

Nicholas Caudill

Dr. Tim Reed

Chromatic Harmony

15 November 2021

MUSICAL HARMONY IN LITERATURE

Professor of Music at Manchester University, Dr. Tim Reed, has asked his students studying a course on Chromatic Harmony to conduct an analysis on the second movement of Beethoven's G Major Sonata. This analysis will include a detailed description of the harmonic aspects that make up this piece as well as my personal interpretation of the piece. This analysis will be found in the conclusion of this paper. A syntopical analysis of three books on musical harmony will be demonstrated prior to the analysis of the sonata.

This paper references three books on Harmony at a beginner, intermediate, and advanced level. The first book, "Harmony For The Listener" by Robert L. Jacobs, is a beginner-level book that uses few technical terms. The second book, "Harmony" by Heinrich Schenker is an intermediate-level book that any high school or undergraduate student could comprehend quite well. The last book, "Structural Functions of Harmony" by Arnold Schoenberg, is very difficult and reads more like a math book with less-used notation such as the roman numeral III for altered chords.

Harmony For The Listener – Jacobs

Robert L. Jacob approaches musical harmony by covering the very fundamentals of a tone producing overtones where a string will vibrate at different speeds and at different points of the string. Essentially, a string vibrating at 440hz is not ever 440hz entirely and produces inherently different pitches. This is explained well on page 10 with the quote "Half the wire is vibrating at twice the speed of the total vibration, a third at three times the speed, a fourth four times, and so on through ever diminishing fractions." My best guess is the only time a string is 440z would be during the moments after a pluck but before the string bounces from the initial inertia and assuming air resistance does not make it lose tune in that interval of time.

The first and second chapters of Jacob's book are titled "The Logic In The Melody" and "The Quality of Interval." Jacobs later emphasizes the importance of dominant seventh chords and their purpose in establishing introductions to a new key. This importance is due to the fact that a dominant seventh, compared to a dominant triad, contains a note that is outside the diatonic series of notes that create the major and minor scales. Modulation then becomes the act of "smoothing the passage to a new key" by playing a chord shared by both keys such as these disrupting dominant seventh chords^(p.66).

Chapter 10 is about the factors involved in key changes. These factors might be simply choosing a key and what structural functions would be best used to realize the desired key change. Structural functions would be compositional choices for how a key change would effect the musical work.

A piece may take a binary form and briefly leave the home key but quickly return. By ‘briefly’, Jacobs means a ‘few measures or bars.’ A piece could also take on a ternary form that has a whole section in the home key, another section but in a different key, then finally returning to the home key (ABA).

Jacobs further mentions three types of key changes: the ‘passing’ or ‘ornamental’, the cadential, and a key change that is followed by a passage in the new key. Ornamental key changes occur within a musical phrase. A cadential key change occurs at the end of a musical phrase. On page 73, Jacobs says “new keys are classified as either related or remote.” The difference between related and remote comes down to how many notes are different from the home key. For example, the difference between C major scale and G major scale is one note, making these more related. Related keys are contrasted by remote keys such as C major and C# major where the difference is seven notes making these two keys more remote. It may be interesting to look more into how pentatonic or blues scales come into this equation.

In Chapter 13, Jacobs conceptualizes the tonic key as a celestial whole, where each celestial body has five related keys which can be thought of as ‘satellites’ that orbit the celestial body/tonic key. If the tonic is a major key, then you would have 2 related major keys and 3 related minor keys. The inverse is also true, if the tonic is minor, then you would have 3 related major keys and 2 related minor keys.

Jacobs stretches out his idea of constellationalized harmony by showing sketches exemplifying key changes where two keys share satellites or not. If they do not share a related satellite, then Jacobs describes a process of acclimatizing the listener’s ear by hopping through one or more keys that shares a satellite with the end-goal tonic. Jacob finishes the chapter by analyzing the ‘constellationalized harmony’ of the first movement of Mozart’s ‘Jupiter’ Symphony.

In Chapter 13, Jacobs also talks about how the Sonata-Form and its fundamental ternary form creates “the widest possible scope to the departing-in-order-to-return logic of tonality.”

