# Contrapuntal studies

CS 275B/Mus 254

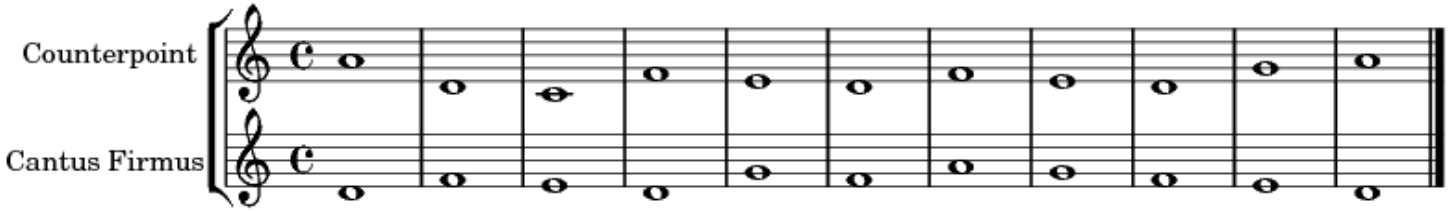
Stanford University

# Counterpoint overview

- Various methods governing the combination of voices in a polyphonic work
- Main approaches
  - Note against note (*punctus contra punctum*), usually called “sixteenth-century” or “species” counterpoint
  - Palestrina counterpoint (also from the 16th century)
  - “Free” counterpoint (also “18th-century”)
- Highly rule-driven
- Originally required a pre-existing melody
  - *Cantus firmus* (later “tenor”)

