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Schoenberg's Transition to Atonality (1904-1908): The Use of Intervallic Symmetry and
the Tonal-Atonal Relationship in Schoenberg's Pre-Atonal Compositions

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the Tonal-Atonal Relationship in Schoenberg's Pre-Atonal Compositions

by

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Preface

“Ich fühle Luft von anderem Planeten”

--- *Stefan George*

The term “Martian musicologists” has been used to describe those who problematically use pitch-class set theory to analyze tonal music and disregard the existence of the overall tonal framework.¹ When I started the analysis of these “transitional” pieces by Arnold Schoenberg (1874-1951) several years ago, I always feared I would fall into this trap of being an extraterrestrial musicologist, as most scholarly writings approach these works from the tonal point of view. Nevertheless, Schoenberg’s music during this transitional period certainly needs a different kind of approach. As we have seen, the use of the diatonic triad as the representation of keys at formal junctures of the compositions does not lead immediately to the definition of the tonal framework since, as Schoenberg claims in his description of the second string quartet, “the overwhelming multitude of dissonances cannot be counterbalanced any longer by occasional returns to such tonal triads as represent a key.”² The use of interval cycles appears to have become a significant vehicle for shaping and defining the tonal framework as well as the basic harmonic fabric of these pieces. It is not difficult to identify the interval cycles: many scholars have mentioned their existence in

¹ See Richard Taruskin, “Reply to van den Toorn,” *In Theory Only* 10, no. 3 (October 1987), 56, and George Perle, *The Listening Composer* (Berkeley and Los Angeles: University of California Press, 1990), 27-54.

² Arnold Schoenberg, “My Evolution,” in *Style and Idea: Selected Writings of Arnold Schoenberg*, ed. Leonard Stein, trans. Leo Black (Berkeley and Los Angeles: University of California Press, 1984), 86.

Schoenberg's music. However, cyclic-interval interpretation can point to very different directions with respect to the tonal elements of the pieces. Schoenberg's development toward atonality/pantonicity did not happen spontaneously. Béla Bartók describes Schoenberg's stylistic "Evolution" vis-à-vis "Revolution" as follows:

In the succession of [Schoenberg's] compositions, there is no abrupt turning away from previous devices and no abolition of almost all the means used by preceding composers. What we will see is a gradual change, leading from the patterns and means of their predecessors, to a style and means of expression of [his] own.³

The simultaneous (and gradual) dissolution of traditional tonality and the rise of "atonal" materials are clear in Schoenberg's music during the first decade of the twentieth century. While the renouncement of the diatonic triad and tonal centrality after his Second String Quartet (1907-1908) is an important step in his evolution, this should be regarded as only one step in moving toward a new style. Even though the absence of the diatonic triad as the basic harmonic construct points to its collapse, Schoenberg's music from 1904 to 1908 gradually paves the way toward the new atonal/pantonal idiom by means of the interval cycles and the principal of intervallic expansion and contraction. The attention to the intervallic characteristics of respective pitch collections is crucial in this process of organic development.

³ Béla Bartók, "Harvard Lectures," in *Béla Bartók Essays*, ed. Benjamin Suchoff (Lincoln and London: University of Nebraska Press, 1976), 358-359.

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Schoenberg's Transition to Atonality (1904-1908): The Use of Intervallic Symmetry and
the Tonal-Atonal Relationship in Schoenberg's Pre-Atonal Compositions

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The dissertation explores the use of interval cycles and their relationships with the tonal framework in Schoenberg's pre-atonal compositions from 1904 to 1908. While some scholars view the role of interval cycles in these compositions as subsidiary to the overall tonal framework, I should argue that Schoenberg establishes the interval cycles as an integral part of the overall harmonic language in his pre-atonal music. The use of common elements plays a key role in linking the realms of diatonicism and cyclic-interval construction. Four Schoenberg compositions of this period are examined closely. Chapter 2 explores the relationship between the D-minor tonality and octatonic construct in the First String Quartet (1904-1905). While Maria Niederberger points to the importance of the alternating succession of perfect fourths and major thirds (i.e., interval 5:4 compound cyclic construction, for instance, E_b-A_b-C-F-A-D-F[#]-B) as the octatonic *Grundgestalt* of the quartet (the latter 5:4 ratio construction in scalar form: E_b-F-F[#]-A_b-A-

B-C-D), I shall explore the formal and structural importance of the relationship of this 5:4 octatonic construct along with its equivalent 2:1 compound cyclic-interval form. These are presented contrapuntally during the first foreground appearance of the 5:4 compound cyclic collection. Chapter 3 explores how Schoenberg establishes the diatonic triad as the intersection of interval cycles. In *Ein Stelldichein* (1905, unfinished), Schoenberg establishes the B \flat -major triad as the intersection of the two whole-tone collections in the opening passage. In addition, the establishment of the interval-4 cycle, B \flat -D-G \flat , is achieved through long-range preparation of D and G \flat as key areas in subsequent sections. In the First Chamber Symphony (1905-1906), Schoenberg unfolds the whole-tone and perfect-fourth cycles toward a cadence on the Neapolitan F major before resolving to the E-major tonic. Throughout the piece, the interval cycles play a vital role in establishing tonic and various local key areas. Chapter 4 explores all four movements of Schoenberg's Second String Quartet (1907-8). In the first three movements, the cycles are generated from the intervallic structure of the opening triad of the respective movements. The last movement exhibits a unique procedure of defining the whole-tone collections and establishing the tonic F \sharp -major triad.

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Introduction: Schoenberg's Path to a New Musical Style (1904-1908)

There is no great work of art which does not convey a new message to humanity; there is no great artist who fails in this respect.

--- Arnold Schoenberg (1930)

Arnold Schoenberg is generally known as an “atonal” composer after 1908. His compositions before that time have received relatively little attention. Although most scholars regard his *Drei Klavierstücke*, Op. 11 (1909), as his first consistently atonal work, the rise of atonality and the dissolution of tonality were not sudden in his stylistic development. Most scholars approach Schoenberg's pre-atonal music according to traditional tonal methodology, yet these compositions exhibit various features that cannot be explained merely by traditional tonal means. Paradoxically, the approach to Schoenberg's pre-atonal music from the tonal side actually reveals the impact of the nineteenth-century Austro-German tradition, especially Beethoven, Wagner, Brahms, and Mahler. However, this approach does not provide a complete picture of Schoenberg's development toward “free atonality” after 1909.

This dissertation primarily focuses on Schoenberg's compositions between 1904 and 1908. Four works are discussed in detail: String Quartet No. 1 in D minor (1904-1905); *Ein Stelldichein* for piano, violin, cello, B \flat -clarinet, and oboe (1905, unfinished); Chamber Symphony No. 1 (1906); and String Quartet No. 2 in F \sharp minor (1907-1908), in which I demonstrate the role of the interval cycles. The intention is to reveal the unique

relationship between the interval cycles and the tonal framework of these pieces. While the First String Quartet exhibits a close link between the D-minor scale and the octatonic construct, *Ein Stelldichein*, Chamber Symphony no. 1, and the Second String Quartet demonstrate a close link between the interval cycles and the diatonic triads. To identify these interval cycles is not difficult, as many scholarly works have mentioned the existence of these “atonal” elements. However, the role of the interval cycles is generally interpreted as subsidiary to the overall tonal framework. Rather, it appears that Schoenberg actually establishes the interval cycles as an integral part of the overall harmonic language. To situate these works in Schoenberg’s stylistic development, a brief outline of his life during this period is provided at the outset. The struggle for the public appeal of Schoenberg’s works during this period points to the seemingly relative incomprehension of these works by the conservative Viennese public. Schoenberg’s marital crisis also had a direct impact on Schoenberg’s move toward *Expressionism*. His theoretical thinking on tonality, atonality/pantonicity, and the interval cycles is elucidated by a study of his career as a composer and a teacher of composition and theory. Even though his early compositions, such as his Four Songs, op. 2 (1900), *Gurrelieder* (1900-1), and Eight Songs, op. 6 (1903-1905), may not demonstrate a rigorous systematic use of interval cycles, their innovative approach to the tonal process clearly set the tone of Schoenberg’s unique and personal interpretation of the tonal system.

Early Life

The violin provided Schoenberg his first stimulus to musical composition, when he was eight years old.¹ These early compositions included imitations of the string compositions he played by Viotti, Pleyel, and others. Once he obtained the scores of Beethoven's strings quartets (two of the *Razumovsky* quartets and the *Große Fuge*) a few years later, he "was possessed by an urge to write string quartets."² His early involvement in string instruments – he also taught himself the cello – and chamber music provided a significant impact on his development as a composer:

Of great significance to his development as a composer were two facts: that he had early firsthand experience as a chamber musician and that he was not – and never would be – a performing pianist. Even his music for extraordinarily large forces possesses a chamber music quality in its contrapuntal and soloistic treatment of each instrument. Furthermore, it could only have been written by one steeped as a performer in the chamber music tradition.³

Although Schoenberg took some early lessons with his friend Dr. Oskar Adler, Schoenberg considered Alexander von Zemlinsky as his mentor of composition. They met at an amateur orchestra, the *Polyhymnia*, in which Zemlinsky was the conductor and

¹ Arnold Schoenberg, "My Evolution," in *Style and Idea: Selected Writings of Arnold Schoenberg*, ed. Leonard Stein, trans. Leo Black (Berkeley and Los Angeles: University of California Press, 1984), 79.

² Willi Reich, *Schoenberg: A Critical Biography*, trans. Leo Black (London: Longman, 1971) 2.

³ Allen Shawn, *Arnold Schoenberg's Journey* (New York: Farrar, Straus and Giroux, 2002), 5.

Schoenberg played the cello. Schoenberg's first success as a composer came in 1898 when his string quartet in D major (composed under the supervision of Zemlinsky) was premiered at the Vienna *Tonkünstlerverein*. The quartet's reception demanded repetition in the next season, but it took many years before a new Schoenberg composition received similar success. His string sextet *Verklärte Nacht* (finished in 1899), which today is perhaps his most popular work, was turned down by the *Verein*, and his songs opp. 1-3 created a scandal during a public performance in December of 1900. Recalling this many years later, Schoenberg commented, "Since then the scandal has never stopped." His discouragement was evident in other works of this time. For instance, while conducting small choral societies and orchestrating operettas, he managed between March 1900 and April 1901 to compose the monumental *Gurrelieder*, which he orchestrated only later (1910) because he felt it would not be performed anyway.

The year 1903 marked a new phase in Schoenberg's career after spending a year and a half in Berlin, where he met Richard Strauss and taught in the Stern Conservatory. He returned to Vienna in 1903 with the complete score of his tone poem *Pelleas und Melisande*, Op. 5. In order to provide a more progressive and liberal medium for contemporary music, Schoenberg and Zemlinsky founded the *Vereinigung Schaffender Tonkünstler* (Society for Creative Musicians), in which Gustav Mahler served as the honorary president. Mahler's brother-in-law, Arnold Rosé, was the first violinist of the Rosé Quartet. With ties to the Rosé Quartet, Schoenberg composed several of his large-scale works that utilized the ensemble during 1904-1908: String Quartet No. 1, Chamber Symphony No. 1 (with the wind soloists of the court opera), and String Quartet No. 2.

Scandals during performances featuring Schoenberg's new works were very common throughout Schoenberg's early career. The works discussed in this dissertation are no exception. The First Quartet was premiered in 1907 by the Rosé Quartet in Vienna. The scandal during the premiere, as reported by Paul Stefan, was particularly bizarre:

To many people, the work seemed impossible, and they left the hall while it was being played; one particularly witty person left by the emergency exit. At the end, moreover, people could be heard hissing. Mahler was seated among them, and, immediately up in arms at this artistic injustice, he set upon one of the dissatisfied customers, telling him, with his wonderfully emotional involvement 'It's not for you to hiss!' The stranger, who would have been meek as a lamb in front of his own caretaker, was full of pride when faced by a spiritual monarch, and replied, 'I hiss at your symphonies too!' This scene was held very much against Mahler.⁴

The First Chamber Symphony was premiered in the same year as the First Quartet (1907) by the Rosé Quartet and the wind principals of the Court Opera. One review of the concert is equally scandalous:

⁴ Willi Reich, *Schoenberg*, 20-21.

Part of the public showed its displeasure by noisily leaving the large hall of the Musikverein during the performance. The Vienna correspondent of the Berlin *Vossische Zeitung* noted in his review that he had not taken part in the Vienna carnival season, but, ‘so as not to lose touch completely with the spirit of Eternal Foolery, had listened to Mr. Schoenberg’s Chamber Symphony.’⁵

The Second String Quartet was premiered in December 1908 at a subscription concert in the *Bösendorfersaal*, by the Rosé Quartet and Marie Gutheil-Schoder as soprano. The Vienna newspaper, *Reichspost*, issued an article on the following day with the title “*Ein Konzertsandal. Stürmische Auftritte im Bösendorfersaale.*”⁶ Music critic Richard Batka reported the premiere for *Prager Tagblatt* on 8 January 1909 as follows:

A violent clash of faction took place when Rosé and his colleagues with Mrs Gutheil-Schoder performed a new quartet by the ultraviolet musical secessionist Arnold Schoenberg. Even during the course of the various movements there were hisses and laughters. Suddenly music critic Karpath stood up and shouted, ‘Stop it! That’s enough!’ His colleague Specht, on the other hand, shouted ‘Quiet! Go on playing!’ The majority

⁵ Ibid., 30.

⁶ Christian M. Schmidt, ed. *Arnold Schoenberg, Abteilung VI: Kammermusik, Streichquartette I, Kritischer Bericht, Skizzen, Fragmente*, Reihe B, Band 20 (Wien, Universal Edition AG; Mainz: B. Schott’s Söhne, 1986), xvi. See also Martin Eybl, *Die Befreiung des Augenblicks: Schönbergs Skandalkonzerte 1907 und 1908 Eine Dokumentation*, (Wien, Köln, Weimer: Böhlau Verlag, 2004), 182-184.

of the public took against the work; various dissonances caused elegant ladies to utter cries of pain, putting their hands to their delicate ears, and elderly gentlemen to shed tears of excitement.⁷

Subsequent performances of the quartet given by the Ansorge Society had no reports of any scandalous outcry because the tickets bore the precautionary inscription to require the audience to remain quiet throughout the performance. After all these scandalous premieres, Schoenberg created a love-hate relationship to the Viennese public, as Berg articulated the situation in a letter years later to Schoenberg:

Yes, that's Vienna! You are so right, dear Herr Schönberg! Your revulsion against Vienna has always been justified and I see – unfortunately too late – how wrong I was to have tried to reconcile you to Vienna, dear Herr Schönberg. It's true! One can't hate this "city of song" enough!!⁸

Schoenberg was certainly very upset by all these scandals he encountered during the premieres of his own work. Years later Schoenberg claimed himself as "the Satan of modernistic music" during this period, and the early concert scandals he encountered during his career have made his career a *succès de scandale* (a success out of failure).⁹

⁷ Willi Reich, *Schoenberg*, 36.

⁸ Juliane Brand, Christopher Hailey, and Donald Harris, eds. and trans., *The Berg-Schoenberg Correspondence: Selected Letters* (New York: W. W. Norton, 1987), 170.

⁹ Arnold Schoenberg, "How One Becomes Lonely," in *Style and Idea*, 42.

Schoenberg admitted that the reaction of the audience was partly due to “an intrigue instigated by a powerful enemy of [Schoenberg himself] as an act of revenge from an attack which friends of [Schoenberg], without [his] co-operation, has previously directed against him on account of his artistic misdemeanors.”¹⁰ In addition, Schoenberg was facing a group of very conservative audiences during the 1900s. In the prospectus for the *Vereinigung Schaffender Tonkünstler* (Society for Creative Musicians), Schoenberg describes the state of the Viennese public as follows:

There is a crass contrast between this state of affairs and Vienna’s musical past, when she used to set the tone; the usual explanation is that the public seems to feel an insuperable distaste for everything new. Vienna is not the place for novelties – that is the story, and the people who say so seem, at first glance, to be in the right if one disregards the operetta, a field in which our city does set the tone, beyond a doubt.¹¹

After many years of scandals initiated by the conservative Viennese public, Schoenberg’s monumental *Gurrelieder* was warmly accepted by the Viennese public with a standing ovation during the premiere in 1913. However, Schoenberg did not bow or even face the audience when he went onto the stage to thank the conductor and the performers.

¹⁰ Ibid., 48-49.

¹¹ Arnold Schoenberg, “Prospectus for the Society of Creative Musicians, March 1904,” in Joseph Auner, *A Schoenberg Reader: Documents of a Life* (New Haven and London: Yale University Press, 2003), 43-44.

Marital Crisis and Expressionism: 1907-1908

Schoenberg's stylistic development came parallel to the rise of *expressionism* in art during the first decade of the twentieth century. Largely centered in Germany and Austria, expressionism is an artistic movement that stresses intense subjective emotion. John Crawford describes expressionism as "an explosive, subjective awareness of anxiety, sordidness, and disorder beneath surface order, well-being, and beauty."¹² Schoenberg describes his conception of expressionism in a letter to Wassily Kandinsky as follows: "Art belongs to the *unconscious*! One must express *oneself*! Express oneself *directly*! Not one's taste or one's upbringing, or one's intelligence knowledge or skill. Not all these *acquired* characteristics, but that which is *inborn, instinctive*."¹³

Schoenberg's personal crisis played a crucial role in his stylistic development toward expressionism. John Crawford points out that the death of Schoenberg's father when he was seventeen years old "caused a rupture, or created a sense of anxiety, crucial to the development of [Schoenberg]."¹⁴ As mentioned earlier, poverty and negative reception of his new compositions created a certain amount of tension in Schoenberg's life. However, his marital crisis during 1907 and 1908 was a huge blow to Schoenberg's emotional status. Schoenberg met the expressionist painter Richard Gerstl in 1907 and took painting lessons with Gerstl. However, the affair between Schoenberg's wife,

¹² John C. Crawford and Dorothy L. Crawford, *Expressionism in Twentieth-Century Music* (Bloomington and Indianapolis, IN: Indiana University Press, 1993), 1.

¹³ Arnold Schoenberg, letter to Wassily Kandinsky, 24 January 1911, in *Arnold Schoenberg/Wassily Kandinsky: Letters, Pictures and Documents*, ed. Jelena Hahl-Kock, trans. J. C. Crawford (London: Faber, 1984), 23. Emphasis Schoenberg's.

¹⁴ John Crawford and Dorothy Crawford, *Expressionism*, 5.

Mathilde, and Gerstl led to a brief departure of Mathilde during the summer of 1908. Mathilde returned home after a short time and Gerstl committed suicide. This brief but painful experience in 1908 coincided with Schoenberg's schedule of the composition of his Second String Quartet (1907-1908). Dedicated to Mathilde, the Second String Quartet is generally regarded as Schoenberg's first step to expressionism.

Although his decision to learn painting indirectly caused the brief departure of his wife, the influence of painting on his musical development is important. The aesthetic bases of his music and painting during this time, in which he was approaching the idiom of the F#-minor String Quartet, are strikingly similar. In his painting we find a conception in which representation of nature was subordinated to the expression of emotion induced by the spontaneous distortion of form and color. The similar effect in Schoenberg's music was observed by the expressionist painter Wassily Kandinsky, who attended a concert featuring Schoenberg's music on 1 January 1911, in his first letter to Schoenberg, which addressed the similarity between Schoenberg's music and Kandinsky's own paintings:

The independent progress through their own destinies, the independent life of the individual voices in your compositions, is exactly what I am trying to find in my painting. At the moment there is a great tendency in painting to discover the 'new harmony' by constructive means, whereby the rhythmic is built on an almost geometric form. My own instinct and striving can support these tendencies only half-way. *Construction* is what

has been so woefully lacking in the painting of recent times, and it is good that it is now being sought. [...] I am certain that our own modern harmony is not to be found in the ‘geometric’ way, but rather in the anti-geometric, antilogical [antilogischen] way. And this way is that of ‘dissonance in *art*[’], in painting, therefore, just as much as in music. And ‘today’s’ dissonance in painting and music is merely the consonance of ‘tomorrow.’¹⁵

Schoenberg replied to Kandinsky with great enthusiasm and complimented his assessment on “dissonance” in art and music. In particular Schoenberg claimed that “color [in painting] is so important to me (not ‘beautiful’ color, but color which is expressive in its relationship).”¹⁶ The music analogy seems to point directly to the treatment of dissonance: it is a means of expression not to be bounded by rules of tonal harmony and resolution.

¹⁵ Wassily Kandinsky, letter to Arnold Schoenberg, 18 January 1911, in *Arnold Schoenberg/Wassily Kandinsky: Letters, Pictures and Documents*, 23. Emphasis Kandinsky’s.

¹⁶ Arnold Schoenberg, letter to Wassily Kandinsky, 24 January 1911, in *Arnold Schoenberg/Wassily Kandinsky: Letters, Pictures and Documents*, 23.

Chapter 1: Schoenberg's Musical Language

Tonality, Atonality, Pantonality, and Schoenberg's Musical Evolution

While Schoenberg was well aware of the opposition to his new music from the audience, he also knew that quite a few supporters were eager to learn more about his music. Besides the conservative taste of the Viennese public, the audience simply did not understand Schoenberg's music based on their experiences of music by the nineteenth-century masters. To understand the development of Schoenberg's musical style (the so-called transition from tonality to atonality) during this period, some of the basic concepts and terminology need to be addressed in more detail.

For Schoenberg, tonality is not a system but a "formal possibility that emerges from the nature of the tonal material, a possibility of attaining a certain completion or closure (*Geschlossenheit*) by means of a certain uniformity."¹ Instead of conceiving a piece with various key areas, Schoenberg claims there is only one "tonality" in a piece, or monotonicity.² Modulation to and/or establishment of various key areas within a piece are still within the tonality. Consequently, Schoenberg regards various key areas in a composition as *regions*: a harmonic contrast with that of tonality. Ex. 1-1 shows the "chart of regions" from Schoenberg's *Structural Functions of Harmony*. The relative importance between the regions and the tonic are related naturally by the overtone series. Basically, the closer the region from the fundamental frequency (tonic or *Grundton*) in

¹ Arnold Schoenberg, *Theory of Harmony* (Berkeley and Los Angeles: University of California Press, 1978), 27.

² Arnold Schoenberg, *Structural Function of Harmony*, ed. Leonard Stein (New York: W. W. Norton, 1969), 19.

the overtone series, the closer it relates to the tonic. Severine Neff summarizes Schoenberg's view on the functions of tonality as follows:

Schoenberg viewed the functions of tonality as consisting of a field of forces: those moving away from the tonic, *centrifugal* forces, and those moving toward it, *centripetal*. For example a centrifugal move toward the subdominant could be counteracted by a centripetal one toward the dominant and tonic. Schoenberg understood such forces as creating a network of functional classifications that describe distances between keys.³

Schoenberg then proposes five classes of relationships between the regions and the tonic (see Ex. 1-1).⁴ "Direct and Close" regions have five or six tones in common with the tonic. "Indirect but Close" are closely related to the regions of the "Direct and Close" regions or to the tonic minor. "Indirect" regions are more distant than the "Indirect but Close" regions. "Indirect and Remote" and "Distant" are related to the previous groupings "either through functions of the subdominant minor regions, through fifth relations, or substitution."⁵ Schoenberg's conceptions of "Direct and Close" and "Indirect but Close" regions are of particular importance since they are linked to the tonic predominantly by common elements. As I will discuss later, Schoenberg's concept of

³ Severine Neff, "Schoenberg as Theorist: Three Forms of Presentation," in *Schoenberg and His World*, ed. Walter Frisch, 58 (Princeton, NJ: Princeton University Press, 1999).

⁴ Arnold Schoenberg, *Structural Functions of Harmony*, 68.

⁵ Severine Neff, "Schoenberg as Theorist," 59.

Severine Neff's conception of centripetal and centrifugal forces shapes her analysis of the Second String Quartet.⁶ Neff reconstructs the first movement from scratch and shows the importance of various intervallic expansions and contractions as the process of organic development. In addition, based on her reading of Schoenberg's *Structural Function of Harmony*, she proposes that Schoenberg defined the tonic by inversional symmetry; that is, that "any combination of inversionally balanced key areas about a tonic key area is an analogue for the dominant/subdominant/tonic relationship, and so can confirm a tonal center."⁷ The first movement of the Second String Quartet exhibits major-third and minor-third symmetries around the tonic F# minor and minor-second symmetries at cadential points.

Such harmonic encircling of the tonic region is exhibited in Schoenberg's composition before the Second String Quartet, although the first movement of the Second String Quartet is one prominent example that unfolds the symmetric key areas in such a consistent fashion. David Lewin discusses, briefly, harmonic encircling of the tonic in the principal theme of Schoenberg's First String Quartet, where the principal theme is presented in modified strophic form, and the keys of D minor (mm. 1ff.), E \flat minor (mm. 30ff.), C# minor (mm. 54ff.) are unfolded before the principal theme returns in D minor.⁸ Besides the First and Second String Quartets, traces of such gestures of symmetric encircling that defines the tonic can be found in two songs that Schoenberg composed before the First String Quartet. Although the tonal framework of E major is established

⁶ Severine Neff, "Ways to Imagine Two Successive Pieces of Schoenberg: The Second String Quartet, Opus 10, Movement One; The Song, "Ich Darf Nicht Dankend", Opus 14, No. 1," (Ph. D. Dissertation, Princeton University, 1979).

⁷ Ibid., 101.

⁸ David Lewin, "Inversional Balance as an Organizing Force in Schoenberg's Music and Thought," *Perspectives of New Music* 6: 1-21.

in a relatively traditional way, his Op. 6 Songs, No. 1 “*Traumleben*,” exhibits early traces of symmetric encircling around the tonic E major. Starting with dyad A-B, the piano expands chromatically to an Italian augmented-sixth chord (G-B-E \sharp , m. 2) of the dominant region (B) of E major. This augmented-sixth chord resolves properly to F \sharp , in which the F \sharp -major triad acts as the secondary dominant of the tonic E major and progresses to a dominant-ninth chord (m. 3) and finally moves to the tonic E major (m. 4). Though nothing here is innovative, this passage suggests two important structural features: the ambiguous start with dyad A-B and the establishment of B as the dominant region (through the $I^{+6}/V \rightarrow V/V \rightarrow V^9 \rightarrow I$ in E major).

Philip Friedheim comments on the progression to the E-major tonic in the second phrase (mm. 5-9) as follows:

The chord D \sharp -F \sharp -A-C \sharp in the second bar [m. 6] appears to have a B as an implied root. A technique previously limited to diminished-seventh and augmented-sixth chords is now applied here: a substitute root F alters the function of the chord to become a V⁹ of B \flat , (F)-A-C \sharp -E \flat -G \flat , into which new tonic the chord resolves ... [Measures 8-9] are also somewhat puzzling, since an A⁷, a dominant of D, resolves to E. In Schoenberg’s search for increasingly complex substitutes for the dominant, a traditional IV-I cadence has been altered so that the IV⁷ suggests a V of \flat VII.⁹

⁹ Philip Friedheim, “Tonality and Structure in the Early Works of Schoenberg,” (Ph. D. Dissertation, New York University, 1963), 252-253.

However, I would like to approach this passage in a more direct manner. While the phrase starts clearly at a ii^7 chord (F \sharp -A-C \sharp -E, m.5) and progresses to a half-diminished-seventh chord (F \sharp -D \sharp -A-C \sharp , m. 6), the second-inversion B \flat -major triad (m. 7) can be regarded as a passing chord to introduce the tonic E major in the same measure. While the A-dominant-seventh chord progresses directly to the tonic E major, the establishment of the tonic by means of symmetry starts to emerge; namely the B-dominant-seventh chord is a perfect fifth above the tonic E while the A-dominant-seventh chord is a perfect fifth below the tonic E major.

While the following passage (mm. 10-15) seems to modulate toward the Neapolitan (F major) through B \flat (m. 12) and C 7 (m. 13), which implies a progression of the subdominant triad and dominant-seventh chord respectively in F major, the original tonic is reinforced with the progression A 9 →F \sharp^7 →B 7 (mm. 13-15), or IV 9 →V 7 /V→V 7 in E major. With the use of the French augmented-sixth chord (C-E-F \sharp -B \flat , m. 16), the tonic E major is established through the progression Fr $^{+6}$ →V 7 /V→V 7 →I (mm. 16-19). However, the interlude (mm. 19-21) vaguely calls for the Neapolitan F major with its German augmented-sixth chord (D \flat -F-A \flat -B, m. 20) and the chromatic descent at the very last cadence (F-E in mm. 34-35).

The return of the opening melody (mm. 22ff.) establishes the tonic E major by approaching the tonic E major with a D \sharp -diminished-seventh chord for the first time (mm. 24-25). This D \sharp -diminished-seventh chord appears to exhibit yet another encircling of the tonic E major symmetrically with the Neapolitan F major. While such establishment of E major through symmetrical relationships (A 7 -E-B 7 and D \sharp^{o7} -E-F) can still be

interpreted in traditional tonal harmony, the decision to reinforce the tonic E major emerges as a new way to balance the tonic by symmetric encircling.

In Op. 6, No. 4, “*Verlassen*,” although the piano introduction is used as an ostinato to accompany the first two phrases, it is constantly reinterpreted to articulate different key areas/regions. The piano introduction (m. 1) outlines the key of E \flat minor, while the chromatic elements foreshadow the overall structure of the piece. The ascending chromatic passage in the left hand (G \flat -G-A \flat -A) is contrasted by the descending chromatic figure (F \flat -E \flat -[B \flat]-D). This descending figure is imitated by the voice (mm. 2-3) following an ascending line that outlines a D-dominant-seventh chord (D-F \sharp -A-C). Although it is not resolved to its tonic G, it implies the need for resolution to the latter key (G). However, modal ambiguity results since there is no resolution. The only explicit reference to the G tonic is the note B \flat of the ostinato which relates rather to the E \flat -minor orbit. Concerning the relationship between the D-dominant-seventh chordal arpeggiation and the tonic E \flat minor, Friedheim states that “*Verlassen* exploits the tension between a minor tonic and the major mediant (represented by its dominant). The chord progression expressing this relationship is D⁷-E \flat minor.”¹⁰ However, Frisch disagrees with the functionality of this D-dominant-seventh chord, but claims that it functions “as a genuinely vagrant chord produced by the rearrangement or redistribution of the motivic voices.”¹¹ The second vocal phrase (mm. 5-6) starts with a foreign note, C \flat , and descends through a C \flat -major scale to the tonic E \flat , (m. 6). The key of C \flat appears harmonically as E \flat -G \flat -C \flat at the downbeat (m. 5). These two keys, namely G (represented by its dominant-seventh chord) and C \flat , encircle the E \flat tonic symmetrically.

¹⁰ Ibid, 258.

¹¹ Walter Frisch, *The Early Music of Arnold Schoenberg* (Berkeley and Los Angeles: University of California Press, 1993), 182.

Theme 2 (mm. 9-13) departs from the E \flat minor tonic while establishing another set of symmetric key areas around E \flat . Starting at a half step above the tonic, the first phrase emphasizes E (an enharmonic spelling of the opening F \flat) both melodically and harmonically. With the high F supported by the F-minor chord (m. 10 at the downbeat), the second beat of the same measure suggests a modulation to D with a C \sharp -half-diminished-seventh chord (C \sharp -E-G-B). However, this C \sharp -half-diminished-seventh chord moves quickly to a B \flat -diminished-seventh chord (B \flat -D \flat -F \flat -G), and the next phrase starts in D \flat minor (in the following measure). While a similar harmonic process occurs in the following phrase, the harmonic goal is quite different. A more convincing D minor is approached from an E-dominant-ninth chord (m. 13). The E-dominant-ninth chord (E-G \sharp -B-D-F) helps this approach by its supertertian construction, i.e., the uppermost third (D-F) acts as a common pivot. Thus, the D-F is completed by A to suggest an even larger tertian unfolding, E-G \sharp -B-D-F-A. Although this D-minor cadence is in first inversion, the goal of D is clear in the perfect fifth, D-A, of the melody. Overall, this phrase clearly starts on E minor and cadences on D minor, which encircle the E \flat minor by half steps.

The encircling of the tonic E \flat is especially clear when the voice sings the title word “Verlassen” (mm. 14-17). With the E \flat -minor tonic arriving on the weak beat, the strong beats introduce V 7 /G and C \flat minor (D-G \flat -C \flat , or C \flat -E $\flat\flat$ -G \flat , enharmonically) respectively. This recalls the harmonic implication of the first theme and emphasizes the importance of the D-dominant-seventh sonority, not just in the melody, but also in the harmony.

The encircling of the tonic E \flat continues to be implied indirectly in the phrase “Das frißt wie verruchte Schande” (mm. 19-21), one prominent sonority in the piano

accompaniment is the G \sharp -half-diminished-seventh chord. The implied resolution to A contributes to the endpoint of the symmetrical framework that encircles E \flat , i.e., A-E \flat -A.

The symmetric key relationships revealed in these two songs show Schoenberg's attention to intervals in his compositions, particularly the use of intervals to establish the tonic of the piece. However, the intervals involved in these symmetric encirclings seem to be part of the tonal construct. As Schoenberg becomes more involved in using interval cycles in the foreground level, the systematic use of these symmetric interval constructs, particularly the interval cycles, becomes more prominent and significant on both the local and structural level in establishing the tonal framework, while the constructs unfold themselves in a system of their own.

While the term "atonality" had been used to describe Schoenberg's music as early as 1911,¹² Schoenberg certainly did not like it, partly because the term "atonality" was used frequently with negative connotations during Schoenberg's time. The prefix of the word literally means "without" tonality. In the revised edition of his *Theory of Harmony*, Schoenberg points out his dissatisfaction with the term *atonality* and its implication of "without" tonality:

The word "atonal" could only signify something entirely inconsistent with the nature of tone ... A piece of music will always have to be tonal, at least in so far as a relation has to exist from tone to tone by virtue of which the tones, placed next to or above one another, yield a perceptible

¹² Schoenberg's student, Egon Wellesz, claims that the *Drei Klavierstücke*, Op. 11, was the first piece of his "atonal" period. See Bryan Simms, *The Atonal Music of Arnold Schoenberg*, (New York: Oxford University Press, 2000), 8.

continuity. If one insists on looking for names, “polytonal” or “pantonal” could be considered.¹³

It is obvious that Schoenberg was not completely satisfied with the terms *polytonal* or *pantonal* either, although these terms are clearly different from Schoenberg’s conception of monotonicity. Still, these terms call for the utilization of all twelve pitches within an octave and gradually dissolve the hierarchy of pitches traditionally established in major and minor scales.

Concerning the consequence of such theoretical notions as atonality/pantonicity/polytonality, Philip Friedheim comments on the seeming breakdown of the tonal system and the dissolution of other traditional structural elements:

Recapitulations were deemed unnecessary; functioning themes were abolished; recognizable metrical patterns and even the awareness of a recurrent pulse disappeared. Instead, the listener heard what appeared to be a series of fleeting arabesque-like phrases composed within an almost incomprehensible state of rhythmic flux.¹⁴

However, as mentioned earlier, the simultaneous phenomenon of the dissolution of tonality and the rise of atonality did not occur suddenly. Friedheim shows, by means of analysis of the music of Wagner, Strauss, and Brahms, how their compositions take gradual steps away from the traditional tonal framework. For example, in the analysis of

¹³ Arnold Schoenberg, *Theory of Harmony*, 432.

¹⁴ Philip Friedheim, “Tonality and Structure,” 3.

Wagner's *Tristan und Isolde*, Friedheim illustrates how Wagner uses the Tristan chord as a substituted tonic because "it remained most often rooted at a specific pitch level,"¹⁵ while the Tristan chord itself is tonally ambiguous at the same time. In Strauss' *Elektra*, while the key of C is the only convincing tonality of the work since *Elektra*'s first monologue and the final scene of the opera does cadence on C, other tonal centers do not function in relation to it. Friedheim concludes that "one cannot presume that C is the central tonality merely because it wins by statistical perseverance. All tonal elements in the work should stand in a coherent relation to the structural center."¹⁶ Antokoletz shows that the opening D minor of the opera establishes a tonal axis and the tonal key areas in the opera establish a large scale symmetrical scheme around the D axis. The C-major final cadence is coupled with "the sudden and prominent appearance (last four measures) of the major third degree (E) of the C major tonic triad as part of an implied frame (C-E) for the D axis."¹⁷ This coherent tonal structure is certainly not the traditional kind of tonal relation Friedheim expected at that time. Instead, this kind of symmetrical framework of keys, as Antokoletz suggested, parallels Neff's theory of symmetric encircling of key areas to define the tonic.

Speaking of this eventual and gradual departure of traditional tonal harmony, Jim Samson's monograph is among the first that explores the general stylistic development from tonality to atonality during the first two decades of the twentieth century.¹⁸ Samson gives a very brief account on the "language of classical tonality" as a principle in which

¹⁵ Ibid., 42.

¹⁶ Ibid., 47.

¹⁷ Elliott Antokoletz, *Musical Symbolism in the Operas of Debussy and Bartók* (New York: Oxford University Press, 2004), 265.

¹⁸ Jim Samson, *Music in Transition: A Study of Tonal Expansion and Atonality, 1900-1920* (London: J. M. Dent & Son Ltd, 1977).

“all the events in a musical group ... coordinated by, and experienced in relation to, a central point of reference.”¹⁹ In addition, classical tonality, in its “most fully realized form,” involves the “clarification of relations existing between pitches grouped around a single tonic.”²⁰ Samson continues to make the distinction between “the expansion of classical tonality from within” and “its modification from without.”²¹ However, it is not clear in Samson’s discussion what musical elements within the tonal system are being “expanded” and “modified.” His discussions of Russian composers as examples of “modification of tonality” are not detailed enough to show how the whole-tone and octatonic scales “modify” the tonal practice.

The biggest complaint from the audience during this transition period is probably the excessive amount of dissonance, of which the issue is complicated by the fact that these compositions still have a relatively strong tonal underpinning. In other words, the reference of “consonance,” namely the diatonic triad, is still in the music and the listeners are still aware of this familiar sound as the expected final goal of the harmonic progression. The whole notion of “resolution of dissonance to consonance” has been regarded as a basic premise of tonal harmony. However, to many listeners, Schoenberg’s music becomes so dissonant that the whole sense of dissonance-to-consonance resolution seems to be absent for long stretches in his works, and yet listeners still find themselves waiting for the resolution of dissonance. This notion of traditional listening, as Charles Rosen points out, “neglects the way the operations of dissonance and consonance are re-created and reformulated in Schoenberg’s music.”²² In calling this the “emancipation of

¹⁹ Ibid., 2.

²⁰ Ibid., 2.

²¹ Ibid., 9.

²² Charles Rosen, *Arnold Schoenberg* (Chicago: The University of Chicago Press, 1996), 27.

dissonance,”²³ Schoenberg suggests that the difference between dissonance and consonance is not about a greater or less degree of beauty, but a greater or lesser degree of comprehensibility.²⁴ In defining the degree of dissonance based on the overtone series, Schoenberg is more concerned about how remote or close the overtone is from the fundamental pitch as more or less dissonant respectively.²⁵ This approach has been challenged by Ethan Haimo as he questions the chronological appropriateness of using the overtone series as the basis of consonance and dissonance and applies this to Schoenberg’s tonal compositions before 1908:

If this view of the overtones was indeed a determinant of Schoenberg’s thinking before circa 1908, it would be an obvious source for the origins of atonality. A compositional method grounded on the notion that the distinction between dissonance and consonance is artificial would provide much of the appropriate philosophical/acoustical background for the birth of atonality ... But these remarks ... seem suspiciously like ex post facto justifications, appeals to history and the laws of nature to justify a musical transformation that had already taken place, thus perhaps reflecting the concerns of the composer of 1910 rather than the composer of earlier tonal compositions.²⁶

²³ Arnold Schoenberg, “Composition with Twelve Tones,” in *Style and Idea*, 216.

²⁴ Ibid.

²⁵ Arnold Schoenberg, *Theory of Harmony*, 21.

²⁶ Ethan Haimo, “Schoenberg and the Origins of Atonality,” in *Constructive Dissonance: Arnold Schoenberg and the Transformations of Twentieth-Century Culture*, ed. Juliane Brand and Christopher Hailey (Berkeley and Los Angeles: University of California Press, 1997), 73-74.