While modulation through keys was greatly explored in 18th century sonata-form pieces, this system is quite challenged by 19th century romantic era practices. Composers such as Wagner, Liszt, Tchaikovsky, and Puccini explore the expressive bitter-sweet sounds of dominant major/minor 9th chords. The exploration of these dominant 9th become the parent of a new chord: the rootless diminished seventh. This rootless diminished seventh “acts like a magic carpet abolishing tonal space”^(p.119). “This allows one key to effortlessly pass into another, to melt into it, under our eyes”^(p.119). This type of modulation is known as ‘enharmonic modulation’ which is quite alien to the modulation seen in Haydn, Mozart, and Beethoven’s sonata-forms.

Another important point Jacob emphasizes is that the dominant 7th resolves to five appoggiatura chords: dominant major/minor 9ths, dominant 11ths, and dominant major/minor 13ths.

Jacobs finishes his book with a chapter analyzing works of Schubert, Tchaikovsky, and Brahms in the context of comparing Romantic Sonata-Form to Classical Sonata Form. Jacobs condenses this analyses on page 141 with the quote “The former (classical) is more instinctively concerned with the overall total effect, the latter (romantic) with the immediate momentary one.”

In the last chapter “Some Trends of Twentieth-century Harmony,” Jacobs states that harmony during this time, compared to previous centuries, is several orders of magnitude different to the point that the term “Harmony” is denoted to a number of diverse systems and trends. Jacobs gives the reader a short survey of a few of these trends such as Post-Wagnerian Romantic Harmony, Impressionism, Contrapuntalism, Bitonality, Neo-modalism, Schoenberg’s twelve-note system, and Hindemith’s System of Harmony. Jacobs imagines these trends as “streams flowing out of the main river of classical harmony except for Schoenberg/Hindemiths’, which Jacobs regards as “independent constructions”^(p.177).

Harmony - Schenker

Schenker’s book is divided into two sections: Theoretical and Practical Applications of Harmony. This is similar to the structure of this paper.

Harmony appears to be around the collegiate level compared to the elementary level of Jacob’s Harmony For The Listener. Schenker dives immediately into analysis of Mozart & Beethoven Sonatas regarding the natural major tonal system. This is different from Jacob’s take on Harmony where Jacobs does not introduce a stable harmonious combination of tones until chapter five.

Schenker begins his book in similar manor to Jacobs. Both authors visit the natural phenomena of a tone’s series of inherent overtones. Schenker elaborates on this phenomena by showing how artists build major tonal systems by following the “family tree” or descendants of these overtones. This natural tonal system is altered to make a more stable system that excludes clashing chords like the #IV tritone.

Schenker uses a diagram of the Bach’s family tree on page 23 to help the reader imagine the descendants of the overtone series. In exhibit 1, I have extended this diagram for better comprehension.

In exhibit 1, we see a tone has an inherent major triad. There are many more overtones derived from the fundamental but Schenker argues on page 25 that only the first five are audible. For example, the first five overtones of C are C C G C E which make a C E G ‘C major’ triad. The fundamental triad ‘gives birth’ to three more major triads, one of which is a copy of itself as it its like DNA from studying biology. Such a tree is quite complex and hard to follow, which is why I made exhibit 2.

Both exhibits limit repeating tones to save space on the paper. This begs the question, how do you derive a natural major tonal system from these family trees? When we follow the

fifth overtones we can create the unstable natural major tonal system which consists of the chords: {I II III #IV V VI VII}.

On page 40, Schenker elaborates on the reasons artists altered these chords to make this system more stable. One reason might be making an F# an F or a C# a C to 'yield to the tonic.' The more recognizable major tonal system {I ii iii IV V vi vii^o} comes to fruition. Schenker stresses to remember the natural forces underlying our modern artificial major tonal system^(p.41).

By deriving the artificial major tonal system from the unaltered and unstable natural major tonal system (which was derived from following overtones of overtones from some fundamental tone) leads to the discovery of the complementary minor tonal system.

