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Serial Techniques in Works for Unaccompanied Trumpet

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SERIAL TECHNIQUES IN WORKS FOR UNACCOMPANIED TRUMPET

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ABSTRACT

Of the many compositions for unaccompanied trumpet, some of the most interesting are those that employ twelve-tone serialism. This study provides analyses of these works, including Robert Henderson's *Variation Movements*, Charles Whittenberg's *Polyphony*, Hans Werner Henze's *Sonatina*, and Stanley Friedman's *Solus*. Performance implications related to the twelve-tone analysis are examined for each piece. Where multiple editions of a piece exist, they are compared with each other and with the analysis to guide the performer in choosing an edition.

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INTRODUCTION

Solo works for unaccompanied trumpet are among the most challenging and rewarding in the repertoire. The challenges they present are unique to the idiom. Without other collaborating musicians, it is the soloist's responsibility alone to provide a sense of dramatic pacing. Without underlying harmonies, the performer has only his or her own sense of phrasing to drive the piece forward. The soloist must be able to create a wide variety of tonal colors if the piece is to be interesting. The lack of rest makes these works physically as well as musically challenging. These challenges, while daunting, provide the performer with unequaled opportunities for musical and technical growth. The unaccompanied solo is often thought of as a kind of bridge between academic etudes and more valuable solo works. Indeed, composers often use the unaccompanied solo to explore extended techniques that approach the limit of the instrument's capability. For this reason, unaccompanied solos are among the most difficult in the repertoire. But the important criterion for judging artistic merit should not be instrumentation, but musical quality.

There are a great number of unaccompanied pieces that feature twelve-tone serialism, especially when compared to the standard repertoire. Of the twelve-tone pieces for trumpet and piano, only Sir Peter Maxwell-Davies's *Sonata* could be considered standard repertoire. On the other hand, some of the most celebrated works for unaccompanied trumpet employ serial techniques. These pieces include Robert Henderson's *Variation Movements*, Charles Whittenberg's *Polyphony*, Hans Werner Henze's *Sonatina*, Stanley Friedman's *Solus*, Samuel Adler's *Canto I*, Karlheinz Stockhausen's *Harmonien*, and more. These pieces have all been recorded by prominent

soloists, such as Håkan Hardenberger, Thomas Stevens, Reinhold Friedrich, and others, and are considered equal to other standard pieces in the trumpet repertoire.¹ The fact that these pieces are rarely performed by students is a product of their extreme technical demands rather than a lack of artistic merit.

Besides technical difficulty, one reason that students often avoid these works is the difficulty in understanding the underlying structure. Sonatas and concertos far more familiar to most students, so they possess useful intuitions about how to approach them. Similar intuitions about serial music are much rarer. It is with the goal of making these pieces more accessible to the performer that this study is written.

These techniques originate with Arnold Schoenberg and arise as what he believed was the logical extension of the increased chromaticism of composers like Mahler and Wagner. Schoenberg saw the trajectory of nineteenth-century harmony as one of increasing chromaticism, and dodecaphony was his attempt at formalizing that procedure. The logical conclusion of this trajectory, in Schoenberg's view, is one in which all twelve pitches have equal importance. Schoenberg's solution for insuring absolute equality was a serial procedure in which each note is used before a previous note can be repeated. The order of the twelve pitches is called a tone row, and is given the label P0 for the untransposed prime form of the row. In this study, I have used the traditional method of labeling in which the prime form of the row is P0, regardless of its starting pitch. Other systems use the absolute pitch method which labels the prime form starting on C as P0. I have also elected to use pitch names rather than numbers in the analysis. Using numbers (0-9, T, E), for pitch names is useful in theoretical work because the method lends itself to computation and more complicated matrix operations. However, the goal of this study is to make these pieces accessible to performers who might not have as much theoretical fluency. Therefore,

¹Michael Craig Bellinger, "A model for evaluation of selected compositions for unaccompanied solo trumpet according to criteria of serious artistic merit" (DMA, Louisiana State University, 2002).

I believe labeling with pitch names is more useful.

While, the usual approach to this kind of music is to use a row consisting of twelve pitches, it is possible to use different numbers of pitches. Robert Henderson's *Variation Movement* uses a nine-note row, while Stockhausen's *Harmonien* uses a twenty-five-note row. Other techniques depart from the standard practice, including overlapping row statements (Friedman's *Solus*), simulating multiple voices (Henderson's *Variation Movements* and Whittenberg's *Polyphony*), and reordering row pitches (Henze's *Sonatina*). Understanding these techniques will help the performer understand the structure of each piece, ultimately making the performance more effective. Serial procedures unrelated to pitch, such as dynamic and tempo serialism, are not used in any of the objects of this study.

CHAPTER 1

12 Studies in Classical and Modern Style BY PAOLO

LONGINOTTI

Paolo Longinotti's *12 Studies in Classical in Modern Style* are staples of trumpet education. These short etudes seem particularly well-suited to address the many technical issues facing modern trumpet players. For example, there are studies specifically designed for teaching rhythm (numbers three and seven), *staccato* playing (number two), whole tone scales (number 8), etc. However, two full studies are devoted to twelve-tone serialism (numbers five and twelve). This shows the importance Longinotti placed on understanding twelve-tone language. Before moving on to more substantial twelve-tone literature, it will be useful to view a short analysis of these two etudes.

1.1 ETUDE A

The first twelve-tone etude in Longinotti's book is number five. Most etudes in this book are given descriptive names (Etude Vocalise, Hexaphonic Study, Etude (Study in Rhythm), etc.). This study is simply named "Etude A (based on a twelve tone system)."¹ Longinotti provides an analysis above the music. Here, he lists four rows using numbers. The first row is labeled "1.2.3.4.5.6.7.8.9.10.11.12" by definition. The other three rows are numbered based on the corresponding pitches from the first row. The second row is labeled "3.5.7.9.11.1.2.4.6.8.10.12." This means that the second

¹Paolo Longinotti, *12 Studies in Classical and Modern Style* (New York: International Music Company, 1962).

row is constructed from the odd pitches of the first row combined with the even pitches of the first row. Note that these are mislabeled in the International edition as evens and odds, rather than odds and evens.² The third row is the second row in retrograde, “12.10.8.6.4.2.1.11.9.7.5.3.” Finally, the fourth row is simply the first row in retrograde, “12.11.10.9.8.7.6.5.4.3.2.1.” This way of constructing a twelve-tone system is very simple, as it does not employ transpositions or inversions. The resulting rows are shown in figure 1.1.

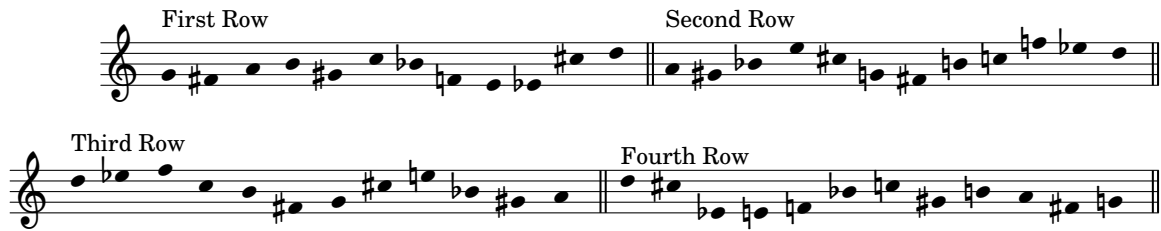


Figure 1.1 Rows for *Etude A*

Above the score, Longinotti labels each row statement I, II, III, or IV to correspond with the rows listed above. As this is a study designed to teach the basics of twelve-tone technique, the analysis is straightforward. There are no omitted notes from each row statement, and repeated notes are relatively rare. When notes are repeated, they usually occur in the fourth row form. An extra D \sharp_4 , the pitch that began the row, is added to the end of the row statement. This occurs in measures ten and thirty-seven. The final note of the piece is not labeled as being in any of the rows. This final G \flat_4 allows the etude to begin and end on the same pitch, creating a kind of tonic note. Because the previous row ends on a D \sharp_4 , the final measures have the finality of an authentic cadence, despite being atonal in construction. In measure eighteen, the G \sharp_4 should not carry through the bar. This is the end of a statement of the fourth row, which ends on G \flat_4 rather than G \sharp_4 . In this case, the study of the twelve-tone system

²Longinotti, *12 Studies in Classical and Modern Style*.

used in this piece reveals a non-obvious misprint.

1.2 ETUDE B

Etude number twelve is named “Etude B (based on a twelve tone system).”³ While Longinotti also provides analysis for this study, the number of misprints in the International edition require clarification. This study is constructed slightly differently than Etude A. Here, there are still only four row forms used in the composition. The first row, Longinotti labels “1.2.3.4.5.6.7.8.9.10.11.12.” The second row is labeled “Inversion of intervals,” and “6.9.11.10.5.1.12.8.2.4.3.7.” Because this inversion begins on pitch six (Ab), this is I8, rather than I0. The third row is labeled “Retrograded imitation of the 2nd Row,” and “12.11.10.9.8.7.6.5.4.3.2.1.” This is obviously the retrograde of the first row (R0), rather than the indicated second row. The fourth row is labeled “Retrograded imitation of the 1st Row,” and “7.3.4.2.8.12.1.5.10.11.9.6.” This is obviously the retrograde of the second row (RI8), rather than the first. While Longinotti is unlikely to have been familiar with matrix operations, the following table helps the modern reader understand the various rows. The rows I, II, III, and IV correspond to P0, I8, R0, and RI8, respectively. The beginning of the study is straightforward. Longinotti labels the row forms as they occur in the piece with Roman numerals. His labeling is I-IV-III-II-II-I-II-I-IV-III-III-II-IV-I-III. In more modern notation, this becomes P0-RI8-R0-I8-I8-P0-I8-P0-RI8-R0-R0-I8-RI8-P0-R0. Toward the end of the study, Longinotti makes subtle changes to the rows. The statement of row IV (RI8) in measure sixty-two is labeled as beginning of F \sharp rather than the original D \sharp . Because the previous row is row II (I8), whose last note is D \sharp , this statement can be heard as an elision, or connection of two row statements by a common tone. However, the missing D \sharp is added to the end of the row in measure sixty-six. This can also be heard as a rotation of the row, such that 1.2.3.4.5.6.7.8.9.10.11.12 becomes

³Longinotti, *12 Studies in Classical and Modern Style*.

