

# A Brief Analysis of Harmonic Techniques in Bartók's Musical Compositions and Their Practical Applications

Zhuopeng Wang

Leopold Mozart College of Music-University of Augsburg, Augsburg, 86159, Germany

## ABSTRACT

Béla Bartók was one of the most important Hungarian composers of the twentieth century. His musical creation, rooted in Eastern European folk music elements and modern compositional techniques, demonstrated distinctive harmonic innovation and experimentalism. Bartók's harmonic language broke through the limitations of the traditional tonal system; integrating the modal and rhythmic characteristics of folk music, he extensively employed church modes, pentatonic scales, and artificial scales to create complex harmonic effects. Despite its modernity, his music remained within the realm of tonal music and did not venture into pure atonality. Three prominent features characterize Bartók's harmonic techniques: the axis system, polytonality, and major-minor triads. These elements collectively formed a rich, modern, and logically coherent harmonic language in his music, endowing his works with striking variability and layered acoustic effects, and securing him an irreplaceable and pivotal position in the history of twentieth-century music.

## KEYWORDS

Bartók; Harmonic techniques; Eastern european folk music

## 1 The "Axis System"

Ernő Lendvai (1925–1993), a Hungarian music theorist, was one of the most renowned Bartók scholars of the twentieth century. Lendvai proposed a systematic theoretical framework for understanding the harmonic structures in Bartók's music, thereby providing theoretical support for the comprehension of Bartók's harmonic language. The concept of the Axis System is a theoretical model employed to analyze Bartók's harmonic language, and it also represents one of Lendvai's most celebrated theoretical contributions. This model is primarily based on the symmetry of pitch relations and the notion of tonal centers, aiming to explain and construct the harmonic and tonal structures within music. It implicitly contains two research approaches: the exploration of harmonic functional grouping and the analysis of symmetrical relations.

### 1.1 Functional Grouping

Lendvai's Axis System is based on a cyclic model founded on perfect fifths, reorganizing and symmetrizing the traditional tonal functional relationships. He breaks through the limitations of scale degree relationships in the original major-minor system, arranging the twelve semitones within an octave into subdominant, tonic, and dominant functions respectively. According to the perfect fifth cycle of the circle of fifths, the twelve tones can be sequentially attributed to different functions. This results in "the twelve scale degrees being divided into three functional groups (subdominant, tonic, dominant), forming the subdominant axis, tonic axis, and dominant axis. Each functional axis contains four scale degrees, representing four tonalities, which constitutes the foundation of the Axis System." For example, if the C tone is taken as the tonic function, its subdominant function is F and its dominant function is G. The D tone, a perfect fifth above G, belongs to the subdominant function, and the A tone, a perfect fifth above D, belongs to the tonic function, and so on. Visualizing this idea yields the following three linear diagrams:

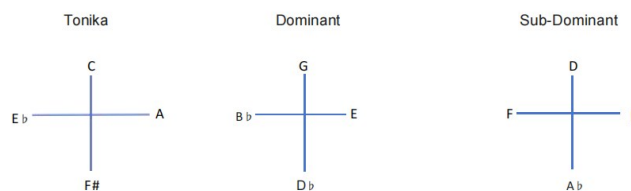


Figure 1

As shown in the diagrams above, the twelve semitones are respectively classified into three different functions (subdominant, tonic, dominant). According to the "Axis System" theory, the relationship between the four tones within the same model is similar to the "closely related keys" of parallel tonalities (such as C major and A minor) in classical music, while tones from different models are regarded as "distantly related keys". The four tones in "closely related keys" can be

mutually substituted within chords, providing a logical basis for explaining many seemingly complex chords in Bartók's musical works that cannot be accounted for by traditional chord formation logic (tertian stacking), such as the opening of the "Piano Sonata Sz.80":

