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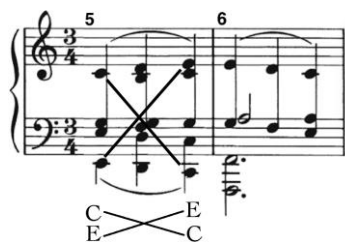
Embedded Voice Exchanges: The Gateway to Tonal and Metaphorical Transformation

ABSTRACT

The voice exchange is one of the most fundamental voice-leading techniques in tonal music. Even though voice exchanges are implicitly associated with Schenkerian analysis today, Schenker did not discuss the concept in depth. Thus, Timothy Cutler's *On Voice Exchanges* (2009) contains the most current lexicon of voice-exchange techniques. I propose one vital addition to the existing array of voice-exchange paradigms: *embedded* voice exchanges. In my view, embedded voice exchanges must be added to the existing lexicon of voice-leading techniques; they embody underlying compositional ideas in pieces by Bach, Beethoven, and Chopin. Ultimately, my exploration of this striking contrapuntal maneuver not only showcases its expressive potential, but also opens new avenues for further research and analysis.

1. INTRODUCTION

The voice exchange is one of the most fundamental voice-leading techniques in tonal music (Parker 1985, 31). A rudimentary voice exchange contains a pitch 'swap' between two voices. Consider the voice exchange in Example 1 from the second movement of Beethoven's Piano Sonata No. 4 in E-flat major Op. 7. In m. 5, the outer voice lines, C–D–E in the top voice, and E–D–C in the bass, are exchanged. The presiding harmonic progression is I⁶–I with an intervening V^{4/3} chord on the second beat. The pitch 'swap' transforms a minor sixth (C over E) into a major third (E over C).



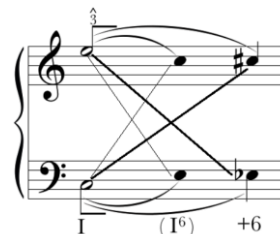
Ex. 1. Beethoven, Piano Sonata No. 4 Op. 7, II, mm. 5–6.

Following the same underlying principle, more complex voice exchanges can be chromatic or doubly chromatic, and they can govern longer spans of tonal music as pillars of tonal structure. In sonata expositions, for example, a chromatic voice exchange can facilitate the motion from the tonic to the dominant. For example, two of Roger Kamien and Naphtali Wagner's (1977) three voice-leading paradigms for 'modulat[ing] from I to V in the exposition' contain doubly chromatic voice exchanges. Carl Schachter (1983), Edward Laufer (1981), and David Beach (1994) have also demonstrated how chromatic and doubly chromatic voice exchanges are far from uncommon in classical-period expositions.

Timothy Cutler (2009) outlined the most current lexicon of voice-exchange paradigms in his article 'On Voice Exchanges'. Schenker (1979) left us only a preliminary glance into the vast

array of voice-exchange techniques, but his analytical studies opened the door for his followers to explore voice exchanges more extensively.¹ Cutler catalogues long-range voice exchanges, erroneous voice exchanges, motivically-significant voice exchanges, and some unique examples of exchanges with 'inverted cadential six-four chords'. I propose one vital addition to the existing array of voice-exchange paradigms.

Embedded voice exchanges possess a unique expressive potential because they unfold two exchanges from the same point of departure (see Example 2, hypothetical model). After one voice exchange emerges as a tonal/structural goal, a second exchange materializes later, superseding the first and transforming the initial tonal process.²



Ex. 2. Embedded voice exchanges (hypothetical model).

The underlying idea is to transcend one voice-leading goal with a second exchange that originates from the same starting pitches. Therefore, unlike any voice exchange technique in our current lexicon, embedded voice exchanges can signify a particularly transformative poetic or compositional idea. My analyses explore embedded voice exchanges in the 'Crucifixus' of Bach's B-minor mass, the first movement of Beethoven's 'Tempest' Sonata (Op. 31 No. 2), the first movement of Beethoven's Ninth Symphony (Op. 125), and Chopin's E-flat minor Prelude (Op. 28 No. 14). Some embedded exchanges symbolize metaphorical ideas while others possess a striking motivic significance.

