MEI

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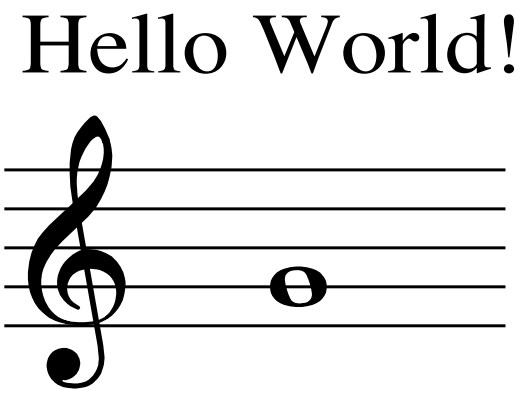
MEI

- XML representation for music with focus on academic research
- Features for generating critical editions of a work (with multiple source that are not the same)
- Secondary concentration on pre-modern western musical notation (mensuration and neumes).
- Examples: http://www2.lib.virginia.edu/innovation/mei/Examples

```
<mei version="1.7b">
  <meihead>
    <meiid>20071029101306082</meiid>
    <filedesc>
      <titlestmt>
        <title>Hello World!</title>
      </titlestmt>
      <pubstmt/>
    </filedesc>
  </meihead>
  <work>
    <music>
      <mdiv>
        <score>
          <scoredef meter.count="4" meter.unit="4" key.sig="0">
            <staffgrp>
              <staffdef n="1" id="P1" label.full="Music" clef.line="2" clef.shape="G" midi.div="1" key.sig="0"/>
            </staffgrp>
          </scoredef>
          <section>
            <scoredef meter.count="4" meter.unit="4" key.sig="0"/>
            <measure n="1" id="d1e6">
              <staff>
                <layer>
                  <note id="d1e24" tstamp="0" pname="c" oct="4" dur="1" dur.ges="4"/>
                </layer>
              </staff>
            </measure>
          </section>
        </score>
      </mdiv>
    </music>
  </work>
</mei>
```



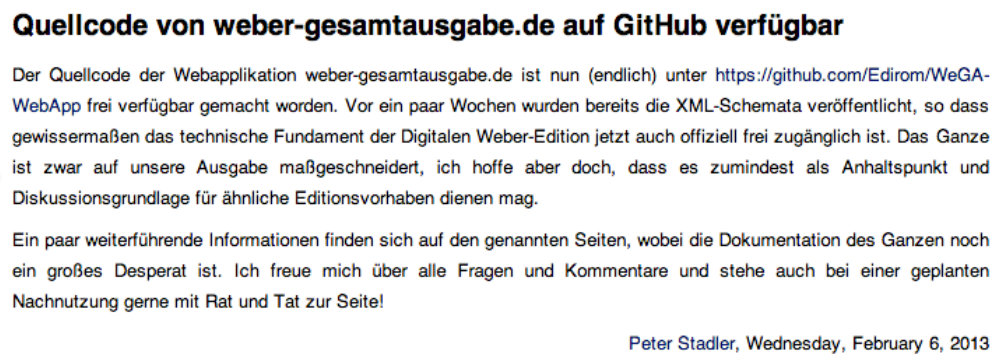
TEI

- MEI is modeled after the Text Encoding Initiative: http://www.tei-c.org/index.xml

  “a consortium which collectively develops and maintains a standard for the representation of texts in digital form.”

```
<TEI xmlns='http://www.tei-c.org/ns/1.0' xmlns:xml='http://www.w3.org/XML/1998 namespace'
xml:id="A050153">
<teiHeader>
<fileDesc>
<titleStmt>
<title level="s">Aktuelle Nachrichten der Carl-Maria von Weber-Gesamtausgabe</title> <title
level="a">Quellcode von weber-gesamtausgabe.de auf GitHub verfügbar</title> <author
key="A009001">Peter Stadler</author>
</titleStmt> <publicationStmt>
<date when="2013-02-06T12:02:00"/>
</publicationStmt> <sourceDesc>
<p>born digital</p>
</sourceDesc>
</fileDesc> <profileDesc>
<textClass>
<keywords scheme="WeGA_cat">
<term>announcement</term>
</keywords>
</textClass>
</profileDesc>
</teiHeader> <text type="news">
<body>
<div xmlns:xml='http://www.w3.org/XML/1998/namespace' xml:lang="de">
<p>
Der Quellcode der Webapplikation weber-gesamtausgabe.de ist nun (endlich) unter <ref
target="https://github.com/Edirom/WeGA-WebApp">https://github.com/Edirom/WeGA-
WebApp</ref> frei verfügbar gemacht worden. <rs type="news" key="A050256">Vor ein paar
Wochen wurden bereits die XML-Schemata veröffentlicht</rs>, so dass gewissermaßen das
technische Fundament der Digitalen Weber-Edition jetzt auch offiziell frei zugänglich ist. Das
Ganze ist zwar auf unsere Ausgabe maßgeschneidert, ich hoffe aber doch, dass es zumindest als
Anhaltspunkt und Diskussionsgrundlage für ähnliche Editionsvorhaben dienen mag.
</p> <p>Ein paar weiterführende Informationen finden sich auf den genannten Seiten, wobei die
Dokumentation des Ganzen noch ein großes Desperat ist. Ich freue mich über alle Fragen und
Kommentare und stehe auch bei einer geplanten Nachnutzung gerne mit Rat und Tat zur Seite!</
p>
</div>
</body>
</text>
</TEI>
```

