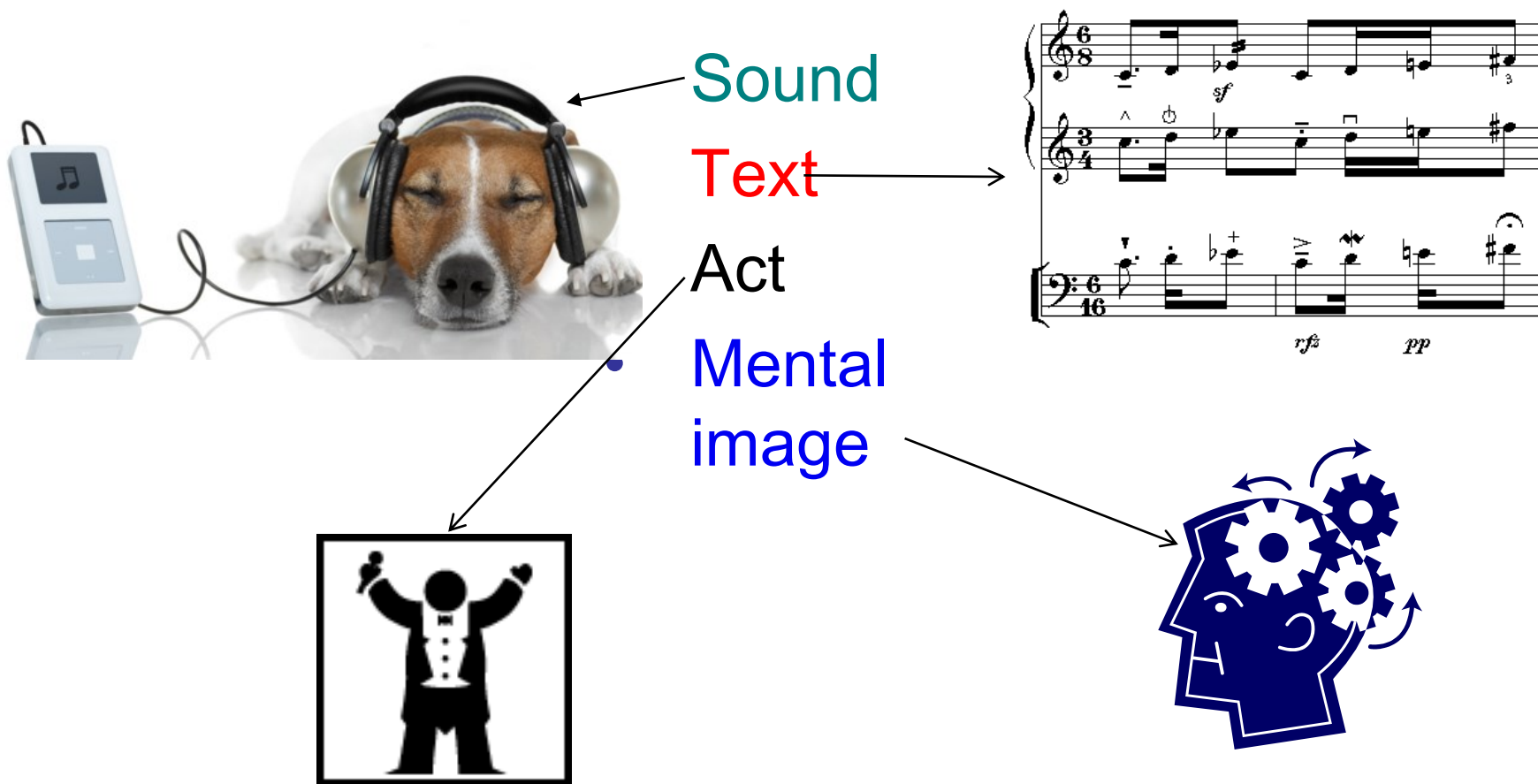


What is musical information?

