Melodic Similarity

CS 275B/Music 254
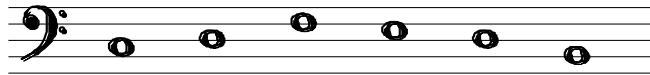
"Natural history" of similarity

- *Concept of similarity* fundamental to organization of most art music
- *Types of similarity* widely variant
- *Roles of similarity* widely variant
- Similarity in art music is **intentional**

Accidental matches

▸ Target:

▸ Some hits:

  ▸ Bach *WTC*

  ▸ Bizet: *Carmen*

  ▸ Saint-Saens: *Carnival* (via Offenbach)

  ▸ Mozart: Symphony No. 41, IV

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Melodic "Invisibility" Factors

‣ Elaboration of something simple

‣ Compound melodies (monophonic)

‣ Psycho-acoustic tricks (polyphonic)

‣ Rotating melodies

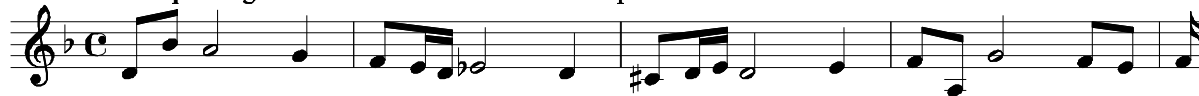‣ Ambiguous foreground/background

‣ Metrical ambiguity

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Elaboration

Bach, Art of Fugue (after Wiering et al.)

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Classic features of melody

- Eerola et al, MP (2001): Statistical vs perceptual melodic similarity
  - Material used: Finnish folk songs
- Frequency distributions (music)
  - Tones
  - Intervals
  - Durations
  - Two-tone transitions

- Frequency distributions (listeners)
  - Tessitura
  - Mean pitch
  - Rhythmic activity
  - Rhythmic variability
  - Melodic predictability

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Recency, Latency

‣ Baroni et al.

   ‣ (linguistics based; 1984 et al.)

‣ Melodic kernel

   ‣ Tessitura

   ‣ Start and end points, by phrase

Tessitura; Kernel

Algorithmic vs Human Judgment

Works by Passion Fruit

Features:
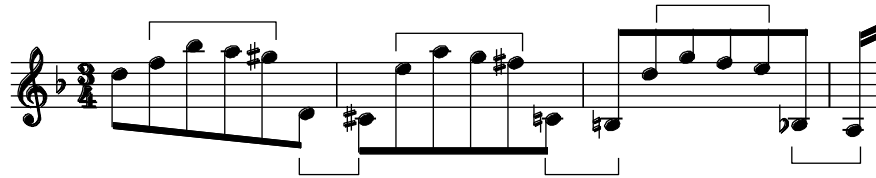- intervals
- contour
- rhythm
- harmony
- recurrent motifs

- Repertory: popular

- Data: MIDI

- Processes include:

  - contour generalization

  - aliasing

  - fuzzification

Class	Intervals	Name
-4	< -7	Big leap down
-3	-7, -6, -5	Leap down
-2	-4, -3	Big step down
-1	-2, -1	Step down
0	0	Same
1	1, 2	Step up
2	3, 4	Big step up
2	5, 6, 7	Leap up
4	> 7	Big leap up

