Structural Analysis Through Ordered Harmony Transformations
in the Early Works of Arnold Schoenberg

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Abstract

Arnold Schoenberg’s early period (1894 - 1907) is traditionally considered “Romantic” and discussed alongside late nineteenth century composers such as Hugo Wölf and Alexander Scriabin, despite its consistently challenging the limits of tonality. Because the music in Schoenberg’s second period (1908 - 1922) is generally described as “freely atonal,” a prelude to his dodecaphonic system, this first period is often discussed similarly as “atonal” or “pre-atonal.” As a consequence, a repertoire of early Schoenberg works slip through the analytic cracks for being “too chromatic” for nineteenth century analysts and “too tonal” for theorist of atonal and serial works.

Although music in his later period is indeed non-tonal, I believe Schoenberg’s early works to be an extension of chromatic tonality that is colored by the possibility of its becoming, not dependent upon it. This belief stems from the music in question’s many gestures that quite simply sound tonal but may not be functional (that is, a sonority may be aurally understood as a dominant seventh although it may not resolve in a manner proceeding by tonal expectations), as well as the abundance of triads that regularly permeate the music in this period.
This document proposes both a method by which Heinrich Schenker’s analytical system may be broadened to include organic atonal works as well as proposes a new system by which these works may be reduced to one of several possible tonal structures. The system presented herein is intended as a compositional tool by which a tonal structure may be composed-out by means of a variety of Ordered Harmony Transformations. By utilizing this system in reverse—as a tool for analysis rather than composition—the analyst is able to generate through reduction a harmonic paradigm that suggests a connection to a particular tonal structure as perceived by the listener. This system is open-ended so as to present infinitely many possible reductions of a single piece, a necessity in dealing with an individual’s particular aural perception which will likely vary depending upon the audience.
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Music theorists face a daunting task when asked to coherently and cohesively analyze the early works of Arnold Schoenberg. Given Schoenberg’s propensity to compose works that slip into the nebular gap between tonality and atonality during this period, such analytical observations might on the surface seem both useless and fundamentally academic. Still, it seems nearly impossible to listen to any of the opuses within this period without sensing the presence of a basic, fundamental organizing structure upon which the music is generated; a structure that allows the listener to perceive the ending of a given work as the resultant of the potential set forth by its beginning. Yet while the presence of said structures seem indisputable, the tools employed for their extraction are less easily chosen as the structure governing the composition of Opus 4, for example, appears to be significantly more dissimilar to that governing Opus 20 as compared to two similar works by Brahms or Wölf (whose music often seems like a chromaticized evolution of itself more than a change of type of fundamental structure). Due to the absence of a cohesive analytical system that may be employed to equally significant affect across each piece within this spectrum of musical works, theorists are left to choose from two similarly mis-applied systems of theory.
The first option involves the discussion of one of the early Schoenberg works using a function theory vernacular as if the work was simply a chromaticized version of a more Romantically tonal piece. While this system may seem applicable throughout the first dozen or so opuses, it loses value in the later works of the period. These opuses avoid typical functional, tonal gestures to such an extent that for a functional analysis to be even slightly coherent, theorists must assert a underlying harmonic sense that is so far removed from the music itself that such analysis becomes more an exercise in analyzing a hypothetical, second-rate, Schoenberg-like score than Schoenberg’s music itself.

Furthermore, this type of analysis offers little pedagogical value when comparing an early score to a later example except when attempting to see how dissimilar a later opus is from an earlier. In this case, the system’s inherent prejudice toward early, quasi-tonal works wins out forcing the later, “atonical” works to appear less cohesive, or less affective despite the listener’s aural interpretation of the work.

The second method, which often seems favorable to analysts of Schoenberg’s early music, requires discussing the music by way of a series of prevailing pitch-class sets that serve to organize a sort of structural set. In a given piece, for instance, pitch-class set [026] might seem a sort of “alpha” set that bookends the work and [015] a goal-intended “beta.” This system is problematic for a number of reasons: the octaval equivalence that a set-class analysis utilizes assumes, as its name suggests, that all Ds are created equal. The system, therefore, removes the possibility of melodic ascents, bass descents, or inner-voice transformations having any structural value apart from in timbre.
Furthermore, it becomes difficult for a set-class analysis to explain textural development and melodic/harmonic motion except in the instance of multiple, simultaneous set-class unfurlings. While this system does provide a simple, efficient method for distinguishing form (and therefor formal structure) throughout the later works, it offers very few advantages for assessing and explaining the earlier works which are much more rooted in key-centers and subsequent chromatic embellishments of a tonal progression than the later works which tend more toward their “atonical” offspring. As a result, this system is just a ill-applied in comparing the early works to those later (within the same “early” period) as was the case with the aforementioned functional approach.

Although neither of the two previously discussed conventions can be used to adequately illuminate an organic, fundamental structure throughout the entire spectrum of musical works in question while offering any significant pedagogical (or compositional) value, they each illuminate different aspects of the score at hand and, as such, should not be discarded outright. As such, I propose a Schenker-inspired analytical system that relates to each of these conventions while creating an adapted amalgamation that works as a cohesive theory for Schoenberg’s early works by revealing a possible fundamental structure and showing said structure’s expansion and composing-out to the work in its ultimate form by means of a series of interconnected levels. Because the restrictions Schenker puts upon his own system are quite specific, ultimately yielding a theory that is ill-equipped to discuss a work by Schoenberg (as it was never intended), I propose
adapting and elevating the following three fundamental Schenkerian postulates so as to create a more broad theory that reaches comfortably into Schoenberg’s musical palette:

1) The triad is the basis for composition.¹

2) The structural harmonic progression and basic melodic line are expressions in time of the fundamental triad.²

3) All works consist of various levels of (sub-) structure as evident via contrapuntal and harmonic prolongation.

These three postulates (which will be discussed in greater detail in later chapters) allow analysts to adopt a Schenkerian perspective while looking into the early works of Arnold Schoenberg without supplanting or dismissing other analytical theories. These theories, as will be discussed, offer various amounts of unique perspective and insight into the works being discussed herein. However, only by examining a work by Schoenberg using the three aforementioned postulates does a governing, fundamental structure become easily discernible and, furthermore, made relevant.

¹ This will be adapted in a future chapter to read “A definite sonority is the basis for composition” so as an “uncommon” triad or seventh chord may be employed in place of a strictly major or minor triad.

² Sonority, see above.
Chapter 1: What Fell Through the Cracks: Approaching Tonality’s Breaking Point

In the 1920s Arnold Schoenberg derived a compositional process allowing for the standardized use of all twelve chromatic pitches known as the 12-tone, or 12-gamut system. This development marked a radical departure from tonality and the end of a musical vocabulary dependent upon major and minor keys. Overcome with excitement for his breakthrough, Schoenberg declared that his system would assure the supremacy of German music for another hundred years.

Despite the polarity with which it was received, the 12-tone system was inarguably Schoenberg’s most influential contribution to music composition and with it music theory. Nearly a century later, music students around the world hunt 12-tone rows in Schoenberg’s piano pieces and songs with such regularity that the process has become amalgamated with suffering courses in music-inspired crossword puzzles or word searches. The pedagogical value is slim. “This is the way the music was composed” offers little about how or why it manages to exist beyond the fact that it simply does. An unfortunate connection is easily forged with thanks in large part to dimwitted instructors and unmotivated students: to analyze music one must be able to section it out into pieces and be able to identify those slices with some name that distinguishes it from others. This
fallacy began to brew as students were farmed into music programs theory programs that stressed ascribing Roman Numerals to a classical sonata, rather than analyzing it; understanding it.

What occurs in between is almost immaterial. By convincing beginning theorists (if such a diluted title can even still be ascribed) that music comprises a few dozen chord-types (or better still, harmonies - as if these are one in the same) that are strewn about it some standardized order, and that analyzing said music consists of hunting through a musical score and pointing out each of these harmonies, music teachers have set their students on a path for a life of musical ineptitude wrought with a sea of shallow, unguided performances. This path is, of course, ultimately confirmed by the 12-tone hunt that marks the end of an undergraduate theory curriculum. What began by searching for I’s, V’s, chord- and non-chord tones is bookended by similar searches for P0’s, RI5’s, set 4-3’s and 3-9’s.

The proverbial musical crossword itself isn’t entirely without pedagogical merit. Applying Roman Numerals to a score forces the analyst to identify similarities: a V-I harmonization at the closing of a phrase in C-Major is the same or similar to a V-i closing in F-Minor therefore both are “cadences” and both may be “authentic.” Pointing out these similarities, therefore, forces students to make a decision about the differences: a IV-I harmonization at a closing in C-Major does not match the description of an “authentic cadence.” “How are they different?” they might ask, “how are they the same?” With these
questions and those drawn from their resulting answers, the surface of the music does, indeed, begin to be scratched.

The same might be said of the 12-tone hunt. When a row spans multiple instruments, it should become apparent that a voice (in this case a line, or a row) is not isomorphic to a part or an instrument. How the composer generates six (for example) musical parts by interweaving only two or three voices does, in fact, begin to lead toward an understanding of the music’s governance as well as providing a glimpse into the composer’s mind in regards to how the piece in question was composed.

Here a conundrum begins to present itself. Because it may be impossible to know how or why a composer made certain choices in producing a piece of music without a plethora of related letters, journals, and notes, a good analysis should explain how a piece might have been composed and in doing so justify how a performer might choose to interpret the score. This is, of course, rather far removed from simply identifying materials present in a score. Circling sets in an atonal piece, for instance, is no different from circling all of the D’s in a tonal one. These things describe a score, they do not describe the piece.

The exception to this comes when we have a composer who doubles as analyst, providing both an explicit system for the process by which a work was composed as well as a score for the work itself. Performing an analysis of a work by Hindemith using
Hindemith’s analytical tools makes perfect sense. This is not to say that undergoing search for 12-tone rows in a Hindemith work is forbidden. Such analysis may in fact prove to be fruitful. However, any trinkets worth mentioning that may be uncovered in the process would have the potential to reveal an intriguing fact or feature of the work in question, but would not explain how it was composed, or better still how it exists.

Arnold Schoenberg was born in 1874. Samuel Schönberg, his father, came from a German-speaking neighborhood in Pressburg, which is now Bratislava, Slovakia (Arnold dropped the umlaut from his last name to distance himself from what had begun to take place in Germany when he moved to America in 1933). Samuel Schoenberg moved to Vienna as a young man to make a living as a shopkeeper. There he met and married Pauline Nachod, who came from a family of singer. The couple lived modestly and did not own a piano so their son (Arnold) learned much of the classical repertoire from a band that performed in a nearby coffeehouse. Arnold taught himself several instruments and played in a string quartet. He learned the theory and musical forms from a musical encyclopedia to which he subscribed, waiting for the S volume to arrive before ever composing a sonata.

Schoenberg managed to learn so much music through his various informal educational settings (as much as a local coffeehouse and neighborhood string quartet may be considered “educational”) that he had no need for formal tutelage. Still, he took a few
lessons from Alexander Zemlinsky, a composer whose music was said to be lyrical and well-crafted, similar to the music of Mahler and Strauss. Schoenberg eventually married Zemlinsky’s sister, Mathilde, who would set off the great emotional crisis of his life a few years later.

After working as a bank clerk, Schoenberg began taking on various odd musical jobs including conducting a workers’ chorus, orchestrating songs and operettas, and writing songs of his own. In 1901 he moved to Berlin to serve as the musical director for the Überbrettl cabaret. However, after the theater’s mastermind, Ernst von Wolzogen quit due to financial constraints in 1902, Schoenberg returned to Vienna. Glimmers of the cabaret would present itself in his later music, particularly in 1912 when the composer penned Pierrot Lunaire where the singer drifts from singing to speaking in what would later be known as sprechstimme. If Schoenberg characterized this, his later atonal music as expression of resistance to the popular mainstream, the early days of his ideal were classified by something significantly less concrete.

The early works of Schoenberg seem always to come as a rather pleasant surprise to first-timer audiences who are expecting something of a painstakingly murderous exercise in atonality. Says Alex Ross in his Pulitzer Prize nominated book *The Rest is Noise*, “the music exudes a heady, luxurious tone, redolent of Klimt’s gilt portraits and other Jugendstil artifact.” ³ Ardent Straussian gestures mix with lush textures that bear an

entirely non-coincidental resemblance to Debussy and Wolf. The music is wrought with periods of suspended animation in which the music itself seems fixed on a single chord. The chamber tone-poem Verklärte Nacht (Transfigured Night), composed in 1899, ends with twelve measures of shimmering D-Major, the root of the harmony ever-pedaled in the bass. The titan Wagnerian cantata for vocal soloist, chorus, and large orchestra, Guerre-Lieder (War Songs) begins with a long prolongation of E-Flat Major imitating the opening of Wagner’s Ring Cycle. Yet Schoenberg’s work maintains a sharp disconnect from Romanticism. Until now, unexplained dissonances regularly appear on the music’s surface while chromatic lines intersect one another in a jumble of counterpoint preventing chords of longing and suspension from ever resolving when and how they are expected.

Even in his early, heavily Romantic-influenced years, Schoenberg encountered a great deal of opposition, but he also received regular encouragement from members of the highest musical circles, no matter how exasperated with him his music left them. “The Mahlers regularly invited him to their apartment near the Schwarzenbergplatz, where, according to Alma, he would incite heated arguments by offering up ‘paradox of the most violent description.’ Afterward, Gustav would say to Alma, ‘Take good care you never invite that conceited puppy to the house again.’ Before long another invitation would arrive.”

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Mahler seemed to find Schoenberg’s music mesmerizing and at the same time, entirely maddening. “Why am I still writing symphonies,” he once exclaimed, “If that is supposed to be the music of the future!”

After a rehearsal of Schoenberg’s First Chamber Symphony, Mahler asked the performers to play a C-Major triad after which he thanked them and walked out. Still, Mahler made a show out of applauding even the most controversial of Schoenberg’s works. Strauss seemed to find Schoenberg equally fascinating. The two composers met during Schoenberg’s first stint in Berlin—Wolzogen, the director of the Buntes Theater, had collaborated with Strauss on his second opera, the comedy Feuersnot—and Strauss helped his younger colleague located other sources of odd jobs until Schoenberg was able to return to Vienna. When Schoenberg later founded the Society for Creative Musicians in Vienna, Strauss accepted an honorary membership.

Schoenberg withheld from Strauss the impertinence that he showed to Mahler. “I would like to take this opportunity to thank you, honored master,” the composer wrote obsequiously in 1903, “once again for all the help you have given me at a sacrifice to yourself in the most sincere manner. I will not forget this for the whole of my life and will always be thankful to you for it.”

As late as 1912, Schoenberg still felt very nervous in Strauss’ presence: “He was very friendly. But I behaved very awkwardly . . . I stammered and surely left the impression of a servile devotion on Strauss.”

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6 ibid, 30.
told himself that he should have been more of a “Selfian”—self-determined and headstrong as Strauss himself.\(^8\)

In May of 1906, Schoenberg had gone to see Salome in Graz. Beforehand, Schoenberg painstakingly studied the vocal score, which Mahler had given to him. It remained on his music stand for some time, open to the first page. “Perhaps in twenty years’ time someone will be able to explain these harmonic progressions theoretically, Schoenber told his students.\(^9\) Aspects of Salmo’s fractured tonality show up in the First Chamber Symphony, which Schoenberg wrote that summer. Yet this new piece was very different in both tone and style from Strauss’s opera. Its strenuous working out of small motivic figures recall the Viennese practice in the classical period from Haydn to Beethoven. In a similar and deliberate rejection of the fin-siecle grandiose style, the Chamber Symphony was scored for a small orchestra comprising a mere fifteen instruments. Says Ross, “Schoenberg was throwing off excess baggage, perhaps in anticipation of lean years to come.”\(^10\) This process of condensation ultimately let to Pierrot Lunaire in which the soloist is accompanied by an ensemble of a pair of winds, strings, and a piano.


\(^9\) Alex Ross, *The Rest is Noise* (New York: Farrar, Straus and Giroux, 2007), 52

\(^10\) ibid
Just as Debussy imagined new timbres and textures while perusing images in Verlaine and Mallarmé, Schoenberg let poetry be his artistic guide. Although his greatest influence seemed to be his discovery of the poetry of Stefan George, Schoenberg seemed to relish the erotic visions in Richard Dehmel’s work, the poet who furnished the story Verklärte Nacht. Following Strauss’ suggestion, he also investigated the plays of Maeterlinck; and in 1902 and 1903, he fashioned an orchestral tone-poem on the subject of Maeterlinck’s Pelléas et Mélisande, allegedly unaware that Debussy had just completed a setting of the same text.11 Schoenberg tended to explain the music in his earlier works as the logical, rational outcome of an historical process. “Perhaps because he was suspected of having gone mad, he insisted he had no choice but to act as he did. To quote...his 1910 program note, ‘the music was the product of necessity’.”12

Instead of separating himself from the titans of the past, from Bach, Mozart, Beethoven and Brahms, Schoenberg presented himself as their heir, and pointed out that many now canonical masterpieces had caused confusions when they first appeared (an argument which failed to impress some audience members who felt that they were being treated as idiots and that from the fact that some great music was once rejected it does not follow that all rejected music is then “great”). Schoenberg ultimately cast himself in an almost political role, speaking about “emancipating the dissonance,” as if his harmonic

language consisted of members of an enslaved people rather than a set of striking chords. Alternatively, he imagined himself as a musical scientist engaged in serious, objective work: “We shall have no rest, as long as we have not solved the problems that are contained in tones.”

