Nicholas Slonimsky
and the expanding Tonality of
John Coltrane

BY DENNIS BELISLE

Nicolas Slonimsky

- Born in St. Petersburg, Russia in 1894, to a family with a long line of scientists, musicians, and brilliant inventors.
- Before reaching the age of three, the family had confirmed that Nicolas acquired the gift of "perfect pitch."
- His maternal aunt, Isabelle Vengerova, later a founder of Philadelphia's Curtis Institute of Music, was his first piano teacher.
- He studied at the St. Petersburg Conservatory until 1914
- In 1918 he began touring as a vocal accompanist, then worked his way through Turkey and Bulgaria as a pianist in theaters and silent movie houses, arriving in Paris in 1921.

Nicolas Slonimsky

- He came to the United States in 1923 to work as an accompanist in the newly created opera department at the Eastman School of Music in Rochester, where he continued his composition and conducting studies
- He also taught music theory at the Boston Conservatory and the Malkin Conservatory
- Slonimsky was a formidably gifted musicologist and lexicographer who also made his mark as a conductor, pianist and composer
- He died on Christmas day in 1995 at the age of 101

Nicolas Slonimsky – the author

- His first book, "Music Since 1900," appeared in 1937. A day-by-day chronology of important as well as amusing but trivial events in 20th-century music
- He wrote his Thesaurus of Scales and Melodic Patterns in 1947
- Other books written by Slonimsky include:
  - Lexicon of Musical Invective (1953), a collection of scathing reviews of musical masterpieces
  - Music of Latin America (1945)
  - The Road to Music (1947)
  - A Thing or Two About Music (1948).
- His autobiography (which he wanted to call ‘Failed Wunderkind’) was published as "Perfect Pitch" in 1988.

Thesaurus of Scales and Melodic Patterns

- This Thesaurus is an extension of several different theorists' concepts on suggesting the possibility of forming entirely new scales based on the division of the octave into several equal parts
  - Domenico Alaleona (1911)
    - Italian musician proposed such scales
  - Alois Haba (1927) in *neue harmonielehre*
    - *classified several scales based on equal intervals and suggested harmonization*
  - *Joseph Schillinger in Schillinger System of Musical Compositions*
    - *Classified new tonal progressions in the chapter 'Theory of Pitch-Scales'*

Thesaurus of Scales and Melodic Patterns

- The scales and melodic patterns in the Thesaurus are systematized in a manner convenient to composers in search of new material
- The Thesaurus is arranged in the form of piano scales and melodic studies
- The notation throughout is enharmonic and all accidentals affect only the note immediately following
- The title's use of the word 'Thesaurus' is chosen advisedly

Thesaurus of Scales and Melodic Patterns

- The term 'Scale' refers to a progression, either diatonic or chromatic, that proceeds uniformly in one direction, ascending or descending, until the terminal point is reached

- The term 'Melodic Pattern' refers to any group of notes that has melodic plausibility

Thesaurus of Scales and Melodic Patterns

- There are scales of 4 notes, scales and patterns of 12 different notes
- Counting repeated notes in different octaves, a scale may have as many as 48 functionally different notes as with the Disjunct Major Polytetrachord (No. 958)

- As with melodic patterns, there is virtually no limit to the number of such tones

Before I get ahead of myself

- There is some terminology that must be presented in order to explore the Thesaurus fully

Thesaurus of Scales and Melodic Patterns

- The Thesaurus is arranged according to principle intervals broken up into different chapters
- To avoid association with definite tonality, intervals are referred to by Latin and Greek names
- In addition, new terms have been coined for intervals not in the system of historic scales

Thesaurus of Scales and Melodic Patterns

- The prefix *sesqui* designates the addition of one-half of a tone giving us the following table:

- Semitone…… Minor Second
- Whole Tone…….Major Second
- Sesquitone…….. Minor Third
- Ditone…….. Major Third
- Diatessaron…… Perfect Forth
- Tritone…….. Augmented Fourth
- Diapente……Perfect Fifth
- Quadritone……Minor Sixth
- Sesquiquadritone..Major Sixth
- Quinquetone……..Minor Seventh
- Sesquiquinquetone…….. Major Seventh

- Sepitone….Interval of Major 9th indicating 7 whole tones

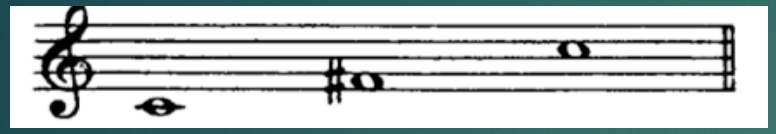
Thesaurus of Scales and Melodic Patterns

- These basic intervals are regarded as fractions of one or more octaves and are broken up in the Thesaurus as follows

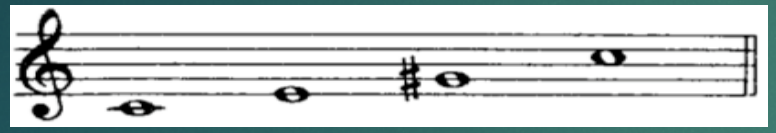
- For each of these intervals to divide evenly, the use of multiple octaves is necessary in some cases

Intervals divided over ONE octave

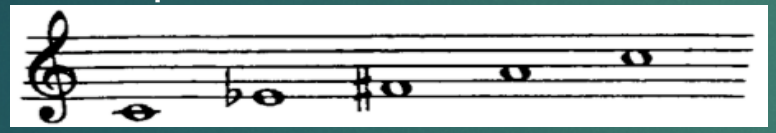
- Tritone Division – ONE octave into 2 equal parts



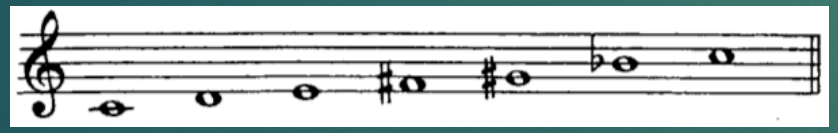
- Ditone Division - ONE octave into 3 equal parts



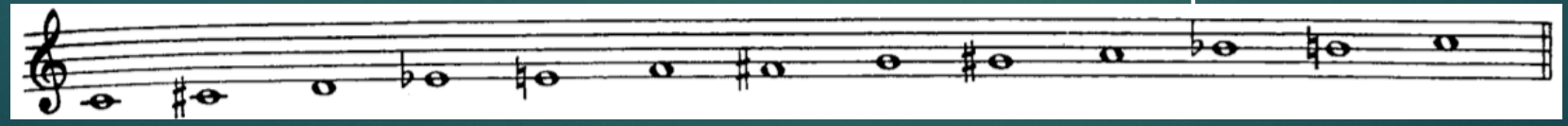
- Sesquitone Division – ONE octave into 4 equal parts



- Whole-Tone Division – ONE octave into 6 equal parts



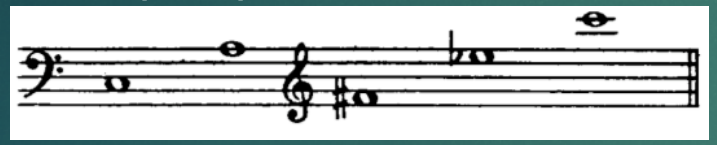
- Semitone Division – ONE octave into 12 parts



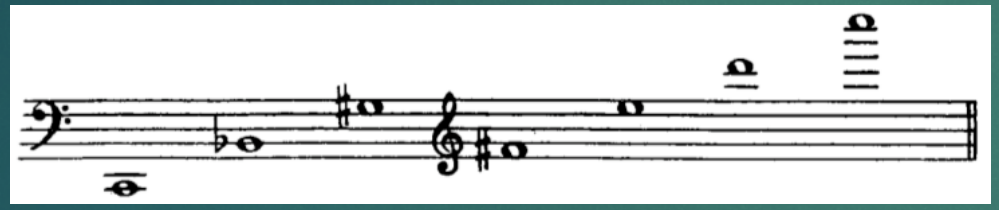
Intervals divided over multiple octaves equally

- Quadritone Division – TWO octaves into 3 equal parts

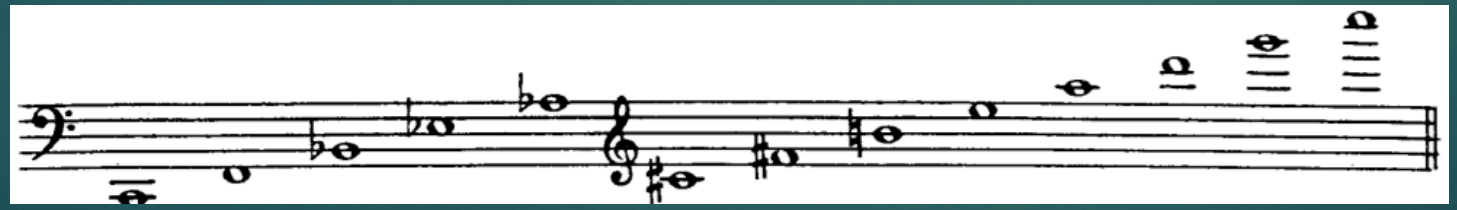
- Sesquiquadritone Division - THREE octaves into 4 equal parts



- Quinquetone Division – FIVE octaves into 6 equal parts

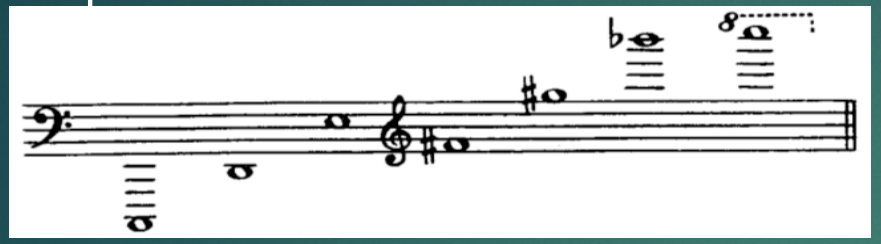


- Diatessaron Division – FIVE octaves into 12 equal parts

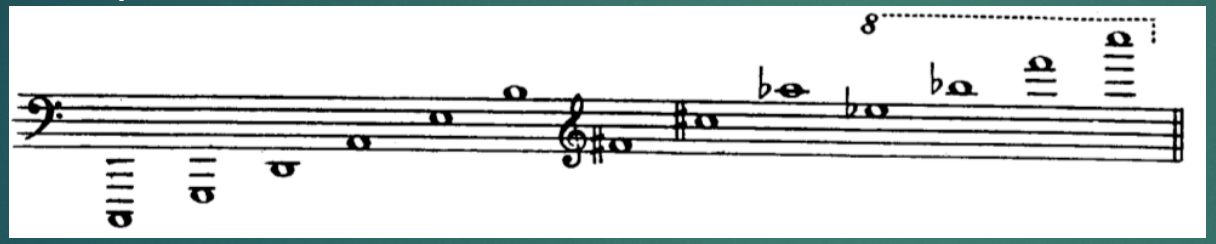


Intervals divided over multiple octaves equally

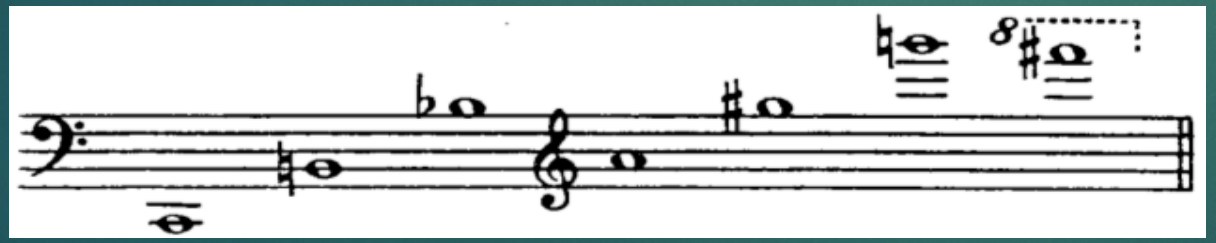
- Septitone Division – SEVEN octaves into 6 equal parts