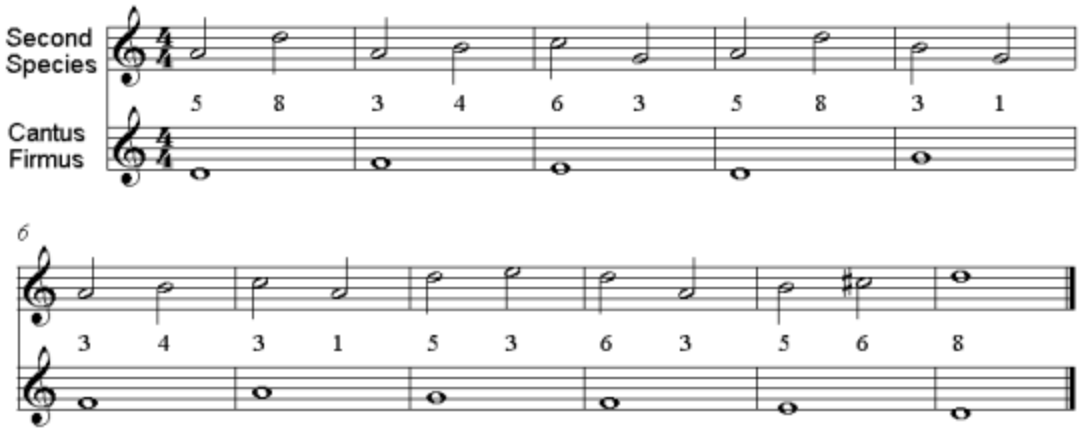
# Automatic species counterpoint

## (Bill Schottstaedt)

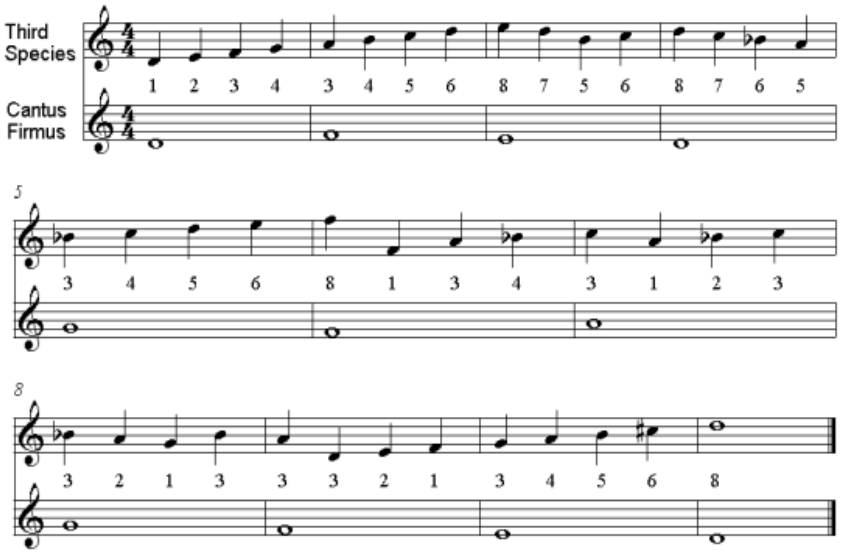



First species—1:1

Second species—2:1

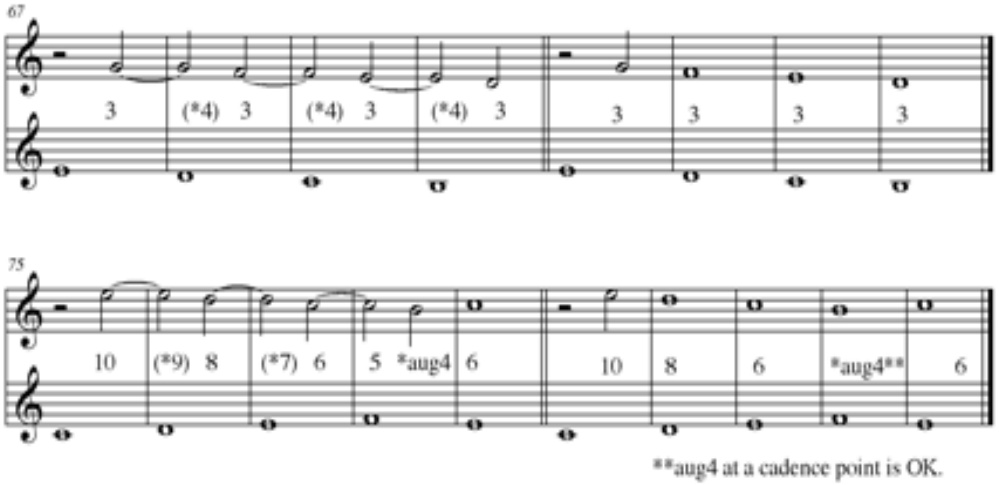


# Species counterpoint, cont.



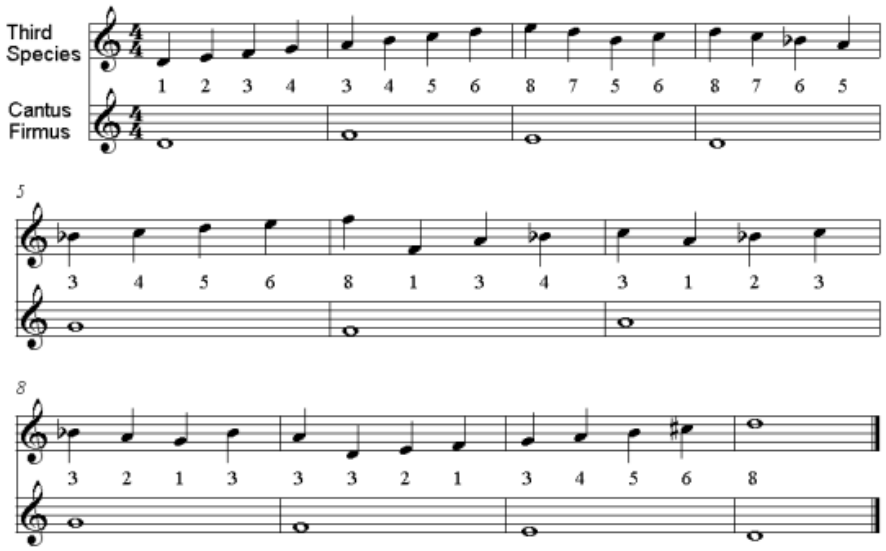

Third species—4:1

Fourth species—2:1 w/ suspensions

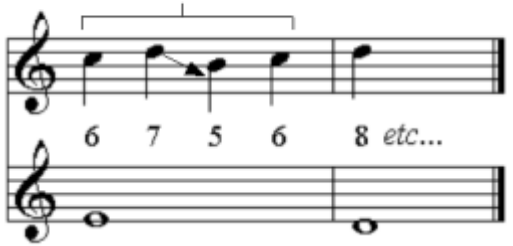



**aug4 at a cadence point is OK.

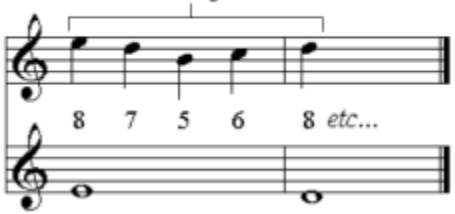
# Cambiata: allowed some dissonances



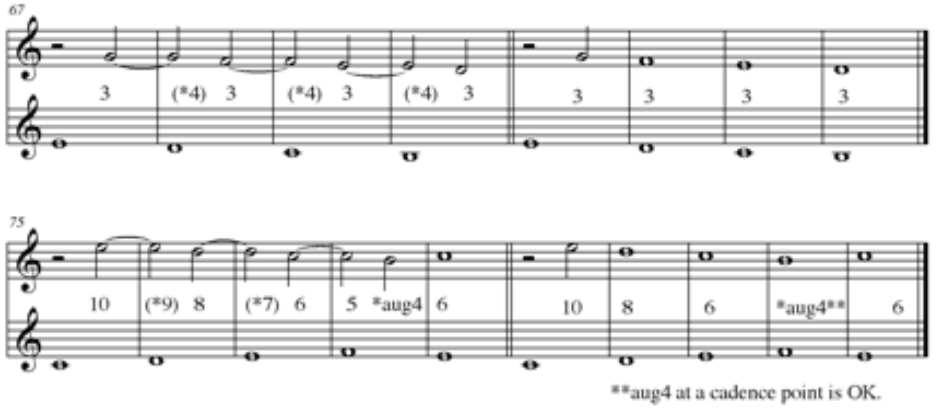

The contour of a double-neighbour figure including a legal leap from a dissonance




An example of the contour of a nota cambiata figure

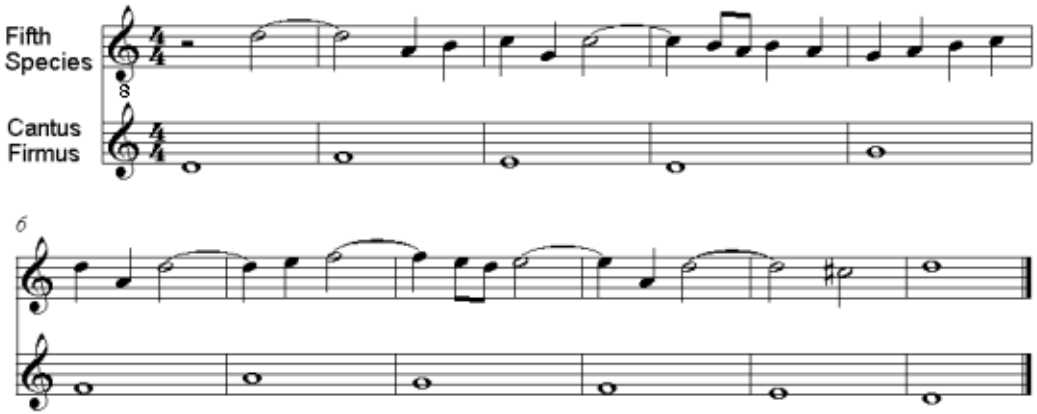



4th species




**aug4 at a cadence point is OK.

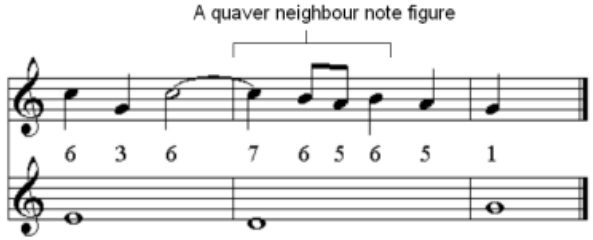
# Fifth species, and its allowances



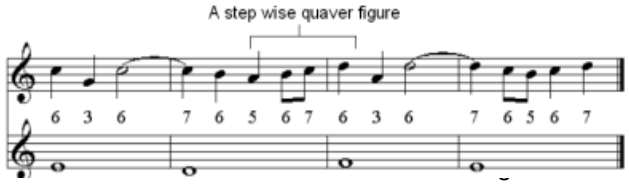

16th-century practice as codified In the 18th century

8th-note rules

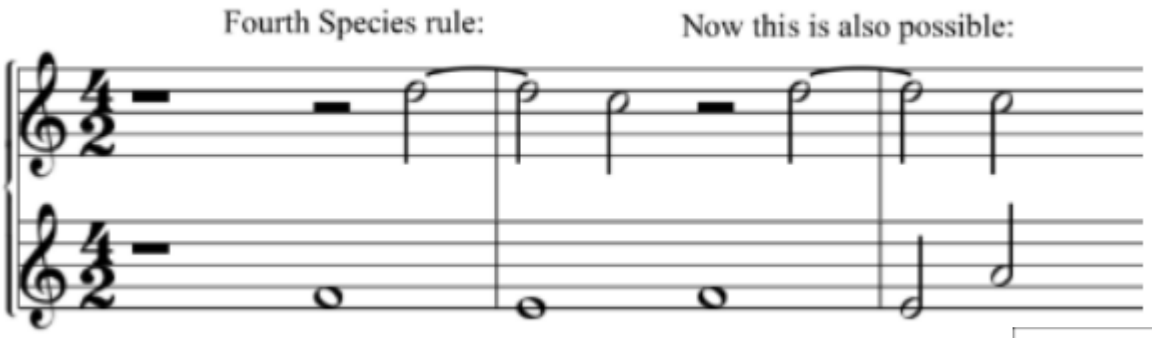
- As a neighbour-note figure (a stepwise connection between two instances of the same (consonant) note may be used if and only if the middle note is also a consonance).




- As passing notes that connect two consonant notes an interval of a fourth apart (rarely used).

