

Piano Sonata No. 1 by Carl Vine; a Theoretical and Pianistic Study

By

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Yuson So

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ABSTRACT

Carl Vine was born in 1954 in Perth, Western Australia. He began his music studies when he was five years old with lessons on the cornet. Later he began piano study with Stephen Dornan and composition study with John Exton at the University of Western Australia. When he was sixteen years old he received the first prize in the Australian Society for Music Education Composers' Competition for his electronic work, *Unwritten Divertimento* (1970). He enrolled as physics major at the university but he switched to composition in his junior year. He was awarded many prizes, such as the Adams Award for the Outstanding Contribution to Music for Dance in Australia and the APRA-AMC (The Australasian Performing Right Association-The Australasian Mechanical Copyright Owners Society) Classical Music Awards for “Best Instrumental Work,” Piano Sonata No. 1. He has composed in various genres such as concertos, symphonies, string quartets, piano sonatas, dance, theatre, film, television, and electronic works.

Piano Sonata No. 1 (1990) is one of his most popular works. Because of its virtuosity, this sonata has been performed at two piano competitions: the Van Cliburn International Piano Competition and Sydney International Piano Competition. This sonata was dedicated to and premiered by Australian pianist Michael Kieran Harvey, who won the Ivo Pogorelich International Competition in 1993. Michael Harvey stated:

The scheme is similar to the Carter Sonata - two movements, with the slow section built into and defining the faster portions of the first movement. The second movement is based on a moto perpetuo which soon gives way to a chorale-like section, based on parallel fifths.¹

¹ Carl Vine, “Sonata No. 1,” program note <http://www.carlvine.com> (accessed September 13, 2013)

In my preliminary research, I found five doctoral papers that include discussion on Vine's Piano Sonata No. 1. In these papers, theoretical analysis is approached in a general way. Cyba Hanna and Eun-Kyoung Yang's approach was to describe dynamics, tempo, and pedaling and virtually ignore theoretical analysis. In another paper, Bo R. Mihn wrote about polyrhythm and intervals, but only gives one example of each. The approach of Benjamin Boren and Kui Min is to compare passages of the Elliott Carter Sonata to the Vine sonata to show the similarities in their pianistic style.

My plan is to do a detailed analysis of this work from a theoretical standpoint. I will examine melody, harmony, and form using traditional analytical tools such as the location of church modes and key centers. For those areas of the music that do not follow traditional methods, I will use set theory. In this piece, there are many repetitions and I will examine how Vine uses repetitions as a formal device. In addition, because the rhythms in this sonata are very complex, I plan to study them to determine if there are any rules or patterns that Vine used to create his rhythms. In 1987, David Lewin proposed a way to visualize metric pulses and their relationships to one another, including dissonant relationships.² I am going to incorporate that particular method into my description of rhythm and meter in Carl Vine's music. What I expect to show in my paper how set theory applies to the work, how the composer utilizes repetitions in his forms, and describes his rhythmic organization. I hope that this study will contribute to a better understanding and appreciation of the music of Carl Vine.

² David Lewin, *Generalized Musical Intervals and Transformations*. New Haven: page 63-72, Yale UP, 1987

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Biography of Carl Vine

Carl Vine was born in Perth, Western Australia, on October 8, 1954. He is a very prolific composer and his reputation is growing and becoming more known on the international scale. He has composed ten concertos, seven symphonies, six string quartets, three piano sonatas, and music for dance, theatre, film, and television, among other works.¹

When he was young, he played cornet, piano, and organ. When he was sixteen years old, he won an Australian Society for Music Education Composers competition (under 18 section) with an electronic work, *Unwritten Divertimento* (1970). In the following year, he completed 2 *Short Circuits*, a composition for electronic tape and his first commissioned work by the West Australian Ballet Company, choreographed by Eleanor Martin.

In 1972, he began the Bachelor of Science degree program, majoring in physics, at the University of Western Australia. In the same year, he earned an Associate in Music degree with distinction in piano from the Australian Music Examinations Board. Also that year he won the Perth Music Festival in the Open Instrumental piano solo division. He served as a pianist with the Queensland Youth Orchestra conducted by John Curro. In 1974, he switched to the Bachelor of Music degree program, majoring in composition, at the University of Western Australia. He studied piano with Stephen Dornan and composition with John Exton.

In 1975, Vine moved to Sydney to start his professional career. He worked as an accompanist and rehearsal pianist at the Sydney Dance Company (then the Dance Company of New South Wales). He was also musical director of the vocal duo Sounds Nice on the Sydney

¹ Carl Vine, Biography <http://www.carlvine.com> (accessed October 13, 2013).

club circuit with many TV appearances. In 1976, he worked as a regular performer for the Sydney Opera House's Environmental Music Series, and was assisted by the Australia Council to attend the Gulbenkian International Choreographic Summer School in Guildford, England. In 1977, he composed *961 Ways to Nirvana* for amplified string quartet, orchestra, and electronics. This piece was his first professional commissioned work for the Sydney Dance Company. In 1978, he became a resident composer for the Sydney Dance Company and completed *Poppy*, which is the music for the first all-Australian full-length ballet. In 1979, he served as a conductor, pianist and resident composer at the London Contemporary Dance Theatre. Between 1979 and 1989, he worked as co-founder of the contemporary music performance ensemble Flederman with the trombonist Simon de Hann. Flederman performed in Australia and the United States, Holland, Finland, and the United Kingdom. Vine himself gave the premiere performances of many Australian works for solo piano.