2. J. S. BACH, MASS IN B MINOR, 'CRUCIFIXUS'

In the 'Crucifixus' from Bach's B-minor mass, a pair of embedded voice exchanges materializes as a gateway for tonal as well as metaphorical transformation. This passacaglia movement features thirteen iterations of the 'lament' bass in

¹ Schenker describes 'exchange of voices' (*Stimmentausch*) in paragraph 236–7 and Figure 105 of *Free Composition*. As I noted, the Figure 105 examples do not fully elucidate the concept of voice exchange in the modern Schenkerian sense.

² The second exchange need not contain any chromatic inflection. In fact, it could involve the same pitches as the first. As I will show, the second exchange transcends the first in terms of structural significance, and it is often a chromaticized or altered version of the first.

the continuo part — the descending fourth, E–B, is filled in chromatically: D–D-sharp–D–C-sharp–C–B.

In the beginning of the movement, Bach uses a single exchange. The minor sixth (C over E) that emerges when the soprano voices enter becomes a major third (E over C) as the bass descends and the alto voices enter in mm. 6–7.

Bach makes vital alterations to the bass line, harmony, and voice leading in the final five measures of the movement (mm. 49–53). In m. 51, the descending path of the ‘lament’ bass line is reversed — the C-natural never completes the descending fourth, E–B in E minor. Instead, the C rises, and the ascending line C–C-sharp–D becomes a $\hat{4}\text{--}\hat{\sharp 4}\text{--}\hat{5}$ bass line for a cadence in G major. While the reversal of the lament bass may convey its own sacred significance, in my view, the embedded voice exchanges catalyse the turn to G major. The first exchange emerges in mm. 49–51: C over E becomes E over C. However, in the last beat of m. 51, not only does the bass ascend to C-sharp, but the E-natural in the soprano part is inflected to E-flat. In that moment, I hear the second voice exchange transcend the first, transforming the minor sixth, C over E, into a diminished third, E-flat over C-sharp. In my view, the embedded voice exchanges represent the *means through which* the tonal transformation occurs.

Collectively, the embedded voice exchanges, the reversal of the lament bass, and the concluding cadence in G major metaphorically evoke the significance of Jesus’ death in Christian theology. From a Christian perspective, Jesus Christ died *for us* (Latin: *pro nobis*); through his sacrifice on the cross, humanity can achieve redemption. Personally, I hear the last beat of m. 51 as the most striking part of the movement, a miraculous tonal event that arises via embedded voice exchanges.

3. BEETHOVEN, ‘TEMPEST’ SONATA, OP. 31 NO. 2, I

The first movement of Beethoven’s ‘Tempest’ Sonata presents various analytical challenges in terms of both form and tonal structure.³ Unlike the Bach, the embedded voice exchanges in the ‘Tempest’ do not convey an element of metaphorical transformation. However, my analysis of striking *motivic* connections demonstrates how the embedded voice exchanges serve as a central compositional idea in the idiosyncratic sonata-form movement.

In the exposition, instead of moving from the tonic (D minor) to the relative major (F major), the key of the subordinate theme is the minor dominant (A minor). The arrival of the minor dominant is in m. 55 in first inversion. The root-position A minor harmony emerges eight measures later (m. 63), and thus, in Schenkerian terms, there is an auxiliary cadence (C–E–A bass arpeggiation in mm. 55–63). What is the structural significance of the minor dominant in the exposition of this minor-mode sonata movement? Ultimately, I hear the minor dominant prolonged in the subordinate theme as passing because of the D major six-three harmony that begins the development (m. 93). The compositional idea underlying mm. 3–93 is a chromatic voice exchange that prolongs D harmony. The low F-sharp in the bass at m. 93 is the lowest

note in the piece thus far and the slow arpeggiated figuration recalls the opening gestures of the movement, forging both a thematic as well as a tonal connection to the opening measures.

Despite its immensity, that exchange is the ‘first exchange’ in a larger pair of embedded voice exchanges. The second exchange surfaces in the recapitulation. As in many classical-period sonatas, the second theme is transposed down by fifth in the recapitulation, so the first-inversion minor dominant from m. 55 returns as the first-inversion minor tonic in the recapitulation (m. 185). Therefore, a massive diatonic exchange (mm. 3–185) surpasses the first, large-scale chromatic exchange (mm. 3–93).