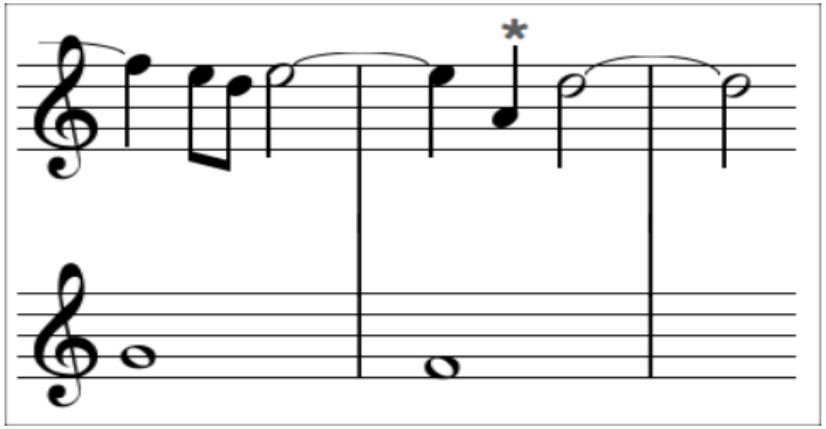


# More allowances



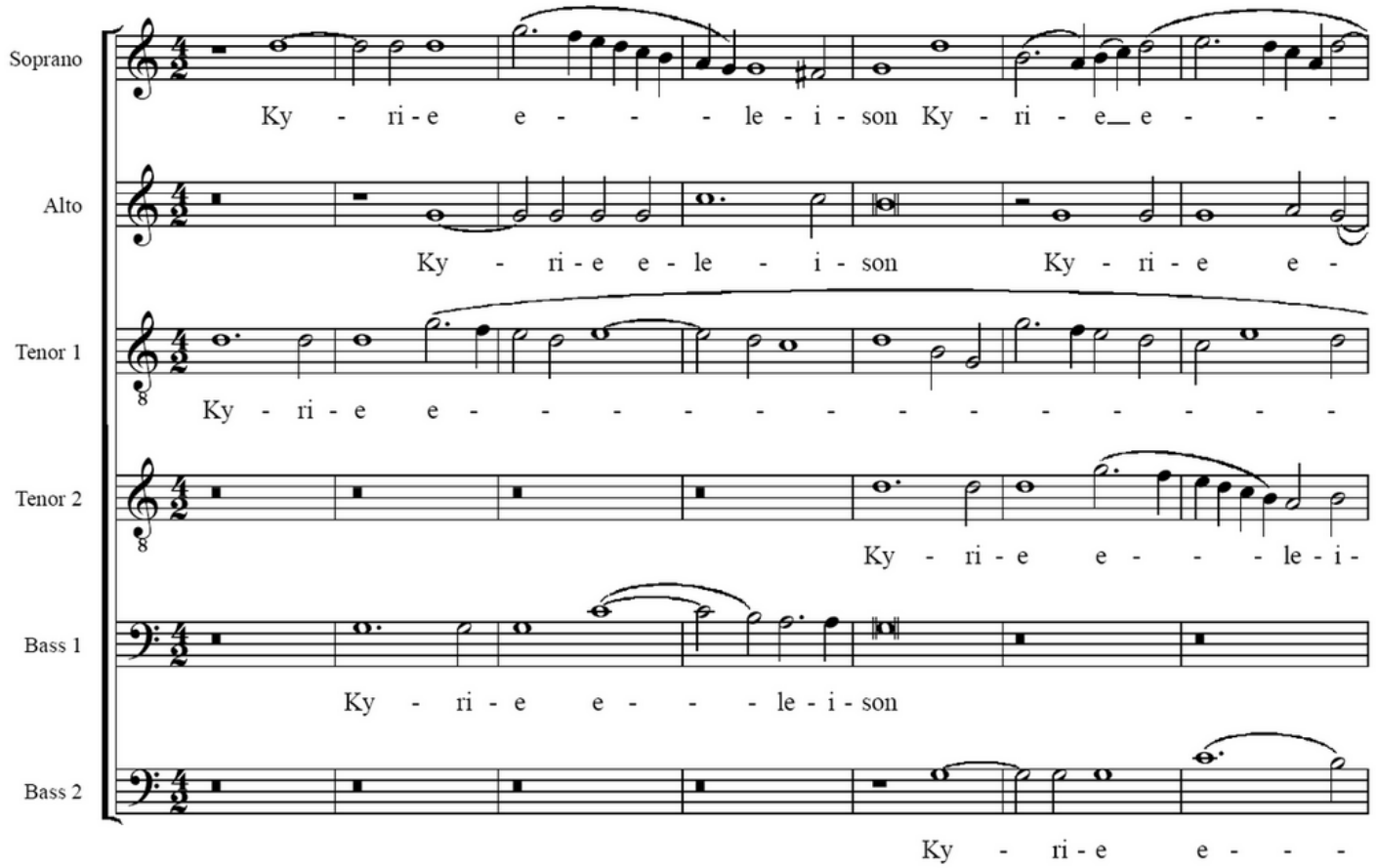

Rests

Interrupted suspensions

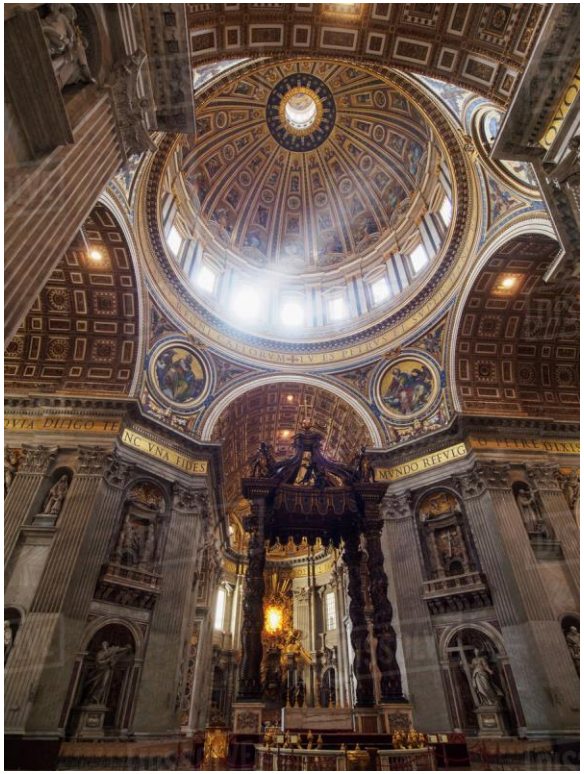


Many more rules (Palestina-style) at ars-nova.com

# Palestrina: Missa Papae Marcellus



# St. Peter's Basilica (Rome)



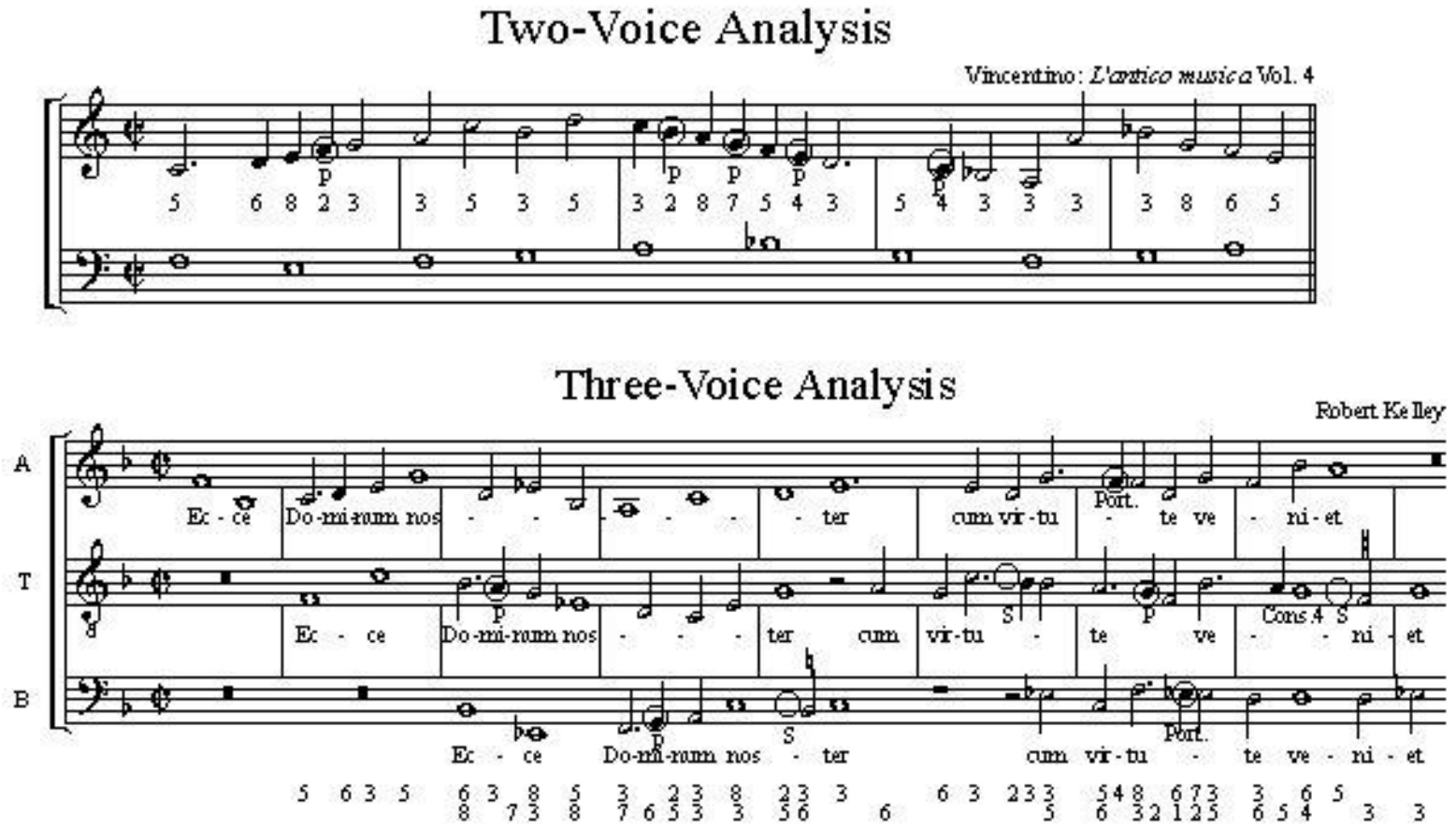
# Sistine chapel

- Where much of the most accomplished music was performed