Music 253/CS 275A

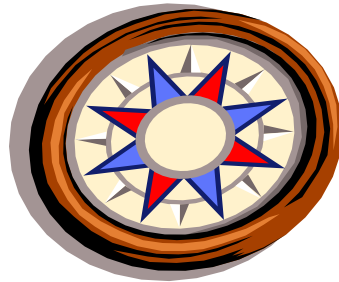
Stanford University

1. What is the basic essence of music?

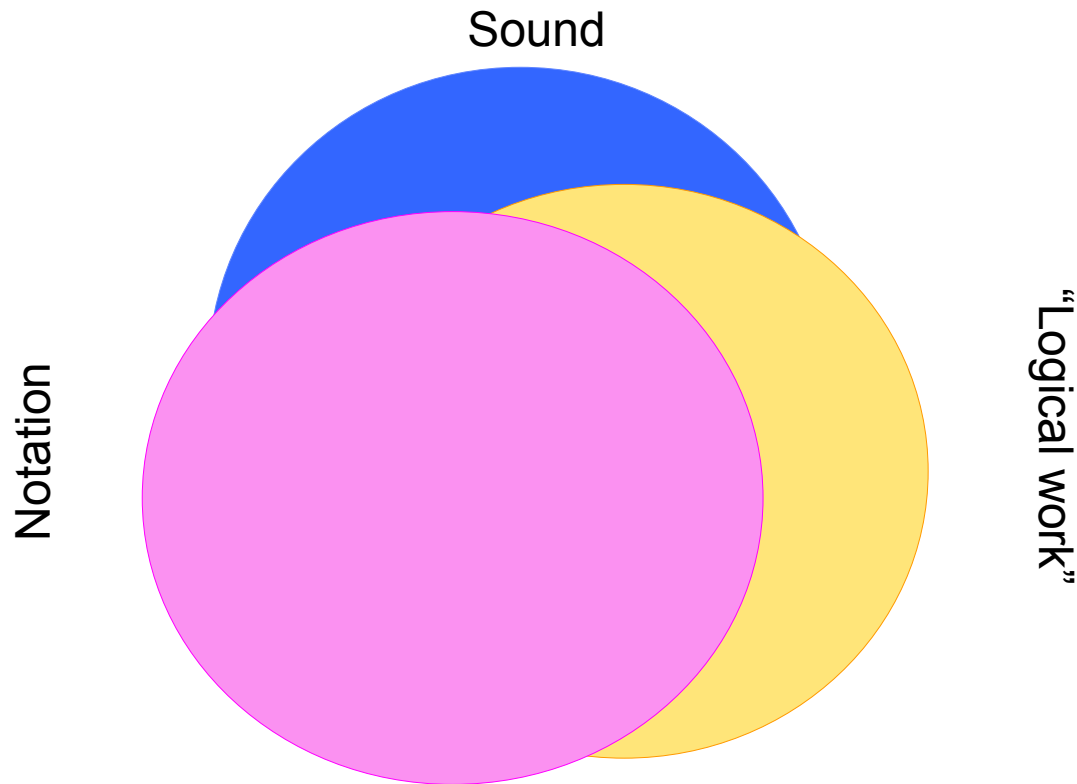


What is music representation?