- Diapente Division - SEVEN octaves into 12 equal parts

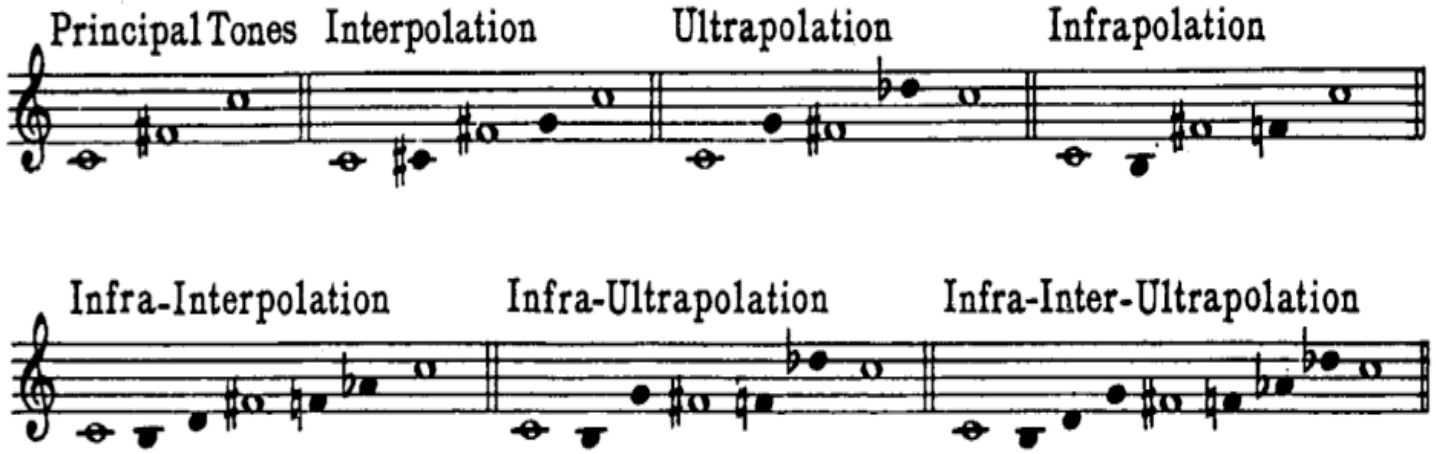


- Sesquiquinquetone Division – ELEVEN octaves into 12 equal parts



Thesaurus of Scales and Melodic Patterns

- Scales and melodic patterns are formed by the process of Interpolation, Infrapolation, and Ultrapolation



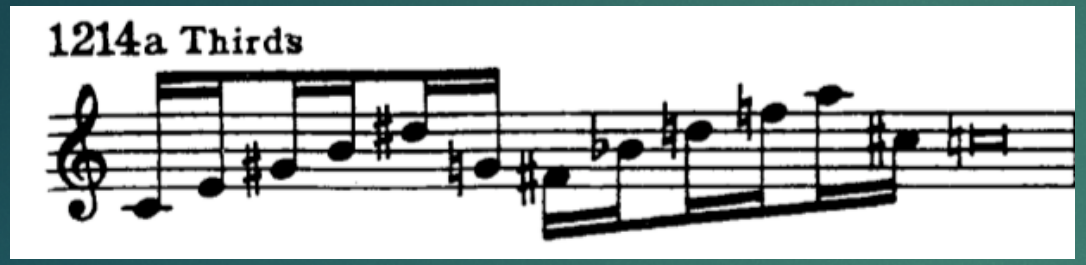
Progressions and patterns – unequal division

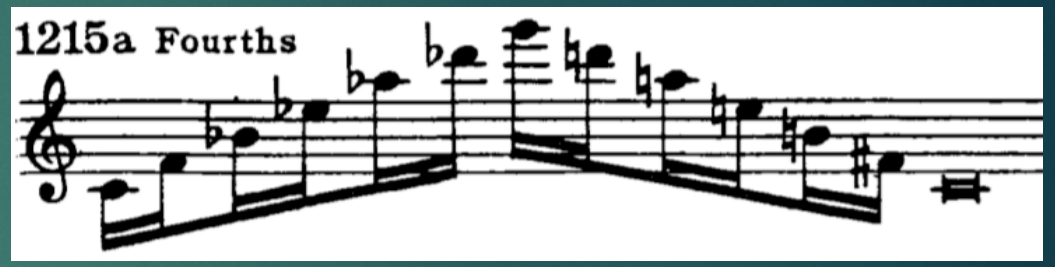
- SCALES
  - Heptatonic Scales (7-tone scales)
    - Major, minor, church modes
  - Pentatonic Scales
    - There are 49 variations in the Thesaurus
  - 8-tone scales
    - These are the whole/half & half/whole diminished scale

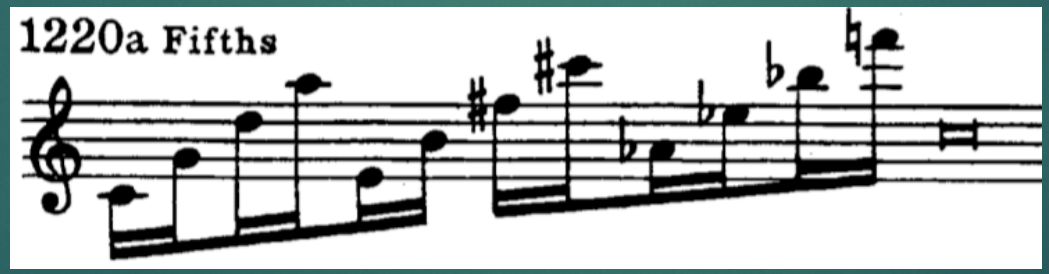
- ARPEGGIOS
  - Heptatonic Arpeggios – Spread out in thirds
  - Bitonal Arpeggios – C major arpeggio combined with arpeggios in all 23 major and minor keys

12-tone patterns

- Patterns stacked on intervals

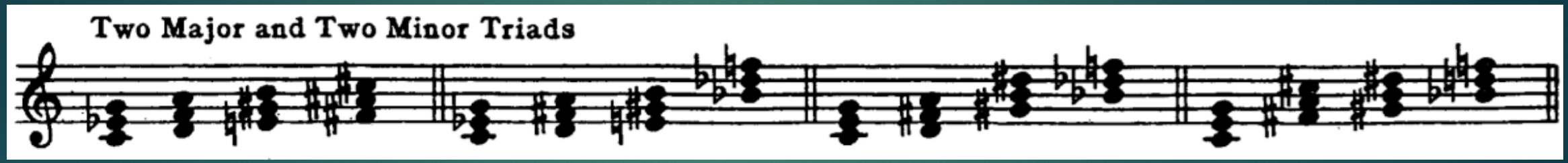


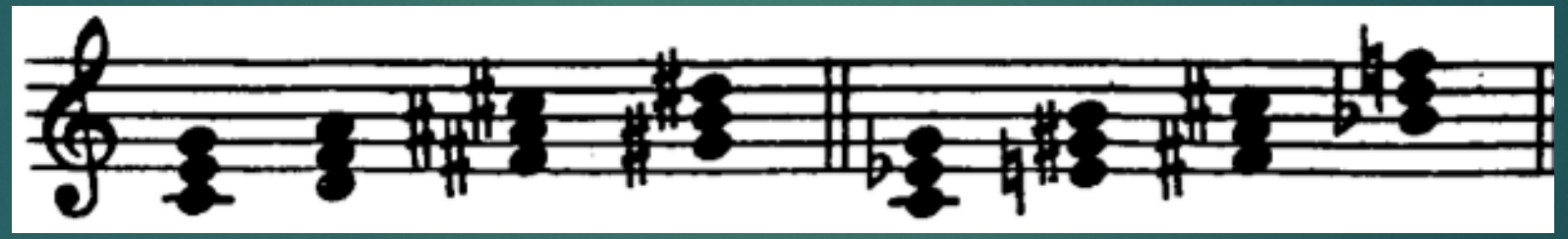




12-tone patterns

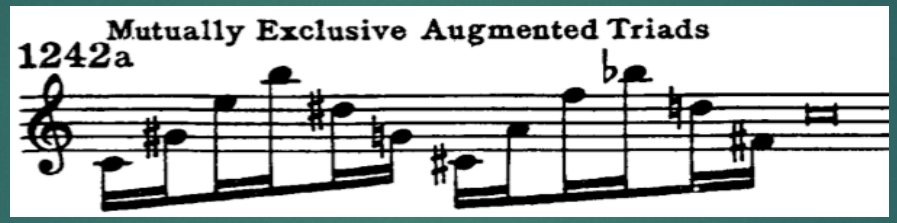
- Mutually exclusive chord combinations that generate 12-tones
  - 2 major & 2 minor chords

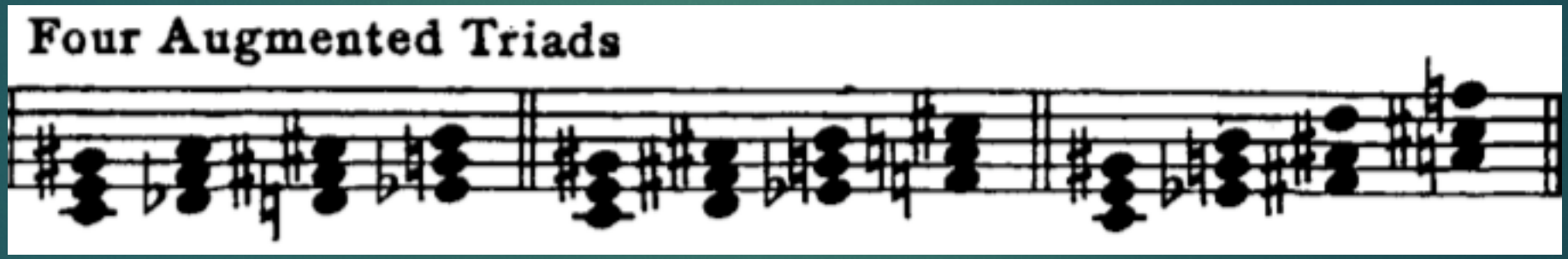




12-tone patterns

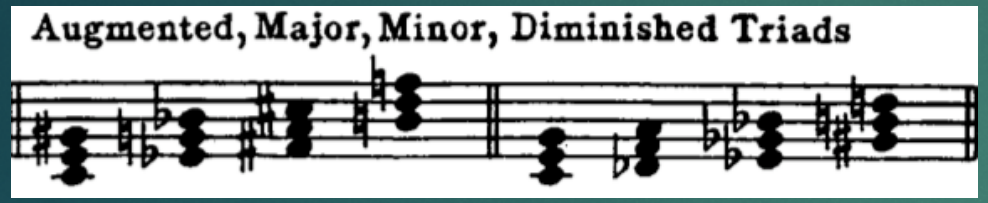
- Mutually exclusive chord combinations that generate 12-tones
  - 4 augmented triads

