

Roger Zare

Fractal Miniatures

Instrumentation

Flute (doubles piccolo)

Clarinet in B \flat (doubles bass clarinet in B \flat)

Trumpet in C

2 Violins

Viola

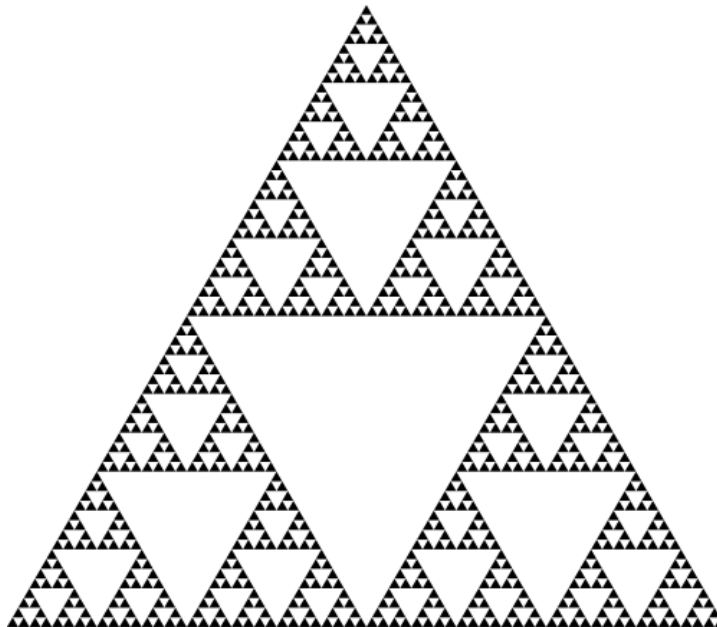
Cello

Piano

Percussion: One player

Marimba, Suspended Cymbal, Snare Drum, Kick Bass

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The beauty and order of fractals never ceases to amaze me, from the simplicity of the Sierpinski Triangle to the incredible complexity within the Mandelbrot set. I am mesmerized by videos that zoom ad infinitum into one of these fractals, revealing the same shapes over and over, gradually transformed by subtle and complex processes. In *Fractal Miniatures*, I have strung eight short movements together that each reflect my impressions of various fractals, taking them as pieces of art. Elements of fractal geometry are alluded to, including symmetry and their additive nature, but all of the music flows organically without any mathematical processes guiding it.

The eight movements are arranged in a somewhat symmetrical layout, with the fifth movement as the focal point. The outer movements, named after the famous Sierpinski Triangle, are rhythmic and unyielding, pounding away at incessant rhythms through massive swells and dips. The second movement, *flowsnake*, is a spoonerism of snowflake, and is a simple space-filling fractal. This movement concentrates on sinewy flowing lines that spiral around one another. The third and seventh movements both open the same way, with the cello and percussion fading in ethereally into a pointillistic texture. The third movement, *Newton Fractal* continues this idea in a somewhat fitful manner, with various instruments taking turns with interjections. The seventh, *Nova Fractal*, is more linear, featuring a muted trumpet solo over an amorphous soup of string trills.

The fourth and sixth movements are named after the Dragon Curve, another space-filling curve. These two movements are abrupt and explosive, with sharp attacks and caustic gestures. They are also almost-exact mirror images of each other. The central movement of the set is named for arguably the most easily-recognized fractal, the Mandelbrot Set. Scored without percussion, the musical shape of this movement mimics the characteristic bulbous shape of the fractal. An underlying ostinato in 7/8 sets the stage for soaring lines and expansive harmonies.

Duration ca. 12'
Score is transposed

Written for Colin Sorgi and the SONAR New Music Ensemble

for more information or performance materials,
please visit www.rogerzare.com

revised 3-1-2013

Fractal Miniatures

I. Sierpinski Triangle, Iteration 1

Steady and punctuated ♩ = 108
jet whistle effect

Roger Zare
(b. 1985)

The musical score is arranged in a standard orchestral format with the following parts and markings:

- Flute:** Starts with a *f* dynamic and a 'jet whistle effect' indicated by a triangle above the first note.
- Clarinet in B♭:** Starts with a *p* dynamic and features a long melodic line across the first two measures.
- Trumpet in C:** Remains silent throughout the piece.
- Violin I & II:** Both parts are marked *fp* and include the instruction 'sul G'.
- Viola:** Marked *fp* and includes the instruction 'sul G'.
- Violoncello:** Marked *fp*.
- Piano:** Features a complex texture with *f* and *p* dynamics in both hands.
- Marimba:** Marked *sfz p* and *f p*.
- Percussion:** Includes 'kick bass', 'snare drum', and 'susp. cymbal'.

