

Delta Oracle

for three retuned, computer-driven pianos

Kyle Gann
2020

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.

Delta Oracle

Kyle Gann
2017/2020

$\text{♩} = 11$ $\text{♩} = 199$ $\text{♩} = 11$ $\text{♩} = 199$ $\text{♩} = 123$ $\text{♩} = 11$ $\text{♩} = 199$ $\text{♩} = 322$ $\text{♩} = 280$ $\text{♩} = 123$ $\text{♩} = 11$ $\text{♩} = 199$ $\text{♩} = 377$

Piano 1 *ff*

Piano 2 *ff*

Piano 3 *ff*

♩ = 453 ♩ = 377 ♩ = 280 ♩ = 123 ♩ = 18 ♩ = 199 ♩ = 377 ♩ = 453 ♩ = 322 ♩ = 377 ♩ = 123 ♩ = 55 ♩ = 29

2

Pno1

Pno2

Pno3

♩ = 199 ♩ = 377 ♩ = 453 ♩ = 322 ♩ = 173 ♩ = 280 ♩ = 377 ♩ = 123 ♩ = 55 ♩ = 18 ♩ = 199 ♩ = 377 ♩ = 453

3

Pno1

Pno2

Pno3

4

mf *f* *mf*

Pno1

Pno2

Pno3

f *mf*

Musical score for measures 4-11. The score is for three piano parts: Pno1, Pno2, and Pno3. The time signature is 8/4. Above the staves, there are tempo markings: ♩ = 322, ♩ = 173, ♩ = 280, ♩ = 377, ♩ = 123, ♩ = 89, ♩ = 55, and ♩ = 11. The dynamics are marked as *mf* and *f*.

5

pp *pp* *pp*

Pno1

Pno2

Pno3

Musical score for measures 5-18. The score is for three piano parts: Pno1, Pno2, and Pno3. The time signature is 13/4. Above the staves, there are tempo markings: ♩ = 76, ♩ = 66, ♩ = 55, ♩ = 89, ♩ = 107, ♩ = 18, ♩ = 76, ♩ = 66, ♩ = 55, ♩ = 47, ♩ = 107, ♩ = 89, and ♩ = 18. The dynamics are marked as *pp*.

9

ff $\text{♩} = 453$ $\text{♩} = 521$ $\text{♩} = 453$ $\text{♩} = 377$ $\text{♩} = 453$ $\text{♩} = 123$ $\text{♩} = 34$

Pno1

ff

Pno2

ff

Pno3

ff $\text{♩} = 453$ $\text{♩} = 521$ $\text{♩} = 453$ $\text{♩} = 377$ $\text{♩} = 453$ $\text{♩} = 123$ $\text{♩} = 34$ *ff*

10

$\text{♩} = 199$ $\text{♩} = 107$ $\text{♩} = 34$ $\text{♩} = 76$ $\text{♩} = 144$ $\text{♩} = 89$ $\text{♩} = 280$ $\text{♩} = 34$ $\text{♩} = 123$

Pno1

pp

ff

Pno2

ff *pp* *ff*

Pno3

$\text{♩} = 199$ $\text{♩} = 107$ $\text{♩} = 34$ $\text{♩} = 76$ $\text{♩} = 144$ $\text{♩} = 89$ $\text{♩} = 280$ $\text{♩} = 34$ $\text{♩} = 123$

pp

11 $\text{♩} = 18$ $\text{♩} = 173$ $\text{♩} = 233$ $\text{♩} = 199$ $\text{♩} = 123$ $\text{♩} = 280$ $\text{♩} = 144$ $\text{♩} = 123$ $\text{♩} = 280$ $\text{♩} = 144$ $\text{♩} = 123$

Pno1

Pno2

Pno3

12 $\text{♩} = 280$ $\text{♩} = 144$ $\text{♩} = 123$ $\text{♩} = 280$ $\text{♩} = 144$ $\text{♩} = 123$ $\text{♩} = 280$ $\text{♩} = 144$ $\text{♩} = 123$ $\text{♩} = 199$ $\text{♩} = 144$