From 1980 to 1982, he taught Electronic Music Composition at the Queensland Conservatorium of Music. In 1983, he received the Adams Award for outstanding contribution to Music for Dance in Australia. The next year, he worked as musical director of the Australia/New Zealand Choreographic School. From 1985 to 1987, he had occasional conducting appearances with the Australian Chamber Orchestra. In 1987, he was guest conductor with the Sydney Philharmonia Society. He was a guest artist at EVOS Music (Perth) at Western Australia University and Western Australia Academy for the Performing Arts in 1989. During same year, he also was awarded the Sounds Australian National Music Critics' Award for the Best Instrumental or Ensemble Work of 1988, for *Miniature IV*.

In 1990, he was awarded the John Bishop Commission to compose Symphony No. 3, premiered by the Sydney Symphony Orchestra. From 1992 to 1995, he was deputy chairman of

the Australia Council. In 1993 and 1994, he received Australian Guild of Screen Composers Awards for “Best Music for a Feature Film” (*Bedevil*), “Best Original Song” (*The Battlers – “Love Me Sweet”*), and “Best Theme for a Television Series” (*The Battlers*).

Since November 2000, he has been the Artistic Director of Musica Viva Australia, the largest entrepreneur of chamber music in the world. As part of his duties as Artistic Director of Musica Viva Australia, Carl Vine was appointed Artistic Director of the Huntington Estate Music Festival, one of Australia's most prestigious and successful annual chamber music festivals. In 2010, he received an honorary Degree of Doctor of Music from the University of Western Australia. He is now a free-lance composer living in Sydney.

Carl Vine produced three piano sonatas (1990, 1997, 2007) and two piano concertos (1997, 2012). The first sonata was commissioned by the Sydney Dance Company to accompany choreography by Graeme Murphy. The first dance performance of *Piano Sonata No.1* was in the Drama Theatre of the Sydney Opera House in May 1992. This sonata was dedicated to and premiered by Australian pianist Michael Kieran Harvey, who won the Ivo Pogorelich International Competition at 1993. The Armenian pianist Sergei Babayan brought this sonata to America, bringing it to the attention of many young American pianists. In 2005, the 19-year-old Korean-American pianist Joyce Yang played this sonata at the 12th Van Cliburn International Piano Competition. She won this competition and has included the sonata on many of her recent recitals.

Analysis of Piano *Sonata* No.1 (1990)

The sonata is in two movements. Both movements are related. The overall structure is not in the traditional sonata form. There is much rhythmic complexity. The technical demands on the pianist are very demanding.

Formal Considerations

The first movement can be divided into twelve sections, as shown in Figure 1. The content of each section changes in terms of texture and rhythmic structure. One section repeats; section 7 and section 9 are exactly the same. The melodic contour in each section is similar, usually the melody is descending, and Vine uses frequent repetition to build phrases.

Although the first movement is not following any traditional form, Vine makes considerable use of small repetitions because he reuses some sections.

Figure 1. Sections of the first movement of Carl Vine, Piano *Sonata* No.1.

SECTION	CHARACTERISTICS
Section 1 (mm. 1-12)	introduction
Section 2 (mm. 13-23)	melodic
Section 3 (mm. 24-49)	continuation to climax
Section 4 (mm. 50-54)	bridge
Section 5 (mm. 55-80)	melodic
Section 6 (mm. 81-91)	bridge
Section 7 (mm. 92-104)	continuation to climax
Section 8 (mm. 105-147)	rhythmic etude
Section 9 (mm. 148-160)	repetition of section 7
Section 10 (mm. 161-172)	recitative
Section 11 (mm. 173-187)	melodic
Section 12 (mm. 188-193)	coda (like recitative)

Section 1 begins the sonata with a very quiet, peaceful melody in the soprano, accompanied by chords built in perfect fourths. The accompanying chords move in a descending two-measure sequence leading to Section 2 (Example 1).

Example 1. Carl Vine, Piano Sonata No.1, mm. 1-8.

1 $\text{♩} = 48$

depress silently *pp*

con pedale

8^{vb} sost.

5

8^{vb} (sost. . .)

Section 2 continues with the melody in the soprano but the accompaniment changes to a triplet quarter-note pattern in arpeggio style covering a wide range of the piano. This type of accompaniment provides the sonata with a feeling of forward motion, which as we will see in the next sections, continues to strengthen. The phrases are again in two-measure groups with the accompaniment repeating measures rather than sequencing (Example 2).

