

Ride the Cosmos

for three retuned, computer-driven pianos

by Kyle Gann

2017

Technical Specifications

The 33-pitch tuning of the three pianos (the same in every octave) is as follows, given first in the number of cents above E-flat, and then as ratios to the nearest E-flat 1/1 below:

Piano	1		2		3	
D	1088	15/8	977	225/128	1044	117/64
Db	969	7/4	938	55/32	906	27/16
C	857	105/64	773	25/16	840	13/8
B	738	49/32	755	99/64	729	195/128
Bb	702	3/2	590	45/32	609	91/64
A	551	11/8	551	11/8	481	169/128
Ab	471	21/16	440	165/128	408	81/64
G	386	5/4	320	77/64	342	39/32
Gb	204	9/8	275	75/64	275	75/64
F	155	35/32	192	143/128	192	143/128
E	92	135/128	53	33/32	27	65/64
Eb	0	1/1	1103	121/64	1173	63/32

Note that no string needs to be raised higher than its natural tuning except for the B-flat on piano 1, which is 2¢ sharp (or if one prefers, 2¢ could be subtracted from all quantities).

For electronic realization of the piece, it can prove helpful to reconfigure the tuning as a reference pitch in cycles per second for each piano, and ratios derived from that standard:

Tuning pitch:	38.891 cps	36.7641 cps	38.2833 cps
D	15/8	225/121	13/7
Db	7/4	20/11	12/7
C	105/64	200/121	104/63
B	49/32	18/11	65/42
Bb	3/2	180/121	13/9
A	11/8	16/11	169/126
Ab	21/16	15/11	9/7
G	5/4	14/11	26/21
F#	9/8	150/121	25/21
F	35/32	13/11	143/126
E	135/128	12/11	65/63
Eb	1/1	1/1	1/1

In the configuration of certain tuning softwares, the following sequences might facilitate getting the required tuning:

Piano 1:

38.891 = Eb0

1/1, 135/128, 35/32, 9/8, 5/4, 21/16, 11/8, 3/2, 49/32, 105/64, 7/4, 15/8

Piano 2:

36.7641485 = Eb0

1/1, 12/11, 13/11, 150/121, 14/11, 15/11, 16/11, 180/121, 18/11, 200/121, 20/11, 225/121

Piano 3:

38.283333 = Eb0

1/1, 65/63, 143/126, 25/21, 26/21, 9/7, 169/126, 13/9, 65/42, 104/63, 12/7, 13/7

For purposes of analysis, the entire scale (which I refer to as my 8x8 scale) is given below, grouping its pitches into eight harmonic series' on the 1st, 3rd, 5th, 7th, 9th, 11th, 13th, and 15th harmonics of E-flat, and naming each pitch in a typographical equivalent of Ben Johnston's just-intonation notation:

Pitch name	Ratio	Cents	1/1	3/2	5/4	7/4	9/8	11/8	13/8	15/8
Db^^-	121/64	1103						11		
D	15/8	1088	15	5	3					1
Db13	117/64	1044					13		9	
C#+	225/128	977								15
Db7	7/4	969	7			1				
C^	55/32	938			11			5		
C+	27/16	906		9			3			
C7+	105/64	857				15				7
Cb13	13/8	840	13						1	
B	25/16	773			5					
Bb^	99/64	755					11	9		
Cb77+	49/32	738				7				
Bb13	195/128	729							15	13
Bb	3/2	702	3	1						
Bbb713	91/64	609				13			7	
A+	45/32	590		15	9		5			3
Ab^	11/8	551	11					1		
Abb1313	169/128	481							13	
Ab7+	21/16	471		7		3				
G^	165/128	440						15		11
G+	81/64	408					9			
G	5/4	386	5		1					
Gb13	39/32	342		13					3	
Gb7^	77/64	320				11		7		
F#+	75/64	275			15					5
F+	9/8	204	9	3			1			
Fb13^	143/128	192						13	11	
F7+	35/32	155			7	5				
E+	135/128	92					15			9
Eb^	33/32	53		11				3		
Eb13	65/64	27			13				5	
Eb	1/1	0	1							
Eb7+	63/32	1173				9	7			

In Johnston's notation, + raises a pitch by 81/80, # raises it by 25/24, b lowers it by 24/25, 7 lowers it by 35/36, ^ raises it by 33/32, 13 raises it by 65/64, and F-A-C, C-E-G, and G-B-D are all perfectly tuned 4:5:6 major triads.

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Kyle Gann
2016-17

$\text{♩} = 100$

Piano 1

Piano 2

Piano 3

$\text{♩} = 100$

The musical score is divided into three systems, each for a different piano.
Piano 1: Four staves. The top two are treble clef, the bottom two are bass clef. It features complex textures with triplets and various dynamics.
Piano 2: Two staves. The top is treble clef, the bottom is bass clef. It features melodic lines with various dynamics.
Piano 3: Three staves. The top is treble clef, the bottom two are bass clef. It features melodic lines with various dynamics.
Tempo: $\text{♩} = 100$.
Dynamics: *fff* (fortissimo) is used throughout.