Another issue is evoked by the extent of comprehensibility of the “emancipated dissonance.” While the emancipation of dissonance does not abandon all the rules of consonance and dissonance, the mere acceptance of the dissonance does not lead us to the emancipation of dissonance. The term “comprehensibility” still needs a more solid ground of reference. Carl Dahlhaus suggests a new and individual system as the basis of “emancipation of dissonance”:

The idea that emancipated dissonance should be comprehensible implies nothing other than this: that with sufficient effect even a very complex sonority becomes transparent with regard to its tonal relationships and can be understood as a structure in its own right. Yet it is uncertain whether comprehensibility in itself is the decisive factor. ... The emancipated dissonance ... is an event without consequences, an isolated sonority. The chord is not deprived of comprehensibility, but it no longer leads anywhere.²⁷

I need to clarify that the emancipation of dissonance does not lead to an immediate creation of a new harmonic practice. Many scholars approach this advancement of harmonic vocabulary as an enrichment of the existing tonal framework in Schoenberg’s compositions during his pre-atonal period. This practice, generally known as extended harmony, is described by Schoenberg as follows:

²⁷ Carl Dahlhaus, *Schoenberg and the New Music*, trans. Derrick Puffett and Alfred Clayton (New York: Cambridge University Press, 1987), 123.

Remote transformations and successions of harmonies were understood as remaining within the tonality. Such progressions might or might not bring about modulations or the establishment of various regions. They function chiefly as enrichments of the harmony and, accordingly, often appear in a very small space, even in a single measure. Though referring them to regions may sometimes facilitate analysis, their functional effect is, in many cases, only passing, and temporary.²⁸

Schoenberg's *Theory of Harmony* discusses in detail the use of altered chords, vagrant chords (chords with multiple meanings), nonharmonic tones, whole-tone chords, and quartal chords (chords of perfect fourths), etc., as some of the harmonic devices to “enrich” the tonal harmony. However, the term “enrichment” indicates these devices as subsidiary to the tonal framework. As we will see in subsequent chapters, the contextual use of interval cycles plays an important role of linking the diatonic and interval-cycle mediums rather than simply “enriching” the tonal harmony. In addition, as we release our boundary of “consonance” from strictly diatonic triads, the interaction between interval cycles and the intervals within the diatonic triads will open a whole new medium of harmonic relationships.

²⁸ Arnold Schoenberg, *Structural Functions of Harmony*, 76-77.

Interval Cycles: Definition, Application, and Relationship to Tonal Elements

Definition

An interval cycle is “a series based on a single recurrent interval, the sequence of which is completed by the return of the initial pitch class.”²⁹ The concept of generating a pitch-class series based on a single interval is fundamentally different from the construction of diatonic triads. As Antokoletz points out, traditional tonal music is based on a system in which “the octave is divided into unequal parts.”³⁰ The octave is divided by the perfect fifth, which serves as the primary structural interval of major and minor triads. The perfect fifth of the triad is divided into major third and minor third. Neither of these divisions results in a symmetric partition of the respective intervals. However, the interval cycles are symmetric because of the reliance of recurrent intervals. Ex. 1-2 shows the system of interval cycles. The interval of perfect-fourth/perfect-fifth (interval-5/7) generates a cycle that does not divide one octave symmetrically. Instead, it generates a cycle that extends through several octaves before the initial pitch class returns. Therefore, there is only one interval-5/7 cycle. The other interval cycles, including one cycle of minor second, two of major seconds, three of minor thirds, four of major thirds, and six of tritone, divide one octave symmetrically.

²⁹ Elliott Antokoletz, *The Music of Béla Bartók: A Study of Tonality and Progression in Twentieth-Century Music* (Berkeley and Los Angeles: University of California Press, 1984), xii.

³⁰ *Ibid.*, 67.

Ex. 1-2: System of Interval Cycles³¹

1/ 11	2/10	3/9	4/8	5/ 7	6/6	7/ 5	8/4	9/3	10/2	11 /1	12 1/ /0 11	
C				F \flat		B \flat				E	D	C
B				C \sharp		E \sharp				F	D	B
B \flat				G \sharp		A \sharp				F \sharp	D	B \flat
A				D \flat		D \sharp				G	D	A
G \sharp				A \sharp		G \sharp				G \sharp	D	G \sharp
G				E \flat		C \sharp				A	D	G
F \sharp	B \flat B			B \flat		F \sharp				F \sharp G	D	F \sharp
F	G \sharp A			F		B			F \sharp G	A \sharp A	B	D
E	F \sharp G	A \sharp A B \flat		C		E		A \sharp A B \flat	B \flat B	C	D	E
E \flat	E F	F F \sharp G	F \sharp G G \sharp A	G		A	B \flat B C C \sharp	B C C \sharp	C C \sharp	C \sharp C \sharp	D	E \flat
D	D E \flat	D E \flat E	D E \flat E F	D	D E \flat E F F \sharp G	D	D E \flat E F	D E \flat E	D E \flat	D E \flat	D	D
C \sharp	C C \sharp	B C C \sharp	B \flat B C C \sharp	A	G \sharp A B \flat B C C \sharp	G	F \sharp G G \sharp A	F F \sharp G	E F	E \flat	D	C \sharp
C	B \flat B	A \sharp A B \flat	F \sharp G G \sharp A	E	D E \flat E F F \sharp G	C	B \flat B C C \sharp	A \sharp A B \flat	F \sharp G	E	D	C

* Due to lack of space, only the D cycle is included in the column of 12/0 cycles. If written out in unabbreviated form, this column would include all the 12/0 cycles, as follows: D-C \sharp -C-B-B \flat -A-G \sharp -G-F \sharp -F-E-D \flat -D.

Schoenberg's Discussion of Interval Cycles

Schoenberg's *Theory of Harmony* also provides his own assessment of two important interval cycles: the whole-tone scale (interval-2 cycle) and the perfect-fourth cycle (interval-5 cycle). According to Schoenberg, the conscious use of the whole-tone scale has two forerunners.³² In the first case (Ex. 1-3), a melody is formed over an augmented triad by using two chord tones. A passing tone is added to produce two whole steps, thus dividing the major third into two equal parts. This melody formation can certainly start from each of the chord tones (Ex. 1-3a, b, and c), and the whole-tone scale is formed (Ex. 1-3d). The same result can be obtained by adding passing tones over a dominant-seventh chord with augmented (Ex. 1-4a and b) or omitted (Ex. 1-4c) fifth. The two cases are similar because the altered seventh-chord can be understood as an augmented triad with added seventh. Such an altered dominant-seventh chord contains four of the six tones of the whole-tone scale, G-[]-B-[]-D \sharp -F. Schoenberg also points

³¹ Ibid., 68.

³² Arnold Schoenberg, *Theory of Harmony*, 391.

out that if the second case is further expanded into a ninth chord, G-B-D \sharp -F-A, five of the six whole tones will result. In addition, Schoenberg also points out a six-note whole-tone chord can be formed by simultaneously raising and lowering of the fifth of a dominant ninth chord: G-B-[D]-F-A to G-B-[C \sharp -D \sharp]-F-A (See Ex. 1-5). This six-note whole-tone chord is regarded as an altered dominant-ninth chord and resolves to C major through traditional voice leading.

Ex. 1-3: Whole-Tone Scale from Augmented Triad³³

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Ex. 1-4: Whole-Tone Scale from Altered Dominant-Seventh Chords

³³ Ibid.

Ex. 1-5: Resolution of a Six-Note Whole-Tone Chord

C: V⁹ WT I

Concerning the fourth chord (or quartal chord), Schoenberg comments that it first appeared as “impressionistic means of expression”³⁴ and has been used in music by Beethoven and Wagner, but it was Debussy who employed quartal chords in “such great power that they seem bound up inseparably with the newness that he is expressing.”³⁵ Concerning the technical aspects, Schoenberg illustrates the four-part quartal chord can be derived by “lowering the root (if one wishes to admit such), the seventh, and the fifth” of a dominant-seventh chord (See Ex. 1-6a). Similarly, the five-part quartal chord can be derived by “raising and lowering the root, raising and lowering the fifth, and sustaining the third”³⁶ of a dominant triad (See Ex. 1-6b). As Schoenberg hinted in his discussion, he is not completely comfortable treating quartal chords as altered dominant chords since the derivation involves a change of the root.

³⁴ Ibid., 399.

³⁵ Ibid., 403.

³⁶ Ibid., 405.

Ex. 1-6: Resolution of Four-Part and Five-Part Quartal Chords from Schoenberg's *Theory of Harmony*

a) $B\flat_3$ 4ths $E\flat$

b) $A\flat_4^6$ 4ths $D\flat^6$

Ex. 1-7 illustrates how a six-part quartal chord progresses to and from a six-part whole-tone chord. Although Schoenberg mentions that such a connection appears in the First Chamber Symphony, I will explore the relationship between the quartal chord and the whole-tone chord in detail in chapter 3.

Ex. 1-7: Quartal Chords and Whole-Tone Chords³⁷

4ths WT0 4ths WT1

³⁷ Ibid., 406.

Common Element as a Means of Progression

Schoenberg once presented an interesting anecdote on organic development of sonata form in general:

... if you have a coat made by a tailor, it has to have a front, a back, and two sleeves. These are in different shapes, but they had to be made out of the same material. So, in a sonata form, the material of the different parts – main theme, second theme, and so on – has to be different, but related. He showed these connexions (harmonically, melodically, rhythmically, dynamically, etc.) in every work that he analyzed.³⁸

The “same material” Schoenberg mentioned points to the connecting fabric that links the whole composition into one coherent unit. Concerning the harmonic structure, one way to approach and understand this connecting fabric or the “same material” in a composition is to examine the common intervallic elements as the basis of the harmonic analysis. The use of common elements is a traditional way of modulation in tonal music. For example, harmonic progression often takes advantage of common tones between chords for smooth voice leading. Also, harmonic modulation often uses pivotal chords that exist in both keys to make a smooth transition from one key to the other. The same concept applies to the interaction between diatonic triad and interval cycles. Schoenberg’s concept of regions and their relationships, as discussed earlier, is based solely on the extent of common element sharing. While Schoenberg’s “chart of regions”

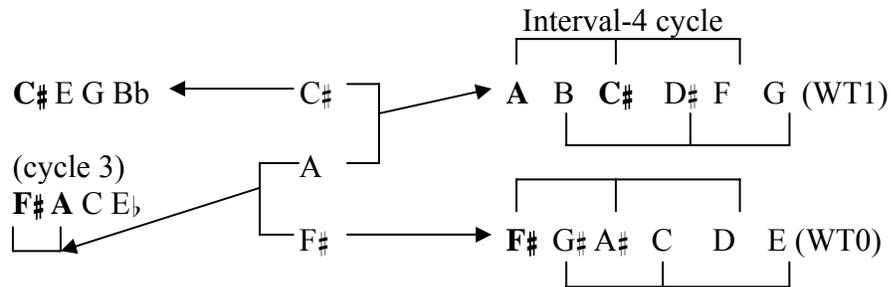
³⁸ Elliott Antokoletz and Paul A. Pisk, “A Survivor of the Vienna Schoenberg Circle: An Interview with Paul A. Pisk,” *Tempo* 154 (Sept., 1985), 16.

does not include any interval cycles as regions, the concept of relating them to the tonic region is similar. The five classes of relating the regions to the tonic Schoenberg defined may not be suitable to classify interval cycles meaningfully, yet the notion of common-element sharing (or in particular common-interval sharing) becomes an important means to link the two realms together and reveal their relationships, no matter how close or far their relationships are with respect to the regions Schoenberg listed.

As mentioned earlier, a diatonic triad contains a perfect fifth, a major third, and a minor third. These intervals can imply the presence of the respective interval cycles, namely interval-5, interval-4, and interval-3 cycles. The interval-4 cycle also implies the presence of the interval-2 cycle by symmetric partitions as Schoenberg discusses in his *Theory of Harmony* (See Ex. 1-3). The interval-6 cycle is also implied as the subset of the interval-3 cycle. Ex. 1-8 illustrates the relationship between a diatonic triad and the respective interval cycles generated from the interval structure of the triad. These intervals in a triad, namely major third, minor third, and perfect fifth (or intervals 4, 3, and 7 respectively) imply the presence of the respective interval cycles. Of particular interest in this dissertation is the interval-2 cycle or the whole-tone collections. Since there are only two interval-2 cycles, I will label the whole-tone collection containing C (pitch class 0)³⁹ as WT0 collection, and the whole-tone collection containing C# (pitch class 1) as WT1 collection.

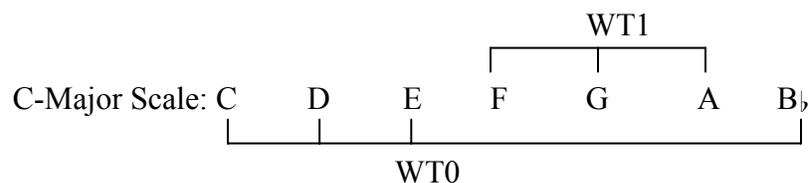
³⁹ This convention of pitch-class designation was first presented in Elliott Antokoletz, “Principles of Pitch Organization in Bartók’s *Four String Quartet*” (Ph. D. dissertation, City University of New York, 1975).

Ex. 1-8: Diatonic Triad and Interval Cycles



The common-element interaction between diatonic and cyclic-interval materials can also occur in their respective scales. Among the easiest and the most controversial is the use of whole-tone collections. For example, Ex. 1-9 illustrates a possible way to partition a diatonic scale with the two whole-tone collections. Without any musical context, this partitioning is arbitrary with no musical significance. Since the two whole-tone collections combine to form a twelve-tone aggregate, one can use the two whole-tone collections to partition anything. In order to justify this whole-tone partitioning, the contextual significance of the whole-tone collections must be first justified. This example is actually taken from the first theme of the last movement of Schoenberg's Second String Quartet. I will come back to the discussion of this particular example in chapter 4.

Ex. 1-9: Whole-tone Partitioning of a Diatonic Scale



Some of Béla Bartók's early compositions exhibit explicit use of common elements between diatonicism and interval cycles. In his Fourteen Bagatelles, No. 4 (1908), the use of the pentatonic scale is coupled with the emphasis of pitch D throughout the whole piece. The "pentatonic" harmony provides a static sound since it lacks a leading tone and consequently no tritone resolution can be established. Without the traditional dominant-tonic relation, Antokoletz points out the establishment of D by other "non-tonal" means:

Within three of the four melodic phrase (the fifth and sixth phrases are exact reiterations of the third and fourth), D prominently appears in the melodic contour as the highest and lowest note, is exposed temporally as the last note of all the phrases and is repeated in the final measure, and is the only tone that appears melodically in more than one octave position. Its priority is further supported by the prominence of the tonic triad.⁴⁰

While the D tonic is established basically by assertion, the pentatonic scale (D-F-G-A-C) serves as the melodic and harmonic basis of the piece. However, with the D-minor triad suggested some sort of "tonal" basis of the piece and the "passing tone" of the melody (such as B \flat , m. 1), the melody does unfold the D-minor scale also. The result is a hybrid between the D-minor and D-pentatonic scales and the common element they share is the pentatonic scale D-[]-F-G-A-[]-C-D. While the pentatonic scale serves as a subset of the D-minor scale, it also unfolds a system of harmony by itself and establishes a unique

⁴⁰ Elliott Antokoletz, *The Music of Béla Bartók*, 30.

harmonic language that is not dictated by the traditional harmonic practice based on the dominant-tonic resolution in D minor.

Some of Schoenberg's early compositions show use of common elements as a means of expanding tonal progression within the relatively traditional tonal framework. In his Four Songs, op. 2, no. 1, "Erwartung" (1899), Schoenberg starts with a resolution to the E_b-major tonic triad from a "vagrant chord," E_b-A-D-G_b-C_b (Ex. 1-10). Concerning this progression to the tonic E_b major, Edward T. Cone comments that this vagrant chord is "created by applying half-step neighbors to the tonic; but in intervallic content it is very close to another sonority consisting of an appoggiatura applied to a minor dominant ninth."⁴¹ Walter Frisch discusses extensively this vagrant chord as a "color chord" with respect to the poem.⁴² However, I would interpret this as a compression of the traditional Ger⁺⁶ → V → I progression in E_b major. All four pitches of the German augmented-sixth chord are present (E_b-A-[D]-G_b-C_b). The augmented sixth-interval (C_b-A) is resolved, accordingly, to the fifth scale degree (B_b←C_b/A→B_b). The neighbor note, D, in this "vagrant chord" is resolved to the tonic E_b as its leading tone, while the G_b ascends chromatically to the diatonic third, G. Therefore, the traditional harmonic progression of augmented sixth to dominant creates a sense of temporal compression in that there is no standard 18th-century use of the intervening I₄⁶ chord. The resolution is, nevertheless, a strong and logical one because of the double leading tone of the augmented sixth. The dominant seventh as represented by the single leading tone, D, goes directly to the E_b tonic. However, the dominant sonority is clearly audible later in the piece (mm. 21-22), as the bass approaches the B_b-dominant triad by ascending chromatic motion from A_b to

⁴¹ See Edward T. Cone, "Sound and Syntax: An Introduction to Schoenberg's Harmony," *Perspective of New Music* 13: 28.

⁴²Walter Frisch, *The Early Works of Arnold Schoenberg*, 92-97.

A (m. 20). However, this dominant triad does not resolve as expected, but ends abruptly with the return of the “vagrant chord” (m. 23, compared with m. 1). The hierarchical predominance of the E_b-major tonic is maintained, and it is particularly obvious in the postlude (mm. 31ff.), where the repeated dominant-tonic progression ends the song.

Ex. 1-10: Schoenberg, Op. 2, No. 1, m. 1

Sehr langsam (♩)

Aus dem meer-grü-nen Tei - che

In the third song, *Erhebung*, Schoenberg provides the first hint of the whole-tone partitioning of a diatonic triad. The A-major tonic triad, as Frisch shows in his analysis, is not established through the traditional dominant-tonic resolution. Instead, the tonic triad is twice approached by an E-augmented triad, E-G[#]-B[#] (mm. 4 and 7; see Ex. 1-11). While the E-augmented triad may be interpreted as a substituted dominant, it also highlights the WT1 portion of the A-major triad (A-C[#]), which is established at the final cadence (mm. 23-24). Approached by the secondary dominant (B-D[#]-F[#]-A, m. 23), an augmented triad, F-A-C[#], is introduced by stepwise voice leading. Together with the D[#] in the bass, we have a four-note WT1 chord, D[#]-A-C[#]-F[#]. While the bass descends a tritone from D[#] to A, the F in the WT1 chord descends a half-step to E. The major third, A-C[#], is held as common tones in the progression from the WT1 chord to the A-major

triad. This is not a very strong case of whole-tone partitioning of a diatonic triad, since the whole-tone collections are not established extensively in the context. The WT1 chord is more appropriately regarded as a “passing chord” between the $V^7/V \rightarrow I$ progression in A major (mm. 23-24). Nevertheless, these whole-tone sonorities provide a starting point for Schoenberg to expand the cyclic-interval materials to a fuller extent in later pieces.

Ex. 1-11: Schoenberg, Op. 2, No.3, *Erhebung*

m. 4 m. 7 m. 23 m. 24

E+ A(+D#) E+ A V^6_5/V WT1 A

The high level of similarity between the minor scale and the octatonic collection aids the interaction between the diatonic and interval-cycle media. First of all, an octatonic collection can be defined in quite a few ways. As shown in Ex. 1-2, there are only three distinct interval-3 cycles: C-E \flat -G \flat -A, C \sharp -E-G-B \flat , and D-F-A \flat -B. An octatonic collection can be formed by combining any two of the three interval-3 cycles, hence there are only three discrete octatonic pitch collections. Ex. 1-12a shows the three octatonic collections in scalar order. We will establish that these permutations assume a referential position when initiated by the whole-step (interval-class 2). Any of these collections that can be permuted to start with pitch class C will be labeled octatonic-0, that with pitch-

class C# octatonic-1, and that with pitch-class D octatonic-2.⁴³ The intervallic content of the octatonic-2 collection is shown in Ex. 1-12b. An octatonic collection is characterized by the alternating whole steps and half steps. This is an example of a *compound interval cycle*, which can be defined as a series based on two recurring, intercalated intervals. In the case of the octatonic collection, there are two recurrent intervals, whole step (interval-2) and half step (interval-1). I will refer this kind of compound cyclic collection by the ratio of the intervals, in this case 2:1⁴⁴ (or 1:2, depending on the initial point of the permutation).⁴⁵

Ex. 1-12: Octatonic Collections

a. The Three Octatonic Collections

(Ratio 2:1)

Octatonic-0:	C	D	E _b	F	G _b	A _b	A	B
Octatonic-1:	C#	D#	E	F#	G	A	B _b	C
Octatonic-2:	D	E	F	G	A _b	B _b	B	C#

(Ratio 1:2)

Octatonic-0:	D	E _b	F	G _b	A _b	A	B	C
Octatonic-1:	D#	E	F#	G	A	B _b	C	C#
Octatonic-2:	E	F	G	A _b	B _b	B	C#	D

b. Intervals in an Octatonic Collection

Octatonic-2:	D	E	F	G	A _b	B _b	B	C#	[D]
Interval-class:	2	1	2	1	2	1	2	1	

⁴³ This labeling system of the octatonic collections is used by Elliott Antokoletz in *The Music of Béla Bartók*.

⁴⁴ Elliott Antokoletz definition of interval ratio is different from Ernő Lendvai's "model" in that Lendvai assigns golden section or Fibonacci significance whereas Antokoletz is using ratio to show cyclic or compound cyclic interval collections. See Ernő Lendvai, *Béla Bartók: An Introduction of His Music* (London: Kahn and Averill, 1971).

⁴⁵ See Pieter van den Toorn, *The Music of Igor Stravinsky* (New Haven: Yale University Press, 1983), 50-51, for the first description of these two octatonic models (0235 and 0134 respectively).

The octatonic-2 collection bears a basic resemblance to the D-Dorian scale (D-E-F-G-A-B-C-D) in its 0235 tetrachord construction. In chapter 2, below, I show its relation to the D-aeolian scale (D-E-F-G-A-B_b-C-D), which shares five notes with the octatonic-2 collection (D-E-F-G-[]-B_b-[]-[]). In addition, the triadic substructure in the octatonic-2 collection (for instance, including both minor and major types on E, G, B_b, and C_#) provide the pivots for moving between the diatonic and octatonic realms.

The first movement of Stravinsky's *Symphony of Psalms* (1930) prominently unfolds the octatonic collections, while the E-minor and G-major triads play a prominent role in establishing the drama of the piece.⁴⁶ Although the piece opens with an E-minor triad (Ex. 1-13), the vast doubling of the third (G) of the triad asserts a "potential counterweight to the bass note, E"⁴⁷ and the harmonic conflict between E and G leads to the final cadence of the movement on G instead of E. The two arpeggiated "dominant-seventh chords," B_b-D-F-A_b and G-F-D-B (mm. 2-3), induce us to interpret the E-minor triad as part of an exclusive seven-note octatonic-2 segment, D-E-F-G-A_b-B_b-B-[], with only one pitch missing, C_#. These two "dominant-seventh" chords do not resolve locally to their implied tonic triads, yet the implied resolutions, namely E_b and C, portray the dramatic polarity between man and God respectively.⁴⁸

Although this piece is twenty-five years away from Schoenberg's *First String Quartet*, it reveals, in retrospect, the importance of the interaction between diatonic triads and octatonic collections. The structural significance of the E-minor triad is revealed

⁴⁶ See *ibid.*, 344-351.

⁴⁷ Joseph N. Straus, *Remaking the Past: Musical Modernism and the Influence of the Tonal Tradition* (Cambridge, MA: Harvard University Press, 1990), 87.

⁴⁸ Wilfrid Mellers, "1930: *Symphony of Psalms*," *Tempo* 97 (1971): 19-27.

Ex. 1-13: Igor Stravinsky, Symphony of Psalms, First Movement, mm. 1-4



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through the interconnecting fabric of the octatonic collection with the E-minor triad and the G-major triad. In the case of Stravinsky's Symphony of Psalms, the "tonic" E is established more by "assertion:" the E-minor triad, the E-Phrygian mode, and an octatonic collection emphasizing E. Schoenberg's compositions during 1904-1908, on the other hand, still demonstrate a relatively strong underpinning of a tonal framework, yet the interval cycles do provide a new connecting fabric that interacts with the tonal framework.

Chapter 2: String Quartet No. 1: Fusion of Diatonic Scales and Interval Cycles

The First String Quartet (1904-5) provides a special contribution to the genre of the string quartet. The implementation of the single-movement symphonic poem idea to the genre is concomitant with the rigorous use of interval cycles within the overall D-minor framework. Although the establishment of the D-minor tonal framework is still strong, the emphasis of the intervallic manipulations through the interval cycles integrates with the tonal framework to create a relatively complex harmonic language that cannot be simply explained with traditional harmonic analysis. In this chapter, I would like to explore the role of the interval cycles in several focal passages of the quartet. In particular, I would like to start with the two *Grundgestalts* proposed by Severine Neff and Maria Niederberger to illustrate the establishment and organic developments of the primary cyclic-interval partitions.

Proposed *Grundgestalts*

Severine Neff

The concept of *Grundgestalt* has been discussed widely in Schoenbergian theory. Although most agree that *Grundgestalt* is about the “basic idea” of a composition, analysts seem to conceive the details of *Grundgestalt* in slightly different ways. Based on her reading on Josef Rufer’s *Composition with Twelve Tones*,¹ Severine Neff approaches

¹ Josef Rufer, *Composition with Twelve Notes Related to One Another*, translated by Humphrey Searle (London: Rockliff, 1954).

Grundgestalt as a technical means of realizing the totality of the piece through different musical transformations:

The *Grundgestalt* is the coherent structural material which is repeated and transformed within the first phrase of a piece. ... Subsequent transformations of the motives of the *Grundgestalt* generate the composition in its myriad dimensions --- the musical manifestation of the idea.²

Based on this approach, Neff claims that the opening three measures of the violin I melody is the *Grundgestalt* of the piece (Ex. 2-1a). She further subdivides this *Grundgestalt* into three motives, labeled here i, ii, and iii.³ Ex. 2-1b shows the characteristic intervals of these motives. In addition, a rhythmic motive iv is identified and is common to all three motives. As we will see, these characteristic intervals play an important role in the organic development to Niederberger's version of the *Grundgestalt* of this piece.

Maria Niederberger:

Niederberger defines the term *Grundgestalt* in a more literal manner: "*Grund* as 'basis,' 'foundation;' *Gestalt* as 'form,' 'shape.'"⁴ With reference to page 57 (Sk. 58) of

² Severine Neff, "Aspects of Grundgestalt in Schoenberg's First String Quartet, Op. 7," *Theory and Practice. Journal of the Music Theory Society of New York State, USA*, 9/1-2 (1984), 12.

³ The motives are renamed to avoid labeling conflict with the discussion later in this chapter. The original labeling of motives i, ii, iii, and iv in Neff's article are motives a, b, c and x respectively.

⁴ Maria Niederberger, "Schoenberg's 'Intricate Structure': An Analytic Approach to his String Quartet in D Minor, Op. 7 [with] Piano Quintet. [Original composition]" (Ph.D. Dissertation, Brandeis University, 1991), 7.

Ex. 2-1: String Quartet No. 1, Severine Neff's Proposed *Grundgestalt*

a. mm. 1-3, Violin I



b. Characteristic Intervals of the *Grundgestalt*

Motive	Characteristic Interval
i	minor second
ii	tritone
iii	perfect fifth (outlining a major triad)

Schoenberg's Sketchbook I⁵ (Ex. 2-2), Niederberger proposes "the intervallic succession of alternating perfect fourths and major thirds (second staff) as a rough sketch or *Grundgestalt* for the flowing melodic line of the third staff."⁶ This intervallic succession will generate eight different pitch classes before duplicating pitch classes and these eight pitch classes form an octatonic collection.⁷ In particular, Niederberger points out her interpretation of *Grundgestalt* "stresses the fact [that] the *Grundgestalt* of a theme is not a theme itself."⁸ In other words, her interpretation of *Grundgestalt* emphasizes conceptual

⁵ Christian Martin Schmidt in *Arnold Schoenberg, Samtliche Werke: Streichquartette I. Abteilung 6: Kammermusik; Reihe B, Band 20*, ed. Christian Martin Schmidt (Wien: Universal Edition AG, 1986), 63.

⁶ Maria Niederberger, "Schoenberg's 'Intricate Structure'," 7.

⁷ For details about the classification of the octatonic "regions" and the associated key areas, see *ibid.*, 12-18. In this dissertation, I will label the three octatonic collections as discussed in chapter 1. See Ex. 1-12a for details.

⁸ *Ibid.*, 7.

significance as the “basis” and “shape” rather than the necessity of the *Grundgestalt* as a “foreground” explicit presentation as a theme.

Ex. 2-2: Schoenberg's Sketchbook I, Page 57 (Sk. 58)⁹



Although Schoenberg did not explicitly identify the *Grundgestalt* of this piece, the two *Grundgestalts* proposed by Neff and Niederberger are valuable starting points since they point to different important aspects of the analysis of this piece. From a listener's standpoint, the process of organic development stems from the opening material. Therefore, it will be logical for us to start from the opening theme and trace the development from the opening theme to the first occurrence of Niederberger's *Grundgestalt* (mm. 8-10¹⁰). The implication of this developmental process is important for us to understand not only the relative importance of these two *Grundgestalts* and ultimately the relationship between the tonal and cyclic-interval materials, but also the whole organic process of textual and registral growth by means of structural transformation.

⁹ Christian M. Schmidt, ed. *Arnold Schoenberg, Abteilung VI: Kammermusik, Streichquartette I, Kritischer Bericht, Skizzen, Fragmente*, Reihe B, Band 20 (Wien, Universal Edition AG; Mainz: B. Schott's Söhne, 1986), 63.

¹⁰ In this chapter, continuous measure numbers of the First String Quartet will be used.

Opening Theme: Fusion of Interval Structure

Although the tonic D minor is presented traditionally at the opening of the piece, the somewhat dissonant harmony implies some destabilization of the opening tonic triad. Bryan Simms summarizes the opening passage of Schoenberg's First String Quartet as follows:

[In the First String Quartet,] diatonic harmonies support the dissonant voice leading. But basic triads themselves rarely come to the surface of the music, being submerged instead beneath the chromatic counterpoint.¹¹

I would slightly alter Simms's perspective by suggesting we are not talking about "dissonant voice leading," but rather dissonant sonority. Ex. 2-3a shows the full score of the opening passage. Walter Frisch analyzes this passage based on traditional functional harmony in D minor and provides a fairly straightforward Roman numeral analysis of the passage (Ex. 2-3b). Indeed, the melodies are still almost strictly in D minor during the first four measures. However, the violin I melody can also be interpreted as an octatonic-2 melody. As Niederberger points out, the octatonic-2 collection and two D-minor variant (harmonic/melodic) scales share six (or seven) tones in common (Ex. 2-4).¹²

¹¹ Bryan Simms, *Music of the Twentieth Century: Style and Structure* (New York: Schirmer Books 1986), 152.

¹² Maria Niederberger, "Schoenberg's 'Intricate Structure,'" 16.

Ex. 2-3 (Continued)

b. Roman Numeral Analysis, mm. 1-8

m. 1 m. 2-3 m. 3 m. 5 m. 6 m. 8

d: i V⁷ VI² ii₅⁶ VI⁷ vii⁷ ii⁷

Ex. 2-4: D-minor Scale vs. Octatonic-2 Collection (Common Elements in Bold)

D-minor:	1	2	3	4	#4	b6	6	7
Octatonic-2:	D	E	F	G	G#	Bb	B	C#

Concerning the fusion of the D-minor scale and the octatonic-2 collection, Niederberger also comments:

A modal mixture is suggested by the lowered and raised sixth and raised seventh scale degree. The dominant is missing, but the presence of its leading tone (#4) makes it possible to construe the harmony of a French augmented sixth chord (2, #4, b6, 8, or E, G#, Bb, D) as an octatonic one.

This octatonic sound may be infused into a diatonic context as a secondary dominant or as a contrapuntal derivation of independent voices.¹³

The missing dominant (A) of D minor in the octatonic-2 collection provides the distinct sound that differentiates it from the D-minor scale. Nevertheless, the high resemblance between the two scales provides a starting point for the fusion between the tonal and cyclic-interval materials. However, the D-minor scale seems to take over when the melody touches upon the dominant pitch at the high point (m. 5) and the G[#] suddenly appears to be an incomplete lower neighbor note of the dominant, A.

The mixed identity of the scales of D-minor and octatonic-2 is even more explicit in the cello bass line. Starting with the D-minor tonic triad, the cello ascends from D to B_♭ before settling on A (mm. 2-3). It then descends to G and the ascending motion restarts on F (m. 4) and rises further through B (m. 5) to reach D_♭ (m. 6). As discussed earlier, the A in the first phrase highlights the D-minor scale, while the B_♭-B-C[#]/D_♭ portion belongs to the octatonic-2 collection. These two cello cadences are articulated by their respective harmonies. With reference to Berg's reduction, Simms shows that the first cello phrase progresses from the D-minor tonic to its dominant seventh (mm. 2-3; see Ex. 2-5).¹⁴ The second phrase, however, reveals the clashes of octatonic, diatonic, and whole-tone collections. While violin I reaches the A (m. 5) that confirms the D-minor scale, it immediately descends to its octatonic replacement G[#] and outlines the French augmented-sixth chord in D minor (G[#]-D-E-B_♭, mm. 5-6), which is also a subset of the octatonic-2 collection. The other French augmented-sixth chord of the octatonic-2

¹³ Ibid.

¹⁴ Simms, *Music of the Twentieth Century*, 153.

collection, D \flat -F-G-B, harmonizes this violin melody to provide a complete octatonic-2 collection (Ex. 2-6). While the use of French augmented-sixth chord is very common since the late eighteenth century, its implication here is far more than functional harmony in D minor. The French augmented-sixth chord in D minor first occurs in the opening measure (see Ex. 2-3a), at which it can be perfectly interpreted as functional in D minor (while its traditional voice leading is somewhat delayed). However, the duality of the D-minor and octatonic scales in the opening passage assigns a pivotal function to the French augmented-sixth chord. Also, as a symmetric whole-tone chord, the French augmented-sixth chord provides the first major hint of whole-tone partitioning of the octatonic collection (G \sharp -D-E-B \flat from the WT0 collection and F-G-B-D \flat from the WT1 collection).

Within the D-minor/octatonic-2 texture in the opening phrase, the whole-tone collection and the interval-4 cycle clash to this mixed texture to prepare for the octatonic/whole-tone mixture in later passages. As mentioned earlier, the first cello bass ascent settles on pitch A in the first phrase as the dominant seventh of D minor (mm. 2-3). However, at the same time, the A can be interpreted as part of the interval-4 cycle, F-A-C \sharp (mm. 2-3), and the WT1 chord, A-C \sharp -F-G (mm. 2-3). With A, C \sharp , and G as common tones, this WT1 chord smoothly “resolves” back to the A 7 chord with the half-step motion F-E in violin I (mm. 2-3).

Melodic Contour

The overall linear arch shape of the melodic contour of the opening passage and the relative motions of the voices to each other articulate the organic development of the passage from diatonicism to the interval cycles. The first two phrases of violin I and

Ex. 2-5: String Quartet No. 1, mm. 1-10, Chordal Reduction by Alban Berg¹⁵

The image shows a chordal reduction of the first ten measures of Alban Berg's String Quartet No. 1. It consists of two systems of music, each with a treble and bass staff. Measure numbers 1 through 10 are indicated above the staves. Chordal reductions are shown below the bass staff, including [m.i], :[d.i], and v7]. At the bottom, there are labels: WT1, WT0, WT0, WT1, o7, WT0, WT0.

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Ex. 2-6: String Quartet No. 1, mm. 5-6

The image shows measures 5 and 6 of Alban Berg's String Quartet No. 1. It consists of two systems of music, each with a treble and bass staff. The first system is marked *mp*. Chordal reductions are shown below the staves: G₂-D-E-B₂ and F-G-B-D₂.

¹⁵ Alban Berg, "Why is Schönberg's Music so Difficult to Understand?" Reprinted in Willi Reich, *Alban Berg*, trans. Cornelius Cardew (New York: Harcourt, Brace & World, Inc., 1965), 197. This article was originally from the special number of *Musikblätter des Anbruch* (Wien: Universal Edition, 1924), to celebrate Schönberg's fiftieth birthday.

cello feature parallel arch shapes. The violin I phrase (mm. 1-3) ascends from D to F (m. 2) before it descends to E (m. 3), while the cello rises from D to B \flat (m. 2) and descends stepwise to A and G (mm. 3-4) before the cello restarts the ascent on F of the following phrasal arch (m. 4). The tension increases when the violin and cello rise higher to A and D \flat (mm. 5 and 6) respectively. In addition, these melodic contours are articulated further by dynamic changes. The *crescendo* and *decrescendo* correspond with the ascending and descending phrases (up to m. 6).

The tension increases substantially (mm. 7-8) when Schoenberg widens the registral distance between violin I and cello by contrary motion while simultaneously shortening the phrase to two measures: Violin I continues to push the highest note of the arch further to B \flat (m. 7) while the cello descends stepwise from D \flat to E (m. 8). Compared to the previous two three-measure phrases, this phrase represents a compression. In addition, the whole phrase is marked only in *crescendo*. All these musical factors enhance the climactic arrival of the first appearance of theme y¹⁶ (mm. 8ff.; see Ex. 2-3a), which presents the first foreground appearance of Niederberger's *Grundgestalt*.

***Grundgestalt* as Interval Cycle**

Although the D-minor tonic is established in a relatively traditional way, theme y exhibits the first explicit foreground emergence of interval cycles. Approached by *crescendo* (mm. 7-8), theme y (mm. 8-10) represents the first dynamic climax of the first theme-group. Frisch analyzes this as the alternation of whole-tone and seventh chords

¹⁶ The labeling of this theme is used in Walter Frisch, *The Early Works of Arnold Schoenberg* (Berkeley and Los Angeles: University of California Press, 1993).

(Ex. 2-7).¹⁷ On the other hand, as Niederberger claims, the octatonic bass line, ascending in alternating perfect fourths and major thirds, E \flat -A \flat -C-F-A-D-F \sharp (=octatonic 0: C-D-E \flat -F-F \sharp -A \flat -A-[]), provides the basis of the work's octatonicism and the keys of octatonic significance. Two questions arise in this climactic passage. What is the relative importance of the octatonic and whole-tone collections with respect to the general diatonicism of the work and especially the opening passage that establishes the D-minor tonic? Also, what is the significance of the simultaneous emergence of both the octatonic and the whole-tone materials (especially mm. 8-10)?

Ex. 2-7: mm. 8-10, Chordal Reduction by Frisch

The musical score for Ex. 2-7, mm. 8-10, is presented as a chordal reduction. It features two staves: a treble staff and a bass staff. The treble staff shows chords for measures 8, 9, and 10. The bass staff shows a bass line with notes corresponding to the chords. Below the bass staff, the chords are labeled: wt, A⁷, wt, F⁷, dim⁷, wt, wt.

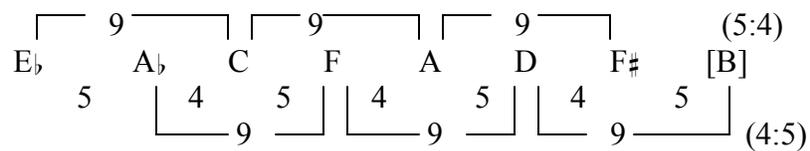
To answer these questions, I would like to take a closer look at Niederberger's octatonic *Grundgestalt*. As mentioned earlier, Niederberger proposes the ascending motive that features ascending sequence of perfect fourths and major thirds as a possible *Grundgestalt* of the piece. First of all, the perfect fourth (interval 5) and major third (interval 4) are combined to form a major sixth (interval 9) or the inversion of minor third (interval 3). Ex. 2-8a illustrates how the interval 5:4 ratio (like the 1:2 ratio) generates two interlocking interval-9/3 cycles in Niederberger's *Grundgestalt*. Besides the interlocking interval-9/3 cycles, the two individual intervals of ratio 5:4 contribute to the

¹⁷ Ibid., 197-198.

groupings of the two whole-tone collections within the octatonic cycle. Ex. 2-8b shows how the major third groups the whole-tone collections together while the perfect fourth (interval 5) alternates the whole-tone collections.

Ex. 2-8: Schoenberg, String Quartet No. 1, op. 7, mm. 8-10, cello

a) Interval-9 cycles:



b) Interval-2 cycles:



Niederberger also discusses this partitioning of the *Grundgestalt* by the two whole-tone collections in her analysis of the scherzo theme (mm. 399ff.):

The whole-tone scale can be systematically derived from an elaborated Grundgestalt which features equal subdivision of its major thirds, i.e. A-C[#] and E_b-G. Any two of the divided segments at tritone distance will generate a whole tone scale, and the two remaining segments supply the complementary one.¹⁸

¹⁸ Niederberger, "Schoenberg's 'Intricate Structure'," 28.