rendering



Quellcode von weber-gesamtausgabe.de auf GitHub verfügbar

Der Quellcode der Webapplikation weber-gesamtausgabe.de ist nun (endlich) unter https://github.com/Edirom/WeGA-WebApp frei verfügbar gemacht worden. Vor ein paar Wochen wurden bereits die XML-Schemata veröffentlicht, so dass gewissermaßen das technische Fundament der Digitalen Weber-Edition jetzt auch offiziell frei zugänglich ist. Das Ganze ist zwar auf unsere Ausgabe maßgeschneidert, ich hoffe aber doch, dass es zumindest als Anhaltspunkt und Diskussionsgrundlage für ähnliche Editionsvorhaben dienen mag.

Ein paar weiterführende Informationen finden sich auf den genannten Seiten, wobei die Dokumentation des Ganzen noch ein großes Desperat ist. Ich freue mich über alle Fragen und Kommentare und stehe auch bei einer geplanten Nachnutzung gerne mit Rat und Tat zur Seite!

Peter Stadler, Wednesday, February 6, 2013

- HTML on steroids
- Database format which can be transformed into HTML

http://www.weber-gesamtausgabe.de/en/A009001/News/A050153

Formal Description/Documentation

http://music-encoding.org/downloads/mei2012

Currently three components:

- mei-CMN (Common western Music Notation)
- mei-Mensural (precursor to CMN)
- mei-Neumes (precursor to mensural notation)

- Documentation (MEI 2012):

http://music-encoding.googlecode.com/files/MEI_Guidelines_2012_v2.0.0.pdf

DTD/Schema/RelaxNG/ODD

DTD: http://en.wikipedia.org/wiki/Document_Type_Definition
http://www.w3schools.com/dtd/dtd_intro.asp

- Original method for formal description of XML file structure (XML 1.0).

Schema: http://en.wikipedia.org/wiki/XML_Schema_(W3C)`

- 2001: Schema is also in XML format, a successor of DTDs
- XSD (XML Schema Definition)
- More data typing than DTDs
- Namespaces, such as “xml:id”