The embedded voice exchanges in the ‘Tempest’ sonata are especially noteworthy because they epitomize central tonal and motivic ideas from throughout the movement. For example, one central motive is the C-sharp–E–A arpeggio (mm. 1–2). In particular, the auxiliary cadence in the exposition (C–E–A) unfolds an inflected version of the motive. Furthermore, in the recapitulation, an enlargement of the C-sharp–E–A motive in the bass bridges over what appears to be the return of the deep-level tonic *Stufe* (D minor return, mm. 143–149). As a result, the significance of the motivic enlargement cannot be understated. In a more conventional sonata-form structure, the return of tonic harmony at the recapitulation re-establishes the tonic *Stufe* in the bass as well as the *Kopft* in the top voice. In this movement, the voice-leading surpasses the return of the deep-level, structural D in the bass with: 1) the enlargement of the arpeggio motive; and 2) the large-scale embedded voice exchanges.

Another striking motivic connection that supports my interpretation of voice leading in the ‘Tempest’ sonata emerges in the D minor *Allegro* theme (mm. 3–6). Indeed, the main theme contains a pair of embedded voice exchanges that are a microcosm of the voice leading that occurs on the grand scale. In mm. 3–4, a chromatic exchange supersedes the diatonic exchange, and over the course of 180+ measures, the opposite unfolds on a much broader scale. One might propose that a tonal problem nested within the opening *Allegro* theme is diatonically ‘corrected’ (or even overcome) by the large-scale superimposed exchanges.

Given the motivic connections between the opening gestures of the movement and the tonal processes that develop over the movement as a whole, I hear the embedded voice exchanges as vital to the overall formal-tonal plan of the ‘Tempest’. Even though many analysts have explored this movement in detail, none have discussed the embedded voice exchanges that, in my view, cannot go unnoticed.

4. BEETHOVEN, SYMPHONY NO. 9 OP. 125, I

The first movement of Beethoven’s Ninth Symphony also contains a pair of embedded voice exchanges — but on an even larger scale. The design recapitulation (m. 301) begins with a thunderous first-inversion D major chord. In my view, the unique six-three harmony at the reprise connects to the main theme via a massive chromatic voice exchange (mm. 19–301). Furthermore, it subverts the more prototypical root-position tonic harmony that could have occurred at the recapitulation. As in the ‘Tempest’, the design reprise fails to definitively re-establish a deep-level, root-position tonic harmony.

³ Discourse on approaches to the unique form and tonal structure of the ‘Tempest’ include, but are not limited to, Burstein (2009), Caplin (2009), Hepokoski (2009), and Schmalfeldt (2011).

As I show in Example 3 (below), the exchange that surfaces in m. 301 is part of a pair of embedded voice exchanges. The second, superimposed voice exchange materializes only a few measures later (m. 315). The D minor six-three chord emerges as a second pillar of tonal structure in the recapitulation and an immense *diatonic* voice exchange surpasses the chromatic exchange. Indeed, the second exchange re-asserts the tonal prominence of D minor for the end of the first movement.

Ex. 3. Beethoven, *Symphony No. 9 in D minor Op. 125, I*, mm. 19–419, voice-leading graph.

The embedded voice exchanges are especially striking in the Ninth Symphony. The D minor and D major harmonies in the exchanges epitomize the modal conflict that unfolds over the course of the entire symphony. The chromatic voice exchange in the first movement is a foreshadowing of D major's tonal victory in the finale ('Ode to Joy'). Ultimately, D minor's tonal triumph in the first movement is only pyrrhic. The superimposed exchanges also typify the F-sharp vs. G-flat paradigm — a voice-leading problem that recurs throughout the movement in various guises. (For example, the bass in m. 301 ultimately descends to F in m. 315, sinking like a G-flat. Also, in mm. 120–127, multiple G-flats ascend as if they were F-sharps in the upper string parts.)

A close reading of the development section also points to the embedded voice exchanges as vital tonal goals in the movement. A stepwise bass pattern, C–B-flat–A–G–F-sharp, spans a large portion of the development and leads into the recapitulation as a goal (mm. 210–301). However, the F-natural in m. 315 could also be interpreted as the goal of this stepwise descent (i.e. C–B-flat–A–G–F). In mm. 319–323, the foreground motives draw attention to the duality. In Example 4, I show two foreground motives that not only summarize the linear motion in the bass of the development section, but also highlight the two tonal goals of the embedded voice exchanges: F-natural and F-sharp.