The whole-tone grouping of the *Grundgestalt* is supported by theme *y* (mm. 8-10). Frisch's analysis shows the alternations among whole-tone, dominant-sevenths, and diminished-sevenths chords (see Ex. 2-7). The two dominant-seventh chords in Frisch's analysis compares with the A'' section (in C# minor)¹⁹ when the same theme *y* is harmonized with the traditional $\text{Ger}^{+6} \rightarrow \text{V}^7 \rightarrow \text{WT} \rightarrow \text{i}$ progression in D minor (mm. 59-65). Although the resolution of the whole-tone chord in the A'' section to D minor (mm. 62-65) is similar to the textbook resolution as discussed in Schoenberg's *Theory of Harmony* (see Ex. 1-5), theme *y* in the opening stanza definitely possesses the quality of interval-cycle mixture. As illustrated by Berg in his chordal reduction (Ex. 2-5), the alternation between the two whole-tone collections aligns with the 4:5 *Grundgestalt* (with the exception of the diminished-seventh chord on A).

The close link between the tonal and cyclic-interval media is shown in theme *yI*, in which the four accented notes, F (m. 8), D (m. 9), C (m. 9), and A (m. 10), articulate the D-minor tonic within the cyclic-interval complex. While pitches D and F can be interpreted as part of the respective whole-tone collections, the A of the D minor appears to be a "foreign" element among the WT0 sonority (mm. 9-10; see Ex. 2-5). This conflict is resolved in the following phrase when theme *y* is transposed up a major third (mm. 10ff.) and theme *yI* starts on A, which is absorbed to the WT1 chord G-C#-F-A (m. 10).

With all these in mind, we can examine how Schoenberg develops the opening theme organically to this climactic octatonic passage through simultaneous expansion and contraction of the characteristic intervals of the two *Grundgestalts*. As mentioned earlier,

¹⁹ The first theme is presented as modified strophic form in the exposition: section A (mm. 1ff), A' (mm. 30ff), A'' (mm. 54ff), and A (mm. 65).

Neff's *Grundgestalt* possesses three characteristic intervals: minor second, tritone, and perfect fifth (as part of a major triad). The minor second of the opening phrase characterizes ratio 1:2 of the octatonic collection (C \sharp -D-E-F; m. 1) that eventually highlights the descending theme *y1* (see Ex. 2-3a). The perfect fifth (or its inversion as perfect fourth) and the major third becomes the characteristic intervals of the octatonic collection in ratio 5:4. In addition, the establishment of the octatonic *Grundgestalt* is articulated by the expansion of register between top and bottom voices. First of all, the establishment of the diatonic D minor is accompanied by parallel motions between violin I and cello (mm. 1-6). However, when approaching theme *y*, contrary motions between violin I and cello become the main event (mm. 7-8) and the foreground appearance of the 5:4 *Grundgestalt* is initiated with the widest registral separation (m. 8) followed by contrary motion of themes *y1* and *y3*, which represent the two forms of the octatonic collections: the most contracted form in ratio 1:2 (theme *y1*; see Ex. 2-3a) and the most expanded form in ratio 4:5 (theme *y3*). The whole theme *y* is transposed up a major third and restarts on A (violin I, m. 10), and G (cello, m. 10). Again, theme *y3* (the 4:5 *Grundgestalt*) ascends with seven pitches to B \flat (cello, m. 12). With the embellishment of the leading tone A (mm. 12-13), B \flat is quickly established as the local tonic of the following section (mm. 14ff.). The transposed restatement of theme *y* brings theme *y3* from the octatonic-2 collection to the octatonic-1 collection (G-C-E-A-C \sharp -F \sharp -B \flat -[E \flat], mm. 10-12, cello).

Transition as an Octatonic Fugue

All three octatonic collections seem to be dissolved by the eventual return of the opening theme in E \flat minor (mm. 30ff.), C \sharp minor (mm. 54ff.), and finally in tonic D minor (mm. 65ff.). As mentioned earlier, in the C \sharp -minor section, theme y is primarily based on the traditional Ger⁺⁶ \rightarrow V⁷ \rightarrow WT \rightarrow I progression (mm. 59-65) that reintroduces the D-minor tonic. This harmonic encircling of the tonic D minor²⁰ prepares the return of D minor (mm. 65ff.), which serves as the real point of departure to establish the subordinate theme (mm. 153ff.). However, the transition (m. 97) to the subordinate theme exhibits organic development from the opening passages through the unfolding of all three octatonic collections. First of all, Niederberger demonstrates how the transition unfolds the three octatonic collections, as manifestation of the octatonic 4:5 *Grundgestalt*, by tracing the opening two notes of the fugato entries. These outline the respective French augmented-sixth chords of the octatonic collections. However, the fugato subjects she identifies are slightly different from the analysis by Frisch, who identifies three fugato subjects with reference to Schoenberg's sketchbook. Frisch's intention is to identify the compositional process based on the sketches. I would like to trace the octatonic implications based on Frisch/Schoenberg's fugato subjects and to demonstrate the deeper-level implication of the cyclic interval partitions of the octatonic collections as basis of pitch-set transformations.

²⁰ See David Lewin, "Inversional Balance as an Organizing Force in Schoenberg's Music and Thought," *Perspectives of New Music*, 6: 1-21.

The Fugato Subjects in Schoenberg's Labels

In studying the compositional process of the quartet, Frisch points out the close relationship between the scherzo opening theme (mm. 399ff.) and the transition fugato subjects. In particular, three subjects are marked on sketchbook I/33 (Sk34), which can be identified as an early version of the transition fugato (Ex. 2-9). The melodic contours of this sketch are very similar to the final version of the transition (Ex. 2-10). On the contrary, Niederberger's analysis does not include subject *c* as a separate entity. Instead, she treats subject *a* as the fugato theme and subjects *b* and *c* collectively as the "fugato counterpoint."²¹ It is consistent that subject *b* is always followed by subject *c* in the transition section. However, the octatonic collection they imply can be different when subject *c* is also considered. There is no major indication why Schoenberg specifically labeled the second half of the "fugato counterpoint," although the cello does introduce subject *b* by itself (mm. 95-97) before violin I introduces subject *b* in counterpoint with subject *a*. However, as I will show, the second half the fugato counterpoint (or subject *c*) provides a significant and representative element of the octatonic unfolding of the transition section.

Ex. 2-9: Schoenberg, Sketchbook I, Sk34²²

²¹ Maria Niederberger, "Schoenberg's 'Intricate Structure'," 68.

²² Christian M. Schmidt, ed. *Arnold Schoenberg*, 46.

Ex. 2-10: String Quartet No. 1, mm. 97-101

Approaching the Transition: Liquidation of *Grundgestalt* and Establishment of the Fugato Subjects

The intervallic expansion and contraction of the 4:5 *Grundgestalt* and theme *yI* establish a process of cyclic-interval unfolding and prepare for the fugato transition (mm. 97ff.). After the principal theme returns in D minor (mm. 65ff.), theme *yI* returns on the downbeat to restore the rhythmic ambiguity (m. 78; see Ex. 2-11). The implication of various cyclic intervals emerges along with the continuous elaboration of theme *yI*. The whole-tone harmony is maintained when theme *yI* starts with the high C (m. 78) that is supported by the embellished chord C-D#-E-F#[G_b]. We may interpret this as a hybrid cyclic-interval construction. Three of the four notes, C-[]-E-F#, imply the presence of a WT0 segment, while three of the four notes, C-D-[]-F#, imply the presence of an

interval-cycle-3 segment. The WT0 cell (C-E-G_b) is confirmed by the first two pitches of the cello (E-G_b, m. 78). This is consistent with the octatonic/whole-tone duality of theme *yI* suggested in the opening passage (mm. 8ff.). This mixture of cycles 2 and 3 also provides a snapshot of the cyclic unfolding of theme *yI* in this section that prepares the fugato transition.

Instead of reinstating the octatonic collection on the foreground level, theme *yI* unfolds cycles 2 and 3 in a systematic fashion. Starting from C (m. 78), theme *yI* starts in augmentation compared to the opening section (mm. 8ff.) before the theme returns to the original rhythm in the following measure. The three accented eighth notes, namely B, C_#, and A_# (m. 78), vaguely recall ratio 1:2 suggested by theme *yI* in the opening section (mm. 8ff.). While theme *yI* retains its chromatic characteristics, the long notes of the theme unfold a complete interval-3 cycle, C-A-F_#-E_b-C, systematically (mm. 78-80; see Ex. 2-11). Compared to the opening section, this interval-3 cycle (C-A-F_#-E_b) lacks a direct implication to the D-minor tonic. It is striking that the hybrid chord under the high C (m. 78) portends the exact cyclic partitions of this *yI* statement, C-A-F_#-E_b/C-B_b-A_b-G_b-E-D, while the completion of the latter cycle is disrupted by a sequential shift to C_# (m. 82).

After the unfolding of the interval-3 cycle, C-A-F_#-E_b-C, theme *yI* tightens its rhythm and omits the long quarter note in the following measure (m. 81). The characteristic leap in the theme (mm. 80-81) systematically partitions the chromatic passage into two whole-tone collections. Starting from the same C in the previous unfolding of the interval-3 cycle (C-A-F_#-E_b-C, m. 80), the “long” notes in the subsequent unfolding of theme *yI* unfold all six notes of the WT0 collection (C-B_b-A_b-

Ex. 2-11: String Quartet No. 1, Theme yI, mm. 78-83

G \flat -E-D, mm. 80-81; see Ex. 2-11). The notes articulated by the downward leaps of each unfolding of theme yI unfold five notes of the WT1 collection (C \sharp -B-A-G-F, mm. 80-81). This WT1 unfolding is accompanied by an explicit unfolding of the interval-4 cycle, C \sharp -F-A-C \sharp , by the cello (mm. 81-82) as implied in the WT1 portion of theme yI.

This interval-4 cycle unfolded in the cello melody (mm. 81-82) is also part of the liquidation process of the 4:5 *Grundgestalt*, which originally accompanies theme *y1* in the opening passage (mm. 8ff.). The bass line 4:5 *Grundgestalt* appears to contract to the smallest representative intervals of the octatonic collection: intervals 1 and 2. First, after the whole-step descent from G_b that accompanies the high C of theme *y1* (m. 78) to E, the cello ascends (mm. 79-80) chromatically from E to A (an echo of the original 4:5 *Grundgestalt*). This ascent is followed by an interval-4 cycle, C[#]-F-A-C[#], in the following measure (mm. 81-82) as mentioned earlier. This interval-4 cycle shares the major third, F-A, with the original 4:5 *Grundgestalt* (m. 9, cello). However, instead of unfolding the original *Grundgestalt* (C-F-A-D, m. 9), the interval-4-cycle passage exhibits intervallic contraction from perfect fourth (C-F/A-D) to major third (C[#]-F/A-C[#]), which further confirms the importance of the interval-4 cycle in the original 4:5 *Grundgestalt*.

The interaction of interval-3 and interval-4 cycles systematically establishes a larger array of interval cycles in theme *y1*. When the unfolding of the interval-4 cycle (C[#]-F-A-C[#], mm. 81-82) cadences at the same augmented triad (m. 82), the violins and viola restart the systematic unfolding of theme *y1*. The three upper instruments generate a stretto of theme *y1* statements from the vertical occurrence of the same interval-4 cycle, C[#]-F-A-C[#]. All three cyclic-interval 3 partitions, which unfold linearly, intersect with vertical statements of all four cyclic-interval 4 partitions. This symmetrical 12-tone array is an adumbration of the fugato transition, based on cyclic-interval 3 partitions of all three octatonic collections.

While the liquidation of the principal themes continues, the characteristic intervals of the themes take on new shapes in establishing the fugato subjects. The 4:5 *Grundgestalt* resurfaces in pizzicato (m. 88, violin I) while the first traces of fugato subjects *b* and *c* emerge as a series of interval-6 cycles. The importance of tritone (interval 6) has been mentioned in Neff's *Grundgestalt* as one of the characteristic intervals. Although the tritone in motive ii (see Ex. 2-1) exhibits various manipulations and liquidations during the principal theme section,²³ the characteristic tritone does not appear explicitly as cyclic materials until this section. For preparation of subjects *b* and *c*, all six tritone cycles appear along with the 4:5 *Grundgestalt* leading to the fugato (see Ex. 2-12). The cyclic unfolding of the tritone is significant here since it is the first manifestation of this interval as a cyclic-interval component. In addition, this interval has served as a prominent local feature of the opening theme. The tritone cycles forecast a similar, yet more complex cyclic unfolding of the octatonic collections in the transition.

The Establishment of the Octatonic Fugato

The transition as an octatonic fugato has been discussed in detail in Niederberger's dissertation. She traces the characteristic opening dyads of the fugato subject and its counterpoint (tritone and perfect fourth respectively) for the first twelve measures (mm. 97-108), which provide two complete octatonic collections. Niederberger tracks down the third octatonic collection by tracing the harmony of the measures following the dyads.²⁴ The second half (mm. 109ff.) of the fugato exhibits similar

²³ See Severine Neff, "Aspects of Grundgestalt," for a detailed discussion of the motivic relationships of the principal theme.

²⁴ See Maria Niederberger, "Schoenberg's 'Intricate Structure,'" 72-73 for details.

Ex. 2-12: String Quartet No. 1, mm. 85-97

[Interval-6 Cycles] G \flat -C

85

E-B

87

[4:5 Grundgestalt]

abnehmend, und nach und nach verlangsamt

pizz. Bogen

abnehmend C D-A \flat A-E \flat

B \flat -E G-C#

abnehmend

abnehmend E-B \flat C-F#

90

pizz. Bogen

pp

pizz. Bogen

pp

pizz. Bogen

pp

pizz. Bogen

pp

93

etw. weniger bewegt

pizz. Bogen

rit. pp

sehr

octatonic unfolding. However, the unfolding of the octatonic collections can be understood in a more straightforward manner if all three subjects as labeled by Schoenberg are considered (see Ex. 2-10). Ex. 2-13 shows the entry pitches of the three subjects. Interestingly, the octatonic implications of the subjects shown in Ex. 2-13 seem to be different from Niederberger's analysis. For example, based on the entry dyads, Niederberger shows the fugato subject (subject *a*) unfolds the octatonic-1 collection while the counterpoint (subject *b*) unfolds the octatonic-0 collection in the opening portion of the fugato (mm. 97-110). In the second portion of the fugato (mm. 110-116), the fugato subject unfolds the octatonic-2 collection while the counterpoint unfolds the octatonic-1 collection. To understand the differences, we need to study how the octatonic collections are unfolded in the transition. The first four entrances of subject *a* (G-E-C#-B \flat , mm. 98-105) unfold a complete interval-3 cycle. These entrances are accompanied by notes a perfect fourth above (C-A-F#-E \flat , mm. 99-106) since subject *a* opens with a perfect-fourth leap (see Ex. 2-10). These two interval-3 cycles contribute Niederberger's construction of the octatonic-1 collection (C#-E \flat -E-F#-G-A-B \flat -C). The common element of the octatonic-1 and octatonic-2 collections is exactly the interval-3 cycle G-E-C#-B \flat , which can be regarded as the pivotal element between the two collections. The partition of the octatonic collection with the interval-3 cycle is significant. The interval-3 cycles prepared in the previous section where theme *yI* (mm. 78-83) unfolds the entry pitches of the fugato subjects. In addition, the interval of minor third has been vaguely suggested in the establishment of subject *a* shortly before the fugato transition. While the passage before the transition unfolds all the tritone cycles, the 4:5 *Grundgestalt* is unfolding the interval-3 cycle, D \flat -B \flat -G-E, in similar fashion (see Ex. 2-12 and Ex. 2-14). However,

the ratio 4:5 passages are interrupted by the viola (m. 93). While the rhythm (eighth-notes starting on the second beat) and the timbre (pizzicato) are consistent with previous entrances, the 4:5 ratio is contracted to 3:5 (F-B \flat -D \flat -G \flat). This interval contraction brings the minor third to the foreground along with the 4:5 *Grundgestalt* and implicitly prepares for the interval-3 cycles which subject *a* articulates.

Ex. 2-13: Entry Pitches of Subjects *a*, *b*, and *c*, mm. 97-126

Subject <i>a</i> (Octatonic-2)		Subject <i>b</i> (Octatonic-1)		Subject <i>c</i> (Octatonic-0)	
Pitch	Measure	Pitch	Measure	Pitch	Measure
G	98, vln II	G \flat	97, vln I	D	99, vln I
E	101, vla	C	101, vln II	A \flat	103, vln II
C \sharp	102, cello	A	103, vla	F	105, vla
B \flat	105, vln I	G \flat	105, cello	D	107, cello
G	107, vla	E \flat	107, vln I	B	109, vln I
F	110, vln II	C	109, vla	A	112, vla
D	112, vln I	B \flat	112, vln II	F \sharp	114, vln II
B	114, cello	G	114, vln I	A	120, vln I
G \sharp	116, vln I	C \sharp	118, vln I	D	124, vln I
		B \flat	123, cello	G \flat	125, cello

Ex. 2-14: Entry Pitches of 4:5 *Grundgestalt*, mm. 87-92

Pitch	D \flat	B \flat	G	E
Measure	m. 88, vln I	m. 90, cello	m. 91, vln I	m. 92, vln II

Subordinate Theme

The importance of subject *c* as a significant melodic idea is revealed in the subordinate theme section (mm. 154ff.). While subjects *a* and *b* of the fugato transition unfold the complete octatonic-2 and octatonic-1 collections respectively, subject *c* does not unfold the respective octatonic-0 collection in its entirety. Only six pitches of the octatonic-0 collection are unfolded by subject *c* while pitch classes C and E \flat are missing from this octatonic-0 unfolding. These two missing pitches will be fulfilled as key areas in the subordinate theme-group. The first subordinate theme²⁵ (mm. 154ff.; see Ex. 2-15) is introduced in counterpoint with subject *b* of the transition fugato. The key of E \flat major is introduced by the two parallel statements of subject *b* (mm. 152ff., viola and cello), which starts the subject on E \flat and G respectively. Violin II enters with an octatonic-1 tetrachord, G-A-B \flat -C (mm. 153-154), which vaguely recalls the unfolding of the octatonic-1 collection during the transition. The violin I melody can be divided into two motives, *Sa* (mm. 153-156) and *Sb* (mm. 157-158). Motive *Sa* (mm. 153-156) descends a tritone from G to D \flat , the same tritone the viola introduced earlier with subject *b* (m. 152). Bounded temporally and registrally by the G-D \flat tritone, motive *Sa* unfolds a symmetric six pitch-class segment, G-F-G-|F-F \sharp -G-|E \flat -D-D \flat (see Ex. 2-15), which features the octatonic-0 tetrachord, D-E \flat -F-F \sharp , as a symmetrical substructure of this larger configuration. Its symmetry is explicit, since the components of the linear collection are themselves symmetrically disposed as ascending and descending three-note inversionally related segments: F-F \sharp -G/E \flat -D-D \flat . The semitones of the octatonic tetrachord (D-E \flat /F-F \sharp) are presented as the first two ascending elements (F-F \sharp) and first two descending

²⁵ As labeled in Arnold Schoenberg, "Notes on the Four String Quartets, in *Schoenberg, Berg, Webern: Die Streichquartette der Wiener Schule, Ein Dokumentation*, ed. Ursula von Rauchhaupt, (München: Verlag Heinrich Ellermann, 1971), 41.

elements (E \flat -D) respectively. Furthermore, it is striking that the *crescendo* and *decrescendo* articulate a whole-tone tetrachord superstructure of the symmetry (F-G/E \flat -D \flat , or D \flat -E \flat -F-G). The interval content of the subordinate theme reveals its organic development from the opening passage. First, the opening of the principal theme also possesses an intervallically similar octatonic-2 tetrachord, C \sharp -D-E-F (mm. 1-2). In addition, the characteristic tritone in the opening passage (as identified by Neff, m. 2; see Ex. 2-1) becomes the boundary interval of motive *Sa* and consequently frames the symmetrically expanded octatonic-0 [0134] tetrachord, i.e. D-E \flat -F-F \sharp , as part of the larger symmetrical content of this theme: D \flat -|D-E \flat -F-F \sharp -G.

Ex. 2-15: First Subordinate Theme, mm. 154ff.

152 *sehr zurückhaltend* *zart bewegt(d)* Motive Sa
 First Subordinate Theme *p ausdrucksvoll*
etwas hervortr.

Motive Sb
 157 *hart, kurz* *weich, innig.*
sehr ausdrucksvoll
hervortr.
 Eb: vii^{o7} i

The fugato transition stages another harmonic implication of the first subordinate theme. Besides the characteristic tritone of subjects *b* and *c*, the opening pitches of subjects *a* and *b* (G and G \flat , respectively; mm, 97-98) imply the harmonic progression of the first subordinate theme from E \flat major to E \flat minor. Starting on G, the first subordinate theme establishes the key of E \flat major with G as the third scale degree of E \flat , and briefly cadences at D \flat (m. 156). However, a sudden change of dynamics from *piano* to *forte* brings the violin melody up from the cadential D \flat to the initial A \flat , and motive *Sb* continues to ascend to G \flat (m. 159) and cadences at an E \flat -minor triad (m. 159). Such contraction between major third and minor third forecasts the organic contraction and expansion of intervals of the second half of the subordinate theme-group and the opening of the development.

Niederberger discusses the “second subordinate theme”²⁶ (mm. 167-170, violin II; see Ex. 2-16) in detail, particularly its relationship to the octatonic-1 4:5 *Grundgestalt* that links this theme to the Scherzo theme (mm. 398ff.). Schoenberg claims that this theme is derived from “the last six notes of the first subordinate theme”²⁷ (Motive *Sb*; see Ex. 2-15, mm. 157-158). While the second subordinate theme (Ex. 2-16) and motive *Sb* (Ex. 2-15) are both characterized by the perfect-fourth leap in the middle, the difference between them – one is chromatic and symmetric, the other diatonic – represents an organic expansion/contraction of intervals that articulates the diatonic key areas and the octatonic implications. Motive *Sb* of the first subordinate theme starts from A \flat , ascends in whole steps to C, and outlines a major third (A \flat -B \flat -C). After a perfect fourth leap, the ascent continues from F to G. However, instead of outlining another major third to A in

²⁶ Ibid.

²⁷ Ibid.

order to maintain the 4:5 ratio, the ascent continues with only a half step from G to A \flat . This contraction from major third (F-G-[A]) to minor third (F-G-A \flat) has its local significance since this minor third (F-A \flat) is absorbed into a diminished-seventh chord that resolves to E \flat minor (m. 159). Furthermore, the continuation, F-G-A \flat , is supported by a symmetric filling-in by the G \flat , i.e. F-G/A \flat -G \flat , to give us a semitonal fusion of the two whole-tone spheres. This perhaps recalls the whole-tone structure of motive *Sa*, F-[F \sharp]-G/E \flat -[D]-D \flat , and its filling-in.

Ex. 2-16: Second Subordinate Theme, mm. 167-170, violin II

einfach

Violin II

Grundgestalt: G C E A

Approaching the Development: The Establishment of E minor through Intervallic Expansion and Contraction

The anticipation of the key of E in the development (m. 213) is first revealed through a varied form of motive *Sa*. In particular, the expansion and contraction of this six-note motive becomes an important means of establishing the key of E in the development. When the first subordinate theme returns in a varied form (mm. 178ff.), the violin I melody articulates the tritone in a more explicit fashion (Ex. 2-17). While the accompaniment features motive *Sb* (A \flat -B \flat -C-F-G-A \flat), the violin I melody unfolds the tritone B \flat -E as boundary of the descending figure, B \flat -G \flat -F-E (m. 179), which simultaneously expands and contracts the interval structure of motive *Sa* of the first

subordinate theme. The whole step that separates the two chromatic trichords in the first subordinate theme is contracted to two half steps by chromatic filling (B \flat -A-A \flat -[G]-G \flat -F-E). In addition, by rearranging the intervals within the melody, the contour descends from A \flat (G \sharp) to E and outlines a major third, which will eventually expand to an interval-4 cycle to establish the key of E in the development.

Ex. 2-17: String Quartet No. 1, mm. 178-179

Motive *Sb* works its way toward the development through liquidation and eventual unfolding of interval cycles through the expansion and contraction of its intervals. Shortly before the development, a variant of the principal theme emerges briefly along with motive *Sb* (mm. 192ff.; see Ex. 2-18). However, the six-note ascending figure starts to liquidate into a three-note ascending figure that outlines either a major third or a minor third. For example, when violin I and cello introduce a varied version of theme *yI* of the principal theme (mm. 192ff.; see mm. 8ff. for comparison), violin II and viola accompany this varied theme *yI* with the hexachordal motive *Sb* on B \flat and D respectively (mm. 192-193; see Ex. 2-18). However, the perfect-fourth leap that

separates the two ascending trichords disappear at the end of the subordinate theme section and rise in stepwise motion from C-D_b-E_b (m. 195) to F-G-A_b (m. 196). The trichord, F-G-A_b, repeats for two measures in diminution (mm. 197-198) while violin I settles on the tonic minor third, D-F (mm. 196-198), which is followed by a six-note ascending figure playing in unison (F-G_b-A-D_b-E-F; m. 199). At first, it seems to complete the D-minor tonic triad with its major third, F-A. However, as it continues, it is clear that the six-note figure represents an intervallic contraction of motive *Sb* to outline an interval-4 cycle, F-[G_b]-A-D_b-[E]-F. The significance of this contraction and expansion is twofold. Besides the perfect-fourth leap is contracted to a major third, it also expands the trichord that follows from a minor third to a major third (D_b-F). This expansion also represents a foreground expansion of the D-minor tonic triad (D-F-A) to a complete interval-4 cycle (F-A-D_b-F).

The unfolding of interval-4 cycles continues with the inversion of motive *Sb*. This six-note motive *Sb* is approached by a perfect-fourth leap from F to B_b, which outlines another interval-4 cycle, B_b-G_b-D-B_b (mm. 202-203; see Ex. 2-18). The interval-4 cycle take a short detour and contracts to a minor third, A_b-C_b (mm. 206-207), before it returns to the interval-4 cycle, F-A-D_b-F (m. 210), as had appeared at the beginning of the development section. When violin I and cello reenter with the first subordinate theme (mm. 211ff.), another interval-4 cycle, C-A_b-E, is outlined (m. 212) with the E of this interval-4 cycle cadences on E minor (m. 213). However, this E-minor sonority (E-G-B) is only short-lived as it quickly expands harmonically to another interval-4 cycle, E_b-G-B (mm. 217-221), a process similar to the expansion of the D-minor triad to the interval-4 cycle, D_b-F-A, at the end of the subordinate theme section.

Ex. 2-18: String Quartet No. 1, mm. 192ff.

190 Principal Theme

195 ⁽¹⁰⁰⁾ beschleunigend

199 [First Development] B Sehr rasch. $\text{♩} = \text{♩}$

204 ⁽⁵⁾

Ex. 2-18 (Continued)

The image displays three systems of musical notation for a string quartet. The first system, starting at measure 209, includes a circled measure number '10' and a 'rit.' (ritardando) marking. It features a treble clef staff with a melodic line and three bass clef staves for the other instruments. Dynamics include *fp* and *p*. The second system, starting at measure 213, is marked 'Viel langsamer. (♩♩♩)' and 'schr zart' (very soft). It shows a more complex texture with many notes and rests across all staves, with a *p* dynamic. The third system, starting at measure 219, is marked 'E minor' and a circled measure number '20'. It continues the intricate texture with various dynamics and articulations.

Second Movement: Recapitulation of the Key of D

After the recapitulation of the principal theme in C# minor (mm. 301ff.), Schoenberg does not seem to be in a hurry to bring back the D-minor tonic in the first movement. Instead, the quartet establishes a new theme to start the scherzo movement in G \flat major (mm. 399ff.). However, the opening of the scherzo provides some hints of the whole-tone expansion of the 4:5 *Grundgestalt*, which establishes an important gesture to

recapitulate the key of D. Together with the reintroduction of theme *y1*, the principal theme finally reunites with the key of D minor at the end of the second movement. The importance of theme *y1* in counterpoint with the 4:5 *Grundgestalt* is revealed in the Schoenberg's "verwenden" sketch (see Ex. 2-2). While Niederberger concentrates her discussion on the 4:5 *Grundgestalt*, Schoenberg conceives the 4:5 *Grundgestalt* and theme *y1* as a single entity since he marked the whole three-staff sketch as "verwenden," not just the 4:5 *Grundgestalt*. While the 4:5 *Grundgestalt* takes its own course of establishing the thematic and harmonic relationships of the piece, theme *y1* possesses its thematic significance as the counterpoint of the 4:5 *Grundgestalt*. In this section, I would like to discuss three key passages that eventually bring back the D-minor tonic along with the reunion of theme *y1* and the 4:5 *Grundgestalt*.

As Schoenberg claims, the main theme of the scherzo (mm. 399ff.) is a transformation of subject *a* of the fugato transition.²⁸ Frisch examines closely the sketchbook and indicates the compositional process that compliments Schoenberg's statement.²⁹ While the tonic-dominant progression of the opening phrase is self-explanatory, the articulation of the key of A major (m. 408), B \flat major (m. 411) and the whole-tone collection have a close relationship to the 4:5 *Grundgestalt* as exemplified in the opening phrase. First, Niederberger points out that the second subordinate theme of the first movement (mm. 167ff.) and the scherzo theme (mm. 398ff.) are linked by the octatonic-1 4:5 *Grundgestalt* (see Ex. 2-19). The WT0 major thirds in the 4:5 *Grundgestalt* (C-E, m. 167; G \flat -B \flat , mm. 399-400) are filled by whole steps and they together form a complete WT0 collection (C-D-E-G \flat -A-B \flat). As discussed earlier, the

²⁸ Ibid., 41-42.

²⁹ See Walter Frisch, *The Early Works of Arnold Schoenberg*, 201ff.

major thirds in the 4:5 *Grundgestalt* are used to partition the octatonic collection into two whole-tone collections.

Ex. 2-19: Second Subordinate Theme (mm. 167ff.) and Scherzo Theme (mm. 398ff.)

The whole-tone significance of the octatonic 4:5 *Grundgestalt* is revealed in the following passage. After the symmetric 4+4 phrase (mm. 398-406), the key of A major is established temporarily (mm. 408ff.). This key of “Neapolitan of ii of G \flat ” or “flatted-sixth of D \flat ,”³⁰ emphasizes a three-note ascending whole-tone passage, A-B-C \sharp (mm. 408-409). However, the melody shifts up a half step and restarts on B \flat major (m. 411). This B \flat -major triad unfolds the WT0 collection contrapuntally. The WT0 unfolding from pitches B \flat and D of the B \flat -major triad (m. 411, violin I, violin II, cello) are relatively straightforward since they belong to the WT0 collection. Pitch F of the B \flat -major triad (m. 411, viola) also progresses to the WT0 collection by half-step motion from F to E (m. 412, viola). All four voices move within the WT0 collection to establish the whole-tone/French augmented-sixth chord, E \flat -A \flat -G \flat -C (m. 413), and resolves to D \flat major (m. 414) in traditional voice leading. While this progression is traditional, the establishment of the French augmented-sixth chord of G \flat is significant since it clearly implicates the whole-tone significance of the 4:5 *Grundgestalt* while it links the whole-tone, 4:5 *Grundgestalt*, and the traditional tonal media smoothly to establish the I \rightarrow V progression

³⁰ Lynn Cavanagh, “Tonal Multiplicity in Schoenberg’s First String Quartet,” (Ph. D. dissertation, University of British Columbia, 1996), 176-177.

in G). This same passage returns later in the movement to establish the key of D major (mm. 497-503), the first significant attempt after the first-movement recapitulation to re-establish the key of D.

Theme *yI* provides an important impetus of recapitulating the D-minor tonic. Toward the end of the trio section, theme *yI* returns briefly (mm. 656ff.) to establish the key of D major. However, the D major here seems short-lived and quickly moves back to the local E-major tonic. After the scherzo reprise (mm. 706ff.), theme *yI* returns prominently (mm. 892ff.; see Ex. 2-20) that prepares for another recapitulation of the first-movement principal theme-group. Theme *yI* first returns in counterpoint with a varied form of the first subordinate theme of the first movement (see mm. 153ff., especially motive *Sa*, Ex. 2-15). Two statements of theme *yI* (mm. 892-894, violin I; mm. 896-897, viola) articulate an octatonic-1 tetrachord, E-F#-G-A (G-A, mm. 892-893; E-F#, mm. 896-897). This anticipation of the octatonic collection prepares the reunion of theme *yI* and the 4:5 *Grundgestalt* (mm. 904-908) that establishes the recapitulation of the principal theme in D minor (mm. 909ff.).

The significance of the reunion of theme *yI* and the octatonic 4:5 *Grundgestalt* is shown in its special cyclic-interval unfolding. While the long notes of theme *yI* articulates an interval-3 cycle, A-F#-D#-C (mm. 903-905), prominently and implies the octatonic-0 collection in ratio 1:2 (A-G#-F#-F-D#-D-C-B; see Ex. 2-20), the 4:5 *Grundgestalt* takes a significant detour from its octatonic-1 unfolding to anticipate the recapitulation of the D-minor tonic. The unfolding of the A-major triad (mm. 902-904) prepares pitch E as the starting pitch of the unfolding of the octatonic-1 4:5 *Grundgestalt*

Ex. 2-20: String Quartet No. 1, mm. 892ff.

Theme y1

892

896

899

902

4:5 Grundgestalt: E A C#

Ex. 2-20 (Continued)

D C B A $G\#$ Theme y1

905

$F\#$ $A\#$ D G C 4:5 Grundgestalt

908

Erstes Zeitmass. Recapitulation (Principal Theme Group)

4:5 Grundgestalt in diminution

(mm. 904ff., cello). Starting with a perfect-fourth leap from E to A, ratio 4:5 is maintained in the cello ascending melody up to pitch A $\#$ (E-A-C $\#$ -F $\#$ -A $\#$, m. 905). However, instead of continuing the ascent with a perfect-fourth leap to D $\#$, the cello melody ascends a major third to D and continues to ascend in perfect fourths to G (m. 905, last beat) and C (m. 906, first beat). This intervallic contraction of the 4:5 *Grundgestalt* highlights the importance of pitch D as the tonic while articulating the respective intervals of the *Grundgestalt*, namely major third and perfect fourth. In addition, pitch D in the cello melody serves as a focal point of cyclic-interval intersection: F $\#$ -A $\#$ -D from cycle 4 and D-G-C from cycle 5. Meanwhile, the harmony at pitch D

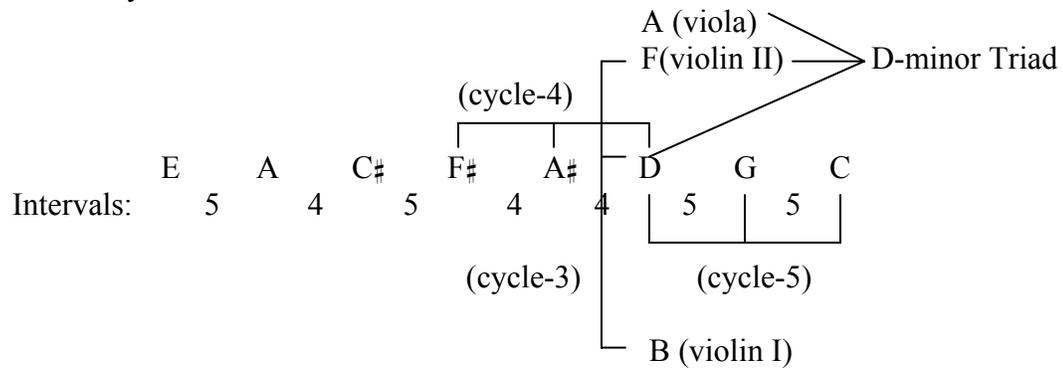
unfolds a half diminished-seventh chord, B-D-F-A (m. 905). While the D-F-A portion of this chord anticipates the return of the D-minor tonic triad, the B-D-F portion unfolds an incomplete interval-3 cycle. Ex. 2-21 summarizes this process of cyclic-interval intersection before the recapitulation of the first-movement principal theme. This detour from D \sharp to D as the focal point of the complex intersection of various interval cycles as well as the D-minor triad is repeated once (mm. 906-907) before the octatonic-1 4:5 *Grundgestalt* is performed in diminution (m. 908) and greatly speeds up the harmonic rhythm. However, this ascending *Grundgestalt* stops at D before it quickly moves back to D minor with the return of the first-movement principal theme. The simultaneous thematic and tonal recapitulation of the first-movement principal theme brings a significant closure to the developmental process of the first movement material before it progresses to the slow movement.

Ex. 2-21: String Quartet No. 1, mm. 904-906, cello

a) 4:5 (octatonic-1) *Grundgestalt* Starting on E:

Intervals: 5 4 5 4 5 4 5
 E A C \sharp F \sharp A \sharp [D \sharp] G C

b) Cello Melody: mm. 904-906



Conclusion

Alban Berg's analysis of Schoenberg's First String Quartet reveals the "traditional" aspects of the quartet, such as the symmetrical $2\frac{1}{2}+2\frac{1}{2}$ phrase structure, contrapuntal technique, diversity of rhythm, and the use of variation to affect the themes, harmony, counterpoint, and rhythm of the music, in order to show the piece is indeed not difficult to understand:

I will be reproached with having proved something in this investigation where no proof was called for: namely the difficulty of the Quartet in D minor, a 'tonal' work that stopped being a problem long ago, a work in fact that has on the contrary been generally recognized and hence – understood! Well, even though the validity of that is questionable, I admit that the question at the head of this article would only really be answered if I were to demonstrate what I have shown on the basis of these few minor-key bars with reference to at least one example of so-called 'atonal' music. But it was not only a question of the difficulty but also – as readers of my analysis must have realized – a question of proving that the means of this music, despite the fact much in it is felt to be particularly difficult to understand, are all right and proper: right and proper, in connection with the highest art! And it was of course easier to show this with regard to an example rooted in major/minor tonality, which nevertheless – an

advantage in this connection – occasioned as much outrage in its day as ‘atonal’ music does today.³¹

In some sense, the quartet is rooted in traditional elements that need to be heard and understood properly in order to appreciate Schoenberg’s innovation. As Lynn Cavanagh shows in her detailed analysis, the tonal underpinning based on the D-minor tonic is still strong in this quartet. Yet, the extensive unfolding of interval cycles that intertwines with the D-minor tonal framework is significant. In particular, the duality of the D-minor and octatonic-2 scales plays a major role in the octatonic-diatonic unfolding and the organic development of the quartet. Although Berg’s chordal reduction of the opening ten measures (see Ex. 2-5) appears to oversimplify the complex counterpoint, the harmonic implication, especially the interrelationship between the 4:5 *Grundgestalt* and the whole-tone collections, forecasts the eventual recapitulation of the D-minor tonic at the end of the scherzo movement. In his next major composition, *Chamber Symphony No. 1*, Schoenberg takes a slightly different route to establish the relationships between the diatonic and cyclic materials by presenting this relationship in a short introductory passage.

³¹ Alban Berg, “Why is Schönberg’s Music so Difficult to Understand?” 201.

Chapter 3: From *Ein Stelldichein* to Chamber Symphony No.1: The Advancement of Interaction between Diatonic and Interval Cycle Materials

Ein Stelldichein

After Schoenberg completed his D-minor String Quartet, several works appeared to be in progress but left unfinished before Chamber Symphony No. 1, op. 9 (1906). Among these unfinished fragments,¹ *Ein Stelldichein* for oboe, B \flat -clarinet, violin, cello, and piano is the longest composed during this period.² Like his earlier string sextet *Verklärte Nacht*, op. 4, *Ein Stelldichein* is based on a poem of the same title by Richard Dehmel. This piece remains unfinished with only 136 measures in Schoenberg's sketchbook and 90 measures in the fair copy.³ Although this piece is rarely mentioned in secondary literature, Rudolf Stephan offers his speculation on why Schoenberg did not finish the piece:

Turning again to Dehmel's poems after an interval of several years did not lead – as the composer had hoped it would – to a repetition of their earlier stimulating effect. Therefore the attempt to create, in a more progressive

¹ Jan Maegaard defines fragment as “a piece of music, at any length, that starts at the beginning and is worked out in detail but not concluded.” See Jan Maegaard, “Schoenberg's Incomplete Works and Fragments,” in *Constructive Dissonance: Arnold Schoenberg and the Transformation of Twentieth-Century Culture*, ed. Juliane Brand and Christopher Hailey, 131-145 (Berkeley, CA: University of California Press, 1997).