Example 2. Carl Vine, Piano Sonata No.1, mm. 13-15.

The musical score for Example 2, Carl Vine, Piano Sonata No.1, mm. 13-15, is presented in two systems. The first system (measures 13-14) shows a right-hand melody with a triplet of eighth notes and a left-hand accompaniment with wide-spaced arpeggios and triplets. The second system (measures 14-15) continues the right-hand melody with a fifth-note run and a left-hand accompaniment with triplets and a descending accented note. Dynamics include *pp* and a *una corda* instruction.

In section 3, from measure 30, the right-hand melody is presented in octaves along with an internal fourth or fifth. The left hand continues with the wide-spaced arpeggio accompaniment. An additional middle voice is added in the left hand consisting of three descending accented notes. These changes bring about a fuller texture and more complex rhythms, which add to the excitement of the mood leading to *fortissimo* climax at measure 46 (Example 3).

Example 3. Carl Vine, Piano Sonata No.1, mm. 30-31, 45-46.

30

mf

ff

ff

45

ff

8^{vb}.

* Red.

Section 4 is the shortest section in the first movement and serves as a bridge to section 5.

It is characterized by even moving staccato sixteenth notes in irregular patterns. This texture continues as the accompaniment to the melody in section 5 (Example 4).

Example 4. Carl Vine, Piano Sonata No.1, mm. 50, 52.

♩ = ♪
(♩ = 144)

50

f

* Red. *

♩ = ♪
(♩ = 108)

52

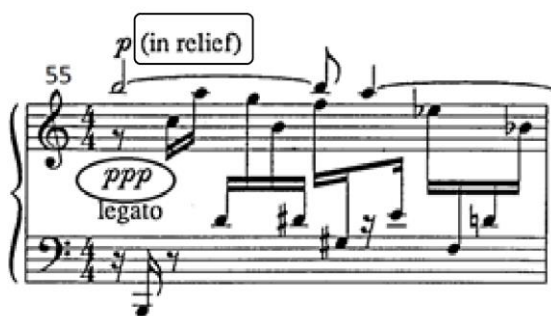
sfz

pp sub.

8^{vb}.

Section 5, beginning at measure 55, Carl Vine wrote “in relief” and *legato*. The top voice, which is the melody, should be brought out. The accompaniment is a continuation of the sixteenth note pattern introduced at section 4 and divided between the hands. This pattern continues until measure 72 (Example 5).

Example 5. Carl Vine, Piano Sonata No.1, m. 55.



In section 6, there are constant sixteenth notes and irregular accents. In the left hand, the bass notes moves in chromatic, descending motion. This section has the role of preparing section 7.

In section 7, from measures 92 to 104, the melody is very excited and dramatic. This part is the climax of the first movement. In measure 104, there is big *glissando* followed by a forearm cluster, a technique created by Henry Cowell, at a *fortississimo* dynamic level. Three accented chords follow *poco allargando*, leading to Section 8.

Section 8, from measures 105 to 147, consists of various intervals: thirds, fourths, fifths, and sixths, alternating in irregular sixteenth note patterns. The meter changes twelve times and unconventional meters such as 7/16, 13/16 are used. The dynamic marking is *piano*, creating a strong contrast to the *fortississimo* of measure 104. The dynamics and tempo gradually increase, leading to section 9.

Section 9 contains the exact same music as section 7. Section 10 starts with the loudest dynamic marking in the first movement: *fortississimo* (*ffff*). Section 10, however, is in extreme contrast to section 9 in that it is all at a very soft dynamic level and the rhythm is quite static due to long held, arpeggiated chords and a slow moving, improvisatory-like melody (Example 6).

Example 6. Carl Vine, Piano Sonata No.1, mm. 161-164.

Tempo Primo
 161 ($\text{♩} = 48$) *p*

(even & steady)

162 *pp*

p *mf*

This section has a calming effect and prepares us for one final melodic section; section 11. Section 11 is similar to Section 1, in that the lowest bass is a perfect fifth giving a sense of key center. There are two eight-measure phrases that are essentially the same except for a few melodic variations in the second phrase (Example 7).

Example 7. Carl Vine, Piano Sonata No.1, m. 173.

Meno Mosso
 (♩ = 36)

173 *mp*

p
con pedale

|sost.→

The final six measures, section 12, are coda-like and use the same material as section 10 (Example 8).

Example 8. Carl Vine, Piano Sonata No.1, mm. 188-193.

Meno Mosso
 188 (♩ = 60)

188 *mf* 7 *mf* 7

* (even & steady)

191 *p* 7 ()
pp *f*

Repetition is one of Vine's favorite compositional techniques used to build phrases. He uses several types of repetition. One is to repeat the accompaniment pattern of one or two measures under a changing melodic line (Example 9).

Example 9. Carl Vine, Piano Sonata No.1, mm. 20-23.