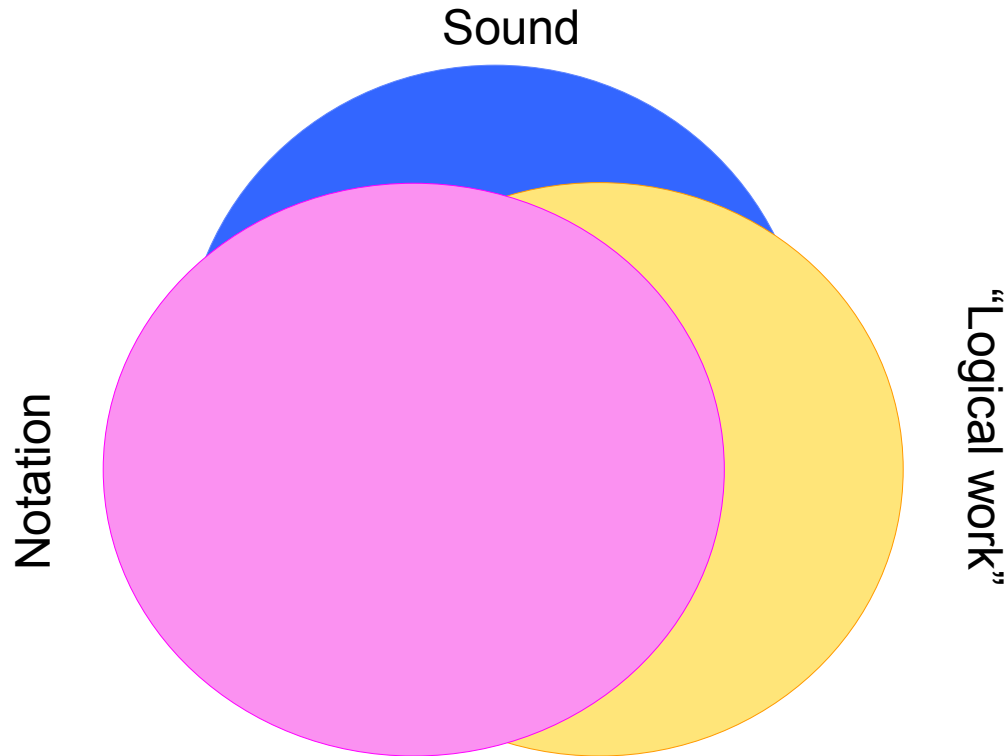
- *Sound*: parameterization of sound qualities
- *Text*: symbolic representation of scores
- *Act*: symbolic representation of gestures
- *Mental image*: rules, principles, perceptions



2. Domains of information



2. Domains of musical information

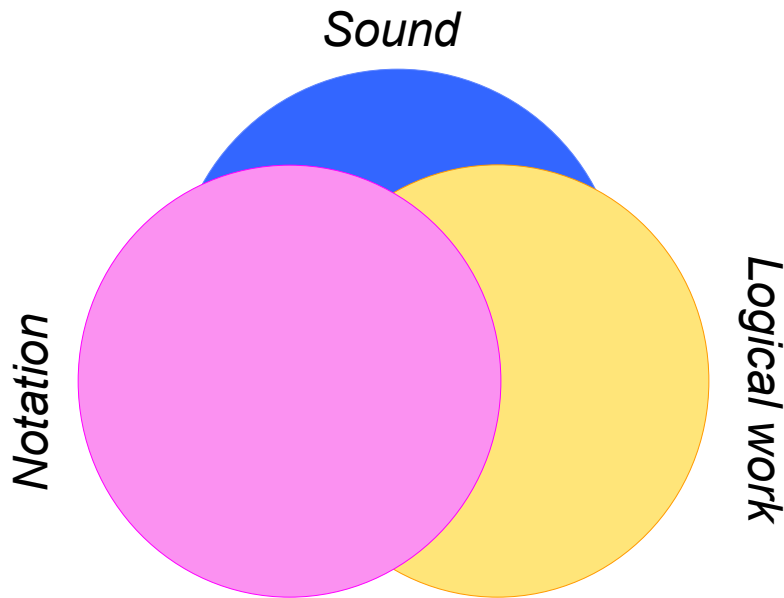


- No ASCII code for music
- Some parametric ideas common to all domains
- Logical = perceptual??

Musical information confounds

Virtual symbolic content:

- Pure graphics
- Pure sound



Sign vs. sound (semiotics)