² *Ein Stelldichein* is substantially longer than the other fourteen fragments composed during 1905 and 1906. While *Ein Stelldichein* contains 90 completed measures, the second longest fragment, *Wie das Kregsvolk* (1905), contains only 33 measures. See *ibid.*, 133, for detailed listing.

³ Composer Friedrich Cerha “completed” the sketches and provided a performable ending to the piece. My analysis will concentrate on the 90 measures Schoenberg himself completed in his fair copy.

musical language, something corresponding to *Transfigured Night* Op. 4 (1899[sic]) was doomed to failure. Obviously, this kind of programme music had already lost its interest for Schoenberg.⁴

Stephan also points out “the significance of the fragment, and its position between the String Quartet in D minor Op. 7 and the Chamber Symphony in E major Op. 9, needs no further discussion here.”⁵ Since Schoenberg did not finish the piece and the sketches did not indicate clearly how long the piece would have actually been, it could be difficult to predict the overall formal scheme of this piece. In the first half of this chapter, I would like to show how Schoenberg employed various interval cycles systematically, particularly the interval cycles 2, 3, and 4, in the 90 completed measures of *Ein Stelldichein*. In the second half of the chapter, I will show how this systematic unfolding of interval cycles in *Ein Stelldichein* influences Chamber Symphony No. 1.

Formal Division: An Overview

Ein Stelldichein exhibits the similar modified strophic form as in the principal theme-group of Schoenberg’s First String Quartet. Ex. 3-1 details the formal division of this piece. Although the strophic form is similar to the First String Quartet, *Ein Stelldichein* does not exhibit the encircling of tonic as exhibited in the principal theme-group of the First String Quartet. As I will discuss in the following section, the tonic of

⁴ Rudolf Stephan, preface to Arnold Schoenberg, *Ein Stelldichein für Oboe, Klarinette, Geige, Violoncell und Klavier* (Wien, Universal Edition, 1980).

⁵ Ibid.

piece does not establish explicitly at the opening of the piece at all. Furthermore, while the piano motto and theme 1 exhibit various musical developments, theme 2 by itself seems to articulate the key of D in all three appearances. It is the accompaniment that provides unique cyclic features of three appearances of theme 2.

Ex. 3-1: Formal Division of *Ein Stelldichein*

Measure	Section	Thematic materials
1	A1	Piano motto, theme 1, theme 2
31	A2	Motto in canon, theme 1, theme 2
55	A3	Motto varied, theme 1 varied, Theme 2
78	A4	Motto only

Section A1: The Establishment of the Interval Cycles

Stephan mentions that “[*Ein Stelldichein*] opens with a kind of ‘motto’ (as does the Chamber Symphony Op. 9), and this too is a bow to the programme music tradition.”⁶

Ex. 3-2 shows this piano “motto” that reappears throughout the piece:

Ex. 3-2: *Ein Stelldichein*, Piano, mm. 1-4



⁶ Ibid.

Starting from E \flat , the melody descends a minor third to C, followed by an octave leap and descends again a minor third to A to outline an A-diminished triad (mm. 1-2). If the F in the following phrase is taken into account, it could be considered as an F-dominant-seventh chord (F-A-C-E \flat). Starting from F (last beat of m. 2), the melody progresses in parallel major thirds to B \flat -D (mm. 3-4). If the key signature of E \flat major/C minor is representative, the introduction suggests the progression of F 7 \rightarrow B \flat or V 7 /V \rightarrow V in E \flat major. The major thirds in between form a whole-tone chord that exhibits a similar resolution of a dominant-ninth chord that Schoenberg described in his *Theory of Harmony* (See Ex. 1-5, above; Ex. 3-3a and b, below):

Ex. 3-3: Dominant Resolution through Whole-Tone Chord

a) From Schoenberg's *Theory of Harmony*:

The diagram shows a piano reduction of three chords in C major. The first chord is a dominant ninth chord (V⁹) with notes C4, E4, G4, Bb4, and C5. The second chord is a whole-tone chord (WT) with notes C4, D4, E4, F4, G4, and A4. The third chord is the tonic triad (I) with notes C4, E4, and G4. Arrows indicate the voice leading: the bass line moves from C4 to C4, then to E4, and finally to G4; the treble line moves from E4 to D4, then to C4, and finally to E4.

C: V⁹ WT I

b) *Ein Stelldichein*, mm. 1-4 (Reduction):

The diagram shows a piano reduction of three chords in E \flat major. The first chord is a dominant seventh chord (V⁷/V) with notes F \flat 3, A \flat 3, C4, and E \flat 4. The second chord is a whole-tone chord (WT1) with notes F \flat 3, G \flat 3, A \flat 3, B \flat 3, C4, and D \flat 4. The third chord is the tonic triad (V) with notes F \flat 3, A \flat 3, and C4. Arrows indicate the voice leading: the bass line moves from F \flat 3 to G \flat 3, then to A \flat 3, and finally to C4; the treble line moves from A \flat 3 to B \flat 3, then to C4, and finally to A \flat 3.

E \flat : V⁷/V WT1 V

Although the pitch content and the voice leading are quite different in these two examples, the harmonic progressions, namely $V^7[V^9] \rightarrow WT \text{ chord} \rightarrow I$, are identical, especially the simultaneous raising and lowering of the fifth in the *Ein Stelldichein* example (i.e. C is split into its half-step neighbors, $C\#$ and $C\flat$).

The major third also serves as a link between the whole-tone and diatonic media. Theme 1 performed by the $B\flat$ -clarinet (mm. 4-7; see Ex. 3-4) shows clearly how these two media intersect. While the piano motto cadences on $B\flat$ major, the violin and cello enter with the same major third ($B\flat$ -D) and sustain for four measures to support the WT0 clarinet solo passage. The $B\flat$ -major triad implies the presence of the two whole-tone collections: $B\flat$ -D from WT0 and F from WT1. The identity of $B\flat$ -D as part of the WT0 collection is supported by theme 1 ($B\flat$ -clarinet), which consists of pitch classes predominately from the WT0 collection ($G\flat$ - $A\flat$ - $B\flat$ -[]-[]-E), with $C\flat$ (m. 6) as the only pitch class from WT1. The fifth of the $B\flat$ -major triad seems to be omitted deliberately at the cadence of the piano motto in order to establish the WT0 collection represented by the WT0 major third, $B\flat$ -D. This assumption is suggested by the principle shown in Ex. 3-3a, where the explicit progression from dominant ninth to WT0 confirms the presence of the whole-tone partition in the dominant-ninth construction.

The significance of the whole-tone collections in the opening passages can also be revealed in the complementarity of the two whole-tone collections. As shown in Ex. 3-3b, only five pitch classes of the WT1 collection are unfolded (F -[]- A - B - $C\#$ - $E\flat$) in the piano motto. Theme 1 also unfolds only five pitch classes of the WT0 collections ($B\flat$ -[]- D - E - $G\flat$ - $A\flat$). As mentioned earlier, theme 1 contains one “foreign” pitch, B (m. 6), which

Ex. 3-4: *Ein Stelldichein*, mm. 1-8

Sehr langsam

Oboe

Klarinette in B

Violine

Violoncello

Klavier

Theme 1

(Ex. 3-2)

5

Ob.

Kl.(B)

Vi.

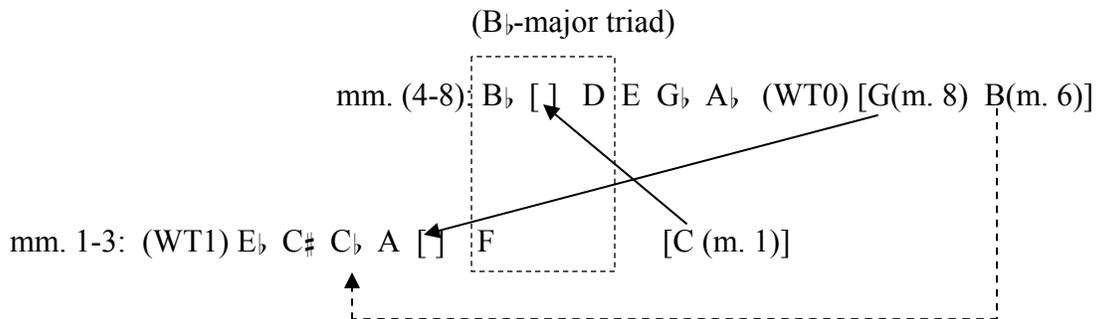
Vc.

Klav.

has been established as part of the WT1 collection in the piano motto. However, after theme 1 cadences on A_b (mm. 7-8), it descends to G (m. 7) and mimics the octave leap in the piano motto. This G complements the WT1 collection established earlier in the piano motto. The missing C in the WT0 collection established by theme 1 is complemented by

the C in the opening piano motto, which is also highlighted by the octave leap. Ex. 3-5 summarizes this complementary relationship between the two whole-tone collections.

Ex. 3-5: *Ein Stelldichein*, Complementation of the Whole-Tone Collections



The restatement of the piano motto in C minor (mm. 7-9) does not provide tonal stability to the whole-tone medium established in the previous phrase. The clash between the sustained B \flat -D dyad and the C-minor piano passage seems to create more tension than tonal resolution. Yet, this C-minor passage further confirms the complementation of the WT0 collection as discussed earlier. This C-minor triad and the opening A-diminished triad (mm. 1-2) share two common pitch classes, namely C and E \flat . The different pitch classes A (from the A-diminished triad, m. 1) and G (from the C-minor triad, mm. 7-8) belong to the WT1 collection, while the clarinet continues theme 1 with pitch classes mainly from the WT1 collection. This swing from an A-diminished triad to a C-minor triad provides a subtle link between the triadic and WT collections as well as the two whole-tone collections.

The B \flat -major triad established in the opening passage exhibits a systematic intervallic expansion to an interval-4 cycle through the restatement of the piano motto. The C-minor triad is followed by a three-note segment B \flat -A \flat -D (mm. 9-10) that suggests the sonority of the B \flat -dominant-seventh chord (B \flat -D-[]-A \flat). Compared to the motto at the opening, this passage seems to strengthen the urge of resolution toward the key of E \flat , and the C-minor triad in the previous measures could be interpreted as a deceptive cadence ($V^7 \rightarrow vi$ in E \flat major). However, this C-minor passage as a deceptive cadence in E \flat major is absorbed back to the whole-tone medium when the oboe reintroduces theme 1 (mm. 12ff.). The motto is repeated partially with only two pitch classes, D-B \flat (mm. 11-12) while the violin and cello chromatically introduce F \sharp (mm. 11ff.). They together imply the presence of an interval-4 cycle, B \flat -D-F \sharp . Suddenly the B \flat -dominant-seventh chord (B \flat -D-[]-A \flat) that I mentioned earlier does not function as a dominant-seventh chord at all, but instead it is absorbed into the WT0 collection and serves as a pivot to introduce the interval-4 cycle, B \flat -D-F \sharp . The voice leading from A \flat (violin and cello, m. 9) to F \sharp (m. 10) highlights the link between these whole-tone chords. In addition, the interval-4 cycle, B \flat -D-F \sharp , accompanies the return of the restatement of theme 1 (oboe; mm. 12ff.). Starting on a major third higher on C (m. 12), the oboe solo brings theme 1 back to the WT0 collection. Compare this restatement of theme 1 with the opening, the role of the major-third dyad, B \flat -D, expands to an interval-4 cycle instead of the major-third portion of a B \flat -major triad.

After a relatively extensive manipulation of theme 1 and the whole-tone collections, the piano motto returns to establish the $V^9 \rightarrow WT \rightarrow I$ progression in G \flat (mm.

17-20; see Ex. 3-6). It starts with an F-minor triad instead of an F-diminished triad as in the opening piano motto. However, the five-note whole-tone chord is achieved by half-step splitting of A_b (as the fifth of D_b) as discussed earlier in the V⁹ → WT progression. Compared to the opening piano motto (mm. 1-3), this WT chord should have resolved to a G_b-major triad. However, with the oboe melody cadencing at E_b, the G_b-B_b in the piano seems to become part of an E_b-minor triad (E_b-G_b-B_b). Although the piano clearly articulates the resolution in G_b, the E_b as the melodic cadence of the oboe should not be ignored. Indeed it is exactly this conflict between E_b and G_b that is ultimately resolved in section A3.

Interestingly, Schoenberg has demonstrated similar principles in his earlier compositions. The deliberate use of the minor-seventh chord as vagrant chord in *Gurrelieder* (1900-1) characterizes Schoenberg's attention to the details of the intervallic construct of major and minor triads.⁷ The opening harmony can be interpreted either as an E_b-major triad with added sixth (C) or as a C-minor-seventh chord (Ex. 3-7a). The multiple meaning of this vagrant harmony is projected into the background level of the work, which begins in E_b and progresses, at the end of Part III (after the speaker's monologue), into the final chorus in C. This "bitonal" interpretation is supported by the layers of ostinati, in which the lower pattern basically in E_b major and the upper exclusively in C minor. The latter tonality is continued in the next phrasal block (mm. 3-4, repeated in mm. 5-6) in a new ostinato figure, in which an increase of activity is determined by the triplet figuration as well as the displacement of the ostinato by

⁷ I would like to thank Professor Elliott Antokoletz to provide this analysis of *Gurrelieder*.

Ex. 3-6: *Ein Stelldichein*, Piano Motto, mm. 17-21

syncopation. According to the principle of overlapping thematic layers, the principal theme of the orchestral introduction appears (mm. 7ff.) in counterpoint with the ostinato figure. Again we have a melodic projection of the C-minor-seventh harmony.

The cadential passage (No. 1, mm. 5-6), which articulates the ending of the first period of the principal theme, provides us with a new thematic germ idea and,

Ex. 3-7: Arnold Schoenberg: *Gurrelieder*

a. Opening

Mäßig bewegt. C minor

ppp

E \flat major

ppp

p

(poco espress.)

Detailed description: This musical score shows the opening of Arnold Schoenberg's *Gurrelieder*. It consists of two systems of piano accompaniment. The first system (measures 1-2) features a treble clef with a melodic line of eighth notes and a bass clef with a steady eighth-note accompaniment. The second system (measures 3-4) continues the melodic line in the treble and introduces a more active bass line with triplets and a dynamic marking of *p* (poco espress.). The key signature is C minor (three flats), and the tempo is 'Mäßig bewegt.' (Moderately moved).

b. No. 1, mm. 5-6

p

L.H.

A \flat ⁹

F-minor-7th

Detailed description: This musical score shows measures 5-6 of the first movement of *Gurrelieder*. It features a treble clef with a melodic line and a bass clef with a complex accompaniment. The key signature is C minor. The score includes dynamic markings of *p* and 'L.H.' (Left Hand). Chordal annotations include A \flat ⁹ and F-minor-7th. The melodic line is marked with an '8' and a dotted line, indicating an octave. The bass line features a prominent cadential figure.

simultaneously, is marked by the first prominent disruption of the pervasive C-minor-seventh construction (see Ex. 3-7b). In this cadential figure, the seventh degree (G) of

the A_b chord moves to pitch F to form an F-minor-seventh chord. As suggested by Berg, the cadential F-minor-seventh chord in its dual interpretation as an A_b -major triad with added sixth can be understood as II of G_b .⁸ The latter tonality is the first modulatory goal of the introduction (at No. 2, m. 8), where it is the basis of the second principal theme (B). At this point, we get a G_b -major triad with added sixth (or E_b -minor-seventh chord). Furthermore, G_b is the key of Tove's first song (no. 18, m. 10), while Waldemar's first song comes to rest in E_b (explicitly at No. 11). Thus, the traditional third relationship of keys (E_b to G_b) is established by non-functional means, exclusively based on special manipulations of the minor-seventh-chord construction. These two passages from *Gurrelieder* demonstrate the similar duality and conflict between E_b -minor and G_b -major in *Ein Stelldichein*, yet these two key areas in *Ein Stelldichein* have cyclic-interval implication that will be revealed later in the piece.

Theme 2 of *Ein Stelldichein* (mm. 21ff.; see Ex. 3-8) outlines the key of D and cadences in D minor twice (mm. 25 and 28). The D-minor cadence is approached by the progression $F^+ \rightarrow f^\sharp \rightarrow d$ (mm. 24-25; 27-28), in which the F^\sharp -minor triad (F^\sharp -A-C \sharp) appears to be a hybrid dominant (A-C \sharp)/D-major tonic (F^\sharp -A) chord before it resolves to the single pitch class D (m. 28). The dominant portion is suggested by the descending fifth movement at the bass, which suggests a dominant-tonic progression. The D-major portion, as mentioned earlier, is implied in the overall melodic articulation of D major of theme 2. The $F^+ \rightarrow f^\sharp$ progression is repeated once (m. 29) after the cadence on the single pitch class D. Instead of cadencing on D minor again, section A1 ends in an E-diminished

⁸ Alban Berg, *Arnold Schönberg, Gurrelieder: Führer*, trans. Mark DeVoto, *Journal of the Arnold Schoenberg Institute* 16, nos. 1-2 (Jun-Nov 1993), 65.

triad (m. 31) and the same E-diminished triad brings the motto back to start the following section.

Ex. 3-8: *Ein Stelldichein*, Theme 2, mm. 21ff.

20

Ob.

Kl.(B)

Vl.

Vc.

Klav.

Theme 2

25

Ob.

Kl.(B)

Vl.

Vc.

Klav.

F+

d⁶

Ob.

Kl.(B)

Vl.

Vc.

Klav.

F+

f^{#6}

d

Section A2: Further Establishment of the Interval-4 Cycle

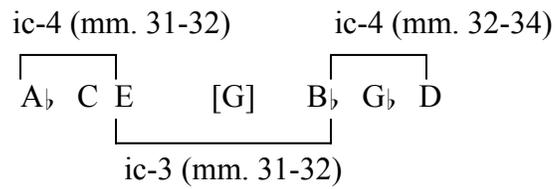
The expansion of interval-3 to interval-4 cycle highlights the opening of section A2. Established at the end of the previous section, the E-diminished triad could have started section A2 and brought back the piano motto. Instead, this “triadic” portion of the motto is presented in imitative polyphony (Ex. 3-9a). While the oboe unfolds the E-diminished triad, the other instruments enter with a new interval-4 cycle, E-C-A_b (mm. 31-32), followed by the interval-4 cycle, B_b-D-F[#]/G_b (m. 33, cello), as introduced in section A1. This specific unfolding of the motto implies the expansion of interval class 3 to interval class 4. Simultaneously, the interval-3 cycle provides a subtle link with the two interval-4 cycles that form a larger symmetrical structure (Ex. 3-9b), in which this intertwined structure of cyclic-intervals 3 and 4 will be integrated to the fullest extent in section A3. Furthermore, these two interval-4 cycles represent two partitions of the complete WT0 collection. If one compares this rendition of the piano motto to that of section A1, it is obvious that the WT0 collection dominates the opening of section A2. The only WT1 element that remains here is pitch class G, the same pitch class that was missing at the WT1 unfolding of the piano motto as mentioned in the previous section (see Ex. 3-5).

After establishing the WT0 collection through its two interval-4 cycle partitions, Schoenberg demonstrates how he integrates these two interval-4 cycles and articulates the WT0 collection harmonically. Ex. 3-10 shows a varied version of theme 1 (mm. 42ff.). After the B_b-clarinet solo is accompanied by the interval-4 cycle, G_b-B_b-D (mm. 35-38), as in section A1, the WT0 collection harmonically articulates the cyclic-interval structure of theme 1. In particular, the two interval-4 cycles are expanded by whole-tone

Ex. 3-9: *Ein Stelldichein*, Section A2, mm. 31ff.

a) Section A2:

b) Implied Symmetrical Structure:



Ex. 3-10: *Ein Stelldichein*, Section A2, mm. 41ff.

41

Ob.

Kl.(B)

Vl.

Vc.

Klav.

pp

pp espr.

45

$B\flat-C-D-E-G\flat$

$A\flat-B\flat-C-D-E$

$B\flat-D-E-F\sharp$

Ob.

Kl.(B)

Vl.

Vc.

Klav.

pp

pp

pp

WT0

$B\flat$ $F\sharp$ D (with WT filling)

47

Ob.

Kl.(B)

Vl.

Vc.

Klav.

pp cresc.

pp

pp cresc.

$C-E-F\sharp-G\sharp$

filling to form two five-note WT0 chords. For example, the interval-4 cycle, B \flat -D-G \flat , is expanded to a five-note WT0 chord, B \flat -C-D-E-G \flat (m. 42). This whole-tone chord is juxtaposed by another five-note WT0 chord, A \flat -B \flat -C-D-E (m. 43), which implies a whole-tone filled interval-4 cycle, A \flat -C-E. As discussed in chapter 1, such whole-tone filling of an interval-4 cycle is in accord with Schoenberg's conceptions of whole-tone collections as expansion of an augmented triad (see Ex. 1-3).

This WT0 complex further integrates and saturates the harmony (mm. 46-47) to prepare for the return of theme 2 (mm. 48ff.). When the oboe, violin, and cello cadence on an interval-4 cycle, B \flat -D-F \sharp -[E] (m. 46), the piano answers with the same interval-4 cycle, B \flat -D-F \sharp , with whole-tone filling to complete the WT0 collection (see Ex. 3-10). This WT0/interval-4 cycle line is accompanied by various WT0 trichords and tetrachords before it cadences on a cycle-4 implied WT0 chord C-E-[F \sharp]-G \sharp . In addition, this establishment of the WT0 collection prepares for the return of theme 2. As mentioned earlier, theme 2 has a strong implication of D major. The cadence of the oboe melody clearly articulates the link between the WT0 collection and theme 2. The two cadential pitches, D (m. 46) and F \sharp (mm. 47-48) are absorbed to this WT0 complex before theme 2 starts on the same F \sharp (m. 48).

The return of theme 2 features another episode of intervallic expansion to establish the whole-tone and interval-4 cycles. The characteristic interval-4 cycle/F-augmented triad (F-A-C \sharp , m. 51) again precedes the cadence of the melody. However, theme 2 in section A2 cadences on D major (m. 52) instead of D minor. With the underpinning whole-tone harmony, the passing notes appear to disrupt the established

whole-tone medium. For example, the second half of theme 2 (see Ex. 3-11) is surrounded by whole-tone harmony (C-E-G[#]-D, m. 50; F-A-C[#], m. 51) before it cadences on a D-major triad (m. 52). The sixteenth-note accompaniment in the right-hand piano (mm. 49-52) introduces passing tones that appear to embellish the whole-tone chords. For example, with the right hand of the piano playing G[#]-G-F[#]-E along with the WT0 chord, C-E-G[#]-D (m. 50), the G in the piano can be interpreted as a passing note between G[#] and F[#], which both belong to the WT0 collection. The piano figure changes to G[#]-F[#]-F-E on the third beat of the same measure. Similarly, the F can be interpreted as a passing tone connecting F[#] and E.

Although the use of passing tones can be easily understood in this whole-tone medium, it is exactly this half-step motion which disrupts the stability of the WT0 medium established in section A2. While the F⁺ → D progression is similar to that of section A1 (mm. 27-28; see Ex. 3-8), the D-major triad here (m. 52) appears to be absorbed back to the WT0 medium. The duality of this cadence is clouded by the relatively chromatic piano accompaniment (mm. 48-52). For example, compared to the cadence of theme 2 in section A1 (mm. 27-28), one might expect that the same F⁺ → d cadential progression will occur at the same location of section A2 (mm. 51-52). While the piano does provide the harmony of D major (m. 52), the clarinet plays the 16th-note figure, B_♭-A-F[#]-D. The B_♭ in this 16th-note accompaniment can be regarded as an upper neighbor tone of A of the D-major triad. Considering the extensive establishment of the WT0 collection and interval-4 cycles in section A2, it is also possible to interpret this

Ex. 3-11: *Ein Stelldichein*, mm. 49ff.

The image shows a musical score for 'Ein Stelldichein' (mm. 49ff.), specifically Theme 2. The score is arranged in five systems, each with a different instrument: Oboe (Ob.), Clarinet in B (Kl. (B)), Violin (Vl.), Viola (Vc.), and Piano (Klav.). A vertical line at measure 50 highlights a cadence. Harmonic annotations include 'C-D-E-G#', 'Bb-A', 'Bb-D-F#', 'F+', and 'D6'.

16th-note figure as an interval-4 cycle, B \flat -D-F \sharp , with A as a lower neighbor tone of B \flat . With D-F \sharp as the common element between the D-major triad (D-F \sharp -A) and the interval-4 cycle (D-F \sharp -B \flat), the cadence of theme 2 exhibits fusion and resolution of the diatonic and whole-tone media, which will be further developed in the following section.

While the postlude of section A1 (mm. 29-31) prepares for the interaction between interval cycles 2 and 3, the postlude of section A2 (mm. 53-54) attempts to

restore the whole-tone cycles temporarily. While section A2 is dominated by the WT0 collection, the conclusion shows the juxtaposition of WT0 and WT1 collections (see Ex. 3-12). This juxtaposition of WT0 and WT1 collections recalls the interaction of the two whole-tone collections between opening piano motto (mm. 1-3) and theme 1 (mm. 4-7). Instead of intersecting the whole-tone cycles at a B \flat -major triad, the WT1 measure (m. 53) moves directly to B \flat major (m. 54), which eventually resolves to E \flat minor (m. 57) and further progresses to G \flat major (mm. 58ff.). The neighbor-tone motion once again can be found in m. 53. While the complete WT1 collection is unfolded in this measure, the G \flat (see Ex. 3-13) is clearly introduced as the incomplete upper neighbor tone of F. This “foreign” G \flat along with the WT0 passage and the G \flat major established in section A1 (mm. 21; see Ex. 3-6), forecasts the reestablishment of G \flat as a significant key area in section A3.

Ex. 3-12: *Ein Stelldichein*, mm. 50-53

Measure:	50	51	52	53
Pitch-classes:	C-E-G \sharp -D	F-A-C \sharp	D-F \sharp -[A]-B \flat	C \sharp -E \flat -F-[G \flat]-G-A-B
WT:	0	1	0	1

Section A3: The Integration of Interval-3 and 4 Cycles

Section A3 opens with a modified version of the piano motto performed by the oboe and prepares for the establishment of the E \flat -minor and G \flat -major triads. While the characteristic octave leap is still present, the descending third that starts the motto is omitted (see Ex. 3-14). After the octave leap, the melody descends a half step instead of

Ex. 3-13: *Ein Stelldichein*, mm. 53-55

a minor third. With the oboe melody outlining E_b minor, the half-step descent from G_b to F works both as a manipulation of the piano motto and a lower neighbor-note embellishment. The harmony also supports the key of E_b minor with a local progression from B_b minor (m. 56) to E_b minor (mm. 56-57), or $v \rightarrow i$ in E_b minor. Compared to the opening passage of section A1, the quest of establishing the key of E_b is finally achieved in section A3 through this dominant-tonic resolution. However, this E_b minor is only short-lived. The tonal goal of this section is actually G_b major (mm. 58ff.), the relative major of E_b minor. The voice leading of this section is mainly based on common tones and half-step motion. For example, the progression from E_b minor to G_b major through the passing A-diminished-seventh chord is linked with one common tone G_b , which will be established in this section as a significant key area. This harmonic progression that establishes G_b major is summarized in Ex. 3-15. The key of G_b major seems relatively static in the following passage (mm. 58-65) as the harmony implies the juxtaposition of

the G \flat -major triad and the G-half-diminished-seventh chord (G-B \flat -D \flat -F). The bass motion from G \flat to G highlights the back-and-forth progression between G \flat major and the G-half-diminished-seventh chord (see especially mm. 63-64).

Ex. 3-14: *Ein Stelldichein*, mm. 55-57



Ex. 3-15: *Ein Stelldichein*, Harmonic Progression, mm. 56-60

m. 56 mm. 56-57 m. 57 mm. 58-60

b^{\flat} e^{\flat} $a^{\flat}7$ G^{\flat} $g^{\flat}7$

The return of theme 2 in section A3 (mm. 68ff.) becomes the highpoint of the integration and reestablishment of various interval cycles. First of all, with G \flat established statically in the first half of section A3, the harmony becomes more progressive when approaching theme 2. With the descending G \flat -major scale on the left-hand piano (mm. 65-66), a traditional harmonic progression in G \flat major, namely I \rightarrow vi \rightarrow IV \rightarrow ii in G \flat major, seems to suggest a tonal establishment of G \flat major (see Ex. 3-16). However, instead of establishing the key of G \flat major through the traditional [ii] \rightarrow V \rightarrow I progression, it turns abruptly to C \flat minor and is respelled enharmonically as B minor (mm. 66-67) before theme 2 returns.

Ex. 3-16: *Ein Stelldichein*, mm. 65-66

The image shows a musical score for five instruments: Oboe (Ob.), Clarinet in B-flat (Kl. (B)), Violin (Vl.), Viola (Vc.), and Piano (Klav.). The score is for measures 65 and 66. The key signature is B-flat major (two flats). The tempo is marked '65'. The score includes dynamic markings such as *f* (forte) and *cresc.* (crescendo). The piano part features a prominent interval-3 cycle in the right hand, with a *cresc.* marking. Below the piano part, chord symbols are provided: Gb: I, vi, IV, ii, and (iv) c_b = B minor.

Theme 2 (mm. 68ff.) returns with an E_b pedal throughout the rest of section A3. The long-delayed tonic of E_b is finally established, even though it is introduced basically by assertion. Although it was not established as a tonal key area in previous sections, the importance of E_b has been vaguely suggested at the beginning of the piece. As the first note of this piece, E_b is quickly absorbed as part of an incomplete interval-3 cycle, A-C-E_b-[] (m. 1), which remains incomplete since the opening passage. However, section A3 completes this interval-3 cycle with long-range preparation by the establishment of G_b as a prominent key area: first in section A1 (mm. 20-21) and then in the first half of section A3 (mm. 58ff.). Also, this complete interval-3 cycle (A-C-E_b-G_b) provides the opening harmony of theme 2 in section A3 (mm. 69-70; see Ex. 3-17). The opening two notes of theme 2, F_#-A (or enharmonically G_b-A), are now completely absorbed to the interval-3 cycle F_#-A-C-E_b.

Ex. 3-17: *Ein Stelldichein*, Section A3, Theme 2, mm. 68ff.

rit. Theme 2 70

Ob.
Kl. (B)
Vl.
Vc.
Klav.

am Steg
pp am Steg
pp
G♭ - F
pp
A-C-E♭-G♭ E♭-F-[G♭]-A-B-D♭
wieder gewöhnlich
pp
WT0: G♭-A♭-B♭-C-D
F-A-B-C♯-E♭ WT1
75

As theme 2 approaches its cadence, the WT1 collection is reestablished before theme 2 cadences on a WT0 chord, D-G \flat -A \flat -B \flat -C (m. 72). This juxtaposition of WT1 and WT0 collections recalls similar progression of the opening piano motto (mm. 1-3; see Ex. 3-3b) and the conclusion of section A2 (mm. 50-53; see Ex. 3-12). While the opening piano motto does establish the B \flat -major triad through the F 7 \rightarrow WT1 \rightarrow B \flat progression, the cadence of theme 2 here lacks the formal establishment of the dominant-seventh sonority. Instead, the original progression has been expanded to a pure progression of interval cycles. Theme 2 starts with an interval-3 cycle (A-C-E \flat -G \flat), followed by a WT1 chord, F-G-A-B-C \sharp -E \flat (m. 71), before it resolves to a WT0 chord, G \flat -A \flat -B \flat -C-D (m. 72). This WT0 chord, G \flat -A \flat -B \flat -C-D, implies the interval-4 cycle, G \flat -B \flat -D, which was established in sections A1 and A2 through the B \flat -D portion of the B \flat -major triad. However, the tonal implication of B \flat major or D major is totally absent here in section A3. The cadential D of the oboe melody is absorbed into the WT0 collection. The pedal E \flat , asserted here as the “tonic” of the piece, is absorbed into the WT1 collection in the postlude (mm. 73-75). The melody briefly departs from the WT1 collection when the B \flat -clarinet and cello cadence on G \flat (mm. 76-77). This melodic preparation of the missing G \flat finally completes the interval-3 cycles implied in the piano motto and starts section A4 with a complete interval-3 cycle, [G \flat]-E \flat -C-A \flat (mm. 78ff.).

Section A4: Further Fusion of the Interval Cycles

After an embellished return of the piano motto (mm. 78-86), the diminished-triad portion of the piano motto exhibits systematic expansion from interval class 3 to interval

class 4. First, the establishment of G \flat to complete this diminished-triad portion ([]-E \flat -C-A, m. 1 and m. 78) of the piano motto is reinstated (mm. 86-89; see Ex. 3-18). The characteristic melodic contour of the diminished triad of the piano motto unfolds a complete interval-3 cycle, G \flat -E \flat -C-A. However, this motive is expanded to an interval-4 cycle, F-A-D \flat (mm. 89-90), while the oboe and B \flat -clarinet expand this interval-4 cycle to a complete WT1 collection (mm. 89-90). This process of expansion from interval-class 3 to interval-class 4 is very similar to theme 2 of section A3 (mm. 68-71). The piano motto is completely expanded as interactions of interval cycles and consequently the tonal implication of the piano motto (as suggested in sections A1) is totally absent here.

Conclusion and Preview: Interval Cycles and Tonal Scheme

Although the modified strophic form of *Ein Stelldichein* is similar to the First String Quartet, *Ein Stelldichein* does not exhibit the symmetric encircling of E \flat -major tonic as in the First String Quartet. Although Josef Rufer identifies this piece in C minor⁹ probably because of the key signature and the reintroduction of the piano motto in C minor at the cadence of the B \flat -clarinet solo passage (m. 8), the key of C minor plays very little role in the overall harmonic scheme. The implication of E \flat as the tonic is stronger. It is first implied as the sixth of G \flat major when the piano motto cadences on G \flat major (mm. 20-21), and it is again emphasized in section A3. However, as mentioned earlier, the prescribed tonic of E \flat is only introduced as a pedal underneath the rigorous interaction between interval-cycles 2 and 3. If E \flat major is indeed the prescribed tonic,

⁹ Josef Rufer, *The Works of Arnold Schoenberg: A Catalogue of his Compositions, Writings and Paintings*, trans. Dika Newlin (New York: The Free Press of Glencoe, 1963), 110.

Ex. 3-18: *Ein Stelldichein*, Section A4, mm. 86-90

The musical score for Ex. 3-18, Section A4, mm. 86-90, is presented in two systems. The first system (mm. 86-88) features staves for Oboe (Ob.), Clarinet in B (Kl. (B)), Violin (VI.), Viola (Vc.), and Piano (Klav.). The piano part includes an 'interval-3 cycle' and chord symbols G_b , E_b , C, C, A, $F\sharp / G_b$. The second system (mm. 89-90) features the same instruments and includes an 'Interval-4 cycle' and chord symbols D_b , A, F. A bracket labeled 'WTJ (Complete)' spans measures 89 and 90. Dynamics include *sf* and *fff*.

the key areas unfolded in this piece are clearly stemmed from the secondary key area, B_b . Particularly, the tonal scheme of *Ein Stelldichein* is closely tied to the interval cycles unfolded and implied in the opening piano motto. As mentioned in previous sections, interval-cycles 3 and 4 play a significant role of cyclic-interval unfolding along with the tonal key areas. The three tonal key areas, namely B_b major, D major/minor, and G_b

major, represent a complete interval-4 cycle. This interval-4 cycle is emphasized repeatedly since its introduction in section A1. Schoenberg also demonstrates the 12-tone integration of interval-cycles 3 and 4 as a source of various cyclic-interval unfolding in the First String Quartet (see Ex. 2-12). However, while the unfolding of interval-cycles 2 and 4 is extensive, the unfolding of interval-cycle 3 is relatively brief in *Ein Stelldichein*. Still, the implication of G_b as part of the interval-3 cycle, A-C-E_b-G_b, is strongly established by long-range preparation. However, its possibility of extensive unfolding as key areas and/or other compound interval cycles, such as the octatonic collections, is not realized in the 90 measures Schoenberg completed. Although we do not know how Schoenberg would have finished this piece, *Ein Stelldichein* still represents a very progressive attempt of integrating traditional tonal harmony and interval cycles. In addition, the process of intervallic expansion, along with the establishment of a secondary key area, provides an important model for Schoenberg's next large scale work, *Chamber Symphony No. 1*, op. 9.

Chamber Symphony No.1, Op. 9

Introduction: Traditional Approaches of the Opening Passage

As mentioned in the previous section, the Chamber Symphony starts with a harmonic progression (Cadence 1;¹⁰ see Ex. 3-19a and b) very similar to the opening

¹⁰ For formal plan and thematic designation, I will follow the analysis as discussed in Walter Frisch, *The Early Works of Arnold Schoenberg 1893-1908* (Berkeley and Los Angeles: U. of California Press, 1993). His formal analysis, based on a double-exposition first movement, is listed as follows (with starting measures listed): Cadence 1 (=slow introduction, m. 1), horn motto (m. 5), Cadence 2 (m. 8);

piano motto of *Ein Stelldichein* (see Ex. 3-2). With the F-major triad (m. 4) as the goal of the progression, Robert Morgan approaches this passage based on traditional harmonic progression:

The chord in perfect fourths that builds up gradually in mm. 1-2 is altered in m. 3 to become an augmented-sixth chord on G \flat (the standard “French sixth” with an added A \flat , producing five of the six notes of a whole-tone scale), which then resolves in “normal” fashion to an F-major chord in m. 4.¹¹

While Morgan’s interpretation clearly articulates the tonal aspect of the passage, he does not elaborate on the process of the gradual build-up of the “chord in perfect fourths.” In addition, the progression from the quartal chord to the five-note whole-tone chord implies a lot more than just a process of “alteration.” While the materials in the first three measures do resolve to an F-major triad, the role of the cyclic materials is certainly more than some tonally dissonant elements that need to be resolved. Instead, as I will show, these interval cycles establish a unique medium that works hand-in-hand with the overall

Exposition I: theme 1a (m. 10), theme I/1b (m. 16), theme I/2 (m. 32), transition + cadence 2 (m. 50); Exposition II: theme 1a (m. 58), theme II/1b (m. 68), theme II/1c (m. 75), theme II/2 (m. 84), transition (m. 106), Codetta (m. 113), Cadence 3 (m. 127), Transition [to scherzo] (m. 133); Scherzo: theme 1 (Scherzo, m. 160), transition (m. 184), theme 2 (trio, m. 200), development (m. 215), Scherzo Recapitulation (m. 249); Development: part I (m. 280), part II (m. 312), part III (m. 335); Slow Movement (378); Episode Transition (415); Finale/Recapitulation (m. 435). Alban Berg interprets the first movement with only one exposition. In particular he identifies Frisch’s theme II/2 (m. 84) as the subordinate theme. See Alban Berg, *Arnold Schönberg. Kammer-symphonie Op. 9: Thematische Analyse* (Leipzig and Vienna: Universal, 1921).

¹¹ Robert P. Morgan, *Twentieth-Century Music: A History of Musical Style in Modern Europe and America* (New York, NY: W. W Norton, 1991), 66.

tonal framework to prepare for the simultaneous unfolding of the diatonic and cyclic materials.

Ex. 3-19a and b: Chamber Symphony No. 1, mm. 1-4

a) Piano Reduction

The image shows a piano reduction of the first four measures of Chamber Symphony No. 1. The tempo is marked 'Langsam' (Ad libitum). The key signature is three sharps (F#, C#, G#) and the time signature is common time (C). The score is written for piano with a grand staff. The first measure has a piano (*fp*) dynamic. The second measure has a forte (*f*) dynamic. The third measure has a piano (*p*) dynamic. The fourth measure has a piano (*p*) dynamic. The music features a complex harmonic structure with overlapping lines and a final cadence in the fourth measure.

b) Chordal Reduction

The image shows a chordal reduction of the first four measures of Chamber Symphony No. 1. The key signature is three sharps (F#, C#, G#) and the time signature is common time (C). The score is written for piano with a grand staff. The first measure is marked with a '1' above the staff. The second measure is marked with a '2' above the staff. The third measure is marked with a '3' above the staff. The fourth measure is marked with a '4' above the staff. The music features a complex harmonic structure with overlapping lines and a final cadence in the fourth measure.

Walter Frisch's analysis goes into more detail on Schoenberg's discussion on the resolution of the chords of fourths and whole tones and he considers these chords of fourths and whole tones as "altered but functional dominant sonorities."¹² This reading compliments Morgan's interpretation of the whole-tone chord as a French augmented sixth chord. Concerning the nature of the French augmented sixth chord, Niederberger

¹² Walter Frisch, *The Early Works of Arnold Schoenberg*, 233.

provides the following assessment based on Christopher Wintle's discussion¹³ on Schoenberg's *Theory of Harmony*:

A French augmented sixth chord itself can be interpreted as a secondary dominant. It is significant that a resolution of this chord is possible in two keys at the distance of a tritone, since the symmetrical intervallic content of the chord permits an enharmonic reinterpretation[.]¹⁴

Based on Niederberger's approach, the two possible resolutions of the French augmented sixth/whole-tone chord in the opening passage (m. 3) are shown in Ex. 3-20. The subtle link between the establishment of the F-major cadence and the E-major tonic (m. 9) is obvious as this French augmented sixth/whole-tone chord (G_b-B_b-[A_b]-C-E) provides a theoretical implication to the E-major tonic. As I will show later, the musical context, on the contrary, provides a more complex link between the two keys and the establishment of the tonic major.