Ex. 4. Beethoven, *Symphony No. 9 in D minor Op. 125, I*, mm. 319–323, foreground motives.

The embedded voice exchanges in the first movement of the Ninth epitomize the modal conflict and pervasive tonal issues

in the symphony as a whole. Perhaps the presence of embedded voice exchanges in *two* of Beethoven's D minor sonata movements is more than just a coincidence, but that is not my focus here.

5. CHOPIN, E-FLAT MINOR PRELUDE, OP. 28 NO. 14

Although the embedded voice exchanges in the Beethoven examples are the most striking, Chopin's E-flat minor prelude suggests that the technique extends into the nineteenth century. Unlike the two Beethoven sonata movements, in which the overlaid voice exchanges materialize on a massive scale, the Chopin prelude is rapid — a typical performance lasts less than thirty seconds. Overall, the exchanges in the Chopin prelude represent a more evolved manifestation of the same voice-leading techniques evident in the Bach and Beethoven movements.

The first four measures of the prelude contain a pair of embedded voice exchanges that foreshadow the more striking, complex voice exchanges that emerge later. In the first phrase, the third, G-flat over E-flat (m. 1), becomes E-flat over G-flat (m. 4) then shortly thereafter, E-natural over G-flat (m. 4). The next four measures (mm. 5–8) emulate the melodic material from the first four bars, but transpose it to the tonal level of the dominant. The linear motion in the bass descends B-flat–B-double-flat–A-flat–G–F–E, seemingly destined to return to the tonic E-flat. However, the bass instead moves to G-flat with E-double-flat above, forming a six-three chord that I hear as a result of a larger-scale chromatic voice exchange (mm. 1–9). The larger exchange occurs in a two-measure hypermetric interpolation (mm. 9–10), because the restatement of the initial melodic ideas in E-flat minor occurs in m. 11 and comprises the last eight measures (plus a beat).

In the reprise at m. 11, E-flat is re-established in the bass, and the top voice begins to ascend from B-flat again. In m. 14, just like in m. 4 of the first phrase, as the top voice reaches E-double-flat, the bass arrives on G-flat, thus creating a split-second reminiscence of the exchange from mm. 1–9. However, in the reprise, the top voice continues higher, E-double-flat–E-flat–F-flat–F-natural, and the bass ascends from G-flat to G-natural (see Example 5). The F-natural, which is the peak of the ascent in the top voice, is an enharmonic E-sharp over the G-natural in the bass. Thus, the goal of the first exchange (E-double-flat over G-flat) is surpassed in such a way that the goal of the second exchange necessitates enharmonic respelling: E-sharp over G-natural, written as F over G. I conceptualize Chopin's embedded voice exchange paradigm as a more evolved, or perhaps contorted, version of the same tonal principle that underlies the Bach and Beethoven examples.

Ex. 5. Chopin, Prelude in E-flat minor, mm. 14–18.

The evolution of embedded voice exchanges into the mid-nineteenth century repertory is not the focus of this study, but perhaps a brief exploration of the Chopin prelude might demonstrate that embedded voice exchanges may not be limited to Bach and Beethoven.

6. CONCLUSION

Embedded voice exchanges can unlock particularly transformative tonal processes because they unfold two exchanges from the same point of departure. The second exchange has the same contrapuntal origin as the first, but transcends it in terms of structural significance. In my view, embedded voice exchanges play a vital tonal *and* metaphorical role in the conclusion of the ‘Crucifixus’ from J. S. Bach’s Mass in B minor. In *two* of Beethoven’s D-minor sonata movements, substantial pairs of large-scale embedded exchanges epitomize tonal and motivic ideas that pervade the ‘Tempest’ sonata and Symphony No. 9, respectively. The idea of surpassing a first exchange with a second exchange also surfaces in Chopin’s E-flat minor prelude; albeit as extreme evolution of the same underlying principle. Ultimately, I hope that my analyses of embedded voice exchanges can open new avenues for further research and allow us to explore the expressive potential of this specialized voice-leading technique.

KEYWORDS

Voice Exchange, Bach, Beethoven, Chopin, Schenkerian Analysis.

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