rsp domain-specific features

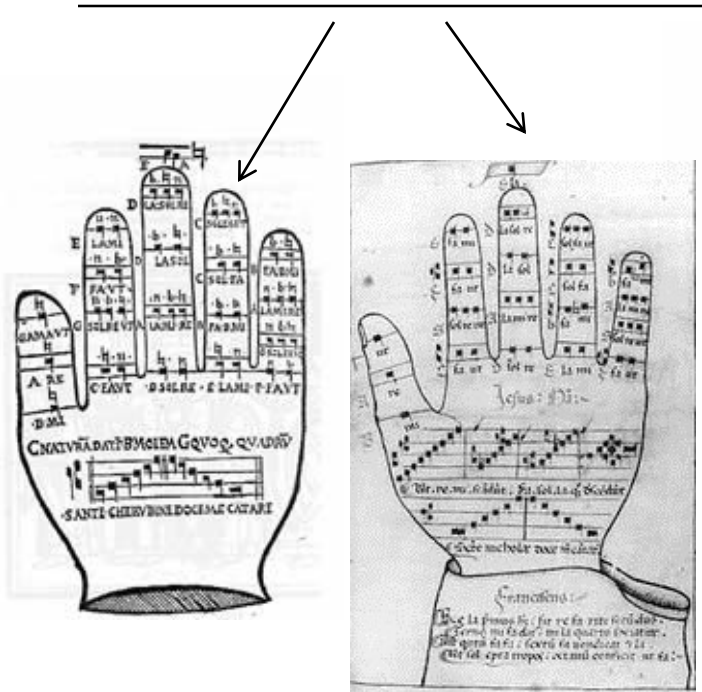
A musical score for piano, showing two systems of music. The first system is marked with a tempo of quarter note = 120. The score includes various musical notations such as notes, rests, and dynamics. Several sections of the score are highlighted with blue boxes, including a measure in the first system and a large section in the second system.

3. Software used in the course

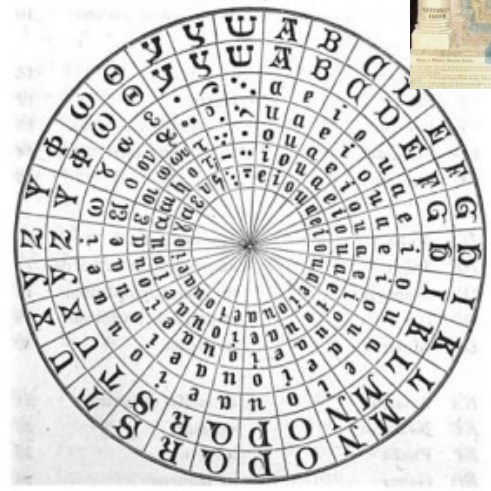
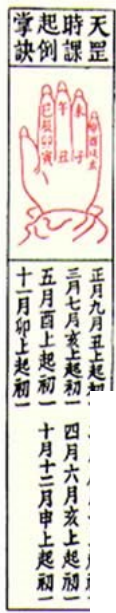
- *Sound-based: MIDI**
- *Text-based: Guido*, Finale, SCORE, Sibelius, abcplus*
- *Logical/analysis-friendly: Humdrum** [spring quarter]
- *Data and data interchange: MuseData, MusicXML*, MEI**

The image shows a screenshot of a music notation software interface. On the left side, there is a vertical control panel with various icons and text labels for editing and playback. The main area on the right displays a musical score for a piano. The score is written in three staves: two for the right hand (treble clef) and one for the left hand (bass clef). The time signature is 6/8. The music features a variety of notes, rests, and dynamic markings such as *mf* and *pp*. The interface is clean and professional, typical of a music notation application.

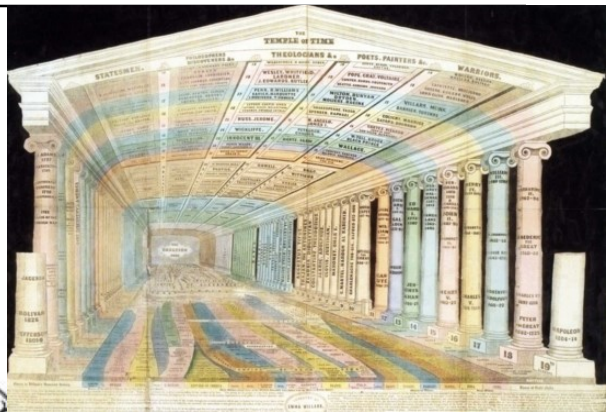
4. Music codes before machine computation: The Guidonian hand (mnemonics)