13

It is with this final point that we shall return to the earlier discussion regarding Schoenberg’s creation of his 12-tone system for it is hear that problem realized by the Hindemith example becomes explicitly clear. Regarding music that was composed by Schoenberg after he derived his 12-tone system in the 1920s, it is both right and, in fact, necessary to apply a 12-tone analysis in order to grasp the inner-workings of the piece. A theorist need hardly concern himself with connecting this music to the works of Beethoven and Mozart (which Schoenberg insists begins his musical lineage) for such connections have been made by the composer himself in the process of outlining his system.

Finally, here is the problem: Schoenberg composed some two-dozen opuses between his Zwei Gesänge in 1898 and the announcement of his 12-tone system in the 1920s. How were these composed? How do they, as independent organic beings, exist?

Analytically, these early Schoenberg works exemplify a large-scale Ramelian double-employment. The works leading into them, e.g., Brahms Quartets and Symphonies may be very nicely understood through a series of layered (Schenkerian) analyses. The works proceeding them, e.g., Schoenberg’s own 12-tone literature, are easily explained through 12-tone and even set-class analysis. Yet for the works themselves, these two systems equally successful through their failures. A structural theorist might say that Schoenberg’s early works are mere extension of Brahms, yet his tonal language is so far removed from the land of Tonic-to-Dominant that a strict Schenkerian application seems futile. A serial theorist might suggest that these early works are in-fact a precursor to the later ones, and as such should be viewed analytically through the lens which begat their own evolutilonal eventuality. Such analyses, unfortunately, do nothing to explain how we as an audience perceive the pieces themselves and in many cases seem to subvert our own aural understanding just as modern Schenkerians assert structures that they might like to see but surely cannot hear. I therefore propose a system that is inspired by Heinrich Schenker’s theories by evolving some of the theorist’s principle elements in order to account for the unique harmonic language and tonality inherent in Schoenberg’s early works which, until now, have fallen through the cracks of analytic understanding. In doing so, I hope to offer various interpretations of a selection of these pieces with the understanding that they exhibit a language which is an extension of tonality thereby the beginning of atonality and not the other way around.
Chapter 2: Coming to Terms with Tonality

Most theorists are likely to agree that Rameau was the founder of harmonic theory. In his many theses, Rameau attempted to synthesize a unified theory of tonal harmony based upon the *corps sonore*. Whether or not he succeeded in creating a truly systematic, unified theory of harmony may be debated. Nonetheless, his output laid the groundwork for a number of compelling theories by theorist who would advance them in a variety of directions. Because a comprehensive history of Ramellian theory would be both lengthy and largely unrelated, I should like to focus the content of my discussion on the evolution of harmonic theory. This is still an expansive topic given the significant changes in harmonic vocabulary that occurred from 1800 to 1900, extending into Schoenberg’s destabilization of the tonal system. As this body of work is still too large an entity to effectively summarize herein, I will limit my discussion to the advancement of a German harmonic theory, a tradition that encompasses a great deal of work throughout the century while preparing the way for Schoenberg’s systematic work. Within this tradition, three sub-theories should be discussed for the manner by which they have evolved and how each view sheds its own light on Schoenberg’s eventual work: scale-degree theory, fundamental-bass, theory, and function theory. While all of these intersect, I find it most prudent to discuss them as separate entities through the lens of a few
representatives of each field, namely: Vogler and Weber for scale-degree theory, Sechter and Mayrberger for fundamental-bass theory, and Riemann for function theory.

As David Bernstein reminds us in his article *Nineteenth-century harmonic theory: the Austro-German legacy*, “one of the central tenets of Rameau’s harmonic theory is that every chord is generated from some fundamental sound belonging to a scale degree of a given key.”

Thorough-bass pedagogues supply rules and guidelines through which performers may select tones to be performed above a line of unfigured bass. Said rules and guidelines require an understand of which of a several possible harmonies may be appropriate at a given time when considering the chord in question’s placement along a harmonic trajectory thereby insinuating a growing awareness of tonal relations. These same pedagogues authored various thorough-bass manuals which regularly included suggested harmonizations for ascending and descending tones of the major and minor scale, referred to as the “rule of the octave.”

Rameau was a significant contributor to the development of such scale-degree theory. For example, in his *Traité de l’harmonie*, Rameau differentiates between types of seventh chords, referring to harmony which supposes a seventh above the triad harmonizing the fifth scale degree as the dominante-tonique and those that appear above non-dominant scale-degrees as simply dominante. The use of an added-sixth chord, on

the other hand, is restricted to the fourth scale-degree. Still, theorists argued that such distinctions did not constitute a complete theory of chordal scale degrees since they fail to draw connection or make distinctions between all chords built upon the notes of the diatonic scale. The first such complete scale-degree theory comes in a series of works by George Joseph Vogler.

Vogler (1749-1814) believed that all musical proportions could be derived from the existence of a vibrating string. Unlike Rameau (who constrained his use of the overtone series when governing harmonic construction to the first six partials), Vogler reached through the sixteenth partial in when generating his system. Through these tones, Vogler was able to sketch out a “natural” minor scale (eighth through sixteenth partials) which contained both a raised fourth and a natural seventh. He then formed triads based on the resulting scale-degrees. In so doing, he considered every major, minor, and diminished triad that could be placed over a scale degree “fundamental.”  

Furthermore, Vogler found it possible to explain virtually every tone within even the most complex simultaneity within the context of a single triad by means of several categories of displacement: suspension, anticipation, appoggiatura, etc. This system of reduction is particularly noteworthy within this context for its strong connection to both harmony and voice-leading which therefore anticipates Heinrich Schenker’s theory of structural levels.

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16 ibid
Vogler analyzed harmonies according to their behavior which pivoted around his understanding of the chromatic leading tone as it applied to cadences. He lists ten such cadences possessing various degrees of closure: I-V, V-I, IV-I, VII-I, and #IV-V in major; V-I, I-V, #VII-I, #IV-V, and II-V in minor.\footnote{David W. Bernstein “Nineteenth-century Harmonic Theory: The Austro-German Legacy.” In \textit{The Cambridge History of Western Music Theory}, ed. Thomas Christensen, 778-811. (Cambridge: Cambridge University Press, 2002), 780.} “The diminished chord on #IV in major,” says Bernstein, “and the irregular triad on #IV in minor are both derived from Vogler’s ‘natural’ scale, and are analogously cadential to the dominant as the leading-tone chord is to the tonic.”\footnote{ibid.}

Modulation was a central issue within Vogler’s theory. He claimed that modulations were best left to keys separated by the addition or subtraction of only one sharp or flat. Thus, from C Major, one ay modulate to only five keys: A Minor, G Major, E Minor, D Minor, and Fa Major. However, he understood and discussed the apparent need to modulate to keys beyond those within this restriction. Within the notion of modulation, Vogler describes chords as having “multiple meanings.” The first occurs when a chord on a given scale degree is reinterpreted as belonging to a different degree of a new key. The second takes place through enharmonic reinterpretation and
respelling thereby allowing its resolution to change. Vogler’s contemporaries criticized his system as suffering from too many logical and empirical problems (his modulation restrictions being chief amongst them). However, his use of roman numeral notation was adopted into the theoretical vernacular and his understanding of multiple meanings became important for understanding chromatic harmonic progressions.

Theorists in the nineteenth century tended to favor more practical approaches to music theory over speculative, philosophical approaches. Gottfried Weber (1779-1839) criticized music theorists for not reflecting musical practice believing that theory depends on practice for its validation. Weber was critical of Vogler’s extreme number of harmonies and the complicated notational system he employed. He instead posited only seven chord types consisting of three triads (major, minor, and diminished) and four seventh chords (dominant, minor, major and half-diminished). Weber considered the diminished seventh chord a to be a minor ninth chord missing its root and, therefore, not a fundamental harmony. Every other chord, he continued, is derived through linear embellishments of the fundamental chord or by additions of tones thereto. Weber utilized Vogler’s roman numeral notational system but he refined it by using upper- and lower-cases so as to differentiate between qualities of triads (a system which is still employed today).

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20 ibid, 783.
Weber’s chief concern was an extension of Rameau’s own interest on harmonic interrelations; how chords progress from one to the next. He criticized figured-bass theory for its assertions of generalized harmonic progressions. It is through the analysis of works of art, he argued, that the rules of theory should be deduced. Rameau’s rule prohibiting the fundamental-bass from descending by step was therefore both arbitrary and useless. Weber relied upon aural recognition of tonic relationships to understand the key:

When our ear perceives a succession of tones and harmonies, it naturally endeavors to find, amidst this multiplicity and variety, an internal connection—a relationship to a common central point. For, as, in every art, the mind spontaneously desire to find a certain unity in the multiplicity—a centrality of the manifold parts—so it does here. The ear everywhere longs to perceive some tone as a principal and central tone, some harmony as a principal harmony, around which the others resolve as accessories around their principal, that is, around the predominant harmony.²¹

The tonic, therefore, is the central axis around which the remaining harmonies are circulated.

Unlike Rameau, Weber never seemed to claim a single, unifying understanding of the concept of tonality by which various, specific modulations could occur within the confines of a structural key. Weber insinuated a difference between what we have come to know as “tonicization” and “modulation” by requiring modulation to consist of a

real change of key and he classified keys according to their similarities in pitch content. His tonal grid which outlines all such connections is one of many such *Tonnetz* (tonal charts) conceived by theorists throughout the evolution of chromatic harmonic theory. Like Arnold Schoenberg, Weber account for similarities in pitch content as well as parallelisms in structure. However, the scale retains its organizing role in Weber’s theory.

While the groundwork laid by Rameau through his formation of an encompassing scale-degree theory is certainly to be consider one of his great legacies, he is perhaps better known for his expansive work in fundamental-bass theory and for the foundations he set forth for the understanding of harmonic tonality. In fact, aspects of his fundamental-bass theory survived well into the nineteenth century wherein Sechter was able to offer it significant expansion.

Simon Sechter (1788-1867) is known as being a teacher of theory perhaps greater than a theorist itself. His work is largely credited as establishing the Viennese harmonic tradition which was referenced both by Schenker and Schoenberg. Sechter compiled both fundamental-bass theory and scale-degree theory into his own thorough-bass teachings. Beginning with the scale, Sechter harmonized each note with both triads and seventh chords without even attempting to justify the creation of said harmonies through any particular scientific means. He then offered labels for the resulting harmonies using both letter names and roman numerals. Secther then arranged his harmonies so that preference might be given to a falling fifth motion in the bass (consequently the triadic
roots) and spaced the upper notes so that motion passed by either stepwise decent or common-tone. Unlike Rameau, who justified his harmonic chains through discussion of the overtone series, Sechter was content to allow the harmonies to exist via an “unscientific” compositional spinning forth.

Scale-degree theory permeates Sechter’s approach to chromaticism. Sechter considered chromatic chords to be essentially diatonic in nature, taking an opposing view from Weber (who saw them as a type of diatonic alteration) by claiming that the chromatic pitches were really just tones belonging to a different key. Ergo, chromatic chords were considered “hybrid chords” made up of tones derived from a variety of key (e.g., the augmented sixth chord). This treatise (published in Vienna circa 1853) appeared at a time when music was beginning to branch into various directions. By developing the implications of possible extensions to fundamental-bass progressions, Sechter allowed for the possibility of the notion “scale degrees” to be conceived in a much larger span, effectively paving the way for Heinrich Schenker’s discussion of Stufen in Harmonielehre.

By the mid nineteenth century, a rift had formed between theoretical practice and compositional advancement. While Sechterian theory was adapted to adhere to increased chromaticism (most notably by Bruckner who himself studied and taught

theory at the University of Vienna), Karl Mayrberger took it upon himself to reunite the
two, very much in the spirit of Weber. Mayrberger (1828-1881) was the first music
theorist to attempt a comprehensive analysis of Richard Wagner’s harmonic techniques
(which, notably, was actually approved by the composer himself\textsuperscript{23}). Like Bruckner,
Mayrberger attempted to adapt Sechterian fundamental-bass theory to account for
contemporary chromaticism:

The harmonic language of the present day is on a footing essentially different from that of
the past. Richard Wagner has pointed the musical world along the path that it must
henceforth travel. The sixteenth century knew only the realm of the diatonic. In the
eighteenth century, the diatonic and the chromatic existed side by side, equal in status.
The nineteenth century, in the work of Beethoven, Schubert, Weber, and Spohr, gravitated
more and more towards chromaticism. But with Richard Wagner an altogether new era
begins: major and minor intermingle, and the realm of the diatonic gives way to that of
the chromatic and the enharmonic.\textsuperscript{24}

Like Sechter, Mayrberger considered all chromatic chords as composite diatonic
chords, or “hybrid chords” whose chromatically altered pitches stem from keys other than
the tonic. Through his analysis of \textit{Tristan und Isolde}, Mayrberger demonstrated that
fundamental-bass theory (even less rigid, adapted forms) could not be easily applied to
the complexities of Wagner’s harmonic structure. Throughout his work, Mayrberger
regular expressed frustration with the degree to which he felt trapped by fundamental-


bass theory and how much more difficult his analysis seemed to be than Wagner’s music itself.  

Rameau eventually elevated the importance of the subdominant to the point of asserting the subdominant, dominant, and tonic harmonies as fundamental harmonic functions. A function theory sets itself apart from scale degree theory in that the former goes beyond harmonic description and deals instead with harmonic behavior. The underpinning of Riemann’s function thesis lies in his dualist understanding of the Klang —harmonies that stem from the frequencies of a fundamental tone. It is with this that Hugo Riemann began to carve out his niche in nineteenth-century harmonic theory.

Riemann (1849-1919) separated all harmonic possibilities into three categories: Tonic (T), Dominant (D), and Subdominant (S). Chordal alterations or harmonic members that occur outside of the generating Klang are then considered “apparent consonances”. Riemann’s harmonic theory gained unprecedented influence during his lifetime. Still, there was incredible resistance to the more dogmatic aspects of his dualistic premises; so much so, in fact, that Riemann eventually moved away from the acoustical arguments which begat his dualistic approach in favor of a more psychological,


26 ibid, 795.
idealist justification. Criticisms aside, Riemann’s theories were largely considered the most compelling, comprehensive, and influential body of writings since Rameau’s theses.

There was significant change in musical language around the turn of the century which presented a great deal of challenge to fundamental-bass, scale-degree, and function theories. It appeared that the composer’s harmonic palette had outgrown existing theoretical discourse and with that, criticism of existing theories began to arise. No composer or theorist was more vocal in his challenges to these theories than Schoenberg.

Arnold Schoenberg (1874-1951) believed foremost that there was no distinction between harmony and figurative dissonance. As he claimed in his discussion of non-harmonic tones in *Harmonielehre*, there are:

no non-harmonic tones, no tones foreign to harmony, but merely tones foreign to the harmonic system. Passing tones, changing tones, suspensions, etc. are, like sevenths and ninths, nothing else but attempts to include in the possibilities of tones sounding together — these are of course, by definition, harmonies—something that sounds similar to the more remote overtones.27

Therefore, according to Schoenberg, we can interpret virtually any simultaneity as a harmony, as a chord—a theoretical assumptions stemming from his notion concerning the “emancipation of the dissonance.” By challenging the existing understanding of consonance and dissonance, an onslaught of new harmonic conceptualizations were thereby able to be understood as both “tonal” and “nontonal,” including chromatically

altered chords, chords five or more tones, fourths chords, etc. Schoenberg saw the
evolution of chromatic harmony as a process by which dissonance was gradually
uncovered. Schoenberg’s rather progressive approach to harmonic theory—as may be
expected considering the strong reaction to Riemman’s dualist model—brought forth a
considerable degree of opposition. This was particularly true via the writings of fellow
Austrian’s theorist Heinrich Schenker\(^\text{28}\) whose many extraordinarily significant writings I
shall not go into at this time apropos both time constraints (concerning my candidacy
examinations) and my lack of an understanding as to where his work (and the work of his
student, Felix Salzer) will fit into my own theoretical discourse.