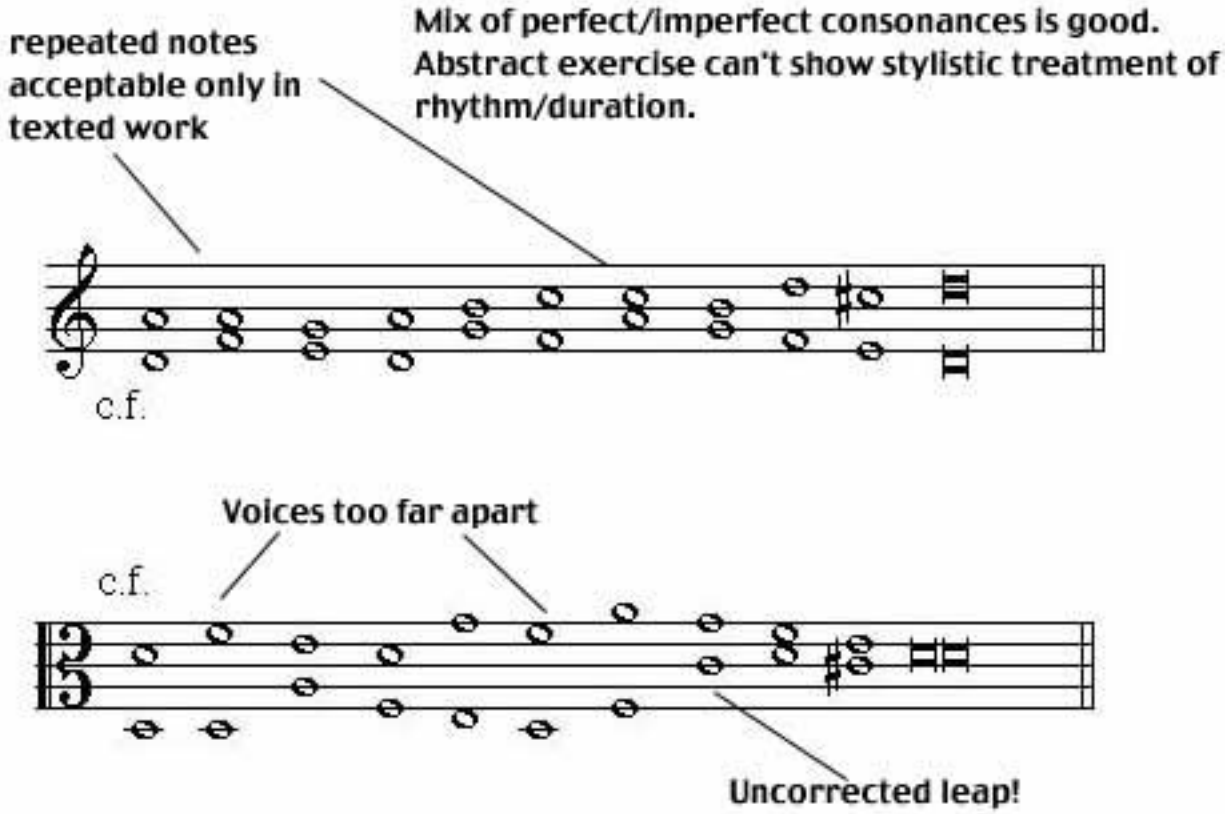
# Uses: 16th-18th centuries

- Consonance and dissonance
- Differentiation of vocal and instrumental rules
- Growing rhythmic independence between parts
- Increasing use of canons and fugues
- Substitution (Protestant cultures) of chorale melodies for *cantus firmi* (Catholic cultures)
- Elaboration of chorale melodies in chorale preludes (Protestant culture)