Table 1.1 Matrix for *Etude B*

	I0	I11	I6	I7	I10	I8	I3	I4	I9	I1	I2	I5	
P0	C	B	F \sharp	G	B \flat	A \flat	E \flat	E	A	C \sharp	D	F	R0
P1	C \sharp	C	G	A \flat	B	A	E	F	B \flat	D	E \flat	F \sharp	R1
P6	F \sharp	F	C	C \sharp	E	D	A	B \flat	E \flat	G	A \flat	B	R6
P5	F	E	B	C	E \flat	C \sharp	A \flat	A	D	F \sharp	G	B \flat	R5
P2	D	C \sharp	A \flat	A	C	B \flat	F	F \sharp	B	E \flat	E	G	R2
P4	E	E \flat	B \flat	B	D	C	G	A \flat	C \sharp	F	F \sharp	A	R4
P9	A	A \flat	E \flat	E	G	F	C	C \sharp	F \sharp	B \flat	B	D	R9
P8	A \flat	G	D	E \flat	F \sharp	E	B	C	F	A	B \flat	C \sharp	R8
P3	E \flat	D	A	B \flat	C \sharp	B	F \sharp	G	C	E	F	A \flat	R3
P11	B	B \flat	F	F \sharp	A	G	D	E \flat	A \flat	C	C \sharp	E	R11
P10	B \flat	A	E	F	A \flat	F \sharp	C \sharp	D	G	B	C	E \flat	R10
P7	G	F \sharp	C \sharp	D	F	E \flat	B \flat	B	E	A \flat	A	C	R7
	RI0	RI11	RI6	RI7	RI10	RI8	RI3	RI4	RI9	RI1	RI2	RI5	

2.3.4.5.6.7.8.9.10.11.12.1. Longinotti uses the same technique in the final row statement. This is labeled row III (R0). Like before, the last note of the previous row statement creates an elision. The final note of row I (P0) is F \sharp . This can be heard as an elision with the beginning of row III (R0). Despite the elision accounting for the missing note, Longinotti adds the missing F to the end of the study in another row rotation. Longinotti exploits the structure of the row to create tonal implications. Like Etude A, Etude B also ends with the impression of V-I motion. This creates the feeling of a tonic pitch and gives the study a sense of closure.

CHAPTER 2

Variation Movements BY ROBERT HENDERSON

Robert Henderson's use of serialism in *Variation Movements* is among the most aurally accessible in the unaccompanied trumpet literature. Several of the work's attributes contribute to its accessibility. First, the theme and variations structure allows the listener to hear the prime form of the row as the main theme of the work. Second, the use of a nine-note row in place of the usual twelve-note row allows the listener to more easily distinguish between row permutations. Third, Henderson places cadences from outside the row to mark the piece's structure.

2.1 MOVEMENT ONE

The musical score for Movement One consists of two staves. The first staff begins with a tempo marking of quarter note = 76. It contains two statements of the row P0. The first statement (measures 1-4) is marked *p* and *sempre legato*. The second statement (measures 5-8) is also marked *p* and *sempre legato*. The second staff starts at measure 9 with row R0, marked *p* and *cresc.*. This is followed by a 'Triad' in measure 11, marked *f* and *p*, and a 'Cadence' in measure 12, marked *pp*. The score includes various time signatures (5/4, 2/2, 3/4, 2/2, 3/2, 2/2) and dynamic markings (*p*, *cresc.*, *f*, *pp*). There are also breath marks and slurs throughout the piece.

Figure 2.1 mm. 1-12

The first movement begins with two complete statements of the row P0 (figure 2.1). Henderson employs two techniques to make the row audible. First, he places breath marks to separate the row statements. Second, he adds a D \sharp between statements of P0. Because no row forms contain semitones, the rising semitone from D \sharp to E

announces the beginning of a new row statement. After the second statement of P0, there is another D \sharp , here written enharmonically as E \flat . In this measure, the ascending minor sixth is accented and contrasts with the “sempre legato” instruction given at the beginning of the movement. This minor sixth gesture is another way that Henderson announces the beginning of a new row statement. While the ascending semitone announces that a prime form will follow, the minor sixth announces a retrograde form. After a complete statement of R0, there is another D \sharp . This time, the D \sharp combines with G and E to create a cadential figure. This cadential figure separates the movement into sections, making it easier to mark the beginning and end of row permutations.

Table 2.1 Matrix for *Variation Movements*

	I0	I5	I8	I1	I11	I7	I2	I9	I3		I4	I10	I6
P0	E	A	C	F	D \sharp	B	F \sharp	C \sharp	G	R0	G \sharp	D	A \sharp
P7	B	E	G	C	A \sharp	F \sharp	C \sharp	G \sharp	D	R7	D \sharp	A	F
P4	G \sharp	C \sharp	E	A	G	D \sharp	A \sharp	F	B	R4	C	F \sharp	D
P11	D \sharp	G \sharp	B	E	D	A \sharp	F	C	F \sharp	R11	G	C \sharp	A
P1	F	A \sharp	C \sharp	F \sharp	E	C	G	D	G \sharp	R1	A	D \sharp	B
P5	A	D	F	A \sharp	G \sharp	E	B	F \sharp	C	R5	C \sharp	G	D \sharp
P10	D	G	A \sharp	D \sharp	C \sharp	A	E	B	F	R10	F \sharp	C	G \sharp
P3	G	C	D \sharp	G \sharp	F \sharp	D	A	E	A \sharp	R3	B	F	C \sharp
P9	C \sharp	F \sharp	A	D	C	G \sharp	D \sharp	A \sharp	E	R9	F	B	G
	RI0	RI5	RI8	RI1	RI11	RI7	RI2	RI9	RI3		RI4	RI10	RI6
P8	C	F	G \sharp	C \sharp	B	G	D	A	D \sharp	R8	E	A \sharp	F \sharp
P2	F \sharp	B	D	G	F	C \sharp	G \sharp	D \sharp	A	R2	A \sharp	E	C
P6	A \sharp	D \sharp	F \sharp	B	A	F	C	G	C \sharp	R6	D	G \sharp	E

The first movement’s second section begins in measure thirteen. Rather than using complete row statements as in the first section, Henderson begins this section with only the opening tetrachords of each row. In figure 2.2, Henderson creates a long line by continually transposing the P0 tetrachord (P0, P2, P4) before ending with a triad from I2. The cadence follows; however, its notes are reversed B-G-D \sharp (the first statement of the cadential figure was D \sharp -G-B. The triad in measure nineteen (labeled

Figure 2.2 shows two staves of music. The first staff (measures 13-16) features a melodic line with notes G4, A4, B4, C5, D5, E5, F5, G5. It is marked with *p* and *pp*. Labels P0 and P2 are placed above the first and second measures respectively. The second staff (measures 17-20) continues the melodic line with notes G4, A4, B4, C5, D5, E5, F5, G5. It is marked with *p*, *f*, and *p*. Labels P4, I2, and Cadence are placed above the first, second, and fourth measures respectively.

Figure 2.2 mm. 13-20

“I2”) continues the practice of preceding the cadence with a major or minor triad. In this case, it is F \sharp major; earlier, it is A minor (the last three notes of R0).

The final section of the first movement (figure 2.3) follows the same format as the first section. That is, a prime form stated twice in succession, followed by its retrograde form, followed by a cadence. Rather than repeating P0 as in the beginning, Henderson chooses P2.

Figure 2.3 shows two staves of music. The first staff (measures 43-46) features a melodic line with notes G4, A4, B4, C5, D5, E5, F5, G5. It is marked with *p*. Labels P2 and P2 are placed above the first and second measures respectively. The second staff (measures 47-54) continues the melodic line with notes G4, A4, B4, C5, D5, E5, F5, G5. It is marked with *cresc.*, *f*, *p*, *pp*, *dim.*, and *ppp*. Labels R2 and Cadence are placed above the second and fourth measures respectively.

Figure 2.3 mm. 43-54

Like in the beginning, the first statement of P2 is complete. It is followed by an F \sharp in measure forty-six that is not in the row. Like the D \sharp in measure four, the F forms a semitone with the following note to announce the next statement of P2. The ascending minor sixth in measure fifty declares that a retrograde form is to follow, just as in measure eight. After a complete statement of R2, the cadential figure

returns, but is followed by a final E \sharp . This final note is better explained as a tonic, rather than as a member of a row. The D \sharp and B in the cadential figure suggest a B-major chord, creating a sense of V-I motion.

2.2 MOVEMENT TWO

The second movement treats the solo trumpet as two separate voices. The voices are distinguished by articulation, dynamics, register, and interval content. The upper voice begins *forte* and *marcato*, while the lower voice begins *piano* and uses slurs.

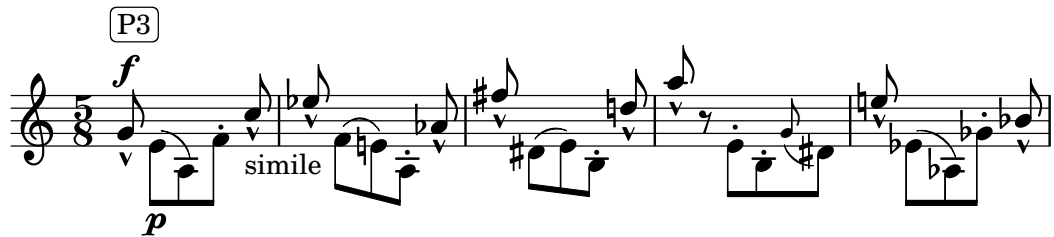


Figure 2.4 mm. 1-5

In figure 2.4, the upper voice spells out P3, while the lower voice uses pitch material that is not a statement of any row. The repeated pitches in the lower voice serve to disrupt any sense of a row statement apart from the upper voice. The structure of this movement is similar to the first in that the first prime form of the row is stated twice. Like in the first movement, Henderson gives a semitone preparation to the second statement of the row. Unlike the first movement, the second statement of the row is not complete. A *fortissimo* D \flat interrupts after four notes. This is the first note longer than an eighth note that appears in either voice in the first nine measures. It is also the first D \flat /C \sharp in either voice. C \sharp does not appear in the nine note P3 row. Measure ten continues the pattern of the opening measures, this time with the upper voice sounding only the first tetrachord of P3. The F \sharp in measure twelve creates an elision with P2. The chromatic passage that begins in measure fifteen ends the

two-voice texture (figure 2.5). This passage can be seen as an elaboration of the first movement’s cadential figure because it does not derive from a straightforward statement of a row and because it serves to separate sections of the piece.



Figure 2.5 mm. 15-17

Repeated notes, uniform articulations and irregular rhythms alert the listener that this figure is not a continuation of the previous two-part writing. The next section, marked “*subito piano*,” returns to a single melodic voice. This section contains a complete statement of R0. As shown in figure 2.6, measures twenty-four and twenty-five contain another embellishment of the cadential gesture.



Figure 2.6 mm. 24-25

Here, the added A \natural to the usual D \sharp -G \flat -B \natural acts as an *appoggiatura* to the B \natural . The two-part writing attempts a return in measure thirty-one, only to be interrupted by the same cadential figure from measure fifteen. The structure of this section is similar to the beginning, but with P5 in place of P3. In figure 2.7, the second statement of the row is interrupted by a high note that is not in the row. The high E \flat appears neither in P5, nor in the lower voice’s accompaniment between measures thirty-six and forty-four.

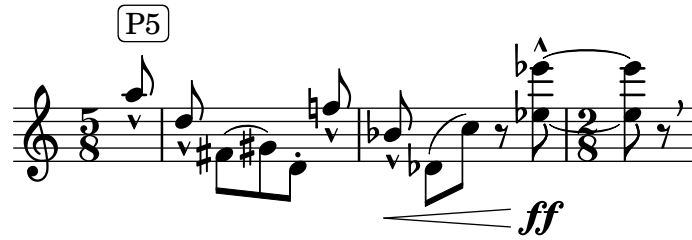


Figure 2.7 mm. 42-44

As shown in figure 2.8, the music returns to P3 in measure forty-five. This section corresponds to measure ten. Similar to measure ten, the P3 row elides with P2 two measures later.