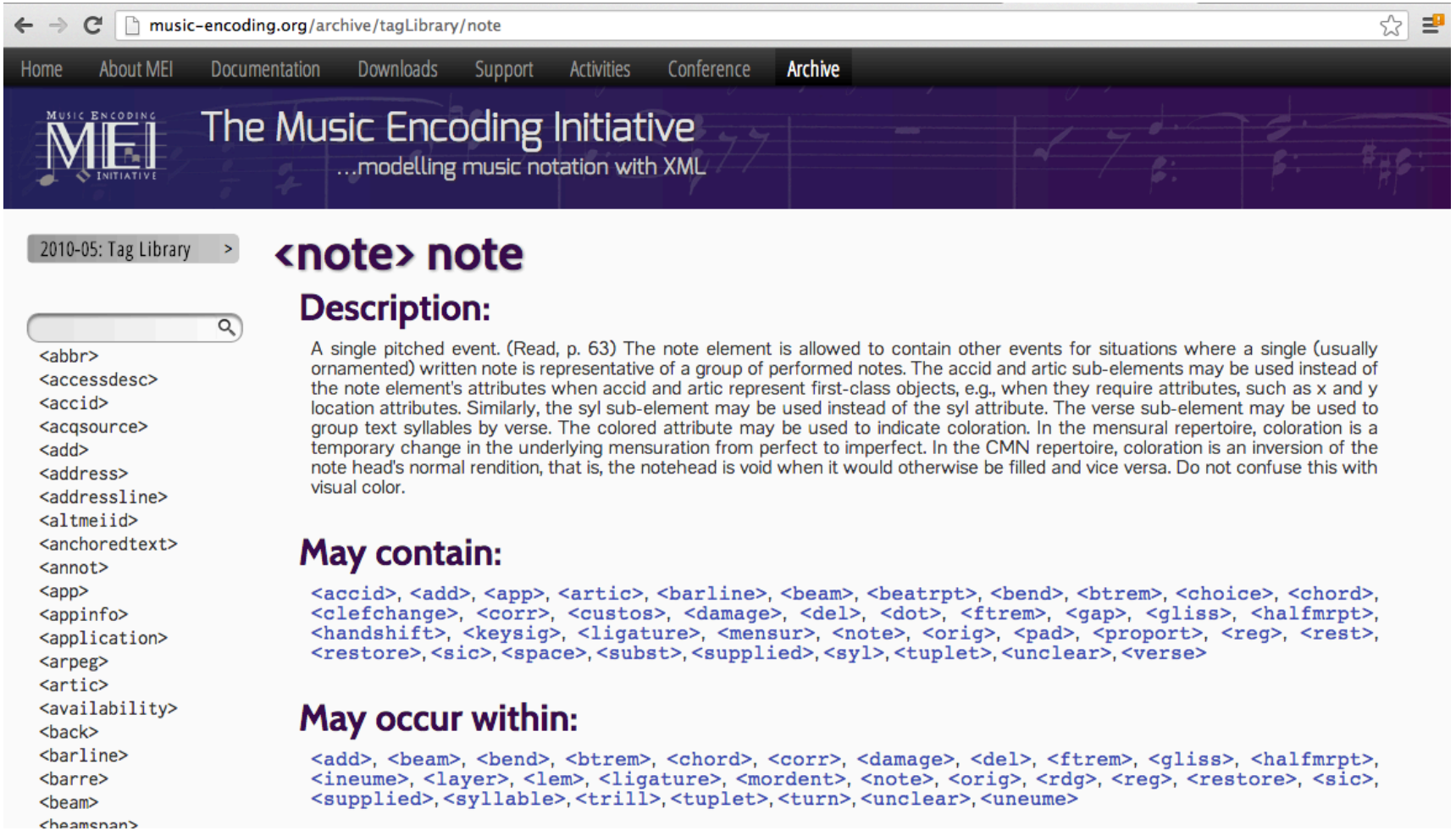
RelaxNG: http://en.wikipedia.org/wiki/RELAX_NG

- REgular LAnguage for Xml Next Generation
- 2009

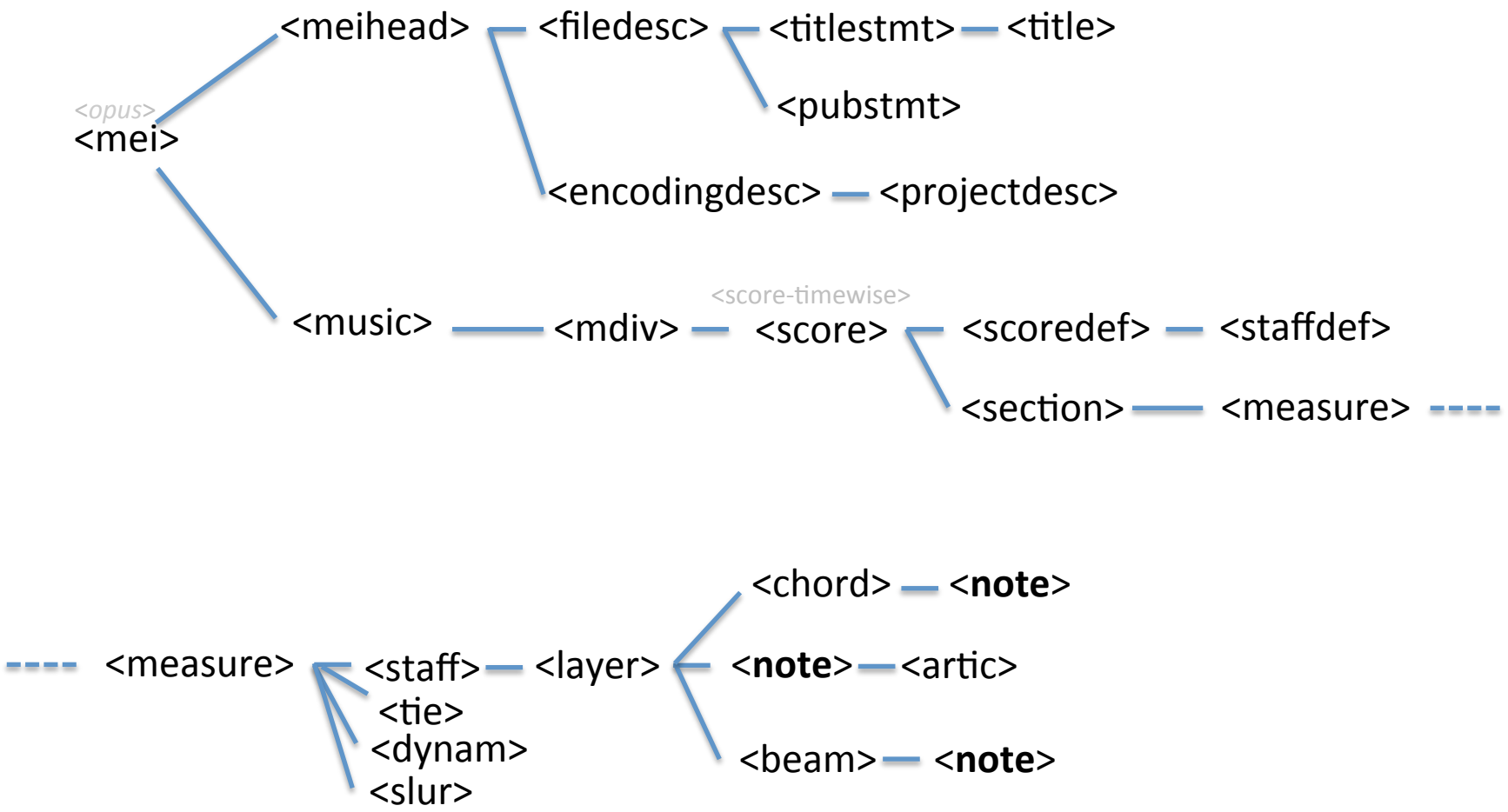
ODD: TEI’s meta representation to automatically generate Schema or RelaxNG format description.