Musical score for Example 9, Carl Vine, Piano Sonata No.1, mm. 20-23. The score is in 4/4 time, with a tempo marking of $\text{♩} = \text{♩} \text{ (♩} = 144)$. The key signature has two flats (B-flat and E-flat). The score consists of two systems. The first system covers measures 20 and 21. The right hand (RH) has a melodic line with slurs and accents. The left hand (LH) has a bass line with slurs and accents. The second system covers measures 22 and 23. The RH continues the melodic line, and the LH continues the bass line. The score includes dynamic markings such as *mf* and *p*, and articulation marks like slurs and accents.

The second is to have a one- or two-measure idea with all parts repeating (Example 10).

Example 10. Carl Vine, Piano Sonata No.1, mm. 92-95.

Musical score for Example 10, Carl Vine, Piano Sonata No.1, mm. 92-95. The score is in 4/4 time. The key signature has two flats (B-flat and E-flat). The score consists of two systems. The first system covers measures 92 and 93. The right hand (RH) has a melodic line with slurs and accents. The left hand (LH) has a bass line with slurs and accents. The second system covers measures 94 and 95. The RH continues the melodic line, and the LH continues the bass line. The score includes dynamic markings such as *mf* and *p*, and articulation marks like slurs and accents.

The third is to repeat a long phrase of four to five measures (Example 11).

Example 11. Carl Vine, Piano Sonata No.1, mm. 105-117.

Poco Meno
105 ($\text{♩} = 132$)

107 *ppp* possibile

112

The number of times an idea is repeated varies and adds to the musical effect. A fourth type would be measures 246 to 249 where the left-hand repeats by the measure and the right-hand repeats by every two measures (Example 12).

Example 12. Carl Vine, Piano Sonata No.1, mm. 246-253.

The image displays a musical score for Carl Vine's Piano Sonata No. 1, measures 246-253. The score is in 4/4 time and consists of two systems. The first system (measures 246-249) features a treble clef with a 'loco' marking and a bass clef with a 'ff' marking. The second system (measures 250-253) features a treble clef with a '1' marking and a bass clef with a '5' marking. The score includes various musical notations such as dynamics (mp, f, ff), articulation (>), and phrasing slurs.

Second Movement

The second movement, *Leggiero e legato*, can be divided into three parts. It is closely related to the traditional song form. The following chart (Figure 2) illustrates the form of movement 2.

Figure 2. Sections of the second movement of Carl Vine, Piano *Sonata* No.1.

Section	Measure	
A	mm. 194-279	a mm. 194-201
		b mm. 202-219
		a mm. 220-227
		b' mm. 228-245
		c mm. 246-279
B	mm. 280-309	d mm. 280-287
		d' mm. 288-295
		d'' mm. 296-309
A'	mm. 310-415	a'' mm. 310-343
		e mm. 344-388
		f mm. 389-415
coda	mm. 416-421	

Section A is divided into smaller sections, a, b and c. The “a” section is characterized by constantly moving sixteenth notes in a toccata style, marked *senza pedale* and *una corda*. Section “a” is to be played *pianississimo* and fast, demanding great control from the pianist (Example 13).

Example 13. Carl Vine, Piano Sonata No.1, mm. 194-195.

♩ = 120

ppp leggiero e legato

(senza pedale)
una corda

Section “b” begins in measure 202. This is characterized by more contrast in the rhythm and longer melody notes. Section “b” is characterized by three ideas which are repeated and a two measure conclusion (Example 14).

Example 14. Carl Vine, Piano Sonata No.1, mm. 202-205.

202 (in relief)

pp

ppp

Measures 210 to 211 and measures 212 to 213 are the same. In measures 210 to 211, the soprano and bass move in contrary motion; the left-hand part in measure 210 is repeated through the next three measures (Example 15).

Example 15. Carl Vine, Piano Sonata No.1, mm. 210-211.

210

ppp

(con poco pedale)

Measures 214 to 215 repeat in measures 216 to 217 and the meter is changed from 4/4 to 10/16. Measures 218 to 219 have the indication *Cédez un peu*. This, along with the fermata in measure 219, brings this section to a close (Example 16).

Example 16. Carl Vine, Piano Sonata No.1, mm. 214-219.

The image shows a musical score for Carl Vine's Piano Sonata No. 1, measures 214-219. The score is in 10/16 time and consists of two systems. The first system (measures 214-215) is marked 'mp' and 'pp'. The second system (measures 217-219) is marked 'Cédez un peu...' and includes a fermata in measure 219. The score is written for piano with treble and bass staves.

Measures 220 to 243 are a repeat of section “a” and “b” (measures 194 to 217). A crescendo through measures 244 to 245 brings us to a new section at a *fortissimo* level. These two measures are conclusion of section b’ and leads us to section “c”. Section “c” is more rhythmically complex, has a fuller texture, and is the climactic area of Section A.

Section “B” arrives at measure 280 in a *Lento* tempo. This section is in a quiet, chordal style with a melody in the tenor voice. Measures 280 to 287 act as an introduction to the melody that follows (Example 17).

Example 17. Carl Vine, Piano Sonata No.1, mm. 280-287.