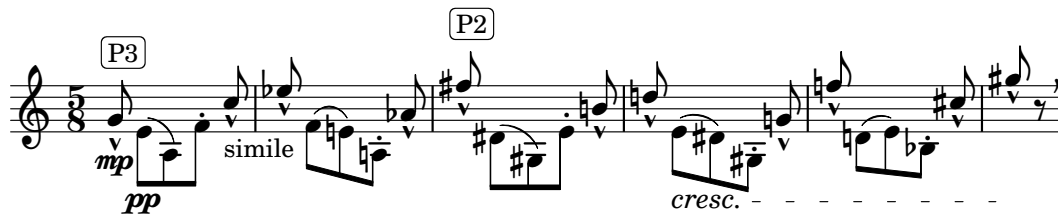


Figure 2.8 mm. 45-50

The cadential figure is repeated again, but with even greater elaboration in measures fifty-three to fifty-six.

2.3 MOVEMENT THREE

The third movement begins *attacca*, but the sudden change in style from *staccato* sixteenth notes to slurred eighth notes makes it easy to hear the beginning of the movement. Within the slurred texture of the third movement, only accented notes are part of the row statements. The opening of the third movement is shown in figure 2.9. Like the first movement, the third movement begins with two complete statements of P0 separated by a leading tone D \sharp , then a complete statement of R0 followed by the cadential figure. The middle section of this movement alternates



Figure 2.9 mm. 1-4

voices, as shown in figure 2.10. A *piano* voice enters with three notes from P2 and is answered with the same three notes played in the style of the beginning of the movement. The two voices continue alternating for a complete statement of P2,

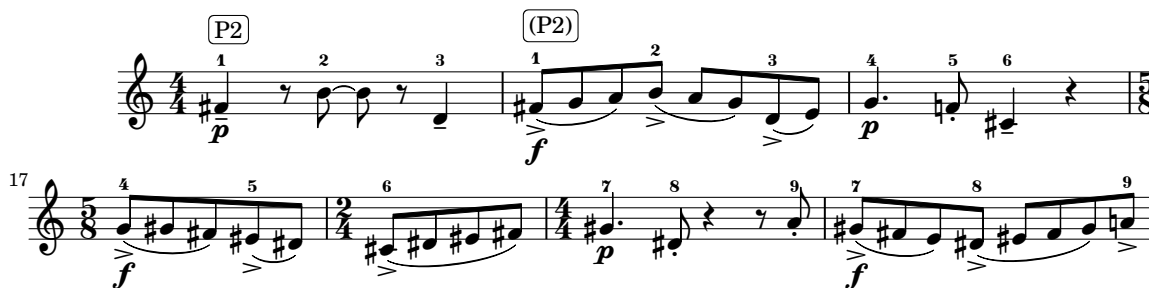


Figure 2.10 mm. 14-20

followed a second incomplete statement. In figure 2.11, the movement ends with three notes from P0 followed by a modified version of the cadential figure.

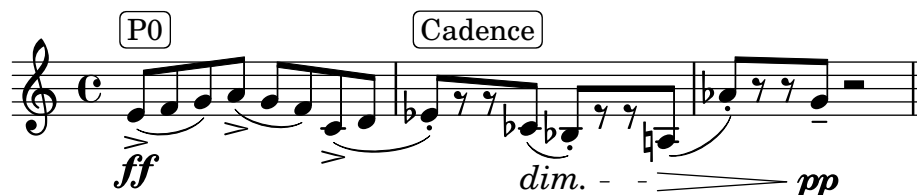


Figure 2.11 mm. 30-32

2.4 MOVEMENT FOUR

The fourth movement begins with a straight mute. As shown in figure 2.12, the opening material is derived from the opening of the third movement. Measure thirteen



Figure 2.12 mm. 1-5

outlines the pitches of the cadential figure B-G-D \sharp . This is followed by a statement of P0 (figure 2.13). This statement may prove difficult to hear because it is filled in with notes from outside the row. Henderson uses the same technique from the first



Figure 2.13 mm. 14-17

movement to introduce a retrograde row form. Figure 2.14 below shows music from the first movement above music from the fourth movement. Although pitches are added between notes of the R0 row, there is enough similarity to hear this section as referencing the corresponding section in the first movement. As shown in figure 2.15, measure twenty-three contains an interjection from material from the second movement. Although the lower voice's pitches match the corresponding pitches from measure thirty-six and thirty-seven in the second movement, the upper voice's pitches



Figure 2.14 mm. 18-20

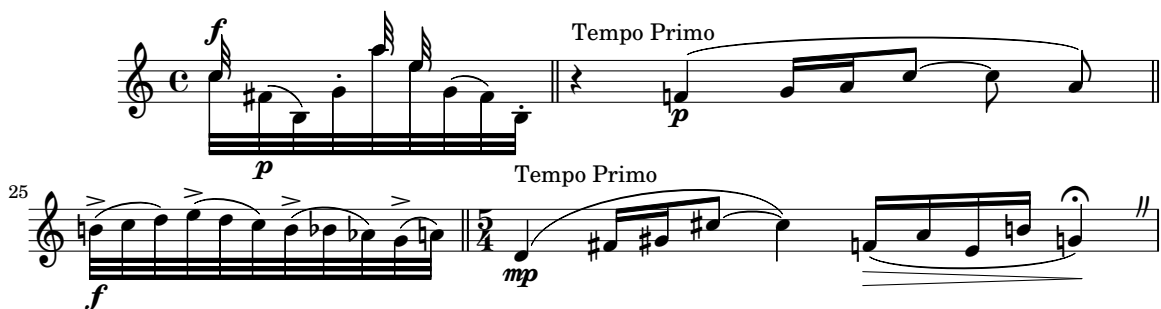


Figure 2.15 mm. 23-26

are not used in the same way in the second movement. These three notes are the last three pitches of R0.

2.5 MOVEMENT FIVE

The fifth movement is a fugue for three voices. Henderson differentiated the two voices of the second movement by stem direction and dynamics, but placed all the music on one staff. However, in the fifth movement, Henderson places each voice on its own staff, giving three staves for the majority of the movement. In figure 2.16, Henderson uses the familiar construct of two P0 statements separated by a D \sharp as the subject of the fugue. The second voice enters with P7. This choice is significant because it mirrors the structure of tonal fugues. For fugues with subjects that begin on $\hat{1}$, the second voice will most commonly enter on $\hat{5}$. Because P7 is, by definition, a perfect fifth higher than P0, the entrance of the second voice in measure six is a real

Figure 2.16 mm. 1-13

answer. The trills in the first voice constitute a countersubject whose pitch material is not derived from the original row. As shown in figure 2.17, the third voice enters with the subject on P11 in measure seventeen. The countersubject trills move to the second voice. The first voice plays triplets derived from prime forms of the row. These combine with the countersubject in the second voice to create the tetrachords P9, P6, P0, P1, and P3. The third voice completes its statement of the subject before continuing with a chromatic transition to the next group of subject entrances. As shown in figure 2.18, the material beginning at measure twenty-four does not contain complete statements of the subject. Instead, Henderson uses tetrachords from the various prime forms of the row divided among the three voices. The first few notes of the row are enough to be recognizable as the subject because each entrance maintains the same contour as the original subject. The trilled countersubject in the second

Figure 2.17 mm. 17-21

voice completes the tetrachord from each row entrance in the first voice. As shown

Figure 2.18 mm. 24-27

in figure 2.19, the next section begins in measure thirty-one with the first voice sounding P11. While these subject statements are not complete, they contain more

The image shows a musical score for three systems of staves, likely piano and violin/viola parts, in 4/4 time. The first system (measures 31-33) features a treble clef staff with a *p* dynamic and a bass clef staff with a *f* dynamic. A boxed label 'P11' is above the first measure, and 'P2' is above the second measure. The second system (measures 34-37) starts with a measure number '34' and includes a boxed label 'P9' above the first measure and 'P3' above the second measure. The score includes various musical notations such as notes, rests, and dynamic markings.

Figure 2.19 mm. 31-37

of the row than the tetrachord statements of the previous section. In measure thirty-five, the first voice contains the first four pitches of P9. However, because the rhythm and contour of the line are modified, this row statement cannot be heard as subject entrances. The second voice abandons the first section's countersubject in favor of a scalar flutter-tongued line. As shown in figure 2.20, The transitional material in measure forty-three is not derived from the row, but from the second movement's transitional material. The frequent semitones and double-tongued sixteenth notes distinguish this material from any possible row form. The material that follows in measure forty-five (figure 2.21) is characterized by rapid changes in register. Each voice sounds only one note before the next voice enters. The same texture continues in measure forty-eight, with each voice sounding only one note. However, when the voices are taken as a single line, the pitch material comes from the row. The first four pitches in this example (E^b - A^b - B^b - E^b) form the P11 tetrachord. The third-voice

Figure 2.20 mm. 41-44

Figure 2.21 mm. 48-50

$E\sharp$ creates an elision with P0. The music moves from three staves to one in measure fifty-three. This material is transitional and is not derived from the row. Analysis of the material starting in measure fifty-seven (figure 2.22) is especially valuable for the performer. Because the music is written on one line, it may seem that it is for one voice unrelated to the row. However, this line can be broken into two separate voices, each sounding a different row form. Figure 2.23 shows the two voices divided by stem direction. It also shows how difficult the music would be to read were it written on

CHAPTER 3

Polyphony BY CHARLES WHITTENBERG

Charles Whittenberg's *Polyphony* was written in 1970 and is dedicated to Gerard Schwarz.¹ While this is a staple of the unaccompanied repertoire, surprisingly little has been written about it. Stanley Schumacher's 1976 dissertation analyzes this piece with a focus on directional counterpoint.² I take a different approach that does not require the row's four trichords to be reordered.

The musical score for the opening nine measures of Charles Whittenberg's *Polyphony* is presented in two staves. The first staff starts with a tempo of quarter note = 104 and a dynamic of *ff*. It contains a sequence of eighth notes with accents. The second staff starts with a tempo of quarter note = 48 and the instruction "sotto voce, non vib.". It contains a sequence of quarter notes with dynamics ranging from *ppp* to *mf*. The score includes various time signatures: 2/4, 3/4, 4/4, 5/4, 9/16, and 3/4.

Figure 3.1 mm. 1-9

Figure 3.1 shows the opening nine measures. The obvious approach with this music is to identify the row from the first twelve pitches. After the F in measure five, the remaining twelve pitches form a twelve-tone row; however, this row is not a standard permutation of the original row. One solution is to consider the piece's title, *Polyphony*. Viewing the piece as being for two voices, the extreme contrasts in tempo,

¹Charles Whittenberg, *Polyphony* (New York: Joseph Marx, 1970).