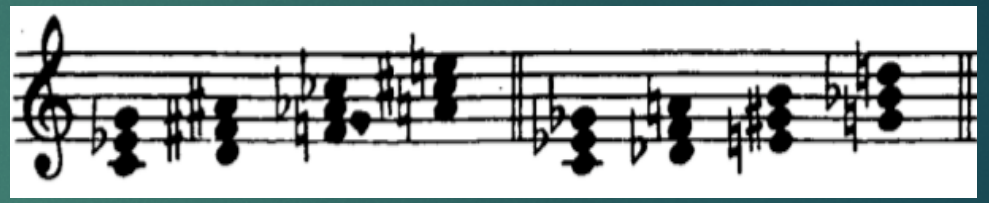




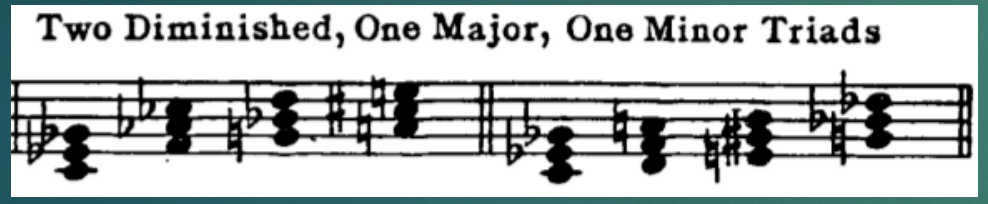
12-tone patterns

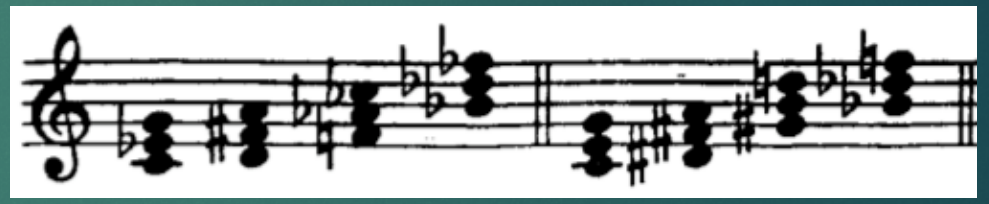
- Mutually exclusive chord combinations that generate 12-tones
  - 4 different triads combined



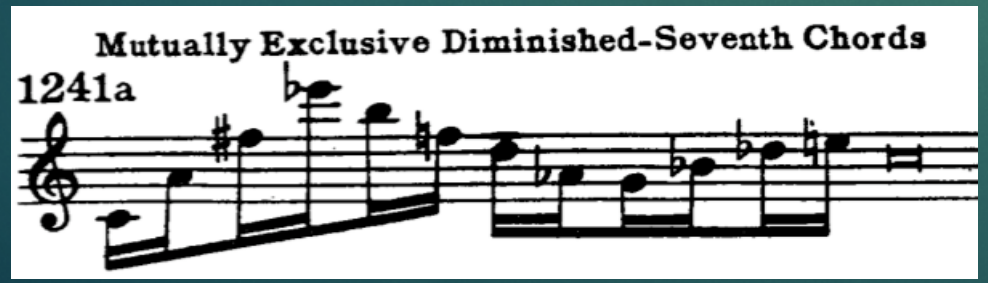


  - 3 different triads combined



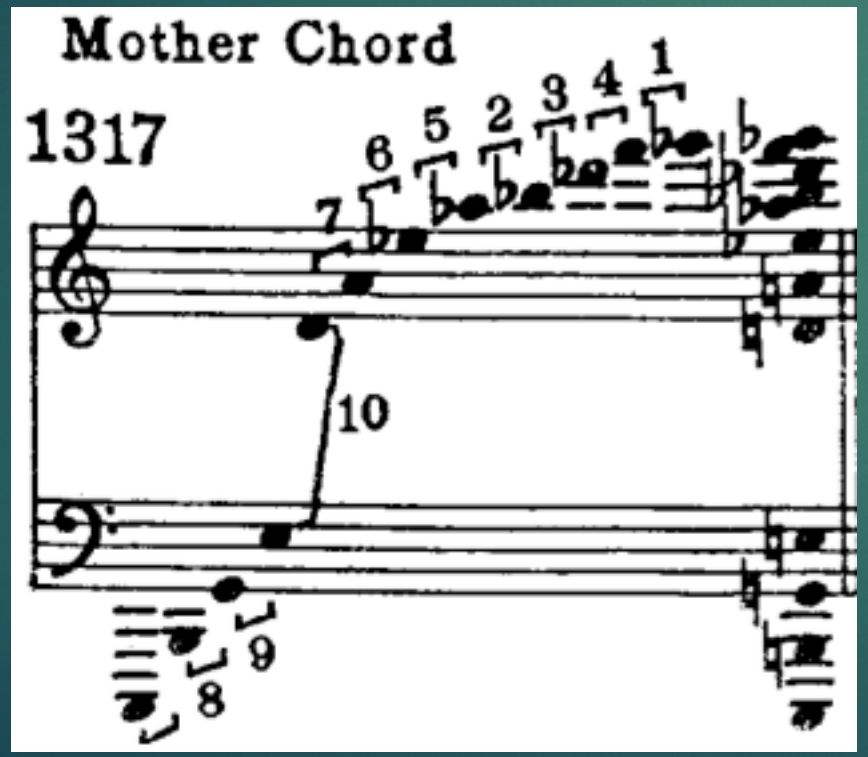


  - 3 diminished 7th chords



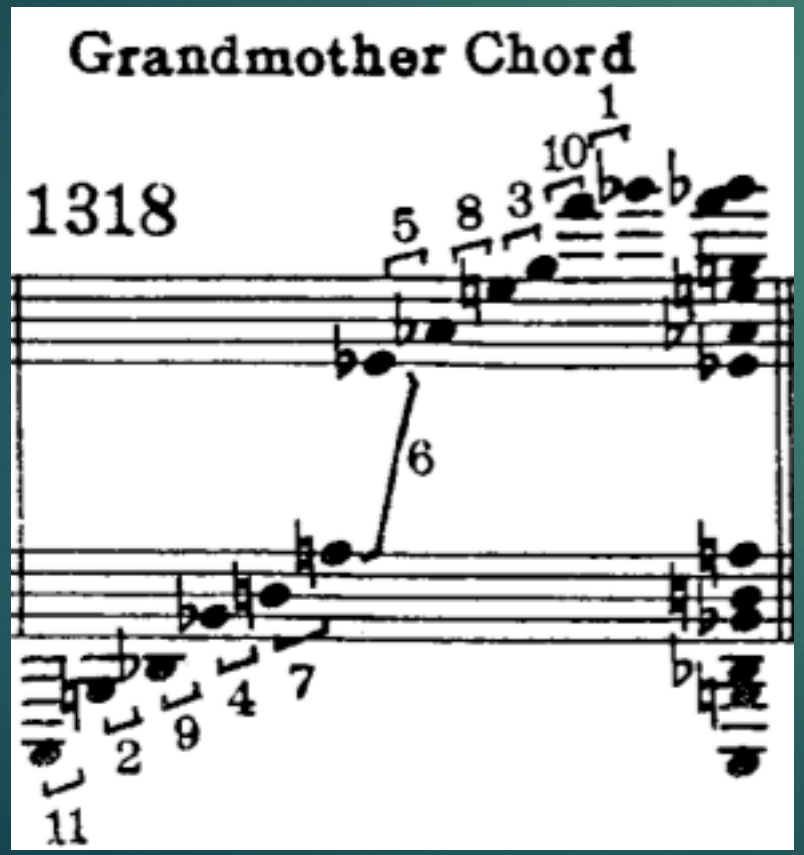
11-interval technique

- Austrian musician Fritz Klien introduced the idea in 1921
  - In his composition *Die Maschine: Ex-Tonal Self-Satire,* Klein introduced a Mother Chord which contains 11 different intervals and 12 different notes

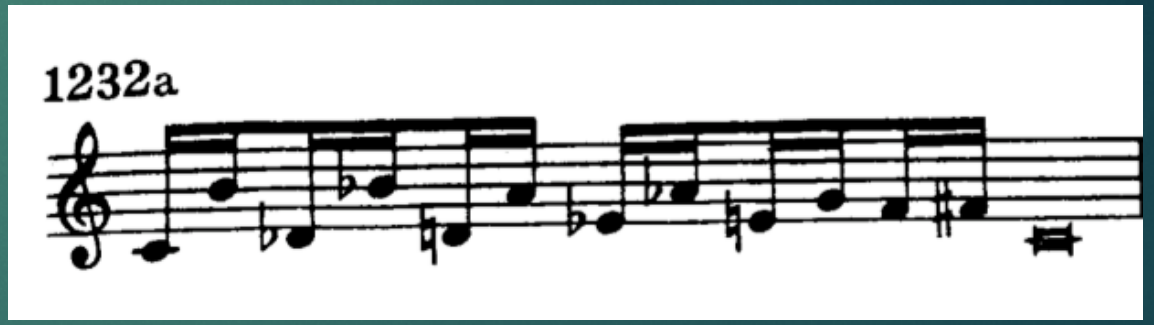


11-interval technique

- Slonimsky further elaborated on the Mother Chord
  - He arranged the chord in an invertible 11-interval, 12-tone chord that he introduced as the Grandmother Chord

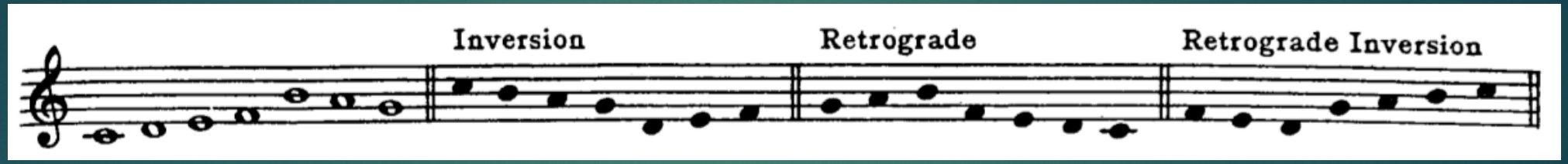


12-tone Spiral Patterns (GM Chord)

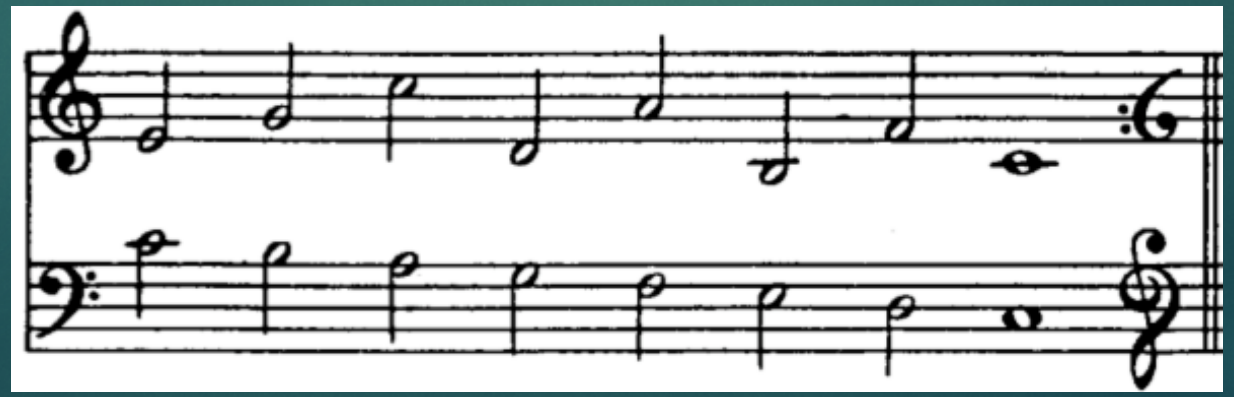


Pandiatonic

- Pandiatonic denotes the free use of all 7 tones of the diatonic scale (both melodically & harmonically)
  - Pandiatonic progressions