Tag Library

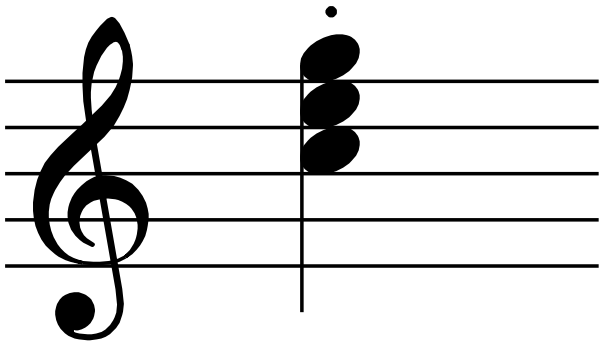
- http://music-encoding.org/documentation/tagLibrary (MEI 2010-05 version)
- Useful tool for navigating the element hierarchy



Basic MEI structure



Chords



MEI

```
<chord xml:id="d11e1" dur="4" dur.ges="1" stem.dir=”down">
  <artic value="stacc"/>
  <note xml:id="d1e85"   pname="g" oct=“5"/>
  <note xml:id="d1e102" pname="e" oct=“5"/>
  <note xml:id="d1e118" pname="c" oct=“5"/>
</chord>
```

MuseData

```
G5      1       1 q     d
 E5     1       1 q     d
 C5     1       1 q     d
```

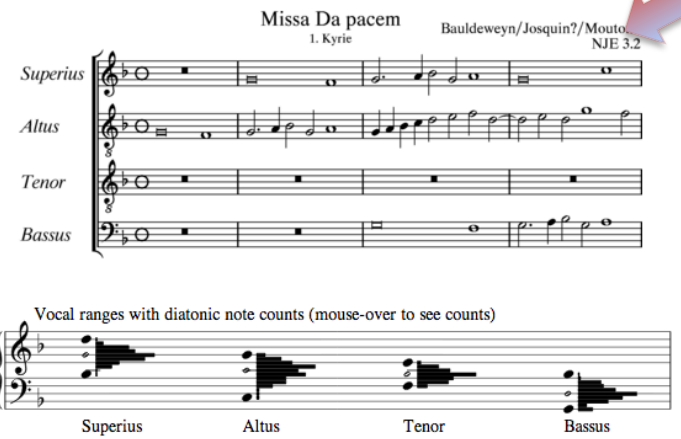
MusicXML

```
<note default-x="84">
  <pitch>
    <step>C</step>
    <octave>5</octave>
  </pitch>
  <duration>2</duration>
  <voice>1</voice>
  <type>quarter</type>
  <stem default-y="-50.5">down</stem>
  <notations>
    <articulations>
      <staccato default-x="3" default-y="15" placement="above"/>
    </articulations>
  </notations>
</note>
<note default-x="84">
  <chord/>
  <pitch>
    <step>E</step>
    <octave>5</octave>
  </pitch>
  <duration>2</duration>
  <voice>1</voice>
  <type>quarter</type>
  <stem>down</stem>
</note>
<note default-x="84">
  <chord/>
  <pitch>
    <step>G</step>
    <octave>5</octave>
  </pitch>
  <duration>2</duration>
  <voice>1</voice>
  <type>quarter</type>
  <stem>down</stem>
</note>
```