The score is divided into two systems, with measures 2 and 3 indicated at the bottom.

Fl. *f* *pp* *f* (jet whistle effect)

Cl. *f* *pp* *p*

C Tpt. *f* con sord. straight mute

Vln. I *f* *p* *f sub.* *fp*

Vln. II *f* *p* *fp* *fp*

Vla. *f* *p* *fp*

Vc. *f* *p* *fp* *fp*

Pno. *f* *p* *f*

Mar. *f* *p* *f p* *f p*

Perc.

Fl. *ff* *f* *f* **A**

Cl. *f* *f*

C Tpt. *f* *f*

Vln. I *fp* *f* *f* *mf*

Vln. II *f* *f* *f*

Vla. *f* *f* *mf*

Vc. *f* *f* *mf*

Pno. *pp* *f* *p* *f* **A**

Mar. *f* *pp* *f* *p* *f* *p*

Perc.

8 9 10 11

Fl. *fp* *f* *p*

Cl. *fp* *p*

C Tpt. *f*

Vln. I *f* *mf* *f* *mf* *f* *mf*

Vln. II *mf* *f* *mf*

Vla. *f* *mf* *f* *mf*

Vc. *f* *mf* *ff*

Pno. *f* *Red.*

Mar. *f p f p f f*

Perc. *kick bass* *f*

12

13

14

15

Fl. *p* *f sub.* *marc.* *f* **B**

Cl. *p* *f sub.* *marc.* *p*

C Tpt. *p* *f*

Vln. I *f* *marc.* *f* *mf*

Vln. II *f* *marc.* *f* *mf*

Vla. *f* *marc. 3* *f* *mf*

Vc. *mf* *ff* *marc. 3* *f* *mf* **B**

Pno. *ff*

Mar. *f* *ff* *p*

Perc. *f* *f*

Fl. *ff* *p*

Cl. *p*

C Tpt.

Vln. I

Vln. II *f* *mf*

Vla.

Vc. *ff*

Pno. *f*

Mar. *f* *p*

Perc. *f*

20 21 22 23

Detailed description: This page of a musical score covers measures 20 to 23. The instruments are Flute (Fl.), Clarinet (Cl.), Trumpet (C Tpt.), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Violoncello (Vc.), Piano (Pno.), Maracas (Mar.), and Percussion (Perc.). The score is written in 4/4 time, with a 3/4 time signature change occurring at the beginning of measure 22. The Flute part features a dynamic shift from fortissimo (ff) to piano (p) across measures 21 and 22. The Clarinet part is marked piano (p). The Violin II part shows dynamics of forte (f) and mezzo-forte (mf). The Violoncello part has a fortissimo (ff) marking in measure 22. The Piano part has a forte (f) marking in measure 20. The Maracas part has dynamics of forte (f) and piano (p). The Percussion part has a forte (f) marking in measure 22.

C

Fl. *ff* *mf* *ff* 3

Cl. *f* *p sub.* *ff* 3 6 3

C Tpt. *ff* 3

Vln. I *ff* *mf* *ff*

Vln. II *ff* *mf* *ff*

Vla. *ff* *mf* *ff* sul C

Vc. *ff* *mf* *ff*

Pno. *ff* *mf* *ff* 8va

Mar. *f* *ff*

Perc. *f*

Fl. *p* *ff*

Cl. *ff* *p* *ff*

C Tpt. *ff* *p* *ff*

Vln. I *f* *mf*

Vln. II *f* *mf*

Vla. *f* *mf*

Vc. *ff* *f* *mf*

Pno. *f* *ff*

Mar. *f* *ff*

Perc. *ff*

28 29 30 31

This musical score page contains measures 32 through 35. The instruments are arranged as follows:

- Fl. (Flute):** Measures 32-33 feature triplets of eighth notes with a *marc.* (marcato) marking. Measure 34 has a triplet of eighth notes followed by a sixteenth-note triplet. Measure 35 is a whole rest.
- Cl. (Clarinet):** Similar to the flute, with triplets in measures 32-33 and a triplet followed by a sixteenth-note triplet in measure 34. Measure 35 is a whole rest.
- C Tpt. (Trumpet):** Measures 32-33 have triplets of eighth notes with *marc.* markings. Measure 34 has a triplet of eighth notes. Measure 35 is a whole note with a *sfp* (sforzando piano) dynamic.
- Vln. I & II (Violins):** Measures 32-33 have triplets of eighth notes with *marc.* markings. Measure 34 has a triplet of eighth notes. Measure 35 is a whole note with a *sfp* dynamic.
- Vla. (Viola):** Measures 32-33 have triplets of eighth notes with *marc. 3* markings. Measure 34 has a triplet of eighth notes. Measure 35 is a whole note with a *sfp* dynamic.
- Vc. (Violoncello):** Measures 32-33 have triplets of eighth notes with *marc. 3* markings. Measure 34 has a triplet of eighth notes. Measure 35 is a whole note with a *sfp* dynamic.
- Pno. (Piano):** Measures 32-33 have triplets of eighth notes with *marc.* markings. Measure 34 has a triplet of eighth notes. Measure 35 is a whole note with a *sfp* dynamic. A dashed line labeled (8) spans measures 32-33.
- Mar. (Mandolin):** Measures 32-33 have triplets of eighth notes. Measure 34 has a triplet of eighth notes. Measure 35 is a whole note with a *fp* (fortissimo piano) dynamic.
- Perc. (Percussion):** Measures 32-33 have triplets of eighth notes with a *ff* (fortissimo) dynamic. Measure 34 has a triplet of eighth notes. Measure 35 is a whole rest.

Measures 32, 33, 34, and 35 are indicated at the bottom of the page.

Fl. *ff* *ff* *ff*
 Cl. *ff* *ff* *ff*
 C Tpt. *ff* *ff* *ff*
 Vln. I *ff* *f*
 Vln. II *ff* *f*
 Vla. *ff* *f*
 Vc. *ff* *f*
 Pno. *ff* *p* *f* *secco*
 Mar. *ff* *mf* *ff* *mf*
 Perc. *p* *ff*

Measures: 36, 37, 38, 39
 Section: **D** (starts at measure 38)

Fl. *p* *ff*
 Cl. *p* *ff* *fp* *fp*
 C Tpt. *ff* *f*
 Vln. I *ff* *f*
 Vln. II *ff* *f*
 Vla. *ff* *f*
 Vc. *ff* *f*
 Pno. *ff* *p* *ff*
 Mar. *ff* *p* *ff* *mf* *ff* *mf*
 Perc.

Fl. *fp* *f* *ff* *p* *ff*

Cl. *fp* *f* *ff* *p* *ff*

C Tpt. *f* *ff* *p* *ff*

Vln. I *ff* *fp* *ff*

Vln. II *ff* *fp* *ff*

Vla. *ff* *fp* *ff*

Vc. *ff* *f* *ff*

Pno. *p* *ff* *ff*

Mar. *ff* *p* *ff* *p* *ff*

Perc. *f* *ff* *ff*

43

44

45

46

Musical score for measures 47-50, featuring Flute (Fl.), Clarinet (Cl.), Trumpet (C Tpt.), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Violoncello (Vc.), Piano (Pno.), and Percussion (Perc.).

The score is divided into four measures (47, 48, 49, 50). The time signature changes from 3/4 to 4/4 between measures 48 and 49. The key signature is G major.

Dynamics and performance markings include:

- fff* (fortississimo)
- f* (forte)
- ff* (fortissimo)
- p* (piano)
- sul G* (sul G string)
- Red.* (Reduction)

The score includes various musical notations such as slurs, accents, and dynamic markings. The Percussion part features a rhythmic pattern of eighth notes in measures 47 and 48, and a more complex pattern in measure 49.

Fl. *attacca*

Cl. *fff*

C Tpt. *fff*

Vln. I *fff*

Vln. II *fff*

Vla. *fff*

Vc. *fff*

Pno. *fff* *attacca*

Mar. *fff*

Perc. *fff*

51

52

53

54

II. Flowsnake

Wispy and flowing ♩ = 120

(overblow)

The musical score is arranged in a standard orchestral format with the following parts:

- Flute (Fl.):** Starts with a trill (tr) and a dynamic of *f*. The piece is marked "Wispy and flowing" with a tempo of ♩ = 120. The score includes an overblow instruction and a triplet of eighth notes in the 3/4 time signature section.
- Clarinet (Cl.):** Features a melodic line with dynamics ranging from *p* to *f sub.* and *p*.
- C Trumpet (C Tpt.):** Remains silent throughout the piece.
- Violin I (Vln. I) and Violin II (Vln. II):** Both parts are marked *pizz.* (pizzicato) and *p*. The Violin I part has a dynamic shift to *f* in the 4/4 section.
- Viola (Vla.):** Also marked *pizz.* and *p*, with a dynamic shift to *f* in the 4/4 section.
- Violoncello (Vc.):** Marked *pizz.* and *p*, with a dynamic shift to *f* in the 4/4 section.
- Piano (Pno.):** Features a melodic line in the right hand and a bass line in the left hand. Dynamics include *f* and *8va* (octave) markings.
- Maracas (Mar.):** Remains silent throughout the piece.
- Percussion (Perc.):** Uses suspended cymbal and wire brushes, marked *mf*. In the 4/4 section, it switches to snare sticks, marked *f*.

The score is divided into four measures, with time signatures changing from 4/4 to 3/4 and back to 4/4. Measure numbers 2, 3, and 4 are indicated at the bottom of the page.

Musical score for measures 5, 6, and 7. The score includes parts for Flute (Fl.), Clarinet (Cl.), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Violoncello (Vc.), Piano (Pno.), and Percussion (Perc.).

- Fl.:** Measures 5 and 6 contain a complex melodic line with many accidentals. Measure 7 begins with a *f* dynamic.
- Cl.:** Measures 5 and 6 are rests. Measure 7 begins with a *f* dynamic.
- Vln. I, Vln. II, Vla., Vc.:** Measures 5 and 6 are rests. Measure 7 begins with a *f* dynamic.
- Pno.:** Measures 5 and 6 are rests. Measure 7 begins with a *f* dynamic.
- Perc.:** Measures 5 and 6 are rests. Measure 7 features a triplet of eighth notes with an accent (>) and a *f* dynamic.

Measure numbers 5, 6, and 7 are printed below the staff.



Musical score for measures 8, 9, and 10. The score includes parts for Flute (Fl.), Clarinet (Cl.), and Percussion (Perc.).

- Fl.:** Measure 8 starts with a *p* dynamic. Measure 9 continues with a *p* dynamic. Measure 10 begins with a *f* dynamic.
- Cl.:** Measure 8 starts with a *p* dynamic. Measure 9 continues with a *p* dynamic. Measure 10 begins with a *f* dynamic.
- Perc.:** Measure 8 is a rest. Measure 9 is marked "(drum sticks)" and begins with a *pp* dynamic. Measure 10 continues with a *pp* dynamic.

Measure numbers 8, 9, and 10 are printed below the staff.

Musical score for measures 11, 12, and 13. The score includes parts for Flute (Fl.), Clarinet (Cl.), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Violoncello (Vc.), Piano (Pno.), and Percussion (Perc.).

- Fl.:** Measure 11: *f* (forte), notes G4, A4, B4, C5. Measure 12: *f*, trill on G4. Measure 13: *f*, notes G4, A4, B4, C5.
- Cl.:** Measure 11: *f*, notes G4, A4, B4, C5. Measure 12: *f*, notes G4, A4, B4, C5. Measure 13: *f*, notes G4, A4, B4, C5.
- Vln. I:** Measure 11: *f*, notes G4, A4, B4, C5. Measure 12: *f*, notes G4, A4, B4, C5. Measure 13: *f*, notes G4, A4, B4, C5.
- Vln. II:** Measure 11: *f*, notes G4, A4, B4, C5. Measure 12: *f*, notes G4, A4, B4, C5. Measure 13: *f*, notes G4, A4, B4, C5.
- Vla.:** Measure 11: *f*, notes G4, A4, B4, C5. Measure 12: *f*, notes G4, A4, B4, C5. Measure 13: *f*, notes G4, A4, B4, C5.
- Vc.:** Measure 11: *f*, notes G4, A4, B4, C5. Measure 12: *f*, notes G4, A4, B4, C5. Measure 13: *f*, notes G4, A4, B4, C5.
- Pno.:** Measure 11: *f*, notes G4, A4, B4, C5. Measure 12: *f*, notes G4, A4, B4, C5. Measure 13: *f*, notes G4, A4, B4, C5.
- Perc.:** Measure 11: *f*, notes G4, A4, B4, C5. Measure 12: *f*, notes G4, A4, B4, C5. Measure 13: *f*, notes G4, A4, B4, C5.