In contrast to Morgan's analysis that emphasizes traditional harmonic progression and resolution, Catherine Dale concentrates more on the intervallic characteristics of the passage. In particular, she identifies five important components of this theme as follows:

(1a) the perfect fourths G, C, F, B flat, E flat, A flat in bar 1-2;

¹³ See Christopher Wintle, "Schoenberg's Harmony: Theory and Practice," *Journal of the Arnold Schoenberg Institute*, 4.1, 50-68 for details.

¹⁴ Maria Anna Niederberger, "Schoenberg's 'Intricate Structure': An Analytic Approach to His String Quartet in D Minor, Op. 7" (Ph.D. diss., Brandeis U., 1991), 67.

Ex. 3-20: Resolution of the French Augmented Sixth Chord

<p>E F</p> <p>C C</p> <p>[A_b]</p> <p>B_b A</p> <p>G_b F ----- B_b</p>	<p>A[#] B</p> <p>F[#] F[#]</p> <p>[A_b]</p> <p>E D[#]</p> <p>C B ----- E</p>
<p>B_b: Fr⁺⁶ → V → I</p> <p> [V₃⁴/V]</p>	<p>E: Fr⁺⁶ → V → I</p> <p> [V₃⁴/V]</p>

(1b) the augmented fourths G flat-C, E-B flat in bar 3;

(1c) the three-note chromatic ascent in violin II and descent in cello and double-bass in bars 2-4;

(1d) the whole-tone chord G flat, A flat, B flat, C, E in bar 3;

(1e) the semitone resolution from A flat to A natural in violin I and oboe in bars 1-4.¹⁵

My reading of this passage will concentrate on the overall significance of the interval cycles, particularly the relationship among the interval cycles and the overall tonal framework that has been demonstrated in Schoenberg's *Ein Stelldichein*. Based on the analyses by Morgan, Frisch, and Dale, the openings of *Ein Stelldichein* and the Chamber Symphony share two similar features: (1) Both progressions are characterized by a five-note whole-tone chord resolving to a major triad; and (2) Both passages do not

¹⁵ Catherine Dale, *Schoenberg's Chamber Symphonies: The Crystallization and Rediscovery of a Style* (Burlington, Vermont: Ashgate Publishing Company, 2000), 81.

cadence on the tonic of the piece. While the opening of *Ein Stelldichein* establishes the dominant of E \flat , the opening of Chamber Symphony No. 1 establishes the Neapolitan of E major.¹⁶

Introduction: The Establishment of the Interval Cycles and Tonality

Compared to *Ein Stelldichein*, the opening of the Chamber Symphony exploits a more complicated harmonic passage that prepares the whole-tone chord for the F-major cadence. Starting from a WT0 trichord, A \flat -B \flat -C (m. 1), the whole-step dyad, B \flat -C, performed by violin II and viola, ascends a perfect fourth to E \flat -F (m. 2) while the cello and double bass introduce pitch class G. Combined with the opening trichord A \flat -B \flat -C, we have a six-note quartal chord, G-C-F-B \flat -E \flat -A \flat (m. 2). The progression of this quartal chord to the WT0 chord, G \flat -C-E-B \flat -A \flat (m. 3) confirms the importance of the WT0 collection in the opening trichord, A \flat -B \flat -C. Therefore, the quartal chord, G-C-F-B \flat -E \flat -A \flat (m. 2), can be regarded as two partitions of whole-tone segments: A \flat -B \flat -C from WT0 and E \flat -F-G from WT1. In addition, the opening trichord, A \flat -B \flat -C, sustains throughout this passage until the A \flat -B \flat dyad resolves to A in half steps (m. 4; see Ex. 3-19b).

The systematic use of the whole-tone collections has been explored in *Ein Stelldichein* and other earlier pieces. However, the use of quartal harmony is relatively new in Schoenberg's compositions. As Schoenberg points out, although he used quartal chords in his earlier symphonic poem, *Pelleas und Melisande* (1902-3), the application is

¹⁶ See Walter Frisch, *The Early Works of Arnold Schoenberg*, 236-246 for a more detailed discussion on the Neapolitan relationship in the Chamber Symphony.

relatively isolated and it is used more for local expressiveness.¹⁷ On the contrary, Schoenberg points out the importance of quartal harmony as a structural element of the Chamber Symphony:

Here the fourths, springing from an entirely different expressive urge (stormy jubilation), shape themselves into a definite horn theme [mm. 5-6; see Ex. 3-21], spread themselves out architectonically over the whole piece, and place their stamp on everything that happens. Thus it turns out that they do not appear here merely as melody or as a purely impressionistic chord effect; their character permeates the total harmonic structure, and they are chords like all others.¹⁸

Ex. 3-21: Chamber Symphony, mm. 4-6 (piano reduction)

The musical score for Example 3-21 is a piano reduction of the first horn part from Schoenberg's Chamber Symphony, measures 4-6. It is written in G major (one sharp) and 4/4 time. The treble clef staff shows a melodic line for the horn, starting with a whole rest in measure 4, followed by a quarter note G4 in measure 5, and a half note B4 in measure 6. The bass clef staff shows a bass line for the horn, starting with a whole rest in measure 4, followed by a quarter note D4 in measure 5, and a half note G4 in measure 6. The key signature is G major, and the time signature is 4/4. The score is labeled 'Hom' for Horn, 'oboe', and 'English Horn'.

The horn theme, D-G-C-F-B \flat -D \sharp , is a perfect fifth above the opening quartal chord on G (m. 2), and cadences on an augmented triad, G-B-D \sharp , which implies an interval-4 cycle and a partition of the WT1 collection. In the previous passage, the first horn descends

¹⁷ Arnold Schoenberg, *Theory of Harmony*, (Berkeley and Los Angeles, CA: University of California Press, 1978), 403.

¹⁸ *Ibid.*, 403-404.

from B \flat to A and cadences on an F-major triad (m. 4; see Ex. 3-19a). Moving down a perfect fifth, the horn starts the theme at D. This perfect-fifth motion suggests that pitch A can be regarded as part of the ascending fourth of the horn theme, [A]-D-G-C-F-B \flat -D \sharp . Therefore, this opening passage is again similar to that of *Ein Stelldichein*: a diatonic triad implies an intersection of two cyclic-interval partitions. In the Chamber Symphony, the F-major triad (m.4) can be regarded as an intersection of two segments of the interval-5 cycle since F-C is in the opening cycle-5 segment (G-C-F-B \flat -E \flat -A \flat), and A, as well as F-C, in the horn theme ([A]-D-G-C-F-B \flat -D \sharp). This interval-5/7 segment grows directly from the A, which is part of the cadential F-major triad directly preceding this cyclic generation. Thus, this relation is confirmed by the immediate context. In addition, pitch F can also be regarded as part of the WT1 cycle. After the WT1 portion of the quartal chord (E \flat -F-G) is established through the perfect-fourth ascent, pitches E \flat and G approach symmetrically to F in half steps. With two passages exhibiting the progression from interval-5 to interval-2 and interval-4 cycles, the F-major triad seems to become a foreign element within these two passages, which is similar to the B \flat -major triad in the opening passage of *Ein Stelldichein*. However, unlike *Ein Stelldichein*, the Chamber Symphony quickly defines the prescribed E-major tonic in the following phrase. As I will show later in this chapter, the intimate interaction between cycles 2, 4 and 5 will become a major event in the development section.

Approaching Theme 1a: The Establishment of E major through Interval Cycles

The key of E major is established in a traditional manner with the introduction of the Cadence 2 theme (Ex. 3-22). Following the horn theme, the clarinets, French horns, English horn, oboe and flute continue to sustain the interval-4 cycle, G-B-D#, while the rest of the orchestra is performing the dotted rhythm of the horn theme and completes the WT1 collection with the interval-4 partition, F-A-C# (mm. 6-7, cello, bass, bass clarinet, and contrabassoon). The E-major triad is approached by its diminished-seventh chord, D#-F#-A-C, in second inversion (m. 8), and the same progression is repeated in the following measure. While this resolution of the diminished-seventh chord to the E-major tonic triad is straightforward, the diminished-seventh chord is closely associated with the interval cycles established in the previous passage. Approached by the WT1 passage (mm. 6-7), pitches A and D# of the diminished-seventh chord are directly associated to the WT1 collection. However, pitches C and F# of the diminished-seventh chord are both introduced by descending half-step voice leading. The dotted rhythm of the Cadence 2 theme descends from D# to C# (m. 7) and then from C# to C (m. 8), whereas violin I and bassoon descend from G to F#. Again, this suggests the partition of the diminished-seventh chord, or a complete interval-3 cycle, as two dyads from two whole-tone collections: A-D# from WT1 and C-F# from WT0. Besides this whole-tone partitioning, the identity of this diminished-seventh chord as interval-3 cycle will be reconfirmed and expanded in the transition to the second exposition (mm. 53ff.).

Ex. 3-22: Chamber Symphony No. 1, mm. 1-10

Cadence I=Slow Introduction

Langsam $\text{♩} = \text{ca } 52$ 1 Sehr rasch $\text{♩} = \text{ca } 104$

Flöte

Oboe

Englisches Horn

Klarinette in D

Klarinette in A

Baß-Klarinette in A

Fagott

Kontra-Fagott

1. 2. Horn in F

Horn Motto

Langsam $\text{♩} = \text{ca } 52$ Sehr rasch $\text{♩} = \text{ca } 104$ pizz.

1. Violine

2. Violine

Bratsche

Violoncell

Kontrabaß

F major

Exposition I: Interaction between Tonality and Interval Cycles

While the diminished-seventh chord that precedes the E-major tonic triad has its strong cyclic-interval implications, the establishment of the E-major tonic triad (mm. 8-9) itself is also coupled with the unfolding of cyclic intervals. Cadencing on A as part of the interval-3 cycle, D \sharp -F \sharp -A-C (m. 8), the cello melody enters aggressively with theme 1a (mm. 8ff.). Starting on A (m. 8) as part of the interval-4 cycle as discussed earlier (F-A-C \sharp), it descends a perfect fifth to D, followed by an ascending octave leap, and ascends a tritone to G \sharp . The melodic contour of theme 1a vaguely resembles the opening piano motto of *Ein Stelldichein* since both have the characteristic ascending octave leap. While the perfect-fifth descent consists of the same pitch classes as the opening of the horn motto, the ascending tritone from D to G \sharp suggests an intervallic expansion from interval 5 to interval 6. In addition, this expansion absorbs the cello melody into the WT0 collection. This echoes the whole-tone partitioning of the opening quartal chord (m. 2). The interval of the perfect fourth becomes an important means to move between the two whole-tone collections. When the clarinet melody (Cadence 2) cadences on B (m. 10) as the fifth of the E-major triad, the major-third portion of the E-major triad (E-G \sharp) is quickly absorbed into the WT0 collection. While the double bass, bassoon, contrabassoon and A-clarinet articulate the E-major tonic triad in arpeggio (m. 11), the cello melody ascends from E to A \sharp (m. 11) in whole steps. This ascent serves two functions: besides confirming the significance of the WT0 collection in theme 1a, it also confirms the major-third portion of the E-major triad (E-G \sharp) as part of the WT0 collection.

Theme 1a also provides the subtle link between the opening introductory passage (Cadence 1) and the E-major tonic triad. While the five-note WT0 chord in Cadence 1

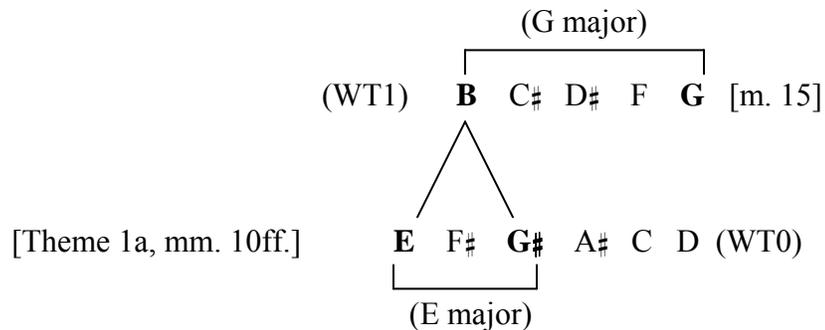
(G_b-A_b-B_b-C-E, m. 3; see Ex. 3-19) resolves to an F-major triad, theme 1a unfolds the same WT0 collection. As shown in Ex. 3-20, if we interpret this WT0 chord in Cadence 1 as a French augmented-sixth chord, A_b is the extra note. This extra note is complemented by its tritone D when theme 1a is introduced (mm. 8-10). In addition, this pitch class D fills in the five-note whole-tone chord and completes the WT0 collection (G_b-A_b-B_b-C-[D]-E). As I will show later in this chapter, this unfolding of the tritone cycle will return with structural significance in the transition to the second exposition.

Another interesting rendition of the E-major triad as part of the whole-tone cycle can be found at the introduction of theme I/1b (mm. 16ff.). As theme 1a modulating from E major to G major (mm. 14-15), the horn articulates the major-third portion of the G-major triad (G-B) with an ascending WT1 passage (m. 15; see Ex. 3-23). This unfolding of the WT1 collection prepares the cadential WT1 chord, F-A-B-D_#-G (m. 15), before the introduction of theme I/1b. Since it eventually resolves to E major, we can certainly interpret this five-note WT1 chord as an altered dominant-seventh chord of E major (B-D_#-[F]-[G]-A), with the fifth of the B-dominant-seventh chord simultaneously raised and lowered in half steps (i.e. from F_# to F and G; see Ex. 3-3a). However, the voice leading does not totally support this reading. While the F in the double bass is introduced by half-step descent from F_#, the G in the horn is clearly introduced as part of the WT1 ascent (m. 15) instead of a chromatic ascent from F_#. Although we can still interpret this as a dominant-tonic resolution in E major, the systematic unfolding of whole-tone collections is also a significant process, which starts from the introduction of theme 1a (mm. 9ff.) and continues to theme I/1b. Ex. 3-24 summarizes the relationship

between the tonic E major and the whole-tone collections. With the modulation from E major to G major, the tonic E major can be interpreted as two partitions of the two whole-tone collections: E-G# as part of the WT0 collection and B as part of the WT1 collection. While theme I/1b is accompanied by the tonic E pedal in the double bass, the orchestra suggests a shift from WT1 (G) to WT0 (E) by voice leading with familiar intervals, namely half step and perfect fourth. Concerning the opening chord of theme I/1b (m. 16), both pitches D (violin II) and E (viola) are approached by a perfect-fourth leap from A and B respectively, while G# is approached by descending half step from A (cello). The whole-step motion from D to C (m. 16, violin I and violin II) shifts the WT0 chord, E-G#-D, to an interval-4 cycle, C-E-G#, with E-G# as common tones. While theme I/1b eventually cadences on an E-major triad (m. 19), it again reinforces the whole-tone significance of the triad, namely E-G# of the E-major triad as part of the WT0 collection. The similar cadence does occur later in the second exposition before the introduction of theme II/1b (mm. 66-68; see Ex. 3-25)¹⁹. The harmonic progression, namely $c\#_{4}^{6} \rightarrow f\# \rightarrow$ WT1 (B-D#-[]-G-A-C#) \rightarrow E, again features the WT1/B-dominant-ninth chord resolving to the E-major tonic triad. This occurrence even features a bass motion of descending fifth (from B to E, mm. 67-68) to highlight the $V^9 \rightarrow I$ progression in E major.

¹⁹ In Berg's analysis, this cadence starts the transition to the subordinate theme-group (mm. 84ff). See Alban Berg, *Arnold Schönberg. Kammer-symphonie Op. 9: Thematische Analyse*.

Ex. 3-24: Unfolding of Whole-tone Collections, mm. 10-15.



Transition to the Second Exposition: The Expansion of Interval-3 Cycles

The transition to the second exposition (mm. 50-57; see Ex. 3-26) serves two functions: besides preparing the return of theme 1a (mm. 58ff.), it also expands the harmonic implication of Cadence 2 theme through systematic progression from interval-2 to interval-3 cycles. The low strings and the low woodwinds ascend in four-note sequence from A_b (m. 50) to E (m. 52, third beat) while the high woodwinds descend in five-note sequence (mm. 50-51), all from the WT0 collection. In addition, the melody of the violins and viola unfolds pitch classes G#-E-D-C (mm. 50-51), the same as the opening of theme I/1b (m. 16; see Ex. 3-23 for comparison). However, the unfolding of the WT0 collection is disrupted when approaching its cadence. The intervals of half step and perfect fourth are used again for bridging the two whole-tone collections. The ascending leap from E to B (m. 52, violin, viola, and cello) introduces the WT1 collection. It then descends from B to D# in whole steps. The second horn descends a perfect fourth from B_b to F (m. 52), which also represents a progression from WT0 (B_b) to WT1

Ex. 3-25: Chamber Symphony No. 1, mm. 66-68

sehr zurückhaltend - - 16 Zeitmaß

Fl. *ff* *p*

Ob. *ff* *p*

E.H. *ff* *p*

in D Kl. *ff*

in A *ff* *p*

Bkl. in A *ff* *sf* *ff*

Fg. *ff* *ff*

Kfg. *ff* *sf* *ff*

Hrn. in F *ff*

sehr zurückhaltend - - 16 Zeitmaß

66 1.VI. *ff* *fp* *p*

2.VI. *ff* *fp* *p*

Br. *ff* *fp* *fauc*

Vlc. *ff* *sf* *fp* *ffp*

Kb. *ff* *sf* *fp* *pizz*

C# 6
4 f# WT1 16 E
G-B-D#-C#-A

collection (F). The WT0 sequential, ascending bass line (unfolding five notes of the WT0 collection) is interrupted by an half-step ascent from E to F (mm. 52, beat 3 and 4), while the flute, oboe, and D-clarinets descend in half step (B, to A). All these bring the short WT0 passage to a momentary WT1 chord (m. 52).

This intersection of the two whole-tone collections also recalls the F-major triad as the secondary key area in the opening passage (mm. 1-4). While the root of the F-major triad unfolds in the bass (m. 52), the major-third portion of the F-major triad (F-A) is introduced as part of the WT1 collection and the fifth of the triad (C) is unfolded as a continuation of the WT0 collection by the English horn and the A-clarinets (m. 52).

While the opening passage highlights the importance of the F-major triad as a cadential point, the whole-tone collections become the focus of the harmonic language here in this transitional passage and the F-major triad becomes a “passing-chord” within this whole-tone dominated texture.

The progression of this WT1 chord (m. 52) to the D \sharp -diminished-seventh chord (m. 53) is similar to the opening passage (mm. 6-7). Again, the D \sharp -diminished-seventh chord can be regarded as two partitions of the two whole-tone collections: D \sharp -A from the WT1 collection and F \sharp -C from the WT0 collection. While the WT1 chord (m. 52) prepares for the WT1 portion (D \sharp -A) of the D \sharp -diminished-seventh chord, the WT0 portion can also be interpreted as the extension from the preceding WT0 passage (mm. 50-52). The intervals of minor second and perfect fourth are used again here to move the WT1 collection to the WT0 collection. While the bass line (mm. 50-52) unfolds the WT0 collection, the F (as part of the WT1 chord, m. 52) disrupts the WT0 unfolding.

Ex. 3-26: Chamber Symphony No.1, mm. 50-59

This musical score page contains the following parts and markings:

- Woodwinds:** Flute (Fl.), Oboe (Ob.), English Horn (E.H.), Clarinet in D (in D Kl.), Clarinet in A (in A Kl.), Bassoon (Bkl. in A), and Contrabassoon (Kfg.).
- Brass:** Horn in F (Hrn. in F).
- Strings:** Violin I (1.VI.), Violin II (2.VI.), Viola (Vlc.), and Cello (Kb.).

Key markings and features include:

- Rehearsal mark **11** at the beginning of the section, with a **rit.** (ritardando) instruction.
- Dynamic marking **ff** (fortissimo) is present in the woodwind and string parts.
- A **WTI** (Wagner Tuba) part is indicated on the right side of the score.
- Measure numbers **50** and **11** are clearly visible.

Ex. 3-26 (Continued)

12

The musical score is arranged in a standard orchestral format. The top section includes woodwinds: Flute (Fl.), Oboe (Ob.), English Horn (E.H.), Clarinet in D (in D Kl.), Clarinet in A (in A Kl.), Bassoon (Bkl. in A), and Contrabassoon (Kfg.). The middle section includes Horns (Hrn. in F), Violins (1.VI., 2.VI.), and Viola (Vlc.). The bottom section includes Cello (Cb.) and Double Bass (Kb.). The score is in 4/4 time with a key signature of two sharps (F# and C#). It features dynamic markings such as *ff*, *f*, *p*, and *pp*. Performance instructions include *pizz.* (pizzicato) for strings and *Bogen am Steg* (bow on the bridge) for violins. The bottom of the page contains a boxed number '12', a note 'd#⁰⁷', and chord diagrams for 'C-F-B' and 'A-D-G#'. The 'C-F-B' diagram shows a C major triad with a flat on the F, and the 'A-D-G#' diagram shows an A major triad with a sharp on the G.

Fl. *ff* *p*

Ob. *ff* *p*

E.H. *ff* *p*

in D Kl. *ff* *p*

in A Kl. *ff* *p*

Bkl. in A *ff* *p*

Kfg. *ff* *p*

Hrn. in F *f* *ff* *ff* *p*

1.VI. *ff* *pizz.* *Bogen am Steg* *pizz.*

2.VI. *ff* *p*

Br. *ff* *p*

Vlc. *ff* *p*

Kb. *ff* *p*

12

d#⁰⁷

C-F-B

A-D-G#

Ex. 3-26 (Continued)

13 1. Zeitmaß

Fl.

Ob.

E.H.

in D
Kl.

in A

Bkl.
in A

Fg.

Kfg.

Hrn.
in F

58 1. Zeitmaß Bogen

1.Vl. Bogen

2.Vl. pizz. Bogen

Br. pizz. Bogen

Vlc.

Kb.

13

However, the F ascends again in half step to F \sharp and brings the bass line back to WT0. If this cadential F \sharp is considered as part of the WT0 unfolding in the bass line, the F that disrupts this WT0 unfolding can certainly be regarded as a passing tone between E and F \sharp . After the WT1 chord in the previous measure unfolds a descending line, B-A-G-F (m. 52, violin II and viola), the viola melody descends a perfect fourth from F to C, which is presented together with F \sharp as a tritone dyad (m. 53, viola).

So far, the harmonic progression of this transition to the second exposition is very similar to that of the Cadence 2 theme in the first exposition (mm. 7-10; see Ex. 3-22), namely a whole-tone passage to a D \sharp -diminished-seventh chord followed by its resolution to the E-major tonic triad. However, in this transition section, the D \sharp -diminished-seventh chord does not resolve to E major immediately as we have seen in the first exposition. The opening motive of theme 1a becomes a major source of cyclic-interval expansion. Violin II and viola sustain the D \sharp -diminished-seventh chord and the chord is partitioned into two sets of tritone, F \sharp -C and D \sharp -A. The bass instruments reintroduce the rhythmic motive of theme 1a. However, the motive is interrupted by rests (mm. 53-56), which highlight the leaps in the motive (perfect-fifth descent, octave ascent, and tritone ascent). In addition, instead of theme 1a in its original pitches (A-D-G \sharp), the cello and double bass start theme 1a on C and unfold theme 1a with a new set of tritone, F-B (mm. 53-54). With parallel minor thirds performed by the horns the diminished-seventh chords are partitioned by two related intervals, namely minor third and tritone. Although the D \sharp diminished-seventh chord has its tonal implications, the newly introduced tritone (B-F) and the D-G \sharp tritone in the original theme 1a do not function locally as a diminished-

seventh chord in any key. Instead, these two minor-third related tritones unfold another interval-3 cycle, G \sharp -B-D-F. Together with the D \sharp -diminished-seventh chord (D \sharp -F \sharp -A-C), these two perfect-fourth related interval-3 cycles combine to form the octatonic-0 collection (C-D-D \sharp -F-F \sharp -G \sharp -A-B). As discussed earlier, the F-major triad at the opening passage can be partitioned by the two whole-tone collections, namely F-A from the WT1 collection and C from the WT0 collection. However, the minor-third portion of the F-major triad (A-C) is highlighted here by cyclic-interval unfolding. As the theme 1a motive unfolds the interval-3 cycle, G \sharp -B-D-F, the motive also articulates the minor third, A-C (C-F-B, mm. 53-55; A-D-G \sharp , mm. 56-58), which vaguely recalls the minor-third portion of the “secondary key area” F major (mm. 4 and 52).

Interestingly, this notion of minor-third partitioning of a triad is articulated in a more explicit fashion in establishing the E-major tonic triad. In particular, the octatonic collection developed in this transition provides an important element for a new interpretation of the tonic E-major triad in the second exposition. With respect to the resolution of the octatonic collection, the return of theme 1a strengthens the WT0 collection, whereas the octatonic-0 collection (C-D-D \sharp -F-F \sharp -G \sharp -A-B) contains the minor-third portion of the E-major triad (G \sharp -B). When the key of E major is reintroduced at the beginning of the second exposition (mm. 58ff.), the tonic pitch E enters as a sequence of major thirds that emphasizes the WT0 portion of the E-major triad (E-G \sharp).

Simultaneously, the minor-third portion of the E-major triad (G \sharp -B) is introduced in the previous passage as part of the octatonic-0 collection. While the resolution of the D \sharp -diminished-seventh chord to E major is still prominent in this passage, the interpretation

of the E-major triad as intersection of the WT0 collection (E-G#) and the octatonic-0 collection (G#-B) is also significant. Compared to the same passage at the opening, the octatonic collection expands the harmonic fabric of theme 1a in the second exposition. As we will see, the octatonic collection will be used again to prepare for the introduction of the scherzo.

Theme II/2: The Integration of Themes and Interval Cycles

Theme II/2²⁰ is one of the highlights of the fusions of various interval cycles developed in previous passages along with the tonal goal of A major. Schoenberg discusses briefly the close intervallic relationship between this theme and theme 1a.²¹ Ex. 3-27 shows how he aligns these two themes in order to illustrate that both melodies feature an ascending perfect fourth followed by an ascending tritone. While I discussed earlier that the interval of perfect fourth is used to bridge the two whole-tone collections, the same interval is now absorbed into an octatonic collection. Violin I introduces theme II/2 (mm. 84-85), which contains five pitches of the octatonic-1 collection, A-B_b-C-C#-[]-[]-F#-[]. In addition, this theme can also be partitioned contextually by the two whole-tone collections. As discussed earlier, theme 1a can be partitioned by the two whole-tone collections: D-G# as part of WT0 and A as part of WT1. While the D-G# portion of theme 1a was regarded as part of the interval-3 cycle, D-F-G#-B, the A in theme 1a had stemmed indirectly from the major third-portion of the F-major triad (F-A).

²⁰ In Berg's thematic analysis, the first movement is analyzed as a single exposition. Theme II/2 in Frisch analysis is regarded as the subordinate theme of the exposition in Berg's analysis.

²¹ Arnold Schoenberg, "My Evolution," in *Style and Idea: Selected Writing of Arnold Schoenberg*, ed. Leonard Stein, trans. Leo Black, (Berkeley: University of California Press, 1984), 85.

That is, the obvious role of A as the third degree of the F-major triad (in m. 4) is echoed in the bass (m. 6). From here, the F-A becomes part of the WT1 cycle in the bass (mm. 6-8, beat 1). The whole-tone significance of the A is reiterated (in m. 9), except for the interpolation of tritone D-G# from WT0. The A in m. 9 is nothing but repetition of the triplet A in m. 8, which is in proximity with F-A on the preceding beat. Similarly, theme II/2 can be interpreted in similar fashion. The first and the last note of this phrase (C#-A) outline the major-third portion of the A-major triad and consequently can be regarded as part of the WT1 collection, while the three pitch classes in the middle of the phrase (F#-C-Bb) represent the WT0 collection.

Ex. 3-27: Schoenberg's Illustration of Theme II/2 (Subordinate Theme) and Theme 1a



The introductory passage to theme II/2 (mm. 82-83) prepares various interval cycles for theme II/2. While the second-inversion A-major triad is introduced right before theme II/2 at the downbeat (m. 84), the E of the triad, which is introduced by chromatic voice leading from G (m. 82, last beat), continues to move chromatically to D# (m. 84, last beat). The violin II ascending line, A-B-C# (mm. 82-83), is coupled with the

A-D \sharp tritone (m. 84, beat 4) to outline the WT1 collection. This A-D \sharp WT1 tritone progresses to a WT0 chord, B \flat -C-D-F \sharp (m. 85, downbeat). At the same time, the tritone A-D \sharp fills in one of the missing notes of the octatonic-1 segment introduced by the violin I melody (A-B \flat -C-C \sharp -[D \sharp]-[]-F \sharp -[]). Also, the bass clarinet and bassoon provide another tritone, D \flat -G, of the octatonic-1 collection (mm. 82-83). Interestingly, E-B \flat is the only tritone within the octatonic-1 collection that is not introduced harmonically or melodically. While B \flat is introduced as part of the octatonic-1 melody, E is bass of the second-inversion A-major triad.

The transition to the codetta of the second exposition (mm. 106-112) reinforces the key of A major while articulating the whole-tone significance of the German augmented-sixth chord. After theme II/2 cadences on F major through a traditional dominant-tonic resolution (mm. 105-106), the F-major triad is quickly absorbed to the German augmented-sixth chord in A major (F-A-C-D \sharp , m. 110). Before it is resolved to A through its dominant, the German augmented-sixth chord appears to be absorbed into a WT1 chord, F-A-B-C \sharp (m. 111). The voice leading indicates that this expansion is achieved from a descending major-seventh leap from C to C \sharp , which highlights this simple yet important expansion from the augmented-sixth to the WT1 chord. In addition, it is approached by a three-note WT1 chord, G-D \sharp -A (m. 110, downbeat), which also functions as a WT1 preparation of the German augmented-sixth chord (F-A-C-D \sharp) by the sustained common pitches, E \flat /D \sharp -A (m. 110, viola). The expansion of the German augmented-sixth chord to the WT1 chord, F-A-B-C \sharp , prepares for the resolution to the second-inversion A-major triad to start the codetta (mm. 113ff.).

The second-inversion A-major triad is reiterated with different themes while the A-major triad is partitioned by two octatonic collections in the codetta of the second exposition (mm. 113ff.). Although the overall tonal framework is very simple as the A-major triad is reiterated by virtually the same set of themes, the connecting fabric between these A-major triads is quite complicated. First of all, with pitch classes C[#]-D-[D[#]]-E-F-G-[]-B-[], the D-clarinet melody (mm. 113- 114) contains six notes of the octatonic-2 collection except one foreign note, D[#]. Within the violin I melody (mm. 113-115), the six accented pitch classes, namely C[#], A, B^b (m. 113), D^b (m. 114), E^b, C, and G (m. 115), articulate an octatonic-1 segment (A-B^b-C-C[#]-E^b-[]-[]-G). While the octatonic-2 collection contains the C[#]-E portion of the A-major triad, the octatonic-1 collection contains the major-third portion of the A-major triad, A-C[#].

The A-major cadence works its way from second inversion to root position in the codetta. After another similar cadence on a second-inversion A-major triad (m. 119), the A-major cadence is presented in first inversion (m. 123) before theme II/2 returns briefly (mm. 123-127). However, after the first statement of theme II/2 cadences on a second-inversion A-major triad again (m. 125), the second statement takes a surprising turn and cadences on a second-inversion D^b-major triad (m. 127) before it finally cadences on a root-position A-major triad (mm. 128-130). However, the second-inversion D^b-major triad also finds its way to the root position. After the root-position A-major cadence (mm. 128-130), it suddenly shifts to a passage of repeating root-position C[#]-major triad (mm. 130-132).

Overall, the exposition (especially the “subordinate theme” and the closing section [theme II/2, codetta, and cadence 3 in Frisch’s analysis]) of the first movement represents the unfolding of key areas very similar to *Ein Stelldichein*. Starting from the secondary key area B \flat major, *Ein Stelldichein* unfolds three major-third related key areas, namely B \flat major, D major, and G \flat major. Similarly, the opening F-major passage of Chamber Symphony No. 1 initiates the unfolding of the major-third related key areas, namely F major (mm. 4 and 106), A major (mm. 84, 113-130), and C \sharp major (mm. 127, 130-132). Such similarity could not be coincidental, yet the Chamber Symphony reveals a much more complicated fabric partly because of the numerous thematic materials presented. As observed by Reinhold Brinkmann, the themes of Chamber Symphony No. 1 are “all stark, brief, concise and each possessed of a clearly defined character.”²² Catherine Dale provides a comprehensive review of the twenty-three themes as identified by Alban Berg²³ in order to reveal the thematic unity in the Chamber Symphony as “a cause and result of the weakening of tonality in his early works.”²⁴ Furthermore, she also comments that “the occurrence of the non-tonal fourths motives at each of the main dividing points in the structure is just one indication that in Schoenberg’s music form was soon to become a thematic rather than a tonal concept.”²⁵ I would like to compliment Dale’s comment on Schoenberg’s thematic concept of “weakening of tonality,” in which the interval cycles play a crucial role of establishing a unique harmonic fabric while the

²² Reinhold Brinkmann, “The Compressed Symphony: On the *Historical* Content of Schoenberg’s Op. 9,” trans. Irene Zedlacher, in *Schoenberg and His World*, ed. Walter Frisch (Princeton, NJ: Princeton University Press, 1999), 146.

²³ Alban Berg, *Arnold Schönberg. Kammer-symphonie Op. 9: Thematische Analyse*.

²⁴ Catherine Dale, *Schoenberg’s Chamber Symphony*, 106.

²⁵ *Ibid.*

diatonic triads still possess their tonal implications. However, the “weakening” of tonality is foreshadowed by the extensive use of interval cycles as a means of establishing the diatonic triads.

Preparation of Scherzo: The Articulation of Octatonic Collections

While the transition to the scherzo movement (mm. 133ff.) prepares for the C-minor tonic of the movement, the C-minor triad is revealed through the context of the octatonic-1 collection. After the end of the first movement, the transition to the scherzo (mm. 133ff.) starts with a varied version of theme 1a. After outlining E major (m. 137) and G major (m. 140) as in the first exposition (mm. 10-15), it eventually cadences on C \sharp major (m. 148) before it progresses to a C-dominant-ninth chord (mm. 152ff.; see Ex. 3-26) through the progression C \sharp major \rightarrow B \flat major \rightarrow A major \rightarrow f \sharp ⁰⁷ \rightarrow C⁹ (mm. 148-152). This progression, while strange, has its octatonic significance. While the roots of these chords (C \sharp -B \flat -A-F \sharp) unfold an octatonic-1 segment, the C \sharp -major and B \flat -major triads can be found only in the octatonic-2 collection. The A-major triad and the F \sharp -diminished-seventh chord belong to the octatonic-1 collection (C-D \flat -E \flat -E-F \sharp -G-A-B \flat). This octatonicism of the diatonic triads provides a new meaning of the opening of this transition. While theme 1a articulates the E-major and G-major triads, these triads can also be regarded as pivotal elements between the diatonic and octatonic spheres since both E-major and G-major triads can be found in the octatonic-2 collection. In other words, the progression of E major \rightarrow G major \rightarrow C \sharp major \rightarrow B \flat major (mm. 133-149), which is part of the larger transitional section, unfolds four octatonic-2 related diatonic

triads. This progression also outlines the common interval-3 cycle which the octatonic-1 and octatonic-2 collections share, namely E-G-B \flat -C \sharp . As the progression shifts to the octatonic-1 collection and cadences on the C-dominant-ninth chord (C-E-G-B \flat -D \flat , m. 152), it does not resolve to F major, nor does it function as a dominant-ninth chord at all. Instead, it is part of the complete unfolding of the octatonic-1 collection (C-D \flat -E \flat -E-F \sharp -G-A-B \flat), and the actual function of this chord is to anticipate C as the tonic of the scherzo movement (mm. 160ff.).

After the unfolding the octatonic-1 collection along with the articulation of the C-F \sharp tritone in the bass (mm. 152-155; see Ex. 3-28), the horns establish another tension that will be revealed in the scherzo. The horns establish repeating passages with mixtures of minor thirds and major thirds (mm. 156-159). The passage, which features the dotted rhythm that will become the major rhythmic motive of the scherzo movement, starts with B \flat -D \flat as part of the octatonic-1 collection. However, the following three major-third dyads (A \flat -C, G \flat -B \flat , F \flat -A \flat , m. 156) contain five pitch classes of the WT0 collection (F \flat -G \flat -A \flat -B \flat -C-[]). Among these five pitch classes, only A \flat does not belong to the octatonic-1 collection. This A \flat foreshadows the presence of the dissonant pitch in the C-minor triad at the opening of the scherzo movement (m. 160). The horns finish the repeating passage of thirds with descending minor thirds (m. 158), which re-establish the octatonic-1 collection and prepares the C-minor tonic triad of the scherzo movement. These descending minor thirds, namely E \flat -G \flat , D \flat -F \flat , and C-E \flat , unfold five pitch classes of the octatonic-1 collection (C-D \flat -E \flat -F \flat -G \flat -[]-[]-[]). Moreover, this descending passage cadences on C-E \flat as part of the octatonic-1 collection and the C-minor tonic triad

of the scherzo movement. The fifth of the C-minor triad (G) is also introduced as part of the octatonic-1 collection through half-step motion from F# (mm. 156-159) to G (m. 160).

Scherzo: The Fusion of Octatonic Collections

The arrival of the C-minor triad that starts the scherzo movement (mm. 160ff.) reveals another intersection of two octatonic collections. First of all, the C-minor tonic triad is introduced with a dissonant clash of A \flat in the double bass and oboe. While the C-minor triad belongs to the octatonic-1 collection established in the previous passage (mm. 152-159), the A \flat introduced here (m. 160) does not belong to the octatonic-1 collection. Instead, this A \flat hints at absorption into an octatonic-0 segment. The same passage returns at m. 249, where it is more obviously part of the octatonic-0 collection, rather than the earlier, more fragmented interaction of various octatonic segments. First of all, while the double bass and oboe introduce the A \flat on the downbeat and ascend to A in the following measure (m. 161), the cello ascends from G to A \flat simultaneously. The viola, bassoon, and English horn enter with an eighth-note motive and unfold pitch classes B-C-E \flat . This motive articulates the key of C minor (C-E \flat) with its leading tone, B. Together with the A \flat -major triad (A \flat -C-E \flat , m. 160), the opening of the scherzo movement articulates the harmonic progression of $i \rightarrow VI$ in C minor (or C minor to A \flat major). However, the pitches introduced here at the opening measure of the scherzo, namely A \flat -A-B-C-[]-E \flat -[]-[], unfold a five-pitch octatonic-0 segment. The common element between the octatonic-1 and octatonic-0 segments is the minor-third tonic, C-E \flat . In other words, the local C-minor tonic triad at the opening of the scherzo movement represents

Ex. 3-28: Chamber Symphony No. 1, mm. 152ff.

Octatonic-1: D \flat -E \flat -E-F \sharp -G-A-B \flat -C

36 **37**
steigernd und beschleunigend bis in ein ϕ -Zeitmaß

Fl.
Ob.
E. H.
in D
Kl.
in A
Bkl.
in A
Fg.
Kfg.
Hrn.
in F
1. Vl.
2. Vl.
Br.
Vlc.
Kb.

m. D. WT0
mf < f mf < f mf < f mf < f
sf
pizz. Bogen
pizz. Bogen
m. D. Dämpfer weg!
pizz. Bogen
pizz. fff Bogen
152 157

36 C 9 (C-E-G-B \flat -D \flat) **37**

Ex. 3-28 (Continued)

Scherzo

sehr rasch $\text{♩} = \text{ca } 92 - 96$

38 (♩ rascher als die ♩ von früher)

Fl. $\text{♩} = \text{♩}$

Ob. *hervortreten*

E.H. *pp*

in D *in Es*

Kl. *in B*

in A *in B*

Bkl. *in B*

in A

Fg. *pp*

Kfg.

