Uses of Humdrum

Music 253/CS 275A
Stanford University
Traditional categories of music analysis

- Traditional means of analysis
  - Harmony
  - Counterpoint
  - Melody
  - Rhythm

Feature sets
Analytical styles

Root analysis

Schenkarian analysis

Figure 1. Instantaneous tempo curves of two performances of a composition for the Kazakh dombra (time-stretched for alignment as they have different durations).

Blair Johnson, MTO (2012)
Music analysis without music

Tartini (sw)
Perspectives on music analysis: 1-2

- **Traditional** (*theoretical, historical*) means of analysis
  - Harmony
  - Counterpoint
  - Melody
  - Rhythm

- **Statistical** (*systematic*) approaches

Feature sets: results related to **score**

Feature sets: results reported in tables, charts, graphs
More approaches to analysis

- **Imported procedures**
  - Often *procedural* or *structural*
  - Borrowed from
    - Linguistics
    - Mathematics
    - Computer science
    - Engineering

- **Cognitive studies**
- **Performance-based analysis**
- **Data visualization**
Other legitimate projects

- Data translation, enrichment
- Linking symbolic data with MIDI or audio
- Style evaluation (and generation as proof of concept)
Sample Projects, Random Order
Algorithmic generation: 12-bar blues

Exercise: Simple 12-bar Blues in F

1. Phrase 1
F7
2. Phrase 2
Bb7 F7
3. Phrase 3
C7 F7

Improvise over the 12 bars using notes from this blues scale

Francesco Giomi, c. 1988
Hierarchical systems: Lerdahl-Jackendoff

Generative theories of musical grammar (1984)
Phrase families (centonization)

- Panos Mavromatis (2006)
  - N.B. Lerdahl-Jackendoff touch

*Figure 3. A Phrase family in Echos 1, illustrating formulaic variation. Brackets above the staff mark the family’s opening and closing formulas.*
Linear systems (species counterpoint)

Two-Voice Analysis

Three-Voice Analysis

Several systems
Imitative systems (18th-century counterpoint)

Timothy Smith, NAU
Generative chorale variations

- Dominik Hörnel (2005): Pachelbel
  - Keyboard elaboration generated from chorale melody
Rhythm, Meter, Tempo (performance)


Figure 4. Expression trajectories over the last bars (mm 24–28) of the Mozart piano sonata K.279, second movement, first section, as played by Daniel Barenboim (left) and András Schiff (right). x axis: tempo in beats per minute; y axis: dynamics (‘loudness’) in decibel. The darkest point represents the current instant (third beat of m 28), while instants further in the past appear fainter.
Geospatial mapping of musical features

- Bret Aarden (1998)

Minor mode

Triple meter
Tabla drumming

Themefinder (melodic search)

- Huron, Kornstädt, Sapp, et al. (1996)

themefinder.org
The Haydn/Mozart String Quartet Quiz

Can you tell the difference between the musical styles of Haydn and Mozart?

This website tests how well you can distinguish between the string quartets of these two composers. You will listen to randomly selected movements composed by either Mozart or Haydn. Then, you will choose the composer you think wrote the music you have just heard.

Digital scores for the quartet quiz have been provided by the Center for Computer Assisted Research in the Humanities at Stanford University. Click the start button below to answer some questions about your musical knowledge and then start the quiz...

- View current identification statistics

Brought to you by Craig Sapp and Yi-Wen Liu, Stanford University.
Neuromusicology

- Carol Krumhansl: Tonal, harmonic understanding
  - Their physiological correlated
- Petr Janata: specific-key perception
  - Neural correlates
- Petri Toiviainen
  - Spatial-temporal music cognition