Pno1

Pno2

Pno3

13 $\text{♩} = 89$ $\text{♩} = 280$ $\text{♩} = 18$ $\text{♩} = 47$ $\text{♩} = 199$ $\text{♩} = 89$ $\text{♩} = 18$

Pno1

Pno2

Pno3

ff

ff

ff

ff

14 $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 89$

Pno1 *pp*

Pno2 *pp* $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 89$

Pno3 *pp*



15 $\text{♩} = 144$ $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 377$ $\text{♩} = 453$ $\text{♩} = 377$

Pno1 $\text{♩} = 144$ $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 377$ $\text{♩} = 453$ $\text{♩} = 377$

Pno2 $\text{♩} = 144$ $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 377$ $\text{♩} = 453$ $\text{♩} = 377$

Pno3 $\text{♩} = 144$ $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 377$ $\text{♩} = 453$ $\text{♩} = 377$

The musical score consists of three systems, each for a different piano (Pno1, Pno2, Pno3).
- **Pno1:** Treble and bass staves. Treble clef has a whole rest. Bass clef has a melody starting with a *pp* dynamic, followed by *pp* and *mf* dynamics. A *mf* dynamic is also marked above the treble staff.
- **Pno2:** Treble and bass staves. Treble clef has a whole rest. Bass clef has a melody with *mf* dynamics, including a triplet marked with a '3' and *mf*.
- **Pno3:** Treble and bass staves. Treble clef has a melody starting with *pp*. Bass clef has a melody with *pp* dynamics.
Tempo markings are placed below the Pno2 system: ♩ = 173 ♩ = 89, ♩ = 199 ♩ = 89.

17 $\text{♩} = 322 \text{ ♩} = 377 \text{ ♩} = 144 \text{ ♩} = 89$ $\text{♩} = 322$

Pno1 *mf* *pp* *pp*

Pno2 *mf* *pp* *pp* *pp* *pp* *pp*

Pno3 $\text{♩} = 322 \text{ ♩} = 377 \text{ ♩} = 144 \text{ ♩} = 89$ *pp* $\text{♩} = 322$

18 $\text{♩} = 89$ $\text{♩} = 377$

Pno1 *mf* *pp*

Pno2 *pp*

Pno3 $\text{♩} = 89$ $\text{♩} = 377$

19 $\text{♩} = 453$ $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 89$ $\text{♩} = 144$

Pno1 *p*

Pno2 *mf* *mf* *p*

Pno3 $\text{♩} = 453$ $\text{♩} = 89$ *p* $\text{♩} = 144$ $\text{♩} = 89$ *p* $\text{♩} = 144$

20 $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 453$ $\text{♩} = 377$ $\text{♩} = 322$ $\text{♩} = 89$ ¹¹

Pno1 *mf*
p

Pno2 *p*
mf 3
p

Pno3 $\text{♩} = 107$ $\text{♩} = 89$ *p* $\text{♩} = 453$ $\text{♩} = 377$ $\text{♩} = 322$ $\text{♩} = 89$

21 $\text{♩} = 144$ $\text{♩} = 89$ $\text{♩} = 377$

Pno1

Pno2 *mf*
p

Pno3 *p* $\text{♩} = 144$ $\text{♩} = 89$ $\text{♩} = 377$

22 ♩ = 453 ♩ = 89 ♩ = 144 ♩ = 89

Pno1

Pno2

Pno3

mf

The image shows a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is divided into three systems. The first system (Pno1) has a treble and bass clef. The second system (Pno2) has a treble and bass clef. The third system (Pno3) has a treble and bass clef. Above the first system, there are tempo markings: ♩ = 453, ♩ = 89, ♩ = 144, and ♩ = 89. The dynamic marking *mf* is present in all three systems. The notation includes various notes, rests, and accidentals.