# Consonance and dissonance



# Intervals weighted



# Counterpoint in Protestant countries

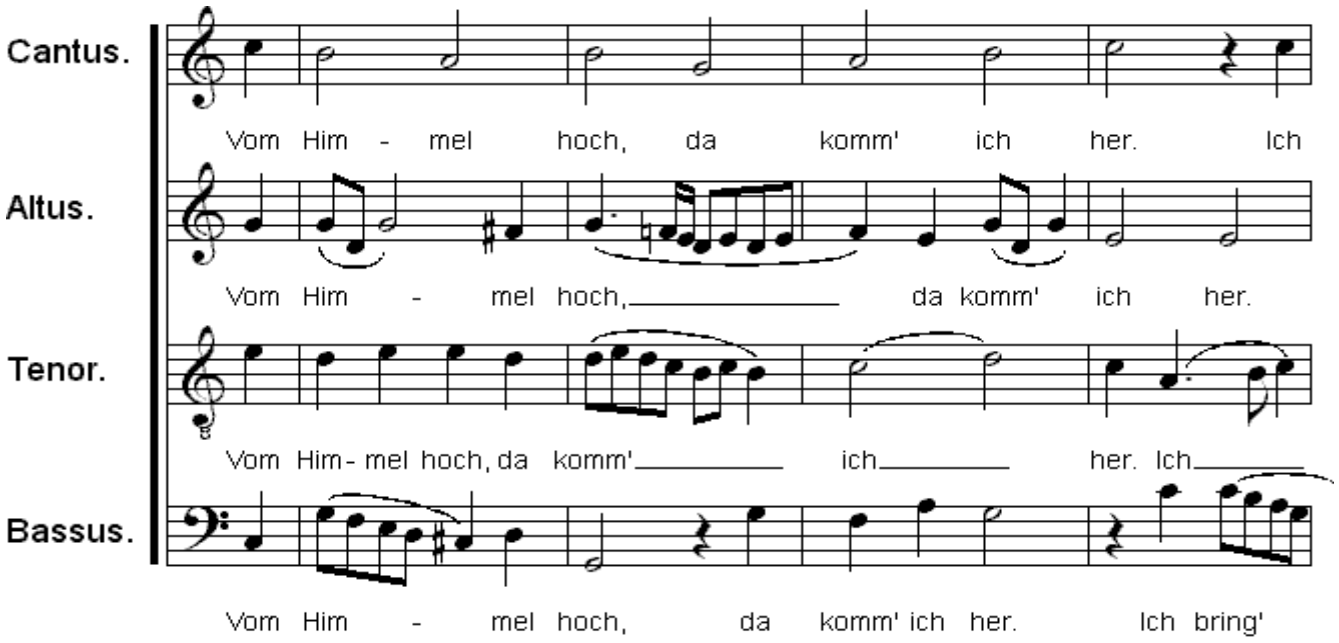
- Chorale melodies (common songs) substituted for *cantus firmus*
- Many fewer rules
- Traditional emphasized elaboration
  - Chorale fantasia
  - Chorale motet
  - Chorale variations
- Music a **substitute** for visual stimulation