MEI data on the web

http://jrp.ccarh.org

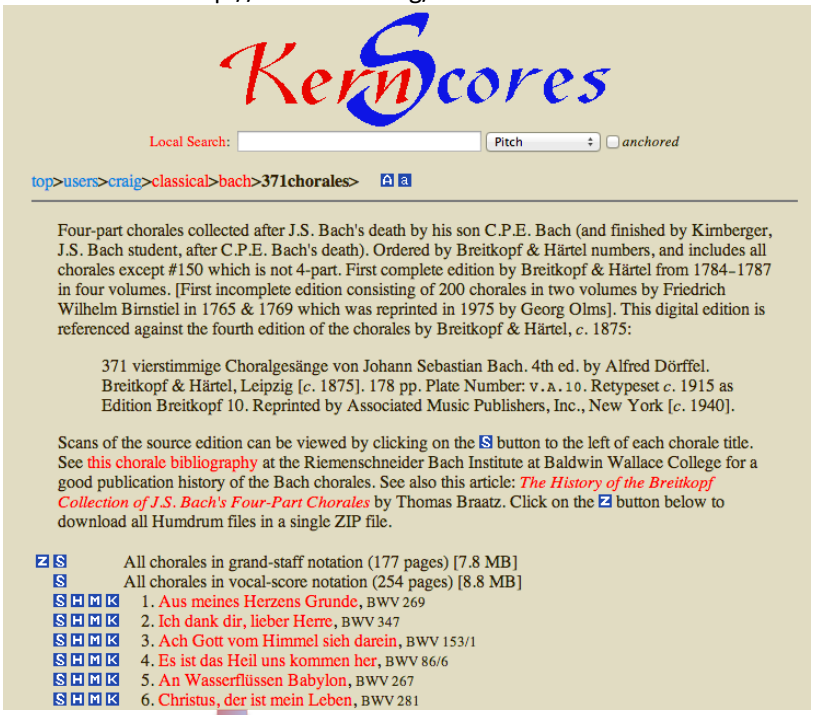
- JRP: database of music from the early Renaissance (1425-1525)
- Data available in Humdrum (primary format), MIDI, MuseData, MusicXML and MEI.
- Primarily Josquin des Prez
- Currently 600,000 notes



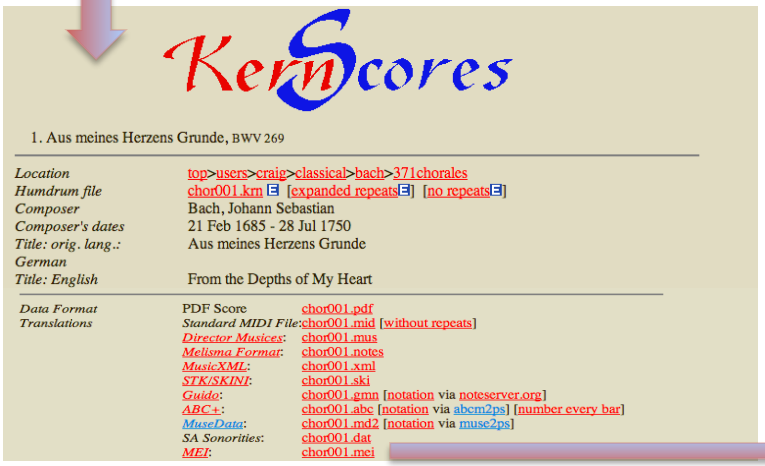

```
<measure n="1" xml:id="mx_sc_1">
  <staff n="1">
   <layer n="1">
    <rest xml:id="n_sc_29_3" dur="breve" dots="1"/>
   </layer>
  </staff>
  <staff n="2">
   <layer n="1">
    <note xml:id="n_sc_29_2" pname="g" oct="3" dur="breve"/>
   </layer>
  </staff>
  <staff n="3">
   <layer n="1">
    <rest xml:id="n_sc_29_1" dur="breve" dots="1"/>
   </layer>
  </staff>
  <staff n="4">
   <layer n="1">
    <rest xml:id="n_sc_29_0" dur="breve" dots="1"/>
   </layer>
  </staff>
</measure>
```