One of the differences between the artificial major tonal system and the natural major tonal system is the mutual agreement to make the VI tone into a vi. This is likely due to the fact that the 3rd of a VI would be a half step above the tonic, creating dissonance and instability in tonal relations. This human desire for consonance, order, and stability leads to the adoption of the vi tone. The interesting feature about the vi tone in a 12-note equal-tempered tuned system is the emergence of the parallel major and minor relationship. This opens up further possibilities such as thinking of a piece not in the key of major or minor but as both at the same time.

For example, a piece written in "C" would mean C major/minor. Both sides of this duality comes with its family of related keys opening up the possibility of modulation thanks to equal-tempered tuning.

Schenker's book becomes more difficult to read beginning around page 133 with chapters titled "Scale-steps and Harmony" and "Scale-steps and counterpoint." These chapters are prefaced by theories about intervals and their construction. Schenker describes a listener's ability to hear a triad with only one or two of its tones having been voiced or played. This concept may tie in with the first book on harmony by Jacobs where Jacobs stresses the importance of listening to the quality of cadences from the last two notes of a melody.

Structural Functions Of Harmony - Schoenberg

Schoenberg's book is a completely different beast and may seem largely unintelligible on first readings. Contents of this book cover topics such as Part-leading, 6/4 Chord of the Cadence, Substitutes and Regions, Transformations of the Second Degree, Vagrant Harmonies, and the Interchangeability of Major and Minor. Schoenberg begins the book with the structural functions and principles of harmony using complex symbols such as III , VH^6 , or II_5^6 to represent altered chords and their respective positions (inverted or not). Schoenberg's book also includes a vastly greater amount of sheet music examples compared to the previous two books we covered. Structural Functions of Harmony gives the impression of approaching music theory as if it was rocket science.

Schoenberg's "book is difficult to understand for several reasons. He uses outdated or unfamiliar terms without much explanation such as "reissuance", "monotonicity", and "region." Schoenberg in the beginning of his book mentions that often his American university students were poorly prepared to study harmony which was part of the motivation to write this

book. Schoenberg also says his student's understanding of harmony was superficial due to two obsolete teaching methods: writing parts above a figured bass (claiming it is too easy), and "harmonizing a given melody is too difficult". Schoenberg says both these methods are wrong and recommends to study harmony by composing harmony progressions from the beginning. A memorable quote from the beginning of the book was "A triad alone is entirely indefinite in its harmonic meaning."^(p.1)

Analysis Of Beethoven's G Major Sonata – 2nd Movement

In an attempt to apply our theoretical knowledge to practical applications, we will now analyzing the harmonic structure that underlies the second movement of Beethoven's G Major Sonata.

Does this the harmony follow the standard model? If by standard model you mean the depart-in-order-to-return logic of tonality that is best expressed in pieces written in sonata form, then yes, this sonata does follow the standard model. In fact, there are I, V, and V⁷ chords everywhere. The listener of a sonata can expect the piece to be structured in ABA format. By looking at the score of this piece and not the name, the piece begins with a G major triad and ends with a partial G major triad in root position which tells the listener that the home key would logically be G Major.

The basic ABA tonal structure gets extended to ABACA 'rondo form' where the initial theme keeps returning throughout the piece. This movement ends with what looks like a coda starting at measure 107.

Theme A can be found at the beginnning of the piece and then returns at measures 47 and 87. Part B contains a modulation to D major at measure 25 which is a related key to G major, only differing by one sharp. I did not see any seventh chords to smooth out these modulations. The lack of seventh chords at these transitions could be because seventh chords are not that necessary when modulating to related keys. Part C we see a modulation to C major at measure 69 which also differs by only one sharp.

Conclusion

Jacobs imagination of harmony as a series of related or remote constellations was useful for mapping out the tonal movements as seen in exhibit 3. Of the three books on musical harmony, this concept of constellationalized harmony was the most novel. The next best idea would be Heinrich Schenker's analogy of Bach's family tree in relation to generations of tones created from a fundamental tone. Beethoven's G major sonata was very joyful and full of youth. Beethoven's choice of a sonata where each section is in a major key was an interesting experiment and the dancing $\frac{3}{4}$ pulse could make it a treat for any carnival setting in that era.

