure. The piano part consists of sustained chords in the right hand and single notes in the left hand.

Figure 5: Music as Transferred to Finale 2007 via MusicXML

# Commercial Success?



# Lessons

- API usability
- bi-directional exchange
- overhead from standards organisations
- compare to NIFF and SDML

# Music Encoding Initiative (MEI)

- developed by Perry Roland (UVA)
- inspired by the Text Encoding Initiative (TEI)
- similar in goals to MusicXML
- more idealised, less commercialised
- less commercial support, no direct viewer

# Design Goals

- comprehensive
- declarative
- explicit
- interpreted
- hierarchical
- formal
- flexible
- extensible

# MEI Example

```
<score>
  <scoredef>
    <pghead1><fw><fwr><fwd></fwd><fwd></fwd><fwd>9</fwd></fwr></fw></pghead1>
    <pgfoot1><fw><fwr><fwd>7545</fwd></fwr></fw></pgfoot1>
    <staffgrp symbol="brace" label.full="">
      <staffdef n="1" clef.line="2" clef.shape="G"/>
      <staffdef n="2" clef.line="4" clef.shape="F"/>
    </staffgrp>
  </scoredef>
  <section>
    <sectiondef key.sig="3s" meter.count="12" meter.unit="8"/>
    <measure n="1">
      <staff def="1">
        <layer def="1">
          <beam>
            <note id="n1" pname="c" oct="6" dur="16" stem.dir="down"/>
            <note pname="a" acci="s" oct="5" dur="16" stem.dir="down"/>
            <note pname="f" oct="5" dur="16" stem.dir="down"/>
            <note pname="g" oct="5" dur="16" stem.dir="down"/>
            <note pname="b" acci="s" oct="5" dur="16" stem.dir="down"/>
            <note pname="a" oct="5" dur="16" stem.dir="down"/>
          </beam>
        </layer>
      </staff>
    </measure>
  </section>
</score>
```

# TabXML

- project to encode lute tablature using XML
- could not use MusicXML or the MEI:
  - too hierarchical
  - focus on common music notation
- can be translated to MusicXML
- would like to interoperate with the MEI