²Stanley Schumacher, "An Analytical Study of Published Solo Literature for Brass Instruments: 1950-1970" (Ph.D. Dissertation, The Ohio State University, 1976).

meter, dynamics, and articulation suggest that measures one and five be grouped as one voice, while the other measures be grouped as another. Using measures one and five, the prime form of the row becomes:



Figure 3.2 P0

This is a derived row. If the row is divided into four trichords, each trichord is related to the first through some operation. The second trichord is the retrograde inversion of the first transposed up five semitones. The third is the retrograde transposed up six semitones. The fourth is the inversion transposed up two semitones. Each of the two hexachords is the chromatic 6-1, which is all-combinatorial. If the notes in the measures marked $\downarrow=104$ form P0, the notes in the measures marked $\downarrow=48$ form RI5. This row has the interesting property of hexachordal invariance; that is, the first hexachord of P0 is the same as the second hexachord of RI5 (with the order preserved). Likewise, the second hexachord of P0 is the same as the first hexachord of RI5. The test of the effectiveness of this method is whether it makes the rest of the piece more understandable. Starting in measure ten, the piece continues with complete statements of P1, P2, RI6, and RI7. There are no extraneous pitches or reorderings. Analyzing the same section with the other row requires that one reorder the trichords for every row statement. Having established the row, Whittenberg begins to explore “polyphonic” ideas in measure twenty-six (figure 3.3). In Figure 3.3, there are two alternating voices. The first sounds P3, while the second sounds RI8. The extreme difference between *pianissimo* and *forte* alerts the listener that these notes are being played by two different voices. Once the three-note alternation is established, Whittenberg is free to change the dynamics within each voice. This section

Table 3.1 Matrix for *Polyphony*

	I0	I1	I3	I2	I4	I5	I9	I7	I6	I11	I10	I8	
P0	C	D \flat	E \flat	D	E	F	A	G	F \sharp	B	B \flat	A \flat	R0
P11	B	C	D	D \flat	E \flat	E	A \flat	F \sharp	F	B \flat	A	G	R11
P9	A	B \flat	C	B	D \flat	D	F \sharp	E	E \flat	A \flat	G	F	R9
P10	B \flat	B	D \flat	C	D	E \flat	G	F	E	A	A \flat	F \sharp	R10
P8	A \flat	A	B	B \flat	C	D \flat	F	E \flat	D	G	F \sharp	E	R8
P7	G	A \flat	B \flat	A	B	C	E	D	D \flat	F \sharp	F	E \flat	R7
P3	E \flat	E	F \sharp	F	G	A \flat	C	B \flat	A	D	D \flat	B	R3
P5	F	F \sharp	A \flat	G	A	B \flat	D	C	B	E	E \flat	D \flat	R5
P6	F \sharp	G	A	A \flat	B \flat	B	E \flat	D \flat	C	F	E	D	R6
P1	D \flat	D	E	E \flat	F	F \sharp	B \flat	A \flat	G	C	B	A	R1
P2	D	E \flat	F	E	F \sharp	G	B	A	A \flat	D \flat	C	B \flat	R2
P4	E	F	G	F \sharp	A \flat	A	D \flat	B	B \flat	E \flat	D	C	R4
	RI0	RI1	RI3	RI2	RI4	RI5	RI9	RI7	RI6	RI11	RI10	RI8	

Figure 3.3 mm. 26-29

can also be heard as one voice. Because the music is arranged in groups of three, and because the first hexachords of P3 and RI8 combine to form an aggregate, the first twelve notes can be analyzed as P3 with the trichords rearranged. While the single-voice approach is valid in this section, it is less effective later in the piece. The next section arranges notes in groups of two rather than three. Because the single-voice approach requires rearranging trichords and not dyads, it does little to explain this section in terms of the original row.



Figure 3.4 mm. 30-34

Figure 3.4 shows the music divided into two voices. The top voice sounds P4 while the bottom voice sounds RI9. As before, the voices are easily distinguished by dynamics. Because these two row permutations share the same relationship as the previous examples (P_n and $RI_{(n+5)}$), the voices can be combined to form two distinct aggregates. However, the resulting rows are not related to the original row by any standard permutation. This section is followed by a return of the first three notes of the piece in the same register. This figure is recognizable as a kind of theme, and serves to close the first large section of the piece. The middle section begins at measure forty-one. The tempo of $\text{♩}=48$ contrasts with the rapid tempo changes earlier in the piece. The pitch material is a continuation of the final statement of P0 from the previous section. After P0, Whittenberg continues with complete statements of P5, P6, P7, P8 and P9. These statements all seem to be for a single voice. Each row statement flows freely into the next, giving no impression of multiple, competing voices. When the straight mute is removed, the row permutations change from prime to retrograde-inversion. This can be thought of as an extended solo for the second voice. Like the first voice, the second continues up by semitone with RI10, RI11,

RI0, RI1, and RI2. Every note in measures sixty to sixty-four is half-valved. In order for the row forms to be heard, it is important that the extended half-valving does not alter the written pitches. Half-valving on the trumpet can alter the pitch by up to a semitone, so fingerings must be chosen carefully to sound the correct pitch. Starting in measure sixty-five, Whittenberg again combines the two voices. In this case, they are distinguished by dynamic markings. For the listener to hear the rows, it is important for the performer to make the most of the dynamic contrast in this section. In figure 3.5, I divide the two voices by dynamic marking.

The musical score in Figure 3.5 consists of two systems of staves. The first system (measures 65-69) has a top staff in 4/4 time and a bottom staff in 4/4 time. The top staff contains notes for P10 and RI3, with dynamic markings *f*, *mf*, and *f*. The bottom staff contains notes for RI3 with dynamic markings *pp*, *mp*, and *pp*. The second system (measures 67-69) has a top staff in 2/4 time and a bottom staff in 2/4 time. The top staff contains notes for P10 and RI3, with dynamic markings *ff*, *fff*, and *f*. The bottom staff contains notes for P10 and RI3, with dynamic markings *pp* and *pp*. Performance instructions include "half valve" and "ord." (order) markings throughout the score.

Figure 3.5 mm. 65-69

Also important is the fact that the “half-valve” and “ord.” markings do not serve to distinguish the two voices. Because half-valving greatly reduces the dynamic level, the performer should play the loud half-valved notes in measures sixty-five and sixty-seven especially loudly. Otherwise, they will be mistaken for members of the soft voice. The two-part writing continues with complete statements of P11 and RI4. The pattern of ascending P and RI forms ends in measure seventy-eight with one voice sounding P10. Measure eighty-six is a kind of recapitulation, in that it is identical to measure one and announces the beginning of the final section of the piece. Beginning

in this measure is a complete statement of P0 followed by R0. The A \flat in measure ninety forms an elision between the last note of P0 and the first note of R0. Figure 3.6 shows the two voices divided by dynamic markings.

Figure 3.6 mm. 98-105

The loud voice in the above example is the only instance of an inversion form in the piece. Measure 106 to the end of the piece contains many contrasting articulations, dynamics, and tempos; however, the pitch material is best understood as one voice. This section contains P0, P7, and P6 to end the piece. The last note of the piece, a sustained, flutter-tongued D \sharp , also ends the first section (measure thirty-nine). While the end of the first section occurs during a statement of P0, the final D \sharp is the final pitch of P6.

Table 3.2 Harmonic Plan for *Polyphony*

Measure	First Voice	Second Voice	Measure	First Voice	Second Voice
1-9	P0	RI5	56-57		RI10
10-13	P1		57-59		RI11
13-18	P2		60		RI0
19-21		RI6	61-63		RI1
21-25		RI7	63-64		RI2
26-29	P3	RI8	65-69	P10	RI3
30-35	P4	RI9	70-76	P11	RI4
36-42	P0		78-85	P10	
43-45	P5		86-90	P0	
45-47	P6		90-97		R0
47-48	P7		98-105	P0	I5
48-54	P8		105-108	P0	
54-55	P9		109-111	P7	
			112-119	P6	

CHAPTER 4

Sonatina BY HANS WERNER HENZE

Hans Werner Henze's *Sonatina* for solo trumpet was written in 1974 and is dedicated to British trumpeter Howard Snell. While this piece has been recorded many times by prominent soloists and is considered by many to be among the finest works for unaccompanied trumpet, surprisingly little has been written about it. Henze himself makes no mention of it in his lengthy autobiography, *Bohemian Fifths*,¹ nor in his collected writings from 1953-1981.² It is even missing from Gerhard Koch's catalog of Henze's works.³ The *Sonatina* is in three short movements, with a complete performance lasting about five minutes. Henze only employs twelve-tone serialism in the third movement, to which the bulk of this chapter is devoted. It is worth mentioning that there are two different editions of this work available. Both the Dunster edition and the Schott edition were published in 1976 and contain several discrepancies. Much of the music is so impenetrable that determining which edition is correct is a difficult task. Recordings by such prominent performers as Håkan Hardenberger, Thomas Stevens, and Reinhold Friedrich are not in agreement over which edition to use. However, I have chosen to use the Schott edition for this analysis because it is still commercially available, while the Dunster edition is out of print at the time of this writing.

¹Hans Werner Henze and Stewart Spencer, *Bohemian fifths: an autobiography* (Princeton, NJ: Princeton University Press, 1999).

²Hans Werner Henze, *Music and politics: collected writings, 1953-81*, trans. Peter Labanyi (London: Faber / Faber, 1982).

³Gerhard R. Koch, *Hans Werner Henze: List of Works* (Mainz: Schott, 1983).

in the last group of sixteenths. This note cannot be seen as a “carry through” error unless one expects accidentals to carry through different octaves.

4.2 MOVEMENT TWO

Like the first movement, the second movement is also unmeasured. It is notable for its use of extended techniques. The entire movement is marked to be played with a “soft mute”, but Henze frequently indicates places that the performer should either remove the mute half-way or remove the mute slightly. The type of mute is not specified, but a harmon mute lends itself especially well to the intermediate placements required in this movement and also provides a nice contrast to the “sharp mute” required in the third movement. Whichever mute is used, the performer must note that the left hand must hold the mute for the entire movement and is therefore unavailable to make third slide adjustments. Because most C trumpets do not have locking third valve slides, it is probably necessary to use some method of securing the third slide. One solution is a silicone band (such as is provided with newer Yamaha trumpets) or a hair tie that keeps the third slide from falling out during 2-3 combinations, but is flexible enough to extend the slide for the low F in the third movement. Because the transition from the second to third movement already requires a mute change, additional time spent removing a string or other third-slide solution may interrupt the flow of performance. Another solution is to use a mute holder to anchor the mute to the music stand. This allows the performer to move the trumpet rather than the mute, making it easy simply to add the straight mute for the third movement. Another notable feature of the second movement is quarter tone vibrato. Its performance should be exaggerated enough that it becomes a dramatic effect and is not confused with normal expressive vibrato.

The title of the second movement is given as “Canzone” in the Dunster edition, but “Canzona” in the Schott edition. “Canzona” is the standard English spelling, while

“canzone” is standard in modern Italian. However, the spelling “canzona” appears often enough in Italian sources after 1600 that it cannot definitively be called an error. Henze lived in Italy for many years and spoke fluent Italian, so this is unlikely to be a simple spelling mistake.

Figure 4.2 Differences between editions

The two most notable differences in figure 4.2 are the additional slur in the Schott edition and the $F\flat$ in the Dunster edition. In every recording surveyed (Håkan Hardenberger,⁵ Thomas Stevens,⁶ and Reinhold Friedrich⁷) the first $D\sharp-C\sharp$ is slurred, while the $F\sharp/G\flat$ in the second beat is not. The $F\sharp$ in the third beat of this example is usually tongued, following the Dunster edition. Also following the Dunster edition, most recordings play the F in the sixth beat of figure 4.2 as $F\flat$. The other changes in this example are merely enharmonic changes and should not effect performance. In figure 4.3, the middle C on the third beat of the Dunster edition is lengthened by one eighth note in the Schott edition. An eighth rest is also added after this figure. The rhythmic freedom with which this movement is generally played makes this only a minor difference, and different *rubato* styles between recordings preclude identifying definitively which edition was used.

⁵Håkan Hardenberger, *The Art of the Trumpet*, 0289 475 9126 9 (London: Decca, 2007).

⁶Thomas Stevens, *Thomas Stevens Trumpet*, S366 (US: Crystal Records, 1979).

⁷Reinhold Friedrich, *Trumpet Recital*, C10439 (Germany: Capriccio, 1992).