This eight-measure pattern (Example 17) serves as the accompaniment for the tenor melody beginning with an anacrusis in measure 287. There are two eight-measure phrases. The melody is varied in the second phrase, becoming more active and intense. These two phrases are followed by a third phrase of six measures using arpeggios covering the complete range of the keyboard and leading us back to “section A” in measure 310.

The melody in this section is in the B-flat Aeolian mode, and sounds like a solo aria for a male voice. The melody moves into the upper range in measures 298 to 301 and sounds like a woman’s reply. The rhythm of the melody is very complicated, giving the impression of an improvisation.

The “A” section returns at measure 310, but this time at a *fortissimo* dynamic level. The first four measures are the exact same as the very beginning part of the second movement. At measure 314, the left-hand part is the same but the right-hand part is transposed a minor third higher and the *piano* dynamic level returns (Example 18).

Example 18. Carl Vine, Piano Sonata No.1, mm. 314-315.

The image shows a musical score for two staves. The top staff is in treble clef and the bottom staff is in bass clef. The time signature is 2/4. The key signature has one flat (B-flat). The score starts at measure 314, indicated by a circled '314' above the first measure. The dynamic marking 'p' is placed below the first measure of the right-hand part. The right-hand part consists of a series of eighth notes, and the left-hand part consists of a series of quarter notes. A large oval is drawn around the right-hand part of measures 314 and 315, indicating the transposition mentioned in the text.

In measure 318, the dynamic level reaches its loudest point thus far in this movement:

fortississimo. Measure 318 repeats in measure 319. From measures 318 to 325, the left-hand part of measure 318 is repeated seven times. In measure 322, the right-hand rhythmic figure repeats five times. It is Vine’s technique of repeating the small unit (Example 19).

Example 19. Carl Vine, Piano Sonata No.1, mm. 318-325.

318 *fff* possibile
ff

320

322 *sforzato*

324 *mp* *f* *mf* *ff*

The image displays a musical score for Carl Vine's Piano Sonata No. 1, measures 318-325. The score is written for piano and consists of four systems of music. The first system (measures 318-319) features a treble clef staff with a melody marked *fff* possibile and *ff*, and a bass clef staff with a bass line. The second system (measures 320-321) continues the melodic and bass lines. The third system (measures 322-323) is marked *sforzato* and includes five numbered boxes (1-5) highlighting specific melodic phrases in the treble clef. The fourth system (measures 324-325) shows a dynamic range from *mp* to *ff* and includes a *8va* marking for the treble clef staff. The score includes various musical notations such as slurs, accents, and dynamic markings.

Measures 326 to 327 and measures 328 to 329 have different meter signatures but the rhythm is the same (Example 20). (Vine changed the meter of measures 326-327 from 3/4 to 12/16 in the revised edition.²)

Example 20. Carl Vine, Piano Sonata No.1, mm. 326-329.

Measures 344 to 346 have the same melody as the beginning of the second movement. However, this time it is scored in an alternating hand technique rather than parallel octaves as at first (Example 21).

Example 21. Carl Vine, Piano Sonata No.1, mm. 344-346, mm. 194-195.

VS

² Carl Vine, *Piano Sonata* (1990). London: Chester Music, 2003.

194 $\text{♩} = 120$
ppp leggiero e legato
 (senza pedale)
 una corda

The music from this point, until the Coda at measure 416, is all new music.

The measures 381 and 382 are same. From measures 381 to 386, the sixteenth notes ascending arpeggio figure most conspicuously creates the dramatic action (Example 22).

Example 22. Carl Vine, Piano Sonata No.1, mm. 379-384.

379 *mf*
 382 *fff*

At measure 389, the extended coda starts. The sixteenth notes in the low bass are played *pianissimo*, which creates an unclear sound similar to thunder. From measures 389 to 405, the

left-hand five-beat rhythmic pattern repeats sixteen times. The right hand has a melody harmonized in thick, cluster-like chords (Example 23).

Example 23. Carl Vine, Piano Sonata No.1, mm. 389-391.

The image shows a musical score for three measures (389-391) of Carl Vine's Piano Sonata No. 1. The right hand (treble clef) features a melody with thick, cluster-like chords. The left hand (bass clef) has a rhythmic pattern of eighth notes. Dynamics include *pp* and *mp*. The score is marked with measure numbers 389, 390, and 391.

This section builds up and reaches *fortississimo* the loudest dynamic indication creating the grand climax of the sonata in measure 409 (Example 24).

Example 24. Carl Vine, Piano Sonata No.1, mm. 409-410.

The image shows a musical score for two measures (409-410) of Carl Vine's Piano Sonata No. 1. The right hand (treble clef) features a melody with thick, cluster-like chords. The left hand (bass clef) has a rhythmic pattern of eighth notes. Dynamics include *ffff* and *Red*. The score is marked with measure numbers 409 and 410.

Finally, Vine returns to the beginning of the first movement with *in relief* in measure 416 and *Morendo al fine* in measure 418. It finishes *pianississimo*. From measures 420 to 421, the lowest A in the left-hand and the highest C in the right-hand finish the movement (Example 25).