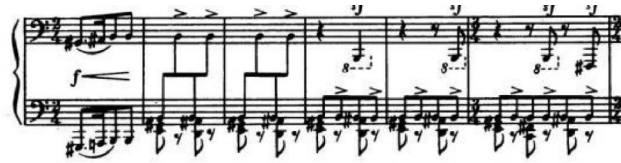


Figure 2

The melody of the first theme is a combination of E major and E Aeolian mode (E natural minor). In the second measure of the second theme, the first chord is clearly an E major triad (E, G#, B), while the nature of the second chord (D, A#, B) cannot be clearly defined. If the Axis System model is adopted with E as the tonic, the following model is obtained:

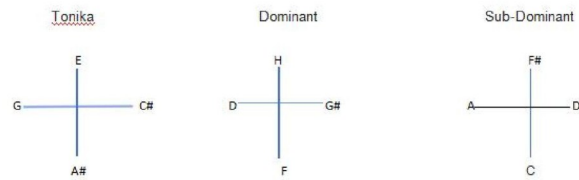


Figure 3

Based on the principle that the four tones within the same cyclic model can be substituted without changing the basic nature, the chord (D, A#, B) can be converted into the same E major triad (E, G#, B) by replacing G# with D and A# with E. Similarly, the second chord (C, F#, B) in the sixth phrase can be converted into a clear E major subdominant chord (D#, F#, B) by replacing C with D#. Therefore, in the first phrase of the first movement, Bartók actually uses only two types of chords: the tonic chord and subdominant chord of E major. The subdominant chord briefly appears at the end of the phrase and ultimately resolves to the tonic chord. This substitution is reasonable as it enriches the acoustic effect of the chords. For example, both chords analyzed earlier contain tense tritone intervals (D-A#, C-F#), which undoubtedly enhance the richness of the sound without changing the original function of the chords.

### 1.2 Symmetrical Structures

The Axis System is also an exploration of symmetrical structures. It focuses on interval symmetry, particularly harmonic organization centered around a central tone or axis. As can be inferred from the functional grouping above, among the four tones in "closely related keys", the interval relationship between adjacent tones is a minor third, while the interval relationship between opposite tones is a tritone. This interval relationship forms a wonderful symmetry and balance. This system breaks through the traditional functional harmonic system, replacing it with a system based on tertian stacking and axial symmetry. Bartók often takes a tone or chord as the center and then conducts symmetrical interval movements around it. For example, if C is the central tone, tones equidistant from C (such as Eb and A) can form a symmetrical relationship. The application of this symmetrical relationship is reflected in many works, such as the 141st piece "Subject and Reflection" in Bartók's piano collection "Mikrokosmos" (Sz. 107, 1926-1939), which demonstrates the characteristics of the Axis System through symmetrical pitch relationships:



Figure 4

The work takes Bb as the axis tone. Each corresponding tone in the subsequent melodies of the left and right hands has the same interval relationship with the axis tone Bb. For example, the interval relationships between Ab and C and Bb are both major seconds, and the relationships between Eb and F and Bb are both perfect fourths. This work exhibits almost perfect symmetry in interval relationships, serving as a vivid portrayal of Bartók's unique musical style.

## 2 "Polytonality"

During Bartók's era, there emerged a research tendency toward "atonality" in the music community. As one of the pioneers and pivotal figures in music history, Bartók naturally explored atonality as well. Many of his works cannot be easily identified through the traditional tonal system in the same way as those from the Classical or Romantic periods. Nevertheless, through repeated listening and score analysis, they can still be classified as tonal music. Bartók merely blurred the boundaries of tonality through his compositional techniques, incorporating extensively non-traditional scales such as church modes and artificial scales with Eastern European ethnic characteristics (e.g., Hungarian major and minor modes) in the process. He demonstrated the diversity of tonality through various compositional devices, specifically manifested in the simultaneous use of two or more tonalities in music (for instance, the concurrent presence of C major and F major). These tonalities may be completely independent or interrelated through certain means (such as common tones or symmetry). The first movement of his Piano Sonata (Sz.80) serves as a case in point:

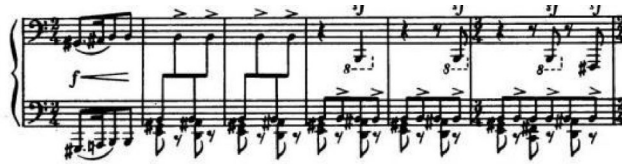


Figure 5

In the first measure, the only difference between the left and right hands is that the right hand plays the second A as A#, while the left hand plays A. When this single note is placed within the entire range of the first theme (measures 1-13), two completely different tonalities are formed: "E, F#, G#, A#, B, C#, D#, E" or "E, F#, G#, A, B, C#, D#, E".

The first scale corresponds to E Lydian mode, while the second scale corresponds to E major. When the second theme (measures 14-25) appears, the tonality changes immediately without the transition and preparation found in traditional modulation. The previous G# is restored to G, and the overall tonal feeling seems to return to E minor :



Figure 6

Subsequently, when the third theme (measures 26-43) appears, F and B replace F# and B (H) from the previous themes, leading to another change in tonality. The superimposition of different tonalities produces many semitonal clashes (such as the clash between A and A# in the first measure), which are also evident in the subsequent movements :



Figure 7

In the third movement of the "Piano Sonata Sz. 80", the simultaneous superimposition of modes can be intuitively observed in some passages:

In the above music example, the tonalities of the left and right hands are Bb natural major (right hand) and C natural major (left hand) respectively.



Figure 8

This technique of modal superimposition is prevalent in Bartók's musical works, such as *Mikrokosmos*, the Second Violin Concerto, and certain symphonic works like *Music for Strings, Percussion and Celesta*. Beyond the superimposition of two distinct modes, Bartók also constructed harmonies through the stacking and alternation of different modes based on the same tonic—for instance, in the third movement of his *Sonata for Two Pianos and Percussion*, three distinct tonalities emerge within a descending scale centered on D:



Figure 9

In the aforementioned musical example, centered on D as the tonic, the following modes appear through alternation and stacking: D-Phrygian, D-Aeolian (natural minor), and D-Mixolydian.

Even though Bartók employed a variety of distinct compositional techniques to enrich the harmonic expression in his works and blur the boundaries and differences between different tonalities, his music essentially remains within the realm of modal music. Instead, it represents a breakthrough and expansion of traditional harmony, aiming to create unique harmonic tension, enrich the musical layers and expressiveness, and unlock greater possibilities for traditional tonal music.

### 3 Major-Minor Chord

Bartók's Major-Minor Chord, as a highly distinctive innovative element in his harmonic language system, serves not only as a core marker distinguishing his musical style from both traditional tonal music and contemporary modernist music but also as a significant breakthrough in the development of 20th-century tonal harmony. Grounded in an interval structure of "contradictory unity," it breaks the rigid logic of the singular tonal characteristic inherent in traditional major and minor triads, achieving the organic integration of the acoustic properties of major and minor keys. From an academic perspective on chordal structure, this chord represents a typical "complex intervalal superimposition" structure, whose core feature lies in the creative reconstruction of the traditional third-stacking principle—taking the root as the foundation, it simultaneously superimposes ascending major thirds, minor thirds, and perfect fifths, forming a fixed structural paradigm of "root—major third—minor third—perfect fifth." For instance, in the C-root Major-Minor Chord (C - E - E<sub>b</sub> - G), the bright quality of E (the major third) engages in direct acoustic collision with the dark hue of E<sub>b</sub> (the minor third), while the bass support of G (the perfect fifth) neutralizes the potential chaos arising from this collision, ultimately yielding a unique harmonic effect. In Bartók's compositional practice, this chord is frequently employed to connect different tonal regions or realize emotional transitions; for example, in the harmonic progression of the second theme of his *Piano Sonata (Sz.80)*, the incorporation of the Major-Minor Chord not only achieves a seamless transition between the tonic and subdominant but also enhances the music's textural layering through its dual tonal properties:



Figure 10

In numerous miniatures from *Mikrokosmos*, the chord further functions as a crucial tool for shaping nationalistic acoustic colors, its interval structure implicitly resonating with the acoustic logic of "neutral tones" in Eastern European folk music and thereby reinforcing the works' national cultural lineage. From a theoretical perspective, the structural logic of the Major-Minor Chord exhibits profound intrinsic coherence with the other two core pillars of Bartók's harmonic system—the Axis System and polytonality: on one hand, the symmetrical layout of the internal major third and minor third, centered on the root, directly echoes the Axis System's core tenets of "pitch symmetry and functional equilibrium"; on the other hand, the coexistence of major and minor tonal characteristics within the chord essentially constitutes a concentrated manifestation of "micro-polytonality," forming a logical isomorphic relationship with the polytonal superimposition techniques Bartók adopts at the macro level. Together, they construct a comprehensive innovative

framework encompassing "microcosmic chords—mesoscopic harmonic progressions—macroscopic tonal layouts." This intrinsic coherence endows Bartók's harmonic language with a high degree of logical self-consistency, ensuring the groundbreaking nature of his innovations while avoiding formalistic exoticism, thus providing a paradigm of both theoretical depth and practical feasibility for the modern transformation of 20th-century tonal music.

With the Axis System, polytonality, and the Major-Minor Chord as its core tenets, Bartók's music has established a harmonically systematic framework that is both logically rigorous and highly innovative. The Axis System reconstructs tonal functions through the symmetrical relationships of pitches, breaking the rigid framework of traditional tonality while firmly preserving the internal logical coherence of the music. Polytonal techniques generate richly layered harmonic textures through the interplay and collision of multiple tonal centers. The Major-Minor Chord, via the juxtaposition and integration of major and minor thirds, creates a dual modal quality that mediates between major and minor keys. Collectively, these three elements have shaped the artistic core of his music: pursuing modernist innovation and development on the basis of inheriting the techniques of predecessors, while incorporating a considerable array of folk music elements.

Bartók's creative wisdom offers profound academic insights for the development of contemporary Chinese nationalist music. In the transformation of folk music materials, composers can draw on his methodology of deeply deconstructing and creatively reconstructing Eastern European folk music. They may excavate the distinctive modal patterns inherent in Chinese folk songs, traditional operas, and ethnic instrumental music, and by extracting their intrinsic universal logical frameworks, achieve the coupling of ethnic cultural heritage with harmonic innovation. In balancing tradition and modernity, composers should avoid the dual pitfalls of conservatism and rigidity as well as blind Westernization. Instead, they can pursue the unity of traditional aesthetic paradigms and modern technical language through approaches such as the artful integration of regional ethnic modes, pentatonic scales, and functional chromatic alterations. In the construction of theoretical systems, the academic paradigm formed by the mutual enrichment of Bartók's compositional practice and Ernő Lendvai's theoretical exegesis can serve as a reference. This involves systematically summarizing and academically refining the innovative practices of nationalized harmony to establish a theoretical framework that is both culturally indigenous and scientifically rigorous. In the context of international communication, his creative model of "ethnic core + modern medium" can be adapted: centering on the cultural connotations of Chinese folk music, composers may employ harmonic logic universally intelligible within the global music community to embody national spirit. This enables Chinese nationalist music to retain its distinct ethnic identity while acquiring an aesthetic foundation for dialogue with international modern music.

In essence, Bartók's artistic practice epitomizes the dialectical unity of ethnicity and modernity. Only by deeply exploring the inherent value of indigenous musical traditions, flexibly innovating the expressive forms of modern techniques, and systematically constructing theoretical frameworks can contemporary Chinese nationalist music create works that integrate ethnic essence, contemporary characteristics, and academic depth. In doing so, it will firmly establish its academic standing and cultural discourse power in the global musical landscape.

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