Hrn. *in F* *m. D.*

in F

sehr rasch $\text{♩} = \text{ca } 92 - 96$

160 (♩ rascher als die ♩ von früher)

pizz. *mit zwei Fingern* ($\text{♩} = \text{♩}$)

1. Vi.

2. Vi.

Br. *stacc.* *pp*

Vlc. *pp*

Cb. *pp*

38 *f hervortreten*

C minor

+ A \flat

an intersection of two octatonic segments, and the C-E \flat tonic minor third bridges the two octatonic segments with local tonal significance.

This intertwining of the octatonic collections becomes more complex and explicit in the scherzo recapitulation (mm. 249ff.), where the octatonic collections form a relatively complex harmonic fabric. In particular the octatonic-0 collection, which is unfolded along with the introduction of the C-minor tonic triad in the opening measure of the scherzo movement (mm. 160ff.), becomes much more prominent at the scherzo recapitulation. The recapitulation starts with two characteristic pitches featured in the opening measure of the scherzo movement, namely C (as the root of the C-minor triad) and A \flat (as the dissonant pitch with respect to the C-minor triad). However, the scherzo recapitulation starts with only these two pitches instead of the complete C-minor triad. Without the complete C-minor triad, the A \flat becomes less dissonant compared to the scherzo opening, yet the C-minor triad does not seem to return at all. Instead, the first phrase contains pitches mainly from the octatonic-0 collection (see Ex. 3-29). First of all, when the cello starts the unfolding of the eighth-note motive (E-F-A \flat , m. 249), the A \flat of the motive is absorbed to a five-note WT0 chord (A \flat -C-G \flat -B \flat -E), which has been unfolded previously as a sequence of major thirds in the section that prepares for the scherzo (m. 156). In addition, violin I also unfolds four of the five pitches from the WT0 chord (G \flat -A \flat -B \flat -C, mm. 249-251). However, the octatonic-0 collection takes over as the main harmonic fabric of the first phrase (mm. 250-253). The octatonic complex of the scherzo recapitulation continues in the following phrase (mm. 253ff.), which picks up the octatonic-0 collection of the previous phrase and starts with six pitches of the octatonic-0

collection (A-B-C-D-E_b-F, m. 253). While the violins also start with an octatonic-0 segment (D-E_b-F_#, m. 253), it is absorbed to the octatonic-2 collection introduced by the rest of the orchestra, particularly the woodwind section (see Ex. 3-29).

Development: The Fusion of the Perfect-Fourth Cycle and other Cyclic Materials

Preparation of the Interval-5 Cycle in the Scherzo Movement

Although the very opening of the Chamber Symphony establishes the perfect-fourth cycle as a significant construction, our discussion has so far focused mainly on the unfolding of interval cycles 2, 3, and 4. But Schoenberg obviously plans the interval-5 cycle carefully because he intends to use it as the focus of the development section (mm. 280ff.). Before the development section, Schoenberg clearly indicates (in the conclusion of the first scherzo section) his intention of the fusion of interval cycles. While the opening of the scherzo suggests the unfolding of octatonic collections, their identity is fragmented and mixed. However, toward the end of the first scherzo section, the interval cycles return in a more explicit manner. After a busy unfolding of the eighth-note motive and the dotted rhythm in the transition between scherzo and trio (mm. 184-199), the horn melody prepares the cadence by unfolding a cycle-4 segment, C_#-A-F (mm. 192-193), and a cycle-5 segment, F-C-G-D (mm. 194-195), with embellishment by the orchestra (see Ex. 3-30). The orchestra cadences on a cycle-4 segment, E-G_#-C (m. 195), before the horns continue to unfold another one, E_b-G-B (m. 196). The two cycle-4 segments unfolded by the horns complement each other to complete the WT1 collection (C_#-A-F, E_b-G-B). After the horns unfold the cycle-4 segment, E_b-G-B, they rise sequentially in

Ex. 3-29: Chamber Symphony No. 1, Scherzo Recapitulation, mm. 249ff.

Scherzo Recapitulation

54 sehr heftig
(d = d aber etwas rascher)

55

Fl.

Ob.

E. H.

in Es

Kl.

in B

Bkl.

in B

Fg.

Kfg.

Hrn.

in F

1. VI.

2. VI.

Br.

Vlc.

Kb.

249 sehr heftig WT0: G \flat -A \flat -B \flat -C
(d = d aber etwas rascher)

54 C-A \flat

55 octatonic-1:
A-B-C-D-E \flat -F

Ex. 3-29 (Continued)

56 *nimmt kleine Flöte*

Fl. *p*

Ob. *p* *trill* *heruor*

E.H. *p* *trill*

in Es *p* *trill*

Kl. in B *p* *trill* *heruor*

Bkl. in B *p* *trill*

Fg. *p* *trill*

Kfg. *p* *trill*

octatonic: 2: G-A \flat -B \flat -B-[C]-D F-G-A \flat -B \flat -C \flat [E \flat]-F-G-A \flat -B \flat

Hrn. in F *ff* *trill* *heruor*

254

1. VI. *trill*

2. VI. *trill*

Br. *ff hervortreten* *trill* *stacc.*

Vlc. *ff hervortreten* *trill*

Kb. *ff hervortreten* *trill*

56

major thirds to unfold three sets of major thirds, D-F#, E-G#, and F#-A# (m. 197), which belong to the WT0 collection. Combined with the cadential cycle-4 segment in the previous measure (C-E-G#, m. 196), we have the complete WT0 collection.

As the horns cadence at the F#-A# major third as part of the WT0 collection (m. 197), violin II continues to unfold a sequence of major thirds (mm. 197-199), which ascend in half steps from F#-A# (m. 197) to B-D# (m. 198). Simultaneously, the oboe and English horn unfold an ascending chromatic passage from A#-F# (m. 197) to E_b-B (m. 198) in parallel motion. Both melodies are bounded by the perfect fourth (F#-B and A#-D#). These perfect-fourth boundaries articulate the cycle-5 segment unfolded by the bass clarinet, cello, and double bass (mm. 197-198), which feature an ascending cycle-5 segment, A-D-G-C-F, followed by another, descending one, D-A-E-B. This unfolding of the cycle-5 segments is interrupted by a minor-third descent from B to G# (m. 198, last beat). This simultaneous cyclic-interval unfolding is repeated and expanded in the following measure (m. 199). The cycle-5 unfolding is partially repeated (F-D-A-E-B, m. 199) and finishes with descending major/minor thirds, B-G#-E-C# (m. 199). The oboe, English horn, and French horns restart the parallel melody on F#-A# and ascend chromatically to D_b-F in parallel motion. Violin II unfolds the major-third sequence as in the previous passage and also ascends from F#-A# to D_b-F chromatically. The boundary interval of these parallel ascending melodies is expanded to a perfect fifth (F#-D_b/C#; A#-E#/F). Violin I also expands its ascending melody from E to B, which also outlines a perfect fifth. One interesting feature of this simultaneous unfolding of cyclic intervals is that the sequential chromatic unfolding of major thirds generates two interlocking whole-

Ex. 3-30: Chamber Symphony No. 1, Transition to the Trio, mm. 188ff.

44

steigernd und beschleunigend

Fl. *f* *cresc.* **3/4** **4/4**

Ob. *mf* *f* *cresc.* **3/4** **4/4**

E. H. *mf* *f* *cresc.* **3/4** **4/4**

in Es *mf* *f* *cresc.* **3/4** **4/4**

KL *mf* *f* *cresc.* **3/4** **4/4**

in B *mf* *f* *cresc.* **3/4** **4/4**

Bkl. in B *f* **3/4** **4/4**

Fg. *f* **3/4** **4/4**

Kfg. *f* **3/4** **4/4**

Hrn. in F *f* **3/4** **4/4** cycle-5: F *ff*

188 **steigernd und beschleunigend** cycle-4: C# A F

1. Vl. *f* **3/4** **4/4**

2. Vl. *p* *Bogen* *f* **3/4** **4/4**

Br. *f* **3/4** **4/4**

Vlc. *mf* *f* **3/4** **4/4**

Kb. *mf* *f* **3/4** **4/4**

44

Ex. 3-30 (Continued)

rit. $(d = d)$ $d = 160$ tempo **46** sehr rasch $d = d$ (Pres)

The musical score is arranged in two systems. The first system includes parts for Flute (Fl.), Oboe (Ob.), English Horn (E. H. in Es), Clarinet in B (Kl. in B), Bassoon (Bkl. in B), Bassoon (Fg.), and Contrabass (Kf.). The second system includes parts for Horn in F (Hrn. in F), Violin I (1. Vl.), Violin II (2. Vl.), Trombone (Br.), Viola (Vlc.), and Cello (Kl.). The score features complex rhythmic patterns with 3/2 and 2/2 time signatures. Performance markings include 'rit.' (ritardando), 'sehr rasch' (very fast), and dynamic markings such as 'f' (forte), 'pp' (pianissimo), and 'mp' (mezzo-piano). A rehearsal mark '199' is present above the Violin I part. A 'WT: 0 1' marking is located above the Viola part. The page number '46' is enclosed in a box at the bottom right of the score.

tone collections (m. 198), a process similar to interpret the cycle-5 segment as two interlocking whole-tone collections. While the violin I melody is aligned with the whole-tone partitions of the major-third chromatic ascent (m. 198), the cycle-5 segment unfolded in the bass does not align with the whole-tone partitioning of cycles 1, 2 and 4. However, as the bass melody starts to descend in major/minor thirds as it approaches the cadence (m. 199), the whole-tone alignment is restored with the rest of the orchestra. This misalignment between the whole-tone collections and the interval-5 cycle becomes a major event in the development.

Entering the Development: The Harmonic and Melodic Return of the Interval-5 Cycle

Toward the end of the recapitulated scherzo, Schoenberg prepares for the interval-5 cycle both melodically and harmonically. The horn motto is reintroduced in descending fourths, D-A-E-B-F \sharp -C \sharp (mm. 278-279; see Ex. 3-31), and the rest of the orchestra supports the motto with a four-note quartal chord, C \sharp -F \sharp -B-E (m. 279). This descending-fourth horn passage complements the opening quartal chord (G-C-F-B \flat -E \flat -A \flat , m. 2) and completes the interval-5 cycle on the background level. However, the local complementation of the interval-5 cycle is not achieved perfectly. Instead of repeating the C \sharp after the sixteenth note to finish the motto as in the original horn motto (see Ex. 3-21 for comparison), the horns descend an augmented fifth and cadence on F as part of a six-note chord, F-B \flat -C-E \flat -G \flat -A \flat (m. 280; see Ex. 3-31). Based on the quartal harmony established in previous measures, the pitch classes in this chord can be interpreted as

ascending fourths: [G \flat]-C-F-B \flat -E \flat -A \flat , with G \flat as the only “foreign” note. This cadential chord, which also starts the development, shares five pitch classes with the first quartal chord of the piece (m. 2), i.e., except for the foreign note, G \flat . This chord serves as the point of departure for the development and implies the need to be resolved in two ways: 1) the foreign note, G \flat , needs to be resolved to G, and 2) the correct order of the perfect-fourth cyclic segment needs to be restored.

Ex. 3-31: Chamber Symphony No. 1, mm. 278-280 (Reduction)

The first hint of the return of the horn motto occurs in part I of the development²⁶ along with the development of theme 1a (mm. 293ff.; see Ex. 3-32). Starting on D (m. 293, bassoon and horn), this statement of theme 1a is a perfect fourth higher than the original one (A-D-G \sharp , m. 9). Simultaneously, the violins unfold a complete interval-3 cycle, A \flat -F-D-B (mm. 293-294). However, after the same passage is repeated (m. 294),

²⁶ Walter Frisch’s analysis divides the development section into three parts. See n. 9, above, for details.

this interval-3 cycle is expanded to a descending melody that unfolds a seven-note cycle-5 segment, E_b-B_b-F-C-G-D-A (mm. 295-297). The last pitch (A) of this cycle-5 segment articulates the F_#-minor cadence (m. 297). This coupling of the perfect-fourth theme and theme 1a will reveal its significance in part III of the development, as theme 1a will be used as the main thematic material to prepare for the recapitulation of Cadence 1 theme.

As mentioned in Frisch's analysis, part III of the development (mm. 334ff.) features theme 1a and the horn motto. While the original theme 1a features a descending perfect fourth and an ascending tritone in the exposition (mm. 8ff.), it becomes a vehicle to unfold the whole-tone collections in the development. The opening of part III of the development features a complete WT0 collection performed by the bassoon along with theme 1a, which is absorbed into the WT0 collection (see Ex. 3-33). The whole-tone version of theme 1a continues to unfold both whole-tone collections in this section. The unfolding of theme 1a prepares for the fusion of the whole-tone and perfect-fourth cycles. The highpoint of the development starts to emerge when the cycle-5 segment returns along with the whole-tone version of theme 1a (mm. 354ff., see Ex. 3-34). This passage has been mentioned in the analyses of Samson and Dale. While Samson simply points out the existence of the interval-2 and interval-5 cycles in this passage,²⁷ Dale points out that "the workings of functional tonality are thus effectively immobilized for some 38 bars by an insistence on non-diatonic, symmetrical chord."²⁸ To compliment Dale's statement on the absence of functional tonality in this passage, I would like to

²⁷ Jim Samson, *Music in Transition: A Study of Tonal Expansion and Atonality*, (London: J. M. Dent & Son Ltd., 1977), 103-104.

²⁸ Catherine Dale, *Schoenberg's Chamber Symphonies*, 26.

Ex. 3-32: Chamber Symphony No. 1, Development, Part I, mm. 293-296.

63

63

293

1. VI.

2. VI.

interval 3 cycle: A \flat F D B

Br.

Vlc.

Kb.

ff

63

Ex. 3-32 (Continued)

This musical score is for a symphony orchestra and includes the following parts and markings:

- Woodwinds:** Kl. Fl. (Clarinet in F), Ob. (Oboe), E. H. (English Horn), in Es Kl. (Clarinet in E-flat), in B Kl. (Clarinet in B), Bkl. in B (Bass Clarinet in B), Fg. (Fagott), Kfg. (Kontrabaß).
- Brass:** Hrn. in F (Horn in F), 1. Vl. (Violin I), 2. Vl. (Violin II), Br. (Bassoon), Vlc. (Viola), Kb. (Kontrabaß).
- Performance Markings:** *ff* (fortissimo), *p* (piano), *f* (forte), *fff* (fortississimo), *pizz.* (pizzicato), *Bogen* (arco/bow), *tr.* (trill), *3* (triplets), *3* (triplets), *3* (triplets).
- Other Text:** "nimmt D-Kl." (takes D-Clarinet) is written above the Clarinet in B staff.
- Measure Numbers:** The score begins at measure 295.
- Key Signature:** The key signature is B-flat major (two flats).
- Time Signature:** The time signature is 3/4.

elaborate further on the function of this passage as recapitulation of interval cycles established at the opening of the piece. While Schoenberg points out that the whole-tone chords can be used as vagrant chords for “modulation and modulatory episodes,”²⁹ I would like to show how this passage sets up the resolution of the conflict established at the beginning of the development and the reestablishment of the interval-5 cycle.

As discussed earlier, Cadence 1 (mm. 1-4) anticipates the whole-tone partitioning of the interval-5 cycle. However, these two interval cycles seem to go separate ways after the opening passage until they are finally reunited and integrated as a complex cyclic-interval construct in part III of the development. The first perfect-fourth passage being brought back is a descending passage starting on G \flat (mm. 354-356; see Ex. 3-34), the foreign note at the beginning of the development that needed to be resolved (m. 280; see Ex. 3-31). Cadencing on F (m. 355), this cycle-5 segment is partitioned by the two whole-tone collections unfolded by theme 1a. However, the clarinets answer with an ascending perfect-fourth melody (mm. 355-356) and disrupt the whole-tone partitioning of the cycle-5 passage. This disruption creates the conflict between the whole-tone collections. As the bass line restarts on G \flat (m. 356), it does not unfold a perfect-fourth segment at all. Instead, the bass line unfolds a ratio 6:4 compound cycle (mm. 356-358). This simultaneous contraction and expansion of the cycle-5 segment transform the perfect-fourth melody to a WT0 descending melody. However, the first and the last notes of this whole-tone melody are clashing with the WT1 chords on top of them. Such clashing of the two whole-tone collections has been established briefly in the scherzo

²⁹ Arnold Schoenberg, *Theory of Harmony*, 397.

Ex. 3-33: Chamber Symphony No. 1, Development, Part III, mm. 334-336.

Development Part III

71

Fl. - - - - - tempo - - - - - gr. Fl. *pp*

Ob. *ff*

E.H. *ff*

in D *ff ff*

Kl. in B *ff ff* *pp*

Bkl. in B

Fg. *pp* WFO

Kfg.

Hrn. in F *ff*

1.VI. *ff* tempo *pp* spiccato

2.VI. *ff* *pp* col legno

Br. *ff* spiccato

Vlc. *ff* *pp* hervortreten *pp* thème 1a

Kb. *pp*

333

71

movement (mm. 197-199; see Ex. 3-30). This clashing of the two whole-tone collections continues after the return of the perfect-fourth melody (mm. 358-360). Starting this time on F, the first two pitches, F-C (mm. 358-359), continue this whole-tone clash: while pitch F supports the complete WT0 collection (m. 358), pitch C supports the complete WT1 collection (m. 359).

The interaction between the whole-tone theme 1a and the interval-5 cycle comes to a conclusion when theme 1a is completely absorbed into the interval-5 cycle. As the perfect-fourth melody starts on E (m. 360), the interval of perfect fourth returns to become the characteristic interval of theme 1a (mm. 361ff.) and accompanies the unfolding of the perfect-fourth cycle. Without the cadential dotted rhythm, the perfect-fourth melody is bounded by E and F, the two important key areas unfolded at the opening of the piece. Presented both harmonically and melodically, this cycle-5 segment, E-A-D-G-C-F, becomes the sole harmonic fabric for eight measures (mm. 360-367). While it is presented as both ascending and descending melodies, it eventually settles as an ascending melody. As the first quartal chord of the piece (G-C-F-B_b-E_b-A_b) is brought back after the end of the development (mm. 369), the horn motto returns as an ascending melody in its original pitches, D-G-C-F-B_b-E_b (mm. 371-373). The conflict established at the beginning of the development is finally resolved. The quartal chord is restored to its original pitch classes and the perfect-fourth melody is reestablished as an ascending melody. In addition, the missing G in the opening chord of the development (m. 280) is established as the key area of the slow movement (mm. 378ff.) through the return of Cadence 1 (m. 373-375), which brings back the opening quartal chord.

84 Ex. 3-34: Chamber Symphony No. 1, Development, Part III, mm. 354ff.

This musical score page contains the following parts and markings:

- Fl.** (Flute): *f*, triplets.
- Ob.** (Oboe): *f*, triplets.
- E.H.** (English Horn): *f*, triplets.
- in D Kl.** (Clarinet in D): *f*, triplets.
- in B Kl.** (Clarinet in B): *f*, triplets.
- Bkl. in B** (Bass Clarinet in B): *p*, *f*, triplets.
- Fg.** (Fagott): *p*, *f*, triplets.
- Kfg.** (Kontrabaß): *p*, *f*, triplets.
- Hrn. in F** (Horn in F): *p*, *f*, triplets, *1. m.D.*, *2.*
- 1. Vl.** (Violin I): *f*, *Theme 1a*.
- 2. Vl.** (Violin II): *p*, *f*.
- Br.** (Brass): *p*, *mf*.
- Vlc.** (Viola): *f*, *fff sehr her.*, *Horn Motto (Inverted)*.
- Kb.** (Kontrabaß): *fff sehr her.*

Additional markings include *fff sehr her.* and *WTO* at the bottom right.

Ex. 3-34 (Continued)

86

WTI

Fl.

Ob.

E.H.
in D

Kl.
in B

Bkl.
in B

Fg.

Kfg.

Hrn.
in F

358

1.VI.

2.VI.

Br.

Vlc.

Kb.

WT0

WT0+C

+F

Conclusion

Ein Stelldichein, although incomplete, provides an important structural model for the Chamber Symphony. While *Ein Stelldichein* establishes B \flat major as a secondary key area and provides the basis of the unfolding of major-third related keys, the Chamber Symphony establishes F major as a secondary key area and also exhibits similar unfolding of major-third related key areas (F-A-C \sharp) in the exposition. However, the Chamber Symphony further establishes a complex relationship among various interval cycles unfolded in the opening passage, particularly cycles 2, 3, 4, and 5. These interval cycles take on different courses to establish themselves and integrate with the overall tonal framework, while they also interact among themselves rigorously to create a unique harmonic fabric that is quite different from the First String Quartet.

Chapter 4: String Quartet No. 2 in F# minor, Op. 10: Tradition and Innovation in the Use of Diatonic and Cyclic Materials

The Second String Quartet represents a major turning point in Schoenberg's composition career. After several single-movement compositions (such as *Verklärte Nacht*, *Pelleas und Melisande*, String Quartet No. 1 in D minor, and Chamber Symphony No. 1) Schoenberg decided to return to the more traditional four-movement plan for his Second String Quartet. In this chapter, I will discuss how interval cycles are generated from the intervallic structure of the opening triads. While the first movement exhibits the traditional sonata form in F# minor, the intervals of the tonic F#-minor triad, namely minor third, major third, and perfect fifth, imply the presence of the respective interval cycles. As a scherzo-type movement, the second movement unfolds the interval cycles through the opening three themes and reveals their importance in subsequent appearances. The last two movements of the quartet introduce a soprano solo with poems by Stefan George. The third movement (*Litanei*) is a reunification of themes and interval cycles from the first and second movements. The last movement (*Entrückung*) demonstrates the interlocking of interval-2 and interval-5 cycles as the main harmonic fabric on top of the traditional yet loosely defined tonal framework in sonata form.

First Movement: F#-minor Triad as the Source of Interval Cycles

Principal Theme-group

Unlike the Chamber Symphony, the first movement of the Second String Quartet starts without an introduction. Instead, the opening triad of the first movement presents all the important tonal and cyclic-interval elements that are being explored and developed through the movement. In particular, these materials are being used for various expansions and contractions of intervals.¹ When theme 1a opens with the F#-minor triad (m. 1; see Ex. 4-1), violin II provides the first hint of intervallic expansion and contraction of its intervals. While all the instruments are in the key of F# minor, violin II seems at the same time to play in its own harmonic realm. Starting at C# as the fifth of the F#-minor triad, violin II ascends in whole steps (C#-D#-E#, m. 1). This ascending figure and the F#-minor melody harbor a basic relationship between traditional tonal harmony and the non-traditional interval cycles. The whole-tone ascending line of violin II outlines the interval of a major third (interval 4, C#-E#). As Severine Neff points out, the C#-D#-E# ascending line is followed by an embellished form of its inversion, diatonic C#-B-A in violin I (m. 2).² The boundaries of these two whole-tone segments imply the presence of an interval-4 cycle, C#-A-E#-C# (see Ex. 4-2). This interval-4 cycle emerges as a melodic foreground event in violin I (m. 3). These two whole-tone figures hint at the inversionally symmetrical relations contained in the larger period. The cadence (m. 4) of

¹ Severine Neff's analysis points out that the expansion of F# minor to the augmented triad, F-A-C#, as a major element of symmetric articulation of cadential points that defines the harmonic framework of the movement. Her analysis focuses more on the role of intervallic symmetry and the symmetric tonal encircling as a means of defining the F#-minor tonic. See Severine Neff, "Ways to Imagine Two Successive Pieces of Schoenberg: The Second String Quartet, Opus 10, Movement One; The Song, "Ich Darf Nicht Dankend", Opus 14, No. 1" (Ph. D. Dissertation, Princeton University, 1979) for details.

² Neff refers to this relation as a parallel one, a significant observation, but having slightly different meaning in terms of the symmetrical motion, i.e., C#-D#-E# is inverted by C#-B-A.

this initial phrase establishes harmonically and melodically an interval-3 cycle, B \sharp -D \sharp -F \sharp -A, which appears to be a projection of the minor-third component (F \sharp -A) of the initial F \sharp -minor triad. This assumption is supported by the content of the cello line, F \sharp -G \sharp -A, the boundary of which is vertically projected on beat 1 of m. 4. The cello figure, F \sharp -G \sharp -A, is retrograde-inverted by D \sharp -C \sharp -B \sharp in violin I (m. 4). The two boundaries, analogous to the relation of the two whole-tone segments, produce the larger cyclic-interval-3 partition (see Ex. 4-3).

With three measures of extension that reiterate pitch class B \sharp /C, the viola and cello descend from A \flat (m. 5) to C, which outlines the interval class of the major third (minor sixth). This major third again contracts to a minor third (A-C) that starts the consequent phrase (mm. 8-12) in A minor. The consequent phrase continues the scheme of contraction: The phrase starts with the chromatic ascent (E-F-F \sharp , viola, m. 8) followed by another measure (m. 9) outlining the same interval-3 cycle (F \sharp -A-C-D \sharp) as the cadential measure (m. 4) of the antecedent. Although this interval-3 cycle seems to function like a diminished-seventh chord that resolves to C \sharp minor (m. 10), it articulates the link between tonal harmony and interval cycles as an intermediary step of the intervallic expansion process. The first and second violins (at m. 10) transpose the preceding melodic figure to E, outlining the key of A major. However, the local tonic of A is reinterpreted as the third of an F-major triad (m. 11), which is further expanded to an augmented triad, F-A-C \sharp (m. 12), the same augmented triad performed by violin I in the antecedent phrase (m. 3) and indeed serving as the structural basis of the very opening of the antecedent. Such expansion of the diatonic triad is also exhibited on the melodic

Ex. 4-1: String Quartet No. 2, mm. 1-12.

Mäßig (moderato) (♩ = ca 100)
theme 1a *etwas langsamer anfangen*

I. Geige
II. Geige
Bratsche
Violoncello

10
etwas rascher (♩ = 120-126) *rit.---*

Hauptzeitmaß (♩ = ca 52-56)

theme 1b

Ex. 4-2: String Quartet No. 2, Interval-4 Cycle

Violin I (m. 2)	/	Violin II (m. 1)
C# B A		E# D# C#
Interval-4 Cycle:	C# A E# C#	

Ex. 4-3: String Quartet No. 2, Interval-3 Cycle

Cello (mm. 1-3)	/	Violin I (m. 4)
F# G# A		B# C# D#
Interval-3 Cycle:	F# A B# D#	

level in the consequent phrase. While the melody of the consequent phrase seems to articulate the A-minor triad (see Ex. 4-4), it cadences on G# (violin I, m. 12). This expansion from A minor to an augmented triad, C-E-G#, is similar to the progression from the F#-minor triad (m. 1) to the augmented triad, F-A-C# (m. 3 and m. 12), during the course of the first theme.

Ex. 4-4: Schoenberg, *String Quartet No. 2*, First Movement, mm. 8-12, violin I

As a summary, theme 1a consists of a period with an antecedent (mm. 1-4) and a consequent phrase (mm. 8-12) with three measures in between as the extension of the antecedent phrase. The tonic F#-minor triad consists of three intervals: a minor third (F#-

A), a perfect fifth (F \sharp -C \sharp), and a major third (A-C \sharp). These intervals are subjected to various expansions and contractions during the course of harmonic progression. Overall, the minor third (F \sharp -A) of the F \sharp -minor tonic triad is expanded to a major third (F-A) as part of an augmented triad, F-A-C \sharp , while the major-third (A-C \sharp) of the F \sharp -minor tonic triad is contracted to a minor third (A-C) as part of the A-minor triad that starts the consequent phrase. This contraction to minor third is re-expanded to a major third (G \sharp -C) at the end of the consequent phrase to outline an augmented triad, C-E-G \sharp . Overall, the process produces two cycle-4 segments: F-A-C \sharp as part of the WT1 collection and C-E-G \sharp as part of the WT0 collection. On the architectural level of this opening period (mm. 1-12), the antecedent-extension (mm. 5-8), based exclusively on the interval progression A \flat -C to A-C, is inverted (or retrograded) at the cadence (violin I, m. 12) to A-G \sharp (in enharmonic spelling, A-A \flat) to balance the cadential area of the two phrases. The supporting harmony of the second cadence is F-A-C to F-A-C \sharp . This return to the superstructure of the opening of the antecedent (m. 1, violin I and viola) has yet a higher level significance. The process of shifting from WT1 (F-A-C \sharp) to WT0 (C-E-G \sharp) is supported by this long-range cadential inversion (A-G \sharp). This local surface detail contains the shift from one element (A) of the WT1 augmented triad (F-A-C \sharp) to one element (G \sharp =A \flat) of the WT0 augmented triad (C-E-G \sharp). The progression at the cadence (F-A-C to F-A-C \sharp , mm. 11-12) supplies another corresponding elemental interchange between C and C \sharp , precisely the inversion (retrograde) of the antecedent cadence (mm. 4-5) in violin I from C \sharp to B \sharp .

The return of theme 1a (mm. 35ff.) prepares for the whole-tone collections that leads to the second theme-group. The WT1 collection is further expanded as the opening theme returns briefly in F# minor (mm. 35-42) while the key of F# minor is defined traditionally by dominant resolution ($V^4_3 \rightarrow i$ in F# minor, m. 35; see Ex. 4-5). While violin I is playing the same interval-4 cycle, A-F-D \flat (m. 38), as in the opening passage (m. 3; see Ex. 4-1), the accompaniment is filling in this interval-4 cycle with pitches from the WT1 collection. While the A-F portion of the interval-4 cycle is accompanied by a D-minor triad (m. 38), the rest of the measure absorbs the A-F portion of the melody into the WT1 collection. The viola and cello ascend in parallel major thirds (from F-A to A-C#) that absorb the cycle-4 segment, A-F-D \flat , of violin I to a five-note WT1 collection, D \flat -[]-F-G-A-B (m. 38). Here again, we see the inversional relation of the cyclic-interval components: the A-F descent is mirrored by the F-A ascent and the F-C# descent is mirrored by the A-C# or F-A ascent. The passage then cadences on a WT0 chord, G#-B#-D-F# (mm. 40-41), which leads to the second theme-group (mm. 43ff.). While this WT0 chord seems to suggest a French augmented-sixth in C (A \flat -C-D-F#) or a dominant-seventh chord in C# (G#-B#-[D]-F#), it does not function as either one of those. Indeed, it does function more like a WT0 chord by itself. This local progression establishes the implied conflict between the two whole-tone collections in the opening theme. As mentioned earlier, the opening theme establishes the importance of an interval-4 cycle, F-A-C# (a subset of the WT1 collection), while it implies another interval-4 cycle, C-E-G# (a subset of the WT0 collection). During the return of the opening theme, the WT1 collection is established by filling in the interval-4 cycle (m. 38) and this WT1 chord

progresses mainly by chromatic voice-leading to a WT0 cadence (mm. 41-42). This conflict between the two whole-tone collections will become the major harmonic fabric in the second theme-group (mm. 43ff.).

Ex. 4-5: String Quartet No. 2, First Movement, mm. 34ff.

34

mf cresc.

rit.

breit

mf cresc.

mf cresc.

mf cresc.

mf cresc.

sf

sf

sf

sf

$V^3_{/f\#}$

$f\#$

WT1(D, -[]-F-G-A-B)

rit.

40

sf

sf

sf

sf

WT0(G#-B#-D-F#)

Second Theme-group

Theme 2a of the second theme-group (mm. 43ff.; see Ex. 4-6), as Philip Friedheim calls it “tonally obscure,”³ exhibits the dissolution of the F#-minor tonality while continuing to establish the interval cycles. The antecedent and consequent phrases of theme 2a do not clearly suggest a “contrasting” key area as we expect in a traditional sonata-form movement. Instead, this 9+9 symmetrical period presents the conflict between the two whole-tone collections, within which the WT1 collection established in theme 1a becomes the main harmonic fabric of the second theme-group. While Dale considers the second theme-group as melodic variants of the first theme-group in various ways,⁴ the progressiveness and the interaction of the interval cycles in the second theme-group are certainly more intense. With violin I playing the melody, the antecedent phrase (mm. 43-51) starts with a WT1 chord, C#-A-D#-E#. While it contains the interval-4 cycle, F-A-C#, which previously appeared in the first theme as an expansion of the F#-minor tonic triad, the C#-D#-E# portion certainly recalls the opening of the theme 1a (m. 1, violin II). In addition, it also progresses to the same interval-3 cycle, D#-F#-A-C (m. 44), as we have seen in the antecedent phrase of theme 1a (m. 4). However, this shift (or modulation) of interval cycles has tensed up in the theme 2a. While it takes four measures to shift from the WT1 collections to the interval-3 cycle in theme 1a, the similar process takes only two measures in theme 2a (mm. 43-44).

³ Philip Friedheim, “Tonality and Structure in the Early Works of Schoenberg”, (Ph. D. Dissertation, New York University, 1963), 375.

⁴ See Catherine Dale, *Tonality and Structure in Schoenberg's Second String Quartet, Op. 10*, (New York and London: Garland Publishing, Inc., 1993), 107-108. In particular, she compares the intervallic similarities between theme 1b of the first theme-group (mm. 12ff) to the second theme-group.

Ex. 4-6: String Quartet No. 2, First Movement, Second Theme-group, mm. 43ff.

The image displays a musical score for a string quartet, consisting of four staves (Violin I, Violin II, Viola, and Cello/Double Bass). The score is divided into four systems, each with a measure number in a box: 40, 50, 55, and 60. The key signature is D major (two sharps). The time signature is 3/4, indicated by the text "Zeitmaß" and "ic-3 (D#-F#-A-C)".

System 1 (mm. 40-43): Labeled "Theme 2a". It begins with a "rit." (ritardando) marking. The first measure is boxed with the number "40". The music is marked "sehr ausdrucksvoll" (very expressive) and "p" (piano). The first violin part has a "WT0" marking. The first and second violins play a melodic line, while the viola and cello/bass provide harmonic support.

System 2 (mm. 44-49): Labeled "WT1 (E#-D#-A-C#)". It starts with a boxed measure number "50". The music is marked "p" and "pp" (pianissimo). The first violin part has a "WT1" marking. The texture is more active, with various string parts.

System 3 (mm. 50-54): Labeled "espress." (espressivo) and "WT1 (cf. m. 43) WT1 (B-D#-A-G) WT0". It begins with a boxed measure number "55". The music is marked "p" and "pp". The first violin part has a "WT1" marking. The texture is dense and expressive.

System 4 (mm. 55-60): Labeled "belebend" (revivifying) and "Theme 2b". It starts with a boxed measure number "60". The music is marked "f" (forte). The first violin part has a "WT1" marking. The music becomes more energetic and rhythmic.

While theme 2a exhibits the progression from a WT1 chord (E#-D#-A-C#, m. 43) to an interval-3 cycle (D#-F#-A-C; m. 44), the main melody itself establishes the conflict between the two whole-tone collections. With D# and A held as common tones by viola and violin II respectively, C# and E# of the WT1 chord progress to C and F of the interval-3 cycle respectively through stepwise motion. However, pitch class C here is absorbed into the WT0 collection through the melodic motion of violin I. Starting from C# (m. 43), it ascends a half step to D and descends in whole steps to G# (m. 46). While the melody seems to emphasize pitch class A (mm. 45-46), it serves more like an accented passing tone to establish G# as the melodic cadence. First of all, when the violin I melody descends to pitch class A (mm. 45, last beat), the WT0 melody is supported by a WT0 chord, G#-D-F# (m. 45, viola and cello), followed by a WT0 dyad, A#-D (m. 46 downbeat, viola and cello). When the violin I melody reaches G#, it is accompanied by viola and cello as part of an E-dominant-seventh chord (E-G#-B-D). However, it does not function as a dominant-seventh chord of A or a German augmented-sixth chord of G# (E-G#-B-C*). Rather, G# in the melody should be interpreted as part of a WT0 trichord, G#-D-E, and the B in the cello should be interpreted as a “dissonant” passing note within the WT0 context.

The conflict between the two whole-tone collections becomes more apparent in the second half of the antecedent phrase (mm. 47-51). After restarting the phrase with the same WT1 chord, E#-D#-A-C# (m. 47), the violin I melody is ascending to C (m. 50) before cadencing on Bb (m. 51). This cadential figure from C to Bb is articulated by the WT0 collection harmonically (see Ex. 4-6). Furthermore, the use of a common element

as a means of progression confirms the significance of the WT1 collection. As discussed earlier, the opening progression of theme 2a, namely from a WT1 chord (E \sharp -D \sharp -A-C \sharp , m 43) to an interval-3 cycle (D \sharp -F \sharp -A-C; m. 44), features a common tritone dyad, D \sharp -A, as the pivot of the progression. When the phrase restarts with the same opening WT1 chord, E \sharp -D \sharp -A-C \sharp (m. 47), and progresses to its tritone transposition, B-A-D \sharp -G (m. 49), the same tritone dyad, D \sharp -A, serves again as a common element in the middle voices. In addition, this progression completes the WT1 collection locally. This WT1 complex progresses to another dominant-seventh/German augmented-sixth chord, F-A-C-D \sharp /E \flat (m. 49, last beat). However, it is obvious that the C of violin I is an anticipation of the WT0 collection in the following measure, while the other three pitches, F-A-D \sharp , belong to the WT1 complex that initiates the phrase. Hence, the conflict between the two whole-tone collections is highlighted by the juxtaposition of the WT1 collection (mm. 47-49) and the WT0 collection (m. 50).

The consequent phrase (mm. 51-59) passes the melody to the cello. Although the conflict between the two whole-tone collections is not as clear cut as in the antecedent phrase, the cadence (mm. 58-59) of the consequent phrase clearly reestablishes the WT1 collection. While the cello repeats the antecedent melody an octave lower up to the penultimate pitch of the phrase (C, m. 58), it descends from C (m. 58) to B \natural (m. 59, instead of B \flat)⁵ while violin I introduces a new melodic idea, theme 2b (mm. 58ff.; see Ex. 4-6). While the antecedent phrase establishes the C in the melody as part of the WT0

⁵ Neff interprets this as an expansion of interval from E \flat -G-[C]-B \flat (mm. 48-51) to E \flat -G-[C]-B, a process analogous to the intervallic expansion in the first theme (F \sharp -A-C \sharp to F-A-C \sharp and A-C-E to G \sharp -C-E). See Neff, "Ways to Imagine," 93. However, the local tonal implication of this E \flat -major triad is not as clear compared to the diatonic triads in the first theme-group (namely F \sharp -minor and A-minor triads).

collection (m. 50), the same C in the cello melody becomes a “dissonant” element among the WT1 cadence (mm. 58-59). The cadential chord (m. 59) contains five pitch classes of the WT1 collection, B-C#-E_b-F-[]-A. The missing pitch class in this WT1 chord, G, will be established in the following phrase as a local key area.

Theme 2b (mm. 58ff.) is repeated several times and each time it is slightly varied. Perle’s comparison of these varied repetitions of the “antecedent” portion of theme 2b (mm. 58-63) is shown in Ex. 4-7.⁶ His analysis demonstrates the process of intervallic expansion and contraction similar to theme 1a (mm. 1-12). The intervals of the original version of theme 2b (m. 58) is shown in the first measure of Ex. 4-7. Among the five pitches in the antecedent portion of theme 2b, only pitch class D belongs to the WT0 collection, while the other four belong to the WT1 collection. The following repetition (m. 62, violin I) expands the interval of the final two notes from perfect fourth (D-G) to augmented fourth (D-A_b). With this expansion, theme 2b transforms from a WT1-dominated motive to a five-note motive that contains a cycle-3 segment (D-F-A_b-B-[E_b]). After this figure, violin II answers with another variation of theme 2b starting at a major third below (C_b, m. 62). Instead of starting the phrase with a descending major third, the violin II melody starts with a minor-third descent, which demonstrates a contraction from major third to minor third. This results in a complete interval-3 cycle (B-D-F-A_b-C_b). However, these contractions of intervals are counterbalanced by the final repetition of violin II (m. 63). Starting the phrase on E_b again, the phrase expands all the minor thirds of the melody in the previous measure to major thirds and theme 2b becomes an

⁶ George Perle, *The Listening Composer* (Berkeley and Los Angeles: University of California Press, 1990), 36-37.

exclusive WT1 melody (E \flat -B-F-C \sharp -G). The whole-tone significance of theme 2b is highlighted by the “dissonant” D that is resolved to C \sharp through the expansion and contraction of intervals that introduce the interval-3 cycle. We will revisit this conflict of the “dissonant” tone in theme 2b in the third movement, in which theme 2b will be quoted in the introduction of the movement.