Measures 11, 12, and 13 are indicated below the score.



Musical score for measures 14 and 15. The score includes parts for Flute (Fl.), Clarinet (Cl.), and Violin I (Vln. I).

- Fl.:** Measure 14: *f*, notes G4, A4, B4, C5. Measure 15: *f*, notes G4, A4, B4, C5.
- Cl.:** Measure 14: *f*, notes G4, A4, B4, C5. Measure 15: *f*, notes G4, A4, B4, C5.
- Vln. I:** Measure 14: *f*, notes G4, A4, B4, C5. Measure 15: *f*, notes G4, A4, B4, C5.

Measures 14 and 15 are indicated below the score.

F

Fl. *p* *f*

Cl. *f* *f*

C Tpt. *f* senza sord.

Vln. I *p* *f*

Vln. II *f* arco *f*

Vla. *f* arco *f*

Vc. *f* arco

Pno. *f* *f* secco

Perc. *f* *p* *f* snares off

Fl. *Flute* staff with melodic line and slurs.

Cl. *Clarinet* staff with melodic line and slurs.

C Tpt. *C Trumpet* staff with rests.

Vln. I *Violin I* staff with rests.

Vln. II *Violin II* staff with rests.

Vla. *Viola* staff with melodic line.

Vc. *Violoncello* staff with melodic line.

Pno. *Piano* grand staff with complex accompaniment.

Perc. *Percussion* staff with a steady rhythmic pattern, marked *pp*.

Fl. *f*

Cl. *f*

Vln. I *p < f* *p*

Vln. II *p < f* *p*

Vla. *f*

Vc. *f*

Pno. *p < f* *p*

Perc. *f* *p < f*

21 22 23

Detailed description: This is a page of a musical score for measures 21, 22, and 23. The score is arranged in a system with eight staves. The instruments are Flute (Fl.), Clarinet (Cl.), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Violoncello (Vc.), Piano (Pno.), and Percussion (Perc.).
- Flute: Measures 21 and 22 feature a melodic line with slurs and ties. Measure 23 has a dynamic marking of *f*.
- Clarinet: Similar to the flute, it has a melodic line with slurs and ties in measures 21 and 22, and a dynamic marking of *f* in measure 23.
- Violin I and II: Both have rests in measures 21 and 22. In measure 23, they play a tremolo figure with a dynamic marking of *p < f* and a hairpin ending at *p*.
- Viola and Violoncello: Both have melodic lines with slurs and ties in measures 21 and 22, and a dynamic marking of *f* in measure 23.
- Piano: The right hand has a melodic line with slurs and ties in measures 21 and 22, and a dynamic marking of *p < f* and a hairpin ending at *p* in measure 23. The left hand has a sustained chord in measure 21.
- Percussion: Measures 21 and 22 have a rhythmic pattern with a dynamic marking of *f*. Measure 23 has a dynamic marking of *p < f*.

G

Fl. *ff*
 Cl. *ff*
 C Tpt. *ff*
 Vln. I *ff*
 Vln. II *ff*
 Vla. *ff*
 Vc. *ff*
 Pno. *ff*
 Perc. *ff* (snare on)

The score is divided into two systems. The first system covers measures 24 and 25. The second system covers measures 24 and 25. The key signature is G major. The time signature is 4/4. The dynamics are consistently *ff* (fortissimo). The Flute and Clarinet parts have melodic lines with slurs. The Violin I and II parts have rhythmic patterns. The Viola and Violoncello parts have melodic lines. The Piano part has a melodic line in the right hand and a bass line in the left hand. The Percussion part has a snare drum pattern.

Fl. *ff*

Cl. *ff*

C Tpt. *ff*

Vln. I *ff*

Vln. II *ff*

Vla. *ff*

Vc. *ff*

Pno. *ff*

Perc. *p* *ff* *f* *pp* *f.s.*

Detailed description: This is a page of a musical score for a symphony orchestra. It features nine staves: Flute (Fl.), Clarinet (Cl.), C Trumpet (C Tpt.), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Violoncello (Vc.), Piano (Pno.), and Percussion (Perc.). The Flute, Clarinet, Violin I, Violin II, Viola, and Violoncello parts are marked with a forte-forte (*ff*) dynamic. The Percussion part has a dynamic range from piano (*p*) to fortissimo (*ff*), with a fortissimo (*f*) and pianissimo (*pp*) section, and a fortissimo (*f.s.*) section. The Piano part is marked with a forte-forte (*ff*) dynamic. The score is divided into three measures, with measure numbers 26, 27, and 28 indicated at the bottom.