MEI data on the web (2)

http://kern.ccarh.org/browse?l=371chorales



http://kern.ccarh.org/data?file=chor001.krn&l=371chorales&format=info



http://kern.ccarh.org/sdata?l=371chorales&file=chor001.krn&f=mei

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<?oxygen SCHSchema="http://music-encoding.org/mei/schemata/2010-05/rng/mei-all.rng"?>
<?oxygen RNGSchema="http://music-encoding.org/mei/schemata/2010-05/rng/mei-all.rng"
   type="xml"?>
<mei xmlns:xlink="http://www.w3.org/1999/xlink" xmlns="http://www.music-encoding.org/ns/
mei" meiversion="2010-05">
 <meihead>
  <filedesc>
   <titlestmt>
    <title type="main" xml:lang="ger">Aus meines Herzens Grunde</title>
    <title type="translated" xml:lang="eng">From the Depths of My Heart</title>
   </titlestmt>
   <pubstmt/>
  </filedesc>
  <profiledesc>
   <langusage>
    <language xml:id="eng" authority="iso639-2"/><!-- English -->
    <language xml:id="ger" authority="iso639-2"/><!-- German -->
   </langusage>
  </profiledesc>
</meihead>
 <music>
  <body>
   <mdiv>
    <score>
     <scoredef key.sig="1s" key.pname="g" key.accid="n" key.mode="major" meter.count="3"
       meter.unit="4">
      <staffgrp>
       <staffdef n="1" clef.shape="G" clef.line="2"/>
       <staffdef n="2" clef.shape="G" clef.line="2"/>
       <staffdef n="3" clef.shape="G" clef.line="2" clef.trans="8vb"/>
       <staffdef n="4" clef.shape="F" clef.line="4"/>
      </staffgrp>
      <!-- <secexpan repeat="true" label="default" ids="A A B"/> -->
      <!-- <secexpan repeat="false" label="norep" ids="A B"/> -->
     </scoredef>
     <section xml:id="A">
      <measure xml:id="mx_sc_13">
       <staff n="1">
        <layer n="1">
         <note xml:id="n_sc_19_3" pname="g" oct="4" dur="4"/>
        </layer>
       </staff>
       <staff n="2">
        <layer n="1">
         <note xml:id="n_sc_19_2" pname="d" oct="4" dur="4"/>
        </layer>
       </staff>
       <staff n="3">
        <layer n="1">
         <note xml:id="n_sc_19_1" pname="b" oct="3" dur="4"/>
        </layer>
       </staff>
```

The Music Encoding Conference 2013

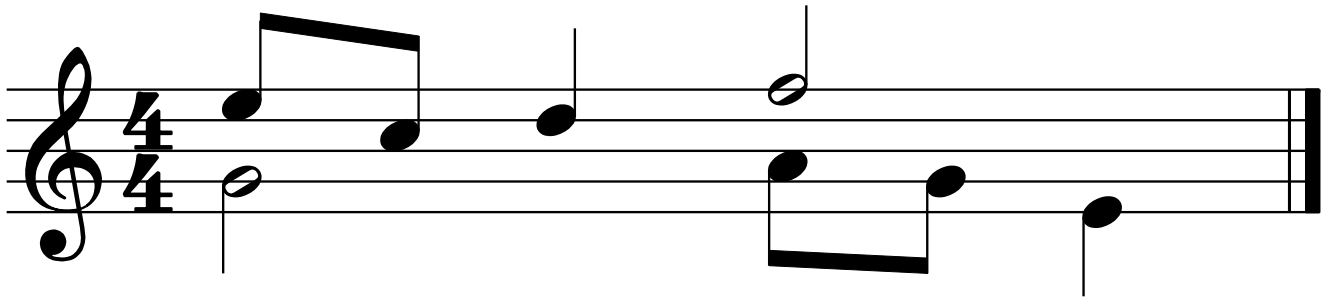
Concepts, Methods, Editions

22-24 May, 2013
Mainz Academy for Literature and Sciences, Mainz, Germany

Music encoding is now a prominent feature of various areas in musicology and music librarianship. The encoding of symbolic music data provides a foundation for a wide range of scholarship, and over the last several years, has garnered a great deal of attention in the digital humanities. This conference intends to provide an overview of the current state of data modeling, generation, and use, and aims to introduce new perspectives on topics in the fields of traditional and computational musicology, music librarianship, and scholarly editing, as well as in the broader area of digital humanities.

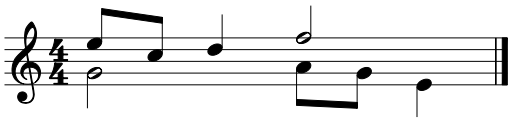
- 30 Short MEI examples (pre MEI 2010-05 version):