Ex. 4-7: mm. 58-63, George Perle’s Analysis of Theme 2b (abridged)⁷

Although Dale points out the importance of G major (together with F major) as part of the tonal encircling of the tonic F \sharp minor,⁸ the G-major triad (mm. 66ff.) in the second theme-group does not seem to establish as a definite key area. Instead, the G-major triad here should be interpreted as a foreign element among the context of the interaction of various interval cycles. The first and second violins continue with the inversion of theme 2b (mm. 64-65) before the first inversion G-major triad is introduced in *fortissimo* (m. 66). However, the root of the G-major triad (G) is introduced as a “dissonant” pitch of the inversion of theme 2b (see Ex. 4-8). The descending portion of the violin I melody (G-B, m. 66) articulates the introduction of the G-major triad. In

⁷ In Perle’s example, all four versions of theme 2b are shown in the “same register to facilitate comparison.” I decide to keep the examples in their original pitch classes for all four versions and list the version in m. 62 to start on C \flat (instead of D as in Perle’s original example).

⁸ Catherine Dale, *Tonality and Structure*, 118.

addition, starting on F# (m. 65), the violin I melody shifts theme 2b to the WT0 collection while retaining the interval content of the theme. Within the WT0 context, the G (m. 66) in the melody becomes the “dissonant” element from the WT1 collection.

Ex. 4-8: String Quartet No. 2, First Movement, mm. 64ff.

The musical score consists of four staves. The first staff (Violin I) has an interval-class analysis above it: [interval-class] 4 6 3 5, with a note '4 6 3 5 ♭' above the final measure. Dynamics include *mf cresc.*, *ff*, and *sf*. The second staff (Violin II) has dynamics *p cresc. mf* and *ff sf*. The third staff (Viola) has dynamics *p cresc.* and *ff sf*. The fourth staff (Cello/Double Bass) has dynamics *fp*, *fp cresc.*, and *ff*. A bracketed section from measure 64 to 70 is labeled 'WT1: A-G-F-D♭-C♭'. The key signature is two sharps (D major).

While the G-major triad is on the downbeat during its first appearance (m. 66), subsequent appearances of the G-major triad occur on weak beats (mm. 67 and 68). The progression from the G-major triad to the five-note quartal chord, B \flat -E \flat -A \flat -D \flat -G \flat (mm. 66, 68, 69), becomes the highpoint of the cadence of theme 2b, which resolves to E \flat ,

minor (m. 70). Although the two subsequent repetitions of the G-major triad to the five-note quartal chord progression are linked by chromatic voice leading, the initial appearance (m. 66) shows the fusion of the whole-tone collections and the quartal chord through the G-major triad. First of all, the quartal chord can be partitioned into two whole-tone segments: G \flat -A \flat -B \flat (violin I, viola, and cello) from WT0 and D \flat -E \flat (violin II) from WT1. This whole-tone partitioning is foreshadowed by the establishment of the two whole-tone collections that partitions the G-major triad in similar fashion: G-B from WT1 and D from WT0. As mentioned earlier, the violin I melody initiates the WT0 collection with theme 2b in inversion (m. 65) and the G in the melody becomes a “dissonant” pitch within the WT0 melody. However, the following pitch, D (m. 66), belongs to the WT0 unfolding of this inverted version of theme 2b. In addition, with the melody starting on F \sharp -B \flat (or enharmonically G \flat -B \flat ; m. 65), this inverted theme 2b anticipates the WT0 portion of the five-note quartal chord (G \flat -A \flat -B \flat). With the cello answers the first appearance of theme 2b in literal inversion (mm. 61-62), the cello continues to unfold a five-note WT1 segment, A-G-F-D \flat -C \flat (mm. 63-66), and the last pitch of this descending bass line, namely C \flat (or enharmonically B), cadences on a G-major triad. While this WT1 bass line implies the major-third portion of the G-major triad (G-B), the missing pitch class of this WT1 segment, namely E \flat , is introduced as part of the WT1 portion (D \flat -E \flat) of the five-note quartal chord.

From Closing to Development: The Role of the Interval-3 Cycle in Defining Key Areas

Toward the end of the exposition, the unfolding of all three interval-3 cycles becomes a significant process in preparing for the cadence of the exposition and the opening of the development (mm. 90ff.). After the closing section unfolds the key of F major (m. 77), it moves temporarily back to the F#-minor tonic (m. 80) before the F#-minor tonic is reconfirmed by the dominant-ninth to tonic resolution (m. 85; see Ex. 4-9). However, this resolution to F# minor also initiates a complex unfolding of the interval-3 cycles. First of all, the C#-dominant-ninth chord (m. 85) can be partitioned into two parts, namely the root, C#, and an interval-3 cycle, B-D-E#-G#. While the C# is held as common tone in the resolution, the minor-third portion of the F#-minor triad (F#-A) is approached from E#-G# (m. 85, violin II) in parallel motion. Instead of settling at the F#-minor tonic triad, the C# of the F#-minor triad is immediately absorbed into another interval-3 cycle, C#-E-G-Bb (mm. 85-86), which is accompanied by the cello ascending line, A-B-C-D-Eb (mm. 85-86). This cello ascent implies the presence of an incomplete interval-3 cycle, A-C-Eb-[], which will be completed later as part of this process of cyclic-interval/diatonic-triad unfolding.

The exposition concludes with the return of the interval-3 cycle, G#-B-D-F (mm. 87-89), before it eventually cadences on a German augmented-sixth chord, D-F-Ab-Bb (m. 89), which resolves directly to D minor to start the development (mm. 90ff.). Simultaneously, violin I is unfolding an incomplete interval-3 cycle, A-F#-[]-[] (mm. 88-89), before it cadences on Bb as part of the German augmented-sixth chord. While the notion of the interval-3 cycle, G#-B-D-F, as a substitute dominant-ninth chord in F# minor

sixth chord by unfolding the interval-3 cycle, G[#]-B-D-F (mm. 87-89), which shares three pitches with the German augmented-sixth chord, namely D-F-A_b. While the German augmented-sixth chord has its tonal significance to establish the D-minor triad that starts the development, it also exhibits a pivotal role between the realms of tonal harmony and cyclic-interval unfolding.

The unfolding of the interval-3 cycles continues through the opening of the development along with the unfolding of tonal key areas of the first episode of the development (mm. 90-106).⁹ Although theme 1a starts the development on its original pitches (see Ex. 4-1 for comparison), it is harmonized in D minor (instead of the F[#]-minor tonic) by the viola and cello. While the German augmented-sixth chord in the previous measure (D-F-A_b-B_b, m. 89) appears to prepare the opening D-minor triad of the development, the interval-3 cycle, G[#]-B-D-F, plays a more important role in preparing for the D-minor triad. As the development starts in D minor with theme 1a, the viola and cello continue to unfold the same interval-3 cycle, G[#]-B-D-F (m. 90). This confirms the importance of the interval-3 cycle as the source of the minor-third portion of the D-minor triad (D-F), a process very similar to the opening passage where the minor-third portion of the F[#]-minor triad (F[#]-A, m. 1) is projected to the interval-3 cycle, B[#]-D[#]-F[#]-A (m. 4). In addition, it confirms the unfolding of the interval-3 cycles as a continuous process established at the end of the exposition.

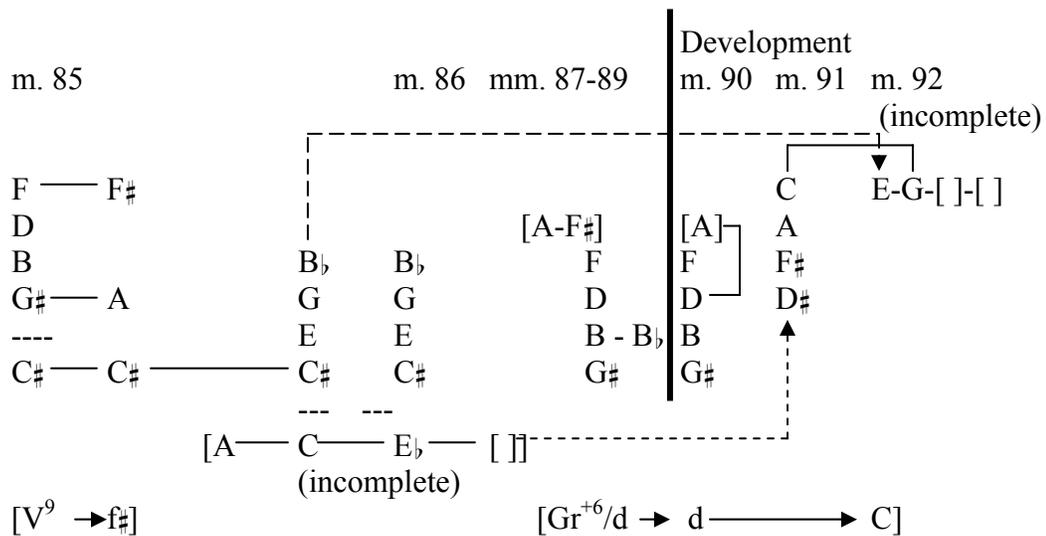
⁹ Six episodes can be identified in the development based on the themes of the exposition: Theme 1a (mm. 90-106); theme 2a (mm. 109-113); theme 2b (mm. 114-119); Inversion of theme 2a (mm. 123-131); theme 2a in fugato (mm. 131-139); theme 2b (mm. 140-145).

The modulation from D minor to C major in the opening phrase of the development is accompanied by the unfolding of interval-3 cycles. After the viola and cello outline the interval-3 cycle, G \sharp -B-D-F, in descending minor thirds (m. 90), they immediately answer themselves with ascending minor thirds (m. 91). However, they start their ascent a half step higher and outline another interval-3 cycle, A-C-D \sharp -F \sharp ,¹⁰ the same interval-3 cycle unfolded at the beginning of the movement (m. 4). While the original melody descends in whole step from C \sharp to B (m. 2; see Ex. 4-1), the violin I melody here descends only a half step from C \sharp to B \sharp (m. 91) and exhibits an intervallic contraction from F \sharp -A-C \sharp to F \sharp -A-B \sharp , which is absorbed to the interval-3 cycle, F \sharp -A-B \sharp -D \sharp , as unfolded by the viola and cello in the same measure. The progression from this interval-3 cycle to C major (m. 93) is linked by only one common pitch between them, namely C. The B \sharp in the violin I melody is respelled enharmonically to C and the viola and cello provide the minor-third portion (E-G) of the C-major triad. While these three instruments sustain the C-major triad, violin II continues to develop theme 1a and attempts to unfold the same interval-3 cycle, A-D \sharp -F \sharp -[] (mm. 91-93; see Ex. 4-9). The missing pitch of this cycle-3 unfolding, C, is supplemented as the local tonic of the passage, namely C major. The passage cadences abruptly as the interval-3 cycle, G \sharp -B-D-F, returns (mm. 95-97). The cello restarts theme 1a after the cadence and repeats the same progression (mm. 98-100), namely D minor to C major, along with the unfolding of the two interval-3 cycles. The minor-third portion of the C-major triad, namely E-G (mm. 92-95), implies an incomplete interval-3 cycle, E-G-[]-[], which has been

¹⁰ Neff also points out that this half-step ascent from G \sharp to A (mm. 90-91, cello) is mirrored by the resolution from A \flat (m. 89, violin II) to A (m. 90, violin I). See Severine Neff, "Ways to Imagine," 87.

established in the previous passage (C#-E-G-B \flat , mm. 85-86) along with another interval-3 cycle, G#-B-D-F. Ex. 4-10 summarizes the relationship of these three interval-3 cycles and the relative importance of the incomplete interval-3 cycles during this process.

Ex. 4-10: String Quartet No.2, Unfolding of Interval-3 Cycles, mm. 85-95.



Approaching the Recapitulation: The Intersection of the Two Whole-Tone Collections

Theme 2b plays an important role of establishing the recapitulation of the first movement (mm. 146ff.) through the interaction of the two whole-tone collections. The first appearance of theme 2b in the development (mm. 114-115, cello; see Ex. 4-11) possesses the same melodic contour and pitch classes as the original version (mm. 58-59; see Ex. 4-6). However, theme 2b in this developmental episode does not exhibit the kind of intervallic expansion and contraction as we have seen in the exposition (mm. 58-63; see Ex. 4-7). Instead, all five appearances of theme 2b here emphasize the WT1 collection with the “dissonant” WT0 pitch class emphasized by the dotted rhythm. In

addition, theme 2b in the development consistently unfolds the interval-4 cycle, E \flat -G-B, while the accompaniment unfolds the complementary interval-4 cycle F-A-C \sharp to complete the WT1 collection. Ex. 4-11 illustrates the “dissonant” pitches that do not belong to the WT1 collection. While articulating the WT1 collections along with the two interval-4 cycle partitions, theme 2b also unfolds five pitch classes of the WT0 collection, C-D-E-F \sharp -[]-B \flat , in which B \flat (m. 119) is unfolded at the cadence of the phrase.

Ex. 4-11: String Quartet No. 2, First Movement, mm. 114-119.

The image shows a musical score for a string quartet, specifically measures 114 to 119. The score is written for four parts: Violin I, Violin II, Viola, and Cello/Double Bass. The key signature is one sharp (F#), and the time signature is 3/4. Measure 114 is marked with 'steigernd' and 'f'. Measure 119 is marked with 'fp hervort.' and 'p'. A box labeled '120' is placed over measure 119. Various dynamics like 'mf', 'f', and 'p' are indicated throughout the passage.

Toward the end of the development, theme 2b returns again to prepare for the recapitulation (mm. 140ff.). However, theme 2b here establishes the conflict between the two whole-tone collections by starting the theme at G \sharp and unfolds the WT0 collection

(m. 140; see Ex. 4-12). Ex. 4-12 illustrates the “dissonant” pitches from the WT1 collection in the two identical statements of theme 2b (mm. 140-143). While theme 2b articulates G (m. 140) as the “dissonant” pitch from the WT1 collection, the first cadence of theme 2b (m. 141) is highlighted by the WT1 major third, D \flat -F. The second cadence of theme 2b (m. 143) introduces C \flat -E \flat (violin II and viola) as dissonant pitches among the WT0 melody. This WT0 version of theme 2b unfolds five “dissonant” pitches from the WT1 collection, C \flat -D \flat -E \flat -F-G-[], with pitch class A as the missing note.

Ex. 4-12: String Quartet No. 2, First Movement, mm. 140ff.

The image displays a musical score for String Quartet No. 2, First Movement, measures 140ff. The score is written for four staves: Violin I, Violin II, Viola, and Cello/Double Bass. The key signature is two sharps (D major/E minor). The time signature is 4/4. The score includes various musical notations such as dynamics (cresc., f, fp, p), articulation (accents), and pitch markings. A box labeled "140 breiter" highlights the first statement of theme 2b. A second box labeled "141 werden" highlights the second statement. A third box at the bottom right highlights the WT0 collection: WT0(F \flat -G \flat -A \flat -B \flat -C-[]).

Ex. 4-12 (Continued)

Recapitulation

146 **noch breiter** **150** **ruhiger**

151 **molto rit. und dim.**

160 **Zeitmaß. (aber ruhig)**

p hervortreten

While the WT0 version of theme 2b cadences on A_b and sustains through the end of the development by violin I (mm. 143-145), the other three instruments temporarily re-establish theme 2b as part of the WT1 collection (mm. 143-144) before they eventually cadence at a WT0 chord, C-A_b-G_b-F_b-B_b-A_b (m. 145). This WT0 cadence is significant

because it clearly articulates the sustained A \flat as part of the WT0 collection from theme 2b. In addition, this A \flat complements the “dissonant” WT0 collection during the previous unfolding of theme 2b (mm. 114-119; see Ex. 4-11).

Articulated by theme 2b, the conflict between the two whole-tone collections prepares for the return of the diatonic triad as partitions of the two whole-tone collections. First of all, as a cadential chord of theme 2b, the WT0 chord, C-A \flat -G \flat -F \flat -B \flat -A \flat (m. 145), prepares for the WT0 partition of the F-major triad (C) that starts the recapitulation. Also, when the viola starts theme 1a at C (m. 146), it can be heard that this C is approached by the sustained A \flat at the end of the development. Thus, the WT0 complex at the end of the development section continues through the recapitulation to establish the WT0 partition of the F-major triad. Concerning the WT1 partition of the F-major triad (F-A), pitch class A is prepared in two ways. First of all, it is approached by half-step voice leading from the WT0 chord (A \flat to A and B \flat to A). In addition, when theme 2b is presented as part of the WT0 collection in the previous passage (mm. 140-143), the dissonant pitches unfold a five-note WT1 segment, C \flat -D \flat -E \flat -F-G-[]. The missing pitch class, A, is completed by the sustained A at the beginning of the recapitulation (mm. 146-150).

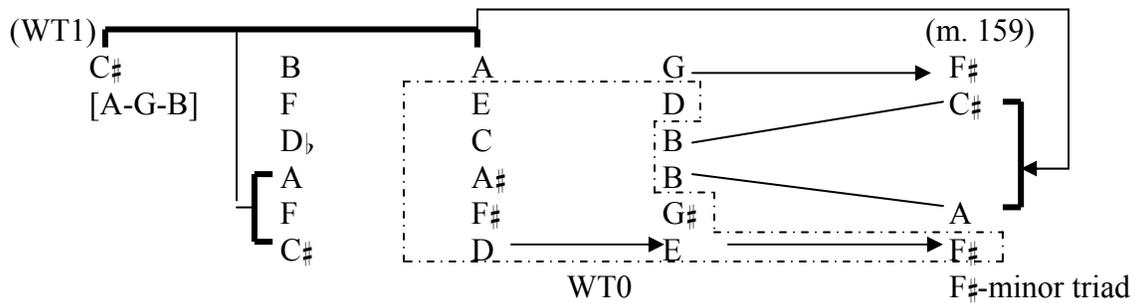
The four-measure antecedent phrase of theme 1a in the recapitulation (mm. 146-149) is answered by theme 2b (mm. 150-153). Except for the last one performed by violin II (m. 153), the interval content of theme 2b here in the recapitulation is not exactly the same as the original one. Nevertheless, the whole-tone significance of theme 2b is still prominent. When the viola starts theme 2b on C (m. 150), it is bounded by the C-D

descent before it continues the descent from D to B \flat in whole steps (m. 150-151) and therefore unfolds the WT0 collection. Violin I continues the unfolding of the WT0 collection from F \sharp to B \flat and extends the cadence to unfold a five-note WT0 segment, B \flat -A \flat -G \flat /F \sharp -E-D (mm. 151-152). However, during this WT0 unfolding, violin II answers with theme 2b that unfolds the WT1 collection (mm. 152-153). While the first two statements of theme 2b start with minor-third descents (C-A, viola, m. 150; F \sharp -D \sharp , violin I, m. 151), the violin II melody expands this minor third to a major third (D \sharp -B, m. 152). After the D \sharp -B descent, violin II continues its descent to E \sharp and C \sharp and therefore unfolds a four-note WT1 segment, B-C \sharp -D \sharp -E \sharp (m. 152). The perfect-fourth ascent from C \sharp to F \sharp brings the melody back to the WT0 collection, and the F \sharp is absorbed to the WT0 descent of violin I (mm. 152-153).

The WT0 descent of violin I takes a detour of a half step from D to C \sharp (m. 154) and continues the descent to unfold a WT1 segment, C \sharp -B-A-G (mm. 154-155), which eventually descends further to F \sharp to establish the recapitulation of the F \sharp -minor tonic triad. Ex. 4-13 shows the harmonic progression that accompanies this WT1 descent to establish the F \sharp -minor tonic triad (m. 160). This progression is repeated twice before it finally cadences on F \sharp minor. The WT1 descent is supported by an interval-4 cycle, F-A-C \sharp (m. 155), a partition of the WT1 collection. Both the violin I descent and this interval-4 cycle implies the A-C \sharp major third as part of the WT1 collection. However, the WT0 collection that harmonizes pitches A and G of the WT1 descent is introduced as a conflict to the WT1 melody. While these two WT0 chords, D-F \sharp -A \sharp -C-E and E-G \sharp -B-D, appear to be dominant-ninth and dominant-seventh chords respectively, they do not function as

dominant chords at all. The bass line clearly articulates a three-note WT0 ascent, D-E-F# (mm. 158-159), to absorb F# of the F#-minor triad as part of the WT0 collection. In addition to the WT1 descent and the interval-4 cycle, F-A-C#, the WT1 portion of the F#-minor triad (A-C#) is articulated by voice leading, especially by the filling-in of the “dissonant” B of the WT0 complex. This conflict of the two whole-tone collections that establishes the F#-minor triad is highly similar to that of theme 2b at the end of the development (mm. 140-145). However, the whole-tone collections are reversed here in the recapitulation. During the development, the WT0 collection is established through theme 2b while the WT1 collection is acting as the conflicting accompaniment. However, at the recapitulation, the WT1 collection is established in the melody while the WT0 collection is acting as the conflicting harmony. Although theme 2b is not presented in this conflict as outlined in Ex. 4-13, it is clear that this theme plays a role in preparing the whole-tone collections and the drama of the conflict, which ultimately establishes the F#-minor tonic as the intersection of the two whole-tone collections.

Ex. 4-13: String Quartet No. 2, Establishment of the Tonic F#-Minor Triad



Second Movement: D-minor Triad and the Conflict of the Whole-Tone Collections

The interaction and conflict between the two whole-tone collections are again the highlight of the harmonic fabric of the second movement. Erwin Stein identifies three themes in the exposition¹¹ (see Ex. 4-14) and each represents a unique process of outlining the D-minor tonic triad and their respective interval cycles. Concerning the first theme, while Jim Samson emphasizes the importance of the fourths that eventually lead to the quartal-chord cadence (m. 13),¹² the conflict between the two whole-tone collections prepares the whole-tone interaction in the following two themes and also in the development of the trio. While the starting pitch of violin II and viola (A) is a perfect fifth above the tonic pedal (D) and implies the presence of a D-minor triad, the violin II and viola melodies establish the WT0 collection (D-F#-G#-[A]-B), m. 5) and temporarily absorb the tonic pitch D to the WT0 collection. The opening pitch of the violin II and viola melodies (A) suddenly becomes a “dissonant” pitch within the WT0 collection. However, the WT0 collection quickly shifts to the WT1 collection (F-G-A-B-C#-[D]-[E], mm. 6-7) and establishes the major-third portion of the D-minor triad (F-A). When the cadence establishes a full D-minor triad (m. 7), the tonic pitch D, while considered as part of the WT0 collection (m. 5), is now a “dissonant” pitch within the WT1 collection.

¹¹ Erwin Stein, “Synopsis of Form,” in Arnold Schoenberg, *String Quartet No. 2 in F# Minor, Op. 10* (Vienna: Universal Edition, 1921). Although Stein identifies this movement as a scherzo-type movement, he treats the scherzo and the trio in sonata form with exposition, development, and recapitulation. The formal layout of this movement is listed as follows: Scherzo (Exposition, mm. 1-19; Development, mm. 20-84; Closing Section, mm. 85-97), Trio (Exposition, mm. 98-122; Development, mm. 123-150; Recapitulation, mm. 151-163), Transitory passage (mm. 164-194), Recapitulation of the Scherzo (mm. 195-258), Coda (mm. 259-275).

¹² Jim Samson, *Music in Transition: A Study of Tonal Expansion and Atonality, 1900-1920*, (London: J. M. Dent and Sons Ltd., 1977), 107.

Ex. 4-14. String Quartet No. 2, Second Movement, mm. 1-19.

Sehr rasch ($\text{♩} = \text{ca } 116$)

1st Theme

stacc. sehr kurz u. leicht

pp

WT0: D-F#-G#-[A]-B

10 WT1: F-G-A-B-C#-[D]-[E] rit.

2nd Theme *etwas langsamer*

3rd Theme

pp

Bogen

Bogen

rit. 20 *f*

p

pp

pp

The second theme (mm. 14-17) is not harmonized during its first appearance. Samson briefly discusses the importance of the intervals of major third and perfect fourth in the melody.¹³ However, the significance of these intervals, especially the major third, is revealed only through subsequent reinterpretations of the theme. As discussed earlier, the first theme establishes the two whole-tone collections and the tonic D-minor triad is partitioned by the two whole-tone collections: D as part of the WT0 collection, and F-A as part of the WT1 collection. This major-third portion of the D-minor triad (F-A), now presented melodically in the second theme, is coupled with a major-third cycle, E-G#-C, a partition of the WT0 collection. As the second theme is restated in the development (mm. 35ff.; see Ex. 4-15), the opening major third is harmonized by a D-minor triad. With the eighth-note figure (E-G-A-D) being harmonized by an E-minor triad (m. 36), the interval-4 cycle, E-G#-C (m. 37), is now absorbed into the WT0 collection. The accompaniment and the interval-4 cycle provide five pitch classes of the WT0 collection (C-[]-E-F#-G#-A#). The missing pitch, D, is provided by the eighth-note figure in the previous measure (m. 35). In addition, the boundary pitches of the eighth-note figure, E-D (m. 36), imply a possible partition of this eighth-note figure into two whole-tone segments: E-D from the WT0 collection and G-A from the WT1 collection. This partition is supported by the cycle-4 cadential figure (E-G#-C, m. 37). The WT0 chord (B \flat -F#-A#) that harmonizes the C of the cycle-4 cadential figure progresses in half steps to a WT1 chord, A-G-B (m. 38), which contains the whole-step dyad G-A of the eighth-note figure.

¹³ Ibid.

Ex. 4-15: String Quartet No. 2, Second Movement, mm. 35ff.

35) **Zeitmaß** (*etwas schwerer*)

This conflict between the two whole-tone collections continues as the opening major third of the second theme is expanded to an interval-4 cycle. As the second theme is establishing G \flat major as a local tonic while developing the major-sixth descent and the eighth-note figure of the theme (mm. 41ff.), the opening major third is trying to unfold the B \flat -G \flat descent (m. 44). However, this major-third figure clashes with the accompanying E-minor triad before moving back to a WT0 chord, B \flat -A \flat -D-G \flat (m. 44). This opening figure is temporarily expanded to a perfect-fourth descent by violin I (C \flat -G \flat , m. 46; C-F, m. 47; and D \flat -A \flat , m. 48) before it returns to a major-third descent (F-D \flat , mm. 50ff.). However, this major-third descent is restated as part of the interval-4 cycle, F-D \flat -A (mm. 54-55), before it is juxtaposed with another major-third descent, B \flat -G \flat (m. 55). As the second theme returns again in the recapitulation (mm. 203ff.) with the F-A ascent, it is again absorbed into the interval-4 cycle, F-A-C \sharp . Therefore, the second theme articulates the two whole-tone collections while expanding the major-third portion of the D-minor triad (F-A) to an interval-4 cycle, F-A-C \sharp , through subsequent restatements.

This interaction between the two whole-tone collections becomes a major harmonic event in the trio section (mm. 98ff.; see Ex. 4-16). While the melody can be notated in 4+3 meter, Schoenberg decided to notate the melody in duple meter because he “feared to be called a revolutionary.”¹⁴ Nevertheless, the cello melody provides a contrapuntal expansion of the WT0 collection implied by the violin I melody. Starting on a perfect-fifth dyad, F#-C#, the violin I melody exhibits intervallic expansion similar to the opening of the first movement. The first four measures of the melody unfold a complete interval-4 cycle, F#-D-A#-F# (mm. 98-101). This unfolding of the interval-4 cycle is answered by the cello counterpoint (mm. 100-101), which unfolds the same interval-4 cycle before it cadences eventually on a major-third dyad, E#-C# (m. 104). This major-third dyad, E#-C#, implies that the opening dyad, F#-C#, can be partitioned by the two whole-tone collections: F# from the WT0 collection and C# from the WT1 collection. The importance of C# and the WT1 collection is emphasized when the trio section cadences on a five-note WT1 chord, C#-F-G-A-B (m. 122).

The importance of the whole-tone collections is further revealed in the development of the trio section.¹⁵ The cello theme in the development (mm. 139ff.; see Ex. 4-17) is expanded to unfold both whole-tone collections¹⁶ while preparing for the recapitulation of the trio. While the first statement does unfold a complete interval-4

¹⁴ Arnold Schoenberg, “Notes on the Four String Quartets, in Ursula von Rauchhaupt, ed., *Schoenberg, Berg, Webern: Die Streichquartette der Wiener Schule, Ein Dokumentation* (München: Verlag Heinrich Ellermann, 1971), 46.

¹⁵ See Jim Samson, *Music in Transition*, 107.

¹⁶ Samson briefly mentions the existence of the whole-tone collections in this passage and points out that this process is similar to the development of the Chamber Symphony. See *ibid.*

cycle, E-G \sharp -C (mm. 139-140), the second statement only unfolds two notes of the other cycle-4 partition of the WT0 collection, F \sharp -A \sharp -[]. The countermelody, performed by viola and cello, unfolds the WT0 collection simultaneously. However, this countermelody contains two “dissonant” pitches, A-C \sharp (m. 142), from the WT1 collection. This WT1 major-third dyad (A-C \sharp) is highlighted at the end of the development (mm. 149-150) to anticipate the recapitulation of the trio section (mm. 151ff.). After the unfolding of the WT0 collection (mm. 139-143), violin II starts the same theme at D \sharp and initiates the unfolding of the WT1 collection. The “dissonant” WT1 major-third dyad, A-C \sharp (m. 142), of the previous phrase is now expanded to a complete interval-4 cycle, E \sharp -A-C \sharp (mm. 143-144), while the viola and cello provide the WT1 descending counterpoint (mm. 142-144). However, as violin I continues the unfolding of the other cycle-4 partition of the WT1 collection (m. 147), only two pitch classes, G-B-[], are present. The missing D \sharp /E \flat is fulfilled as the initial key area of the recapitulation, namely E \flat minor (m. 151).

Third Movement “Litanei”

The introduction of the soprano voice and the poems by Stefan George in the third and fourth movements heighten the drama of the work. The theme of the third movement (“Litanei”) consists of four motives which are motivic transformations from the previous two movements. Ex. 4-18 lists these motives and their associations to previous movements.¹⁷ The quotation of themes from previous movements is suggested by the

¹⁷ These motives are identified and labeled according to Erwin Stein, “Synopsis of Form.”

Ex. 4-17: String Quartet No. 2, Second Movement, mm. 139ff.

The image displays a musical score for a string quartet, specifically the second movement of String Quartet No. 2, measures 139 through 150. The score is arranged in three systems, each with four staves representing the four string parts (Violin I, Violin II, Viola, and Cello/Double Bass). The key signature is D major, and the time signature is 3/4. Measure 140 is marked with a box containing the number 140. Above the first staff, the tempo marking 'WT0' and the dynamic 'p' are present. The first system includes various musical notations such as triplets, slurs, and dynamic markings. The second system features a 'cresc.' marking and a 'Bogen' instruction for the Cello/Double Bass part. The third system is marked with a box containing the number 150 and includes 'pizz.' (pizzicato) markings for all parts, along with an 'accelerando' instruction. Chord symbols like [G], [F#], [A], [A#], [B], and [Bb] are placed below the staves. The score concludes with a final chord in the Cello/Double Bass part, marked with a fermata and the dynamic 'f'.

title of the poem, “Litanei” (Litany), which is a prayer consisting of a series of petitions recited by a leader alternating with fixed responses by the congregation.

While the quotations preserve most of the intervallic contour of the respective melodies, some minor changes in the quoted melodies enhance the importance of the two

Ex. 4-18: Motives in Schoenberg's Second String Quartet, Third Movement "Litanei"

a. Motive I (mm. 1-3, viola; theme 1a of the First Movement)



b. Motive II (mm. 2-3, violin I; theme 2a of the First Movement)



c. Motive III (mm. 3-5, viola; 2nd Theme of the Second Movement)



d. Motive IV (mm. 5-10, violin II and cello; theme 2b of the First Movement)

Musical notation for Motive IV in the violin II and cello parts. The score shows three staves: Vln. II (Violin II), Vla. (Viola), and Vc. (Cello). The key signature is three flats and the time signature is 4/4. The Vln. II part starts with a half note G4, followed by a quarter note F4, a quarter note E4, a quarter note D4, a quarter note C4, and a quarter note B3. The notes are connected by a slur. The dynamic marking *pp* is written below the staff. The Vla. part has a quarter rest. The Vc. part starts with a half note G2, followed by a quarter note F2, a quarter note E2, a quarter note D2, a quarter note C2, a quarter note B1, a quarter note A1, a quarter note G1, and a quarter note F1. The notes are connected by a slur. The dynamic marking *p* is written below the staff.

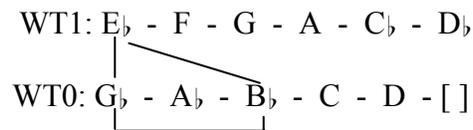
whole-tone collections within these melodies. Starting with a relatively thin texture, motive I establishes the key of E_b minor. Although the motive is not supported by an explicit E_b-minor triad, the melody outlines the tonic minor triad (E_b-G_b-B_b) as in the

corresponding melody of the first movement. Motive II, performed by violin I and cello, emphasizes the major-third portion ($G\flat-B\flat$) of the $E\flat$ -minor triad. The chromatic motion also introduces another major third ($G-C\flat/B$), which absorbs to the last note of motive I that will eventually link to the WT1 collection in motive III. Motive III provides the first explicit presentation of one of the two whole-tone collections. Starting on the tonic pitch, $E\flat$ (m. 3), motive III cadences on an interval-4 cycle, $E\flat-G-C\flat$ (m. 4). Compared to the same theme in the second movement, motive III expands the original melody with two extra pitches, namely $E\flat-F$ (mm. 4-5), and further confirms the importance of the WT1 collection in the cycle-4 cadence ($E\flat-F-G-[]-C\flat-[]$). As discussed earlier, Schoenberg did attempt to absorb the opening ascending figure of motive III into the whole-tone sphere in the second movement. The passage of four thirty-second notes can be partitioned by the two whole-tone collections: $E\flat-[]-[]-D\flat$ from the WT1 collection and $[]-G\flat-A\flat-[]$ from the WT0 collection (m. 3). Therefore, motive III contains five pitches from the WT1 collection ($E\flat-F-G-[]-C\flat-D\flat$).

The whole-tone significance of the major third, $G\flat-B\flat$, of motive II is further confirmed by motive IV. As discussed earlier, motive IV has a strong whole-tone underpinning when it is introduced in the first movement. Here in the third movement, motive IV starts with the same $G\flat-B\flat$ major third as motive II. This major third is then absorbed into the WT0 collection ($B\flat-G\flat-C-[A]-D-C-B\flat$, mm. 5-10), with A as the only pitch from the WT1 collection. This “dissonant” pitch, A, complements the WT1 collection established by motive III.

The equal emphasis of the two whole-tone collections partitions the E \flat -minor tonic triad: E \flat (of WT1) and G \flat -B \flat (of WT0). Ex. 4-19 summarizes the relationships between the four motives and the two whole-tone collections. Among the motives, only pitch class E of the WT0 collection is missing. This missing element will be fulfilled in the first phrase of the soprano melody with programmatic significance.

Ex. 4-19: Whole-Tone Collections Used in String Quartet No. 2, Third Movement



The first variation¹⁸ features the expansion of motives III and IV. While motives I, II, and III are presented literally, the soprano melody (mm. 14ff.; see Ex. 4-20) enters with motives III and IV as accompaniment. The soprano melody starts with a descending E \flat -minor figure (m. 14) while the accompaniment continues its surge of the whole-tone collections. Right before the entrance of the soprano, the viola figure fills in the G \flat -B \flat major third with A \flat (m. 13) while the cello is supporting the figure with B \flat . When the soprano outlines the E \flat -minor triad, the foreign note, F \flat (or enharmonically E), as mentioned earlier, completes the WT0 collection established at the opening theme (see Ex. 4-19). In addition, this note emphasizes the word “Trauer” (sorrow) of the poem,

¹⁸ Erwin Stein analyses this movement in theme-and-variation form: theme (mm. 1-9), Variation I (mm. 9-17), Variation II (mm. 17-25), Variation 3 (mm. 25-33), Variation 4 (mm. 33-41), Variation 5 (mm. 41-49), Quasi Finale (mm. 50-77). See Erwin Stein, “Synopsis of Form,” for details.

which can be regarded as the most important word that describes the mood of the poem and Schoenberg himself during the time of composition.

Ex. 4-20: String Quartet No. 2, Third Movement, mm. 14ff.

The image displays two systems of musical notation for a string quartet. The first system, starting at measure 11, features five staves. The top staff is marked *flüchtig*. The second staff has a *pp* dynamic marking. The bottom two staves have a *breit* marking and a *f* dynamic marking. The second system, starting at measure 14, includes a vocal line with the lyrics "Tief ist die trau - er, d". The vocal line is marked *pp* and features a triplet of eighth notes. The accompaniment consists of four staves, all marked *pp*, with various triplet markings.

While the five variations of the theme accompany the poem that describes emptiness and desire of love, the quasi finale (mm. 50-77) establishes the climax of the piece along with the last four lines of the poem. During the last variation, Schoenberg establishes the WT0 collection when the soprano sings the line “fiebernd der Mund” (mm. 47-49; see Ex. 4-21). At the word “Mund” (mouth), the accompaniment establishes

the complete WT0 collection with two “dissonant” pitches, A-E \flat , from the WT1 collection. While E \flat anticipates the return of the E \flat -minor tonic triad that starts the quasi finale (mm. 50ff.), this WT1 tritone, A-E \flat , becomes a “dissonant” element that is “feverish in the mouth,” which will be addressed in the quasi finale.

Ex. 4-21: String Quartet No. 2, Third Movement, mm. 47-50.

47

fie - bernd der mund...

p *f*

[A] [E \flat]

WT0

sehr zurückhaltend II. Zeit

50

WT0

ff *pp* *pp* *fp*

am Steg am Steg

Flag.

L

e \flat

The climax of the quasi finale occurs when the soprano sings “Innerst im grunde wacht noch ein schrei” (mm. 56-58; see Ex. 4-22). Alan Lessem points out that Schoenberg presents all four motives of this movement simultaneously to a climax along with a powerful restatement of the opening voice melody (mm. 14ff.).¹⁹ The WT0 collection is established as a prominent cyclic-interval material in this passage. First of all, motive IV unfolds the WT0 collection with G as the only pitch from the WT1 collection. In addition, when the soprano sings the word “Schrei” (scream, m. 58), the accompaniment, D-A-E \flat -F \sharp -C-G \flat , seems to suggest a D-dominant-eleventh chord. While the voice ascends from G \flat to G (m. 59), the accompaniment progresses to a predominantly WT0 chord (m. 59). Given the WT0 fabric in the accompaniment, this chord accompanying the word “Schrei” can be partitioned by the two whole-tone collections: D-F \sharp -C from the WT0 collection and A-E \flat from the WT1 collection. This WT1 tritone, A-E \flat , which previously appeared when the soprano sings “fiebernd der Mund” (feverish the mouth, mm. 47-49), now becomes a dissonant tritone among the WT0 passage that is “screamed” out (probably from the “feverish mouth”) and is dissolved into the WT0 chord in the following measure.

¹⁹ Alan Philip Lessem, *Music and Text in the Works of Arnold Schoenberg: The Critical Years, 1908-1922* (Ann Arbor, MI: UMI Research Press, 1979), 34.

Ex. 4-22: String Quartet No. 2, Third Movement, mm. 56-58.

55 her - zen lo - den noch of - fen, in - nerst im
Motive III *p*
Motive II *p cresc.* Motive IV
p cresc. Motive IV
p cresc.

57 *Pesante molto rit. bewegte*
grun - de wach - t nochein schrei.... *ff* *ff* *ff*
Tü (soprano line, m. 14)
[A] [E] [A] *f* *ff* *ff* WT0

Fourth Movement “Entrückung”²⁰

Instrumental Introduction

The famous introduction to this movement is a fine example of tone painting that both illustrates the “transport” of the poem and “epitomizes or captures the essential

²⁰ This section is based on my master’s report, “The Tonal-Atonal Relationship and the Use of Interval Cycles in the Last Movement of Schoenberg’s Second String Quartet” (The University of Texas at Austin, 1999).

tonal-atonal conflict that lies at the basis of the quartet.”²¹ Schoenberg himself describes the opening as follows:

The fourth movement, *Entrückung*, begins with an introduction, depicting the departure from earth to another planet. The visionary poet here foretold sensations, which perhaps soon will be affirmed. Becoming relieved from gravitation – passing through the clouds into thinner and thinner air, forgetting all the troubles of life on earth – that is attempted to be illustrated in this introduction.²²

The opening figure, which outlines ascending fifths (G#-D#-B \flat -F), prepares for the first line of the poem, “Ich fühle Luft von anderem Planeten” (“I feel a breeze from another planet”). However, the viola and cello introduce the second basic motive (m. 3) that features descending fifths. The downward, cadence-like gesture works as “a kind of counterforce to the floating figure and thus might be said to embody ‘gravity’.”²³

The use of whole-tone collections is prominent in the opening passage of the instrumental introduction. The most prominent use of the whole-tone collections occurs in violin I and violin II (mm. 1-5; see Ex. 4-23). While violin II is unfolding a WT1 melody D#-G-B-[D]-C# (m. 1, last beat), violin I is imitating the violin II melody a minor-seventh above (C#-F-A-[C]-B, mm. 1-2). The “foreign notes,” namely D and C, can be

²¹ Walter Frisch, *The Early Works of Arnold Schoenberg 1893-1908* (Los Angeles and Berkeley: University of California Press, 1993) 269.