23 ♩ = 173 ♩ = 123 ♩ = 89 ♩ = 453

Pno1

Pno2

Pno3

♩ = 173 ♩ = 123 ♩ = 89 ♩ = 453

24 ♩ = 89 ♩ = 521

Pno1

Pno2

Pno3

♩ = 89 ♩ = 521

25 $\text{♩} = 89$ $\text{♩} = 66$ $\text{♩} = 144$ $\text{♩} = 66$ $\text{♩} = 123$

Pno1 *p*

Pno2 *p*

Pno3 $\text{♩} = 89$ $\text{♩} = 66$ $\text{♩} = 144$ $\text{♩} = 66$ $\text{♩} = 123$ *p*



26 $\text{♩} = 66$ $\text{♩} = 89$ $\text{♩} = 11$ $\text{♩} = 233$ $\text{♩} = 144$ $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 233$ $\text{♩} = 144$ $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 233$ $\text{♩} = 144$

Pno1 *p*

Pno2 *p*

Pno3 $\text{♩} = 66$ $\text{♩} = 89$ $\text{♩} = 11$ $\text{♩} = 233$ $\text{♩} = 144$ $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 233$ $\text{♩} = 144$ $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 233$ $\text{♩} = 144$ *p*

27 $\text{♩} = 107$ $\text{♩} = 89$ $\text{♩} = 280$ $\text{♩} = 107$ $\text{♩} = 173$ $\text{♩} = 89$ $\text{♩} = 76$ $\text{♩} = 280$ $\text{♩} = 107$ $\text{♩} = 173$ $\text{♩} = 89$ $\text{♩} = 76$ $\text{♩} = 280$

Pno1 *p*

Pno2

Pno3 *p*

28 $\text{♩} = 107$ $\text{♩} = 173$ $\text{♩} = 89$ $\text{♩} = 76$ $\text{♩} = 322$ $\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 199$ $\text{♩} = 377$ $\text{♩} = 89$ $\text{♩} = 322$ $\text{♩} = 233$ $\text{♩} = 123$

Pno1

Pno2

Pno3

The image shows a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in treble and bass clefs. Above the staves, there are tempo markings in quarter notes: 107, 173, 89, 76, 322, 233, 123, 199, 377, 89, 322, 233, and 123. The first measure of Pno1 starts with a measure rest and a dynamic marking of ff . Pno2 has a pV marking above the staff. Pno3 starts with a pV marking above the staff. The score includes various musical notations such as notes, rests, and dynamic markings.

29 p p^{v} p^{v} p^{v} p

$\text{♩} = 199$ $\text{♩} = 377$ $\text{♩} = 89$ $\text{♩} = 322$ $\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 109$ $\text{♩} = 377$ $\text{♩} = 89$ $\text{♩} = 280$ $\text{♩} = 377$ $\text{♩} = 199$ $\text{♩} = 107$

Pno1

Pno2

Pno3

$\text{♩} = 199$ $\text{♩} = 377$ $\text{♩} = 89$ $\text{♩} = 322$ $\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 109$ $\text{♩} = 377$ $\text{♩} = 89$ $\text{♩} = 280$ $\text{♩} = 377$ $\text{♩} = 199$ $\text{♩} = 107$

Detailed description: This is a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in treble and bass clefs. Pno1 and Pno3 have a treble clef on the upper staff and a bass clef on the lower staff. Pno2 has a treble clef on the upper staff and a bass clef on the lower staff. The score includes dynamic markings such as p (piano) and p^{v} (pianissimo). Above the staves, there are tempo markings in the form of a quarter note followed by an equals sign and a number: $\text{♩} = 199$, $\text{♩} = 377$, $\text{♩} = 89$, $\text{♩} = 322$, $\text{♩} = 233$, $\text{♩} = 123$, $\text{♩} = 109$, $\text{♩} = 377$, $\text{♩} = 89$, $\text{♩} = 280$, $\text{♩} = 377$, $\text{♩} = 199$, and $\text{♩} = 107$. The score begins with a measure number of 29. The music consists of various chords and melodic lines across the three instruments.