  http://wiki.ccarh.org/mediawiki/images/c/cb/30_short_mei_encoding_examples.pdf

SCORE XML



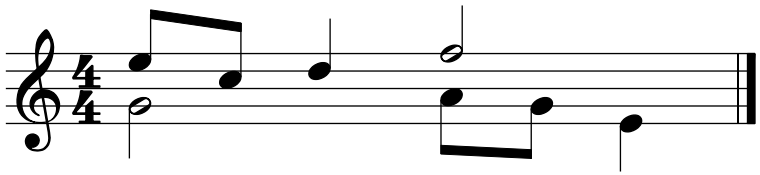
```
8  1   0.000  0.0  0.0 100.000
3  1   1.500
18 1   8.999  0.0  4.0   4.000
1  1  16.499 10.0 10.0   0.000  0.5 -1.5
6  1  16.499  9.0  7.5  28.551 11.0
1  1  16.499  5.0 20.0   1.000  2.0 -1.0
1  1  28.551  8.0 10.0   0.000  0.5 -0.5
1  1  40.454  9.0 10.0   0.000  1.0 -1.0
1  1  58.087 11.0 10.0   1.000  2.0 -1.5
1  1  58.087  6.0 20.0   0.000  0.5 -0.5
6  1  58.087  6.5  6.0  70.138 21.0
1  1  70.138  5.0 20.0   0.000  0.5 -1.0
1  1  82.041  3.0 20.0   0.000  1.0 -1.5
14 1 100.000  1.0  2.0
```

ScoreXML



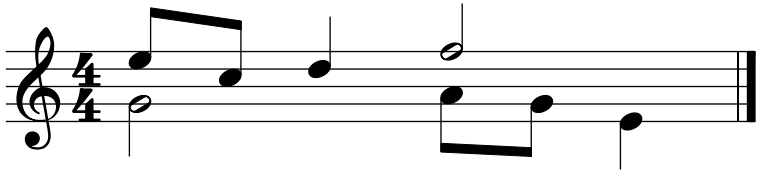
```
<ScoreXML version="1.0">
 <scoreHead>
  <info>
   <description>Pitch range information by voice</description>
  </info>
 </scoreHead>
 <scoreData>
  <page>
   <pageData>
    <scoreFile>
     <fileHead>
        <name>0301a</name>
        <pmxExt>pmx</pmxExt>
      </fileHead>
     <fileItems>
       <item p1="8" p2="1" p3="0.000" p4="0.0" p5="0.0" p6="100.000"/>
        <item p1="3" p2="1" p3="1.500"/>
        <item p1="18" p2="1" p3="8.999" p4="0.0" p5="4.0" p6="4.000"/>
        <item p1="1" p2="1" p3="16.499" p4="10.0" p5="10.0" p6="0.000" p7="0.5" p8="-1.5"/>
        <item p1="6" p2="1" p3="16.499" p4="9.0" p5="7.5" p6="28.551" p7="11.0"/>
        <item p1="1" p2="1" p3="16.499" p4="5.0" p5="20.0" p6="1.000" p7="2.0" p8="-1.0"/>
        <item p1="1" p2="1" p3="28.551" p4="8.0" p5="10.0" p6="0.000" p7="0.5" p8="-0.5"/>
        <item p1="1" p2="1" p3="40.454" p4="9.0" p5="10.0" p6="0.000" p7="1.0" p8="-1.0"/>
        <item p1="1" p2="1" p3="58.087" p4="11.0" p5="10.0" p6="1.000" p7="2.0" p8="-1.5"/>
        <item p1="1" p2="1" p3="58.087" p4="6.0" p5="20.0" p6="0.000" p7="0.5" p8="-0.5"/>
        <item p1="6" p2="1" p3="58.087" p4="6.5" p5="6.0" p6="70.138" p7="21.0"/>
        <item p1="1" p2="1" p3="70.138" p4="5.0" p5="20.0" p6="0.000" p7="0.5" p8="-1.0"/>
        <item p1="1" p2="1" p3="82.041" p4="3.0" p5="20.0" p6="0.000" p7="1.0" p8="-1.5"/>
        <item p1="14" p2="1" p3="100.000" p4="1.0" p5="2.0"/>
 </fileItems>
    </scoreFile>
   </pageData>
  </page>
 </scoreData>
</ScoreXML>
```

ScoreXML



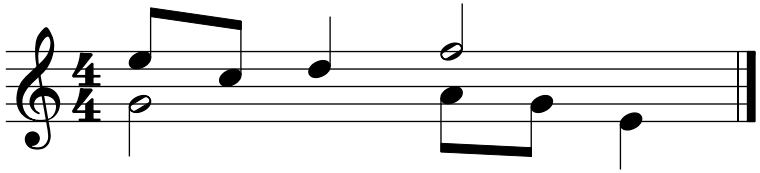
```
8  1      0.000   0.0   0.0 100.000
3  1      1.500
18 1      8.999   0.0   4.0   4.000
1  1.1   16.499 10.0 10.0    0.000  0.5 -1.5
@pitch: E5
6  1.1   16.499   9.0   7.5  28.551 11.0
1  1.2   16.499   5.0 20.0    1.000  2.0 -1.0
@pitch: G4
1  1.1   28.551   8.0 10.0    0.000  0.5 -0.5
@pitch: C5
1  1.1   40.454   9.0 10.0    0.000  1.0 -1.0
@pitch: D5
1  1.1   58.087 11.0 10.0    1.000  2.0 -1.5
@pitch: F5
1  1.2   58.087   6.0 20.0    0.000  0.5 -0.5
@pitch: A4
6  1.2   58.087   6.5   6.0  70.138 21.0
1  1.2   70.138   5.0 20.0    0.000  0.5 -1.0
@pitch: G4
1  1.2   82.041   3.0 20.0    0.000  1.0 -1.5
@pitch: E4
14 1    100.000   1.0   2.0
```

ScoreXML