Figure 4.3 Differences between editions

4.3 MOVEMENT THREE

The third movement, entitled “Segnali,” is the only one of the three to employ twelve-tone serialism. Its use here is surprising because Henze had largely abandoned serialism after his move to Italy in 1953. Indeed, in an interview from 1975 (one year after composing the Sonata), Henze says:

Berg is the only affinity I have to the Vienna School, to dodecaphony and twelve-note technique. I can understand dodecaphony in Berg’s sense, in other words as a language, and never quite in the sense of Webern or Schoenberg, where for me it remains theory, grammar, esotericism perhaps; a bourgeois self-affirmation.⁸

In some ways, the twelve-tone analysis of this movement is more straight forward than that of Whittenberg’s *Polyphony*, discussed in Chapter 3. It does not require inventing multiple voices or grouping rows according to dynamic changes. However, Henze’s method within the row permutations is a departure from strict forms of twelve-tone technique. Here is a table showing all the permutations of the row for the third movement.

⁸Henze, *Music and politics: collected writings, 1953-81*.

Table 4.1 Matrix for *Sonatina*

	I0	I11	I6	I10	I5	I7	I4	I9	I2	↔	I8	I3	I1	
P0	B	B \flat	F	A	E	F \sharp	D \sharp	G \sharp	C \sharp	↔	G	D	C	R0
P1	C	B	F \sharp	B \flat	F	G	E	A	D	↔	G \sharp	C \sharp	D \sharp	R1
P6	F	E	B	D \sharp	B \flat	C	A	D	G	↔	C \sharp	G \sharp	F \sharp	R6
P2	C \sharp	C	G	B	F \sharp	G \sharp	F	B \flat	D \sharp	↔	A	E	D	R2
P7	F \sharp	F	C	E	B	C \sharp	B \flat	D \sharp	G \sharp	↔	D	A	G	R7
P5	E	D \sharp	B \flat	D	A	B	G \sharp	C \sharp	F \sharp	↔	C	G	F	R5
P8	G	F \sharp	C \sharp	F	C	D	B	E	A	↔	D \sharp	B \flat	G \sharp	R8
P3	D	C \sharp	G \sharp	C	G	A	F \sharp	B	E	↔	B \flat	F	D \sharp	R3
P10	A	G \sharp	D \sharp	G	D	E	C \sharp	F \sharp	B	↔	F	C	B \flat	R10
↕	↕	↕	↕	↕	↕	↕	↕	↕	↕		↕	↕	↕	↕
P4	D \sharp	D	A	C \sharp	G \sharp	B \flat	G	C	F	↔	B	F \sharp	E	R4
P9	G \sharp	G	D	F \sharp	C \sharp	D \sharp	C	F	B \flat	↔	E	B	A	R9
P11	B \flat	A	E	G \sharp	D \sharp	F	D	G	C	↔	F \sharp	C \sharp	B	R11
	RI0	RI11	RI6	RI10	RI5	RI7	RI4	RI9	RI2	↔	RI8	RI3	RI1	

However, in the prime forms of the row, Henze freely switches the order of the ninth and tenth tones. The third and fourth notes of the retrograde forms can also be switched. The ninth and tenth notes of the inversion forms can be switched, as well as the third and fourth notes of the retrograde inversion forms. These reorderings are indicated with arrows on the matrix. Figure 4.4 provides an example. The first statement of P0 includes C \sharp followed by G, while the second statement includes G followed by C \sharp .

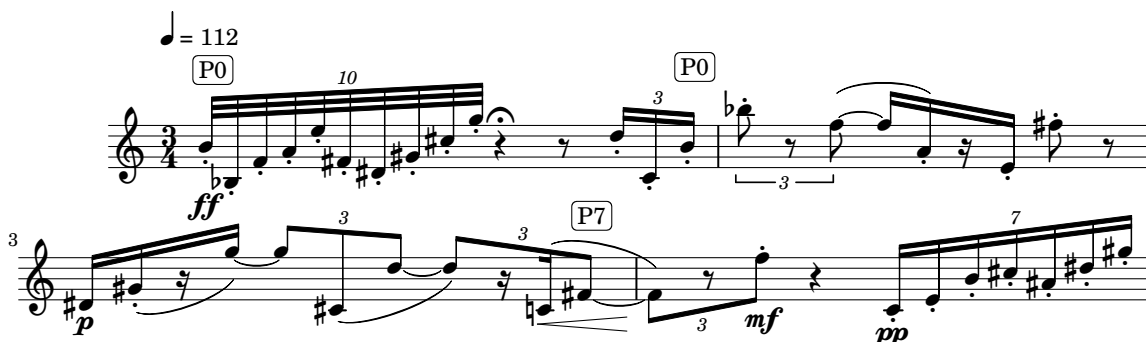


Figure 4.4 mm. 1-4

The following example shows a misplaced slur in the Schott edition. The rest

between the second and third notes, as well as the *staccato* dot on the G \sharp makes the slur from G \sharp to G \natural nonsensical. In most recordings, The D \sharp to G \sharp is slurred, indicating that the Dunster edition is correct in this instance.

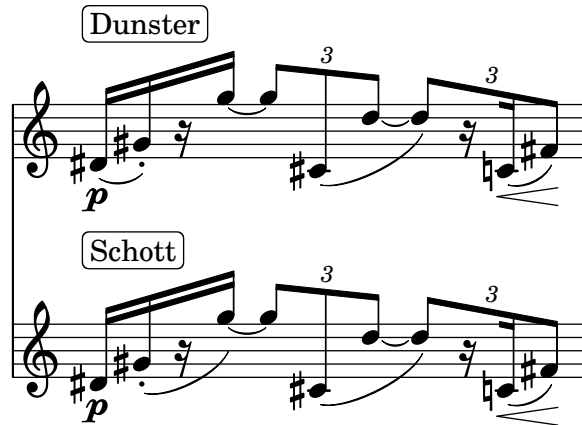


Figure 4.5 m. 3

In figure 4.6, there is an unaltered statement of P7 followed by a statement of P4 with the order of the ninth and tenth notes reversed.

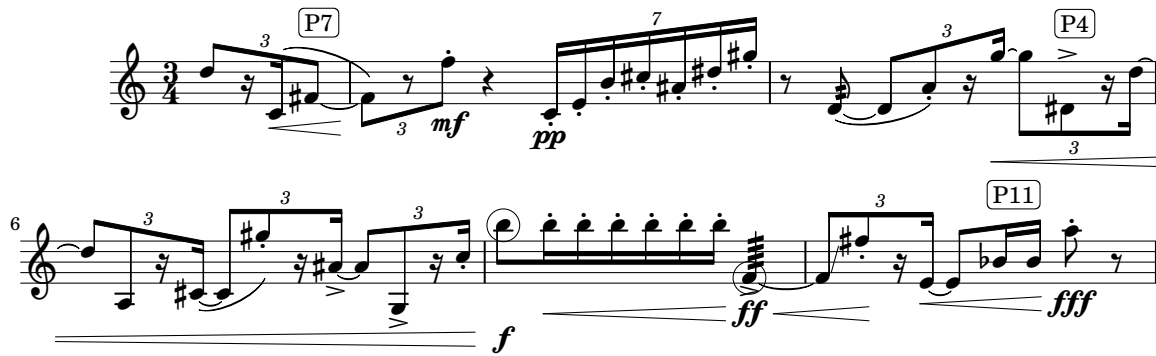


Figure 4.6 mm. 4-8

As shown in figure 4.7, in retrograde forms, the order of the third and fourth notes is reversed, rather than the ninth and tenth, so that the reordered notes correspond to the same pitches in the corresponding prime form.



Figure 4.7 mm. 9-11

Measure ten is one eighth note short of a full $\frac{3}{4}$ measure. While this error is repeated in both the Dunster and Schott editions, the context implies that the missing time be added to the $A\sharp$. A complete statement of R6 would include a $C\flat$ between the $A\flat$ and $A\sharp$ in measure ten, but the $C\flat$ is omitted here.

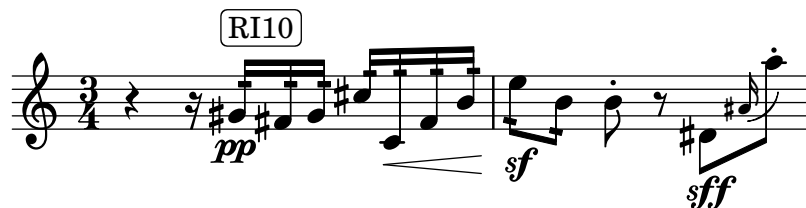


Figure 4.8 mm. 14-15

In this statement of RI10 (figure 4.8), the third and fourth pitches are reversed. There is also a missing $D\flat$ from the row. In its expected position, there is a $B\flat$. It may be tempting to see this as a misprint, after all, the printed B would be a D in bass clef. However, I do not believe that there is enough evidence to consider this an error. This note appears in both the Dunster and Schott editions and it performed as a $B\flat$ on every commercial recording. In figure 4.9, in a statement of I3, the order of $F\sharp$ and C is reversed. This statement also contains an extra $F\flat$ and $G\flat$, another indication that Henze is not concerned with strictly following twelve-tone technique. In the same passage, the $F\sharp$ immediately preceding the *sforzando* $C\flat$ is important because the accidental is omitted in the Dunster edition. Because accidentals in

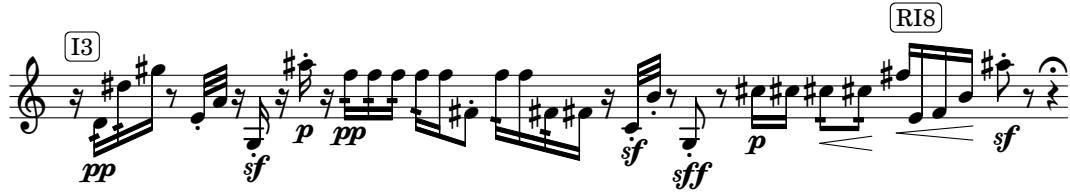


Figure 4.9 m. 16

Henze's music only apply to one note at a time (meaning that they do not carry through the measure), an unmarked F would be played as an F \natural , even if immediately preceded by an F \sharp . Indeed, several recordings, including one by Reinhold Friedrich play this note as F \natural . Because a return to F \natural only serves to further complicate the order of this statement of the row, and because the omission of an accidental applied in a non-standard way is an easier mistake than it's unintended inclusion, I believe that the F \sharp printed in the Schott edition is correct. Figure 4.10 is another example of



Figure 4.10 m. 16

reversing the order of pitches in the RI form of the row. This F \natural is below the normal range of the C trumpet. However, it can be played using the fingering for F \sharp and extending the third valve slide. Because there is so little time to extend the third valve slide when doing so for only that note, I believe the best practice is to extend the slide fully during the rest at the beginning of this example and leave it out until reaching the high D. This will require that the low G be played 2-3, the low F 1-2-3,

and the D \sharp with second valve.

