

**A Window into Tonality via the Structure of
Schoenberg's "Musette" from the *Piano Suite*, op. 25**

Western composers of the early 20th-century inherited a common-practice tonality that had gradually undergone increasing chromaticization in the century prior. This increasing level of chromaticism, often the result of applied or altered chords, eventually destabilized tonality to such an extent that harmonic centers often ceased to be audibly tangible. In response to this trend towards the dissolution of tonality, Arnold Schoenberg and his contemporaries envisioned works that specifically avoided references to traditional tonal harmonies or consonant sonorities. In doing so, these composers attempted to free modern music, which had already become completely saturated in terms of harmony and pitch, from the last vestiges of tonal practice. As early as 1907-08, Schoenberg began to write pieces in this new and dissonant style, which eventually became known as atonality.

Compositions in this early atonal style mainly focused on intervallic relations between pitches and pitch-classes but often lacked consistent higher-level organizational structures. Along with the rejection of tonal harmony and melody, atonal composers such as Schoenberg also (at least initially) eschewed references to classical forms. These classical forms, which had evolved over numerous centuries, were too integrally related with tonality itself to withstand immediate assimilation into an atonal environment. Moreover, organizational methods in atonal works analogous to the interaction of harmony and form had not yet been discovered. As a result, atonal works in this era typically suffered from extreme brevity. At least partially due to a frustration with this absence of large-scale strategies for his atonal works, Schoenberg experienced his famous "crisis" sometime around 1916-17 and ceased to write music.¹

This compositional crisis ended a few years later when Schoenberg began work on his *Klavierstücke* op. 23 in July 1920.² Soon afterward, Schoenberg also started to compose parts of his op. 25 piano suite, which was to become Schoenberg's first published piece written entirely using his newly-developed twelve-tone method. According to Andrew Mead, "the development of the twelve-tone system was the result of Arnold Schoenberg's search for a method of composition that would allow him to create large-scale structures while continuing to employ the sorts of pitch-class collections he had used in his contextual atonal works."³ Schoenberg had thus provided a solution to the persistent lack of established compositional techniques for long-range goals in atonal music. In Schoenberg's own words, the twelve-tone system in fact "seemed fitted to replace those structural differentiations provided formerly by tonal harmonies."⁴ The twelve transpositions and inversions of a twelve-tone row became corollaries to the twelve major and minor keys of tonality. With the discovery of this parallelism, the classical forms could be adopted wholesale as structures with which to organize twelve-tone compositions.

This adoption of traditional formal structures is no more clearly seen than in this first twelve-tone work, the *Piano Suite* op. 25, which was completed in 1923. Modeled after the Baroque suite, op. 25 contains a variety of dance movements, including a gavotte, musette, menuet & trio, and gigue; as well, the suite contains an introductory prelude and an intermezzo. Of these movements, the "Musette" provides a prime example of how Schoenberg coordinates his twelve-tone technique within a conventional formal scheme. In particular, the "Musette" allows a direct mapping to be seen between forms of the twelve-tone row and tonal harmonies. Through this mapping, transpositions and inversions of the twelve-tone row create the "structural differentiations" that become crucial to the organization of even larger pieces later in Schoenberg's career.

To better understand how Schoenberg effects this synthesis of twelve-tone technique and classical form in the "Musette," it is first necessary to understand the derivation and common traits of a traditional musette dance movement. The musette was a small bagpipe popular in France during the 17th and early 18th centuries.⁵ Much like its famous Scottish brethren, musettes included a distinctive drone, usually on the notes {C} or {G}. The dance movement named after this instrument typically has a pastoral quality and imitates this drone in the bass. As well, "the upper voice or voices consist of melodies in conjunct motion, sometimes but not always in quick note values."⁶

With regard to Schoenberg's "Musette," most of these stereotypical characteristics plainly manifest themselves on the surface of the music. A bass drone, for example, is pervasive in this movement. Throughout almost all of the piece (bar 16 is the exception), the lowest written note in any given measure is a {G}. Quick note values are also present; at the given tempo of 176 bpm (with the quarter note as the beat), the almost constant string of eighth notes spiritedly moves the music forward. Moreover, the conjunct motion typical of traditional musettes can be observed through the frequent use of semitones in the voices of the right hand.

Aside from these surface-level details, Schoenberg's "Musette" shares similar formal structure with Baroque dance movements. This similarity is highly important, because it was the search for formal structure that inspired Schoenberg to develop his twelve-tone system. To show this similarity, the reader must recognize that like all dance movements, musettes were often written in binary form.⁷ An initial sense of binary form in the op. 25 "Musette" can be gleaned by identifying the basic changes of texture, figuration, and tempo in the movement.