♩ = 85 ♩ = 72 ♩ = 55 ♩ = 42 ♩ = 37 ♩ = 33 ♩ = 25 ♩ = 140

Pno1

mp

p

p

Pno2

p

5:4

♩ = 85 ♩ = 72 ♩ = 55 ♩ = 42 ♩ = 37 ♩ = 33 ♩ = 25 ♩ = 140

Pno3

mf

5:4

p

p

p

4

Pno1

Pno3



7

Pno1

Pno3

9

Pno1

Pno2

p

Pno3

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a different piano part (Pno1, Pno2, Pno3). The score is in 11/16 time and consists of two measures. Measure 14 is in D major, and measure 15 is in D minor. Pno1 and Pno3 have identical parts, while Pno2 has a unique part. The score includes various musical notations such as slurs, accents, and dynamic markings.

Pno1: Measure 14: Treble clef, 11/16 time. Treble staff: $\overset{v}{\text{D5}}$ (quarter), E5 (quarter), F\#5 (quarter), G5 (quarter), A5 (quarter), B5 (quarter), C6 (quarter), D6 (quarter). Bass staff: D4 (quarter), E4 (quarter), F\#4 (quarter), G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (quarter). Measure 15: Treble clef, 11/16 time. Treble staff: D5 (quarter), E5 (quarter), F\#5 (quarter), G5 (quarter), A5 (quarter), B5 (quarter), C6 (quarter), D6 (quarter). Bass staff: D4 (quarter), E4 (quarter), F\#4 (quarter), G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (quarter). **Pno2:** Measure 14: Treble clef, 11/16 time. Treble staff: D5 (quarter), E5 (quarter), F\#5 (quarter), G5 (quarter), A5 (quarter), B5 (quarter), C6 (quarter), D6 (quarter). Bass staff: D4 (quarter), E4 (quarter), F\#4 (quarter), G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (quarter). Measure 15: Treble clef, 11/16 time. Treble staff: D5 (quarter), E5 (quarter), F\#5 (quarter), G5 (quarter), A5 (quarter), B5 (quarter), C6 (quarter), D6 (quarter). Bass staff: D4 (quarter), E4 (quarter), F\#4 (quarter), G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (quarter). **Pno3:** Measure 14: Treble clef, 11/16 time. Treble staff: D5 (quarter), E5 (quarter), F\#5 (quarter), G5 (quarter), A5 (quarter), B5 (quarter), C6 (quarter), D6 (quarter). Bass staff: D4 (quarter), E4 (quarter), F\#4 (quarter), G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (quarter). Measure 15: Treble clef, 11/16 time. Treble staff: D5 (quarter), E5 (quarter), F\#5 (quarter), G5 (quarter), A5 (quarter), B5 (quarter), C6 (quarter), D6 (quarter). Bass staff: D4 (quarter), E4 (quarter), F\#4 (quarter), G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), D5 (quarter).

Pno1

16

21/16

21/16

21/16

6:5

7

v

v

Pno2

21/16

21/16

21/16

21/16

6:5

5

7

v

v

Pno3

21/16

21/16

21/16

6:5

v

v

17 $\flat e \dots$

Pno1

7

5

$\flat e \dots$

Pno2

$\flat e \dots$

Pno3

5

$\flat o \dots$

18 ♩ = 110

Pno1

Pno2

Pno3

♩ = 110

20

Pno1

Pno2

Pno3

23

Pno1

Pno2

Pno3

25

Pno1

Pno2

Pno3

5:3 5:3 7:5

5:3 5:3 7:5

5:3 5:3 7:5



27

Pno1

Pno2

Pno3

7 7:6

7 7:6

29

Pno1

Pno2

Pno3

7:6

3:2

8:7

7:6

3:2

8:7

7:6

9

8:7

31

Pno1

mf

pp

Pno2

mf

Pno3

mf *p* *mf* *p* *mf* *7:5* *p*

14

34

Pno1

7:5

15/16

2/4

Pno2

3:2

15/16

2/4

Pno3

15/16

2/4



37

Pno1

13/16

Pno2

13/16

Pno3

13

13/16

38

Pno1

Pno2

Pno3

13

10:9

40

Pno1

Pno2

Pno3

5:4

5:4

5:4

3:2

pp

42 ♩ = 100

Pno1

Pno2

The musical score for Pno1 and Pno2 spans measures 42 to 45. Both parts are in 3/32 time with a tempo of 100 beats per minute. Pno1 consists of four staves: two in treble clef and two in bass clef. The top two staves play a melody with eighth notes and rests, while the bottom two staves provide a steady eighth-note accompaniment. Pno2 consists of three staves: two in treble clef and one in bass clef. The top two staves play a melody with eighth notes and rests, and the bottom staff provides a steady eighth-note accompaniment. Both parts are marked with a mezzo-forte (mf) dynamic.

44

rit. $\text{♩} = 38$

Pno1

Pno2

Pno3

The image shows a musical score for three piano parts, labeled Pno1, Pno2, and Pno3. The score is written in 3/2 time and includes a tempo marking of quarter note = 38. The first system covers measures 44 and 45, and the second system covers measures 46 and 47. Pno1 and Pno2 have complex rhythmic patterns with slurs and accents. Pno3 has a simpler accompaniment. Dynamics include 'f' and 'rit.'.

46 ♩ = 100

Pno1

mf

Pno2

mf

Pno3

♩ = 100

mf

48 rit. 19

Pno1

Pno2

Pno3

The image shows a musical score for three piano parts, labeled Pno1, Pno2, and Pno3. The score is divided into two systems of measures. The first system contains measures 48, 49, 50, 51, and 52. The second system contains measures 32, 33, 34, 35, and 36. Pno1 is written in treble and bass clefs. Pno2 is written in treble and bass clefs. Pno3 is written in treble and bass clefs. Dynamics include *f* (forte) and *rit.* (ritardando). The score includes various musical notations such as notes, rests, slurs, and accidentals.