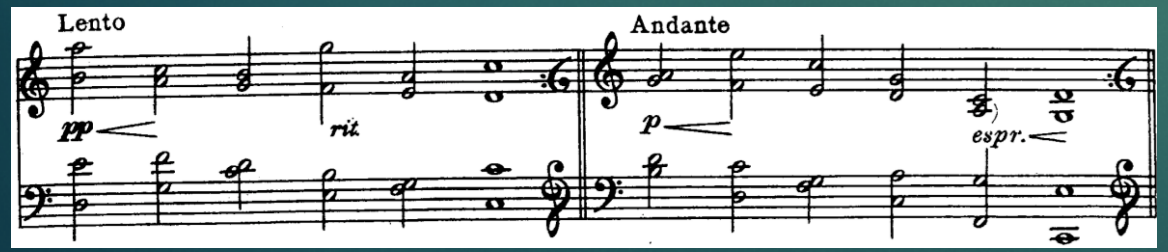
  - Pandiatonic counterpoint
    - The use of 7 different notes in each voice, with no vertical duplication



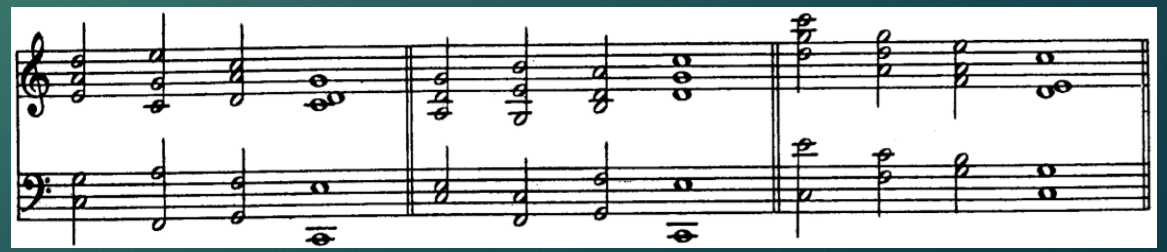
Pandiatonic

- Pandiatonic Harmony
  - 20th century counterpart of classical harmony
  - Used by Ravel, Stravinsky, Hindemith, Milhaud and Copeland to name a few
  - *Pan-diatonicism* harmony sanctions the simultaneous use of any or all seven tones of the diatonic scale, with the bass determining the harmony. The chord-building remains tertian, with the seventh, ninth, or thirteenth chords being treated as consonances functionally equivalent to the fundamental triad.

4-part harmony



5-part harmony

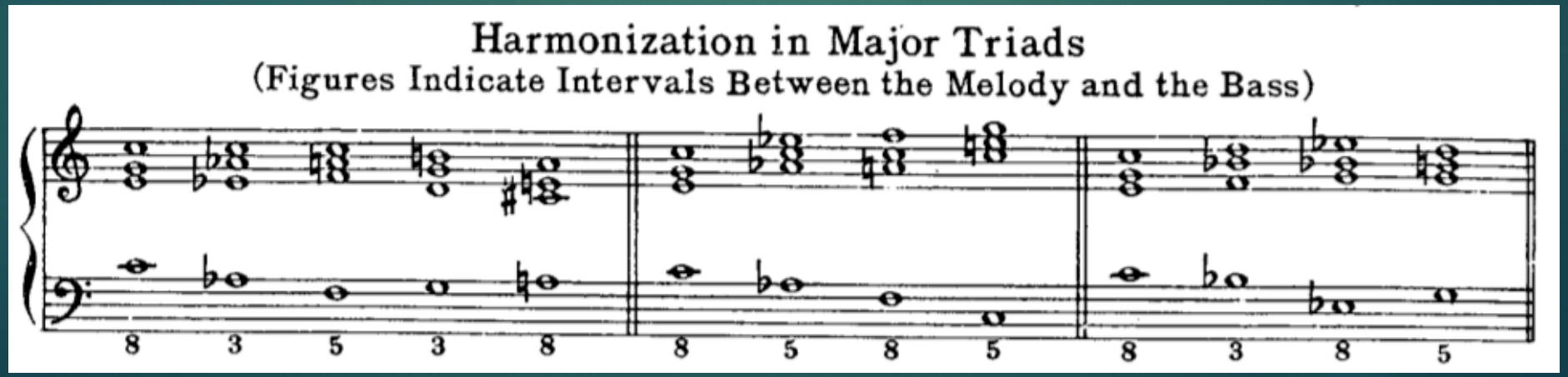


Harmonization of the scales & patterns

- There are 2 formulas used
  - By common triad
  - By seventh-chords

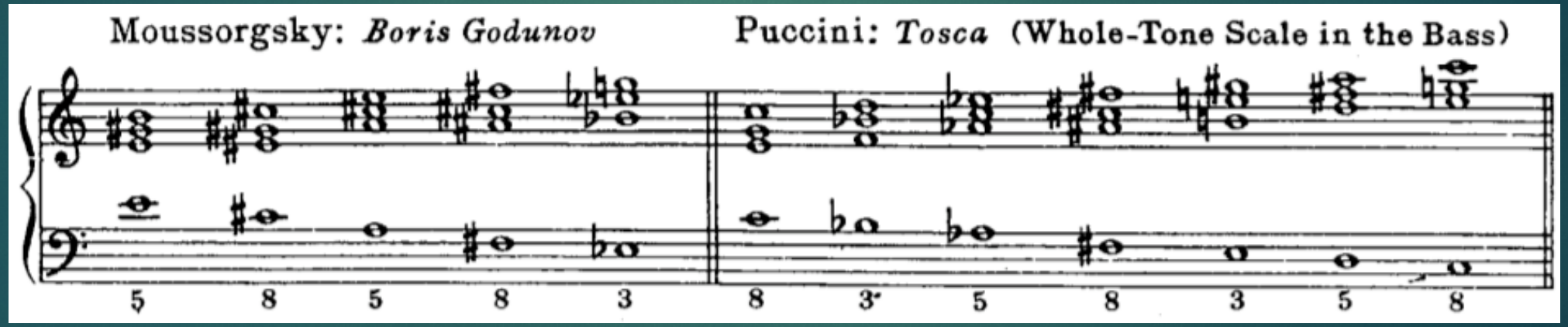
Harmonization of the scales & patterns

- Triads
  - Only root positions of major triads in close harmony are applied
  - Either the root, third or fifth may appear in the melody
    - Root (octave or 8)
    - Third (tertian or 3)
    - Fifth (quintan or 5)



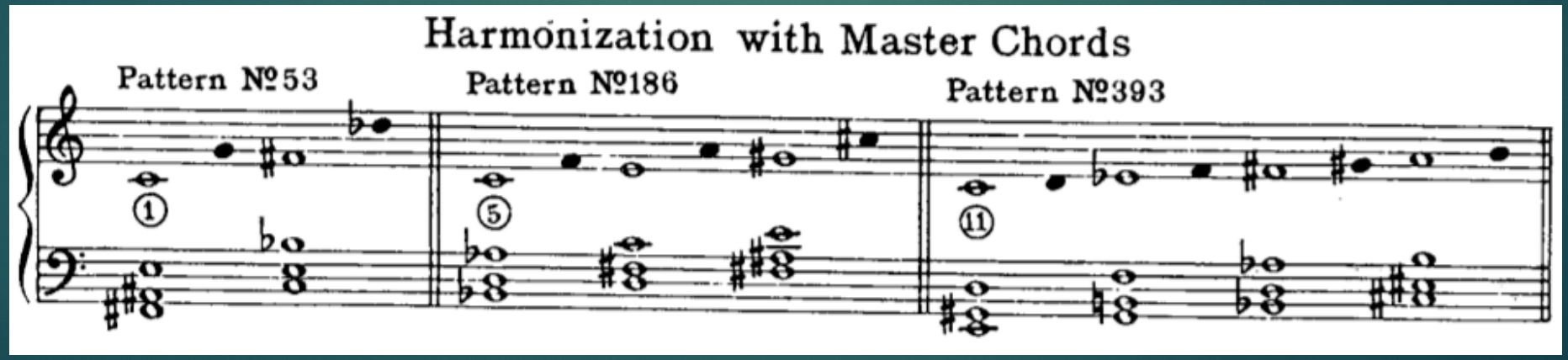
Harmonization of the scales & patterns

- This type of harmonization is found in the works of Debussy, Mussorgsky and other composers of the French and Russian schools



Harmonization of the scales & patterns

- The MASTER CHORD
  - These chords are dominant 7th chords with the fifth omitted
  - These chords are indicated for ascending scales and patterns in the Thesaurus by numbers within circles



The Thesaurus in use

The permutations of all the different scales and patterns along with the harmonization of such patterns, specifically with the Dominant 7th chord…

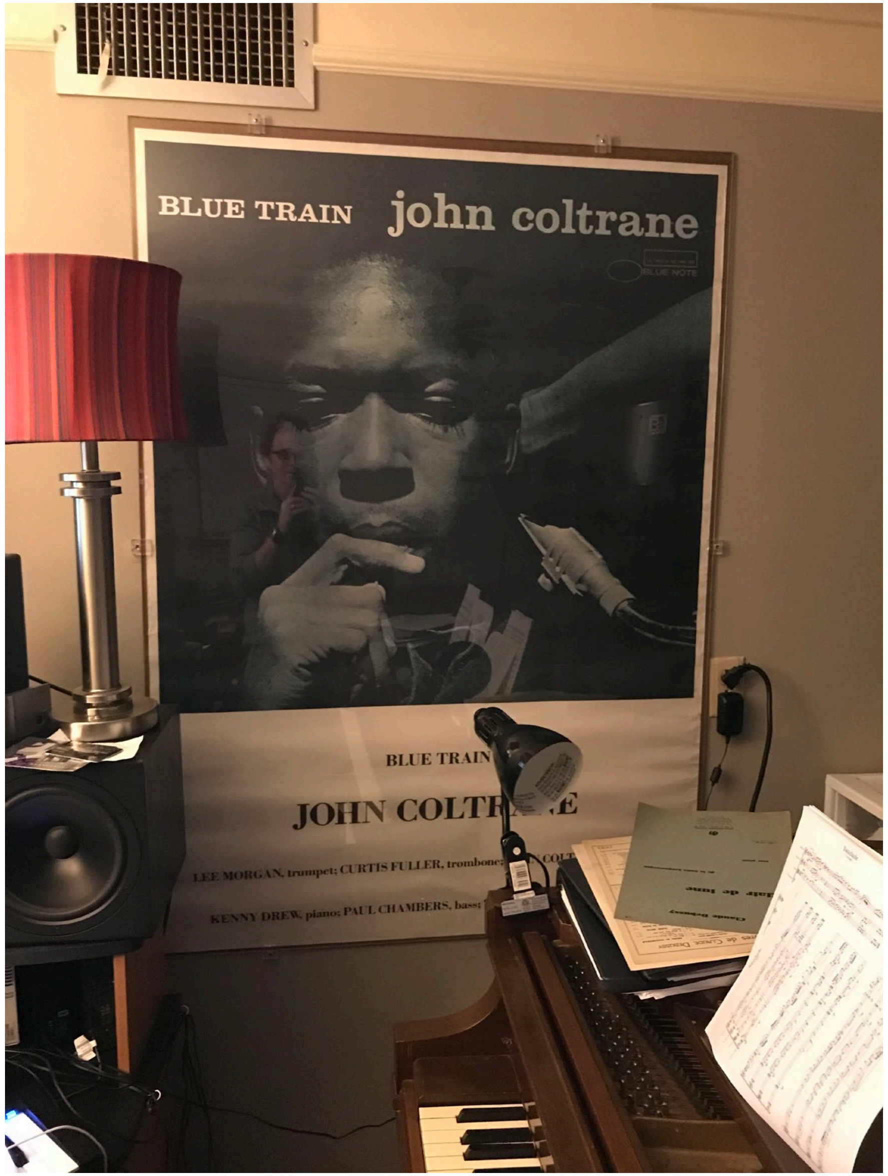
The Thesaurus in use

Along with the extended use of interval cycles within the patterns of the Thesaurus began to attract the attention of serious jazz musicians wanting to expand their vocabulary

John Coltrane

John Coltrane

- Due to time constraints, I will assume everybody knows who Coltrane is.
  - If not, I will gladly do my best to give you more information if you ask


BLUE TRAIN
john coltrane
BLUE NOTE
BLUE TRAIN
LEE MORGAN, trumpet; CURTIS FULLER, trombone;
KENNY DREW, piano; PAUL CHAMBERS, bass;


stanley crouch
considering genius
future JAZZ
OXFORD
Priestley
Chasin' the Bird
The House That TRANE Built
The Story of Impulse Records
ASHLEY KAHN
NORTON
Ashley Kahn
A Love Supreme
viking
COLTRANE ON COLTRANE
ascension
john coltrane and his quest
DA CAPO
The Devil's Horn
john coltrane
John Coltrane
Legacy
JOHN COLTRANE IN EUROPE
COLTRANE
THE COMPLETE 1961 VILLAGE VANGUARD RECORDINGS
IMPULSE!