Figure 1 displays the main divisions and subdivisions of this piece. These boundaries are also marked in red ink on the enclosed score. The double bar provides an obvious point of

separation. Since an *a tempo* indication follows this double bar, it would make sense to also imagine a similar separation due to the *a tempo* in bar 20. The further subdivisions should be fairly clear in the music itself. For example, significant rests occur in the middle of measures 14 and 16. Also, repeated chords at the beginning of bar 4 interrupt the previous linear melodic patterns in the right hand. Finally, the middle of measure 24 shifts from a prior texture of chromatic sixteenth-note runs to a more lyrical and relaxed environment.

These divisions and subdivisions certainly imply some sort of multipartite form. Of course, these surface features do nothing to differentiate between a potential ternary form, per se, or the posited rounded binary form in Figure 1; Figure 1 could easily have been labeled as ABA or ABC given the evidence provided so far. To prove that Schoenberg's op. 25 "Musette" was indeed written in rounded binary form, the discussion must turn to the use of particular row forms in this movement. A closer look at the use of row forms will not only prove the accuracy of the main divisions shown in Figure 1 but will help evince the validity of the subdivisions as well.

If one attempts to derive the main row of the "Musette" solely via an analysis of this movement alone, it will be difficult if not impossible to end up with the correct result. Fortunately, the row and its related forms are exactly the same throughout the collection of pieces in op. 25. The "Prelude," perhaps unsurprisingly, lays out the row simply in the first twelve notes of the right hand's melodic line. This row is shown in Figure 2. As Figure 2 also shows, the interval classes of the row include mostly semitones and 3-cycle intervals (i.e. minor 3rds and tritones). The basic intervallic emphasis of the row is already at odds with the primary intervals of tonality such as the perfect fifth, major third, and major second.

This row, which shall be called P_4 , displays a few important instances of combinatorial invariance. In other words, when the row is combined with transformations of itself (such as inversions, retrogrades, etc.), certain collections of pitch classes stay the same (i.e. are held invariant) at certain positions in the row. For example, Figure 3 shows how the row displays inversional hexachordal combinatoriality. Given any row, P_x , there exists an inversion of the row, I_{x+7} that maintains the same pitch classes in opposite hexachords of the two row forms. Typically, rows that display inversional hexachordal combinatoriality in the music of Schoenberg are separated by $\{x+5\}$ not $\{x+7\}$, but this standard relationship could easily be achieved by simply switching the assignment of the prime row and the inversion. In other words, let the lower row in Figure 3 be called the prime row and the top row its inversion; doing so results in P_x & I_{x+5} hexachordal combinatoriality. Despite the existence of this combinatorial nature in the row, a nature which Schoenberg makes much compositional use of in later works, inversional hexachordal combinatoriality does not appear as a compositional technique in the "Musette." It is worth noting in the development of Schoenberg's twelve-tone method, however, that even at this early stage, Schoenberg was creating rows that had combinatorial properties he would later exploit.

Another quality of the original P_4 row is that it can almost map exactly into itself under retrograde-inversion. Figure 4a shows some irregular segmental invariance between rows P_x and I_{x+1} . In Figure 4b, where the I_{x+1} has undergone a rotation by 8, this segmental invariance creates an identical tetrachord, hexachord, and dyad in both rows. Only through the displacement of the $\langle 4,5 \rangle$ dyad are the two row forms able to be differentiated. As a result of this extreme similarity, row form identification can be tricky since any I_x row will be very similar to $R(P_{x+e})$, and any P_x row will be very similar to $R(I_{x+1})$. Since many of the row forms in the "Musette"

appear as partitions or segments, there often seems no way to confidently discriminate between P_x and I_{x+1} .

The sole tool with which to make a valid choice of row form in the "Musette," therefore, is often simply the knowledge that only four row forms are used throughout the entire suite. These four row forms are shown in Figure 5. It may not be evident from looking at the "Musette" in isolation, but the reader must take for granted that upon analyzing the suite as a whole, it becomes apparent that no other row forms are used in any movement. Martha Hyde and Robert Morgan confirm this limit of four rows for op. 25 in separate essays.⁸⁺⁹ Since the row forms are used almost exclusively with tetrachordal segmentation in the "Musette," the row forms in Figure 5 have been arranged to reflect this typical pattern.