30 ♪ = 89 ♪ = 322 ♪ = 76 ♪ = 280 ♪ = 377 ♪ = 199 ♪ = 107 ♪ = 89 ♪ = 322 ♪ = 76 ♪ = 280 ♪ = 377 ♪ = 199

Pno1

Pno2

Pno3

♪ = 89 ♪ = 322 ♪ = 76 ♪ = 280 ♪ = 377 ♪ = 199 ♪ = 107 ♪ = 89 ♪ = 322 ♪ = 76 ♪ = 280 ♪ = 377 ♪ = 199

The musical score consists of three systems, each for a different piano part (Pno1, Pno2, Pno3). Pno1 is written in treble clef and contains several rests and chords. Pno2 is written in treble and bass clefs and contains a sequence of chords and notes. Pno3 is written in treble and bass clefs and contains rests and chords. Measure numbers are indicated above the staves, and dynamic markings like *ff* and *f* are present. The tempo or pulse is indicated by ♪ = followed by a number.

31 ♩ = 107 ♩ = 89 ♩ = 322 ♩ = 76 ♩ = 233 ♩ = 322 ♩ = 123 ♩ = 107 ♩ = 453 ♩ = 280 ♩ = 89 ♩ = 199 ♩ = 76

Pno1

Pno2

Pno3

The image shows a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in treble and bass clefs. Above the first system, there are tempo markings: ♩ = 107, ♩ = 89, ♩ = 322, ♩ = 76, ♩ = 233, ♩ = 322, ♩ = 123, ♩ = 107, ♩ = 453, ♩ = 280, ♩ = 89, ♩ = 199, ♩ = 76. The first system starts with a measure number of 31. The score consists of three systems of staves, each with a grand staff (treble and bass clef) and a brace on the left. The notation includes various notes, rests, and dynamic markings like 'v' and 'p'.

32

♩ = 233 ♩ = 322 ♩ = 123 ♩ = 107 ♩ = 453 ♩ = 280 ♩ = 89 ♩ = 199 ♩ = 76 ♩ = 233 ♩ = 322 ♩ = 123 ♩ = 107

Pno1

Pno2

Pno3

♩ = 233 ♩ = 322 ♩ = 123 ♩ = 107 ♩ = 453 ♩ = 280 ♩ = 89 ♩ = 199 ♩ = 76 ♩ = 233 ♩ = 322 ♩ = 123 ♩ = 107

33

♩ = 453 ♩ = 280 ♩ = 89 ♩ = 199 ♩ = 76 ♩ = 233 ♩ = 280 ♩ = 322 ♩ = 377 ♩ = 453 ♩ = 521 ♩ = 18 ♩ = 199

Pno1

Pno2

Pno3

mf ff

mf ff

mf ff

♩ = 453 ♩ = 280 ♩ = 89 ♩ = 199 ♩ = 76 ♩ = 233 ♩ = 280 ♩ = 322 ♩ = 377 ♩ = 453 ♩ = 521 ♩ = 18 ♩ = 199

The image shows a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in treble and bass clefs. Above the staves, there are tempo markings in quarter notes: ♩ = 453, ♩ = 280, ♩ = 89, ♩ = 199, ♩ = 76, ♩ = 233, ♩ = 280, ♩ = 322, ♩ = 377, ♩ = 453, ♩ = 521, ♩ = 18, and ♩ = 199. The score includes dynamic markings such as *mf* (mezzo-forte) and *ff* (fortissimo). Pno1 starts at measure 33. Pno2 and Pno3 have their own tempo markings: Pno2 has ♩ = 280, ♩ = 89, ♩ = 199, ♩ = 76, ♩ = 233, ♩ = 280, ♩ = 322, ♩ = 377, ♩ = 453, ♩ = 521, ♩ = 18, and ♩ = 199; Pno3 has ♩ = 453, ♩ = 280, ♩ = 89, ♩ = 199, ♩ = 76, ♩ = 233, ♩ = 280, ♩ = 322, ♩ = 377, ♩ = 453, ♩ = 521, ♩ = 18, and ♩ = 199. The score is complex, with many rests and dynamic changes.