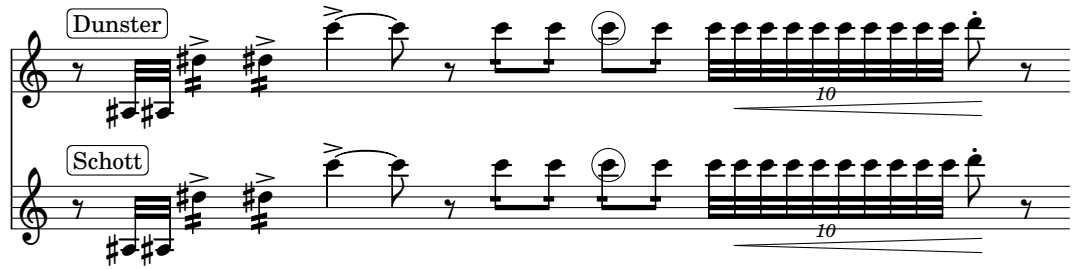


Figure 4.11 m. 16

In figure 4.11, the slash mark is omitted on the third eighth note high C in the Dunster edition. This leads some performers to play this note as a single eighth note rather than as two sixteenths. As shown in figure 4.12, the third and fourth pitches of

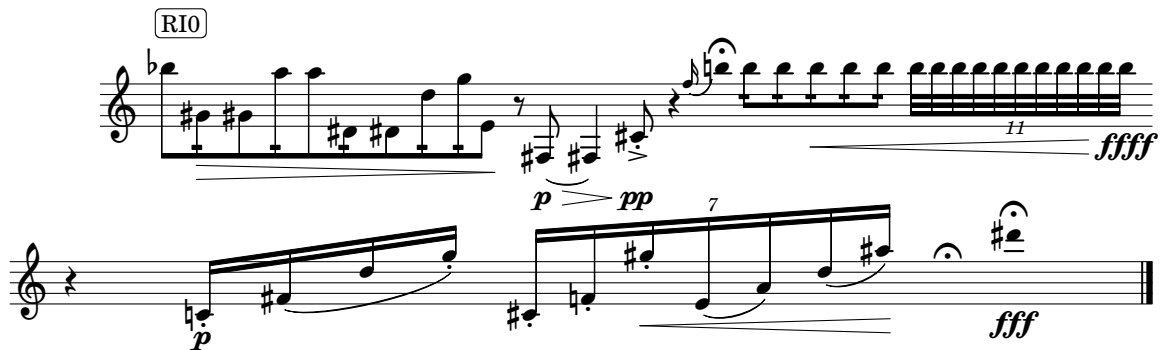


Figure 4.12 m. 16

the retrograde inversion form are reversed once again. Also notable is the missing C \natural from this statement of the row. It's proper position is between F and B \natural . It may be possible to argue that the following C \natural on the second line accounts for this. However, Henze has not previously modified the order of pitches other than those in position three and four for the Retrograde Inversion form. In this case, it is simpler to think of the C as simply missing from this statement, rather than accounted for by a more complicated reordering. The last flourish of the work does not easily fit into any of

the row permutations previously seen. This figure contains a repeated $D\sharp$. Starting on the high B from the previous statement, this figure has the most in common with RI11. Pitches 1, 3, 5, 7 are in the correct positions and tetrachord $G\sharp-E-A-A\sharp$ is in the correct order. However, this similarity is not enough for even the most attentive listener to be able to discern a row form here. Even with all the reordering going on in this movement, we should note that Henze is not being reckless: there is still a system in place. This chart shows which row forms that have reordered pitches,

Table 4.2 Harmonic Plan for *Sonatina*

Row	Reordered Pitches	
P0	$C\sharp$	G
P0	G	$C\sharp$
	↓	↓
P7	$G\sharp$	D
P4	B	F
	↘	↙
P11	$F\sharp$	C
	↓	↓
R6	G	$C\sharp$
	↓	↓
P1	$G\sharp$	D
	↓	↓
R8	A	$D\sharp$
RI10	G	$C\sharp$
	↓	↓
I3	$F\sharp$	C
	↓	↓
RI8	F	B
RI8	F	B
RI0	A	$D\sharp$

as well as the specific pitches that have been switched. As you can see, the specific pitches that are reordered follow a pattern being connected by semitone. The arrows in the figure show semitone relationships. The final two row statements of the piece break this pattern. In an interview in 1967, Henze said:

I have learned from Stravinsky and from the Viennese School what I had

to learn, just as I have learned from much earlier masters, going back to Bach.⁹

This indicates that he thought of twelve-tone technique as a language or color to be used to give a composition certain qualities. The twelve-tone technique was useful to Henze only insofar as it helped realize his musical thoughts.

⁹Henze, *Music and politics: collected writings, 1953-81*.

CHAPTER 5

Solus BY STANLEY FRIEDMAN

Stanley Friedman's *Solus* was written in 1975 and is dedicated to Sidney Mear, Professor of trumpet at the Eastman School of Music. This four-movement work incorporates a great deal of extended techniques, including shakes, tremolos, mute techniques, and pedal tones. Friedman also includes more unconventional techniques, including valve slide *glissandi*, removing the second valve slide, and loud, vocal exclamations. The tonal language of the piece is based on a twelve-tone row, with Friedman treating the row differently in each movement. Much has already been written about this work regarding its use of extended technique. Michael Bellinger's 2002 dissertation¹ deals with *Solus* in the context of using form to evaluate the artistic merit of works for unaccompanied trumpet. Scott Meredith's 2008 dissertation² is devoted entirely to *Solus*, though it deals much more with the issue of trumpet technique than twelve-tone composition. Because *Solus* is among the most substantial and highly-regarded of the twelve-tone works for unaccompanied trumpet, and because my analysis differs from those mentioned above, I have elected to include an analysis here.

5.1 MOVEMENT ONE

Table 5.1 shows the twelve-tone matrix for *Solus*. I have chosen to use this row for the entire piece, rather than only the first movement. The latter approach is used

¹Michael Craig Bellinger, "A model for evaluation of selected compositions for unaccompanied solo trumpet according to criteria of serious artistic merit" (DMA, Louisiana State University, 2002).

²Scott Meredith, "Extended techniques in Stanley Friedman's *Solus* for Unaccompanied Trumpet" (DMA, University of North Texas, 2008).

Table 5.1 Matrix for *Solus*

	I0	I4	I3	I8	I7	I9	I11	I10	I6	I5	I1	I2	
P0	A	D \flat	C	F	E	F \sharp	G \sharp	G	E \flat	B	B \flat	B	R0
P8	F	A	G \sharp	D \flat	C	D	E	E \flat	B	B \flat	F \sharp	G	R8
P9	F \sharp	B \flat	A	D	D \flat	E \flat	F	E	C	B	G	G \sharp	R9
P4	D \flat	F	E	A	G \sharp	B \flat	C	B	G	F \sharp	D	E \flat	R4
P5	D	F \sharp	F	B \flat	A	B	D \flat	C	G \sharp	G	E \flat	E	R5
P3	C	E	E \flat	G \sharp	G	A	B	B \flat	F \sharp	F	D \flat	D	R3
P1	B \flat	D	D \flat	F \sharp	F	G	A	G \sharp	E	E \flat	B	C	R1
P2	B	E \flat	D	G	F \sharp	G \sharp	B \flat	A	F	E	C	D \flat	R2
P6	E \flat	G	F \sharp	B	B \flat	C	D	D \flat	A	G \sharp	E	F	R6
P7	E	G \sharp	G	C	B	D \flat	E \flat	D	B \flat	A	F	F \sharp	R7
P11	G \sharp	C	B	E	E \flat	F	G	F \sharp	D	D \flat	A	B \flat	R11
P10	G	B	B \flat	E \flat	D	E	F \sharp	F	D \flat	C	G \sharp	A	R10
	RI0	RI4	RI3	RI8	RI7	RI9	RI11	RI10	RI6	RI5	RI1	RI2	

in dissertations by Bellinger and Meredith. In Bellinger’s interview with Friedman, he confirms that “the pitch material in the entire third movement is derived from the twelve-pitch row from the first movement. This row permeates the whole piece, in fact.”³ However, Bellinger produces a separate matrix for each movement, relabeling the initial row of the movement as P0. I believe this complicates attempts to understand *Solus* as a unified piece. Because all the row statements are easily understood as permutations of the first movement’s initial row, I believe that a single matrix is a more valuable tool for understanding the piece. The first movement begins with a four note motive. This motive is repeated at the beginning of each section of the movement and can be heard as a recognizable theme. Measures two through four contain the first complete statement of the row. The structure of this row is notable because the first hexachord of the row is 6-Z44 (012569), sometimes called the “Schoenberg hexachord.” This name derives from the fact that the pitches of the hexachord can spell Es-C-H-B-E-G, accounting for all of the “musical” letters of Schoenberg’s surname. Friedman’s ordering of the hexachord in the row prohibits

³Bellinger, “A model for evaluation of selected compositions for unaccompanied solo trumpet according to criteria of serious artistic merit,” p. 143.

the use of this spelling in the work. The second hexachord is the Z-complement of the first, 6-Z19 (013478). Because the two hexachords are Z-related, they possess the same interval vector $\langle 3, 1, 3, 4, 3, 1 \rangle$ without being related by transposition or inversion. Friedman's twelve-tone technique is at its strictest in the first movement. Nearly all row statements are complete, and interjections from outside the row are relatively infrequent when compared to the later movements. Friedman often chooses row permutations that share a common tone with the previous row permutation.

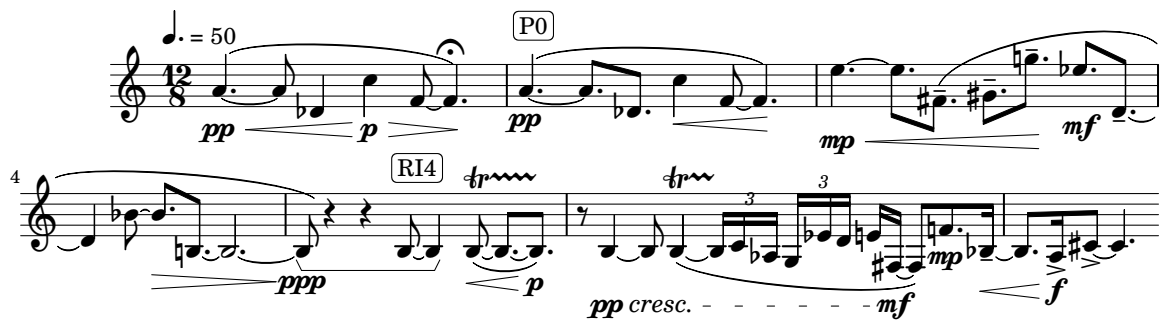


Figure 5.1 mm. 1-7

In measure five, B \sharp is both the last note of P0 and the first note of RI4. This technique gives each phrase a sense of building on the previous one. The same technique is used in measure seven, where C \sharp is both the last pitch of RI4 and the first pitch of R2. The trills in measures five and six alternate between the first and second notes of the RI4 row. The performer should take care that the C \sharp is heard so that the row permutation can be discerned. Friedman continues the common tone technique in measure seven, where the last pitch of RI4 becomes the first pitch of R2. The statement of R2 contains the first interjection from outside the row. In figure 5.2, the first bracketed figure contains pitches 3-4-5-6 of R2 in their normal positions. The second bracketed figure repeats these pitches out of position. The interjection is not random. It is placed before a similar figure on beat two. Like the pitches of this interjection, the last four pitches of beat two contain an ascending semitone followed

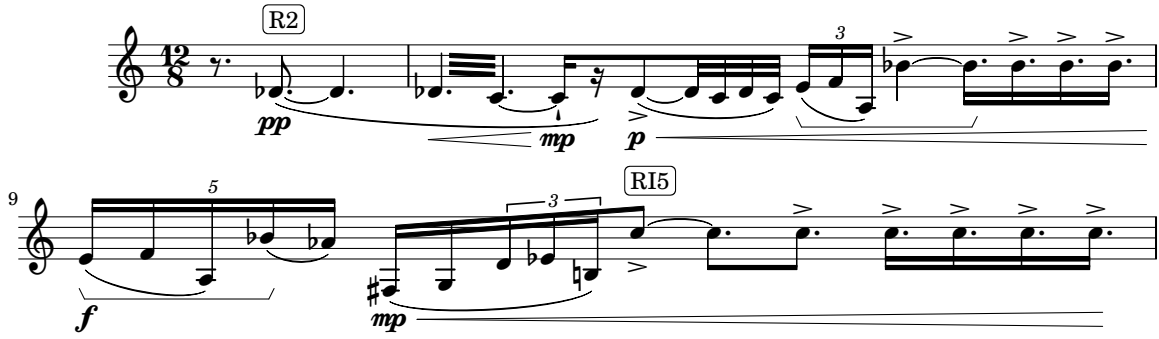


Figure 5.2 mm. 7-9

by a descending leap followed by an ascending minor ninth. This relationship is easily heard as a thematic sequence and serves to create tension before the end of the first section of the movement (figure 5.3).