50

Pno1

mf

mf

mf

mf

Pno2

mf

mf

mf

Pno3

mf

mf

mf

52

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a different piano part. The time signature is 3/32. The first system, labeled 'Pno1', begins at measure 52. It features a whole note chord in the right hand and a whole note bass line in the left hand. The second system, labeled 'Pno2', shows a more active texture with slurs and accents. The third system, labeled 'Pno3', continues the complex rhythmic patterns. The score concludes with a final measure containing a whole note chord in the right hand and a whole note bass line in the left hand.

53

Pno1

mp

Pno2

mp

Pno3

mp

54

Pno1

Pno2

Pno3

The musical score consists of three systems, each for a different piano part. The first system, labeled 'Pno1', begins at measure 54. It features a treble clef and a 3/2 time signature. The right hand plays a melodic line with eighth notes and rests, while the left hand provides a rhythmic accompaniment with eighth notes. A large chord is held in the right hand towards the end of the system. The second system, labeled 'Pno2', continues the piece with similar rhythmic and melodic elements. The third system, labeled 'Pno3', shows further development of the musical themes. The notation includes various note values, rests, and dynamic markings.

55

Pno1

Pno2

Pno3

Piano score for measures 56-57. The score is divided into three systems, each with three staves (Pno1, Pno2, Pno3). The time signature is 32/32. The key signature has one flat (B-flat).

System 1 (Measures 56-57):

- Pno1:** Treble clef. Measure 56: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 57: eighth notes with accents, bracketed as 6:5.
- Pno2:** Treble clef. Measure 56: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 57: eighth notes with accents, bracketed as 6:5.
- Pno3:** Bass clef. Measure 56: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 57: eighth notes with accents, bracketed as 6:5.

System 2 (Measures 58-59):

- Pno1:** Treble clef. Measure 58: p dynamics, eighth notes with accents, bracketed as 6:5. Measure 59: eighth notes with accents, bracketed as 6:5.
- Pno2:** Treble clef. Measure 58: p dynamics, eighth notes with accents, bracketed as 6:5. Measure 59: eighth notes with accents, bracketed as 6:5.
- Pno3:** Bass clef. Measure 58: p dynamics, eighth notes with accents, bracketed as 6:5. Measure 59: eighth notes with accents, bracketed as 6:5.

System 3 (Measures 60-61):

- Pno1:** Treble clef. Measure 60: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 61: eighth notes with accents, bracketed as 8:7.
- Pno2:** Treble clef. Measure 60: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 61: eighth notes with accents, bracketed as 8:7.
- Pno3:** Bass clef. Measure 60: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 61: eighth notes with accents, bracketed as 8:7.

Piano score for measures 58-61. The score is divided into three systems, each with three staves (Pno1, Pno2, Pno3). The time signature is 31/32. The key signature has one flat (B-flat).

System 1 (Measures 58-59):

- Pno1:** Treble clef. Measure 58: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 59: eighth notes with accents, bracketed as 8:7.
- Pno2:** Treble clef. Measure 58: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 59: eighth notes with accents, bracketed as 8:7.
- Pno3:** Bass clef. Measure 58: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 59: eighth notes with accents, bracketed as 8:7.

System 2 (Measures 60-61):

- Pno1:** Treble clef. Measure 60: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 61: eighth notes with accents, bracketed as 8:7.
- Pno2:** Treble clef. Measure 60: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 61: eighth notes with accents, bracketed as 8:7.
- Pno3:** Bass clef. Measure 60: p dynamics, eighth notes with accents, bracketed as 8:7. Measure 61: eighth notes with accents, bracketed as 8:7.

26

58

Musical score for measures 58-61. The score is divided into three systems, each with three staves labeled Pno1, Pno2, and Pno3. The time signature is 2/2. Measure 58 starts with a whole rest in Pno1 and Pno3, and a whole note chord in Pno2. Measure 59 features a melodic line in Pno1 and Pno3, and a whole note chord in Pno2. Measure 60 continues the melodic lines in Pno1 and Pno3, with a whole note chord in Pno2. Measure 61 concludes with a melodic line in Pno1 and Pno3, and a whole note chord in Pno2. Chord ratios 6:5 and 8:7 are indicated below the notes in several measures.



59

Musical score for measures 62-65. The score is divided into two systems, each with three staves labeled Pno1, Pno2, and Pno3. The time signature is 2/2. Measure 62 features a complex rhythmic pattern in Pno1 and Pno3, and a whole note chord in Pno2. Measure 63 continues the rhythmic patterns in Pno1 and Pno3, with a whole note chord in Pno2. Measure 64 features a melodic line in Pno1 and Pno3, and a whole note chord in Pno2. Measure 65 concludes with a melodic line in Pno1 and Pno3, and a whole note chord in Pno2. Chord ratios 8:7 are indicated below the notes in several measures.