# Protestant places of worship (Weimar)

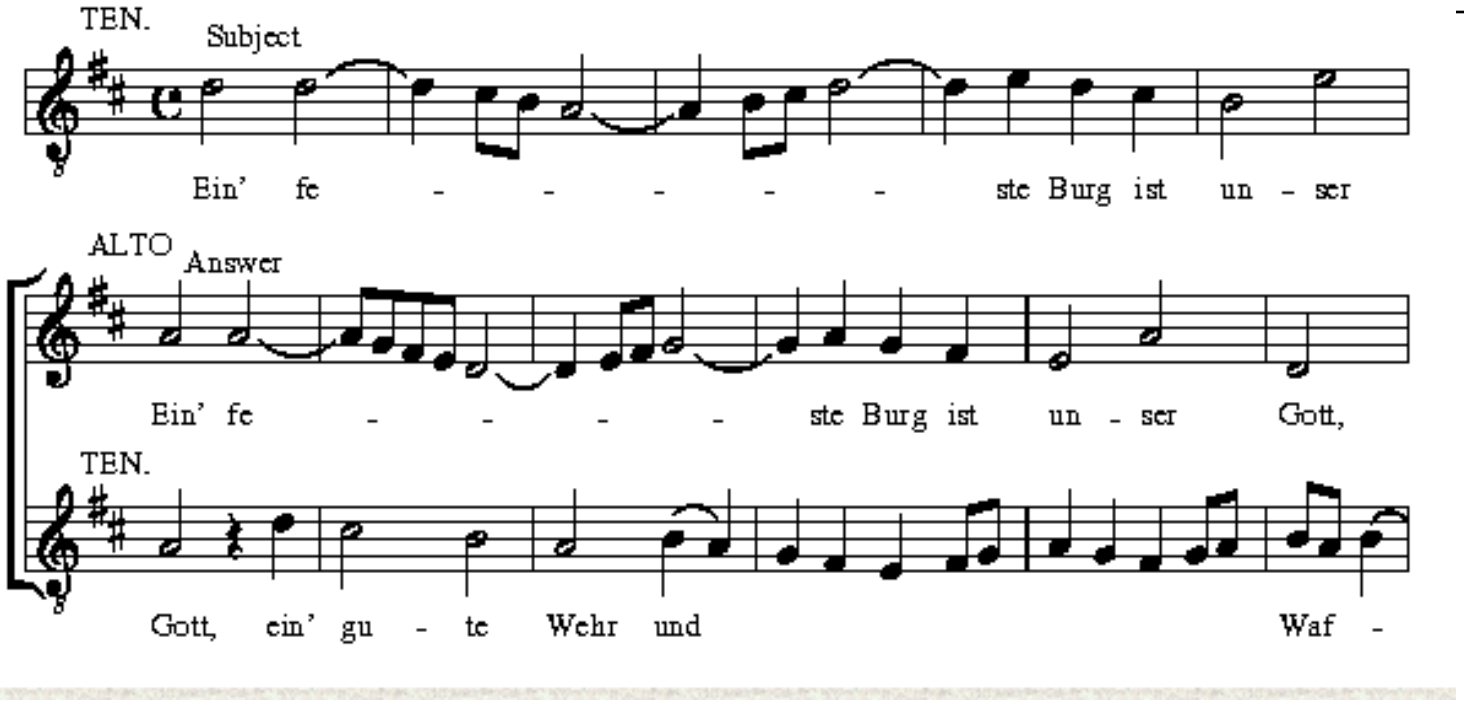
Ducal church, Weimar DE

Served by Bach, Telemann, J.G. Walther

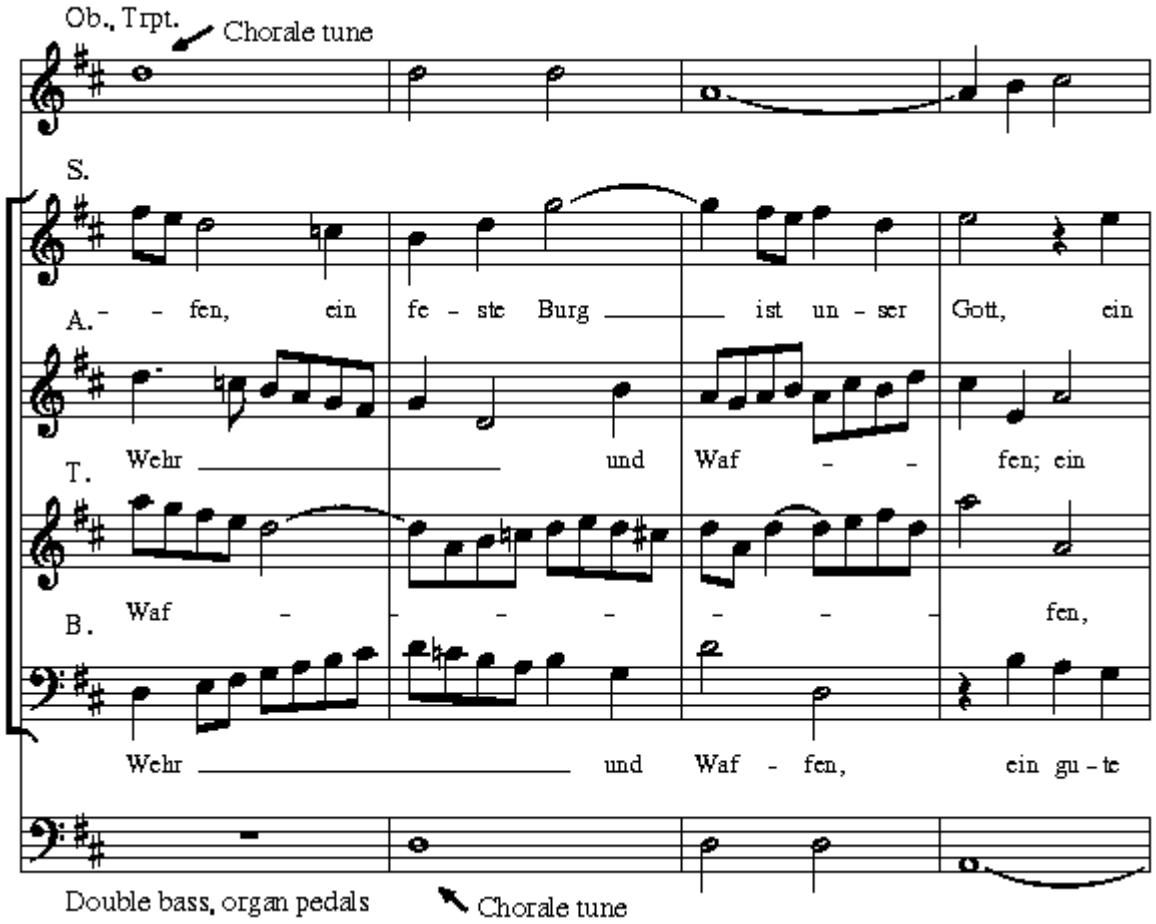
# Chorale settings



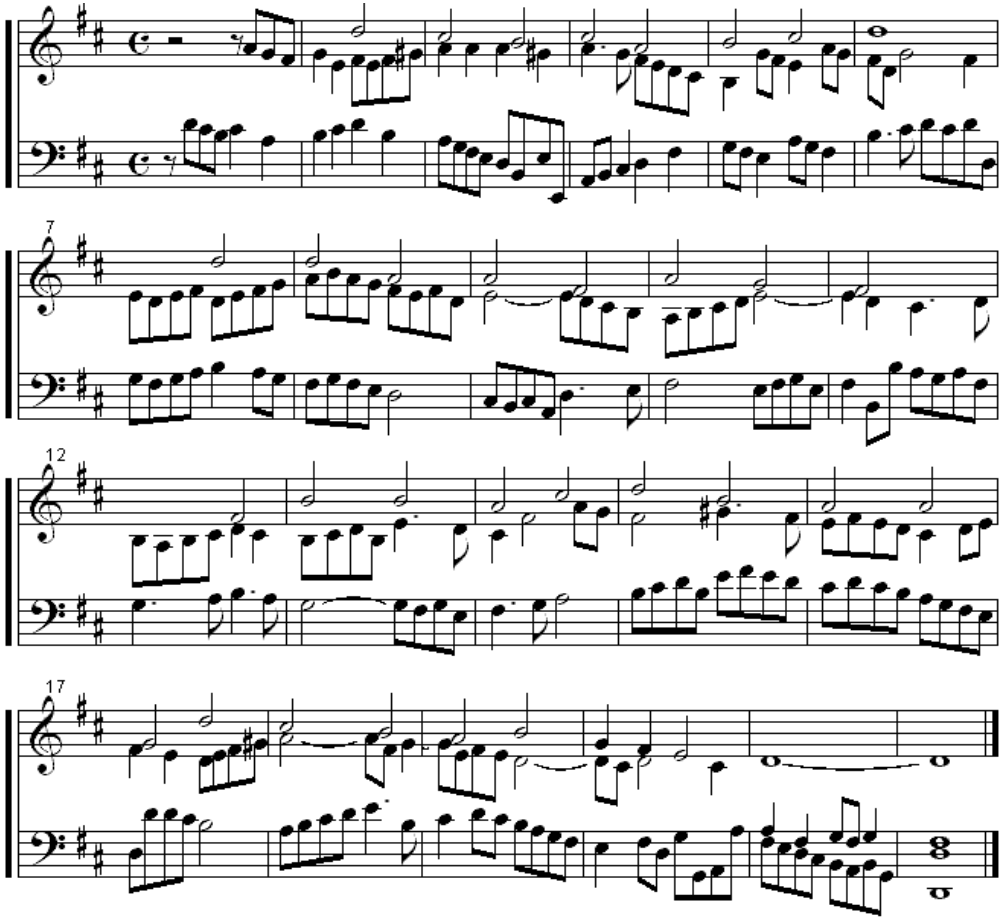
# Canons and Fugues



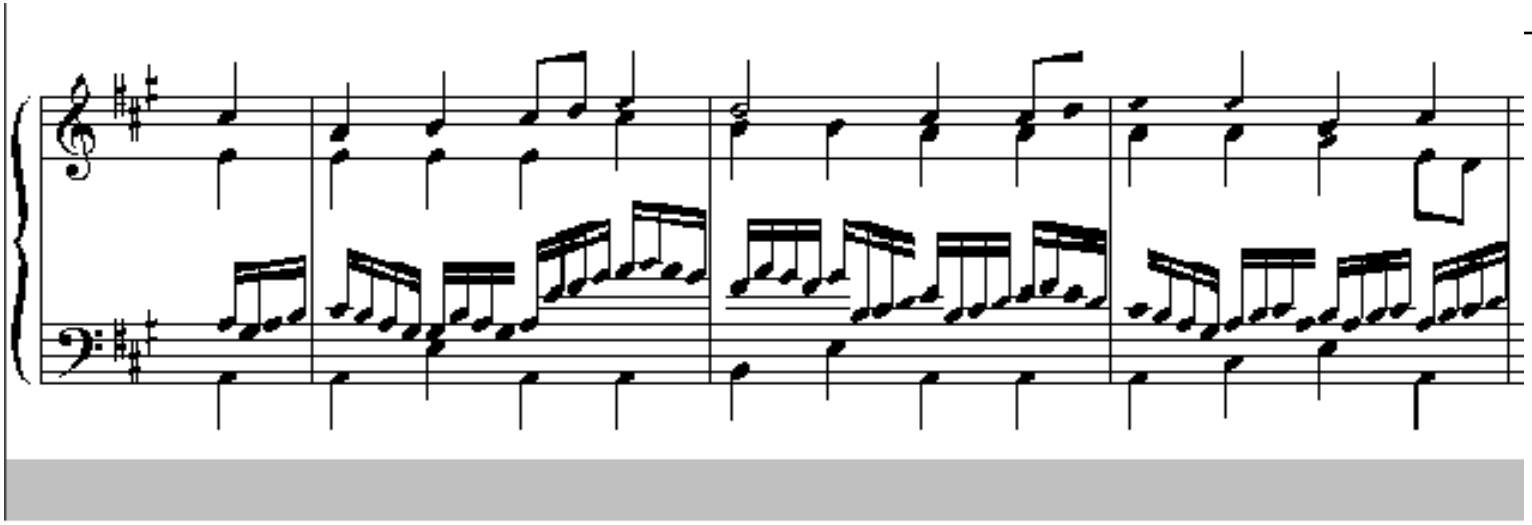
# Chorale cantata

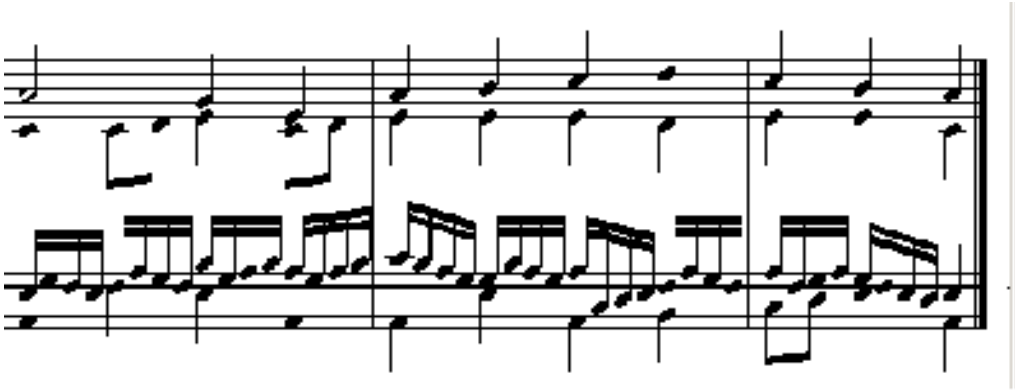


# Keyboard fugue: culminating genre



# Chorale variations (keyboard)





Dominik Hoernel

(U. Karlsruhe, 2000)

2019 update: CEO,

Capella software

https://www.capella-software.com/de/

# *Gradus ad Parnassum* (1725)

Steps to Mt. Parnassus J.J. Fux

**Part One**: *Musica Speculativa*

i.e. tuning, acoustics, and their implications

- **Mathematically exact intervals** result in **half steps** that may be
  - Larger or