**The Trouble with “Tonality”**

François-Joseph Fétis (1784-1871), a Belgian student of Rameau at the Paris
Conservatoire during the early years of the nineteenth century is credited for being the
first theorist to advance the concept of “tonality.” The concluding paragraph of Fétis’s
own theory of *tonalité*, contains the following divisive and potentially troubling remarks:

“[My] theory of harmony is the last word in this art and science; it is now
competit, and there is nothing more to be added. I have given the summary of this theory
in my *Méthode élémentaire d’harmonie et d’accompagnement*, and my major *Traité
d’harmonie* contains the development of it. Rameau…and Catel have all found the first
elements of it, and I have completed it by positing it on a firm foundation. What
demonstrates such invincible excellence is that it is at the same time of the progress of the

art and the best analysis of the art of composition.” 29

The *Traité complet de la théorie et de la pratique de l’harmonie* contains Fétis’s most mature statement regarding tonality (*tonalité*). He uses the term often as a description for the tendencies of individual scale components such as the force generated by the interaction between the leading-tone and tonic, as well as the natural pull associated with the fourth scale degree. Further, Fétis divided Western music into four categories or “orders:” *unitonique*, *transitonique*, *pluritonique*, and *omnitonique*. The third and fourth of these categories, involving enharmonic reinterpretation of a single and multiple pitches, respectively, offer insights regarding the expanded modulatory range by compositions of the period. Despite Fétis’s confidence in his work (a writing which surely reflected the best wisdom of its time), the manner by which nineteenth- and twentieth-century chromaticism evolved requires Fétis’s understanding of “tonality” to undergo an appropriate adjustment. 30

As advanced by Gregory Proctor, the term “atonal” is a derivation of the term “tonal.” This by itself presents a multitude of problems as the concept of “tonality” is a relatively new concept—a mere two-hundred years old—within the scope of music theory as a whole (it may be worth remembering that Mozart would not have considered himself a “tonal composer” as such a concept had yet to be coined and discussed even though no education musician would consider his music anything but tonal). Even Arnold

30 ibid, 85.
Schoenberg, who is largely credited for advancing an “atonal” vernacular, found the idea of “tonality” distasteful, so much so that he replaced it with “pantonal” in his own writing. As Rudolph Reti advances in his text Tonality in Modern Music, unless “tonality” is understood to mean “tonicality” then the word “atonality” is entirely absent of meaning.31

It should be noted that Schoenberg did not create the twelve-tone system in order to take the place of “atonality,” but rather to organize it in a more specific manner a concept that suggests “atonality” to possess various degrees of inherent organization (or, to be a tad more tongue-and-cheek, structural levels of organized “atonality”). Schoenberg’s compositions that highlight his experimentation in serial writing (e.g., Op. 23) indicate the composer’s strong desire to unify the piece within itself without evoking functional (5th related) harmonic relationships. Instead, Schoenberg draws on linear connections independent of said harmonic scheme to provide structure for the work. It is out of this understanding that another paradox is born—Schoenberg did not employ one single type of structural coherency to his “atonal” works. Were such the case, there might actually be little reason for modern theorists to postulate new methods by which structure may be uncovered. In fact, this exploration in advancements toward unifying a musical work without structural harmonic implications continues to stimulate twenty-first century composers. The fact that the twelve-tone system at its conception did not satisfy Schoenberg is substantiated by the eventual discovery and employment of the element of

the system which Mitlon Babbitt would come to term “combinatoriality.” Yet despite Schoenberg’s struggle to liberate structure as it had come to be known by works scores through a variety of manipulations, certain premises remain consistent throughout much of it, offering the clear presence of structure within his both his early and later music.

Alas, we have not yet come to an understanding of tonality itself. As Gregory Proctor again reminds us, the most thorough investigation into the principles of “tonal” music is discussed in the theoretical writings of Heinrich Schenker. Of course, to discuss Schenker’s theories within a treatise on “atonal” music may seem on the surface (no pun intended) to be a bit daft. However, it is worth remembering that Schenker’s theories form the basis of Felix Salzer’s Structural Hearing, a book which attempts to advance Schenker’s theories to the point of being applicable outside of the common-practice period (the period of music marked by harmonic tonality). At the core of Schenker’s theory is the projection of the triad through time, first by arpeggiation and then by contrapuntal prolongation. Salzer, on the other hand, asserts the possibility of prolongation of chords that are not triads in the same manner. Here again we see a distinct difference of understanding of “tonality” for if Schenker ties “tonality” in with the composing out of a triad, Salzer as we have just seen does not.

Continuing the Schenker/Salzer dichotomy, if the main difference between pre-atonal and atonal music lies in the type of sonority being expanded, then the term “atonal” is misleading, especially if we consider Reti’s suggestion that it better means “atonical.” Moreover, the terms lose any value at all should the utilized at their most literal level by referencing musical works that employs tones (tonal) over those that do not (atonal). Similarly, the term “atonical” is both incorrect and useless if a musical work described thusly should contain a tonic triad (as in Salzer’s system).

In his article “The Study of Chromaticism,” William Mitchell suggests the use of the term “diatonic” for music which is essentially that (although, of course, it may then be necessary to define “essentially” as opposed to “mostly” or “fundamentally”); “chromatic” for music which employs a great deal of tones outside of the diatonic system or scale, and “panchromatic” for music which employs chromatic music without relying upon the diatonic scale for governance. Generally speaking, therefore, the term “panchromatic” seems to be an adequate descriptor for the music under discussion. Nevertheless, the term “atonal” shall be hereafter employed both as means of distinguishing within pan-chromaticism music that is composed through twelve-tone operations and that which is composed without twelve-tone operations. Furthermore, the term’s wide-spread use makes it far less simple to create a new term than it does to clarify my understanding of the old one (atonal) as it is to be used herein.

Development of Post-Tonal Music Theory

As John Covach asserts in his article “Twelve-tone theory,” there are two fundamental approaches to scholars studying the history of atonal music and with it, atonal theory. The first approach focuses on the important composers and their works, using atonal and—in most cases—twelve-tone theory as instruments with which structural features, technical concerns, and motivic developments may be observed. In so doing, a history of post-tonal composition may begin to form itself. The second approach primarily involves tracing the history of theoretical writings about post-tonal theory and referring to compositions themselves in order to further an idea and clarify a point, rather than the other way around; this may lead to the production of a history of post-tonal theory. Although I shall take the latter approach, I caution readers not to abandon the notion of formulating a mental history of post-tonal composition as such will be relevant toward the end of the historical journey to follow.

Josef Hauer (1883-1959) advances the “twelve-tone idea” as “a systematic circulation of all twelve pitch classes (pcs) in which no pc is repeated before all twelve have been sounded.” As is the case in various other early atonal writings about twelve-tone theory, the constant cycling of twelve pitch classes is discussed throughout Hauer’s writing as a potential technical solution to various aesthetic problems with which he has

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been struggling compositionally. Hauer’s fundamental assertion is that music, “when conceived and perceived in a proper way, is essentially a mental-spiritual phenomenon.” 36 Hauer explains that in its fundamentally spiritual-mental state, music resides first in the mind of the composer. However, in order to share what is occurring in his mind, the composer must employ something from the physical realm as means for transmitting his fundamental musical thoughts. In so doing, the physically sounding music falls victim to the methods available for transmission thereby crippling the music itself. This is exceptionally important for Hauer tone color in music lies in the nature of the internally perceived interval, not in the “noises” of the material that spin- forth from its physically sounding existence. The twelve-tone circle, then, is a physical representation of the mentally perceived collection of twelve literal notes.

In 1924, Hauer began an exchange with Herbert Eimert which chronicled his discovery of the twelve-tone idea in which he referred to himself as “desperately searching for some underlying objective principle, not only in [his] own atonal music up to that time, but also in the atonal music of Webern and Schoenberg.” 37 Hauer was determined that such a discovery would vindicate atonality against its many critics and through this need for atonal justification he derived an objective guideline for music: the notion of constantly cycling an aggregate. Once Hauer completely yielded from free atonality in favor of strict twelve-tone writing, he began believing that harmony must

36 ibid.

derive from melody and with such claim, began discussing a technique whereby melodic tones could be sustained until they became displaced by new melodic tones related by whole- or half-step.

In *Atonale Musiklehre*, Herbert Eimert (1897-1972) discusses twelve-tone melodic writing by emphasizing the infinite number of melodies that can be created by the nearly 500 million possible orderings of all twelve pitch class sets combined with a virtually unlimited rhythmic palette. The only advice he offers composers of such music is to avoid creating tonal associations and references at all costs. In the same volume, Eimert discusses the organic nature by which both melody and harmony “unfold” throughout a piece and postulates great freedom in harmonic dimension and individual voice parts arises when the two occur together.38 While Eimert does not cite Heinrich Schenker as an influence in this idea of “unfolding,” interrelated melody and harmony, the connection is unmistakable.

While Hauer and Eimert were both pioneers in the field of atonal and, more specifically, twelve-tone theory, it was Arnold Schoenberg’s (1874-1951) twelve-tone method that has come to define modern understanding of the system through its ordered series of row forms based on the employment of transposition, inversion, retrograde, and retrograde-inversion (ideas that originate not as transformative approaches to twelve-tone rows—as are found in Milton Babbitt’s discourse—but as means for transforming

38 ibid, 607-609.
melodic motives). The central component to Schoenberg’s atonal music is the Grundgestalt (basic shape), which is the source of all subsequent musical material used to demonstrate the wide variety of ways in which the composer establishes formal logic and structural unity. Because the works being composed by Schoenberg at the time are not entirely twelve-tone, it becomes clear that Grundgestalt does not presuppose twelve-tone as was the case throughout the majority of Eimert and Hauer’s work.

While Schoenberg’s method would eventually come to dominate the compositional/theoretical world of twelve-tone music, many composers and theorists devised their own similar, parallel, methods. In many cases, these methods advance Schoenberg’s own methods by adapting and extending them onto strictly serialized music. Schoenberg had already argued that atonality was a logical successor to chromatic harmony, asserting said development in a historical context that suggested that atonality was the inevitable consequence of late nineteenth-century extended tonality. As such, tonal harmony became an important problem and theorists such as Richard Hill (1901-1961) began looking at music that preceded tonal harmony with hopes of exploring the manner by which tonality became exhausted thereby working out the consequences of twelve-tone theory.

In his text “Schoenberg’s Tone-Rows and the Tonal System of the Future,” Hill provides a summary of twelve-tone theory, citing both Hauer and Eimert’s work as well
as extensive analyses of Schoenberg’s twelve-tone music, namely opuses 23-35. Although Hill appears to be a fan of Schoenberg’s music, it is difficult to miss his complaint about Schoenberg’s writing that the composer’s “manipulation of the rows in many instances is impossible to discern aurally.” Hill then stipulates that a way of employing the twelve-tone system that might allow the process to be more aurally explicit is to develop the notion of twelve-tone modality. Hill’s work sets out the two more important issues to be discussed by Kreneck and Perle: the idea that 16th century counterpoint might be used as a model for further development of twelve-tone composition and the idea that a tone row can further a meaningful musical context while not having to appear as an ordered set on the musical surface.

Ernst Krenek (1900-1991) was heavily inspired by Hill’s thinking about twelve-tone composition yet he seemed to struggle with the notion of twelve-tone modes. Krenek’s solution to the question of this so-called “extra-motival” modality was to employ two complementary hexachords of a row so as to generate a larger collection of hexachords. Beginning with the two complementary hexachords and the inversions of each, Krenek is able to perform two types of transformations: rotation, and diatonic transformation. In the instance of the latter, the rotated hexachord is transposed so that new hexachord begins on the same pitch class as the first. Although rotation had been


present in the music of Hauer, Schoenberg, and Berg by this time, Krenek was the first to introduce rotation into twelve-tone theory.

George Perle (1915-2009) also employed the row in an extra-motival context. While Perle acknowledged that Hill’s work was the first to introduce twelve-tone modes, he insisted that he was unaware of said work until after the completion of his own research into the notion of twelve-tone modality.\footnote{Perle was a student of Krenek, yet his work in dodecaphonic modality is much closer to Hill’s work than Krenek’s. Perle’s system begins with a specific twelve-tone row (C, F, G, Bb, D, Eb, A, G#, E, C#, B, F#) generated by interlocking a series of descending fifths (C, F, Bb, Eb, Ab, Db) with a series of ascending fifths (C, G, D, A, E, B, F#). Says Covach, “This row serves as the basis for Perle’s system—no others are used—and as a consequence he is able to employ a limited number of possible forms, twelve as opposed to the Schoenbergian forty-eight.”\footnote{John Covach, “Twelve-tone Theory.” In The Cambridge History of Western Music Theory, ed. Thomas Christensen, 603-626 (Cambridge: Cambridge University Press, 2002), 616.}} Perle was a student of Krenek, yet his work in dodecaphonic modality is much closer to Hill’s work than Krenek’s. Perle’s system begins with a specific twelve-tone row (C, F, G, Bb, D, Eb, A, G#, E, C#, B, F#) generated by interlocking a series of descending fifths (C, F, Bb, Eb, Ab, Db) with a series of ascending fifths (C, G, D, A, E, B, F#). Says Covach, “This row serves as the basis for Perle’s system—no others are used—and as a consequence he is able to employ a limited number of possible forms, twelve as opposed to the Schoenbergian forty-eight.”\footnote{ibid, 616.}

Milton Babbitt (1916- ) realized that when Schoenberg discovered his twelve-tone method, the composer discovered a tremendous wealth of musical context that presented future composers with an extraordinary number of possibilities. He further offered that the structure of any given twelve-tone row, when combined with its transformations via the standard four operations (transposition, inversion, retrograde, and
retrograde-inversion), produces a system of relationships that can be characterized theoretically and create a context that may be newly established with each successive work. Babbitt introduces two ideas that would become part of the post-tonal theorist’s vernacular: combinatoriality and derivation. The first of these refers to any pair of rows in which the first six pitch classes of each together form an aggregate of all twelve tones. Derivation refers to a process whereby, for instance, the initial trichord of a row can be used to arrive at a new, “derived” row by employing any of the standard four twelve-tone operations.

In the aftermath of Milton Babbitt’s writings, post-tonal theory has become less interested in evolving and manipulating twelve-tone rows (although Allen Forte’s The Structure of Atonal Music in 1973 has certainly become part of the twelve-tone theorist’s canon), and has instead begun to turn its interest back toward general, “free” atonality. Robert Morris’s Composition with Pitch Classes is both a history of twelve-tone theorists and a compendium for composition that extends beyond twelve-tone composition. John Rahn’s Basic Atonal Theory is similarly tuned to both twelve-tone theory and general atonality. Indeed, Babbitt’s theory seemed to spark the divide which brings us to the issue at hand. His early support of Schenker’s tonal theory has led Matthew Brown toward applying Schenkerian techniques to atonal and twelve-tone theory whereas his later, mathematical techniques have inspired the field of theorists whom we have come to know as Neo-Riemannians.
What unites each of the aforementioned theorists, and what has led us to the conundrum we face today, is the understanding that post-tonal compositions exhibit a certain structure that unifies each piece. While the structure may change from piece to piece, it persists none-the-less. While theorists like Hill, Krenek, and Babbitt have worked diligently to explain how such structure may persist in twelve-tone works, very little has been done to explain the same as it relates to atonal pieces that do not employ transformations of a twelve-tone row. Yet the desire to discern possible structures remains.
Chapter 3: Designing A New System

I approached the idea of designing a system for reducing a structure out of an atonal musical work (specifically one composed by Arnold Schoenberg) as both an analyst and composer. In so doing, I began with Schoenberg’s earliest opuses and progressed, chronologically, through his corpus of works in search of examples that sounded structurally coherent yet would not easily lend themselves to harmonic coherency using existing analytical systems. Of course, one should likely take considerable offense at the presumption that the basis for my own system is rooted within my own aural abilities. While this assertion is in fact true, I concede that upon first listening (or even the tenth) a twelve-tone piece might sound structurally incoherent yet after submerging oneself in the work, octaves might indeed sound equivalent (as they were regularly intended, in principle, from as early as Rameau) and rows might begin to unveil themselves thereby exhibiting the appearance structural cohesion. Would this process then presume that the piece did not possess structural coherence when it was first

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43 I use the term “reducing”—here without quotations—as I mean it in its truest sense. “Reduction” is a concept that has been carelessly tossed about by self-described Schenkerians who are apparently unaware that Schenker considered his own system to be generative and not reductive. What these theorists create is a representation of a musical score that may, in fact, employ fewer musical notes than the original work yet what they fail to reconcile that a reduction (as in mathematics) involves a great deal of expansion through explanation. What these theorists are doing, then, is merely over-simplifying and in so doing, leaving their readers to discover for themselves (as if by divine intervention) the process through which decisions were made that led to their so-called “reduction.” Because I intend to make my analytical decisions explicit thereby generating a considerable amount of content from a more trivial paradigm, I am comfortable using the term “reduction” as it actually is, rather than how I would like for it to be.
heard but yet did so twenty performances later? Of course not. So what makes the foundation of my system any less ludicrous? Put simply, I rely upon my own cognitive abilities as they relate to expectations realized and those subverted. That is, were one to stop playing a piece of music in the middle of a phrase, might they have the sensation that a tone ought to resolve? Would they feel their hands begin to move toward the next likely keys? Would they sense a harmony’s need for expansion? Contraction? If any of these questions are answered in the affirmative, it must be understood that the chromaticism at play within the piece is working in opposition to an underlying, organizing system. Without such structure, organic principles cease to exist within a musical framework—the ascending melodic interval C-Ab needs to be fulfilled by its motion (“resolution”) to G no more than by motion to B, D, or F-Sharp.