60

Pno1

Pno2

Pno3

8:7 8:7 8:7

mp

mp

mp

62

Pno1

Pno2

Pno3

mp

p

p

mp

p

mp

p

10:7 10:7

p

64 $\text{♩} = 111$ $\text{♩} = 100$

Pno1

Pno2

$\text{♩} = 111$ $\text{♩} = 100$

Pno3

♩ = 111

66

Pno1

Pno2

10:7

p

mp

p

mf

p

mf

p

p

68

Pno1

Pno2

Pno3

The musical score is for three pianos (Pno1, Pno2, Pno3) in 4/4 time, starting at measure 68. The key signature has one sharp (F#). Pno1 (top system) has a treble and bass clef. Pno2 (middle system) has two treble clefs and a bass clef. Pno3 (bottom system) has a treble and bass clef. Dynamic markings include *mf* (mezzo-forte) and *mp* (mezzo-piano). The score consists of 12 measures.

69 $\text{♩} = 100$

Pno1

mp *mp* *p* *mp*

Pno2

mf *mp* *p*

Pno3

$\text{♩} = 100$ *mp* *mp* *p*

70

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a different piano (Pno1, Pno2, Pno3). Each system consists of four staves: two for the right hand and two for the left hand. Pno1 starts at measure 70. Pno2 and Pno3 have various performance markings including '22:13', '5', '13', and '9'. The notation includes treble and bass clefs, notes, rests, and dynamic markings.

71

mf

f *mp*

mf *p*

mf *mf*

mf

mf

22:13

5

22:13

$\text{♩} = 111$

$\text{♩} = 111$

Pno1

Pno3

Detailed description: This page of a musical score contains two piano parts, Pno1 and Pno3, spanning measures 71 to 74. Pno1 consists of four staves. The first staff is in treble clef with a 13/32 time signature, playing a complex rhythmic pattern of eighth and sixteenth notes, marked *mf*. The second staff is also in treble clef with a 13/32 time signature, playing a melodic line with a 22:13 ratio, marked *mf*. The third staff is in bass clef with a 13/32 time signature, playing a melodic line with a 5 ratio, marked *mf*. The fourth staff is in bass clef with a 13/32 time signature, playing a single note marked *mf*. Pno3 consists of two staves. The first staff is in treble clef with a 13/32 time signature, playing a melodic line with a 22:13 ratio, marked *mf*. The second staff is in treble clef with a 13/32 time signature, playing a melodic line with a 22:13 ratio, marked *mf*. Both piano parts transition from a 13/32 time signature to a 2/4 time signature at measure 74. A tempo marking of $\text{♩} = 111$ is present at the top right of the page.

73 ♩ = 100

Pno1

Pno2

Pno3

The musical score consists of three systems, each for a different piano (Pno1, Pno2, Pno3). Each system contains two staves (treble and bass clef). The time signature is 31/32. The tempo is marked as ♩ = 100. The score begins at measure 73. Dynamics include *mf* and *f*. Performance markings include '5', '7', '3', and '3'. The score is divided into three systems, each with two staves (treble and bass clef).

Pno1

74

f

f

5:4 13:10

20:11 11:10

3 7

f

Pno2

f

f

5 13:10

20:11 11:10

3 7

mf

Pno3

f

f

5:4 13:10

20:11 11:10

75

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a piano (Pno1, Pno2, Pno3). Each system contains two staves (treble and bass clef). The music is in 3/32 time. Dynamics include *f*, *mf*, *mp*, and *p*. Articulations include accents and slurs. Rhythmic markings include 10:11, 12:11, 13:11, and 3:2. The score starts at measure 75.

76 ♩ = 111

Pno1

p

Pno2

p

♩ = 111

Pno3

77 $\text{♩} = 100$

Pno1

Pno2

Pno3

$\text{♩} = 100$

f

f

f

mf

mf

mf

18:11

18:11

18:11

3:2

3:2

18:11

18:11

18:11

3:2

78

Pno2

p

p

p

33

29

25:16

79

Pno2

33

25:16

29



80

Pno1

pp

Pno2

pp

pp

81

Pno1

Pno2

Pno3

pp

82

Pno1

Pno2

Pno3

pp

pp

pp

Detailed description: The page contains a musical score for three piano parts, labeled Pno1, Pno2, and Pno3. The score is in 3/2 time and begins at measure 82. Pno1 consists of three staves (treble, middle, and bass clefs). The top staff has a melody with a slur and an accent (>) over a half note. The middle staff has a melody with a slur and an accent (>) over a half note. The bottom staff has a melody with a slur and an accent (>) over a half note. Pno2 consists of two staves (treble and bass clefs). The top staff has a melody with a slur and an accent (>) over a half note. The bottom staff has a melody with a slur and an accent (>) over a half note. Pno3 consists of three staves (treble, middle, and bass clefs). The top staff has a melody with a slur and an accent (>) over a half note. The middle staff has a melody with a slur and an accent (>) over a half note. The bottom staff has a melody with a slur and an accent (>) over a half note. There are dynamic markings *pp* (pianissimo) in the middle and bottom staves of Pno3.

83

Pno1

Pno2

Pno3

The musical score for three pianos (Pno1, Pno2, Pno3) begins at measure 83. The time signature is 3/32. Pno1 has a single staff with sparse notes. Pno2 has two staves (treble and bass clef) with more active melodic and harmonic lines. Pno3 also has two staves (treble and bass clef) with similar activity. The notation includes various note values, rests, and dynamic markings.