  - Smaller
- **Equal temperament** (ET) a response to awkwardness of split keys in short octaves
- ET a practical solution to a physical problem
- Same division used by J.G. Walther (1708) and others

# *Gradus ad Parnassum* (1725)

## Steps to Mt. Parnassus

### Part Two: *Musica Prattica*

Purpose: "**to invent a simple method** by which a novice can progress, step by step"

- Counterpoint
- Fugue
- Double fugue

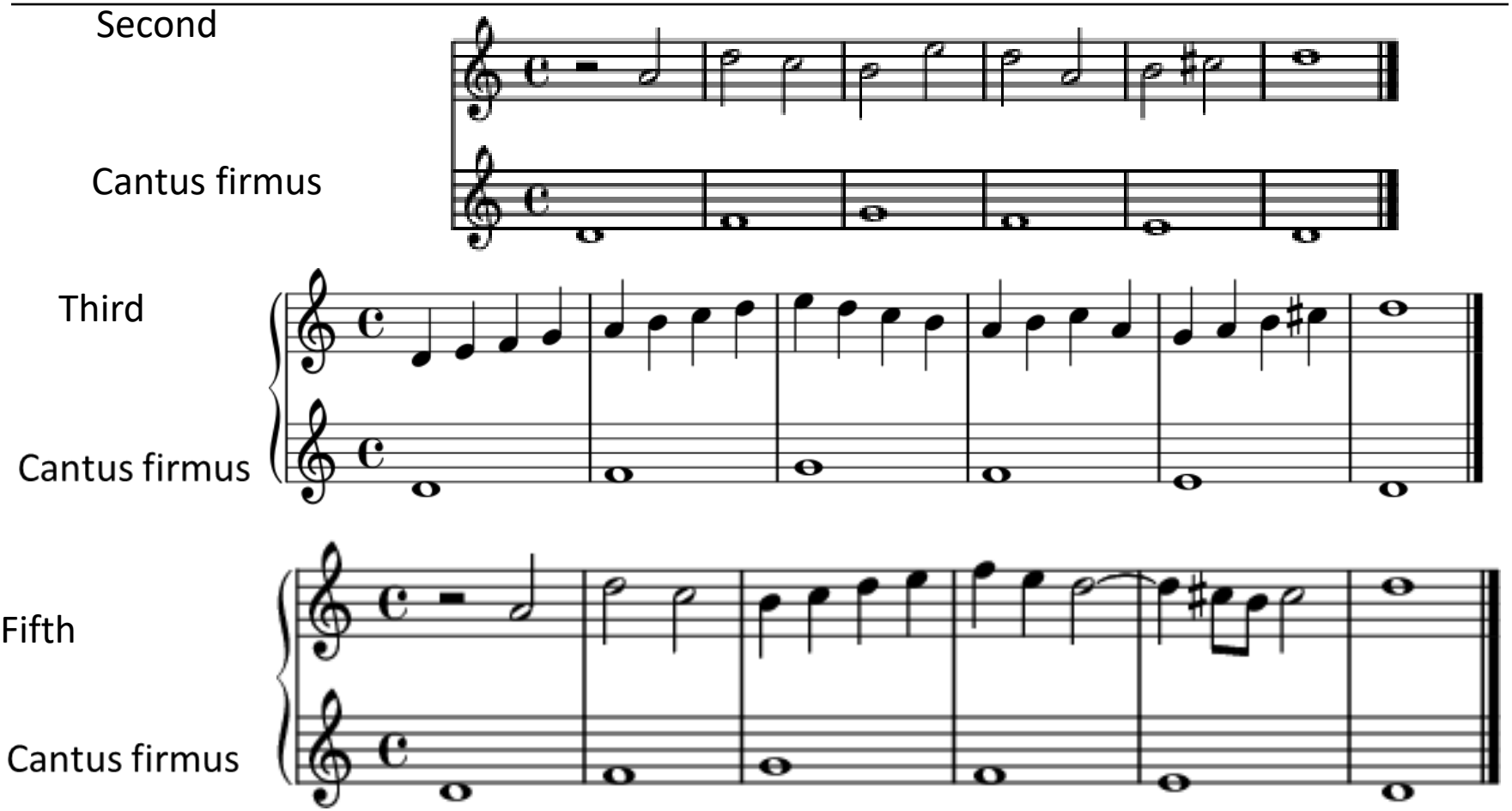
"Theory without practice is useless"

# Steps (*species*) of the path (Gradus)

- *First*: (whole) note against note
- *Second*: (whole) note against half-note(s)
- *Third*: (whole) note against quarter-note(s)
- *Fourth*: Introduces suspensions, of turning figures (*cambiate*)
- *Fifth* (florid): **Use of mixed rhythmic values**