While there is significant musical material that may seem to represent a conscious departure from tonality in the mind of the composer within works as early as Opus 4 (Verklärte Nacht) and Opus 9 (Chamber Symphony), Opus 11 (Drei Klavierstücke) seems to be the first piece that represents a complete departure from tonality whilst maintaining its organic roots. In order to begin reducing a structure from Schoenberg’s chromatic writing, it becomes necessary to search, analytically, for commonalities within the score in attempt to discover compositional devices employed that obscure (or, better still, embellish) a more fundamental structure. In terms of classical, tonal music this process would be similar to observing that when linearly composing out a third, Haydn tends to fill in the gap that has been created with an
adjacency that reaches from the initiating tone to the ultimate tone—a surface-level event referred to as a passing note.

One trend observed within the confines of Opus 11 is that when Schoenberg composes out a triad, he often does so by placing the triad itself in the middle of the texture and adds, at the perimeters (speaking, of course, in terms of the piano’s range) tones that are in fact semi-tone adjacencies to the outer voices of the triad as spelled in the middle of the texture. This is depicted in the hypothetical sonority expressed in Example 1.

Example 1. Hypothetical Triad Spacing with Semi-Tone Adjacencies
As the above example suggests, A Minor has been embellished by means of added semitone adjacencies in the outer registers. In this instance, the generating triad (the sonority being embellished) is not depicted in “root position” but rather is notated so that the third appears on bottom and the root on top. When embellishing a triad, Schoenberg does not seem to concern himself with the position of the generating harmony, but rather with the outer voices of the triad. Therefore, the generating harmony may be freely inverted in order to provide various possibilities for creating linear events in the outer voices.

The second item used most often in obscuring a tonal structure is the continuous alteration of the third both intrinsically and extrinsically related to the generating harmony. That is to say, the presence of an A Minor generating harmony does not suppose a system in which A Minor is to be considered “diatonic.” Rather, Schoenberg seems content to freely alternate between A Minor and A Major without asserting one’s status over the other. This issue is extremely provocative because it supposes a system built upon triadic harmonies without supposing a sense of “key” as we might initially conceive. This is not to propose the breakdown of a tonal system altogether. As we will come to understand, one triad (A, for example) may in fact appear subservient to others (e.g., F) thereby suggesting various levels of harmonic status akin to the system proposed by Felix Salzer. This, then, presupposes a new addition to the apparent adjacencies mentioned previously. Whereas it was stated that the outer voices of the enclosed triad may be embellished by the addition of semitone adjacencies, it is now conceivable that

44 Now assuming both A Major and Minor.
all three members of the triad may be embellished should said triad appear in root position within the texture. In this case, the triad’s third would appear as an inner voice. Still, Schoenberg consistently allows for both qualities of third to appear simultaneously as means of obscuring what might otherwise appear to be obvious tonal implications.

Upon considering all of Schoenberg’s chromatic and freely atonal works through this analytical looking glass, many more observations may be readily synthesized. Most obviously, the idea that triads should be embellished in ranges apart from the space containing the generating triad may be almost immediately discarded. This suggests that adjacencies may in fact appear in extreme registers (with maximal distance from the generating triad) or as literal adjacencies within the space of the generating triad. The difference in color created by these same harmonies in two different positions is aurally significant and should be considered as instances in which the composer is not only weaving a new harmonic palette, but also creating a linear process by which contrast within range may play an important part. Furthermore, this paradigmatic shift may reflect Schoenberg’s experimentation with octave equivalence which will come to play a large part in the development of his twelve-tone system.

A likely question concerning the use of semi-tone adjacencies is whether said adjacencies appear above or below the tone which they are embellishing. The answer is, as one might expect: both. Adjacencies may appear as either upper- or lower-embellishing-tones, both providing the composer with more choices in constructing the
melodic and harmonic surface of the composition. This, then, brings about a new principle—that a member of the generating triad may be embellished via both upper- and lower-adjacencies simultaneously thereby creating still more possible choices for the composer when expanding a single harmony, as shown in Example 2.

Example 2. Hypothetical Triad Spacing with Single and Double Semi-Tone Adjacencies

In addition to offering a graphic representation of the point in discussion, the above example offers the added bonus of highlighting yet another principle concerning semi-tone adjacencies—both tones being embellished need not be done so with the same
number of adjacencies. Concerning Example 2, the C is embellished by C# alone while the A is embellished by both Ab and A#.

This leads to the issue of displacement. While we have previously only concerned ourselves with adjacencies as related to members of the generating triad, we may now bring into light the means by which members of the triad itself may actually be displaced by a semi-tone. Under this operation, a member of the generating triad is omitted outright and has been replaced (either in the musical space of the generating harmony or in an outlying register) by a semi-tone adjacency as seen in Example 3.

Example 3. Hypothetical Semi-Tone Substitution (Displacement)

The above example highlights the extent to which displaced tones (resulting in substitution harmonies) may offer a variety of analytical interpretations. On one hand, the G# may be considered a displacement of A thereby acting as an embellishment of an A generating harmony. However, just as G# may displace A, so too may it displace G, even if the resulting triad leads to a C generating harmony. Our spiral down a rabbit hold of
triadic obfuscation continues once we consider that E may, in fact, be a member of the generating harmony and that C may be an enharmonically respelled B# thereby displacing B. Ergo, Example 2 may in fact suggest an E generating harmony. This is one of the great strengths of the proposed system: that multiple analyses become possible therefore eliminating the existence of a single “correct” interpretation of the same piece of music, a notion equally true of tonal music.

Analysts should use caution in reducing seemingly “irrelevant” structures from the musical foreground by paying little or no attention to the music itself. As Schoenberg departs from his earlier, triadic music and approaches a twelve-tone style of writing, he seems quite careful not to haphazardly notate sharps or flats but instead uses both with great intention. This fact should not be lost on analysts as it offers a great deal of insight into the underlying structure. In order to begin interpreting these displacements, it may be worth remembering that the compositional process at play within these “atonal” works is a direct extension of tonal composition. Therefore, flatted- and sharped-tones ought to be considered just as they would be in a tonal system. In this case, sharped tones as surface-level embellishments tend to suggest micro-tonicizations or chromatic neighbor-tones. In either case, raised-tones tend to embellish notes directly above them and lowered-tones embellish those below. On the other hand, music that consistently favor sharps or flats may best be considered an example of Schoenberg’s writing idiomatically for a particular instrument thereby favoring sharps or flats in attempt to facilitate an easier
performance. In this case, analysts should feel less constrained with their interpretations and should therefore avail themselves to all of the possibilities presented therein.

Just as a member of the generating harmony may be embellished by the addition of two semi-tone adjacencies, so too may triad members be doubly displaced. **Example 4** offers an example of such displacement of one member of a generating harmony.

**Example 4.** Double Semi-Tone Substitution of a Single Chord Member

In addition to offering a graphic representation of the type of substitution being discussed, the above example has the added bonus of employing the use of accidentals to serve as tonal “pointers.” That is, even without the presence of additional musical
material, the occurrence of raised (sharped) and lowered (flatted) pitches as simultaneities suggests an intentional compositional use thereof. As such, it would seem foolish to posit an assumption such as “Bb surely means A#” without further reason for said alteration. In this case, both G# and Bb may be readily seen to embellish A by displacement. What results is an A generating harmony composed-out through double semi-tone displacement of its root, A.

The embellishing tones (as I have been referring to them) discussed until this point have been semi-tone adjacencies (single and double) and semi-tone displacements (single and double). It was stated earlier that one member of the generating harmony may be embellished by means of single semi-tone adjacency (for example) while the opposite member of the harmony (given its spacing) may be doubly embellished by adjacency. This notion of combining embellishing paradigms should leave one to question the possibility of additional combinations. Indeed, a new category of harmonies can now be brought to light as those generated through sonorities that combine semi-tone adjacency in one voice with semi-tone substitution in another as seen in Example 5.
Example 5. Combination Harmony Employing Adjacency and Substitution

In this example, we find C# acting as semi-tone adjacency to C whereas Bb serves to displace A. Once again, this understanding may lead us to consider the above as an embellishment of an A generating harmony.

Throughout my explanation of these new harmonic sonorities I have limited the discussion of embellishing tones to semi-tones. Given the ease with which Schoenberg seems to disregard register as means of indicating embellishing gestures beyond Opus 11, one might wonder if the same should be true of the employment of semi-tone embellishments. Furthermore, while semi-tone adjacencies might seem to foreshadow the coming twelve-tone system, whole-tone embellishments are employed just as readily in tonal music as semi-tone embellishments (e.g., diatonic neighbor tones may be whole- or
half-step adjacencies). Indeed, while semi-tone embellishments may have the benefit of aurally referencing a tonal sonority more effectively than whole-tone embellishments, it would seem arbitrary to restrain this system to semi-tone movements. As such, adjacencies, substitutions, and combinations may occur as whole-tone movements just as their semi-tone counterparts occurred.

In order to best consider all of the possible harmonic embellishments now under consideration, the aforementioned gestures may be broken into categories which I shall refer to as orders based upon semi-tone or whole-tone motion, subdivided into type of embellishment: substitution (displacement), addition (adjacency), and combination as indicated in Example 6.
Example 6. Ordered Harmony Possibilities Given ‘A’ as the Generating Harmony
The one paradigm that has been left out of the above example is the possibility of combining semi-tone embellishments with whole-tone embellishments. The absence of such sonorities should not assume their unimportance but rather the employment of a certain degree of practicality when designing a system like the one in discussion. However, in order to best explain their existence and use, it might be necessary to begin by offering a practical guideline for their use apropos analysis.

When analyzing according to ordered harmonies, I find it best to invoke a two-part system by which both generating harmony and order may be indicated (similar to Roman Numeral and inversion). As such, the letter representing the generating harmony (the triad’s root) should be first indicated followed by the specific order of harmony as indicated by number in superscript as depicted in Example 7.

Example 7. Analyzed Ordered Harmony
In this example, because C# appears as a semi-tone addition to C and Bb is read as a semi-tone substitution of A, the example may be understood as a semi-tone combination harmony, ergo, a harmony of the fifth order as understood by the superscript ‘5’. When concerning ourselves with harmonies that evoke both semi- and whole-tone embellishments, this system may be adapted so as to not exhaust the number of ordered harmonies beyond what is actually helpful. In this case, two super-script numbers are to be used, separated by a slash—the numerator above the slash referring to the semi-tone embellishment and the number below referencing the whole-tone embellishment as shown in **Example 8**.

**Example 8.** Semi-Tone and Whole-Tone Combination Analysis
In this example, the application of a C# has generated a semi-tone adjacency thereby evoking the third ordered harmony whereas the B is being considered a whole-tone substitution for A thereby referencing the sixth ordered harmony.

At the onset of this discussion, I mentioned my approach being both analytical and compositional but until now have paid very little attention to a composition process as much as harmonic theory. As a means of testing this system’s validity for discerning a tonal structure, I find it prudent to attempt a short compositional exercise by which the opposite may be generated. Simply put, I took the simple harmonic framework I-IV-V-I (Example 9) and embellished it by freely incorporating the above ordered harmonies with hopes of generating a “Schoenbergian” musical excerpt (Example 10).

Example 9. Rudimentary Harmonic Framework
Listeners familiar with Schoenberg’s atonal works will very likely find the above (Example 10) familiar. While the music itself is not taken directly from one of Schoenberg’s works, the tonal palette used in its construction is very similar to what might be found in Opus 11, No. 1. Because this connection exists, the notion of implementing the system of ordered harmonies in discussion becomes a relevant compositional exercise as means of composing-out a rudimentary structure in an atonal style. As “compositional process” is little more than “analysis” in reverse, the latter may now be studied with hopes of finding connections between one analysis and another—a metatheory, if you will.
Chapter 4: Discerning Structure

In order to begin discussing the various musical layers that comprise a piece of music, we must understand that there is a basic structure inherent within the piece that colors the work’s composing-out. However, because many examples within the scope of this document do not start and end in the same key (and cannot be related by mode change or enharmonic respelling), it is impossible to judge the pieces themselves against the framework applied to a strictly tonal piece. It is therefore necessary to expand our understanding of structural-tonality beyond “starting and ending in the same or directly related keys” to music that subverts this harmonic structure.

Any piece that is aurally perceptible as an organic whole takes its audience on a musical journey for which a chief characteristic is ending in a place resembling (but not necessarily mimicking) its origin. It could be asserted that any piece that may be capably analyzed by identifying a series of interrelated layers contains within its beginning all the potential for its becoming. This vague (however well-intended) definition may be made considerably more specific after applying a few basic rules of tonality; after all, it is the purpose of this document to assert principles of a theory that extend tonality, not subvert it all together. A piece, then, that begins by establishing one harmony, transforms to at
least one other, and then returns either to the same harmony with which it began, a
harmony affected by modal change (e.g., major to minor), or a harmony closely related
(i.e., related by fifth or a relative harmony) may be considered “organic” and therefore
built upon a discernible structure relevant to the piece’s composition.

One might ask why such limits need to be placed upon a work’s conclusion yet
no specifications are added to its middle section. For a work to be capably understood in
a tonal (or even tonal-inspired) realm, its beginning must be reconciled by its ending.
Therefore, a piece that begins in A-minor yet concludes in E-flat Major may contain
within itself many tonal gestures, but lacks any background tonality which may be expanded toward further levels. It is through these layer-to-layer transformations that tonality is extended and even, in some cases, subverted. Therefore a work that has at its background an atonal structure yet at its foreground resembles tonality may be merely considered an atonal work masquerading as one that is tonal, and such back-to
foreground connections would be hypothetical at best. While a work that is at its core
tonal yet on its surface atonal is one that exemplifies this tonal extension as discussed herein.

One of the tenants of a classical tonality is the motion from Tonic to Dominant
or, in the case of a work in a minor key, Tonic to its relative major. However, in the 19th
century a significant amount of emphasis began to be placed on the subdominant - so
much so that dualist systems that equate subdominant and dominant became exceedingly
popular. Since, as I have already stated, a theory should explain how a work exists not simply how the theorist wishes it to exist, this elevation of Sub-Dominant to the status of Dominant becomes the first step in extending structural theory.

It is worth pausing here to discuss the many ramifications of this assertion as this seemingly insignificant change defies Schenkerian philosophy to a point of being no longer useful in its application toward the pieces under discussion through its lack of internal coherence. The principle harmonic structure for Schenkerian theory, I-V-I, supports at its most basic level a stepwise descent from scale-degree three to one. In order to maintain this idealized voice-leading at the highest level, the only line that may be harmonized by I-IV-I is, in this case, a stepwise ascent from scale-degree three to five. Ultimately, as shall be discussed presently in the context of idealized voice-leading, it is not the direction of the line that provides basis for a work’s structure, but rather the presence of a line itself.

Once the Sub-Dominant harmony becomes a possible destination for the direction of a piece, other harmonies must also be considered as possibilities. As such, significantly less weight is placed upon defining the central harmonic area of a work’s fundamental structure. One might ask “since such a destination seems so open-ended, why not leave it out all together?” Of course, Schenker’s theory still applies: without a central destination, a piece contains only a beginning and ending but no being. This is like an object that is created and ended simultaneously without ever actually existing—it
existed merely philosophically and not physically. Were that object to have existed for
even the most brief window of time, its ending would have been the conclusion of a
process and not simply a logical understanding. It is this process, this life that may then
be ascribed qualities and attributes in the process of an analysis not dissimilar to those
being discussed herein.

A classically tonal piece exerts its tonality by its beginning sonority. As
listeners, our aural appreciation for “tonic” is either confirmed or changed by what
happens next in the music. A good example of this idea is shown at the onset of
Beethoven’s “Waldstein” Sonata (Example 11).

![Example 11. “Waldstein” Sonata, L. van Beethoven (mm. 1-4)](image)

When the first harmony (C-Major) is sounded, our ears are likely to assume tonic. As it is
repeated, C becomes aurally less stable until the motion from D7 to G finally convinces
us that, in retrospect, the harmony was Sub-Dominant. Still, without the following
material, we would have happily assumed the opening to, in fact, be in C-Major. It is due to this aural appreciation that without the presence of a cadence or an embedded phrase model to prove otherwise, the initial harmony shall be considered our local, and therefore structural tonic. This brings into light the issue of discerning a cadence in music that is as chromatically indulgent as these works by Schoenberg.

Cadences like any other analytic observation must be identified based upon how they are aurally perceived, not by how one may theoretically wish them to occur. As such, a cadence may be determined by one of two criteria: a harmony derived through a tonal, contrapuntal gesture; or a moment of harmonic repose. In the case of the former, several combinations of gestures may generate a cadence: 1) a voice that falls a fifth while a second voice moves up or down by step to the same pitch-class as the first voice, 2) a voice that rises by fifth while a second voices that begins on the same pitch-class as the the first voice falls by step to a note a third higher than the aforementioned resolution; 3) two voices that move inward by step to the interval of a fifth. It should be noted that each of these are linear examples to derive a cadence but not every possible instance may be considered such. This crack is left intentionally open so as to ultimately allow for differing analyses of the same work in order to identify how one listener hears a piece as compared to another.