Example 25. Carl Vine, Piano Sonata No.1, mm. 416-421.

$\text{♩} = 40$

416 (in relief)

p

* λ_{ed}

418 Morendo al fine

pp *ppp* *pppp*

* λ_{ed}

* λ_{ed}

8^{va}

FINE

Rhythmic Considerations

The rhythms in this sonata are very complicated. The meter changes many times and the rhythmic patterns of the right hand and left hand are different. Often the left-hand provides a steady, even rhythm against which Vine groups patterns in numerous uneven combinations.

In Example 26, in measures 20 to 23, the left-hand has steady quarter notes moving rhythmically in 6/4 time against which he writes this rhythmic figure for the right hand in alternating groups of four and six caused by the accents and the contour of the treble pitches. The rhythm of the right-hand can be divided into four eighth notes and six eighth notes by accents. Except for the beginning and last group, it can be thought of as four eighth-note and six eighth-note groups. The pattern from the first accented note is repeated every five quarter notes. There is one group of five eighth notes before measure 24.

Example 26. Carl Vine, Piano Sonata No.1, mm. 20-22.

The image shows a musical score for measures 20-22 of Carl Vine's Piano Sonata No. 1. The score is in 6/4 time. The right hand (treble clef) features a complex rhythmic pattern of eighth notes, with groups of four and six eighth notes circled and labeled. The left hand (bass clef) plays a steady quarter-note pattern. Dynamics include *mf* and *p*. A tempo marking of quarter note = 144 is present. A 'Red.' marking with an asterisk is at the bottom of the left hand staff.

These have one thing in common. The meter of measures 24 to 49 is 5/4 and each of these measures contains two accented notes in the left-hand, dividing the measure into two five eighth-note groups (Example 27). The left-hand has a two-measure pattern. Against this two-measure pattern the right-hand has a melody in half notes also in a two-measure pattern. This creates a polyrhythm of 4:5, as seen in Example 26. In measures 34 to 45, the left-hand continues the same

two-measure pattern, but the right-hand now has a melody in dotted quarter notes. It now takes one and a half measures until the hands to line up, therefore creating a polyrhythm of 3:5, as seen in Example 27.

Example 27. Carl Vine, Piano Sonata No.1, mm. 24-26, m. 28, mm. 34-36.

The melody in measures 55 to 64, consists of two five-measure phrases, and except for the two, one, and seven, eighth-note lengths in measures 56 to 58 and 61 to 63, the notes are all five eighth-notes long. This is somewhat symmetrical in that there are three groups of five on either side of music not clearly grouped into fives in the middle (Example 28).

Example 28. Carl Vine, Piano Sonata No.1, mm. 55-59.

The image displays three systems of musical notation for Example 28, Carl Vine's Piano Sonata No. 1, measures 55-59. The music is written for piano in 4/4 time. The first system (measures 55-56) features a right-hand melody starting with a piano (*p*) dynamic and a note marked '(in relief)'. The left hand provides a steady accompaniment. The second system (measures 56-57) continues the right-hand melody with various rhythmic values (5, 2, 1, 7) and includes a *ppp* dynamic marking. The third system (measures 57-58) shows further development of the right-hand melody with rhythmic values of 5, 5, and 5, and includes a crescendo hairpin.

From measures 77 to 78, there is a symmetrical rhythmic pattern in the right-hand, which is supported by the retrograde symmetry of the stepwise quadruplets (Example 29).

Example 29. Carl Vine, Piano Sonata No.1, mm. 77-78.

In the second movement, from measures 202 to 205, the top notes start with dotted eighth notes. It now takes one measure until the parts line up, creating a polyrhythm of 3:4 as seen in Example 30. It changes to a dotted quarter note in measure 204 and it also can be thought of as two dotted quarter notes in the right-hand and three groups in the left-hand, 2:3.

Example 30. Carl Vine, Piano Sonata No.1, mm. 202-205.

In measure 332, there are six eighth notes in the right hand but there are four dotted eighth notes in the left hand (Example 31). In other words, it is three groups in the right hand and two groups in the left hand, 2:3. In measure 334, four sixteenth notes length appears in the right hand. It also can be thought of as three groups in the right hand and four groups in the left hand; 3:4.

Example 31. Carl Vine, Piano Sonata No.1, mm. 332-334.

In measures 349 to 362, the accented notes in the right hand are on the first, second and third beats, but the accented notes in the left hand divide the sixteenth notes into 3+3+2, creating an interesting syncopated rhythm (Example 32).

Example 32. Carl Vine, Piano Sonata No.1, mm. 349-350.

In measure 362 there is the melody D-C#-E-B in the soprano. This melody is then augmented in measures 363 to 364 (Example 33).

Example 33. Carl Vine, Piano Sonata No.1, mm. 362-364.