Because each row in this family of row forms is either an inversion or tritone transposition of another row in the family, these four rows create a mathematical group (D2). In other words, if any of the row forms listed in Figure 5 are inverted and/or transposed by a tritone, the result will be another member of the row forms in Figure 5. A limited set of transformations, therefore, allows the composer to modulate from any row form to another.

The most salient quality of this four-row family, particularly as used in the "Musette," are two instances of invariance, which are shown in Figure 6. In Figure 6, the first and last members of the row have been highlighted. Notice how only pitch-classes {4} and {t} are used in these positions. The existence of solely these two pitch-classes in order position {1} is a direct result of the group structure, but the invariance at order position {e} is an important property of the row. For example, retrogrades of any row form in the family will begin as if they were a non-retrograde form. Moreover, the invariance at the first and last order position allows row forms to more easily link together in a seamless stream; where one ends, the other can begin. Use of this

feature can be found in between mm. 15-16 and mm. 17-18. In both cases, an {E} is held over the bar line to tie the prior row form to the next. Similarly, the {Bb} in bar 19 completes both the row form before it and begins the following one. Aside from these two examples, pitch-classes {4} and {t} also play prominent melodic roles at the beginning and ends of measures throughout the piece.

The second instance of invariance occurs at order numbers {3,4}. As Figure 6 shows, the collection of pitch-classes {7,1} is held invariant in the first tetrachord of each row form. Like the invariant pitch-classes {4,t} in the previous example, the pitch-classes {7,1} are separated by a tritone. This emphasis on tritone relationships further supports the group structure and mirrors the relationships between the row forms themselves. As mentioned previously, the note {G} (pitch-class {7}) functions as the characteristic drone in this musette. The {Db} becomes a consistent partner to this {G} after the double bar, creating a two-note drone in much of the left-hand part. The closeness of this {G,Db} drone to a typical open-fifth tonal drone of {G,D} seems too appropriate to be a coincidence. In Schoenberg's world, therefore, tonality's perfect fifth, a symmetrical bifurcation of the octave on a linear scale, has been replaced by atonality's tritone, a symmetrical bifurcation of the octave on a logarithmic scale.

Since tetrachordal segments play such an important role in Schoenberg's "Musette," it is worth briefly looking at the nature of these tetrachords. Figure 7 shows the three distinct set-classes to which these tetrachords belong. Each of these tetrachords is unique and has separate intervallic qualities from the others. The all-interval tetrachord [0146] allows for the entire palette of intervals to arise on the surface of the music despite the stringent limitations of only four row forms. The chromatic [0123] tetrachord imparts a high degree of semitone motion in the piece, which as stated earlier can perhaps be seen as an atonal manifestation of the conjunct

motion inherent to traditional musettes. The other tetrachord, [0236], eschews perfect intervals and thereby helps remove the work from any possible tonal pitch associations. Of course, the tetrachords by definition maintain these set-classes under transpositions and inversions of the row.

Using these tetrachordal segments as road markers, the path of row forms through the "Musette" can be traced. In the attached score, blue lines have been drawn to indicate where one row form ends and the other starts. Above each delineated area, the row form has been notated in pink. Notice how the row forms occur one after another, much like tonal harmonies. In the common-practice era, a single chord typically defines vertical sonorities. Similarly, in Schoenberg's "Musette," different row forms almost never appear simultaneously in different voices. Instead, row forms change in all voices at the same time. This change happens almost exclusively at the barline or at the halfway point in the bar, mimicking the rate of change for tonal harmonic rhythm as well.

If the row form areas are charted along with the divisions and subdivisions of the movement derived from the surface-level breaks as shown in Figure 1, Figure 8 is obtained. For the sake of more easily identifying patterns, letter names have been substituted for the proper row form labels. Examining Figure 8 helps inform a closer understanding of the piece's form. Notice how the {X} and {Y} patterns at the beginning repeat at the end. A contrasting middle section interrupts these outer parts as well. Moreover, before the return of the {X} and {Y} patterns at the end, another {Y} acts as a projection from earlier in the piece. This {Y} pattern between mm. 16 and 20 picks up where the music left off after the double bar to facilitate a return to the opening pattern. Obviously some sort of ternary or binary form is implied by the sequence of row forms, much as these forms were implied by the surface features as well.

The difference between ternary and binary form can sometimes be subtle. One important distinction, however, is that in ternary forms, both the {A} and {B} sections are typically tonally closed; the harmonic progressions of both sections usually begin and end on the tonic of the same key as they had begun. As Figure 8 shows, however, the last row form before the double bar differs from the row form that began the piece. Also, the first chord after the double bar does not occur at the end of a subdivision until the end of the piece. The form of Schoenberg's "Musette" thus appears more like a progressive form. The smooth connections between row forms through the movement, assisted by invariance at the first and last order positions of the row, generate continuous motion.