Fl.
Cl.
C Tpt.
Vln. I
Vln. II
Vla.
Vc.
Pno.
Perc.

The score is divided into two systems. The first system covers measures 29 and 30. The second system covers measures 31 and 32. The Flute and Clarinet parts feature complex melodic lines with many accidentals and slurs. The Violin and Viola parts play rhythmic patterns. The Piano part has a complex texture with many notes and slurs. The Percussion part plays a steady rhythm. The score ends with a double bar line and a *ff* dynamic marking.

Fl.
 Cl.
 C Tpt.
 Vln. I
 Vln. II
 Vla.
 Vc.
 Pno.
 Perc.
 pp

The musical score for page 27 consists of nine staves. The Flute (Fl.) and Clarinet (Cl.) parts feature melodic lines with slurs and accidentals. The C Trumpet (C Tpt.) part is silent. The Violin I (Vln. I) and Violin II (Vln. II) parts play rhythmic patterns. The Viola (Vla.) and Violoncello (Vc.) parts play similar rhythmic patterns. The Piano (Pno.) part features a melodic line with slurs and accidentals. The Percussion (Perc.) part features a rhythmic pattern with slurs and accidentals. The dynamic marking *pp* is present at the bottom left.

H

Fl. *fff*

Cl. *fff*

C Tpt. *ff possible*
 harmon mute, stem in

Vln. I *fff*

Vln. II *fff*

Vla. *fff*

Vc. *fff*

H

(8) - 1

indeterminate pitches

Pno. *fff* secco

8^{vb}

Perc. *f*

(overblow)

Fl. *f* *mp*

Cl. *mf* *mp*

C Tpt. *mf* *p* *pizz.*

Vln. I *mp* *pizz.*

Vln. II *mp* *pizz.*

Vla. *mp* *pizz.*

Vc. *mp*

Perc.

35 36 37

Detailed description: This system of musical notation covers measures 35, 36, and 37. The Flute part begins with a trill (tr) and an overblow instruction, followed by a dynamic shift from forte (f) to mezzo-piano (mp). The Clarinet and C Trumpet parts play a rhythmic eighth-note pattern, with dynamics of mezzo-forte (mf) and piano (p). The string quartet (Violin I, Violin II, Viola, and Violoncello) is in a pizzicato (pizz.) texture with a mezzo-piano (mp) dynamic. The Percussion part is silent.

Fl. *pp* *p*

Cl. *pp* *p*

Vln. I *p*

Vln. II *p*

Vla. *p*

Vc. *p*

Perc. wire brushes (scrape) *pp* *p*

38 39 40

Detailed description: This system covers measures 38, 39, and 40. Measures 38 and 39 are in 3/4 time, while measure 40 is in 4/4 time. The Flute and Clarinet parts play a sixteenth-note melodic line, with dynamics of pianissimo (pp) and piano (p). The string quartet (Violin I, Violin II, Viola, and Violoncello) plays a sustained piano (p) accompaniment. The Percussion part uses wire brushes (scrape) for a rhythmic texture, with dynamics of pianissimo (pp) and piano (p).

Fl. *p*

Cl. *p*

Perc. *p*

41 42



Fl. *p*

Cl. *p*

43 44 45



Fl. *p*

Cl. *p* (pizz.)

Vln. I *pp* (pizz.)

Vln. II *pp* (pizz.)

Perc. (wire brushes) *p*

46 47



Fl. *pp* 3

Cl. *pp* 3

To Picc.

To Bass Cl.

48 49 50

III. Newton Fractal

Ethereal ♩ = 60 I

Fl.

B. Cl. Bass Clarinet
in B \flat

C Tpt.

Vln. I

Vln. II

Vla.

Vc.

Pno.

Mar.

arco molto sul pont. *mf*

arco molto sul pont. *mf*

arco con sord. 0 *p* senza vibrato *p*

arco *p* *mp*

soft mallets *p* *p*

2 3 4 5 6

Fl.

B. Cl.

C Tpt.

Vln. I

Vln. II

Vla.

Vc.

Pno.

Mar.