All of the previously mentioned cadential formulas presuppose an axiom which must be agreed upon before continuing: that of the step. There is some ambiguity
concerning the step in a strictly tonal sense as it may stand for both half-step and whole-step. Generally speaking, this issue is solved by applying it to a diatonic system whereby step means a diatonic-step or motion, diatonically to a contiguous pitch (e.g., G-Ab or F-G in the key of E-Flat Major). However, Schoenberg’s early works destabilize tonality through such a regular and intense chromaticism that it is at times difficult to determine a key for large stretches of music. In these instances, the term step is problematic.

However, the point becomes moot when considering that such chromatically intense music is judged such by its lack of cadential material altogether.

That said, I shall adopt the understanding of step as a “diatonic-step” whereby the term diatonic references the local harmonic area. The last point concerning the discernment of a cadence is the identification as such via a moment of harmonic repose. When a harmonic rhythm is interrupted by a single harmony which is prolonged beyond the surrounding harmonies, it is given significant weight and, with that, a sense of greater structural importance. Therefore, any harmony that is treated thusly may be considered cadential even if the voice-leading into said harmony does not align with those paradigms previously set forth. To give any cadence more weight (in particular as it relates to the structure and higher-level harmonic areas) it should occur at a moment of harmonic repose and contain one of the cadential, linear paradigms.

45 The term “Harmonic Area” is strongly preferred to tonality or key area as the latter two presuppose a set of voice-leading rules and harmonic hierarchy that are not in keeping with the system being established in this dissertation. However, as the mere presence of a structural analysis will suggest, every section is governed by a higher level harmony which is thereby reflected in the term “Harmonic Area.”
For one of Schoenberg’s works to be considered “highly chromatic” rather than “atonal” or “atonical” it must be understood that the chromaticism is a lower-level or foreground of higher-level structure. Chromaticism, therefore, becomes the result of either an intensified harmony (micro-tonicization) or simply an intensified tone itself (chromatic neighbor tones). When the two embellishing figures happen simultaneously, the local tonality begins to be destroyed. In these cases, new harmonies are formed which may seem (and in fact be) unrelated to the structural harmonic area. In these cases, a linear appreciation of the passage may offer significantly more insight than a vertical (chordal) analysis. Still, it may be advantageous to draw analytical connections based upon the resulting chords themselves as examples of passages in which harmony is generated by multiple-voice counterpoint rather than lines which result from harmony (something quite unique to Schoenberg which shall be identified and discussed as it appears in the future analyses). It then becomes necessary to have a system in place for identifying chordal roots so as to understanding when a note is passing or when it is a root change.

As a direct extension of classical tonality, all of Schoenberg’s harmonies are tertian (derived by stacking thirds) and should be understood and expressed thus. A fourths chord, therefore, should be considered a re-voiced ninth chord (for example) without its third and seventh. A passage that becomes increasingly chromatic is therefore easily understood as one that incorporates harmonies which include further extensions
than a triad or seventh chord. This, then, does not account for chord which contains both sharps and flats as this cannot be derived by stacking thirds unless a tone is enharmonically respelled. In these cases, caution should be shown to arbitrarily respelling harmonies to fit a desired chord. Instead, the adjusted tones should be viewed in light of its voice-leading in terms of how it is derived and how it resolves as per the previous discussion of alterations for melodic intensification. The one exception to this guideline concerns music that approaches a new harmonic area that is generated either by change of mode or by harmonizing an apreggiation of a higher-level harmony. In each case, it may be common for a chord to contain pitches outside the governance of any root without also serving as a linear decoration or embellishing tone. In these cases, how the extraneous tone relates both to the previous (or current) harmonic area as well as the forthcoming harmonic area provide enough evidence to account for an enharmonic respelling.

Concerning the musical structure itself, because harmonies are being incorporated at the background that may ultimately lead to non-ideal voice-leading, some attention must be paid to what constitutes the background musical structure. This structure, therefore, needs to walk a high-wire between being too complicated and not offering enough information (a notable distinction of Schoenberg’s music as a classically tonal structure may not requisite as much information as structure for an early of Schoenberg’s works). As such, the upper voice of the fundamental structure works in combination with the bass whereby both may either arpeggiate the fundamental harmony (I-V-I) or linearly prolong the fundamental harmony (e.g., I-III-I). This unity, as in a
Schenkerian fundamental structure, “makes it possible for voice-leading transformations to take place in the middle ground and enables the forms of the fundamental structure to be transferred to individual harmonies.” ⁴⁶ In the case of unfolding, however, it is worth noting that melodic line may not represent a Schenkerian idealized descent. Instead, ascending as well as neighboring lines ⁴⁷ become possible lines provided they work on conjunction with an arpeggiating bass. This key element alone forms an unmistakable connection between Schoenberg’s early works and any pieces by Brahms, Beethoven, or Haydn in which idealized voice-leading is maintained either in the abstract or at the surface of the piece.

**A Schenkerian Approach**

“The origin of every life,” begins Schenker, “whether of nation, clan, or individual, becomes its destiny.” ⁴⁸ This philosophy epitomizes Schenker’s notion that every beginning contains within itself all the possibility of its becoming. As it is further applied to music, any work which does not exhibit this characteristic, therefore, furthers the assertion of a sort of mechanical dribble devoid of development and lacking a discernible structure (if one were to exist, its disconnect to lower levels would make

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⁴⁷ In this case, the term “neighbor” is used to reference a familiar melodic structure by which a tone of a higher status harmony is displaced by step to a tone of a lower status harmony before being resolved back to its original tone. This is not meant to evoke the vernacular usage by which the displacing tone is concerned “non-harmonic” or not part of a chord.

identifying prolongations and transformations an entirely moot exercise). Just as Schenker relates Origin, Development, and Present to *Background*, *Middleground*, and *Foreground*, so too shall they be referred herein. “The background in music,” says Schenker, “is represented by a contrapuntal structure which I have designated the fundamental structure.” I shall continuously assert that the great majority of Schoenberg’s early works expand upon Schenker’s model for organic musical structure, so too shall the term fundamental structure be employed to express the contrapuntal depiction of the background. However, as has been previously stated, a key distinction between the theory asserted herein and Schenker’s is that the fundamental harmony need not be prolonged by dominant but rather by any other harmony which serves to prolong the fundamental harmony while generating one of three possible upper-voices: a descending line, an ascending line, or a line of changing direction (Example 12). Arpeggiation, therefore, becomes a possible bass motion, but is not required to support the fundamental melodic line.

![Example 12. Types of Fundamental Lines](image)

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Because, from a classical standpoint, it might be difficult to understand the necessity or a “line of changing directions,” the above example offers clarification. An orthodox Schenkerian fundamental structure requires the piece to begin and end in the same key. As such, it would not be necessary for the upper voice of a fundamental structure to change directions. Instead, the concluding tone would simply be shown to have derived from another tone of the same harmony, thereby expressing its musical evolution. In a Schoenberg-tonal work, however, it is not uncommon for a piece to begin and end in different keys (most commonly in parallel keys composed-out through change of mode operations) and this type of line allows said change to be so expressed.

An ascending line may, upon initial consideration, seem equally unnecessary. However, a common way for Schoenberg to elevate the roll of chromaticism from foreground linear devices to structural simultaneities is to members of a structural harmony with a decorative chromatic pitch. This process often results (as in the case of Opus. 11) in incomplete structural harmonies as they are transferred toward the surface of the piece. In order to stray from assigning more tonal gestures than necessary, I find it important to maintain these incomplete harmonies at the structural level rather than and maintain a linear expression of the fundamental structure that may more closely be seen through its evolution into the piece. It is ultimately the goal in establishing the guidelines for determining the fundamental structure that, according to Schenker, “the life of the
fundamental line...manifests itself not only in the first horizontal succession... it also expands through the *middleground*, through what I have called the voice-leading and transformation levels, prolongations, elaborations, and similar means, into the *foreground*.”

Schenker refers to a unity as the combination of the fundamental line with bass arpeggiation. The idea of unity as a means through which voice-leading transformations may occur in the *middleground* is supremely important for understanding a musical work as complete, organic whole and is not lost herein. Despite dismissing bass arpeggiation as a necessary attribute of the fundamental structure, the concept of a work’s unity remains applicable—just as a bass may be composed-out by means other than arpeggiation, so too may further levels advance an unfolding. *Unity*, therefore, is not disregarded but rather expanding to become relevant in an increasingly chromatic musical realm.

Just as Schenker requires the succession of tones of the fundamental line to occur within the space of an octave (referred to as the obligatory register) so too shall the fundamental line be restricted in this context as it applies to Schoenberg’s work. This concept becomes a critical point in understanding the linear derivation of a harmony through idealized voice-leading (to be discussed in the next chapter). Just as in Schenker’s theory, the possibility of a change of register may occur in the foreground or

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the middleground. In fact, these register transfers are significantly more common in Schoenberg’s works than in classically tonal examples. Furthermore, the “illusion of independence”\(^{51}\) created by the change of register of the tones of the fundamental line furthers the “illusion of independence” of Schoenberg’s works with tonality.

**The Augmented Triad Paradox**

The Augmented Triad Paradox is so named due to its remarkable ability to simultaneously assert and destroy the appearance of tonality. In classical tonality, the augmented triad occurs more as a theoretical possibility than as a practical compositional choice. However, it is regularly derived through the occurrence of an upper-voice chromatic passing tone as in Example 13.

![Example 13. Augmented Triads From Chromatic Passing Tones](image)

In the above example, the augmented triad results from chromatic passing tones being employed to strengthen the governing diatonic motion. In this case, the incidental augmented harmonies intensify the diatonic harmonies rather than subvert them. Still, it is worth noting that the augmented chord as an independent harmony most often occurs only (in classical tonality) as the mediant harmony in a minor key in which the leading-tone has taken the place of the subtonic to evoke the harmonic minor scale. Because this harmony is dissonant with itself (neither the root nor the fifth reference the other’s key area or tonality), it is scarcely employed thus. Instead, the mediant harmony most often occurs with a lowered form of scale-degree seven thereby generating a major quality chord.

Let us then return to Example 12. Our ears accepted the presence of an augmented harmony as resultants of chromatic voice-leading. In this case, because the structural harmonies were so clearly evident (thanks in large part to their metric placement as well as their rhythmic elongation), we would likely need to spend very little time reconciling the applied chromatic tones. In Schoenberg’s music, on the other hand, this is rarely the case. Augmented chords become increasingly prominent as the composer approaches atonality thereby forcing certain analytical decisions to be made. Example 14 offers the most common explanations for the augmented chord as a replacement for structural harmony.
Example 14. Augmented Triad Paradigms

The augmented triad paradigms shown in the above example offers three possibilities for the explanation of a single augmented triad. In the first half of the example, G-sharp may be understood as both a chromatic passing tone that takes the place of C-Major’s fifth, as well a chromatic lower-neighbor tone that displaces the root of A-minor. In the second half of the example C-Major is again displaced with a raised fifth, resulting in a harmony what’s lowest note takes the place of E-Major’s fifth. Because all three (C-Major, A-minor, and E-Major) are likely inferred harmonies from the initial augmented chord (C-Augmented), all three must be considered as possible structural harmonies. Ultimately, one harmony may be chosen over the others upon considering the linear composing-out of each member of the chord. In any case, the harmony altered or replaced by the augmented chord is the one which best serves to reference the work’s fundamental structure through various levels of transformation.
Because the harmonies which appear in the fundamental structure are abstractions that reference the governing harmonic areas of the work, the augmented triad may not appear in the background analysis no matter how significant the sonority may appear to be given the tonal framework of the work. However, for examples in which the augmented triad replaces a member of the fundamental structure, said triad may appear at early analytic levels so as to show displacement from the structural harmony being referenced.
Chapter 6: Principles of Idealized Voice-Leading

According to Schenker, “the principles of voice-leading, organically anchored, remain the same in the background, middleground, and foreground, even when they undergo transformations.” What results is a graphic representation of a musical work in its idealized form by which goal-tones are achieved as directly as possible via stepwise (half or whole) motion. To help further the understanding of this idealized voice-leading, careful attention should be paid to the difference between voice and part. With respect to the musical score, a “part” is an individual line created either by following one “voice” or by continually shifting from one to another (or even by referencing one without necessarily physically evoking it). In any case, idealized voice-leading is an abstract framework upon which a given piece is based. How that abstraction is expressed as “real music” helps determine the style and even composer of the music. What results is a sort of path which a part may follow. It is therefore not the music itself, but rather a culmination of several possible choices the composer can make when creating an individual line that moves from one structural harmony to another resulting in the “real,” surface of the piece.

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A brief clarification regarding the term “adjacency” is perhaps helpful in clarifying its use herein. In a discussion of tonal music (pre-Schoenberg), an “adjacency” is often used ambiguously and typically refers to a tone a diatonic step from a second tone. This is, of course, problematic when addressing a modulation. At the moment a modulation occurs, a pitch is introduced that is diatonic with the future key, but chromatic in relation to the one previous. Therefore, this new pitch would only be considered an adjacency to the latter of the two pitches even if the adjacent tone is common to both keys. While not wholly problematic, this paradox tends to allow for a more broad understanding so as to include all steps, half and whole thereby eliminating the problem begat from modulation.

Under a 12-to-the-octave (12-gamut) system, “adjacency” is given a more precise definition. In this case, there is no need to be concerned with problems arising through modulation as there has been no established key or tonal center. “Adjacency” is thus applied only to tones related by half-step. For the purposes of the discussion apropos Ordered Harmony Transformations, a decision must obviously be made. Herein, “adjacency” is applied according to the pseudo-tonal sense (pre-Schoenberg) bearing in mind that the strongest adjacency is one that may be approached through idealized voice-leading.

The term idealized voice-leading, while insinuated by Heinrich Schenker, was advanced as a concept by Gregory Proctor for a process through which smooth part-
writing becomes possible. The idealized voice-leading is therefore the shortest, most
direct path from one harmony to the next as seen in Example 15.

Example 15. Gregory Proctor’s Voice-Leading Paradigms

The process of determining idealized voice-leading involves two rules: 1) while
all of the notes between to harmonies may be derived linearly, the bass (and only the
bass) may move by skip (assumed, generically, to be anything larger than a whole step);
2) the upper voices must move by step, following a direct path from one harmony to the
next. At the highest levels of an analysis, idealized voice-leading must be maintained. As
the analysis moves closer toward the foreground, idealized voice-leading may be avoided in cases where a particular part is necessary to emphasize (in which case the voice-leading is still assumed and the newly indicated part should be notated in reference to the idealized voice-leading).

So that idealized voice-leading can be fully understood, Example 16 offers an excerpt of the opening to Brahms’ Fourth Symphony in E-minor.
Example 16. Symphony No. 4, Johannes Brahms (mm. 1 - 20)

Example 17 offers a reduction of the first nineteen measures using idealized voice-leading.
Example 17. Symphony No. 4, Johannes Brahms (mm 1 - 19);

Idealized Voice-Leading Reduction

In deriving the above example, the first step was to remove the doubled octaves as well as any rhythmic events so as to generate a reduction that is restricted to harmonic information in abstraction. In doing so, it should be noted that the bottom staff contains the roots of each harmony (not merely the bass) and the top staff contains the notes of each chord. A successful reduction will allow for skips in the bottom staff but step-wise or common-tone motion in the upper voice as has been maintained in Example 3.3. From this point, harmonic understanding because significantly easier (although in completing a thorough analysis it will ultimately be necessary to refer to the score itself rather than this reduction). For instance, it will be easily apparent that the work begins with a four-
measure T - PD - D - T embedded phrase-model\textsuperscript{53} that serves to establish E-minor as the key (a gesture similar to those used at the onset of J.S. Bach’s Preludes). The key is confirmed by the cadential 6-4 figure leading to the cadence in E-minor at the end of the example. With that, the bookends for the phrase have been put in place, and it is now the analyst’s job to determine how the intermediary chromaticism served to move both from and to the now established governing pillars, E-minor.

When applied to chromatic music, \textit{idealized voice-leading} becomes a model through which harmonic structures may become more readily discernible. Because idealized voice-leading is a process that may be applied to both analysis and composition, it may be used to simplify a composition to allow the structure, previously hidden, to begin to come forth. As seen in Example 3.1, certain choices may be made when progressing from one harmony to the next. Analytically, the process of making these decisions serves to help illuminate the analyst’s own understanding of the work by making choices based upon what tone they believe to lead to the next and so forth. Furthermore, because linear progressions of the foreground are transformations of

background lines, understanding a work’s surface through *idealized voice-leading* may serve to help reverse-compose the work.\textsuperscript{54}

\textsuperscript{54} This is not to suggest that structures are more readily discerned through reduction, but rather that by making a series of choices, a possible background structure may be determined. This process may be repeated a number of times thereby generating several possible governing structures. From this point, determining the governing structure merely requires making a choice as to which of the aforementioned possible outcomes best fits the analyst’s aural understanding of the work. This process has the added advantage of asserting multiple possible analyses differing only in the analyst’s choices for interpretation.
Chapter 7: Analytical Observations Apropos *Friede auf Erden* (mm. 1-30)

Schoenberg’s Op. 13, *Friede auf Erden* (Peace on Earth), provides an excellent example of music that is largely triadic and containing structural harmonies that are prolonged through chromaticism generated both linearly (via idealized voice-leading) and vertically (via tonal harmonic development). *Example 18* offers the first nine measures of Op. 13 under which a series of roots have been asserted whereby the case of the letter denotes the quality of the fundamental triad (upper case for major, lower case for minor).