To add further evidence for the tonal roots of this movement's form, it is even possible to fairly convincingly make an analogy between tonal harmonies and the row forms themselves. In Figure 9, traditional tonal chords have been substituted for the row form labels. The subdivisions of the movement become even clearer now. In this analogy, the I_t row before the double bar acts somewhat like a half cadence, a typical tonal interruption. In the repeat of the {A} section, the sequence of row forms is not interrupted, and I_t continues on to P_4 for what could be construed as the final authentic cadence.

Admittedly, a few liberties had to be taken in creating Figure 9. For one, the I_t – I_4 – I_t progressions (V–vi–V) before bars 14 and 22 have been assigned different functions. Given the limited row forms used in this piece, such a liberty does not seem too egregious. A mere four row forms have to map on to the probably eight or more distinct harmonies used in a Baroque dance movement. However one wants to label these two cases, they are certainly prolongations of I_t , since at only one other time in the movement are the same row forms put in such close proximity.

A perceptive eye will also notice that the subdivision previously located in m. 20 in Figures 1 and 8 has been shifted to m. 22 in Figure 9. This change was made, of course, to add strength to the view of the opening's return at the end of the piece. The score gives evidence for such a decision, too, though, so this shift is not completely unfounded. In the middle of bar 22, the motivic groupings compress down to half-bar units as compared to the full-bar units beginning in bar 20. As well, the *sforzando* chords in both the left and right hands herald a significant change here. Perhaps the surface-level features do not change as drastically in m. 22 as they do in m. 20, but the underlying structure is changed such that a slight alteration to the location of the {A} section's return does not seem unwarranted.

Finally, it should be mentioned that Figure 9 may of course be drawing too literal of a parallel between row forms and tonal harmonies. Even though row forms seem to be providing "structural differentiations" in a similar way as do tonal harmonies, one cannot expect a sequence of row forms in an atonal environment to behave exactly like a tonal chord progression. For example, the assignment of supertonic to P_t and the submediant to I_4 is fairly tenuous and not meant to imply a one-to-one mapping. Instead, these row forms should be seen as having similar basic roles as pre-dominant sonorities, i.e. sonorities that lead to a pre-tonic function. Furthermore, I_t naturally leads to the home base of P_4 in this movement much like dominant leads to tonic. That is perhaps about as far as the analogy will believably stretch, but it is a worthwhile analogy nonetheless due to the insights it gives as to overall form.

A careful reader will have noticed that of the row forms listed in Figures 8 and 9, no retrograde versions have been included. Yet retrogrades of the four row forms definitely appear in the "Musette." The reason for the simplification of all row forms into non-retrograde versions is that the row forms are often presented in a "mixed" environment. Specifically, a non-

retrograded tetrachord segment may exist in a measure with a retrograded version of a partner tetrachord from the same row form. For example, in measure 7, the pitch-classes <4,5,2,3> appear as a line in the lower voice of the right hand. This tetrachord derives from a retrograde of I_1 . Meanwhile in the upper voice of the left hand, pitch-classes <8,e,6,0> outline another tetrachord from I_1 but in non-retrograde. The ordering of pitch-classes, therefore, does not stay consistent from tetrachord to tetrachord, even within areas controlled by the same row form.

To better trace the ordering of tetrachords throughout the piece, Figure 10 serves as a useful chart. Since the pitch-classes {1,7} from the first tetrachord are used mostly as a drone, it is too difficult to specify the exact ordering of this first tetrachord. Thus in Figure 10, only a history of the middle and last tetrachord from each row form is provided. It is important to note that the numbers in each set-class column refer to the order positions as presented in the piece and do not refer directly to pitch-classes. Where the question marks appear, a specification as to the exact ordering as presented in the "Musette" is too vague, often because some or all of the pitches sound simultaneously. Next to these order numbers are indications as to whether this ordering is a prime form (P), retrograde (R), or some other arrangement (e.g. {A} and {B}).

For the most part, both tetrachords are presented in the same sequence; a couple exceptions are particularly noteworthy, however. The ordering of the penultimate row form, I_6 , matches the ordering of the final row before the double bar. This similarity gives further credence to the parallel structures of both sections despite their contrasting musical surfaces. One may even posit a {7,6,5,4} ordering for the [0146] tetrachord of the I_4 in m. 5 based on this parallelism; its appearance in bar 5 as a vertical sonority had hampered any definite order number sequence. The mixing of prime and retrograde tetrachords in m. 14-17, the area leading to the "deceptive cadence," also perhaps lends an element of deception and ambiguity near the

middle of the movement. Thus this atonal "digression" section takes on a developmental character such as is found in tonal analogs.

