Markup Languages for Music: MusicXML and MEI

Music 253/CS 275A
Stanford University
CMME (Computerized Mensural Music Encoding)
CMME: virtual editions of early music

- **Corpus Mensurabilis Musicarum** (zest. 1998)
  Est. and built by Theodor Dumitrescu, Oxford-Utrecht-Berkeley

Goal: *One encoding, multiple systems of notation for mensural notation*

From *The Virtual Score*. Used by permission.

cmme.org
CMME (2013)

- Computerized Mensural Musical Editing
- Based in Utrecht
- Marnix van Berchum (director from 2012--)
- Home of “The Other Josquin” [attribution study]
- Source code publicly available (GNU license) at https://github.com/tdumitrescu/cmme-editor
CMME today

Content lists, some scores, for 15th-16th cent music

http://www.cmme.org
MusicXML
(Extensible Markup Language)
MusicXML: History

- Developed from 2000 by Michael Good
- Distrib Recordare (2002-2011)
  - V. 2: Java (2007)
  - V. 3: Java (2011)
  - Sold as add-on to Finale, Sibelius et al.

- Sold to MakeMusic (Finale) in 2011
  - Native in Finale; more limited capabilities in Sibelius
  
  http://www.makemusic.com/musicxml/

  Sibelius team moved to Steinberg as Keeping Score
XML in Music: A short history

- 1998 to present: Corpus Mensurabilis Musicarum Electronicum [alt. Computerized Mensural Music Encoding]
- 2007-2011: Java-based MusicXML
  - 2010---: MuseScore et al. rely on MusicXML
- 2011---: MusicXML taken over by MakeMusic (Finale)
- 2013: MakeMusic acquired by Launch Equity
- 2018?: SoundSlice.com MusicXML reading service online
MusicXML vis-à-vis MuseData

MuseData

MusicXML

Analytical apps

Sound apps

Notation apps
Sibelius/Steinberg side of MEI

- Sibelius sold to Avid (Santa Cruz)
- Sibelius sw team moved to Steinberg team to develop “Keeping Score”
- Most visible part is **SMuFL** (standard music font layout) [version 1.18]

Long list of music glyphs (2000+)

Glyphs vs fonts

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Daniel Spreadbury
MusicXML: Main Aims

- Nexus of all commercial notation interchange schemes
- Highest structural compatibility with MuseData and Humdrum
- Most useful tool for converting from older to newer versions of *Finale!*
- In use for over past decade by many small sw companies and a few music publishers (inc. Hal Leonard)
Part/score versatility in *MusicXML*

Both/and

1. Encode **voice by voice** or **bar by bar**
2. Transform array as needed

Part-wise *(MuseData)*

Time-wise *(Humdrum)*
MusicXML: Current status (v. 3.1, 2016)

- [ ] http://www.makemusic.com/musicxml/specification/dtd
- [ ] “Common” DTD (v. 3.0)
- [ ] Sound: timbral recognition (sounds.xml, v. 3.0)
- [ ] MIDI: in absolute or delta times (v. 3.0)
- [ ] Other: some support for recent music, no semantic support for early music
- [ ] Main current emphasis on W3C Music Notation Community (with Noteflight and SMuFL):
  https://www.w3.org/community/music-notation/
MusicXML: MIDI interface

Accidental=“alt”
MuseScore

- Uses MusicXML as visible rep system
- Java-based
- Doc in several languages
- Open-source level
- Closed-source level
- YouTube tutorials

http://wiki.ccarh.org/wiki/MuseScore
Lilypond

- Shareware (GNU) engraving, own code (c. 2005)
- Dev (Han Wen Nienhuys) in Brazil
- All platforms (mainly unix/linux)
- TeX-like syntax, markup
- Extensive online documentation

Musicxml2lp script (Lilypond 2.12.3)
- Hosts “unofficial MusicXML test suite”
  - (no official test suite)
  - Good categorical organization

http://wiki.ccarh.org/wiki/Lilypond
http://lilypond.org/doc/v2.12/input/regression/musicxml/collated-files.html#Test-cases
MusicXML and the Music Encoding Initiative (MEI)
Aims of MEI

- To support encoding of musical sources
  - i.e. sources underpinning modern editions
- To function synchronously with TEI (Text Encoding Initiative)
  - Sources in which textual material and music are combined
- To rely on 3rd-party software for printing and data interchange
TEI in relation to sources

Old Roman cursive script

Tablets from Roman fort at Hadrian’s Wall

TEI app EpiDoc
-epigraphy (Oxford)

Other TEI tools
-Coins
-Seals

Form of preservation
What problems do music sources present?
Manuscript sources of music

Suppressed material
Added material
Imperfections
Ambiguities

Vivaldi MS
Printed sources of music

First word? Zefiro [archaic vs. modern notation]
Bar lines?
Custos?
Part-book problems? Monteverdi