Perceptual tricks

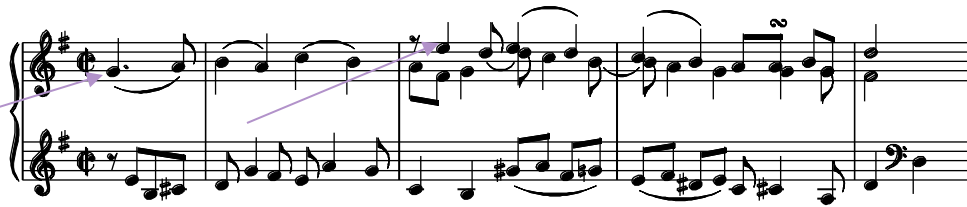▸ Compound melody

One voice that
we hear as two

▸ Distributed melody
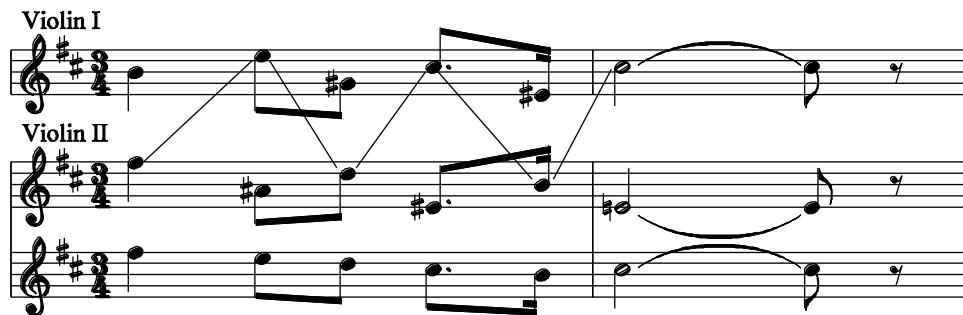
Two voices that
we hear as one

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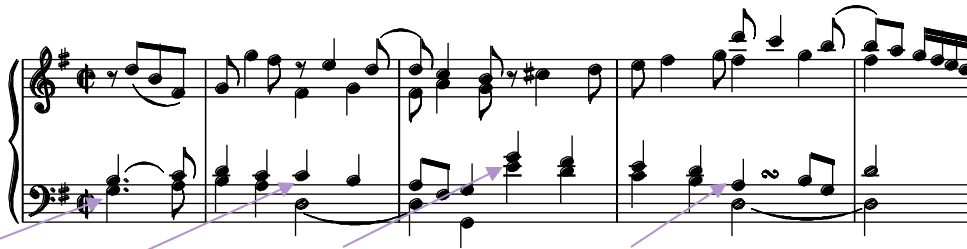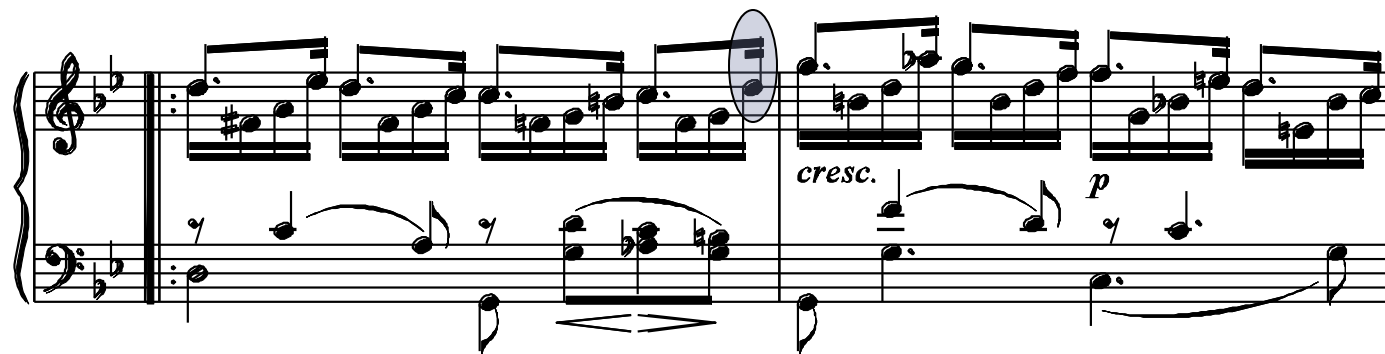
Rotating melodies

B, T, B, T; A, S
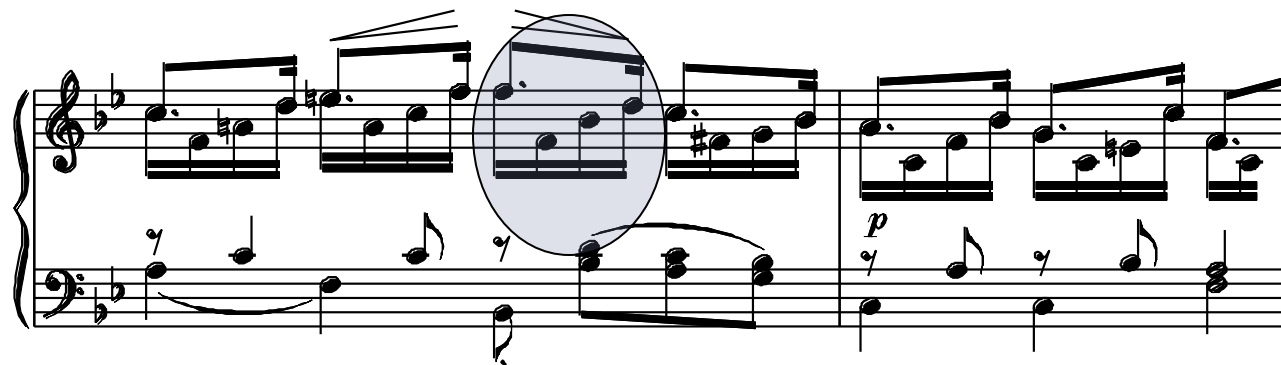
Haydn: "Archduke" String Quartet