Further elaborations in tetrachordal ordering arise in this middle section; these elaborations, though, do not involve merely mixing and matching prime and retrograde versions. Instead, the order numbers are shuffled; the result is a partition of the row form. It should be noted that the consistency of these partitions across row forms implies a conscious plan on the part of the composer. For example, take a look at the ordering of the [0146] tetrachord in m. 9-14. Row forms P_4 , I_4 , and I_t are subject to partitioning that results in a sequence of order numbers $\{6,7,5,4\}$. These tetrachords are placed very clearly in the melody of the right hand, so there is no doubt as to their motivic and melodic importance. Their derivation, though, is less clear. One theory is that the contour of the pitch-classes in this tetrachord has been mapped to the contour of the order numbers. For instance, the [0146] tetrachord from I_t is $\langle 8e60 \rangle$ when in prime form; the resultant pitch-class contour is $\langle 2310 \rangle$. In other words, the tetrachord begins on the second-highest pitch-class, moves sequentially to the highest, drops to the second-lowest, and then moves finally to the lowest. This same contour is manifest in the order numbers $\{6,7,5,4\}$. In a sense, the isomorphism between pitch-classes and order numbers has been exercised; pitch-class contour has been mapped to order number contour.

The mapping between pitch-classes and order numbers can be even more convincingly seen in another example. In particular, notice how the [0123] tetrachord undergoes its own shuffling in m. 9-14. This event is marked as "B" in Figure 10, and the order numbers that result are $\{9,8,e,t\}$. For the I_4 row form that occurs at this point, the pitch-classes of the tetrachord here are $\langle 98et \rangle$ in prime form. With an ordering of $\{9,8,e,t\}$, this tetrachord now becomes $\langle 89te \rangle$, which is found in the left hand of m. 13. Notice how the pitch-classes have become order

numbers and vice-versa. This single instance would be less remarkable if it were not for the reappearance of this order number sequence during the transition back to the opening around m. 20. Here, too, the new order number sequence cuts across multiple row forms. In the repeat of Phrase 1, moreover, the "B" order number sequence is used in retrograde as well as its initial ordering. The surface-level manifestation of this particular partition is seen in the numerous chromatic sixteenth-note runs of m. 21-24. Again, the consistent use of this same partition over numerous and different row forms supports the validity of such an analysis.

Because of these row partitions and the mixing and matching of prime and retrograde tetrachords, a significant sense of development is imparted to the middle section of Schoenberg's "Musette." The presentations of the row forms at the beginning and end of the piece, rather, are fairly straightforward and unadulterated. Such a progression from relative consonance to dissonance back to consonance mirrors the progression of melodic and harmonic content in many tonal forms. The row forms, furthermore, acting in concert with surface features, create structural delineations in the music much like those created by harmonic factors in tonal music. A number of factors therefore create a clear analogy between the form of this movement and traditional tonal organizational schemes. It is even possible that the architecture of the "Musette" was envisioned as some sort of atonal corollary to rounded binary form. Even if such a literal relationship between tonal and atonal forms seems too far-fetched, many similarities are impossible to ignore. This movement may be relatively short, not much if any longer than brief pieces written during Schoenberg's pre-twelve-tone period. However, a clear methodology is present, and one can see how this methodology comes to provide a framework for later, larger works. Thus Schoenberg's op. 25 "Musette" can be seen as not departing from the inherited legacy of tonal tradition but rather extending it into new sonic territory.

NOTES

¹ Robert P. Morgan, "Twelve-Tone Music," *The New Harvard Dictionary of Music*, ed. Don Randel (Cambridge MA: The Belknap Press, 1986), p. 886.

² O.W. Neighbour, "Schoenberg, Arnold," *Grove Music Online* ed. L. Macy (Accessed 16 December 2006), <<http://www.grovemusic.com>>.

³ Andrew Mead, "Large-Scale Strategy in Arnold Schoenberg's Twelve-Tone Music," *Perspectives of New Music* 24 (1985), p. 120.

⁴ Arnold Schoenberg, "Composition with Twelve-Tones," *Style and Idea*, ed. Leonard Stein, trans. Leo Black (New York: St. Martin's Press, 1975), p. 218.