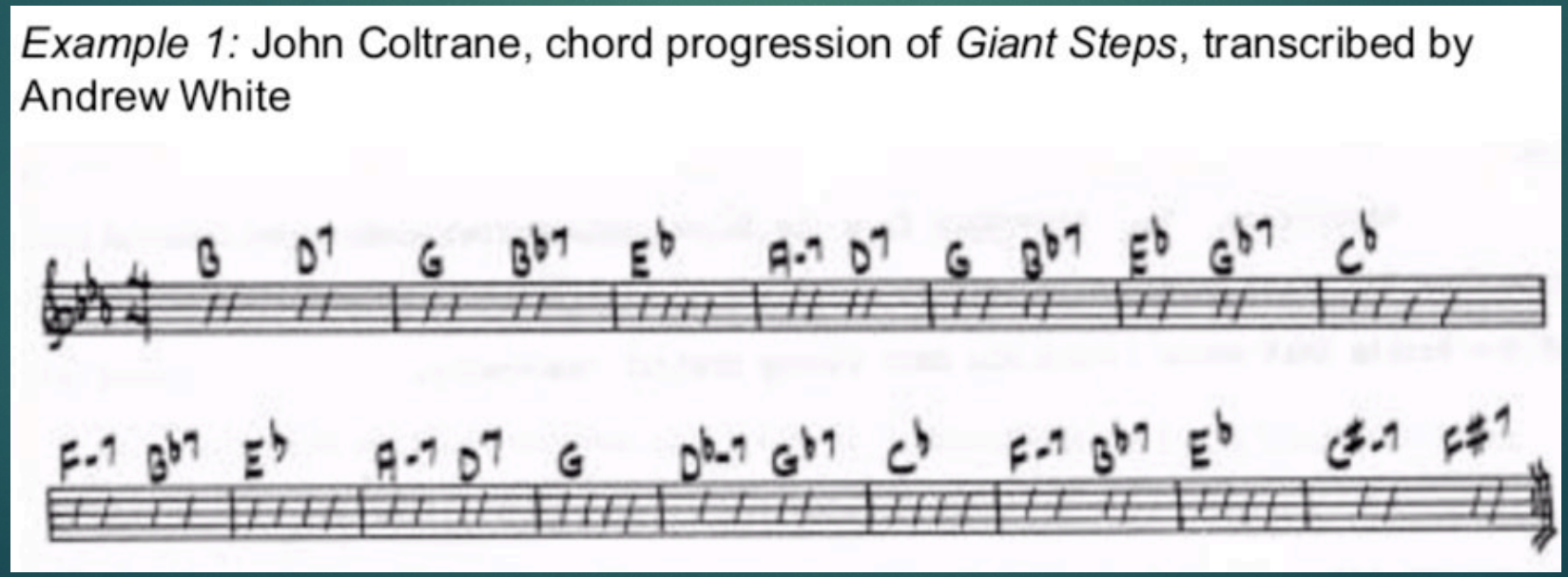
John Coltrane – 4 periods of creative activity

- 1955-57: Miles Davis Quintet
- 1957-59: Thelonious Monk/Miles Davis Sextet
- 1960-64: Coltrane quartet
- 1965 until his death: Coltrane's quest (abstract period)

- Although converging influences were present with Miles, Monk and saxophonist Ornette Coleman which led up to Coltrane's quartet and the use of chromatic third and interval cycles as well as the Thesaurus, the focus of this presentation will be on the 3rd and 4th periods

John Coltrane – Giant Steps

- Released in 1960 alongside Davis' *Kind of Blue* and Ornette Coleman's *Free Jazz*
- The title track Giant Steps, as well as the track Countdown, were ground breaking in the world of jazz for their use of major third cycles



John Coltrane – Giant Steps

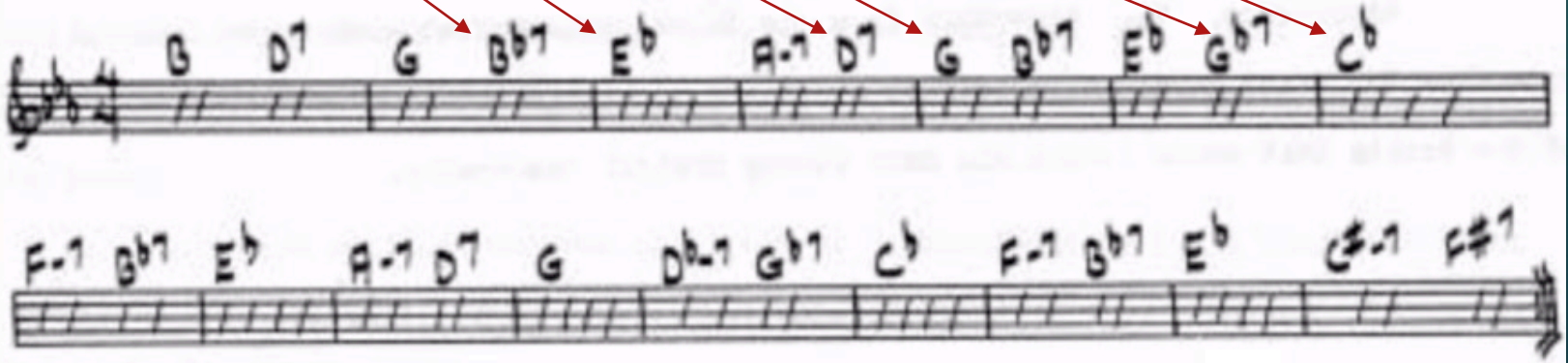
- Coltrane would begin to use this cycle of thirds in his improvisation
  - Known today as the "Coltrane Changes", Coltrane would substitute a series of V7 – I cadences descending by major thirds; i.e. between the d minor and G7 chord for example
    - D minor – Eb7 – Ab major – B7 – E major – G7 – C major
    - What David Demsey called 'tonic prolongation' in his article Chromatic Third Relations in the Music of John Coltrane

- But what was his inspiration?

John Coltrane – Giant Steps

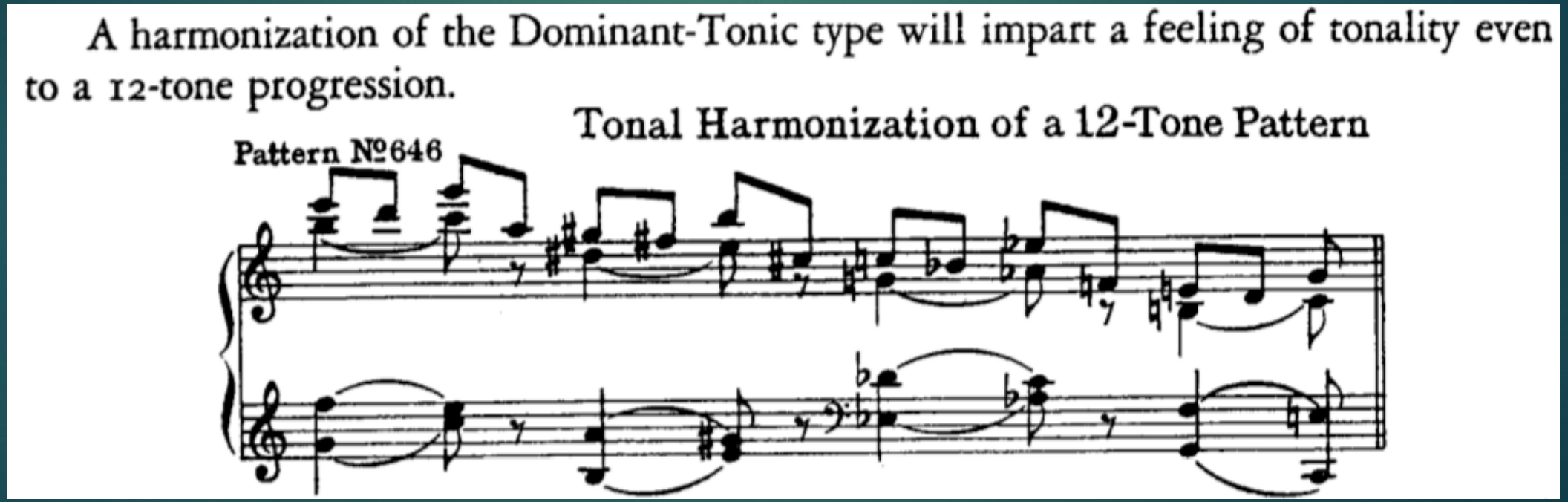
Example 3: Nicolas Slonimsky, *Thesaurus of Scales and Melodic Patterns, #286*

Example 1: John Coltrane, chord progression of *Giant Steps*, transcribed by Andrew White



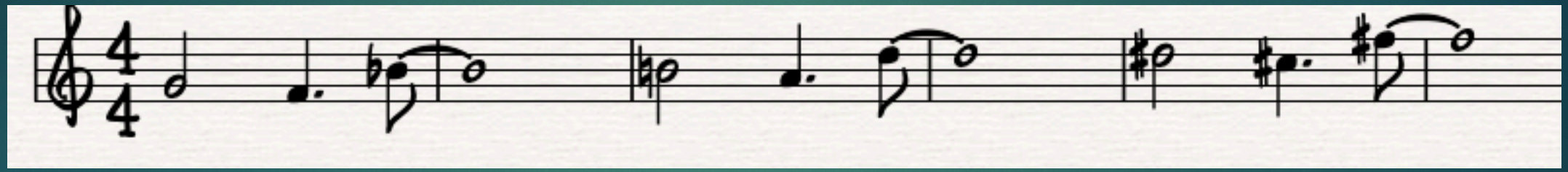
John Coltrane – Giant Steps

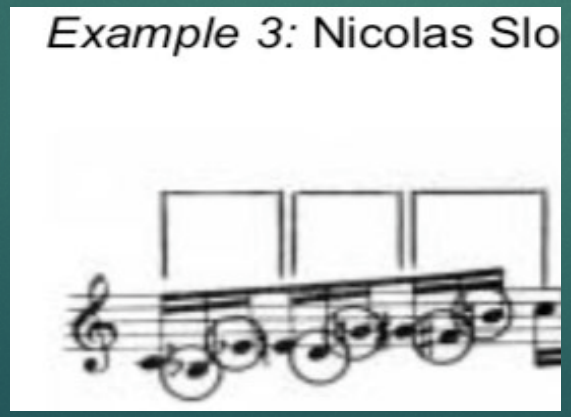
- In an example from the Thesaurus of applying dominant-tonic harmony to a 12-tone pattern to Impart a sense of tonality, Slonimsky choses for his example a cadence forming a major thirds cycle, exactly like the type used by Coltrane in "Giant Steps"



John Coltrane – Giant Steps

- As it happens, this is exactly the sequence of pitches (transposed up a P5) that Coltrane uses in the second half of the melody to "Giant Steps" as well





Andrew White Transcriptions

- Saxophonist who has transcribed and published over 600 transcriptions of recorded improvised solos by John Coltrane
  - "Around the beginning of 1965, the music started to take on more abstract tones."
  - This cyclic pattern that first showed up on "Giant Steps" would be applied broadly throughout most of the compositions of Coltrane in the 4th period of creativity between 1965 and his death.
    - "These patterns appear to be a regular part of Coltrane's improvisations all the way up to his final recording."