Because of its strong foundation in classical tonality as well as its surface-level adherence to *idealized voice-leading*, *Friede auf Erden* is a good place to begin when
trying to discern fundamental structures in Schoenberg’s music. However, Op. 13 possesses much to uncover beginning with the first note for which an analytic decision must be made. In the same way that the Waldstein Sonata example (Example 2.1) showed how a chord is perceived as tonic until otherwise specified, so too does that onset of Friede confound our ears. The ‘A’ in the tenor voice by itself gives us little to infer, however in that brief window it is easy to assume the ‘A’ to be a chord tone. When we stop to consider the piece as a whole, we see that Schoenberg has provided a key-signature (further distancing the work from the atonal pieces composed in the years to come). With this little bit of information we can deduce the ‘A’ to be either the third of a tonic harmony in F-Major, the fifth of tonic harmony in D-Minor, or the root of a dominant harmony in D-Minor. The second harmony (a fourths chord with D against E) neither confirms nor denies the two chords in D-Minor, but the presence of an E above the sustained A does intimate that the harmony on beat two is, in fact, A-Minor thereby seeming to suggest local harmonic area of D-Minor. Still, since the initial ‘A’ could be heard as the fifth of an implied tonic harmony in D-Minor that quickly moves to the minor dominant on the second beat, the illustration in Example 3.1 offers both analyses as possible hearings.

Regardless of the interpretation of first chord, the opening four measures present a gradual linear unfolding of an iconic embedded phrase model in the key of D-Minor whereby tonic (or minor dominant) moves to the minor sub-dominant before continuing to the minor dominant and back to tonic at downbeat of measure four. While the
downbeat of measure four is hardly a moment for harmonic repose, it should be noted that the first cadential paradigm is present here. In this case, the bass line leaps a fifth from dominant to tonic while the alto moves up by step to the same pitch-class as the bass. While, again, this may be somewhat lost aurally, it does provide enough confirmation of the key (in the context of the phrase model) to further the establishment of D-Minor as our first structural sonority offering the likely harmony that will govern the generative layers of the piece.

By measure five, the minor tonic has been temporarily and cleverly transformed to its parallel major (D-Major) in the process of a series of composing-out of overlapping harmonic windows. The third of the D-Major itself (measure 6, beat 4) is derived by a passing motion from the soprano F on the first beat of the measure to the tenor F-sharp on beat four, then the G in the same part on the downbeat of measure six leading up to the B-flat in the tenor at the end of measure seven which is ultimately reconciled by the alto C at the cadence on the downbeat of measure nine. Following similar voice-leading, the soprano E-flat in measure six is prolonged by a lower neighbor D before being resolved back up to E-flat in the bass at the downbeat of measure seven which is then passed back up to the E-flat in the soprano on the second beat of the same measure. Here, once again, we have to distinguish voice from part. The soprano part by itself offers a C-sharp to E-flat figure which would seem to ornament D via double chromatic neighbor tones. Sure enough, the pair of tones both came from and go to Ds which are displaced by an octave. Interpreting the part as a single entity would thereby suggest the D to be in control while
the C-sharp and E-flat are simply tones of figuration. When viewing the voice as a whole, on the other hand, a chromatic line begins to surface that steers the phrase ever-stronger toward the cadence. In this reading the E-flat in the soprano at measure seven is the resolved upward to E-natural in the alto on the next beat followed by an F and then G in the same part which ultimately leads to a G-sharp at the end of the measure and then finally A in the tenor at the cadence in F at measure nine.

The harmony of this particular part of the phrase is just as intertwined as the voice-leading. At the downbeat of measure six we have A-Minor (the minor dominant) beginning a stepwise harmonic ascent toward D which is prolonged by a harmonized chromatic neighbor tone (E-flat) at the downbeat of measure seven. This D-Major harmony transforms back into its parallel mode by the downbeat of measure eight which becomes the sub-mediant in F-Major, confirmed by a V-I cadence in F at measure nine. However, the stepwise ascent at measure six might better be understood as a foreground linear device used, in fact, to prolong B-flat Major which remains in control until measure eight when it becomes confirmed as the sub-dominant in F-Major creating a similar embedded phrase model in F-Major to the one which opened the piece in D-minor. Although several possible examples exist to explain the how Schoenberg moves from the background to the surface of the music, the structure itself becomes evident with D-Minor becoming F-Major by measure nine.
Example 19 offers a depiction of measures 9 through 21, the second part of the opening section, under which harmonies have once again been attributed.
Example 19. Op. 13, Friede auf Erden (mm. 9 - 22) 86
Schoenberg quickly destabilizes F-Major following its cadence at measure nine in order to return to D-Major at measure 11. Yet while the key signature changes from d-minor to D-Major (a change of mode that was foreshadowed at a lower structural level in the previous phrase) D is hardly confirmed. At the beginning of the first phrase (measures 1-4), D (in this case D-Minor) was suggested but not confirmed until a nearly foreground cadence. The same might be true here with a alto passing tone on the second beat of measure 11 which could be interpreted as root change from the soprano ‘A’ to the alto ‘D’ (rather than the aforementioned passing tone). However, the confirmation of the key is significantly weaker than the confirmation of D-Minor in measure four. In this case the
root of the dominant, A, moves to the root of the tonic, D, in a different voice (not just a
different part) between beats one and two of measure eleven thereby devaluing it as a
cadence altogether. Instead of cadencing immediately on D, therefore, A-Major is
maintained as the structural harmony which we find confirmed by the A-Major at the end
of the section (measures 21 - 22). Because this section is bookended by A-Major (and the
only cadence is the g# diminished triad into A-Major at the beginning of measure 21), A
becomes the harmonic area and thereby establishes A as the third structural harmony of
the piece serving to outline a D-Minor triad (D-Minor, F-Major, A-Major) further
confirming the linear composing out of Friede auf Erden’s opening harmonic structure as
seen in Example 20.

Example 20. Op. 13, Friede auf Erden - Structural Harmonies with
Idealized Voice-Leading (mm. 1 - 22)
Compositionally, the section outlined in measures 11 - 20 evokes a passacaglia whereby a two-measure bass line, typically referred to as the Friede Motive (which can hardly be missed as a direct copy of the Credo motive from Beethoven’s Missa Solemnis, perhaps another distinction helping to add credence to the tie-in of this, one of Schoenberg’s early pieces to classical, German musical forms) is repeated, over which a set of increasingly chromatic voices outline fifths progression. In this case, to keep the series from necessarily cycling all the way around the circle of fifths in order to continually prolong A, Schoenberg uses subverts the motion from G to C by employing the lower neighbor C-sharp to D in the alto at measure 12 as a harmonized rood transformation at measure 13. This motion thereby allows the falling circle of fifths to create a significant yet hardly noticeable detour as G - C becomes G - C-Sharp. From C-sharp, A is only four cycles away as arrived in measure fifteen.

Although the current section is more chromatic than the previous, the voice-leading is perhaps more concise; much more closely resembling its idealized form. The, lowest, bass voice is perhaps the easiest to visually derive. While the Friede motive is perhaps best considered as a cohesive four-note unit, its pitches may be seen as eventualities of upper voices. The E to C-Sharp descent in measure nine serves to complete a voice exchange with the alto C-Sharp to E ascent. Here, the D-Sharp (alto) is added to intensify the growth toward E while both Ds (D-Sharp and D-Natural) function under the “passing” umbrella which ultimately derives the alto E and bass C-Sharp. At the end of the measure, the alto E can go either to the E in the same voice at the
beginning of the next measure or to the bass F-Sharp as both derive linearly from the same E even though the bass F-Sharp is more readily (aurally) grasped as a fifth descent from the C-Sharp down to F-Sharp.

Measures twelve and thirteen highlight a pair of undulating, overlapping voices that collectively generate the melodic interplay present in the soprano part. First, the bass B (measure 12) may be seen as coming from the soprano A in the beat before. This posits a unique voice-leading problem as the B is not directly continued or resolved. Of course, once the next measure is considered, the A-Sharp to B in the soprano becomes apparent as the natural evolution of the aforementioned B and therefore the A at the beginning of the line. This assumption requires, therefore, that the pair of Gs and the D in measures twelve and thirteen of the same part be explained through similar idealized voice-leading.

While it might be possible to view the Gs as a second possible line generated from the soprano A which is then picked up by the alto Go and brought downward, it might also be understood as the eventuality of the inner-voice G that has been parenthetically prolonged since the tenor’s resolution to G, the seventh of A major on the downbeat of measure eleven which, until now, has not been considered.

Regardless of how the G is analyzed with respect to idealized voice-leading, the D (soprano, measure 13) deserves careful consideration as the suddenly conjunct line that results from compositional choices is rather aurally striking (however melodious). Again considering the soprano part as a separate entity, it may be desirable to analyze the D on
beat two and B on beat four as a double neighbor to the soprano C-Natural on beat one of measure fourteen. However, this understanding unfortunately fails to account for both how the initial D is derived as well as why the ultimate C-Natural appears thusly rather than the diatonic (given A as the local harmonic area) C-Sharp. A more cohesive understanding of the passage suggests the initial D (soprano, measure 13) to be a passing tone between the bass E and C-Sharp, thereby evoking the B on beat four of the soprano (which was generated from the initial A) as the goal tone of a line which began on E.

One of the unique descriptors of this section (measures 11-20) is not only the Friede motive but also the gradually rising line in the upper voice which has been shown through idealized voice-leading but embellished by voice-exchange and evoking lower voices. This ascent continues as the line draws ever closer to its summit on E in measures seventeen and eighteen with little interruption to the idealized voice-leading (the brief E in measure fifteen is a mere cover-tone of the bass E). This melodic ascent to a goal tone E coupled with a bass motive that strongly suggests the elevation of E to the tone of highest status (the falling fifth, or in this case the rising fourth from the end of one motive to start of the second is impossible to miss as a melodic V - I) helps confirm E as the principle melodic tone of the section which is controlled at a higher level by the harmony A-Major.

Example 21 offers a depiction of measures 21 through 30, the final part of the opening section, under which harmonies have once again been attributed.
The concluding part of the opening section of *Friede auf Erden* (mm. 1 - 30) highlights the significant compositional processes which have been established by the previous sections: parts generated by displacing idealized voice-leading and tonal

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**Example 21.** Op. 13, Friede auf Erden (mm. 21 - 30)
The concluding part of the opening section of Friede auf Erden (mm. 1 - 30) highlights the significant compositional processes which have been established by the previous sections: parts generated by displacing idealized voice-leading and tonal structural harmonies determined by realigning tertian simultaneities. However, in this section, the harmonic evolution is perhaps more significant than the linear composing-out of the independent voices.

Just as the opening of the piece set out to indirectly establish D-minor as the local harmonic area only to displace it as a lower-status harmony within the temporary key of F-Major, so too does this section establish one harmony throughout its own destabilization. The opening sequential gesture (the upper voices unmistakably drawn from the previous Friede motive) is quickly and easily identified as a local Dominant to Tonic move in D-Major, finally resolving the prolonged A harmony throughout the previous section. D is then quickly destabilized by chromaticism generated from a complete, harmonized arpeggiation of A-Minor in the bass (measures 25 - 26) as part of an ascending root motion to G-Minor, the minor sub-dominant of D-Major (derived through modal mixture) which is confirmed by the strong Dominant to Tonic cadence from measure 28 to 29.

As measures 25 - 28 depict the first time the composer has juxtaposed flats and sharps when the flats have come from mixture rather than micro-tonicizations or chromatic voice-leading alterations, these measures deserve a moment of careful
consideration. It is clear that the intended affect of the soprano part itself is to have a four
note whole-tone descent. This, then, begs the question: why did Schoenberg choose B-
Flat and A-Flat over A-Sharp and G-Sharp? The answer becomes apparent when pairing
the melodic descent with its harmonic rooting. The B-Flat at the downbeat of measure 27
may be argued equally in two directions. The B-Flat by itself could serve as the root of B-
Flat chord rather than an augmented D which may be suggested by the simultaneity
alone. B-flat as a chord may seem a strange choice until considered as part of a larger
harmonic window that is governed by the resulting G in the bass, forming a measure of
composed-out G-Minor in which B-Flat lives happily as the relative major. This reading
unfortunately causes additional problems as it requires an explanation for both the C-
Sharp and the F-Sharp on the same beat in the inner voices. While the C- Sharp may be
viewed as a suspension from the previous harmony (in which C-Sharp was the fifth), the
F-Sharp is not as easily explained away. In this case, the F-Sharp might resolve upward to
G which is transferred to the bass on the third beat allowing the proceeding F-Natural in
the alto to come from the F-Natural in the previous measure. The F-Sharp could not be
read as an enharmonically respelled G-Flat without requiring a change of root creating a
G-Flat harmony. This G-Flat might lead capably to G in the second half of the beat (an
enharmonic respelling of the previous F-Sharp harmony), but G-Flat to G would be a
very drastic atypical derivation from tonal harmony in which G-Flat is not a leading-tone
to G. As such, any such analysis should be avoided as it deviates too far from the
composer’s implied tonal extensions.
Unable to account for the B-Flat through entirely vertical means, it becomes necessary to step backward, slightly away from the surface of the music and consider the measure as a collected unit. The A-Flat in the soprano on the final beat of the measure functions without much complaint; the minor ninth of a G harmony. As the voices are prearranged in thirds, it is difficult to hear this as anything but an extension of the bass G. Therefore, one can look backward to the onset of the measure and see that both B-Flat (generating a B-Flat harmony) and its enharmonically respelled A-Sharp (creating a D-Harmony) may prolong G. As such, the tone itself does not necessarily alter our interpretation of the larger unit. The tone itself then becomes a question of voice-leading.

D, C, B-Flat, and A-Flat all form an easily recognizable section of the whole-tone scale. While A-Sharp would still create the same sound through their enharmonic equivalency, it does produce a handful of performance concerns. On one hand, in the same way that G-Flat does not resolve to G in a typical tonal realm, neither does A-Sharp resolve to A-Flat. This creates a significant problem of confusing “part” with “voice” resulting in the abandonment of the whole-tone idea creating an incidental series of whole-steps in one part. On the other hand, looking ahead toward the cadence, we see that A-Natural is the goal-tone of this phrase. As such, the B-Flat creates a tonally recognizable gesture: the chromatic upper neighbor tone.

Two final points are worth making concerning the structure of Op 13’s opening section. The most easily discernible point is that the harmonic area in which the section
concluded (D-Major) completes the middle-ground bass arpeggiation D (Minor) - F (Major) - A (Major) - D (Major) which generates the form of the work’s first section by prolonging the background harmony D. Less notably, however is the melodic descent that has worked its through the section.

The pitch A opens the piece in the tenor. While the works begins to attempt to evade A’s grasp, it fails at relinquishing the tone by the end of the first section but instead moves its position (temporarily) from the fifth of D-Minor to the third of F- Major. As the second section begins, A has been transferred to the soprano voice as well as elevated to a higher status: the root of A-Major (the Dominant harmony of the aforementioned middle-ground structure). The second section highlights a gradual ascent of the line until it the A has been completely transferred to yet a higher octave (yet retained in the soprano) in measure 18. While the following line may be explained locally through idealized voice-leading and octave transference (as has previously been stated), the voice itself remains in limbo. The A is finally reconciled by the G in the same voice at measure 25 which begins an incomplete octave descent (E, the melodic 5th, is missing) culminating in the cadence of the section at measure 29.
Chapter 8: Ordered Harmony Analysis of *Drei Klavierstücke, Op. 11*

Although composed only a year following *Friede auf Erden*, the *Drei Klavierstücke* represent a style of increased chromaticism more representative of Schoenberg’s later works than his earlier opuses highlighting a sharp rift between the composer’s “tonical” and “a-tonical” pieces. However, in much the same way that a purely functional analysis was seen to be less than ideal when discussing *Friede auf Erden*, so too is a strictly set-class analysis unhelpful with the *Drei Klavierstücke*. Still, while a set-class analysis alone may explain very little about the pieces’ underlying structures, it can be a helpful first step in determining what is on the page and, perhaps more importantly, with what tools the composer is constructing the composition.