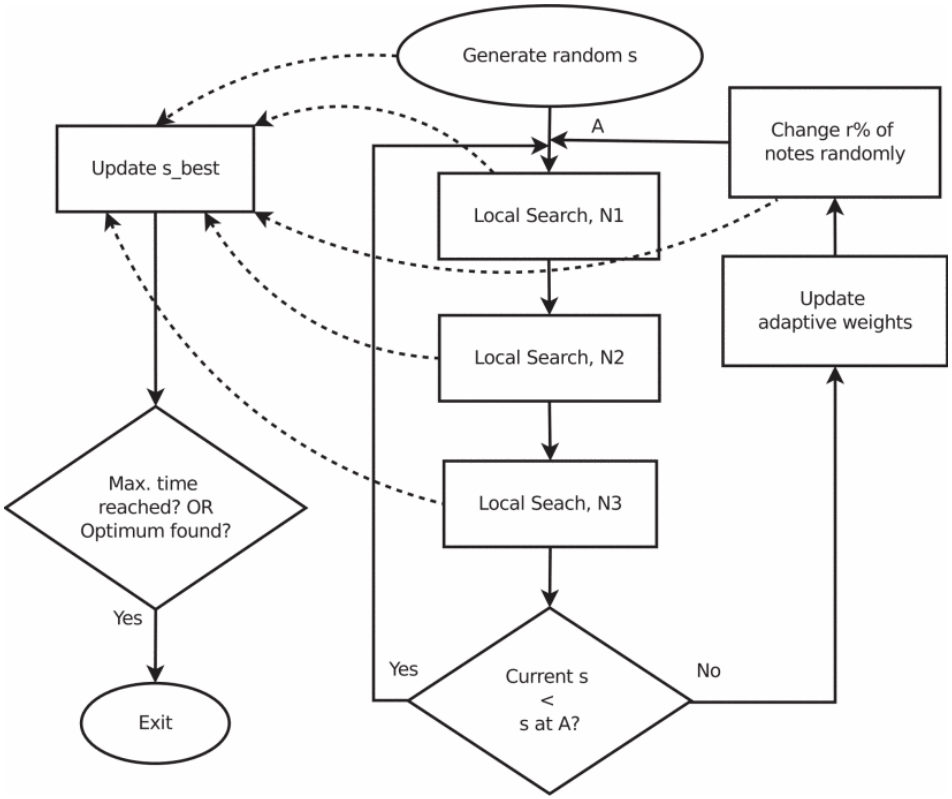
The *Gradus* is only book from Bach's theory library to survive.

# Species: Second, Third, Fifth



# *Fux*, an Android app the generates fifth-species counterpoint (Herremans, Soerensen)

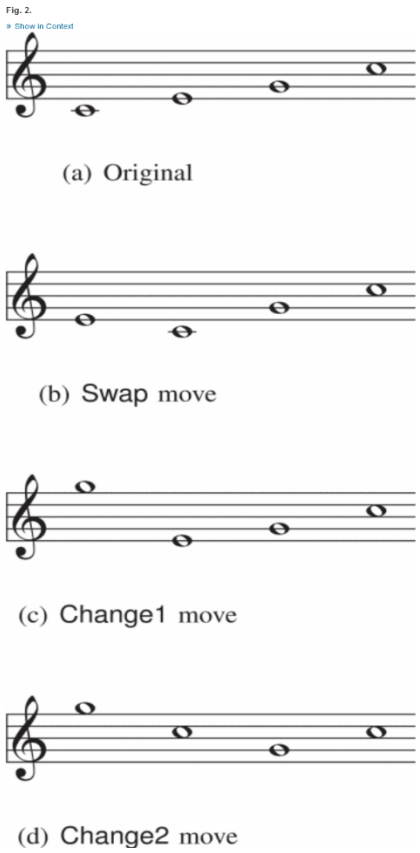
- Relies on **Variable Neighborhood Search (VNS)**
- VNS=local search strategy
- Here: three neighborhoods



# Herremans, Soerensen: Musical details

*Edit-distance* inspired accommodations in *cantus firmus*

- Original;
- Swap;
- Change;
- Change 2



# Herremans, Soerensen: Musical details

Edit-distance inspired accommodations in cantus firmus

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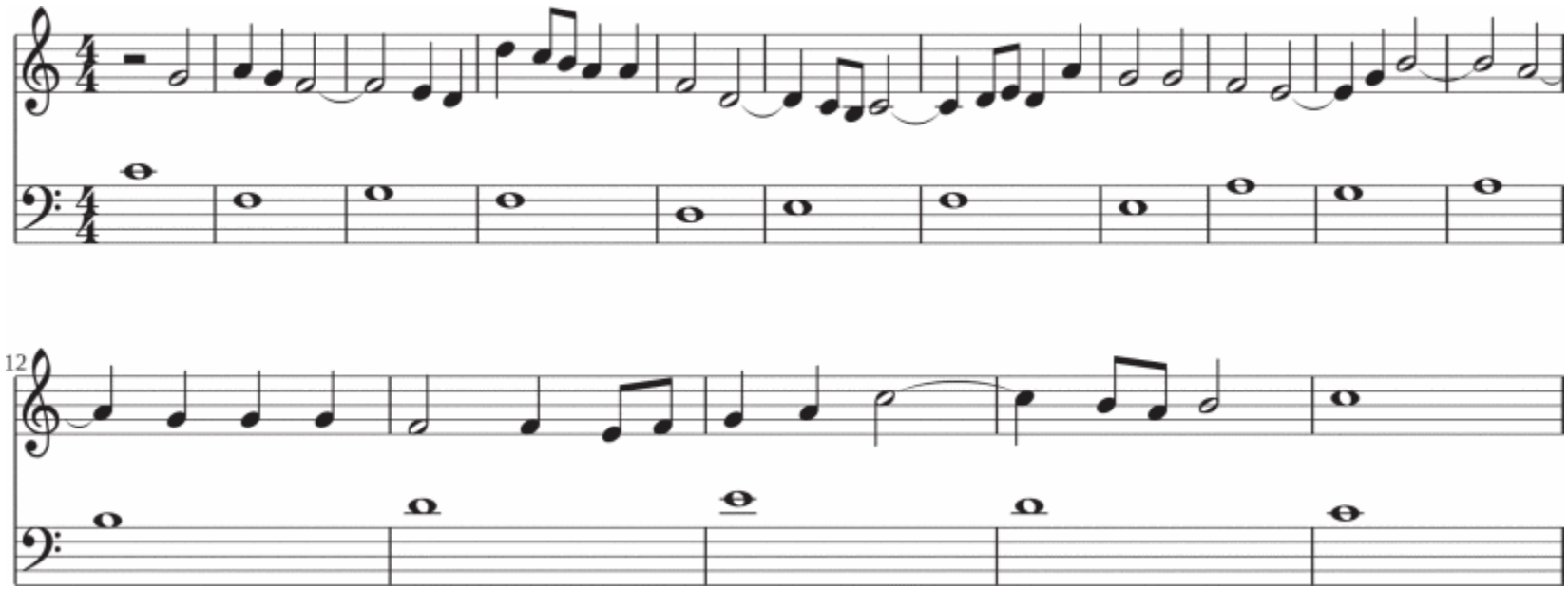
  [several violations of cp rules: tritones, hidden fifths….]