34

♩ = 322 ♩ = 280 ♩ = 123 ♩ = 11 ♩ = 144 ♩ = 123 ♩ = 107 ♩ = 76 ♩ = 199 ♩ = 280 ♩ = 89 ♩ = 144 ♩ = 123

Pno1

mf *mf*

p *p*

Pno2

p *p*

ff *p*

mf *mf*

The image shows a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in treble and bass clefs. Above the staves, there are tempo markings in quarter notes: ♩ = 322, ♩ = 280, ♩ = 123, ♩ = 11, ♩ = 144, ♩ = 123, ♩ = 107, ♩ = 76, ♩ = 199, ♩ = 280, ♩ = 89, ♩ = 144, and ♩ = 123. The score is divided into three systems. The first system (Pno1) has dynamics *mf* and *p*. The second system (Pno2) has dynamics *p*. The third system (Pno3) has dynamics *ff* and *p*. There are also dynamic markings *mf* and *mf* in the upper staves of the first and third systems. The score includes various musical notations such as chords, single notes, and rests.

35

mf *mf* *mf*

p *p* *mf* *p*

mf *mf*

p *p*

♩ = 107 ♩ = 76 ♩ = 199 ♩ = 280 ♩ = 89 ♩ = 144 ♩ = 123 ♩ = 107 ♩ = 76 ♩ = 199 ♩ = 280 ♩ = 89 ♩ = 144

♩ = 107 ♩ = 76 ♩ = 199 ♩ = 280 ♩ = 89 ♩ = 144 ♩ = 123 ♩ = 107 ♩ = 76 ♩ = 199 ♩ = 280 ♩ = 89 ♩ = 144

The image shows a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in treble and bass clefs. Above the staves, there are tempo markings in quarter notes: ♩ = 107, ♩ = 76, ♩ = 199, ♩ = 280, ♩ = 89, ♩ = 144, ♩ = 123, ♩ = 107, ♩ = 76, ♩ = 199, ♩ = 280, ♩ = 89, ♩ = 144. The score includes dynamic markings such as *mf* (mezzo-forte) and *p* (piano). Pno1 has a *mf* marking above the staff and *p* markings below the staff. Pno2 has *p* markings below the staff and a *mf* marking above the staff. Pno3 has *mf* markings above the staff and *p* markings below the staff. The score is numbered 35 at the beginning.

36

$\text{♩} = 123$ $\text{♩} = 107$ $\text{♩} = 76$ $\text{♩} = 199$ $\text{♩} = 280$ $\text{♩} = 18$ $\text{♩} = 76$ $\text{♩} = 107$ $\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 55$ $\text{♩} = 76$ $\text{♩} = 107$

Pno1

mf

p *p*

Pno2

mf

p *p*

$\text{♩} = 123$ $\text{♩} = 107$ $\text{♩} = 76$ $\text{♩} = 199$ $\text{♩} = 280$ $\text{♩} = 18$ $\text{♩} = 76$ $\text{♩} = 107$ $\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 55$ $\text{♩} = 76$ $\text{♩} = 107$

Pno3

mf

p

Detailed description: This musical score is for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in treble and bass clefs. Pno1 and Pno2 have a dynamic marking of *mf* (mezzo-forte) in their upper staves. Pno1 and Pno2 also have dynamic markings of *p* (piano) in their lower staves. Pno3 has a dynamic marking of *mf* in its upper staff and *p* in its lower staff. The score includes various musical notations such as notes, rests, and accidentals. Above the staves, there are tempo markings in the form of quarter notes followed by numbers: $\text{♩} = 123$, $\text{♩} = 107$, $\text{♩} = 76$, $\text{♩} = 199$, $\text{♩} = 280$, $\text{♩} = 18$, $\text{♩} = 76$, $\text{♩} = 107$, $\text{♩} = 233$, $\text{♩} = 123$, $\text{♩} = 55$, $\text{♩} = 76$, and $\text{♩} = 107$. A measure number '36' is written at the beginning of the first system. The score is for the piece 'Delta Oracle'.