A cursory pitch-class set analysis of all three pieces concludes that the most frequent chords tend to occupy the space of sets [026], [015], and [025]. Of course, before continuing any discussion regarding “chords” we must first come to an understanding regarding how the term shall be used as “chord” may insinuate a parallel with harmony and, therefore, tonality. To that effect, I consider a chord to be any grouping of pitches which may be evaluated vertically with respect to the governing compositional system of a piece. As such, a chord may be a vertical collection of simultaneities while it may also be a collection of pitches expressed linearly. The
presentation of pitch elements presented horizontally may be considered a “chord” rather than a “contrapuntal elaboration” or “line” only when said collection may be evaluated vertically with respect to the system. In the instance of a melodic statement that should not be considered a linear example of a chord, the elements may be evaluated as simultaneities, however the resulting collection may not prove useful in a vertical analytical system and, as such, are best left to melodic discussions. Similarly, horizontal instances that warrant both linear and vertical consideration are exceedingly useful as they comprise primarily a vertical harmony the elements of which have been arranged in a way to bear melodic relativity—a compositional tool which should not be brushed off as “coincidence,” rather, “good writing” and should be easily accessible in any analytical system.

Having understood the concept “chord,” it might be a logical step to cull through the three pieces comprising Opus 11 and make note of the occurrences of pitch-class sets [026], [015], and [025]. However, the resulting analysis tells us little beyond the fact that set [026] appears x times within Opus 11. This observation is then both time consuming and unhelpful except to prove that, in fact, [026] occurs often throughout the piece, a step already assumed earlier when the three sets in question were extracted as the most commonly repeated sonorities. While a Forte analysis might take this observation a step further by labeling alpha and beta sets by standardized referential numbers in order to begin to coalesce a sense of set-driven form, I propose a hybrid system (extended from the Schenkerian-based model employed in my analysis of Friede auf Erden) that takes
observations from a set-based analytical study and combines them with elements of a functional analysis. Most specifically, attention should be given to how sets are spelled so as to note a similarity—but not necessarily equality—between various inversions of the same chord.

In order to best utilize the information a set-class analysis readily provides, and to employ said information as an effective tool for uncovering structural materials throughout Opus 11, it is necessary to make a few observations regarding how the predominant set classes actually tend to appear in the music and, logically, which instances seem aurally more or less significant. At the same time, it might be extremely valuable to notice not only where these set classes occur but what happens both before and after them, and what other (potentially initially unrelated) chords appear or sound connected.

No. 1 presents fewer instances of [026], [015], and [025] than the two ensuing movements, however what instances do exist occur surrounded by statements of related, beta, pitch class sets [016] and [014]. While these new sets occur sporadically, their appearances in the same duration, voice, and basic spacing as [026] makes it nearly impossible to see one without connecting it to other via contrapuntal expansion, as shown in Example 22. No. 1 in particular appears to exist quite agreeably in four voices with a fifth voice forming out of the melodic contour which seems to steadily suggest a melding
of two voices despite the fact that one instrument would likely play the line were the score to be orchestrated.

Example 22. *Drei Klavierstücke No.1*, related trichords

No. 2 more traditionally incorporates the *alpha* set classes and might appear, on the surface, to be adequately describable by means of a set-class analysis. However, the recurrence of an eighth note ostinato in the lower voice above a bass pedal seems too significant of a form-defining gesture to be explained away as merely a series of alternating pitch classes \{2,5\}. Similarly, the movement is built decisively around the emergence of a sixth voice from the four- or five-voice texture established by the first movement (Example 23). Interestingly, these six-voice moments *sound* perfectly in keeping within the framework of the piece even though a set-class analysis might attempt to explain them away as a series of two three-voice structures in *contrast* with one another given their varieties in makeup. While an acceptable solution might be to generate a series of six-note pitch class sets (hexachords), such analysis would dilute
Schoenberg’s genius for being able to pit two contrasting (although similar) tri-chords against one another without the feeling of added or unnecessary dissonance.

Example 23. *Drei Klavierstücke No.2*, opposing tri-chords in a six-voice setting

While an analysis of the pitch class sets comprising No. 3 might be fruitful in determining the extraordinary number of *alpha* (as well as *beta*) sets, said analysis would likely reveal very few oddities about the movement at all. From a compositional standpoint, therefore, this analysis might go to great lengths toward explaining how Schoenberg conceptualized (and potentially even composed) the piece. The drastically increased number of *alpha* set occurrences would account for the increase in perceived melodic and harmonic activity and would also help to point out the increased number of simultaneities.
This analysis would fall short in the same way that the previous set-based analytical observations failed to fully articulate an understanding of the pieces. While the ways No. 3 is related to the previous two movements would, in fact, become apparent via a set analysis, the way the movement is off-set (at times to its detriment) from the others and at times sounds entirely disassociated is lost through this system. For example, whereas No. 1 was constructed around four to five voices and No. 2 as many as six, No. 3 relentlessly evokes as many as 12 while highlighting the orchestral nature of the piano and leaving restraint with respect to register lost by the wayside. Similarly, while No. 2 toyed with the notion of two, contrasting chords composed one against the other in harmony with the governing structure, No. 3 equally employs contrasting chords as sort of bi-tonical simultaneities, but to much less success—a distinction that might be made relevant via a hybrid analytical system but is lost by a strictly pitch class set approach.

Because of the similarities between the three movements comprising Opus 11, an analytical system that can adequately explain all three movements within one set of guidelines seems necessary. However, the same system should likely be capable of demonstrating the lack of success that Schoenberg seems to have composing No. 3 as an eventuality of No. 1. With these constraints in mind, the following set of governing harmonic sonorities and compositional guidelines have been generated by extracting both alpha and beta set classes and classifying them according to their perceived appearance in relation both one to the other and to a possible background structure.
Given the amount of importance Schoenberg seems to place in both register and spacing, it seems advantageous to begin with a format similar to a tonal system wherein chords not only relate one to another via an understood sense of hierarchy, but also where chords contain members (i.e., root, 3rd, 5th, 7th, etc.). Not only does a system thusly allow for two chords at one status to be of different qualities (and, thus, potentially different set classes), it also provides us with the opportunity to discuss each voice as connected one to another via a series of contrapuntal expansions and connections. The harmonic sonorities shown in Table 1 describe a series of five so-called “ordered harmonies” that serve to define the harmonic series governing the piece. These sonorities are structured in descending order from background event (form-generating) to foreground. Although all of these events occur, in fact, at the surface of the piece, an observation of first and second ordered harmonies helps reveal a structure previously hidden yet aurally perceived.
connections. The harmonic sonorities shown in Figure X.1 describe a series of five so-called "ordered harmonies" that serve to define the harmonic series governing the piece. These sonorities are structured in descending order from background event (form-generating) to foreground. Although all of these events occur, in fact, at the surface of the piece, an observation of first and second ordered harmonies helps reveal a structure previously hidden yet aurally perceived.

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<tr>
<th>Order</th>
<th>Structure</th>
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<tr>
<td>1st</td>
<td>Root, $3^{rd}$ (M/m), $7^{th}$ (M/m) OR Root, $3^{rd}$ (M/m), $5^{th}$ (P)</td>
</tr>
<tr>
<td>2nd</td>
<td>Root, $5^{th}$ (P), $7^{th}$ (M/m)</td>
</tr>
<tr>
<td>3rd</td>
<td>Root, $3^{rd}$ (M/m), flat-$5^{th}$, $7^{th}$ (M/m), $9^{th}$ (M/m)</td>
</tr>
<tr>
<td>4th</td>
<td>Root, $3^{rd}$ (M/m), sharp-$5^{th}$ (optional $7^{th}$)</td>
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<td></td>
<td><em>Note: The inversion of a 4th ordered harmony may generate the sonority Root, 2nd, 5th depending on the contrapuntal nature of the harmony. Alternatively, Root, 7th, 9th becomes a strong possible respelling of this harmony wherein the 2nd is treated as an extension of the optional 7th which, in three voices, may replace the 5th.</em></td>
</tr>
<tr>
<td>5th</td>
<td>Root, $4^{th}$ (P, substituted for $3^{rd}$), $5^{th}$ (P/d)</td>
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Table 1. *Drei Klavierstücke* Ordered Harmonic Sonorities

It is worth noting that most of the intervals above the root may vary according to their quality. These intervals are, in fact, freely interchangeable and are governed by inner-voice counterpoint that leads one harmony to the next similar to a harmonized neighbor note. **Example 24** shows the opening of No. 1. A dotted-line has been added to show the alteration of the harmonic third in order to point toward the fourth measure.
In order to cohesively put together a system for analyzing any piece of music, I find it helpful to first determine the most readily apparent organizing events for the piece(s), as shown in the above figure, and then establish a set of guidelines and procedures to govern the use of the former events. What typically results is a system of composing “in the style of” the piece at hand rather than a method for taking the preexisting piece apart—a system that possesses the inherent ability for aurally understanding how a piece is constructed in order to get at the structure underneath the work being mimicked. Fixture 5.2 offers these guidelines related to the ordered sonorities given in Table 2.
| Guideline 1 | Lower ordered harmonies (sonorities with higher ordered numbers) suggest lower level structural chords; higher ordered harmonies (sonorities with lower ordered number) suggest higher level structural harmonies. |
| Guideline 2 | 5th related root motion is preferred assuming “root” to be the lowest sonority given the above ordered harmonies. |
| Guideline 3 | All middleground harmonic events depict ordered harmonies that are derived contrapuntally from background harmonic events (ordered harmonies). |
| Guideline 4 | Enharmonic respelling indicates two-voice unfolding unless immediately preceding a change in key signature in which case said respelled notes may suggest renotation for the performer’s sake. Chromatic adjustments, similarly, suggest the presence of multiple voices unless a part of a chromatic gesture (i.e. a five-note chromatic scale). |

**Table 2. Drei Klavierstücke Compositional (Reverse-Analytical) Guidelines**

Within the confines of this new system, a natural, organic shape begins to emerge from within the chromaticism. Here, the first three-voice simultaneities as show in the lower voice in Example 25 are easily understood as variations of 1st ordered harmonies rather than the aforementioned separate instances of set classes [016] and [014].
Example 25. *Drei Klavierstücke No.1*, Opening with Ordered Harmonies (Designated by Arabic Numbers)

This analysis suddenly places Schoenberg’s work in line with earlier composers for whom traditional, functional analysis is helpful. In the case of a prelude by J.S. Bach, for example, it is exceptionally common for the composer to begin by stating the tonic harmony and then move away from tonic to a lower status harmony (e.g., I - ii6). Furthermore, even a first hearing of the opening four measures of No. 1 would likely yield an aural connection between the first two harmonies and a subsequent, less-definite connection between the second and third. The ordered under discussion allows for a clear and visible connection with this aural assumption without disregarding the contrapuntal nature of the composition (as shown via the dotted line in Examples 23 and 24).

As what is the first section of No. 1 appears to conclude, an A-flat rooted 1st ordered harmony emerges in the bass, stated contrapuntally and doubled in octaves (Example 26) before a texture and register shift signifies the beginning of a second
section. After applying the guidelines for an ordered analysis which highlights a shift from 1st ordered harmony in the bass to a series of 4th ordered harmonies in the upper voice. This change in ordered harmony, combined with the shift in register and textures confirms the feeling of a new, B section.

Example 5.5. Drei Klavierstücke No.1, Section A/Section B

At measure 53, motivic material form the initial A section returns, alluding to the return of the A section and thereby creating a three-part (ABA) form. Here, a set class analysis suggests a juxtaposition of two varying sets on top of one another: [0124] over [01358]. This oddity, as shown in Example 27, might suggest a moment of atonality given the degree to which the two sets seem unrelated.

Example 26. Drei Klavierstücke No.1, Section A/Section B

At measure 53, motivic material form the initial A section returns, alluding to the return of the A section and thereby creating a three-part (ABA) form. Here, a set class analysis suggests a juxtaposition of two varying sets on top of one another: [0124] over [01358]. This oddity, as shown in Example 27, might suggest a moment of atonality given the degree to which the two sets seem unrelated.
Example 27. *Drei Klavierstücke No.1*, Set Classes at A’ (mm.53-52)

Example 28 shows the same music whereas the set class labels have been replaced by ordered harmony notation.

Example 28. *Drei Klavierstücke No.1*, Ordered Analysis of A’ (mm.53-52)
Within the context of an ordered analysis, several key features come to light. First, the chromatic respelling of G-sharp to G-natural suggests (as per Guideline 4) the emergence of a lower voice. Whereas a strict set class analysis was unable to decipher a “non-chord tone” (so to speak) from a member of the set, the guidelines that accompany an ordered harmony analysis allow us to assert the ideas of voice, unfolding, and linear gesture in a way that enable this type of linear direction. Example 27, therefore, confirms the G as the extraneous member of a 1st ordered harmony serving to allow for the presence of a third, lower voice (F-natural) at the end of the measure.

The second device that becomes apparent in an ordered analysis is the realization of a 1st ordered harmony juxtaposed above a 3rd ordered harmony. The 1st ordered harmony is significant as it suggests a connection (via inversion) to the 1st ordered harmony that concluded the initial A section and identical (in form and pitch) to the motive that opened the piece. It is extremely appropriate in even the most fundamental, classical sense that governs the A section should return as A returns. Furthermore, the direct repetition from the beginning of No. 1 serves to ably confirm the desire for an analytical system that is at least marginally based in classical structure. Finally, in much the same way that Recapitulation in Sonata Form signifies the unification of primary and secondary themes, so too can we understand Schoenberg as aligning the first ordered harmony that governed the initial A with the 3rd ordered harmony that helped develop B.
No. 2 extends the previous movements treatment of chords as contrapuntally-derived expressions of ordered harmonies and begins to elevate the use of additional voices in order to begin to generate subsidiary harmonies that may occur between and simultaneous with statements of other ordered harmonies. Example 29 shows the opening three measures of No. 2, noting the contrapuntal composing out of the 4th ordered harmony over a two-note ostinato in the bass (a device foreshadowing the use of simultaneous harmonies as furthered from No. 1).

Example 29. *Drei Klavierstücke No.2*, Ordered Analysis of m.1-3

In this example, we see a harmonic D-flat reaching up to an A-natural, a non-harmonic tone (so to speak) that points downward to the preceding A-flat in the same voice but derives from the G-sharp (in the same register) that was left unaccounted for atop the final chord in the previous movement. The D-natural that appears in the third measure most obviously highlights a neighboring gesture below E-flat while the C-natural serves the same function around the D-flat in the same voice thereby both noting the existence
of three voices in the upper structure and serving to suggest the continued contrapuntal expansion of made prevalent in the previous movement.

Example 30 depicts an ordered analysis of the trichords proceeding the cadence at m. 13. The first ordered harmony is the most common structure-generating harmonic sonority throughout Opus 11, and also defined the formal structure of No. 1. The 4th ordered harmony, while remote from from the aforementioned chord, defines the structure of No. 2. The merging of the two hands (ergo two sonorities) into a cadence on the 4th harmony exemplifies the development of subtly juxtaposed harmonic sonorities within a clearly present framework that Schoenberg evokes in No. 2.

Example 30. *Drei Klavierstücke No.2*, Ordered Analysis of m.11-13
**Example 31** shows two later measures (mm. 50-51) in which Schoenberg has begun to develop his initial (form-defining) ostinato into a series of altering triads as shown by the inner-voice harmonized neighbor motion from B to C-sharp.

Example 31. *Drei Klavierstücke No.2, Ordered Analysis of m.11-13*

In this example, the aforementioned ostinato serves to oscillate between harmonies at the third order and others at the first. The melody, meanwhile (a development of the initial melodic motive), outlines a harmony that may be viewed as either a harmony of the 1st order with an added augmented 4th above the root, or a harmony of the fourth order with an added major third (B-flat) below the root (D-natural). This hybrid harmony is easily understood within the confines of an ordered harmonic approach wherein 1 establishes the structure of Opus 11 and 4 defines the form of No. 2. Regardless of the interpretation,
the harmony contains elements of the 1st ordered harmony thereby allowing it to sound “consonant” with the left hand ostinato.

In order to justify the application of an ordered harmony analysis to the three movements in Opus 11, it is necessary to test not only the degree to which No. 1 works as a cohesive, organic piece both aurally and visibly, but also how No. 3 fails to adequately culminate the trio. Still, for the analytical system being discussed to warrant further use and application, ordered harmonies should in fact be clearly visible. Example 32 depicts the opening of No. 3 with analyzed ordered harmonies.

Example 32. Drei Klavierstücke No.3, Ordered Analysis of m.1
In only the first measure of No. 3, it is clear that the density of the work has increased drastically. The bass line (doubled in octaves, a tool used to reference motives in No. 1) highlights statements of 2nd and 3rd ordered harmonies which, by itself, might normally suggest a movement defined by harmonies at the second order or, rather, the replacement of second ordered harmonies for the first in terms of their structural position. However, the middle voice overlaps this lower unfolding with statements of 1st and 5th ordered harmonies in contrary motion, ultimately culminating on a 5th ordered harmony expressed as a simultaneity. The upper voice highlights a compositional gesture that is unique to No. 3—a series of major thirds. These thirds (indicated as ‘y’ in Example 31) present an interesting analytical challenge as they may be viewed as independent elements (a series of thirds), pieces of a larger harmony that is being unfolded across the upper voice, or members of two separate lines that are unfolding the same harmony in parallel. Interestingly, both the second and third options yield the same answer: one 1st ordered harmony constructed with an altered third (A/A-flat) or two first ordered harmonies, the upper constructing and A-Minor chord while the lower F-Minor.