Perceptual tricks: Ambiguous foreground/background

Schubert

Perceptual tricks: Metrical ambiguity

Ratner

Col intimissimo sentimento ma senza troppo marcare la Melodia
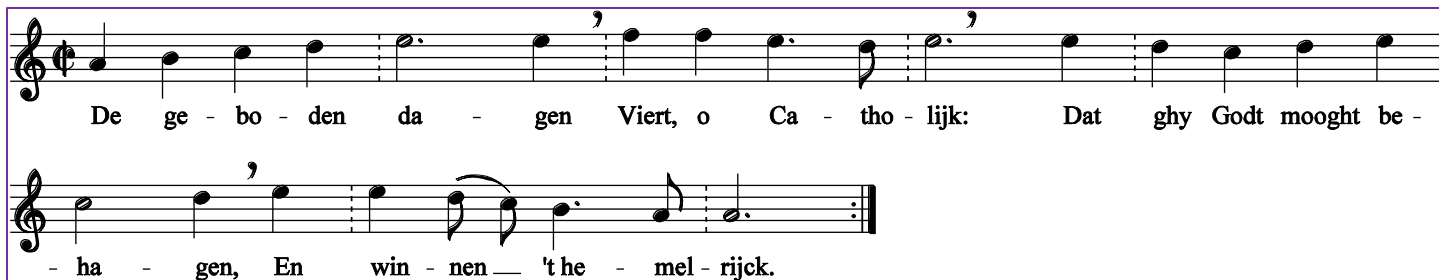
Brahms
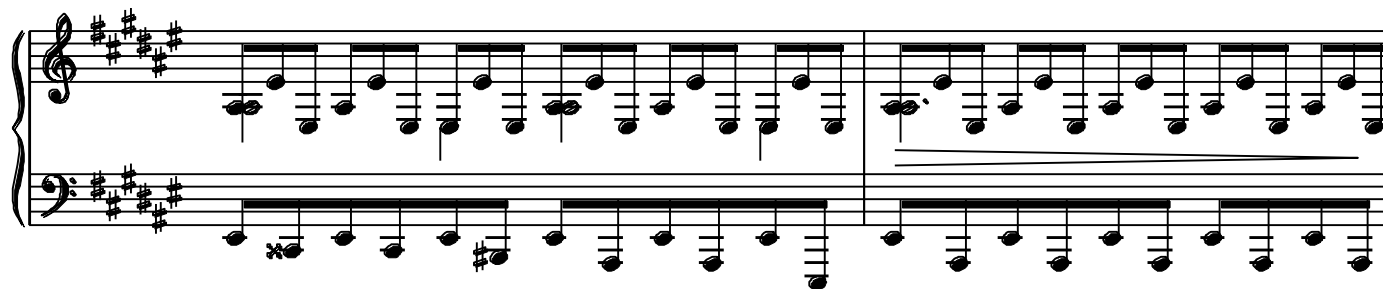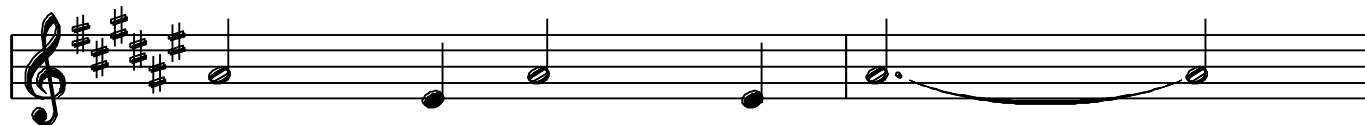
A similarity study: Ballo di Mantova

Fug- gi fug - gi   fug – gi da que – sto cie – lo, aspr' e   du – ro, spie- ta – to ge – lo

Prima Parte

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Ballo di Mantova

De ge - bo - den da - gen Viert, o Ca - tho - lijk: Dat ghy Godt mooght be -

- ha - gen, En win - nen 't he - mel - rijck.

Websites for literature on similarity

‣ www.ismir.net   Proceedings for individuals years can be downloaded