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

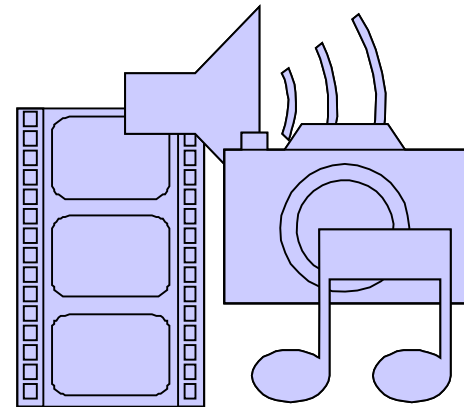
- **Tangible vs. cognitive (selective)**

- Selection by domain
- Selection by reduction



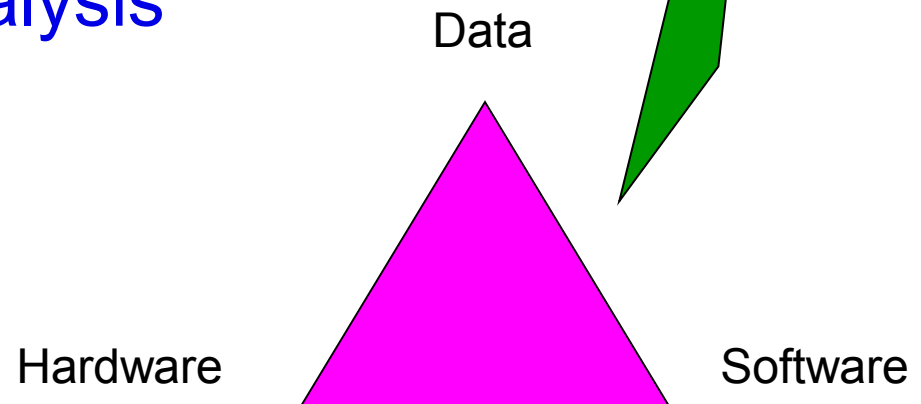
6. Selective understandings

- **Raw vs. interpreted data**
 - *When* interpreted?
 - On input
 - In processing
- **Common vs. application-specific data**
 - **Data** attributes
 - **Application** attributes

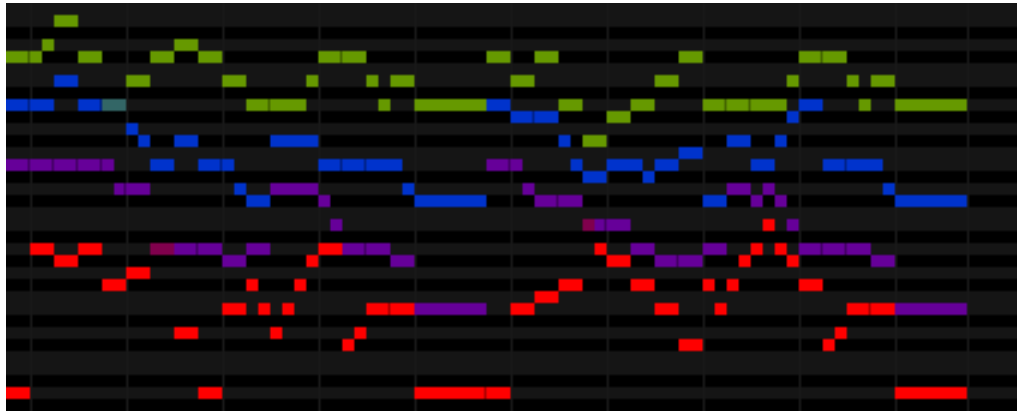


7. Frontiers of musical information

- Data resource development
- Data management and identification
- Data **interchange**
- Data **query and analysis**
- Data **visualization***