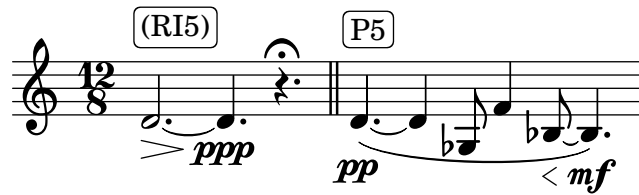


Figure 5.3 mm. 11-12

The second section of the movement begins with P5. Because these pitches are an exact transposition of the opening motive that maintains interval direction, they are easily recognized as a statement of the opening theme. This statement is followed by a complete statement of P9. Several trilled $D\sharp$ interjections appear in this statement. Of these, the third $D\sharp$ is in the correct position for P9. Notes that are in the standard position are marked *mezzo forte*, while the $D\sharp$ interjections are marked *mezzo piano* or *piano*. In measure seventeen, the trill on beat two begins with the upper note D in order to place it in its correct position before $C\sharp$. The following trill, $D\sharp-E\flat$, begins on the lower note because $D\sharp$ is the next pitch in the row. The E that is part of this trill is not part of the row statement; rather, its correct position is between

the F and C used later in the measure. The G and A \flat in measure eighteen complete the row statement. These notes contain the first valve-slide *glissando* of the piece. As Friedman indicates, this effect is to be performed by extending the third valve slide, playing the G 2-3, and gradually retracting the slide to sound an A \flat . Because these two pitches must be heard individually in order to discern the row form, the performer should not begin the *glissando* immediately. The third section of the first movement begins in measure nineteen, shown in figure 5.4. This section begins with a statement of I9. The 1 to 1-3 valve *tremolo* probably requires that the third valve slide be extended slightly to match the pitch of the first valve D. Performing the *tremolo* without adjusting the slide will sound more like a quarter-tone trill than a *tremolo*, and would distract from the listener’s ability to discern the row form.

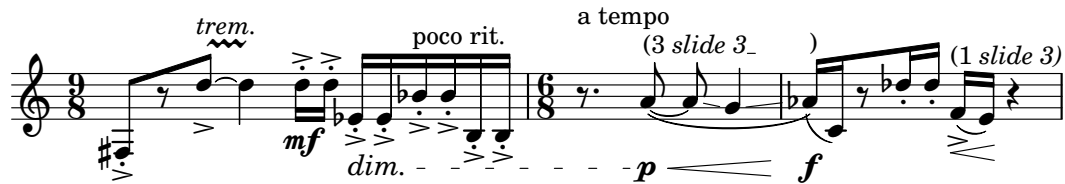


Figure 5.4 mm. 19-21

The above example shows a more difficult valve-slide *glissando*. In this case, the performer must descend by a whole tone rather than a semitone. Even with the third valve slide fully extended, the sounding pitch played with the third valve will be quite a bit sharper than a true G \flat . This will require the performer to lip down with the slide fully extended, then lip back up to the following A \flat . An in-tune A \flat will probably not require full extension of the third valve slide. Experimentation is necessary to determine each instrument’s requirements for good intonation in this section.

The following F-E *glissando* is incorrectly marked “(1 slide 3).” However, there is no fingering for F that incorporates the third valve slide. Following Friedman’s notation of “([fingering] slide [valve slide]),” the correct notation should be “(1 slide

1).” Measure twenty is one sixteenth note short of a complete $\frac{6}{8}$ measure. Adding a dot to the first tied eighth note seems to be the most obvious fix.

The image shows a musical score for two staves. The top staff begins with a boxed 'P7' and contains measures 22-24. It features a triplet of eighth notes marked '(23 slide 3)', a dynamic of *mf*, and a dynamic of *f*. A boxed 'R9' is placed above the start of measure 25. The bottom staff begins with a boxed '25' and contains measures 25-29. It features dynamics of *p*, *f*, *p*, *f*, *p*, and *ff*. Articulations include *flt.*, *trem.*, and *sub.*. Performance instructions include '(13 slide 3)' and '(123 slide 3)'. The score ends with a double bar line.

Figure 5.5 mm. 22-29

Figure 5.5 shows a complete statement of R9. This row statement begins on the last eighth note of measure twenty-three. Because this figure begins with an accented low note with an ascending leap to a valve *tremolo*, it is motivically related to the opening of this section in measure nineteen. For this reason, and because the $A\flat$ starts a new row statement, it is important to begin the new phrase by strongly observing the written accent. This statement of R9 is incomplete. The $B\flat$ that ends the section would usually be followed by an $F\sharp$. Instead, the $A-B\flat$ is repeated as a *glissando*. The $E-F$ *glissando* in measure twenty-six is marked “($\frac{1}{3}$ slide 3),” but can also be played “(1 slide 1).” Using the first valve slide might make the E too sharp, while using the third valve slide might make the F too flat. Experimentation is necessary to see which method yields better intonation. The same choice may be made with the *glissando* in measure twenty-nine. While the third valve slide is indicated, it is also possible to use the first valve slide. However, because this figure does not come with the seventh partial intonation problems of the previous figure, the third valve slide will usually yield a smoother *glissando*. As shown in figure 5.6, the motive that begins the final section is an extension of the opening motive of the movement. This statement of P3 is interrupted to repeat the seventh and eighth pitches, $B\sharp$ and $B\flat$. The row



Figure 5.6 mm. 22-25

statement resumes in measure thirty-six (figure 5.7). The last two row statements of the movement are I3 and R0. These permutations are related in that the last two notes of I3 and the first two notes of R0 are the same (B \sharp and B \flat). Friedman uses this relationship to overlap the two row statements. These two pitches are the same ones that Friedman used to interrupt the previous row statement in measures thirty-four and thirty-five. This repetition of the minor ninth leap is enough to be noticeable as a thematic element. Indeed, the minor ninth D-E \flat is repeated as an interjection in measure forty.

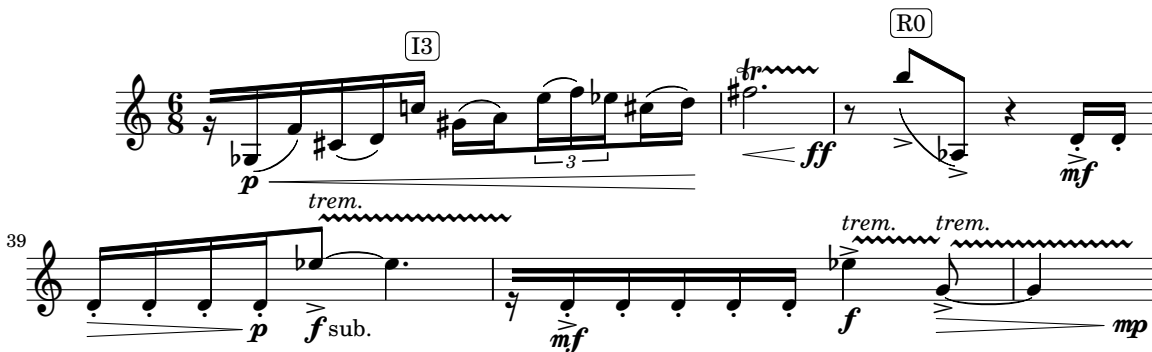


Figure 5.7 mm. 36-40

This statement of R0 ends the movement. This is a common technique that allows the composer to begin and end a work on the same pitch. At the very least, this can create a sense of symmetry. At times, this technique can be used to exploit tonal implications in the row, employing the first pitch of P0 and last pitch of R0 as a kind of tonic note.

5.2 MOVEMENT TWO

The second movement is characterized by indeterminate rhythms and *glissandi*. Interjections from outside the row are more frequent than in the first movement. The row is further obfuscated by the extended valve slide *glissandi* which blurs the boundaries between pitches. While other analyses of *Solus* relabel the opening row statement of the second movement as P0 and provide a new matrix based on this row, I have chosen to analyze the pitch content as it relates to the original row of the first movement. Therefore, the first row statement of the second movement is labeled here as RI2.

Figure 5.8 lines 1-3

As shown in figure 5.8, the opening row statement contains an extra $A\sharp$ in the first beat as well as an extra $C\sharp$ after the first extended rest. A long valve slide *glissando* connects $E\sharp$ to $E\flat$. While Friedman indicates that the third slide should be extended only until the printed $E\flat$, it is more natural during performance to leave the slide extended until the four-second extended rest. This requires playing every $E\flat$ in this line third valve with the slide extended, but is less awkward than quickly retrieving the slide for the first printed $E\flat$. The first note of the second row statement is the same as the last note of the first row statement. Friedman employed this technique extensively in the first movement, and uses it twice in the second movement. As

shown in figure 5.9, the opening sextuplet figure is repeated at the beginning of this statement of RI4. This motive occurs three times in this movement, each time at the beginning of a retrograde inversion statement.

Figure 5.9 lines 4-7

The notes written in the bass clef are to be played as pedal tones. Pedal tones are pitches below the normal range of the instrument (low F \sharp), and require either use of the fundamental partial or lip bending. In this example, Friedman gives the fingerings for B \flat and A, respectively as 0 and 2. This is more effective than the traditional fingerings of 1 and 1-2, which would be extremely flat at softer dynamics. The flatness is due to the effect of the bell curvature, which raises the higher harmonics relative to the fundamental. This effect can be overcome by breath support at louder dynamics, but it is difficult to achieve at softer dynamics. Similar to the second row statement, Friedman begins the third row statement (RI6) where the previous statement left off. Friedman indicates “($\frac{1}{3}$ slide 3)” for the *glissando*. Even with a fully extended third valve slide, the sharpness of the 1-3 valve combination will make the D \flat difficult to play low enough. It may be necessary to extend both the first and third valve slides, then using only the third valve slide for the *glissando*. The F quarter-flat in this statement is played 1-3 with the third slide extended. Unlike previous examples of this technique, this note is accented with *tenuto*. Because of the length of this note, the third valve slide should not move continuously during its execution, but should be set to produce a quarter tone from the start. To assist with this, the F \sharp before

obscures the pitch material of the row. The pedal C that ends this row statement should be played open. The *fortissimo* dynamic can help the performer play this usually very flat note in tune.

The final row statement begins with the same figure that started the movement. This time it is transposed to give RI11. The grace-note and *tremolo* interruptions always occur on an A♯ during this row statement. The *forte tremolo*, like before, is written with two beam-connected half-notes. This figure is generally performed as lasting one beat rather than two, despite the usual practice for writing *tremolo* repeats. The F-E *glissando* is performed by fingering an F and extending the first valve-slide. This will require full extension of the slide in order to play the E low enough. The final notes of the movement begin with an A♯-A♭ *glissando*. While Friedman does not notate that the slide be extended for the final two notes, it is simpler to leave it extended. Changing fingerings for the two final notes will only serve to highlight any intonation issues caused by the previous fingering. The awkwardness involved in retrieving the slide and changing fingerings also does not seem to fit the *diminuendo* and *ritardando* effects that occur here.