²² Arnold Schoenberg, “Notes on the Four String Quartets,” 49.

²³ Walter Frisch, *The Early Works of Arnold Schoenberg*, 269.

regarded as incomplete chromatic upper neighbor notes.²⁴ These melodies are repeated in violins I and II (mm. 2-3) before this figure starts to descend in sequence (mm. 4) and start the melody on B, A, and G. Therefore, the sequence unfolds five notes of the WT1 collection, namely D \sharp -C \sharp -B-A-G-[].

While the WT1 collection dominates the opening of the violin melody, violin II also suggests the importance the other whole-tone collection, namely the WT0 collection. After the WT1 sequence featuring the five-note motive (mm. 1-4), the violins expand their melodic figures to eight or more pitches (m. 5). In particular, violin II unfolds a WT0 melody (E-C-A \flat -[G]-F \sharp -A \sharp -D-E-[D \sharp], m. 5). The “foreign” notes in this melody, G-D \sharp , are the boundary pitches of the descending sequence unfolded by the violins (mm. 1-4). In addition, this WT1 dyad partitions the WT0 collections into two interval-4 cycles, namely E-C-A \flat and F \sharp -A \sharp -D.

With this establishment of the whole-tone collections in mind, we can understand the opening passage (m. 1) based on the interlocking of the two whole-tone collections. Starting from the cello, the four instruments present the same eight-pitch melodic figure in sequence. Ex. 4-24 lists the pitch-classes of these figures in their original orders and the whole-tone collections they unfold. The melody in each instrument contains five notes from the same whole-tone collection and three from the other one. The violin I passage, which unfolds the WT1 segment, D \sharp -C \sharp -B-G-F, prepares for the sequential

²⁴ Michael Annicchiarico’s analysis emphasizes the WT1 unfolding based on the last note of each five-note figure. These notes are emphasized because of the chromatic upper neighbor notes. However, my analysis also stresses the WT1 unfolding of the melody in entirety as well as the interlocking of the two whole-tone collections. For details of Annicchiarico’s analysis, see Michael Joseph Annicchiarico, “A Study of ‘Entrueckung’: From the Second String Quartet of Arnold Schoenberg, Op. 10” (Ph. D. Dissertation, Brandeis University, 1994).

Ex. 4-23: String Quartet No. 2, Fourth Movement, Instrumental Introduction.

Sehr langsam (*gehende Achtel*)
Sopran

The score consists of five staves. The top staff is a vocal line for Soprano, marked with a treble clef and a common time signature. The four lower staves represent the string quartet: Violin I, Violin II, Viola, and Cello/Double Bass. Each string staff is marked with a common time signature and the instruction "mit Dämpfer" (with mute). The music begins with a *ppp* (pianissimo) dynamic. The vocal line features a melodic line with a slur and a fermata. The string parts play a rhythmic pattern of eighth notes, with the Violin I and II parts having a slur and a fermata. The Viola and Cello/Double Bass parts have a slur and a fermata. The dynamic markings *ppp* are placed at the beginning of each string staff. The score is divided into three systems. The first system shows the initial entry of the strings and the vocal line. The second system shows the strings playing a rhythmic pattern. The third system shows the strings playing a rhythmic pattern with a *fp* (fortissimo) dynamic marking.

mit Dämpfer *ppp*

mit Dämpfer *ppp*

mit Dämpfer *ppp*

mit Dämpfer *ppp*

fp

fp

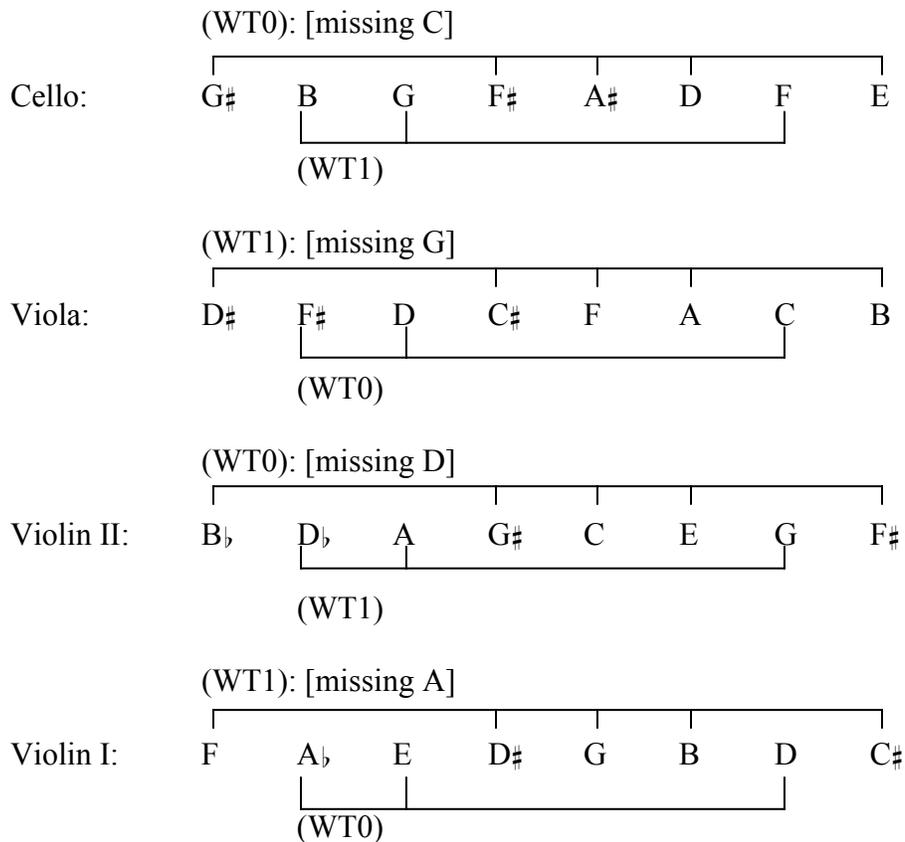
fp

Ex. 4-23 (Continued)

The musical score consists of three systems, each with four staves. The first system features a treble clef on the top staff and a bass clef on the bottom staff. The second system has a treble clef on the top staff and a bass clef on the bottom staff. The third system has a treble clef on the top staff and a bass clef on the bottom staff. The music is written in a complex, multi-measure style with various dynamics and articulations. The first system includes a *pp* dynamic marking. The second system includes a *pp* dynamic marking. The third system includes a *ppp* dynamic marking and the instruction *sehr leicht*. The score is written in a complex, multi-measure style with various dynamics and articulations.

unfolding of the WT1 passage it follows (mm. 1-4). Ex. 4-24 also lists the missing pitch of each five-pitch whole-tone segment. The four missing pitches unfold another cycle-5 segment, C-G-D-A. The importance of this implied cycle-5 segment is twofold: As we will see, this will be the pitch-class set of the “Ich fühle Luft” motive of the opening soprano line (mm. 21-23). In addition, this implied cycle-5 segment confirms the importance of the whole-tone partitioning of the opening rising figure.

Ex. 4-24: String Quartet No. 2, Fourth Movement, Interlocking of Whole-Tone Collections in m. 1 in Each Respective Instrument.



The interaction between the interval-2 and interval-5 cycles is articulated at the first cadence of the movement (m. 9). Violin II and viola approach this cadence in parallel octaves (mm. 7-8) and unfold a WT1 melody, C \sharp -D \sharp -F \ast , while the violin I melody unfolds the major third, B \flat -D, from the WT0 collection simultaneously. The cadential chord (m. 9) can be regarded as a mixture of the interval-2 and interval-5 cycles. The viola and cello provide the cycle-5 segment, C-G-D-A, while the violins provide an augmented-fifth dyad, F-C \sharp . The distinction between the two cyclic segments is articulated by timbre and register. While the violins play the WT1 dyad (F-C \sharp) in harmonics, the cello is playing the perfect-fifth dyad (C-G) in *pizzicato*. In comparison to the opening rising figure (G \sharp -D \sharp -B \flat -F, m. 1), the quintal chord in this cadence (m. 9) can be regarded as a continuation of the perfect-fifth cycle unfolding (G \sharp -B \sharp -B \flat -F-C-G-D-A), which expands the basis of the interval-5 cycle later in the exposition.

Exposition

The relationship between the interval-2 and interval-5 cycles works clearly in the first vocal entrance (mm. 21-24; see Ex. 4-25). Allen Forte points out that the “Ich fühle Luft” motive (D-G-A-C, mm. 21-23) is in the same set-class as the opening rising fifth (G \sharp -D \sharp -B \flat -F, m. 1).²⁵ Moreover, the pitch classes of this motive are presented in the cadence of the first introductory phrase (m. 9). With the cello doubling this motive (mm. 21-23), the other three instruments accompany with the mixture of these two cycle-5 segments. The interlocking of the cycle-5 segments is overlaid with the overall whole-

²⁵ Allen Forte, “Schoenberg’s Creative Evolution: The Path to Atonality,” *The Musical Quarterly*, 64 (1978): 165.

tone sonority. As discussed in the previous section, the “Ich fühle Luft” motive can be partitioned by the two whole-tone collections: C-D from WT0 collection and G-A from WT1 collection. While the harmony of the “Ich fühle Luft” motive is relatively triadic, the second half of this phrase unfolds the whole-tone collections both melodically and harmonically. Starting from C (m. 23), the soprano line ascends in stepwise motion to B \flat (m. 25), which is re-interpreted as the third of the F \sharp -major triad. This ascending scale (mm. 23-25) can be partitioned into two parts: C-D-E from the WT0 collection and F-G-A from the WT1 collection. These whole-tone partitions are supported by the instrumental accompaniment. The WT0 partition (C-D-E) is supported by the interval-4 cycle, D-F \sharp -B \flat (m. 24), which is also a partition of the WT0 collection. Similarly, the WT1 partition (F-G-A) of the soprano melody is supported by another interval-4 cycle, F-[G]-A-C \sharp (m. 23), followed by another WT1 chord, G-B-A (m. 24). Although the vocal melody does cadence on the F \sharp -major tonic triad, it does not provide a stable feeling of arrival since the F \sharp -major triad is in second-inversion. Furthermore, the overall cyclic materials (namely the interval-2 and interval-5 cycles) render the F \sharp -major triad as a “foreign” element within the whole-tone harmonic fabric, in which this instability of the F \sharp -major triad can be seen in the cello melody. After the vocal melody cadences on the F \sharp -major triad, the cello ascends briefly from C \sharp to D (m. 26) before it returns to C \sharp . This brief ascent from C \sharp to D transforms the F \sharp -major triad to an interval-4 cycle, D-F \sharp -A \sharp . Although it occurs very briefly, it does highlight the WT0 portion of the F \sharp -major triad, namely F \sharp -A \sharp , along with the interval-4 cycle, D-F \sharp -A \sharp , which has appeared earlier (m. 24) to articulate the WT0 collection in the soprano melody.

Ex. 4-25: String Quartet No. 2, Fourth Movement, mm. 21ff.

Tempo

Ich füh - le luft von an - de - rem pla - ne - ten...

am Steg -

am Steg -

am Steg -

WT1

WT0

6

F# 4

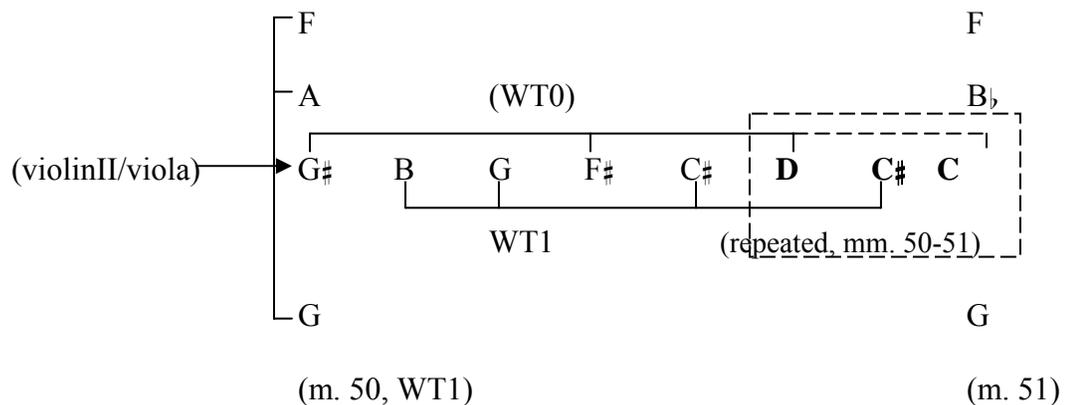
The transition to the second theme expands the whole-tone fabric established in the instrumental introduction. While the F#-major scale is vaguely presented in violin I (mm. 42-44), the transition concludes with the juxtaposition of the two whole-tone collections when the soprano sings “mit einem frommen schauer anzumuten” (mm. 46-48; see Ex. 4-26). In particular a sequential passage (mm. 47-49) exhibits the juxtaposition

of the two whole-tone collections. The alternations between the two whole-tone collections occur every two beats (mm. 46-47). However, as the soprano reaches the last word of the line, “anzumuten” (m. 48), the alternations speed up to every one beat while violin II and viola are ascending chromatically from D to A (mm. 48-49). The downbeats of this chromatic ascent unfold an interval-4 cycle, D-F#-A#. This interval-4 cycle, together with the whole-tone collection alternations, confirms the importance of the whole-tone partitioning of the F#-major triad, a process briefly explored in the first vocal phrase (m. 24), where the F#-major triad is expanded briefly to this interval-4 cycle, D-F#-A#.

While the whole-tone alternation reaches the WT1 chord, G-A-F (m. 49, violin I and cello), the chromatic ascent is interrupted by a brief return of the opening 32nd-note rising motive (mm. 49-50), which recalls the interlocking of the two whole-tone collections in the opening passage (m. 1). This interlocking of the two whole-tone collections becomes an important means to establish the opening of the second theme (mm. 51ff.). Ex. 4-27 illustrates the whole-tone interlocking of the violin II and viola passage. Unlike the previous three statements (m. 49), the violin II and viola melody that outlines the 32nd-note ascending motive ends with a chromatic D-C# descent in eighth notes (m. 50). The same instruments expand this chromatic descent to a four-note descent (D#-D-C#-C, m. 50) before it cadences with a three-note chromatic descent (D-C#-C, m. 51). These repeated statements expand the WT0 portion of the interlocking process (G#-F#-D-C). In addition, this WT0 expansion contributes to the establishment of the opening chord of the second theme, G-F-C-B \flat (mm. 51ff.). This chord implies the

presence of a segment of the perfect-fifth cycle, B \flat -F-C-G, an echo to the opening rising-fifth passage (m. 1) and the “Ich fühle Luft” motive (mm. 21-23). Moreover, this chord contains a perfect-fifth dyad from the opening passage (B \flat -F) and a perfect-fifth dyad from the “Ich fühle Luft” motive (C-G). Approached by the WT1 chord, F-G-A (m. 50), this quintal chord (B \flat -F-C-G) shares two common pitches with this WT1 chord (F-G). The other two pitches of the quintal chord (B \flat -C) can be regarded as a partition from the WT0 collection.

Ex. 4-27: String Quartet No. 2, Fourth Movement, mm. 50-51, Interlocking of Interval Cycles.



The emergence of the F \sharp -major tonic triad here at the opening of the second theme is part of a harmonic process that has been referred to by Schoenberg as “extended tonality.”²⁶ However, this “enrichment” of the F \sharp -major triad is a clear result of the interaction between the interval-2 and interval-5 cycles. As the transition establishes the F \sharp -A \sharp major third as part of the WT0 collection, the F \sharp -major triad can now be interpreted

²⁶ Arnold Schoenberg, *Fundamentals of Musical Composition* (Boston: Faber and Faber, 1967), 100.

as an intersection of the two whole-tone collections: F \sharp -A \sharp from the WT0 collection and C \sharp from the WT1 collection. The opening of the second theme establishes the C \sharp as part of the WT1 collection. The quintal chord, G-C-B \flat -F, which starts the second theme, progresses chromatically to the root-position F \sharp -major tonic triad (m. 52). However, the soprano and violin I introduce A \sharp of the F \sharp -major triad through a major-seventh leap, B-A \sharp (m. 52), while the other instruments are sustaining the perfect fifth of the F \sharp -major triad, F \sharp -C \sharp . While the B in this major-seventh leap (B-A \sharp) acts as an accented passing tone to introduce the third of the F \sharp -major triad, it also prepares for the local manifestation of the WT1 portion of the F \sharp -major triad. The F \sharp -major triad progresses to a five-note WT1 chord, G-E \sharp -B-D \sharp -A (m. 53), with C \sharp as the only missing pitch from the WT1 collection. As the soprano cadences on C \sharp (m. 55), it is absorbed locally to a five-note WT1 segment, A-E \sharp -B-G-C \sharp . The WT1 collection is completely established with these two WT1 segments and C \sharp of the F \sharp -major triad is absorbed into WT1 collection.

Development

The whole-tone collections are used in a more subtle way in the development. The vocal line at the beginning of the development section (mm. 74-87) is presented within a highly chromatic context. Dale rightfully points out that “throughout the first part of the development section the vocal line is constructed from a sequence of chromatic scale segments which begin on successive degrees of a whole-tone scale.”²⁷ Ex. 4-28a shows the first vocal phrase in the development (mm. 74-77). A reduction of

²⁷ Catherine Dale, *Tonality and Structure*, 238.

this melodic line is shown in Ex. 4-28b. The ascending WT0 collection on the downbeats of this passage serves as the framework for a highly chromatic context with descending chromatic passage in pitch-class space.

A similar process can be found in the next two vocal phrases (mm. 85-87), although the vocal line is not as chromatic as the previous phrase. Ex. 4-29 shows these two vocal phrases (mm. 85-87). The generally descending WT1 melody (mm. 85-86) is answered by the ascending WT1 melody (mm. 86-87). This ascending vs. descending contrast can be traced back to the rising vs. falling fifths, or the “Ich fühle Luft” vs. “gravity,” as discussed in the instrumental introduction.

Recapitulation

The concept of recapitulation as a tonal return is problematic in this piece. Dale points out that “the initial chord emerges from a non-tonal context and is not established by functional means.”²⁸ As the first theme returns in the soprano in the tonic key (mm. 100ff.), the harmonization is similar to that of the second theme (mm. 52-65). Instead of stabilizing the F \sharp -major tonic, the idea of the first theme, especially the “Ich fühle Luft” motive (D-G-A-C), receives further development (mm. 110-120). As the cello bass line outlines the same D-G-A-C motive (mm. 110-113), the viola exhibits an interlocking of the motive (mm. 110-113). Ex. 4-30 lists the dyads in the viola (mm. 110-113). The pitch classes, E \flat -B \flat -F-C, are from the same set-class as the “Ich fühle Luft” motive. In addition, while this interval-5 segment shares pitch class C with the “Ich fühle Luft”

²⁸ Ibid.

Ex. 4-29: String Quartet No. 2, Fourth Movement, mm. 85-87

85 *(schr gebunden)* WT1

pp 3 Dann seh ich wie sich duf-ti-ge

pp WT0

pp staccato (äußerst kurz) 3

pp

D# C# G

ne - bel lüp - fen in ei - ner

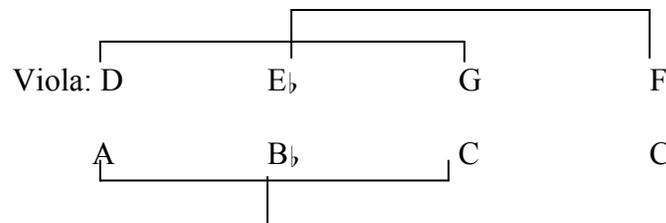
D# E# C#

sonn - er - - full - ten kla - ren frei - e

stacc. 6

motive, the other three pitch classes come from the opening perfect-fifth rising motive ([]-D#-Bb-F; see m. 1). The missing G# in this motive is restored in the cello bass line, which continues to unfold the “Ich fühle Luft” motive in transposition, Eb-Ab-Bb-[] (mm. 114-116), and is accompanied by the viola perfect-fourth dyads, Eb-Ab (m. 114), and Db-Gb (m. 115). These viola dyads and the cello bass line expand the “Ich fühle Luft” motive to its tritone transposition, Ab-Db-Eb-Gb, which will progress chromatically to the prescribed F#-major triad (m. 120).

Ex. 4-30: String Quartet No. 2, Fourth Movement, Viola, mm. 110-113.



Dale points out the tonal process of the rest of the piece (mm. 120ff.) as follows:

The means by which the tonic chord is prolonged from bar 120 are twofold: encircling of the triad by chromatic neighbor notes, and the arpeggiation of an F# major chord after the close of the fundamental line in bar 142.²⁹

²⁹ Ibid., 242.

The F \sharp -major tonic triad is prolonged and reaches the dominant-seventh chord (m. 128). However, this dominant-seventh chord (mm. 128-133) does not resolve directly to the F \sharp -major tonic (m. 134), but to a C-major triad which is “approached by semitonal voice leading in all the parts, modeled on bar 65 (beat 3)-66.”³⁰ However, I believe this C-major triad prepares for the ultimate arrival of the F \sharp -major triad with the use of the interval-2 and interval-5 cycles. After cadencing on the C-major triad, the cello unfolds two similar descending motives (mm. 134-135; see Ex. 4-31). While the viola is imitating the cello descending motive (mm. 135ff.), violin II is playing the “Ich fühle Luft” motive as counterpoint. The cello motives outline a WT0 segment, C-B \flat -A \flat (mm. 134-137), before it is interrupted by a brief WT1 descent, G-F (m. 138). However, the half-step descent from A \flat to G prepares for a brief perfect-fifth bass-line motion, G-D (mm. 138-141). After the bass line reaches C \sharp as the bass of the second-inversion F \sharp -major triad (m. 142), the cello descends in half step to C and resumes the WT0 descent, which reaches the tonic F \sharp (m. 146).

Epilogue: Further Musical Examples by Berg and Schoenberg

The harmonic processes discussed in this dissertation can also be applied in compositions of the same period by other composers. For example, in his Piano Sonata, op. 1 (1908), Alban Berg uses cycles 2 and 4 extensively over the B-minor tonal

³⁰ Ibid., 243.

Ex. 4-31: String Quartet No. 2, Fourth Movement, mm. 134ff.

framework that defines the sonata form.³¹ Bruce Archibald points out the influence of Schoenberg's Chamber Symphony no. 1 on Berg's Piano Sonata, particularly the use of

³¹ For a detailed sonata-form analysis and the overall tonal framework of the sonata, see David Headlam, *The Music of Alban Berg* (New Haven and London: Yale University Press, 1996), 22-33.

the whole-tone and perfect-fourth cycles.³² The major-third portion of the B-minor triad, D-F#, is absorbed into its interval-4 cycle, a process similar to the introduction of Schoenberg's Chamber Symphony. The unfolding of the interval cycles is interlinked with a loosely defined tonal progression, $ii^7 \rightarrow V^9 \rightarrow I$ in B minor (mm. 1-3). While the B-minor cadence occurs on the strong beat, the ii^7 and the dominant-ninth chords occur on weak beats and appear to weaken this tonal progression. As Douglas Jarman points out, the first phrase contains two important motives, x and y (see Ex. 4-32). Motive x features an ascending fourth (interval class 5) followed by an ascending tritone (interval class 6). Motive y unfolds an interval-4 cycle, G-E \flat -B (m. 2), while the bass line unfolds a segment (C#-C-B-A#) of the interval-1 cycle in counterpoint. When this bass line reaches A# (m. 2), it then continues to descend a major tenth to F# as the root of a dominant-ninth chord, which resolves to the B-minor tonic triad (m. 3). While this bass line outlines the F#-minor triad (C#-A#-F#), each pitch is absorbed into its respective whole-tone collections. When the bass line starts at C# to imply the ii^7 sonority, the third (E) of the ii^7 chord is missing, so it can also be interpreted as a WT1 chord, C#-[]-G-B, which prepares for the introduction of motive y (G-E \flat -B) with the common major third, G-B. When motive y unfolds the interval-4 descent, G-E \flat -B, the accompaniment expands the interval-4 cycle to a four-note WT1 chord, B-G-A-E \flat . As the bass line continues its descent to A# (m. 2), it is absorbed into a WT0 chord, A#-E-G#-D, on the downbeat. The voice leading clearly indicates the significance of the WT0 collection in the dominant chord. While the A# is held as common tone, the E in the WT0 chord is

³² See Bruce Archibald, "Berg's Development as an Instrumental Composer," in *The Berg Companion*, ed. Douglas Jarman, (London: MacMillan Press, 1989), 91-96.

tied to the F# in the bass. This expands the four-note WT0 chord to a five-note WT0 segment, D-E-F#-G#-A#, which outlines the interval-4 cycle, D-F#-A#, with whole-tone passing tones. In addition, when the dominant-ninth chord is resolved to B minor (m. 3), the left hand outlines the perfect-fifth portion of the triad (B-F#) with the rhythm of motive x and the right hand plays the major-third portion of the B-minor triad (D-F#). This major third is immediately absorbed to the interval-4 cycle, D-F#-Bb, of the same register (m. 3).

Ex. 4-32: Alban Berg, Piano Sonata, Op. 1, Opening

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The absorption of the major third of the B-minor triad into the larger interval-4 cycle prepares for the tonal modulation from B minor to D major by means of the common major third which these two triads share (D-F#). While the progression from B minor to its relative major (D major) is common in tonal music, the establishment of D major is mainly prepared by interval-4 cycles. The interval-4 cycle, D-F#-Bb (m. 3),

immediately progresses to another interval-4 cycle, C \sharp -F-A (m. 4), and later these two interval-4 cycles are juxtaposed (m. 6) before the introduction of motive z (m. 7), which unfolds the complete WT1 collection. This WT1 form of motive z is juxtaposed by the return of motive y (m. 8), which now unfolds another interval-4 cycle, G \sharp -E-C. This version of motive y (m. 8) is preceded by another interval-4 cycle, G \flat -B \flat -D, at the down beat (m. 8). Although David Headlam suggests that this passage outlines a bass motion of ii⁷ \rightarrow V \rightarrow I in D (mm. 8-11), the dominance of the interval-4 cycles strongly suggests this rising-fifth bass line (E \rightarrow A \rightarrow D) is indeed a foreign or “dissonant” element among the interval-4 cycle progression.³³ As motive y unfolds the interval-4 cycle, C-E-G \sharp (m. 8), the bass pitch E is absorbed to this interval-4 cycle. As motive y descends to C, it ascends a minor third to D \sharp (m. 9) similar to the opening passage. However, this D \sharp now becomes part of the interval-4 cycle, G-B-D \sharp , which continues to descend chromatically to unfold two other interval-4 cycles, G \flat -B \flat -D and F-A-C \sharp (m. 9). However, during this chromatic descent, the A (as the dominant of D in Headlam’s analysis) in the bass should be interpreted as a foreign element before it is absorbed to the interval-4 cycle, F-A-C \sharp .

The systematic expansion and contraction of intervals is also a major harmonic process in Schoenberg’s *Drei Klavierstücke*, Op. 11, no. 1. Although this piece is not based on any diatonic triad, the principle of intervallic expansion and contraction is similar to that of the first movement of Schoenberg’s Second String Quartet. The opening melody unfolds cell A, B-G \sharp -G (mm. 1-2; see Ex. 4-33), which contains all the basic intervals for expansion and contraction. This cell contains three interval classes:

³³ David Headlam, *The Music of Alban Berg*, 24

interval-class 1 (G-G[#]), interval-class 3 (G[#]-B), and interval-class 4 (G-B). The left-hand dyad, F-G^b, implies a continuous chromatic descent from the right-hand melody ([B]-G[#]-G) while the right-hand middle voice expands the accompaniment of the melody to a trichord, B-F-G^b. While Elliott Antokoletz suggests that this trichord implies the presence of a symmetric pitch-class set, []-G^b/B-F,³⁴ I would argue it also implies the expansion of the boundary interval of opening pitch-class set from interval-class 4 (G-[G[#]]-B) to interval class 6 (F-[G^b]-B). However, as the opening theme approaches its cadence (m. 3), the cadential figure, F-E-D^b and A-B^b-D^b (m. 3), brings back interval-class 4 as the boundary interval (D^b-F and A-D^b). In this opening theme, the half step (interval class 1) in the pitch-class sets acts like an anchor while the boundary interval exhibits expansion and contraction to establish the harmonic motion of the first phrase.

Meanwhile, the half-step of the basic cell is also subjected to intervallic expansion. The expansion from interval-class 4 to interval-class 6 (mm. 1-2) reveals its importance in the process of organic development of theme 2 (mm. 4ff.). The opening figure of theme 2, C-E-B^b (m. 4), contains three interval classes: interval-class 2 (B^b-C), interval-class 4 (C-E), and interval-class 6 (E-B^b), with interval-class 6 as the boundary interval (B^b-C-E). This opening cell of theme 2 is answered by the left-hand figure with the same intervallic structure (D-F[#]-G[#]). While the right-hand figure emphasizes interval-class 4 (C-E followed by G-B), the left-hand figure emphasizes interval-class 6 of the same pitch-class set. The cadential chord, G-G[#]-A-B, however, exhibits immediate contraction and reestablishes interval-class 4 as the boundary interval (G-B). Moreover,

³⁴ Elliott Antokoletz, *Twentieth-Century Music*, (Englewood Cliffs, NJ: Prentice Hall, 1992), 13.

Ex. 4-33: Schoenberg, *Drei Klavierstücke*, No. 1, Opening

Theme 1

Mäßige cell A

Theme 2

6 rit. langsamer cell B

11 viel schneller ppp

mit Dämpfung(3. Pedal)

14 Flag. (d) langamer ohne Ped. sf p ohne Ped. sf p

17 sehr langsam f p f p

the eighth-note middle voice fills in the whole-step figure, A-B (m. 5), chromatically.

Suddenly, the three-note basic cell established in theme 1 (G-G#-B) is filled in completely by chromatic pitches (G-G#[A]-[A#]-B, m. 4).

After two varied repetitions of theme 2 (mm. 5-8), a varied return of theme 1 (mm. 9ff.) exhibits intervallic expansion of cell A. The opening three notes of this varied theme 1, F#-D-C (mm. 9-10), contain three interval classes: interval-class 4 (F#-D), interval-class 2 (D-C), and interval-class 6 (F#-C), with interval-class 6 as the boundary interval of the descent. Compare this with the opening cell A (B-G#-G, mm. 1-2), this varied version expands the half step of the opening cell to interval-class 2 (D-C) and the interval-class-3 portion (G#-B) to interval-class 4 (F#-D). The left-hand accompaniment chord, G_b-E-A_b (m. 10), implies a simultaneous contraction and expansion of intervals based on the opening cell A. While maintaining G_b as the bass note, the top note of the original left-hand dyad, F (m. 2), implies a descent of interval-class 1 to E and an ascent of interval-class 3 to A_b. This long-range progression from F (m. 2) to E-A_b (m. 10) implies the same pitch-class set of the opening phrase (E-F-A_b with interval-classes 1, 3, and 4; see Ex. 4-34). The cadential chord of this phrase, G-B-F, possesses the same interval content as cell B. The intervallic expansion from cell A to cell B can be summarized as follows: The interval 1 in cell A is expanded to interval 2 and partitions interval 4 symmetrically (m. 10, E-G_b-A_b). One of the interval 2 is expanded to interval 4 and establishes cell B, first in the melody (F#-D-C, mm. 9-10), then as a cadential chord (G-B-F, m. 11). This progression establishes the significance of the whole-tone collection and the interval-4 cycles, a process very similar to the first movement of the Second

String Quartet. The major difference, and probably the only difference, is that the Op. 11 piano piece starts with a pitch-class set, B-G#-G, instead of a diatonic triad.

Ex. 4-34: Schoenberg, Op. 11, No. 1, Left-Hand Chords

The image shows three measures of music in the bass clef with a common time signature (C). The first measure, labeled 'm. 2', contains a dyad of two notes: B2 (second line) and G1 (first space). The second measure, labeled 'm. 10', contains a dyad of two notes: B2 (second line) and G#1 (first space with a sharp sign). The third measure, labeled 'm. 11', contains a dyad of two notes: B2 (second line) and G1 (first space). Arrows indicate the movement of the notes from measure 2 to measure 10, and from measure 10 to measure 11.

Chapter 5: Conclusion

The purpose of this study was to assess the role of interval cycles in Schoenberg's pre-atonal music between 1904 and 1908 and how the systems of tonal harmony and interval cycles are interrelated. Four compositions were examined: String Quartet No. 1 in D minor, *Ein Stelldichein*, Chamber Symphony No. 1, and String Quartet No. 2 in F# minor. Several aspects of the role of interval cycles in these pieces were discussed: how these interval cycles are introduced; what their relationships are to one another; how they are related to the tonal framework; and to what extent the interval cycles are integrated to the tonal system.

It was found in this study that the use of common elements between the tonal elements and interval cycles play a crucial role in linking the media of diatonicism and interval cycles. While the tonal framework is still clearly defined in these compositions, the role of interval cycles is significant. While Schoenberg explained in detail how whole-tone and quartal chords can be used as some sort of substitute for dominant sonorities in his *Theory of Harmony*, his own compositions are more telling than his textbook examples. In *Ein Stelldichein* and the First Chamber Symphony, the opening progressions unfold the respective interval cycles while revealing their intimate relationships with the tonal framework. In the First String Quartet, the foreground appearance of the octatonic (4:5) *Grundgestalt* is prepared by the simultaneous unfolding of the D-minor tonic and the octatonic (1:2) construct. The Second String Quartet exhibits the unfolding of the interval cycles directly from the intervals within the tonic F#-minor triad. The last movement of the Second String Quartet unfolds the whole-tone collections and the interval-5 cycle extensively in the introduction and the principal

theme-group before presenting the tonic F \sharp -major triad through the interaction of the two whole-tone collections.

The results of this study have suggested a different way to approach the relationship between the tonal and atonal elements. Most scholars approach Schoenberg's music of this period with traditional tonal harmony analyses, treating the atonal elements as "odd" or "foreign" elements that do not fit the tonal scheme and need to be resolved. While such a reading is certainly valid from the tonal point of view, it ignores the role of the interval cycles and their interplay with the tonal elements. The intervals of the tonal elements as the basis of interval cycles unfolded in these pieces reveal Schoenberg's close attention to the intervallic constructs of both realms and his seamless integrations of the interval cycles to the familiar diatonic and triadic structures. The result is a unique musical language that possesses the familiar overall tonal framework, while the system of interval cycles gradually emerges as a musical language in its own right. The dominance of interval cycles can be seen most clearly in the introduction of the last movement of the Second String Quartet, in which the interval cycles are established to stage the appearance of the principal theme-group that is closely linked to the interval-4 cycle before the subordinate theme establishes the F \sharp -major triad as the tonic of the movement.

One major challenge is to justify the role of the so-called "atonal elements" with respect to the tonal framework. While approaching the music of this period purely from the tonal point of view can lead to a possible misreading of these interval cycles, the use of atonal analysis alone can also lead to some disastrous readings. Allen Forte approaches Schoenberg's stylistic development toward atonality with pitch-class set

theory and traces the use of Schoenberg's musical signature, EsCHBEG (E_b-C-B-B_b-E-G), as a key musical motive since his op. 6 songs.¹ This musical signature was used in Alban Berg's Chamber Concerto for Piano and Violin with Thirteen Wind Instruments (1924), a work dedicated to Schoenberg on his fiftieth birthday. To me, this approach is a bit farfetched for several reasons. While the musical signature is clearly presented in its original form in Berg's Chamber Concerto, the musical signature only appears in Schoenberg's early pieces "either as some form of EsCHBEG (6-Z44) or its complement (6-Z19)."² Moreover, the signature as 6-Z44 rarely is the literal EsCHBEG, but is "almost always a transposition or an inversion."³ In the examples that Forte illustrates, none of them present the signature clearly in context. In other words I am not questioning the existence of set classes 6-Z44 and 6-Z19, but I am more concerned about their identities and their significance as Schoenberg's musical signature. For example, Forte claims that the EsCHBEG motive appears literally in the First Chamber Symphony (mm. 378-379). The chords on the downbeats (C-G-B-D[#], m. 378; C-F[#]-A[#]-E-G, m. 379) combine to form a larger pitch-class set 7-22 (D[#]-C-B-A[#]-E-G-[F[#]]), which contains the literal EsCHBEG motive (6-Z44) as well as its complement (6-Z19: D[#]-F[#]-G-A[#]-B-C-[E]). However, the significance of the permutation of the pitch-classes is simply not evident in this passage. In addition, as an introductory passage to the slow movement (mm. 381ff.), the contextual significance of the EsCHBEG motive as a primary generator of the slow movement as a whole is questionable. Furthermore, Forte does not explore

¹ Allen Forte, "Schoenberg's Creative Evolution: The Path to Atonality," *The Musical Quarterly*, 64 (1978), 133-176.

² *Ibid.*, 138. Concerning the two pitch-class sets mentioned in the quote (6-Z44 and 6-Z19), the first number refers to the number of notes in the set, the second the position of the set in Forte's master list of pitch-class sets. The Z preceding the second number indicates another set class with the same interval content, but which cannot be shown to be transpositionally or inversionally equivalent.

³ *Ibid.*

the tonal implication of the set at all. The signature does possess quite a few diatonic triads, such as the C-major, C-minor, E-minor, and E_b-major triads. In addition, it also possesses a C-dominant-seventh chord, which implies the key of F. The complement of the EsCHBEG motive, that is, C[#]-D-F-F[#]-G[#]-A, contains two major triads separated by a half step, C[#]-F-G[#] and D-F[#]-A (in enharmonic spelling, D_b-F-A_b and D-F[#]-A), which makes its connection to diatonicism even easier. Without general establishment of the motive as a musical signature, these occurrences of the 6Z-44 and 6Z-19 hexachords may not have such musical significance as “signature.”

We seem to be in a battle between two extremes: the tonal system as the anchor of the analysis and the “atonal” idiom as intruder that disintegrates tonal harmony. Do these two extremes have to be mutually exclusive and only one of them exist in a piece of music? While the terms “tonal” and “atonal” are mutually exclusive from the linguistic standpoint, the use of interval cycles in Schoenberg’s music is revealed as a natural construct in its own right, which blends with the well understood tonal framework. While the use of interval cycles could be found in music in the nineteenth century, they appear mainly as local, textual devices which could be interpreted nevertheless as an integral part of the tonal framework. For example, the last movement of Beethoven’s Symphony No. 6 “Pastorale” starts with a quintal chord, F-C-G, which mimics the harmony of some folk melodies. However, the clarinet melody clearly articulates the C-major triad linearly before the quintal chord itself resolves to the F-major tonic. The quintal chord provides a snapshot of the dominant-tonic relationship in F major and there is no confusion about the F-major tonality. In scene 1 of Wagner’s *Das Rheingold*, the Rhinemaidens start the music drama with a pentatonic melody (“*Weia! Waga!*”) in E_b

major. While the pentatonic scale can be treated as a five-note segment of the interval-5 cycle, the pentatonic melody here is clearly treated as a subset of the E_b-major scale. Schoenberg's compositions, on the contrary, do not exhibit such an obvious interpretation of interval cycles with respect to the tonal framework. As discussed in previous chapters, Schoenberg treats the interval cycle as an integral element of the tonal system. While triads are still the ultimate goal of harmonic resolution in these pieces, the interval cycles are significant in shaping the harmonic fabric to prepare for these functional cadences. If a tonal cadence has to be approached by dominant sonority, these passages that involve the use of interval cycles to prepare for the cadence on triads must be treated as some sort of "altered" or "substituted" dominant. However, such a concept of traditional tonal progression from dominant to tonic only limits our scope of interval relationships that Schoenberg develops at the beginning of these compositions. The unfolding of the interval cycles at the beginning of his compositions establishes their foreground significance and becomes the basis of the harmonic fabric.

At the beginning of this study, I mentioned my fear of falling into the trap of being a "Martian musicologist" by ignoring the fact that these pieces are tonal. The major concern here is probably not the definition of tonality in the traditional sense or the role of interval cycles as new materials that broaden the definition of tonality. In the case of Schoenberg, his utmost attention to the construct of interval cycles provides a simple yet powerful means of creating a musical language that is not bounded by the strictest rules of tonal harmony while at the same time demonstrating the structure of tonality, no matter how loose that structure is in the compositions.

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