87

Pno1

Pno2

Pno3

Detailed description: The image shows a page of musical notation for three piano parts, labeled Pno1, Pno2, and Pno3. The page number 44 is in the top left. The music begins at measure 87. Pno1 (top system) has a treble and bass staff. The treble staff has a long melodic line starting with a slur and a fermata, followed by a series of notes with accidentals (sharps and flats). The bass staff has a long melodic line starting with a slur and a fermata. Pno2 (middle system) has a treble and bass staff. The treble staff has a short melodic phrase with a slur and a fermata. The bass staff has a short melodic phrase with a slur and a fermata. Pno3 (bottom system) has a treble and bass staff. The treble staff has a short melodic phrase with a slur and a fermata. The bass staff has a short melodic phrase with a slur and a fermata. The time signature is 3/2.

88

Pno1

Pno2

Pno3

pp

pp

Detailed description: This system contains measures 88 through 91. It features three piano parts: Pno1, Pno2, and Pno3. Pno1 is a grand staff with treble and bass clefs. Pno2 is a single treble clef staff. Pno3 is a grand staff with treble and bass clefs. The music is in 3/32 time. Measure 88 starts with a piano (*pp*) dynamic. Pno1 has a melodic line with a slur and a fermata over the final two notes. Pno2 has a rhythmic accompaniment of eighth notes. Pno3 has a similar rhythmic accompaniment. Measures 89-91 continue the melodic and rhythmic patterns, with Pno1 and Pno3 having slurs and fermatas over their final notes.

89

Pno1

Pno2

pp

Detailed description: This system contains measures 89 through 92. It features two piano parts: Pno1 and Pno2. Pno1 is a grand staff with treble and bass clefs. Pno2 is a grand staff with treble and bass clefs. The music is in 3/32 time. Measure 89 starts with a piano (*pp*) dynamic. Pno1 has a melodic line with a slur and a fermata over the final two notes. Pno2 has a rhythmic accompaniment of eighth notes. Measures 90-92 continue the melodic and rhythmic patterns, with Pno1 and Pno2 having slurs and fermatas over their final notes.

The musical score is divided into three systems, each for a different piano part (Pno1, Pno2, Pno3). Each system contains three staves (treble and bass clefs). The score is divided into two measures: measures 90-118 and 118-180. The first measure (90-118) features complex rhythmic patterns with many beamed notes and rests. The second measure (118-180) shows a change in texture with fewer notes and more rests. The key signature changes from one flat (B-flat) to one sharp (F#) between the two measures. The tempo or dynamics markings '90' and '180' are placed at the beginning and end of the first measure respectively.

92

Pno1

Pno3



93

Pno2

Pno3

94

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a different piano (Pno1, Pno2, Pno3). Each system consists of three staves (treble and bass clefs). The time signature is 3/32. The score begins at measure 94. Pno1 features a melodic line in the right hand and a bass line in the left hand. Pno2 has a more active right hand with sixteenth-note patterns and a bass line. Pno3 has a melodic line in the right hand and a bass line. The score includes various musical notations such as rests, notes, and dynamic markings.

Pno1

95

p

6:7

4:5

4:5

Pno2

p

6:7

4:5

4:5

Pno3

p

6:7

4:5

96

Pno1

Pno2

Pno3

97 51

Pno1

Pno2

Pno3

6:7 4:5 12:13 12:13 4:5 12:13

99

Pno1

Pno2

Pno3

17/32 15/32

6:7 4:5 4:5

17/32 15/32

6:7 4:5

17/32 15/32

4:5 4:5

103

Pno1

10:11 4:5 4:5

Pno2

10:11 4:5 4:5

Pno3

10:11 4:5

104

Pno1

16:17

Pno2

Pno3

10:11

16:17

105

Pno1

Pno2

Pno3

106

Pno1

Pno2

Pno3

4:5

10:11

10:11

7:8

10:11

107

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a different piano (Pno1, Pno2, Pno3). Each system consists of four staves (two treble and two bass clefs). The time signature is 18/32. Measure 107 is marked at the beginning of the first system. The score includes various musical notations such as notes, rests, and dynamic markings. Specific annotations include '6:7' in the first system, '4:5' and '12:13' in the third system, and a '13' marking above the second system. The notation is dense, with many beamed notes and complex rhythmic figures.

109

Pno1

30/32

6:7

4:5

Pno2

30/32

4:5

4:5

Pno3

30/32

4:5

110

Pno1

Pno2

Pno3

III

Pno1

Pno2

Pno3

112

Pno1

Pno2

Pno3

114

Pno2

f

6:7

f

3:3

5:4



115

Pno1

p

6:7

6:7

10:11

6:7

6:7

Pno2

p

Pno3

p

25/32

25/32

25/32

25/32

25/32

25/32

25/32

25/32

25/32

116

Pno1

Pno2

Pno3

117

Pno1

Pno2

Pno3

The musical score is for three pianos (Pno1, Pno2, Pno3) in 5/4 time. It begins at measure 117. Pno1 features a complex melodic line with a 6:7 triplet and a 3:2 ratio. Pno2 has a similar melodic line with a 6:7 triplet and a 3:2 ratio. Pno3 has a melodic line with a 3:2 ratio. The score includes various musical notations such as treble and bass clefs, notes, rests, and dynamic markings like 'f' and '3:2'.