Works Cited

- [0] Jacobs, Robert L. Harmony for the Listener. O.U.P., 1958.
- [1] Schenker, Heinrich. Harmony. University of Chicago Press, 1980.
- [2] Schoenberg, Arnold, and Leonard (editor) Stein. Structural Functions of Harmony, by Arnold Schoenberg. Ernest Benn, 1969.

Exhibit 1: "Overtones of Overtones"

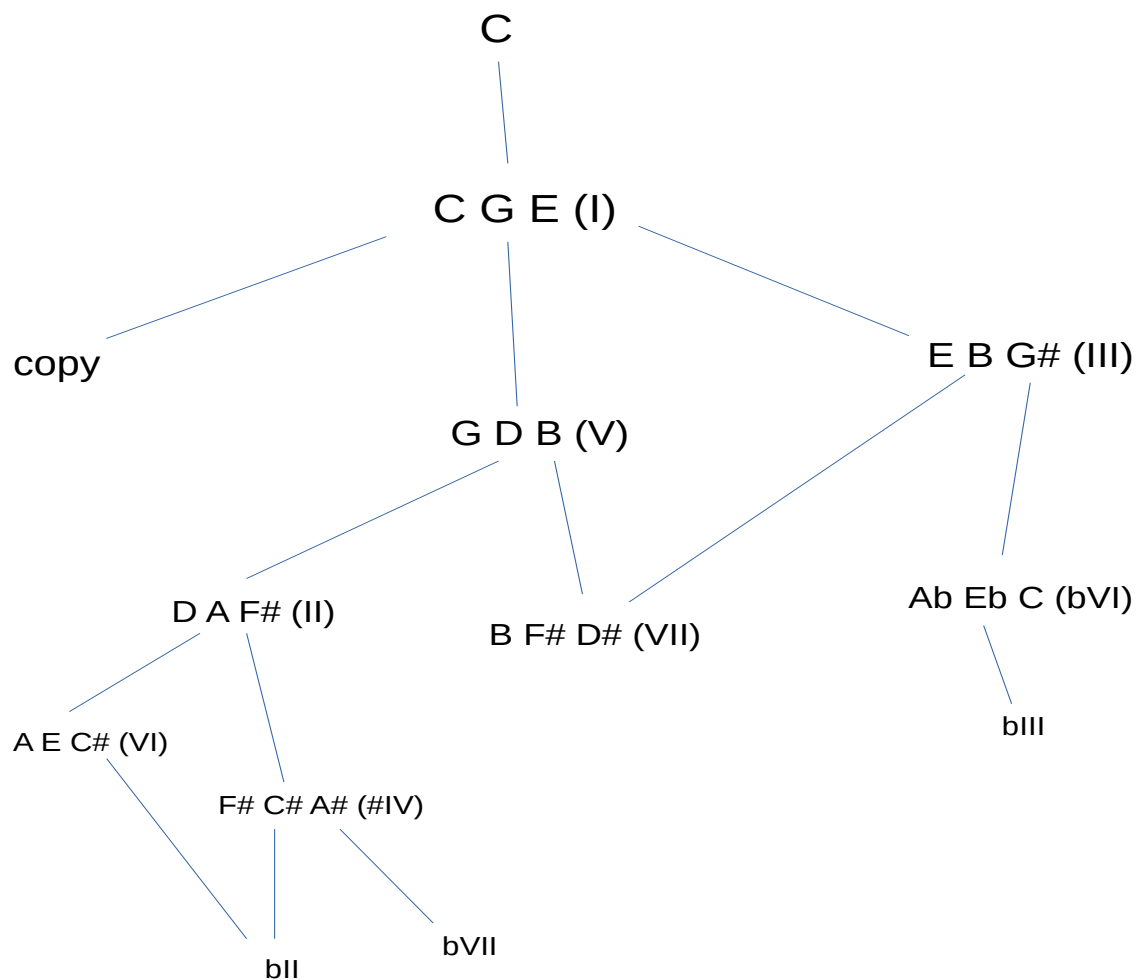


Exhibit 2:

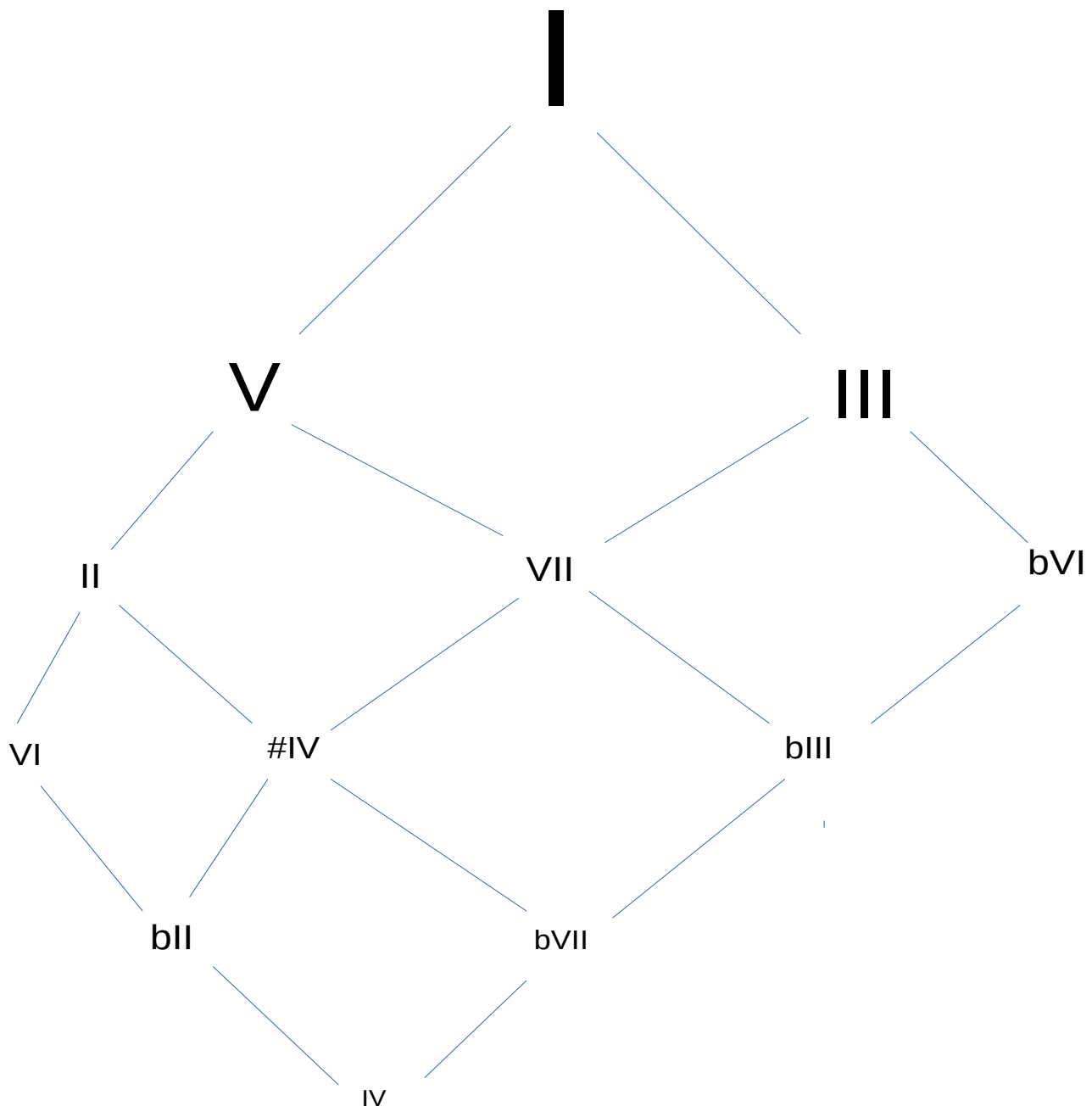


Exhibit 3: Tonal Movement of
Beethoven's G Major Sonata