⁵ Robert A. Green, "Musette," *Grove Music Online* ed. L. Macy (Accessed 16 December 2006), <<http://www.grovemusic.com>>.

⁶ Meredith Ellis Little, "Musette," *Grove Music Online* ed. L. Macy (Accessed 16 December 2006), <<http://www.grovemusic.com>>.

⁷ W. Dean Sutcliffe, "Binary form," *Grove Music Online* ed. L. Macy (Accessed 16 December 2006), <<http://www.grovemusic.com>>.

⁸ Martha M. Hyde, "Musical Form and the Development of Schoenberg's 'Twelve-Tone Method,'" *Journal of Music Theory* 29 (1985), pp. 85-143.

⁹ Morgan, p. 887.

Figure 1: Rounded binary form

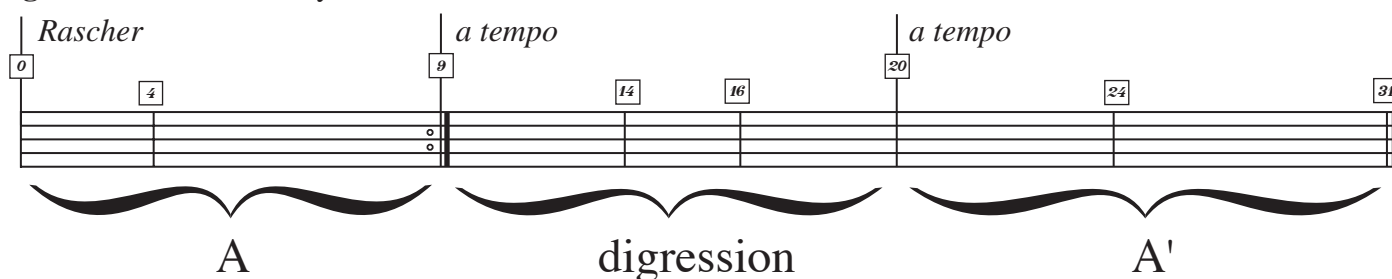


Figure 2: Main Row

row = 4 5 7 1 6 3 8 2 e 0 9 t (4)
interval classes = 1 2 6 5 9 5 6 9 1 9 1 (6)

Figure 3: Inversional Hexachordal Combinatoriality @ P_x, I_{x+7}

$$\begin{array}{l} P_4 = \begin{array}{|c|c|c|c|c|c|} \hline a & & & & & \\ \hline 4 & 5 & 7 & 1 & 6 & 3 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|c|c|} \hline b & & & & & \\ \hline 8 & 2 & e & 0 & 9 & t \\ \hline \end{array} \\ I_e = \begin{array}{|c|c|c|c|c|c|} \hline & & & & & \\ \hline e & t & 8 & 2 & 9 & 0 \\ \hline \end{array} \quad \begin{array}{|c|c|c|c|c|c|} \hline & & & & & \\ \hline 7 & 1 & 4 & 3 & 6 & 5 \\ \hline \end{array} \\ \hline \end{array}$$

Figure 4: Invariance @ P_x, I_{x+1}

$$\begin{array}{l} \text{a)} \quad \begin{array}{l} P_4 = \begin{array}{|c|c|} \hline a & \\ \hline 4 & 5 \\ \hline \end{array} \begin{array}{|c|c|c|c|c|c|} \hline b & & & & & \\ \hline 7 & 1 & 6 & 3 & 8 & 2 \\ \hline \end{array} \begin{array}{|c|c|c|} \hline c & & \\ \hline e & 0 & 9 & t \\ \hline \end{array} \\ I_5 = \begin{array}{|c|c|} \hline & \\ \hline 5 & 4 \\ \hline \end{array} \begin{array}{|c|c|c|c|c|c|} \hline & & & & & \\ \hline 2 & 8 & 3 & 6 & 1 & 7 \\ \hline \end{array} \begin{array}{|c|c|c|} \hline & & \\ \hline t & 9 & 0 & e \\ \hline \end{array} \\ \hline \end{array} \\ \text{b)} \quad \begin{array}{l} P_4 = \begin{array}{|c|c|c|c|c|c|} \hline a & & & & & \\ \hline 4 & 5 & 7 & 1 & 6 & 3 & 8 & 2 \\ \hline \end{array} \begin{array}{|c|c|c|} \hline c & & \\ \hline e & 0 & 9 & t \\ \hline \end{array} \\ R(I_5) r8 = \begin{array}{|c|c|c|c|c|c|} \hline & & & & & \\ \hline 7 & 1 & 6 & 3 & 8 & 2 & 4 & 5 \\ \hline \end{array} \begin{array}{|c|c|c|} \hline & & \\ \hline e & 0 & 9 & t \\ \hline \end{array} \\ \hline \end{array}$$