118

p *f*

Pno1

mp *mp*

6:7 6:7 10:11

Pno2

6:7 10:11

mp

Pno3

mp 10:11

119

Pno1

Pno2

Pno3

f

mp

p

3:2

p

121 69

Pno1

Pno2

Pno3

The musical score is written for three pianos (Pno1, Pno2, Pno3) in a 3/32 time signature. The score is divided into two systems. The first system covers measures 121-122, and the second system covers measures 123-124. Pno1 has a melodic line with slurs and accents, while Pno2 and Pno3 provide harmonic support with chords and arpeggiated figures. Dynamics include pp and pp.

Ride the Cosmos

123

Pno1

Pno2

Pno3



124

Pno1

Pno2

Pno3

125 71

Pno1

Pno2

Pno3

127

Pno1

Pno2

Pno3

128

Pno1

Pno2

Pno3

Detailed description of the musical score: The score is for three piano parts, Pno1, Pno2, and Pno3, in a 3/32 time signature. The key signature has one sharp (F#). The score is divided into three systems. The first system (measures 1-4) shows Pno1 and Pno2. Pno1 has a melodic line with a slur over the first two measures and a fermata. Pno2 has a more active line with slurs and a fermata. The second system (measures 5-8) continues the lines for Pno1 and Pno2. Pno3 enters in the third system (measures 9-12). Pno3 has a melodic line with a slur and a fermata, and a bass line with a slur and a fermata. The score ends with a double bar line and repeat dots.

129

Pno1

Pno2

Pno3

130

Pno1

Pno2

Pno3



131

Pno3

Pno3

132

33

29

25:16

29

133

Pno1

Pno2

Pno3

mp *10:7* *mp*

p

mp *10:7* *mp*

p

mf *10:7* *mf* *mp*

mp

mp

135 $\text{♩} = 111$ $\text{♩} = 100$ 77

Pno1

Pno2

Pno3

The score is divided into three systems, each for a piano part. The first system (Pno1) starts at measure 135 with a tempo of 111. It features a complex rhythmic pattern in the right hand and a more melodic line in the left hand. Dynamics range from *mf* to *p*. A tempo change to 100 occurs at measure 255. The second system (Pno2) starts at measure 255 with a tempo of 100. It features a more active right hand with chords and a simpler left hand. Dynamics range from *p* to *mp*. The third system (Pno3) starts at measure 255 with a tempo of 100. It features a melodic right hand and a supporting left hand. Dynamics range from *mp*. All systems end at measure 322. A rehearsal mark '10:7' is present in the first system.

137

Pno1

10:7

p

Pno2

10:7

p

Pno3

10:7

p

139

Pno1

Pno2

Pno3

140 $\text{♩} = 100$

Pno1

mf *mp*

mf *mp* 22:13

mp 5

mp

Pno2

mp 5 13

mp 9

mp 5:3

mp

$\text{♩} = 100$

Pno3

mp 22:13

141

Pno1

mf

22:13

mp

Pno2

mf

mf

22:13

5

Pno3

mf

mf

22:13

13

9

mp

5

5:3

mp

Ride the Cosmos

142

Pno1

mf

f *p*

mf *p*

mp

22:13

5

♭ = 111

Pno2

mf

mf

22:13

5

p

Pno3

p

♯ = 111

22:13

144 ♩ = 100

Pno1

Pno2

♩ = 100

Pno3

145

Pno1

13:10

11:10

5:3

7 3

mf

Pno2

5 13:10

11:10

3 7

mf

Pno3

mp

20:11

11:10

5:4 13:10

3 7

mp

146

Pno1

mf 13:11

10:11

mf 12:11

3:2

Pno2

13:11

10:11

12:11

Pno3

mp 12:11

mf 13:11

10:11

mp

mf 12:11

3:2

147 ♩ = 111

Pno1
f mp p mf

Pno2
f p mf

Pno3
mf

♩ = 111

148 ♩ = 100

Pno1

Musical score for Pno1, measures 148-151. The score consists of four staves. The top two staves are in treble clef with a 3/32 time signature. The bottom two staves are in bass clef with a 3/32 time signature. The music features complex rhythmic patterns with many beamed notes. The first two measures of the second staff are marked with a repeat sign and the ratio 18:11. The first measure of the third staff has a dynamic marking of *p*.

Pno2

Musical score for Pno2, measures 148-151. The score consists of four staves. The top two staves are in treble clef with a 3/32 time signature. The bottom two staves are in bass clef with a 3/32 time signature. The music features complex rhythmic patterns with many beamed notes. The first two measures of the second staff are marked with a repeat sign and the ratio 18:11. The first measure of the third staff has a dynamic marking of *mp*.

Pno3

Musical score for Pno3, measures 148-151. The score consists of a single staff in bass clef with a 3/32 time signature. The music features long, sustained notes with a dynamic marking of *p*. A tempo marking of ♩ = 100 is present at the beginning of the staff.

149

♩ = 100

Pno1

Musical score for Pno1, measures 149-152. The score is written in 3/32 time, with a key signature of one flat (B-flat). It consists of four staves. The first two staves are treble clef, and the last two are bass clef. The piece starts at measure 149 with a tempo of 100. The first staff has dynamics *p* and *pp* for a five-measure phrase, followed by *mf* for the remainder of the phrase. The second staff has dynamics *p* and *pp* for a five-measure phrase, followed by *mf* for an eight-measure phrase. The third and fourth staves have *mf* dynamics. The score changes to 2/22 time at measure 152.