Coltrane's late period

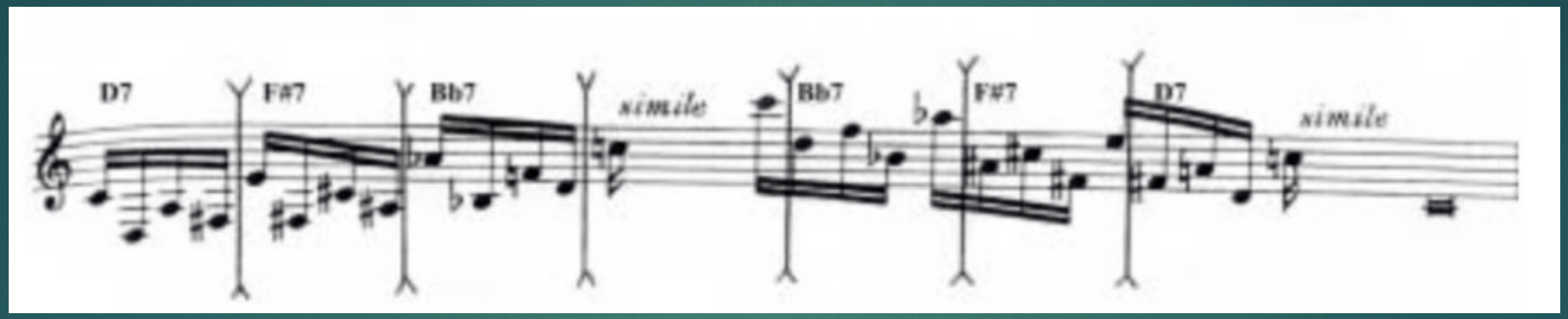
- On the surface this material from Coltrane's late period may appear random and haphazard. However, a detailed analysis of the melodic vocabulary relating to interval cycles reveals a structure of the highest order and detail.

- Demsey states "Coltrane likely developed his awareness of three-key cycles through practicing this material (the Thesaurus) in all keys

- Slonimsky labels one particular group of patterns included in the Ditone progression portion of the Thesaurus as "Miscellaneous Patterns"
  - Included are 16 patterns constructed using dominant 7^{th} chords progressing by the interval of a major 3rd

Coltrane's late period

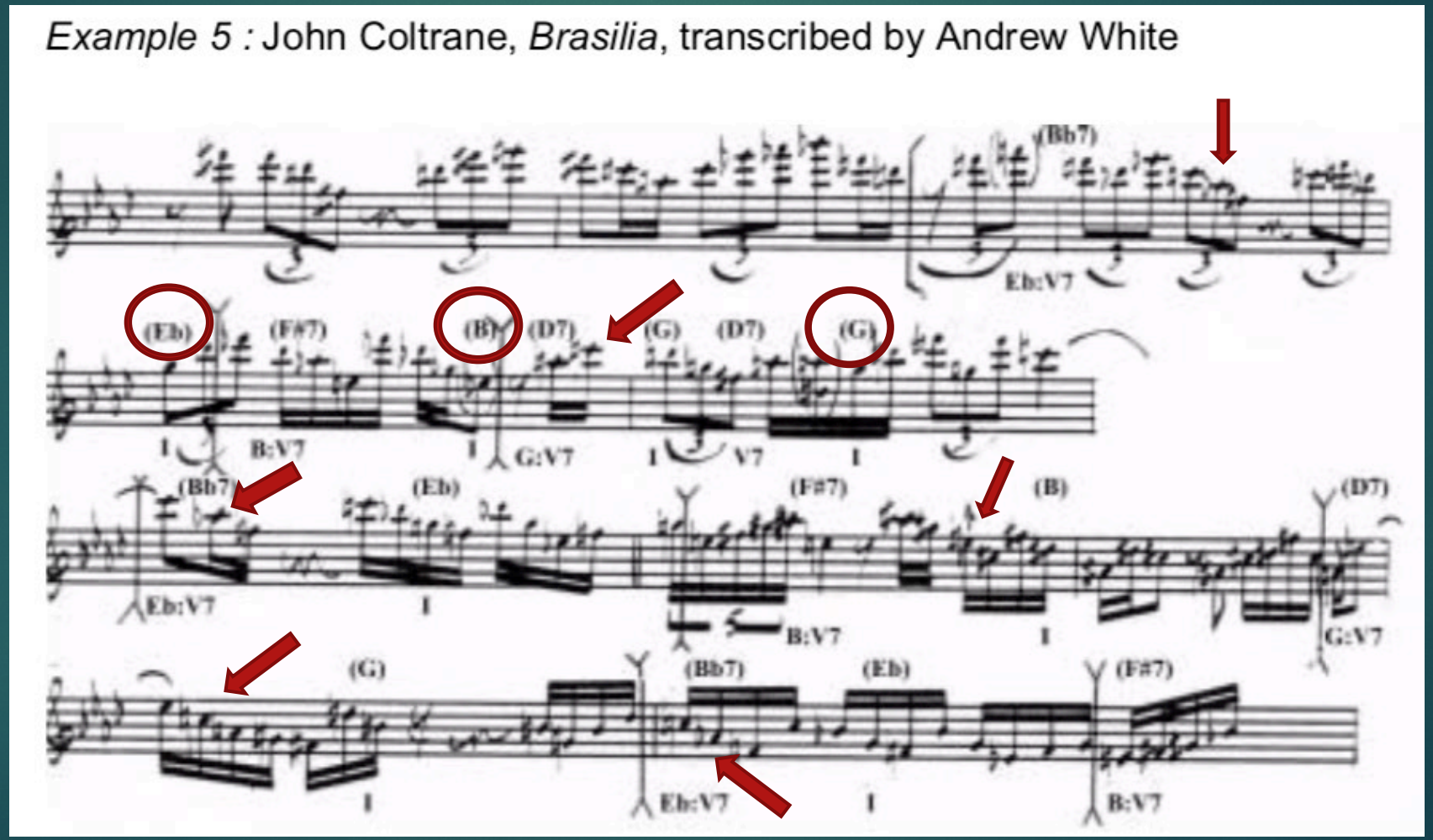
- Pattern #372 in Thesaurus



- The last chord is an outlined D7 chord. The last note of the chord preceding it (F#7) is an "e". This note is the lowered seventh of the F#7 chord and the 9th of the following D7 chord
- The appearance of the 9th somewhere in the previous dominant chord occurs in all sixteen of the Ditone Dominant 7th progressions
- The b7th/9th relationship acts as a pivot between the dominant 7th chords