One last element of the first measure that should be discussed is the chord at the end of the measure in the upper voice indicated by the label 1X in Example 31. Whether one chooses to analyze this instance as connected to the previous third in the upper voice or as the upper extension of a vertical sonority thereby including the middle voice as the basis for the ordered harmony, the highest voice deserves some attention. The note itself may be discussed through register transfer from either the lower voice C-sharp or via the
higher voice C-natural (then confirmed by the C-natural preceding the C-sharp in question by the original voice). Of course, either of these two observations are justified, the first as a literal two-octave transference, the second as an adjusted transference foreshadowed by the altered third from the two-voice 1st order unfolding at the onset of the measure. Either way, this moment suggests an analytic divide wherein analysts who view the opening ascent as one 1st order harmony in thirds should likely choose to analyze the upper C-sharp at the end of the measure as an alteration- confirming transformation from the C-natural before and after. On the other hand, analysts who choose to view the opening as two separate lines likely do so downplay the significance of the alteration and, therefore, should likely choose to view the later C-sharp as a direct transference from the the middle-voice C-sharp.

No matter how the C-sharp in question has been derived, its eventuality (or lack thereof) must next come into question. Opus 11, has been previously discussed as a series of related harmonies connected via contrapuntal expansion. It would seem odd, therefore, for such a striking tone (the highest of Opus 11) to not concede to a note of a structural harmony at some point in the piece. While this eventuality is, in fact, ultimately realized, it does not occur until the end of m. 20 thereby suggesting a large- scale melodic structure that has been left mostly undisclosed until No. 3.
Example 33 displays an example measure from No. 3 that serves to continue the juxtaposition of one ordered harmony on top of another as discussed at the opening of the movement.

Example 33. *Drei Klavierstücke No.3*, Ordered Analysis of m.29

One may notice from this example that Schoenberg, indeed, continues to juxtapose ordered harmonies and, in doing so, places harmonies of *different* orders in relation to one another. In the above example, the contrary motion between the left and right hands is likely obvious both aurally and visually. This motion, a fundamental contrapuntal device, would seem to suggest an easily digestible (if not palatable) tonal sequence. That is, because the gesture is such a familiar device it might be logical for Schoenberg to use this measure as a moment for tonal repose—a chance for our eyes and ears to temporarily realign. However, the music presented herein contains within itself to note-worthy oddities.
The left hand by itself suggests a potentially logical progression given their ordered harmonies. The measure begins with a statement of a harmony at the 3rd order, suggesting this moment to occupy a space toward the middle-ground of the work’s structure. Following the initial 3rd order harmony is statement of a variation on the same ordered harmony wherein the fifth has been altered (or the root has been altered or extended) to substitute a perfect fifth about the root for a diminished fifth, a bit of an oddity all by itself. However, as the fourth guideline explains, chromatic respellings suggest the appearance of multiple voices cross-relating via an unfolding gesture. However, such unfolding would suggest a larger-scale linear exchange which would subvert that more easily recognized contrary motion with the right hand. Furthermore, neither the A-sharp or the A-flat are reconciled in the five measure that remain, serving to disprove the notion that their occurrence next to one another coincides with the cross-section of a two-voice unfolding.

The upper voice of the same measure (Example 5.12) begins by expanding a harmony of the 4th order over a similar harmony of the 3rd order in the lower voice. While this method of stacking harmonies has been consistent throughout the movement, it further serves to suggest a cohesive compositional approach to No. 3 that differs greatly from the previous two movements thereby continually generating a movement that works by itself but not with its counterparts. The measure concludes with a statement of the 3rd ordered harmony (taken from the lower voice) that exists only in principle as the third has
been lowered from minor to diminished and the fifth, likewise, to a doubly-diminished sonority. While the variation itself is certainly in keeping with the variation in the left hand, the degree to which the sonority is varied past the point of being aurally recognizable as an ordered sonority suggests a multi-voice contrapuntal expansion to be subverting the harmonic structure. Indeed, the E-flat respelling of D-sharp references guideline 5, but just as the lower voice chromatic alteration failed to yield and eventuality, so too does the E-flat fail to be reconciled in the preceding measures.

The aforementioned problems (if such a striking term can be associated with such compositional and analytical oddities) might, in fact, be surmountable should they yield a formal structure on which No. 3 could be based, especially should said structure bear some relevance to the previous movements. It was previously discussed that a chord is defined as a referential structure with respect to a given system. As such, it is extremely beneficial to gather certain, general observations about the system in order to determine specific, referential sonorities (i.e. the chords that define the work’s structure). That said, while No. 3 differs from the previous two movements in part by the degree to which Schoenberg composes one ordered harmony on top of another, unrelated harmony, it might therefore be likely that the structure upon which the work is generated derives from an extension of said juxtaposed harmonies. With this in mind, a meta-analysis of No. 3 should point to a harmony (or collection of harmonies) that generates a formal structure similar to the previous two movements. Unfortunately, both a review of the movement’s analysis as well as subsequent hearings lead away from considering the movement in a
traditional form thereby significantly reducing the degree to which a structural analysis might be helpful (except, of course, to highlight its intrinsic through-composed nature). This observation alone helps isolate this last movement from its counterparts thereby explaining the “unbalance” perceived in the work.
Bibliography


Appendix: Ordered Harmony Transformations
Ordered Harmony Transformations

Generating Harmony: A Minor

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Ordered Harmony Transformations

Generating Harmony: A# Minor

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- Fourth Order - Single Neighbor

Semi-Tone Combination
- Fifth Order - Single Neighbor

Whole-Tone Substitution
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- Seventh Order - Single Neighbor

Whole-Tone Addition
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- Ninth Order - Single Neighbor

Whole-Tone Combination
- Tenth Order - Single Neighbor
# Ordered Harmony Transformations

**Generating Harmony: Ab Minor**

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Ordered Harmony Transformations

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Ordered Harmony Transformations

Generating Harmony: Bb Minor

Semi-Tone Substitution
First Order - Single Neighbor

Second Order - Single Neighbor

Semi-Tone Addition
Third Order - Single Neighbor

Fourth Order - Single Neighbor

Semi-Tone Combination
Fifth Order - Single Neighbor

Whole-Tone Substitution
Sixth Order - Single Neighbor

Seventh Order - Single Neighbor

Whole-Tone Addition
Eighth Order - Single Neighbor

Ninth Order - Single Neighbor

Whole-Tone Combination
Tenth Order - Single Neighbor

Split-Substitution
First Order - Double Neighbor

Second Order - Double Neighbor

Split-Addition
Third Order - Double Neighbor

Fourth Order - Double Neighbor

Split-Combination
Fifth Order - Double Neighbor

Sixth Order - Double Neighbor

Split-Substitution
Seventh Order - Double Neighbor

Sixth Order - Single Neighbor

Split-Addition
Eighth Order - Double Neighbor

Ninth Order - Double Neighbor

Split-Combination
Tenth Order - Double Neighbor

Ninth Order - Single Neighbor
Ordered Harmony Transformations

Generating Harmony: C Minor

Semi-Tone Substitution

First Order - Single Neighbor

Second Order - Single Neighbor

Semi-Tone Addition

Third Order - Single Neighbor

Fourth Order - Single Neighbor

Semi-Tone Combination

Fifth Order - Single Neighbor

Whole-Tone Substitution

Sixth Order - Single Neighbor

Seventh Order - Single Neighbor

Whole-Tone Addition

Eighth Order - Single Neighbor

Ninth Order - Single Neighbor

Whole-Tone Combination

Tenth Order - Single Neighbor

Split-Substitution

First Order - Double Neighbor

Second Order - Double Neighbor

Split-Addition

Third Order - Double Neighbor

Fourth Order - Double Neighbor

Split-Combination

Fifth Order - Double Neighbor

Sixth Order - Double Neighbor

Split-Substitution

Seventh Order - Double Neighbor

Sixth Order - Double Neighbor

Split-Addition

Eighth Order - Double Neighbor

Ninth Order - Double Neighbor

Split-Combination

Tenth Order - Double Neighbor

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Ordered Harmony Transformations

Generating Harmony: C# Minor

Semi-Tone Substitution
- First Order - Single Neighbor
- Second Order - Single Neighbor

Semi-Tone Addition
- Third Order - Single Neighbor
- Fourth Order - Single Neighbor

Semi-Tone Combination
- Fifth Order - Single Neighbor

Whole-Tone Substitution
- Sixth Order - Single Neighbor
- Seventh Order - Single Neighbor

Whole-Tone Addition
- Eighth Order - Single Neighbor
- Ninth Order - Single Neighbor

Whole-Tone Combination
- Tenth Order - Single Neighbor

Split-Substitution
- First Order - Double Neighbor
- Second Order - Double Neighbor

Split-Addition
- Third Order - Double Neighbor
- Fourth Order - Double Neighbor

Split-Combination
- Fifth Order - Double Neighbor

Split-Substitution
- Sixth Order - Double Neighbor

Split-Addition
- Eighth Order - Double Neighbor

Split-Combination
- Ninth Order - Double Neighbor
- Tenth Order - Double Neighbor
Ordered Harmony Transformations

Generating Harmony: Cb Minor

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Semi-Tone Addition

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Semi-Tone Combination

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Whole-Tone Substitution

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Whole-Tone Addition

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Whole-Tone Combination

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Ordered Harmony Transformations

Generating Harmony: D Minor

Semi-Tone Substitution

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Semi-Tone Addition

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Semi-Tone Combination

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Whole-Tone Substitution

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Whole-Tone Addition

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Whole-Tone Combination

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Ordered Harmony Transformations

Generating Harmony: D# Minor

Semi-Tone Substitution
- First Order - Single Neighbor
- Second Order - Single Neighbor
- Split-Substitution
  - First Order - Double Neighbor
  - Second Order - Double Neighbor

Semi-Tone Addition
- Third Order - Single Neighbor
- Fourth Order - Single Neighbor
  - Split-Addition
  - Third Order - Double Neighbor
  - Fourth Order - Double Neighbor

Semi-Tone Combination
- Fifth Order - Single Neighbor
  - Split-Combination
  - Fifth Order - Double Neighbor

Whole-Tone Substitution
- Sixth Order - Single Neighbor
- Seventh Order - Single Neighbor
  - Split-Substitution
  - Sixth Order - Double Neighbor
  - Seventh Order - Double Neighbor

Whole-Tone Addition
- Eighth Order - Single Neighbor
- Ninth Order - Single Neighbor
  - Split-Addition
  - Eighth Order - Double Neighbor
  - Ninth Order - Double Neighbor

Whole-Tone Combination
- Tenth Order - Single Neighbor
  - Split-Combination
  - Tenth Order - Double Neighbor
Ordered Harmony Transformations

Generating Harmony: Db Minor

Semi-Tone Substitution
- First Order - Single Neighbor
- Second Order - Single Neighbor

Semi-Tone Addition
- Third Order - Single Neighbor
- Fourth Order - Single Neighbor

Semi-Tone Combination
- Fifth Order - Single Neighbor

Whole-Tone Substitution
- Sixth Order - Single Neighbor
- Seventh Order - Single Neighbor

Whole-Tone Addition
- Eighth Order - Single Neighbor
- Ninth Order - Single Neighbor

Whole-Tone Combination
- Tenth Order - Single Neighbor
Ordered Harmony Transformations

Generating Harmony: E Minor

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Ordered Harmony Transformations

Generating Harmony: E# Minor

Semi-Tone Substitution
- First Order - Single Neighbor
- Second Order - Single Neighbor

Semi-Tone Addition
- Third Order - Single Neighbor
- Fourth Order - Single Neighbor

Semi-Tone Combination
- Fifth Order - Single Neighbor

Whole-Tone Substitution
- Sixth Order - Single Neighbor
- Seventh Order - Single Neighbor

Whole-Tone Addition
- Eighth Order - Single Neighbor
- Ninth Order - Single Neighbor

Whole-Tone Combination
- Tenth Order - Single Neighbor

Split-Substitution
- First Order - Double Neighbor
- Second Order - Double Neighbor

Split-Addition
- Third Order - Double Neighbor
- Fourth Order - Double Neighbor

Split-Combination
- Fifth Order - Double Neighbor
- Sixth Order - Double Neighbor
- Seventh Order - Double Neighbor
- Eighth Order - Double Neighbor
- Ninth Order - Double Neighbor
- Tenth Order - Double Neighbor
Ordered Harmony Transformations

Generating Harmony: Eb Minor

Semi-Tone Substitution
First Order - Single Neighbor
Second Order - Single Neighbor

Semi-Tone Addition
Third Order - Single Neighbor
Fourth Order - Single Neighbor

Semi-Tone Combination
Fifth Order - Single Neighbor

Whole-Tone Substitution
Sixth Order - Single Neighbor
Seventh Order - Single Neighbor

Whole-Tone Addition
Eighth Order - Single Neighbor
Ninth Order - Single Neighbor

Whole-Tone Combination
Tenth Order - Single Neighbor

Split-Substitution
First Order - Double Neighbor
Second Order - Double Neighbor

Split-Addition
Third Order - Double Neighbor
Fourth Order - Double Neighbor

Split-Combination
Fifth Order - Double Neighbor

Whole-Tone Substitution
Sixth Order - Double Neighbor

Split-Addition
Eighth Order - Double Neighbor
Ninth Order - Double Neighbor

Split-Combination
Tenth Order - Double Neighbor
Ordered Harmony Transformations

Generating Harmony: F Minor

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Ordered Harmony Transformations

Generating Harmony: F# Minor

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Ordered Harmony Transformations

Generating Harmony: Fb Minor

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Ordered Harmony Transformations

Generating Harmony: G Minor

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<tr>
<td>Eighth Order - Single Neighbor</td>
<td>Eighth Order - Double Neighbor</td>
</tr>
<tr>
<td>Ninth Order - Single Neighbor</td>
<td>Ninth Order - Double Neighbor</td>
</tr>
<tr>
<td>Whole-Tone Combination</td>
<td>Split-Combination</td>
</tr>
<tr>
<td>Tenth Order - Single Neighbor</td>
<td>Tenth Order - Double Neighbor</td>
</tr>
</tbody>
</table>
Ordered Harmony Transformations

Generating Harmony: G# Minor

<table>
<thead>
<tr>
<th>Semi-Tone Substitution</th>
<th>Split-Substitution</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Order - Single Neighbor</td>
<td>First Order - Double Neighbor</td>
</tr>
<tr>
<td>Second Order - Single Neighbor</td>
<td>Second Order - Double Neighbor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semi-Tone Addition</th>
<th>Split-Addition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third Order - Single Neighbor</td>
<td>Third Order - Double Neighbor</td>
</tr>
<tr>
<td>Fourth Order - Single Neighbor</td>
<td>Fourth Order - Double Neighbor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semi-Tone Combination</th>
<th>Split-Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fifth Order - Single Neighbor</td>
<td>Fifth Order - Double Neighbor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Whole-Tone Substitution</th>
<th>Split-Substitution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sixth Order - Single Neighbor</td>
<td>Sixth Order - Double Neighbor</td>
</tr>
<tr>
<td>Seventh Order - Single Neighbor</td>
<td>Seventh Order - Double Neighbor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Whole-Tone Addition</th>
<th>Split-Addition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eighth Order - Single Neighbor</td>
<td>Eighth Order - Double Neighbor</td>
</tr>
<tr>
<td>Ninth Order - Single Neighbor</td>
<td>Ninth Order - Double Neighbor</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Whole-Tone Combination</th>
<th>Split-Combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenth Order - Single Neighbor</td>
<td>Tenth Order - Double Neighbor</td>
</tr>
</tbody>
</table>
Ordered Harmony Transformations

Generating Harmony: Gb Minor

**Semi-Tone Substitution**
- First Order - Single Neighbor
- Second Order - Single Neighbor

**Split-Substitution**
- First Order - Double Neighbor
- Second Order - Double Neighbor

**Semi-Tone Addition**
- Third Order - Single Neighbor
- Fourth Order - Single Neighbor

**Split-Addition**
- Third Order - Double Neighbor
- Fourth Order - Double Neighbor

**Semi-Tone Combination**
- Fifth Order - Single Neighbor

**Split-Combination**
- Fifth Order - Double Neighbor

**Whole-Tone Substitution**
- Sixth Order - Single Neighbor
- Seventh Order - Single Neighbor

**Split-Substitution**
- Sixth Order - Double Neighbor
- Seventh Order - Double Neighbor

**Whole-Tone Addition**
- Eighth Order - Single Neighbor
- Ninth Order - Single Neighbor

**Split-Addition**
- Eighth Order - Double Neighbor
- Ninth Order - Double Neighbor

**Whole-Tone Combination**
- Tenth Order - Single Neighbor

**Split-Combination**
- Tenth Order - Double Neighbor