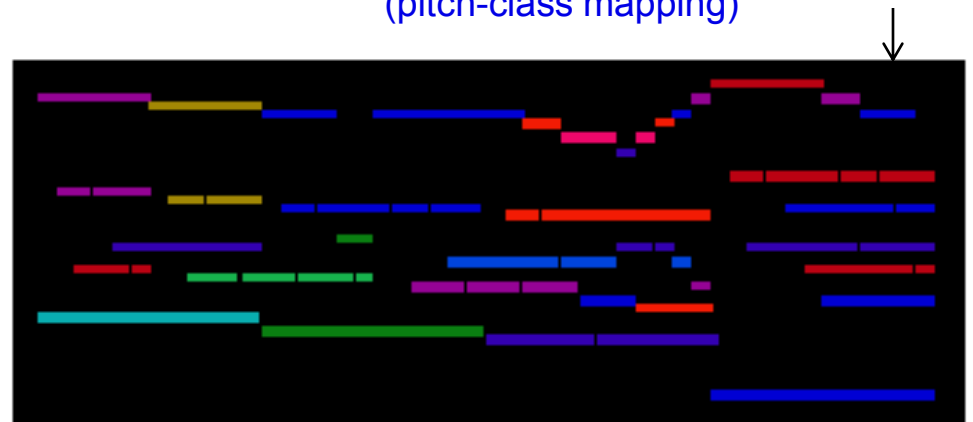


App A. Piano rolls as music representations

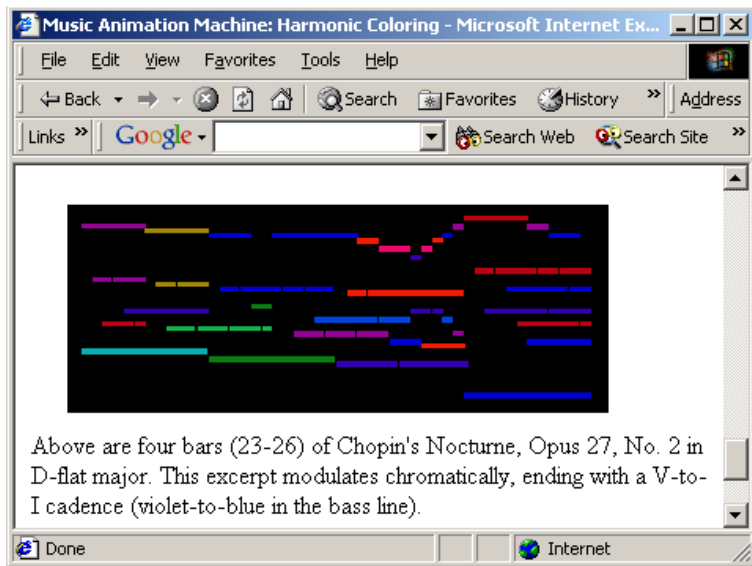


↑ Chopin: Prelude
(voice-part mapping)

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



App A. *The Music Animation Machine*

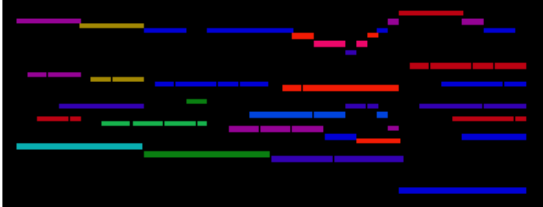


Music Animation Machine: Harmonic Coloring - Microsoft Internet Ex...

File Edit View Favorites Tools Help

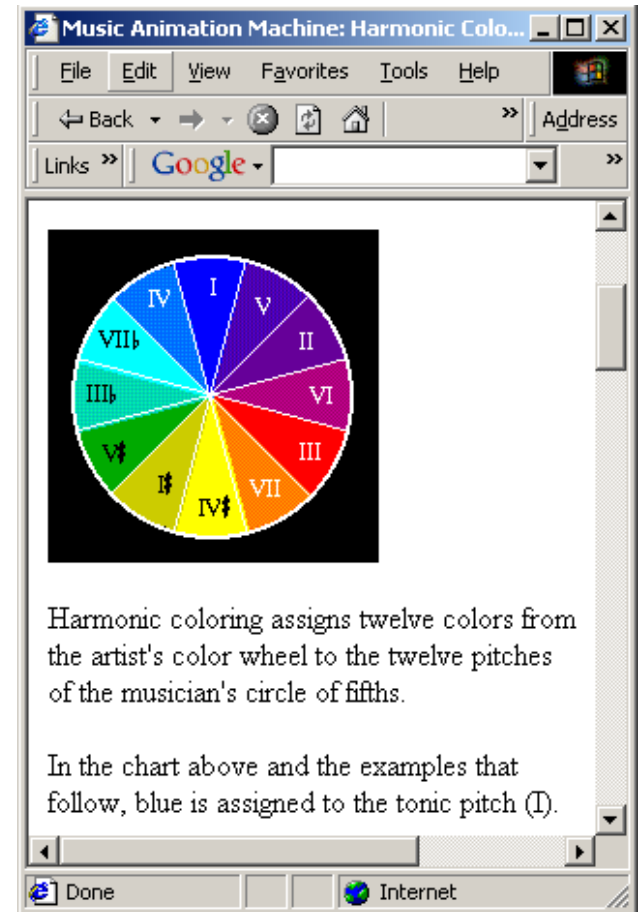
Back Forward Stop Home Search Favorites History Address