362

The musical score is written for piano and consists of two staves. The treble staff begins with a treble clef and a key signature of one sharp (F#). The melody starts with a quarter note G4, followed by a quarter note A4, and then a quarter note B4. The next measure contains a quarter note C5, a quarter note B4, and a quarter note A4. The following measure has a quarter note G4, a quarter note F#4, and a quarter note E4. The melody continues with a quarter note D4, a quarter note C4, and a quarter note B3. The final measure of the treble staff contains a quarter note A3, a quarter note G3, and a quarter note F#3. The bass staff begins with a bass clef and a key signature of one sharp (F#). It features a rhythmic accompaniment of eighth notes. The first measure contains a quarter note G3, a quarter note F#3, and a quarter note E3. The second measure contains a quarter note D3, a quarter note C3, and a quarter note B2. The third measure contains a quarter note A2, a quarter note G2, and a quarter note F#2. The fourth measure contains a quarter note E2, a quarter note D2, and a quarter note C2. The fifth measure contains a quarter note B1, a quarter note A1, and a quarter note G1. The sixth measure contains a quarter note F#1, a quarter note E1, and a quarter note D1. The seventh measure contains a quarter note C1, a quarter note B0, and a quarter note A0. The eighth measure contains a quarter note G0, a quarter note F#0, and a quarter note E0. The piece concludes with a triplet of eighth notes in the bass staff: G1, F#1, and E1.

Pitch Considerations- Set theory

The (027) set is pervasive throughout the piece. It appears as a chord and in arpeggio form. In the first movement, the chord forms appear more often, while arpeggio forms appear more often in the second movement. The prime form of the circled pitches in Example 34 is (027). A (027) chord can be understood to be a triad built of two perfect fourths or two perfect fifths. The first chord of the right hand is a half-step higher than the corresponding chord of the left hand. The second chord of the right hand is a half-step lower than the corresponding chord of the left hand. The left hand chords in the first twelve measures descends in a two-measures progression, and each progression is different; chromatic progression in mm. 1-2, half step-whole step-half step in mm. 3-4, whole step-half step-half step in mm. 5-6, whole step-whole step-whole step in mm. 7-8, whole step-whole step- half step in mm. 9-10, half step-whole step-half step in m. 12. Vine uses all twelve notes in six chords, which are marked with circles in measures 1 to 2, and measures 3 to 4, respectively. The first two chords in the right hand in measure 1 are related by a minor third. (T1: transposed by half step, T2: transposed by whole step.... T9: transposed by minor third) In measures 2 and 4, the left-hand chords continue to use quartal harmony and the whole note in the middle voice of the right hand is also a perfect fourth from the top voice of the left-hand chord.

Example 34. Carl Vine, Piano Sonata No.1, mm. 1-4.

In measure 5, the B flat-G-C-F-C appears almost symmetrical (Example 35).

Example 35. Carl Vine, Piano Sonata No.1, mm. 5-7.

From measures 1 to 12, all of the prime forms of the chord of the left-hand are (027) except for the last chord. The last chord is (016). The reason for the change could be the B-natural that leads to the C in the melody, giving a stronger cadence or lead in to the next section (Example 36).

Example 36. Carl Vine, Piano Sonata No.1, m.12.

In measure 20, the [3, 5, 10] set—a member of the set class (027)—comes back to the same set in measure 21, in which the [6, 10, 1] set—also a member of the set class (027)—also comes back to the same set in measure 22. These (027) sets are placed in register as two perfect fifths except the first one (Example 37).

Example 37. Carl Vine, Piano Sonata No.1, mm. 20-23.

In the Example 38, both measure 189 and measure 191 are the same compositional technique. Even though the pianist plays two chords simultaneously, the chord in the right hand is very short, leaving the left-hand chord sounding. The chord of the right-hand is related down a minor third to the left-hand chord.

Example 38. Carl Vine, Piano Sonata No.1, m.189, m.191.

The image shows two musical staves. The first staff, labeled '189', shows a piano (p) dynamic and a tritone (T9) interval. The second staff, labeled '191', shows piano (p) and pianissimo (pp) dynamics, with a tritone (T9) interval indicated by a downward arrow.

In the second movement, even though the beginning part is in toccata style, there are many (027) sets (Example 39). In the first measure, all twelve notes are used. In the first movement, in measures 1 and 2, Vine also used all twelve notes.

Example 39. Carl Vine, Piano Sonata No.1, m.194.

The image shows a musical staff for measure 194. The notation includes 'Leggiero e legato', 'piano (ppp)', '(senza pedale)', 'luna corda', and 'all 12 notes used'. The measure is divided into sections labeled T1, T7, T1, All (027), T11, T0, and T9.

In measure 214, the (027) sets are used like a sequentially and they are almost in a small arch form (Example 40).

Example 40. Carl Vine, Piano Sonata No.1, mm. 214-5.

In measure 324, each first note of the chord goes up a minor third. The pattern sequences over a two-measure period (Example 41).

Example 41. Carl Vine, Piano Sonata No.1, m.324.