```
<item p1="8" p2="1" p3="0.000" p4="0.0" p5="0.0" p6="100.000"/>
<item p1="3" p2="1" p3="1.500"/>
<item p1="18" p2="1" p3="8.999" p4="0.0" p5="4.0" p6="4.000"/>
<item p1="1" p2="1.1" p3="16.499" p4="10.0" p5="10.0" p6="0.000" p7="0.5" p8="-1.5">
  <pitch>E5</pitch>
</item>
<item p1="6" p2="1.1" p3="16.499" p4="9.0" p5="7.5" p6="28.551" p7="11.0"/>
<item p1=”1" p2="1.2" p3="16.499" p4="5.0" p5="20.0" p6="1.000" p7="2.0" p8="-1.0">
  <pitch>G4</pitch>
</item>
<item p1="1" p2="1.1" p3="28.551" p4="8.0" p5="10.0" p6="0.000" p7="0.5" p8="-0.5">
  <pitch>C5</pitch>
</item>
<item p1="1" p2="1.1" p3="40.454" p4="9.0" p5="10.0" p6="0.000" p7="1.0" p8="-1.0">
  <pitch>D5</pitch>
</item>
<item p1="1" p2="1.1" p3="58.087" p4="11.0" p5="10.0" p6="1.000" p7="2.0" p8="-1.5">
  <pitch>F5</pitch>
</item>
<item p1="1" p2="1.2" p3="58.087" p4="6.0" p5="20.0" p6="0.000" p7="0.5" p8="-0.5">
  <pitch>A4</pitch>
</item>
<item p1="6" p2="1.2" p3="58.087" p4="6.5" p5="6.0" p6="70.138" p7="21.0"/>
<item p1="1" p2="1.2" p3="70.138" p4="5.0" p5="20.0" p6="0.000" p7="0.5" p8="-1.0">
  <pitch>G4</pitch>
</item>
<item p1="1" p2="1.2" p3="82.041" p4="3.0" p5="20.0" p6="0.000" p7="1.0" p8="-1.5">
  <pitch>E4</pitch>
</item>
<item p1="14" p2="1" p3="100.000" p4="1.0" p5="2.0"/>
```

ScoreXML



```
<page num="1">
  <system num="1">
    <staff num="1">
      <measure num="1">
        <item p1="8" p2="1" p3="0.000" p4="0.0" p5="0.0" p6="100.000"/>
        <item p1="3" p2="1" p3="1.500"/>
        <item p1="18" p2="1" p3="8.999" p4="0.0" p5="4.0" p6="4.000"/>
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            <pitch>E5</pitch>
            <beamstart xml:idref="beam1"/>
          </item>
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            <pitch>C5</pitch>
            <beamend xml:idref="beam1"/>
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          </item>
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            <pitch>F5</pitch>
          </item>
        </layer>
        <layer num="2">
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            <pitch>G4</pitch>
          </item>
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            <beamstart xml:idref"beam2">
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