Links Google Search Web Search Site



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).

Done Internet

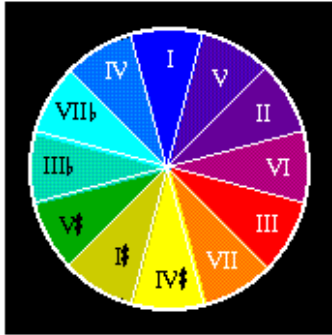


Music Animation Machine: Harmonic Colo...

File Edit View Favorites Tools Help

Back Forward Stop Home Address

Links Google

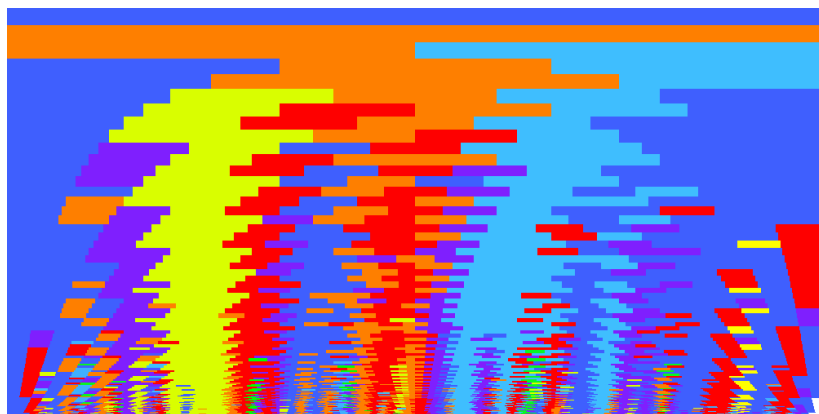


Harmonic coloring assigns twelve colors from the artist's color wheel to the twelve pitches of the musician's circle of fifths.

In the chart above and the examples that follow, blue is assigned to the tonic pitch (I).

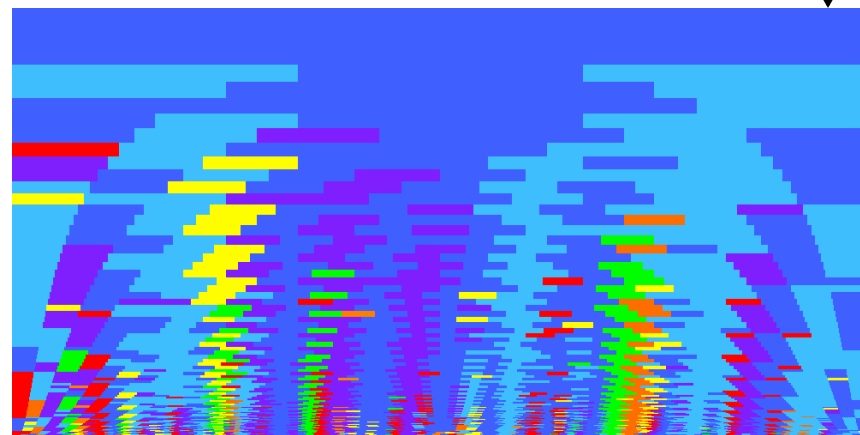
Done Internet

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 fillebrown

- <https://www.youtube.com/watch?v=l3EiEa1UNCw>

Files:

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