5.3 MOVEMENT THREE

The third movement sees a further breakdown of the row compared to the first two movements. As shown in figure 5.11, the opening is fairly straightforward, with the only interjection coming from the opening three-note motive G-G♯-E in measure four.

Allegretto, lightly (♩ = 112)

Figure 5.11 mm. 1-5

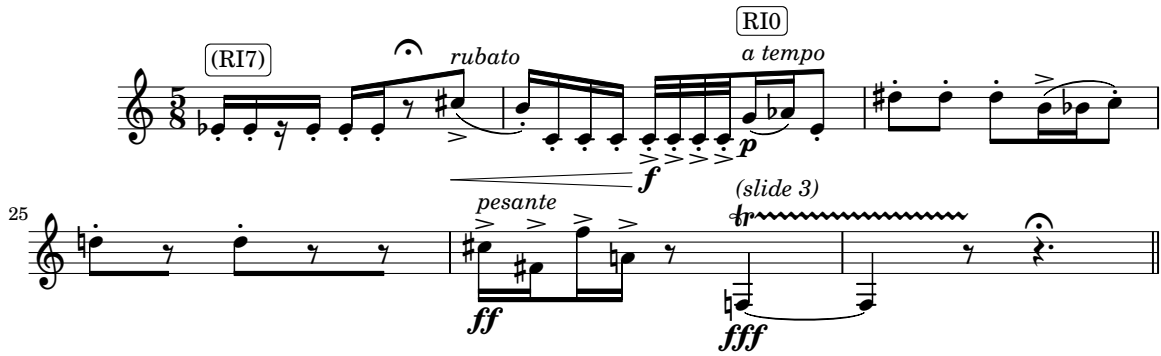


Figure 5.13 mm. 22-27

tend to be stuffy in this register, especially below the normal range of the instrument. Measure twenty-seven is one eighth note longer than a full $\frac{3}{8}$ measure. However, the *fermata* in this measure makes the misprint inconsequential.

The middle section of the movement begins at measure twenty-eight. This waltz is marked “exaggerated and theatrical” and sees a nearly complete breakdown of the row structure. The *molto portamento* indication contrasts strongly with the angularity of the movement’s opening. The opening gesture of the waltz is shown in figure 5.14.



Figure 5.14 mm. 28-32

As shown in figure 5.15, measure fifty-three begins as an exact transposition of the opening gesture. This figure is extended through *rubato* scalar passages until the *a tempo* marking at measure sixty-two. The E-F-D \sharp figure appears to tonicize E, but gradually breaks down into irregular rhythms. Friedman notates an aleatoric

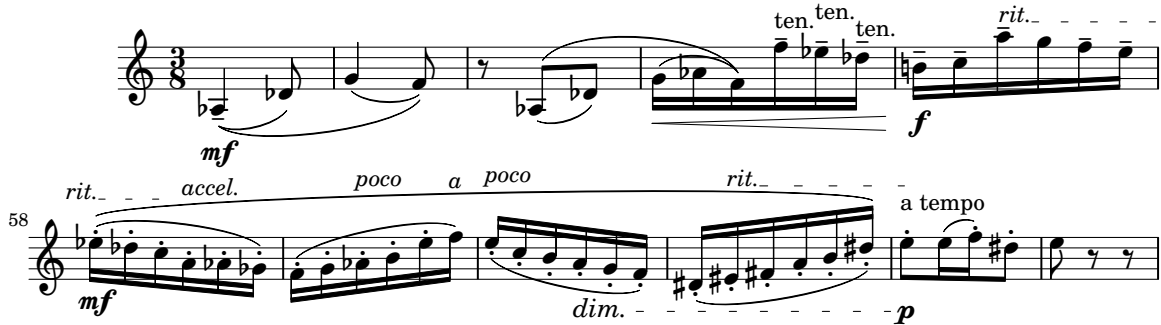


Figure 5.15 mm. 53-63

section with instructions to repeat these three pitches with trills and increasingly disjunct rhythms. After the seven-second aleatoric section, a ten-second aleatoric section follows in which the performer punctuates the played notes with screams of “OW!,” “AGH!,” “AARRRGH!,” etc. This section is marked “progressively louder, more frantic, and more insane.”⁴ Friedman discusses his approach to composing this piece in an interview with Michael Craig Bellinger.

The pitch material in the entire third movement is derived from the 12-pitch row from the first movement. This row permeates the whole piece, in fact. That’s part of the underlying psychological/theatrical/symbolic structure of the composition. The row is fairly strictly employed in the first movement, treated more whimsically in the second, gradually broken down the third and reborn transfigured and fragmented in the fourth. Sometimes it’s a bit of a stretch to find the row. But it’s there. It’s not a “classical,” Schoenbergian treatment of the row. I repeat motives and small groups of notes to create “artificial gravity,” moments of temporary pseudo-tonality. In my compositions in general I often blur the so-called boundaries between tonality and atonality, as befits the intended emotional impact of the musical gesture. There are some “images” (for lack

⁴Stanley Friedman, *Solus* (Vuarmarens: The Brass Press, 1978).

of a better term) that I only can express tonally, others I only can express atonally. Many of my works are based on pitch systems which offer both tonal and atonal possibilities. *Solus* was an early exploration of this concept.⁵

Figure 5.16 mm. 74-80

As shown in figure 5.16, after the “frantic” and “insane” aleatoric section, the row structure returns intact in measure seventy-four. This statement of RI8 is an exact transposition of the opening RI0. By preserving the interval direction of the opening figures, Friedman ensures that the listener will hear this as a return to the original theme. The repeated D \sharp -D \flat -F at the end of this row statement can be heard simply as a repetition, or as the beginning of R3. However, any statement of R3 is not realized due to its interruption by P8. The F of the three note motive D \sharp -D \flat -F is the first pitch of P8, creating an elision. The first two pitches of the final row statement overlap with the previous statement. This is possible for any P $_n$ followed by RI $_{(n+3)}$ or I $_n$ followed by R $_{(n+9)}$. As shown in figure 5.17, after a two-second rest, the row continues with a B \flat followed by an A-B lip trill. Despite the lip trill being marked

⁵Bellinger, “A model for evaluation of selected compositions for unaccompanied solo trumpet according to criteria of serious artistic merit,” pp. 143-144.



Figure 5.17 mm. 81-84

“SHAKE!,” some authors conclude that Friedman intends a difference between a “lip trill” and a true “shake.” Scott Meredith writes:

The shake is another technique that is prominent in jazz performance. As was discussed earlier, there is more than one way to achieve this effect. The most common is to literally shake the instrument against the lips, thus producing two different notes of the same harmonic series. The second method employs a lip trill that creates rapid change in pitch. In *Solus* Friedman specifies use of the latter technique.⁶

While the lip trill is effective and yields greater control, this measure’s connection to the previous “insane” aleatoric section might justify a true shake. The true shake has a wild, frantic character that is difficult to match with a controlled lip trill.

Time resumes in measure eighty-three with the final four notes of RI11. The final notes of the movement do not appear in a row statement. They are best understood as the tonic resolution of the final G \sharp leading tone.

5.4 MOVEMENT FOUR

The fourth movement employs the relatively rare technique of removing the second valve slide. The slide is removed for the entire movement and affects any note whose fingering uses the second valve. Any note using the second valve then creates a false

⁶Meredith, “Extended techniques in Stanley Friedman’s *Solus* for Unaccompanied Trumpet,” p. 32.

notes occurs at rehearsal A. The dotted eighth note C \natural before the *tremolo* is marked to be played with the third valve, yielding a C \sharp rather than a C \natural . Also, because the indicated dynamic is a double dynamic (*piano/forte*), it seems clear that Friedman intends a false tone rather than a normal tone. The only correct fingering for this note is 2-3.

The next section incorporates tonal shifts on individual notes, as well as difficult valve slide *glissandi*. The first A \natural of the movement is introduced in this section. It is given in parentheses to indicate that its pitch is only approximate. This is because even a fully extended third valve slide will leave this note sharper than a true A \natural . An A \natural without parentheses is fingered with the third valve. The first C \sharp of the movement occurs after one of the few multidirectional *glissandi* in the piece. This *glissando* moves from C \natural down to A, then up to C \sharp . This requires the third valve slide to be retracted fully before lifting the second finger. Otherwise, the resulting C \sharp will be too flat. The following low C \sharp may require lipping down to be in tune. The fanfare theme returns at rehearsal B with more false tones. As shown in figure 5.19,

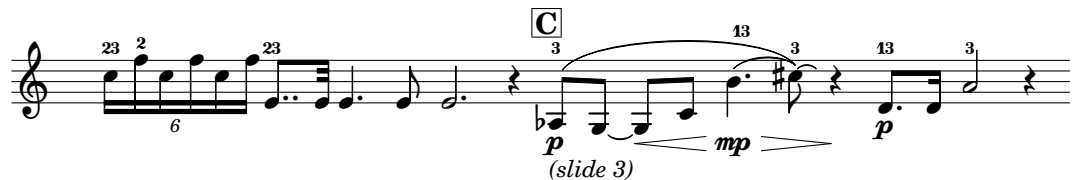


Figure 5.19 line 17

Rehearsal C uses alternate fingerings to create normal notes whose standard fingerings would require the second valve. The last E \natural before rehearsal C combined with the next five pitches forms the first hexachord of P7 (E-G \sharp -G \natural -C-B-C \sharp). Beginning only at rehearsal C, the tetrachord G \sharp -G \natural -C-B can also be found as pitches eight through eleven of RI6. The next four pitches, C \sharp -D-A-B \flat , can be found as pitches eight through eleven of R9 or pitches two through five of I8.

CONCLUSION

Through analysis of the works in this study, the performer can gain valuable insights into their construction. Understanding the row permutations can allow the performer to correct misprints and make informed decisions regarding performance editions. Analysis is perhaps even more useful in twelve-tone works when used for this purpose. Because of the atonal nature of these works, these types of errors are unlikely to be noticed by sound alone. A thorough analysis allows performers to be confident in their editorial choices.

Analysis is also valuable for less mundane choices. As shown in Henderson's *Variation Movements* (Chapter One) and Whittenberg's *Polyphony* (Chapter Three), twelve-tone analysis allows performers to make phrasing decisions. In these cases, new row forms can mark the beginnings of phrases, despite ambiguous phrase markings. In Whittenberg's *Polyphony*, a two-voice analysis can encourage the performer to maximize contrast between the voices with articulation and dynamics. In the third movement of Henderson's *Variation Movements*, realizing that the accents correspond to the pitches of the row encourages the performer to exaggerate the accents more than if this were not realized. This is to say that understanding a work allows one to approach it differently, ultimately yielding a more coherent performance.

While the works included in this study are among the finest in the genre, they are by no means the only ones. Further study can provide insights into other serial unaccompanied works for trumpet. These might include Samuel Adler's *Canto I*, Nadav Ziv's *Monologue*, or any of the unaccompanied works of Karlheinz Stockhausen. Another possible extension of this study is to include analyses of other twelve-tone

works for trumpet without the limitation of the unaccompanied genre. The addition of other instruments allows the exploration of more advanced serial techniques than are possible in the unaccompanied setting.

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