Figure 5: Row Forms for op. 25 ($P_x, P_{x+6}, I_x, I_{x+6}$)

order numbers	0	1	2	3	4	5	6	7	8	9	t	e
P_4	4	5	7	1	6	3	8	2	e	0	9	t
P_t	t	e	1	7	0	9	2	8	5	6	3	4
I_4	4	3	1	7	2	5	0	6	9	8	e	t
I_t	t	9	7	1	8	e	6	0	3	2	5	4

Figure 6: Invariances in the row family

$$\begin{array}{l} P_4 = \begin{array}{|c|c|} \hline a & \\ \hline 4 & 5 \\ \hline \end{array} \begin{array}{|c|c|} \hline b & \\ \hline 7 & 1 \\ \hline \end{array} \begin{array}{|c|c|c|c|} \hline & & & \\ \hline 6 & 3 & 8 & 2 \\ \hline \end{array} \begin{array}{|c|c|c|} \hline & & \\ \hline e & 0 & 9 & t \\ \hline \end{array} \\ P_t = \begin{array}{|c|c|} \hline & \\ \hline t & e \\ \hline \end{array} \begin{array}{|c|c|} \hline & \\ \hline 1 & 7 \\ \hline \end{array} \begin{array}{|c|c|c|c|} \hline & & & \\ \hline 0 & 9 & 2 & 8 \\ \hline \end{array} \begin{array}{|c|c|c|} \hline & & \\ \hline 5 & 6 & 3 & 4 \\ \hline \end{array} \\ I_4 = \begin{array}{|c|c|} \hline & \\ \hline 4 & 3 \\ \hline \end{array} \begin{array}{|c|c|} \hline & \\ \hline 1 & 7 \\ \hline \end{array} \begin{array}{|c|c|c|c|} \hline & & & \\ \hline 2 & 5 & 0 & 6 \\ \hline \end{array} \begin{array}{|c|c|c|} \hline & & \\ \hline 9 & 8 & e & t \\ \hline \end{array} \\ I_t = \begin{array}{|c|c|} \hline & \\ \hline t & 9 \\ \hline \end{array} \begin{array}{|c|c|} \hline & \\ \hline 7 & 1 \\ \hline \end{array} \begin{array}{|c|c|c|c|} \hline & & & \\ \hline 8 & e & 6 & 0 \\ \hline \end{array} \begin{array}{|c|c|c|} \hline & & \\ \hline 3 & 2 & 5 & 4 \\ \hline \end{array} \end{array}$$

Figure 7: Set-classes of tetrachords in the row (no rotation)