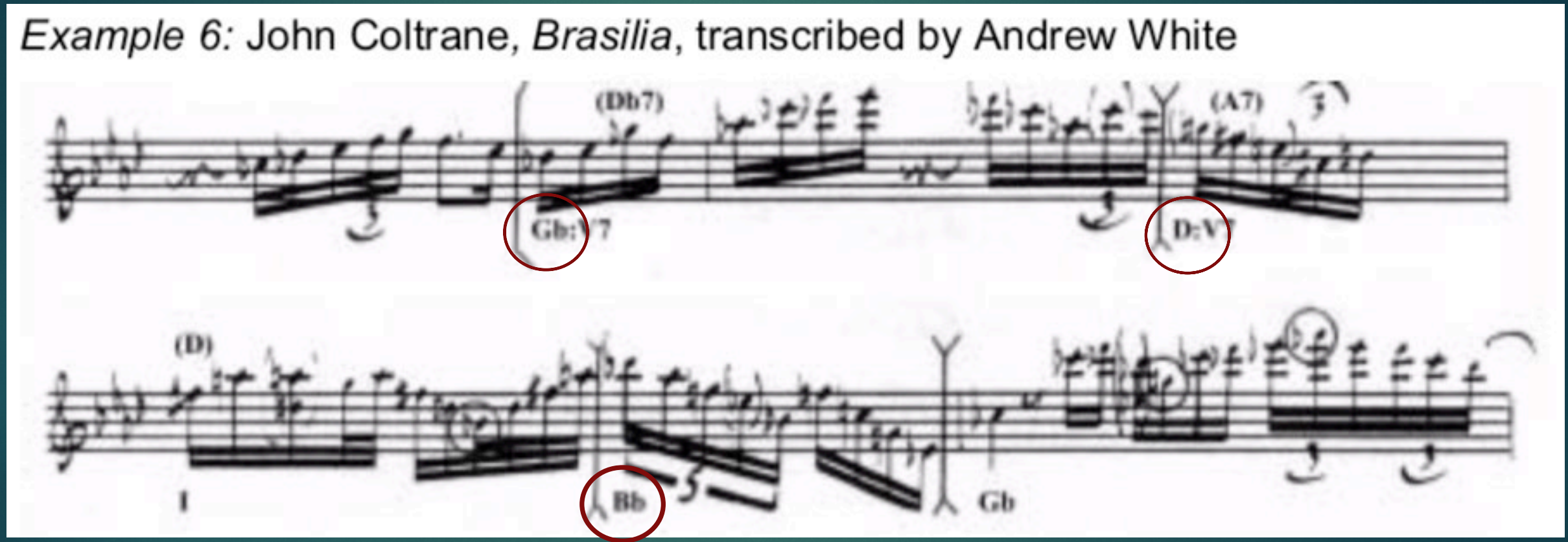
Coltrane's late period

- Eb: V7 – I / B: V7 – I / G: V7 – I



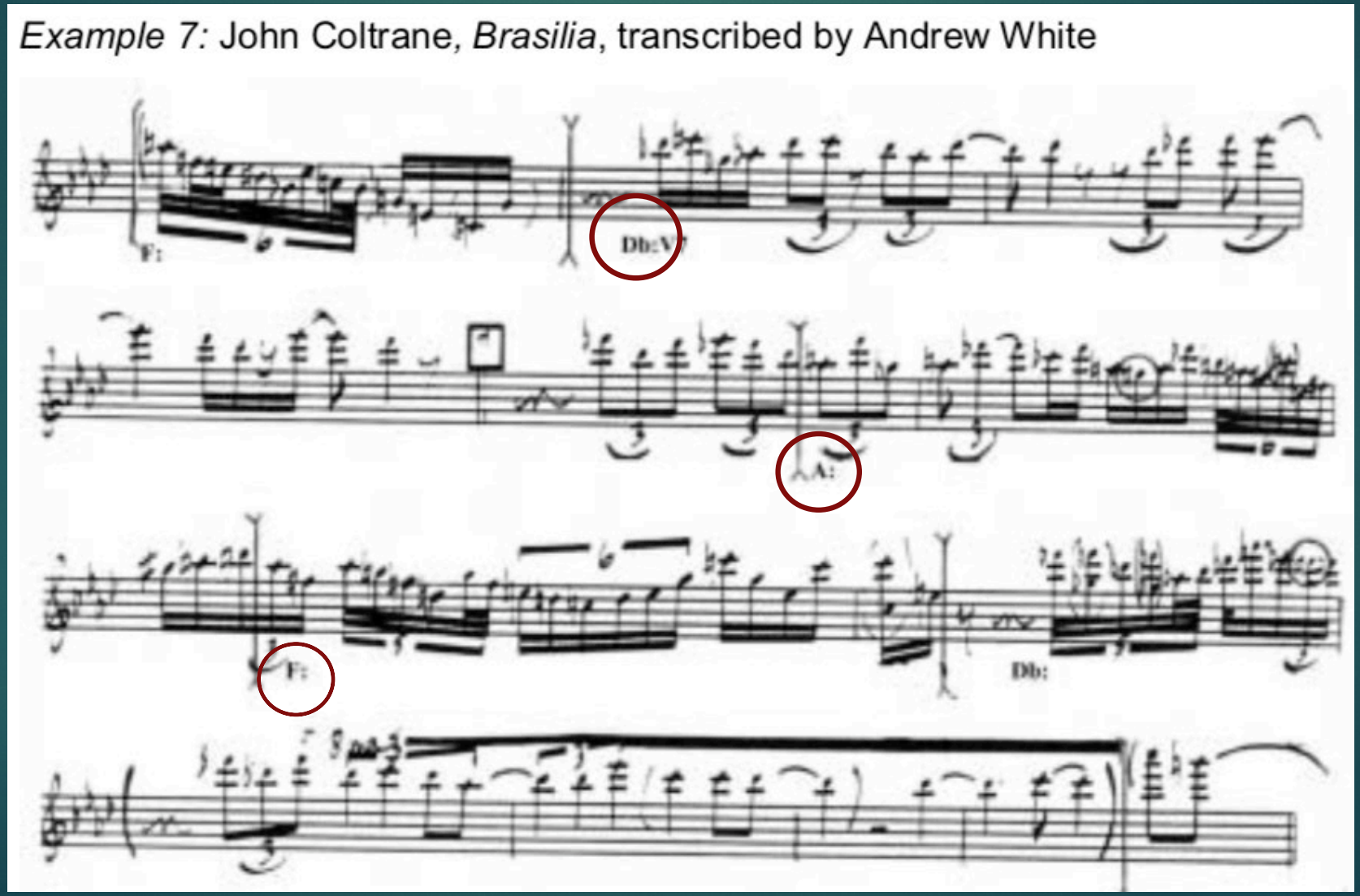
Coltrane's late period

- Bb: V7 – I / D: V7 – I / Gb: V7 – I



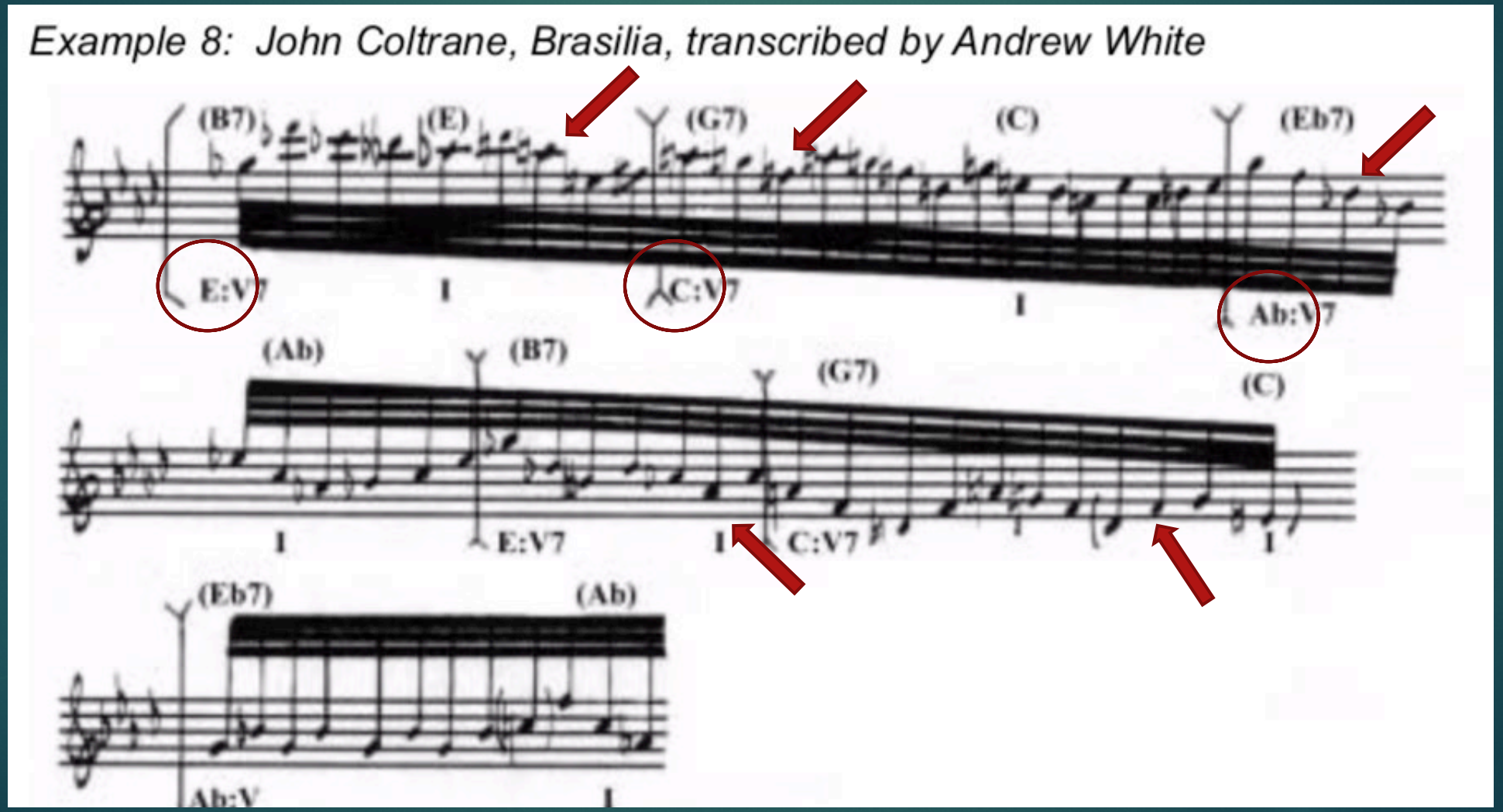
Coltrane's late period

- Db major, A major, and F major



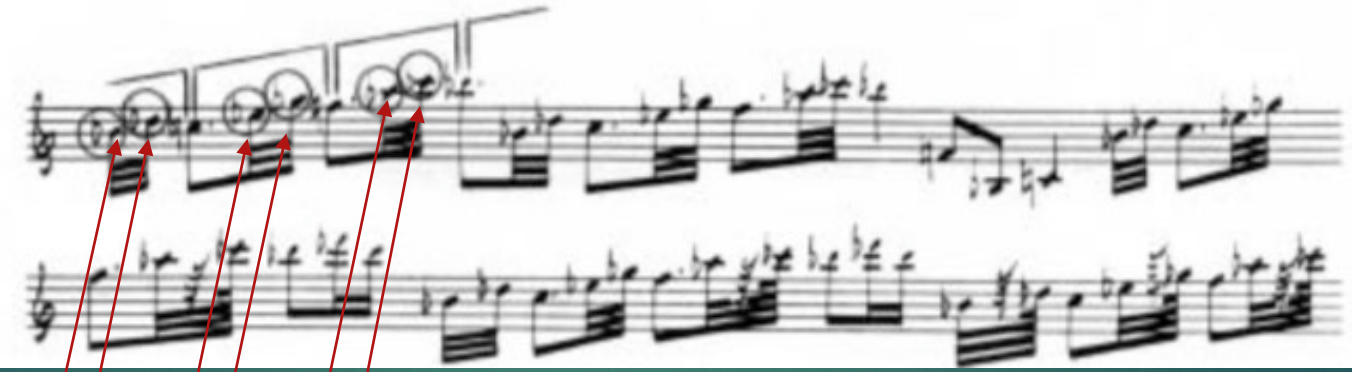
Coltrane's late period

- E major, C major, and Ab major



Coltrane/Slonimsky Connection

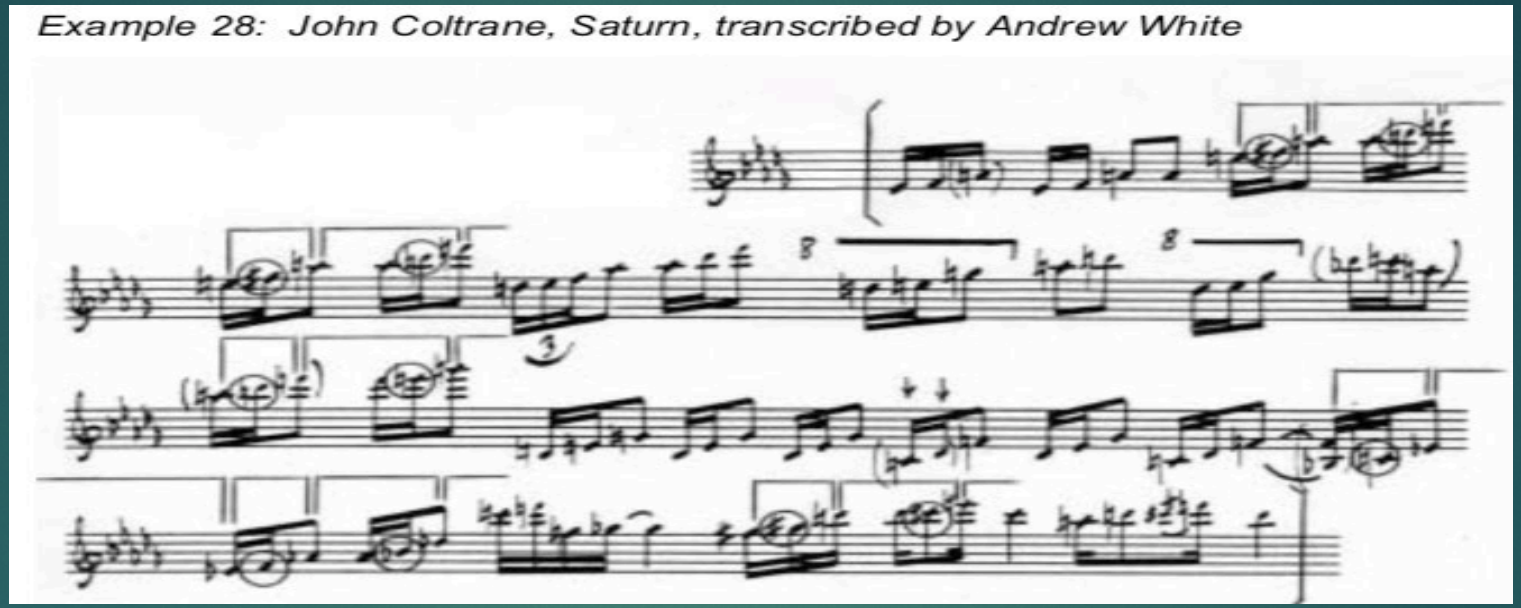
Example 26: John Coltrane, *Jupiter*, transcribed by Andrew White



Example 27: Nicloas Slonimsky, *Thesaurus of Scales and Melodic Patterns, pattern #892*

