What is musical information?

Music 253/CS 275A

Stanford University
1. What is the basic **essence** of music?

- Sound
- Text
- Act
- Mental image
What is music representation?

• **Sound**: parameterization of sound qualities
• **Text**: symbolic representation of scores
• **Act**: symbolic representation of gestures
• **Mental image**: rules, principles, perceptions
2. Domains of information

- Sound
- Notation
- "Logical work"
2. Domains of musical information

- No ASCII code for music
- Some parametric ideas common to all domains
- Logical = perceptual??
Musical information confounds

Virtual symbolic content:

- Pure graphics
- Pure sound

Sign vs. sound (semiotics)

rsp domain-specific features

Notation

Sound

Logical work
3. Software used in the course

- **Sound-based**: MIDI*
- **Text-based**: Guido*, Finale, SCORE, Sibelius, abcplus
- **Logical/analysis-friendly**: Humdrum* [spring quarter]
- **Data and data interchange**: MuseData, MusicXML*, MEI*
4. Music codes before machine computation: The Guidonian hand (mnemonics)

Mnemonic devices (c. 1000 AD)

Giordano Bruno’s memory wheel (1582)

Memory Palace
5. Confusing terminology

- **Absolute vs. relative**
  - machine-oriented
    - MIDI key nos.
  - user-oriented
    - Intervallic information

- **Tangible vs. cognitive (selective)**
  - Selection by domain
  - Selection by reduction
6. Selective understandings

- **Raw vs. interpreted data**
  - *When* interpreted?
    - On input
    - In processing

- **Common vs. application-specific data**
  - Data attributes
  - Application attributes
7. Frontiers of musical information

- Data resource development
- Data management and identification
- Data interchange
- Data query and analysis
- Data visualization*
App A. Piano rolls as music representations

J. S. Bach: Chorale No. 1
(pitch-class mapping)

Chopin: Prelude
(voice-part mapping)
App A. The *Music Animation Machine*

Above are four bars (23-26) of Chopin’s *Nocturne*, Opus 27, No. 2 in D-flat major. This excerpt modulates chromatically, ending with a V-to-I cadence (violet-to-blue in the bass line).

Harmonic coloring assigns twelve colors from the artist’s color wheel to the twelve pitches of the musician’s circle of fifths.

In the chart above and the examples that follow, blue is assigned to the tonic pitch (I).
App B. Harmonic representation schemes

J. S. Bach: *Prelude* in D Major

J. S. Bach: *Fugue* in D Minor

*Keyscapes* (old-style) by Craig Sapp
Apps: Music Animation Machine

Software

• MIDI player (Windows)
  http://www.musanim.com/player/

• Harmonizer for iPad:
  http://www.musanim.com/harmonizer/

• Blender 2.xx
  (http://www.blender.org)

Streaming video

Stephen Malinowski: smalin

• http://www.youtube.com/watch?v=ipzR9bhei_o&feature=channel

Andy Fillebrown: andy lillebrown

• https://www.youtube.com/watch?v=l3EiEa1UNCw

Files:

• http://www.piano-midi.de/midi_files.htm