Pno2

Musical score for Pno2, measures 149-152. The score is written in 3/32 time, with a key signature of one flat. It consists of three staves. The first two staves are treble clef, and the last is bass clef. The piece starts at measure 149 with a tempo of 100. The first staff has dynamics *p* and *pp* for a five-measure phrase. The second staff has an eight-measure phrase. The third staff has a few notes. The score changes to 2/22 time at measure 152.

Pno3

Musical score for Pno3, measures 149-152. The score is written in 3/32 time, with a key signature of one flat. It consists of four staves. The first two staves are treble clef, and the last two are bass clef. The piece starts at measure 149 with a tempo of 100. The first staff has *mf* dynamics. The second staff has an eight-measure phrase with *mf* dynamics. The third and fourth staves have *mf* dynamics. The score changes to 2/22 time at measure 152.

151

Pno1

mf

mf

Pno2

mf

Pno3

mf

mf

♩ = 38 ♩ = 100

153 rit.

Pno1

Pno2

Pno3

155

Pno1

Musical score for Pno1, measures 155-158. The score is written in a grand staff with treble and bass clefs. It features a complex rhythmic pattern with many sixteenth notes and rests. A dynamic marking of *mf* is present in measure 158.

Pno2

Musical score for Pno2, measures 155-158. The score is written in a grand staff with treble and bass clefs. It features a complex rhythmic pattern with many sixteenth notes and rests. A dynamic marking of *mf* is present in measure 158.

Pno3

Musical score for Pno3, measures 155-158. The score is written in a grand staff with treble and bass clefs. It features a complex rhythmic pattern with many sixteenth notes and rests. A dynamic marking of *mf* is present in measure 158.

157 *rit.* $\text{♩} = 38$

Pno1

Pno2

The musical score is divided into two systems, Pno1 and Pno2. Each system contains three staves: a treble clef staff, a middle treble clef staff, and a bass clef staff. The key signature has one flat (B-flat). The time signature is 3/32. The first system (Pno1) starts at measure 157 with a *rit.* marking. The tempo is indicated as $\text{♩} = 38$. The music features sustained chords in the upper staves and rhythmic patterns in the lower staves. The second system (Pno2) continues the piece, with a tempo change to 10/32 indicated by a '10' over the '32' in the time signature. The dynamics are marked with *f* (forte).

160

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a different piano part (Pno1, Pno2, Pno3). Each system contains four staves: two for the right hand (treble clef) and two for the left hand (bass clef). The time signature is 20/32. Measure 160 is indicated at the top left. Pno1 starts with a whole rest in the right hand and a half note in the left hand. Pno2 and Pno3 have more complex rhythmic patterns. Dynamic markings 'f' (forte) are used throughout. The score includes various musical notations such as beams, slurs, and accidentals.

161

The musical score is divided into three systems, each for a different piano part:

- Pno1:** The first system. The treble clef staff contains a melodic line with a slur over the first two measures and a chordal texture in the third. The bass clef staff provides a rhythmic accompaniment with eighth notes and rests.
- Pno2:** The second system. The treble clef staff features a melodic line with a slur and some rests. The bass clef staff has a more active accompaniment with eighth notes and slurs.
- Pno3:** The third system. The treble clef staff has a melodic line with a slur and rests. The bass clef staff has a sparse accompaniment with eighth notes and rests.

The time signature is 3/32 throughout. The key signature has one flat (B-flat) in the first system and one sharp (F-sharp) in the subsequent systems.

163

Pno1

Pno2

Pno3

p

p

p

p

164

Pno1

Pno3

p 6:5 6:5 8:7

p 8:7 6:5 8:7 8:7



166

Pno1

Pno3

8:7 6:5

6:5 6:5

167

Pno3

8:7 8:7 8:7 8:7 8:7 8:7 8:7 8:7



169

$\text{♩} = 140$

Pno1

p *p*

Pno2

p *p*

$\text{♩} = 140$

Pno3

p

172

The musical score consists of three systems, each for a different piano part (Pno1, Pno2, Pno3). Each system contains two staves (treble and bass). The first measure of each system shows rests in the treble clef and notes in the bass clef. The second measure features a change in time signature to 9/16 and includes dynamic markings such as *p* and a fingering '5'. The third measure returns to a 11/16 time signature and includes another *p* marking. Pno2 includes a triplet of eighth notes in the second measure, marked with a '3:2' bracket. Pno3 features sustained chords in the first and third measures.

175

Pno1

Pno2

Pno3

7:5

7:5

7:5

p

p

p

102

177

Pno1

Pno2

Pno3

The musical score consists of three systems, each for a different piano (Pno1, Pno2, Pno3). The time signature is 11/16. The first system (measures 177-178) is marked with a piano (*p*) dynamic. Pno1 and Pno2 have three staves each, while Pno3 has four staves. Pno1 and Pno2 feature melodic lines with accents and slurs. Pno3 features a rhythmic accompaniment with slurs and accents.

179

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a different piano part (Pno1, Pno2, Pno3). Each system contains four staves (treble and bass clefs). The first system (Pno1) starts at measure 179 with a 29/32 time signature. The second system (Pno2) continues from measure 179. The third system (Pno3) also continues from measure 179. The score includes various musical notations such as notes, rests, slurs, and dynamic markings like 'p'. The time signatures change from 29/32 to 2/4 and then to 11/16. There are also some numerical annotations like '5' and '7:5' under certain notes.