Coltrane/Slonimsky Connection

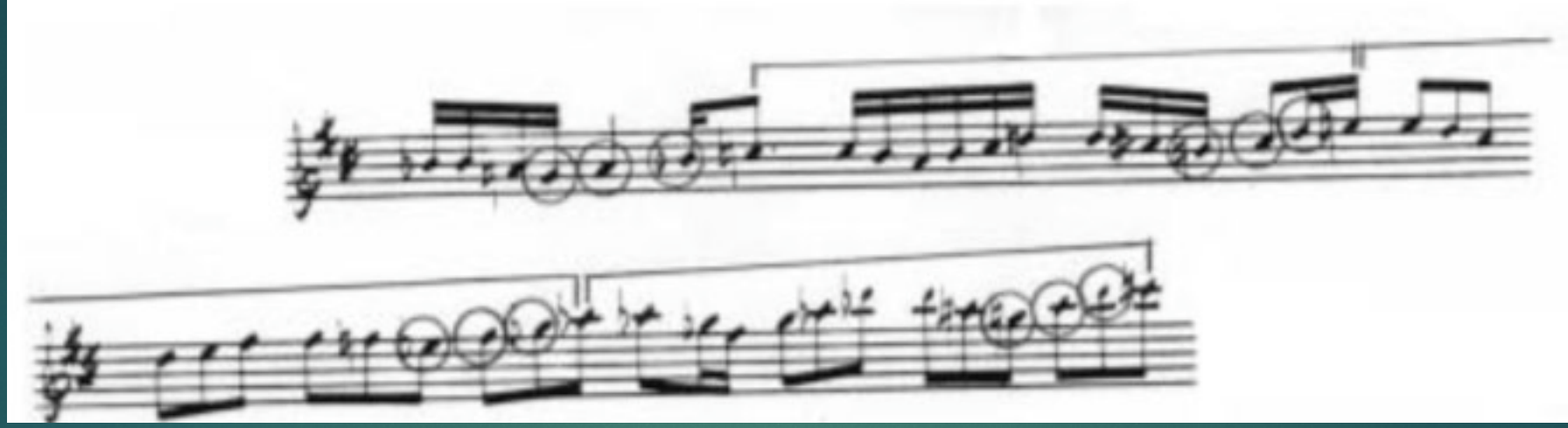
Example 28: John Coltrane, Saturn, transcribed by Andrew White



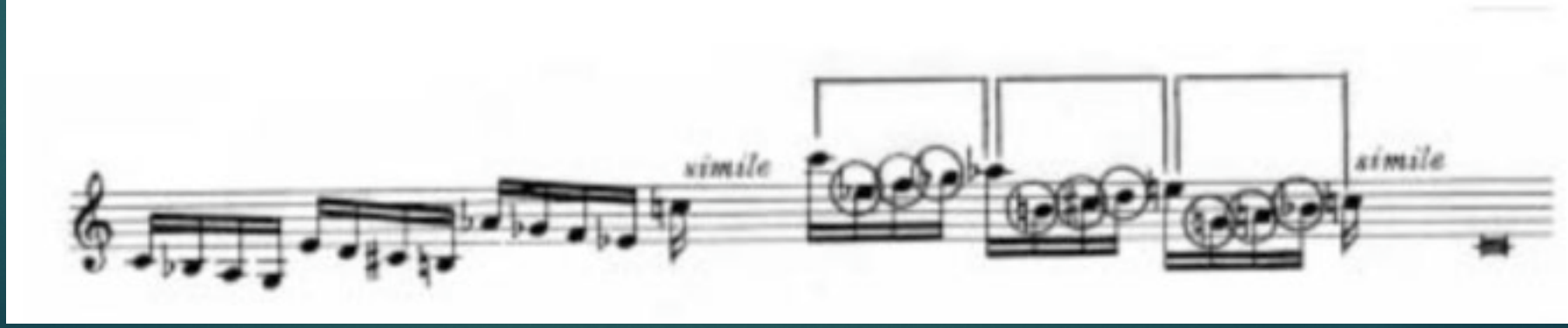
Example 29: Nicolas Slonimsky, *Thesaurus of Scales and Melodic Patterns, pattern #827*

Coltrane/Slonimsky Connection

Example 30: John Coltrane, *Venus*, transcribed by Andrew White

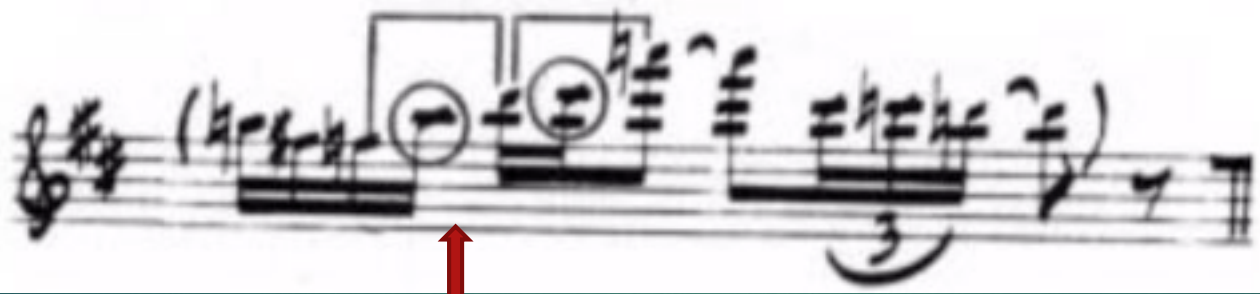


Example 31: Nicolas Slonimsky, *Thesaurus of Scales and Melodic Patterns*, #270, ditone Progression with Infrapolation of Three Notes



Coltrane/Slonimsky Connection

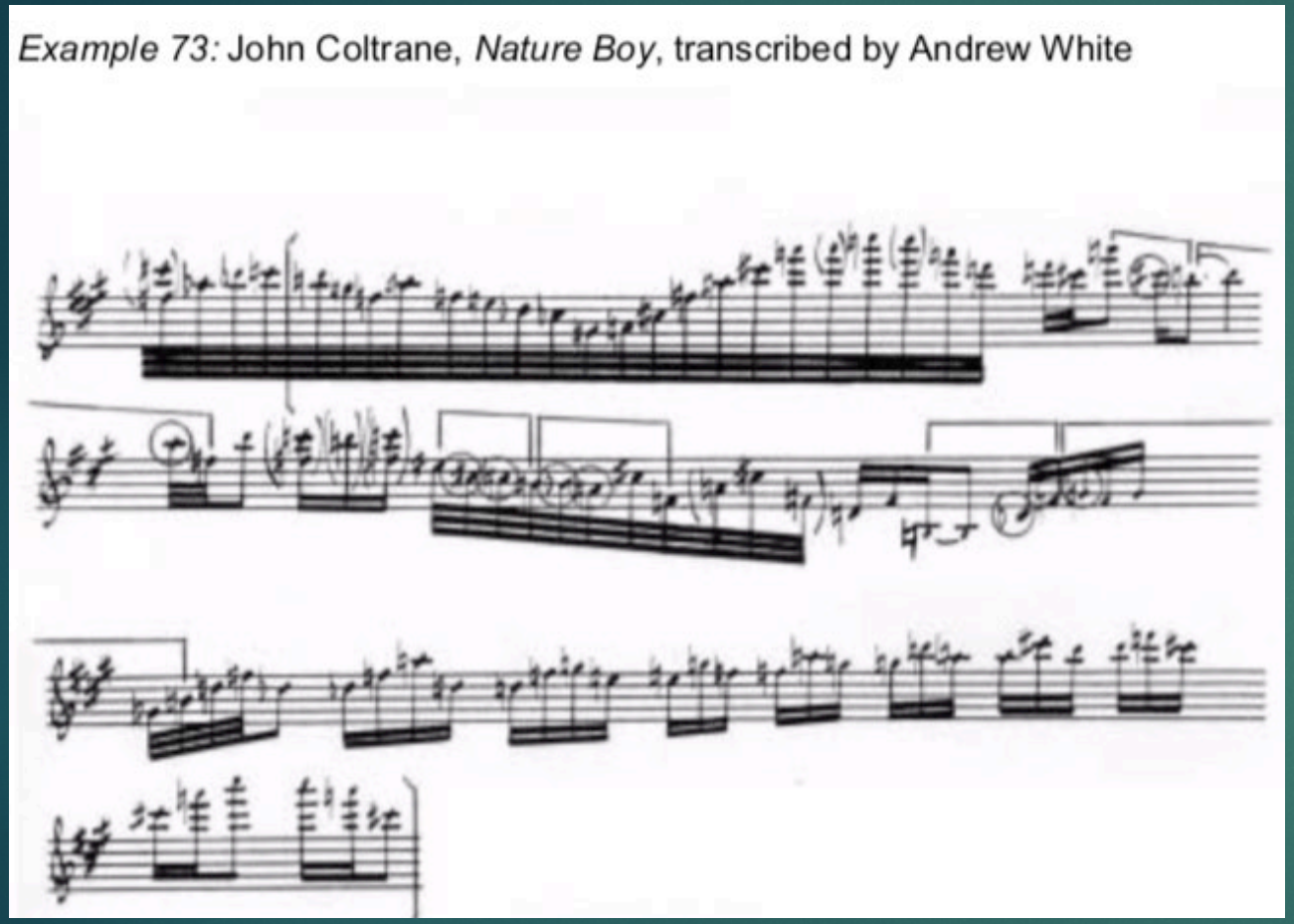
Example 65: John Coltrane, *Untitled Original 90314*, transcribed by Andrew White



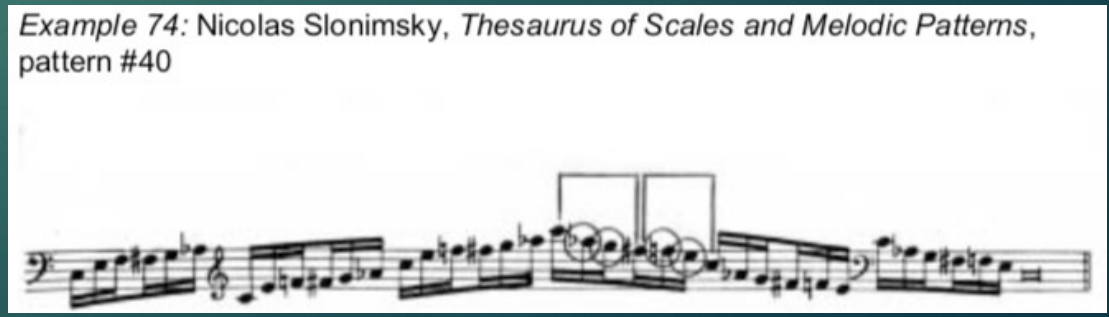
Example 66: Nicolas Slonimsky, *Thesaurus of Scales and Melodic Patterns*, pattern #30

Coltrane/Slonimsky Connection

Example 73: John Coltrane, *Nature Boy*, transcribed by Andrew White



Example 74: Nicolas Slonimsky, *Thesaurus of Scales and Melodic Patterns*, pattern #40



In Conclusion

- Most of the patterns utilized by Coltrane out of the *Thesaurus* are derived from intervallic progressions that divide one octave into equal parts. Given John Coltrane's penchant for the interval of the fourth, it is not surprising that several of these patterns are utilized as well.
- Specific passages from John Coltrane's improvisations show that the influence of Nicolas Slonimsky's *Thesaurus of Scales and Melodic Patterns* on the developing melodic vocabulary of John Coltrane was profound.
- John Coltrane successfully changed the established direction of jazz style without abandoning the traditional tenets of that style. This qualifies Coltrane's unique contribution to jazz melodic vocabulary as innovative.
  - With a little help from Slonimsky!!!

References

- Bair, Jeff. *Cyclic Patterns in John Coltranes Melodic Vocabulary as Influenced by Nicolas Slonimskys Thesaurus of Scales and Melodic Patterns: An Analysis of Selected Improvisations*. 2003.
- Demsey, David. Chromatic Third Relations in the Music of John Coltrane
- Martin, Henry. "Expanding Jazz Tonality: The Compositions of John Coltrane." *Theory and Practice* 37/38 (2012): 185-219. http://www.jstor.org/stable/43864910.
- Slonimsky, Nicolas. *Thesaurus of Scales and Melodic Patterns*. New York: Charles Scribner's Sons, 1947.