7 8 9 10

mf *pp* *f*

f *mp* *f* *f*

f *mp* *f* *f*

p

sul pont.

f *mf*

repeat pitches rapidly in any order

pp

Red.

mp

Detailed description: This page of a musical score covers measures 7 through 10. The instruments are Flute (Fl.), Bass Clarinet (B. Cl.), Trumpet (C Tpt.), Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Cello (Vc.), Piano (Pno.), and Maracas (Mar.).
- Flute: Silent throughout.
- Bass Clarinet: Measures 7-8 are silent. Measures 9-10 play a melodic line with dynamics *mf*, *pp*, and *f*.
- Trumpet: Silent throughout.
- Violin I: Measures 7-8 play sixteenth-note patterns with dynamics *f* and *mp*. Measures 9-10 play similar patterns with dynamics *f* and *f*, including triplets.
- Violin II: Measures 7-8 play sixteenth-note patterns with dynamics *f* and *mp*. Measures 9-10 play similar patterns with dynamics *f* and *f*, including triplets.
- Viola: Measures 7-8 play a sustained note with dynamics *p*. Measures 9-10 play a sustained note with dynamics *p*.
- Cello: Measures 7-8 play a melodic line with dynamics *f* and *mf*.
- Piano: Measures 7-9 are silent. Measure 10 has a short melodic phrase with dynamics *pp*.
- Maracas: Measures 7-8 are silent. Measures 9-10 play a melodic line with dynamics *mp*.
- Performance markings: 'sul pont.' is written above the Cello staff in measure 7. A box in measure 10 of the Piano staff contains the notes Bb, Eb, Bb, Eb with the instruction 'repeat pitches rapidly in any order'. A 'Red.' marking is present below the Piano staff in measure 10.

Fl.

B. Cl. *p*

C Tpt.

Vln. I

Vln. II *molto sul pont.* *mf*

Vla. *senza sord.*

Vc. *pizz.* *f*

Pno. *f* *p* *f* *ppp*

Ped.

Mar. *pp* *mf* *pp*

Measures 11, 12, 13, 14, 15, 16

IV. Dragon Curve, Iteration 1

Charged ♩ = 144

Piccolo

J

Picc.

B. Cl.

C Tpt.

Vln. I

Vln. II

Vla.

Vc.

scratch tone ord.

scratch tone ord.

scratch tone ord.

scratch tone ord.

Charged ♩ = 144

J

Pno.

Perc.

mf

ff

p

sfz

ff

p < ff

sfpp

ff

ff

p < ff

sfpp

ff

ff

p < ff

sfpp

ff

ff

p < ff

sfpp

ff

f

p

f

p

sfz

f

f

2

3

4

5

6

7

8

8^{va}

8^{vb}

Red.

3

6

Picc. *p* *6* *6* *ff*

B. Cl. *pesante* *f* *3* *3* *ff*

C Tpt. *senza sord.* *f* *3* *ff*

Vln. I *ff*

Vln. II *ff*

Vla. *ff*

Vc. *pesante* *f* *ff*

Pno. *f* *pesante* *8^{va}* *3* *5* *ff*

Perc. *p* *ff*

9 10 11 12 13 14

Picc. K staccatissimo
 B. Cl. *p*
 C Tpt. *pp* ————— *p* < *sffz*
 Vln. I pizz. *p*
 Vln. II
 Vla.
 Vc.
 Pno. K staccatissimo *p* 8^{va}
 Perc. *ff*

15 16 17 18 19 20 21 22 23

Picc. *pp*

B. Cl. *p* < *sffz*

C Tpt. con sord. straight mute *p* < *sffz*

Vln. I arco senza vibrato *pp* *p* < *sffz* scratch

Vln. II senza vibrato *p* < *sffz* scratch

Vla. senza vibrato *p* < *sffz* scratch

Vc. senza vibrato *p* < *sffz* scratch

Pno. *pp*

Perc. rim shot, explosive *fff*

24 25 26 27 28 29 30 31 32 33

V. Mandelbrot Set

Sublime $\text{♩} = 72$
molto legato
(ord)

Vln. I *p*

Vln. II *p*

Vla. *p*

Vc. *p*

Pno. *p*

3+2+3

molto legato (ord)

molto legato (ord)

molto legato (ord)

molto legato (ord)

very wet and blurry,
with much pedal

2 3 4 5

Vln. I *mf*

Vln. II *mf*

Vla. *mf*

Vc. *mf*

Pno. *mf*

3+2+3

f

f

f

f

f

3+2+3

6 7 8 9 10