104

182

Pno1

Pno2

Pno3

The musical score consists of three piano parts, Pno1, Pno2, and Pno3, in 13/16 time. The score is divided into two systems. The first system covers measures 182 to 216, and the second system covers measures 21 to 16. Pno1 and Pno3 have complex melodic lines with slurs and ornaments, while Pno2 has simpler accompaniment. Measure numbers 182, 21, and 16 are indicated at the start of each system.

184

Pno1

Pno2

Pno3

185 ♩ = 110

Pno1

Pno2

Pno3

187

Pno1

Pno2

Pno3

5:3

7:5

5:3

7:5

5:3

5:3

7:5

5:3

190

Pno1

Pno2

Pno3

108 192

Musical score for measures 108-192, featuring three piano parts (Pno1, Pno2, Pno3) in 11/16 time. The score is divided into two systems. The first system (measures 108-192) shows Pno1 with complex rhythmic patterns and intervals of 5:3. Pno2 has a melodic line with intervals of 5:3 and 7:5. Pno3 features a dense melodic line with intervals of 5:3 and 7:5. The second system (measures 193-194) shows Pno1 with a 7-measure rest, Pno2 with a 7-measure rest, and Pno3 with a 7-measure rest. The key signature is one sharp (F#).



Musical score for measures 194-277, featuring three piano parts (Pno1, Pno2, Pno3) in 27/16 time. The score is divided into two systems. The first system (measures 194-277) shows Pno1 with a melodic line and a 7-measure rest. Pno2 has a melodic line with a 7-measure rest. Pno3 has a melodic line with a 7-measure rest. The second system (measures 278-361) shows Pno1 with a melodic line and a 7-measure rest. Pno2 has a melodic line with a 7-measure rest. Pno3 has a melodic line with a 7-measure rest. The key signature is one sharp (F#).

195

Pno1

Pno2

Musical score for measures 195-196. The score is for three piano parts: Pno1, Pno2, and Pno3. The time signature is 3/32. Pno1 has a treble clef and a 3/32 time signature. Pno2 has a treble clef and a 3/32 time signature. Pno3 has a bass clef and a 3/32 time signature. Measure 195: Pno1 has a whole rest followed by a quarter rest, then a quarter note G#4, and a quarter note A4. Pno2 has a whole rest followed by a quarter rest, then a quarter note G#4, and a quarter note A4. Pno3 has a whole rest followed by a quarter rest, then a quarter note G#4, and a quarter note A4. Measure 196: Pno1 has a quarter note G#4, a quarter note A4, a quarter note B4, a quarter note C5, a quarter note B4, a quarter note A4, a quarter note G#4, and a quarter note G4. Pno2 has a whole rest followed by a quarter rest, then a quarter note G#4, and a quarter note A4. Pno3 has a whole rest followed by a quarter rest, then a quarter note G#4, and a quarter note A4. There are some annotations like '7:5' and '3:2' in the Pno1 staff.



196

Pno1

Pno2

Pno3

Musical score for measures 196-197. The score is for three piano parts: Pno1, Pno2, and Pno3. The time signature is 3/32. Pno1 has a treble clef and a 3/32 time signature. Pno2 has a treble clef and a 3/32 time signature. Pno3 has a bass clef and a 3/32 time signature. Measure 196: Pno1 has a quarter note G#4, a quarter note A4, a quarter note B4, a quarter note C5, a quarter note B4, a quarter note A4, a quarter note G#4, and a quarter note G4. Pno2 has a whole rest followed by a quarter rest, then a quarter note G#4, and a quarter note A4. Pno3 has a whole rest followed by a quarter rest, then a quarter note G#4, and a quarter note A4. Measure 197: Pno1 has a quarter note G#4, a quarter note A4, a quarter note B4, a quarter note C5, a quarter note B4, a quarter note A4, a quarter note G#4, and a quarter note G4. Pno2 has a whole rest followed by a quarter rest, then a quarter note G#4, and a quarter note A4. Pno3 has a whole rest followed by a quarter rest, then a quarter note G#4, and a quarter note A4. There are some annotations like '3', '5:3', '6:5', and '5:3' in the Pno1 and Pno3 staves.

197

Pno1

Pno2

Pno3



198

Pno1

Pno2

Pno3

200 rit. ♩ = 80 ♩ = 140

Pno1

Pno2

Pno3

p *p* *p*



202

Pno1

Pno2

Pno3

p *mp*

205

Pno1

Pno2

Pno3

mf

f

ff

fff

p

mf

mf

208

Pno1

Pno2

Pno3

p

p

p

7:5

7:5

7:5

8:5 3:2

p

p

p

p



210

The musical score is for three pianos (Pno1, Pno2, Pno3) in 4/4 time. Pno1 consists of two staves: the upper staff starts with a forte (*f*) dynamic and a melodic line with a slur over measures 20-23, ending with a piano-piano (*pp*) dynamic; the lower staff has a similar melodic line with a slur over measures 20-23 and a *pp* dynamic. Pno2 has one staff with a melodic line starting at measure 20, marked *pp*, and a chordal passage at the end of the system also marked *pp*. Pno3 consists of two staves: the upper staff has a melodic line with a slur over measures 20-23 and a *pp* dynamic; the lower staff is mostly silent with a few notes at the end of the system.

Oct. 21, 2016 - July 12, 2017
Germantown, NY