$$P_4 = \{4 \ 5 \ 7 \ 1\} \quad \{6 \ 3 \ 8 \ 2\} \quad \{e \ 0 \ 9 \ t\}$$

$$\quad \quad \quad [0236] \quad \quad [0146] \quad \quad [0123]$$

Figure 8: Abstract form

Let $T = P_4$
 $S = P_t$
 $M = I_4$
 $D = I_t$

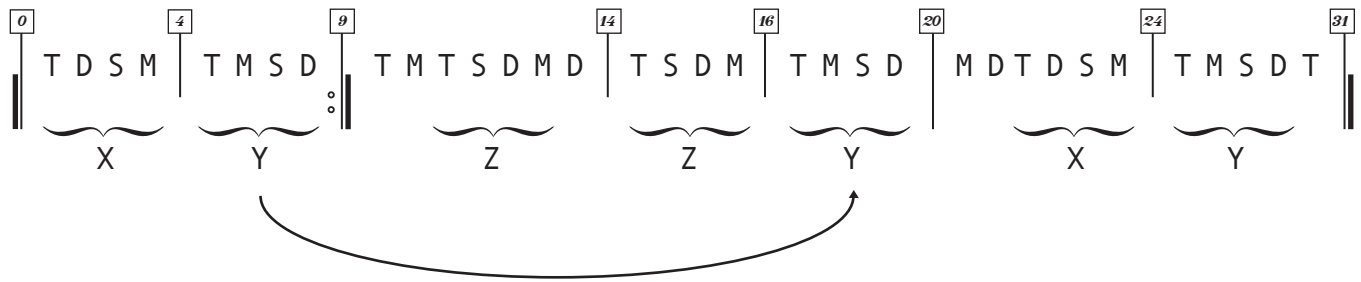


Figure 9: Tonal model

Let $I = P_4$
 $ii = P_t$
 $vi = I_4$
 $V = I_t$

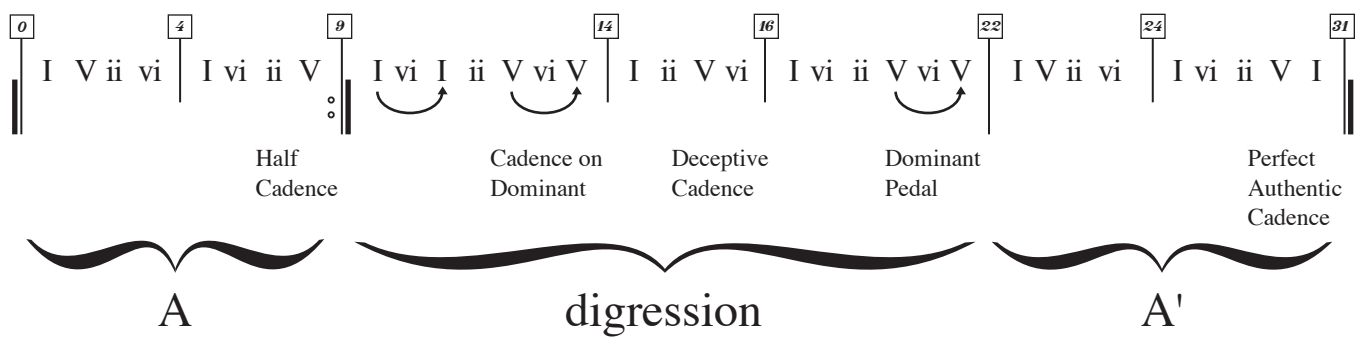


Figure 10: History of [0146] and [0123] tetrachords; chart of order numbers

form			[0146]	order	[0123]	order
A	m. 1	P ₄	4567	P	89te	P
		I _t	4567	P	89te	P
		P _t	7654	R	et98	R
		I ₄	4567	P	89te	P
	Phrase 1					
	m. 4	P ₄	4567	P	89te	P
		I ₄	?		et98	R
		P _t	7654	R	et98	R
		I _t	4567	P	et98	R
digression	m. 9	P ₄	4567	P	et98	R
		I ₄	7654	R	et98	R
		P ₄	6754	A	89te	P
		P _t	4567	P	89te	P
		I _t	?		?	
		I ₄	6754	A	98et	B
		I _t	6754	A	?	
	m. 14	P ₄	4567	P	89te	P
		P _t	7654	R	89te	P
		I _t	4567	P	89te	P
		I ₄	7654	R	89te	P
	Deceptive Cadence					
	m. 17	P ₄	?		et98	R
		I ₄	7654	R	et98	R
		P _t	7654	R	et98	R
		I _t	7654	R	89te	P
		I ₄	?		98et	B
		I _t	?		98et	B
A'	m. 22	P ₄	7654	R	te89	R(B)
		I _t	7654	R	98et	B
		P _t	7654	R	te89	R(B)
		I ₄	7654	R	te89	R(B)
	Phrase 1 (repeat)					
	m. 24	P ₄	4567	P	89te	P
		I ₄	7654	R	et98	R
		P _t	7654	R	et98	R
		I _t	4567	P	et98	R
		P ₄	4567	P	89te	P
	Perfect Authentic Cadence					

Arnold Schoenberg
Musette
op. 25

Rascher (♩ = 88)

ff

pp

f

p

sf

<sf

pp

a tempo

rit.

accel.

f

ff

rit.

p

Red = formal divisions

Lt. Blue = Row form divisions

Pink = Row form

Green = Prime Form

Arnold Schoenberg Musette op. 25

Trevor de Clercy
THS13Headlam
12/16/06

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Handwritten musical score for Arnold Schoenberg's *Musette op. 25*, measures 15-31. The score is annotated with color-coded brackets and labels:

- Red** = formal divisions
- Lt. Blue** = Row form divisions
- Pink** = Row form
- Green** = Prime Form

The score includes dynamic markings (p, f, pp, sf, ppp, mf, sf, f, p, sf, sf, ppp), articulation (acc., rit.), and performance instructions (poco rit., molto legato). The annotations include labels such as P_t , I_t , I_4 , P_4 , and I_4 with subscripts, indicating specific forms or divisions within the piece.

Red = formal divisions

Lt. Blue = Row form divisions

Pink = Row form

Green = Prime Form