In measure 413, the first note in each group in the left hand goes down a perfect fourth. By transposing the 027 set by the same interval that generates it, two of its three notes are preserved.

In the second movement, the (027) sets appear in arpeggio form (Example 42).

Example 42. Carl Vine, Piano Sonata No.1, m.413.

In 1987, David Lewin, an important American theorist, wrote a book entitled *Generalized Musical Intervals and Transformations (GMIT)*. Among many ideas presented in this book, he described a method to relate metric pulses to pitch.³ He demonstrated this method using Elliott Carter's First Quartet. In this piece, each instrument has a different but consistent rhythm. So, each beat of the each instrument is different and it is called a local-time unit. Lewin focused on different local-time units and symbolizing them with pitches. This way is useful to see the relationship of the each section or instrument.

In Carl Vine's Piano Sonata No.1, the tempo changes many times. Following David Lewin's approach, these changes of the tempo can be symbolized by pitches. If, for example, we have a consistent pulse, we can assign a metronome marking to it, which is a frequency of vibrations. Pitch is also a frequency of vibrations; therefore, tempo and pitch can be analogous to each other. For pitch, the ratio of an octave is 2:1, a perfect fifth is 3:2 and a major third is 5:4. If one tempo is moving at a rate of MM=120 and another tempo moves at a rate of MM=60, the tempos would be in the ratio of 2:1, which is that same as the octave relationship. Likewise, if one tempo is moving at the rate of MM=120 and another at the rate of MM=80, the tempos

³ David Lewin, *Generalized Musical Intervals and Transformations*. (New Haven: Yale UP, 1987), 63-72.

would be in the ratio of 3:2, the same as the perfect fifth relationship. This is the basis of Lewin's theory of relating moving pulses to pitch. I analyzed mm.1-104 using this method and made some fascinating discoveries relating to Vine's pitch and tempo.

The sonata begins with a tempo of 48 half notes per minute (MM=48). The lowest pitch is an A. If we relate the MM to pitch, then the MM=48 is symbolized by the pitch A. The local time units in measures 1 to 12 are the half note, the whole note, the measure, and two measures, the latter being the length of a phrase. These time units of MM=48, 24, 12, and 6, can be symbolized by various octave A pitches as seen in Example 43. One could say that time units of MM=48, 24, 12, and 6 all belong to the same "tempo class," just like the eight pitches named "A" on the piano belong to the same pitch class.

Normally the half note divides in half by two quarter-notes. This would mean that the quarter-note would pulse at two times the rate of the half-note or MM=96. In measure 13, the accompaniment rhythm moves in a triplet quarter-note rhythm, which means that the half-note is subdivided into three pulses. Therefore, the triplet quarter-notes are moving at three times the rate of the half-note or MM=144, which belongs to a different tempo class than the tempo class to which MM=48 belongs. The ratio of MM=144 to MM=96 is 3:2 which in pitch equals a perfect fifth. Therefore MM=144 is symbolized by the pitch E which is a perfect fifth above A. This is shown in Example 43.

Continued analysis in this manner gives the pulse rates and the pitches symbolized by them as illustrated in Example 43. The measures in which the pulses change are indicated at the top of the example. It is remarkable to notice that only the tempo classes represented by the pitch classes A, C, E, G, and B are represented and those are the pitch classes of the chord that

the pianist must press down silently and hold with the middle pedal at the outset of the sonata. Furthermore, A, B, and E, the highest three pitch classes in Example 44, which represent the three tempo classes that include the three fastest periodic rhythms, create an (027) chord, which has already been demonstrated to occur many times in this work.

Example 43.

Example 43 is a handwritten musical score for piano, consisting of two staves (treble and bass clef) with various annotations. The score is divided into measures, with measure numbers 1, 13, 20, 24, 34, 50, 52, 55, 80, and 81 marked above the staff. The annotations include tempo markings such as 'm.l.', 'm. 13', '20', '24', '34', '50', '52', '55', '80', and '81'. There are also various rhythmic and harmonic markings, including '144 o l.h.', '288 E r.h.', '72 o F.h.', '96 o', '432 B', '432 B', '432 B', '576 E', '576 E', '192 B', '48 o', '57.6 B l.h.', '43.2 o', '24 o', '28.8 o l.h.', '12 A', '6 A', '12 A l.h.', and '6 A l.h.'. The notation is complex and appears to be a study or analysis of a specific piece of music.

Carl Vine's Piano Sonata No.1 is a very complex work, both harmonically and rhythmically. He uses repetition technique, (027) sets as both chords and arpeggios, and various kinds of rhythmic techniques such as polyrhythm and rhythmic modulation. In the slow sections, we feel a contrast in mood. In this piece, there are many tempo changes which can be analyzed using David Lewin's approach. There is also a predominance of the (027) set. Through these techniques he has created a work full of energy and many challenges for the pianist and one can feel a distinctive musical journey. Even though this piece is very demanding for the pianist, it is a very attractive work for the listener and deserves to be played. I hope this paper will be helpful to other performers who play this piece.

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