37

$\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 55$ $\text{♩} = 76$ $\text{♩} = 107$ $\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 55$ $\text{♩} = 76$ $\text{♩} = 107$ $\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 18$

Pno1

Pno2

$\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 55$ $\text{♩} = 76$ $\text{♩} = 107$ $\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 55$ $\text{♩} = 76$ $\text{♩} = 107$ $\text{♩} = 233$ $\text{♩} = 123$ $\text{♩} = 18$

Pno3

The image shows a musical score for three piano parts, labeled Pno1, Pno2, and Pno3. The score is written on a grand staff with three systems. The first system starts at measure 37. Above the first system, there are tempo markings: $\text{♩} = 233$, $\text{♩} = 123$, $\text{♩} = 55$, $\text{♩} = 76$, $\text{♩} = 107$, $\text{♩} = 233$, $\text{♩} = 123$, $\text{♩} = 55$, $\text{♩} = 76$, $\text{♩} = 107$, $\text{♩} = 233$, $\text{♩} = 123$, and $\text{♩} = 18$. The first system includes a treble clef with a fermata, a bass clef with a fermata, and a dynamic marking of pp . The second system includes a treble clef with a fermata and a bass clef with a fermata. The third system includes a treble clef with a fermata and a bass clef with a fermata. Above the third system, there are tempo markings: $\text{♩} = 233$, $\text{♩} = 123$, $\text{♩} = 55$, $\text{♩} = 76$, $\text{♩} = 107$, $\text{♩} = 233$, $\text{♩} = 123$, $\text{♩} = 55$, $\text{♩} = 76$, $\text{♩} = 107$, $\text{♩} = 233$, $\text{♩} = 123$, and $\text{♩} = 18$. The third system includes a treble clef with a fermata, a bass clef with a fermata, and a dynamic marking of pp .

38

Pno1

pp

mp *mp* *mp*

Pno2

pp *pp*

Pno3

mp *mp*

pp

♩ = 107 ♩ = 144 ♩ = 89

♩ = 173 ♩ = 123 ♩ = 144 ♩ = 107

♩ = 173 ♩ = 89

♩ = 107 ♩ = 144 ♩ = 89

♩ = 173 ♩ = 123 ♩ = 144 ♩ = 107

♩ = 173 ♩ = 89

Detailed description: This is a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in treble clef for all parts. Pno1 has a single staff with a *pp* dynamic marking. Pno2 has three staves (treble, middle, and bass clefs) with dynamic markings *mp* and *pp*. Pno3 has two staves (treble and bass clefs) with dynamic markings *mp* and *pp*. Above the staves, there are tempo markings in quarter notes: ♩ = 107, ♩ = 144, ♩ = 89, ♩ = 173, ♩ = 123, ♩ = 144, ♩ = 107, ♩ = 173, and ♩ = 89. The score includes various musical notations such as chords, rests, and dynamic markings.

39

Pno1

$\text{♩} = 123$ $\text{♩} = 66$ $\text{♩} = 123$ $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 76$

mp *pp* *mp* *pp*

Pno2

mp *pp* *pp* *pp*

Pno3

$\text{♩} = 123$ $\text{♩} = 66$ $\text{♩} = 123$ $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 76$

pp *pp* *pp* *pp* *mp* *pp*

3

Detailed description: This is a musical score for three pianos, labeled Pno1, Pno2, and Pno3. The score is written in a key signature of one flat (B-flat) and a common time signature. Pno1 (top system) starts at measure 39 with a treble clef. It features a melodic line with a dynamic marking of *mp* and a *pp* section. Pno2 (middle system) has a treble clef and provides harmonic support with a *pp* dynamic. Pno3 (bottom system) has a bass clef and includes a triplet of eighth notes with a *mp* dynamic. Tempo markings are placed above the staves: $\text{♩} = 123$ and $\text{♩} = 66$ for Pno1; $\text{♩} = 123$ and $\text{♩} = 89$ for Pno2; and $\text{♩} = 123$, $\text{♩} = 66$, $\text{♩} = 89$, $\text{♩} = 144$, and $\text{♩} = 76$ for Pno3. The score includes various musical notations such as beams, slurs, and dynamic markings.

40

$\text{♩} = 107$ $\text{♩} = 55$ $\text{♩} = 173$ $\text{♩} = 66$ $\text{♩} = 123$ $\text{♩} = 76$

Pno1

mp

pp

Pno2

mp

pp *pp* *pp*

Pno3

pp

Detailed description: The image shows a musical score for three piano parts, labeled Pno1, Pno2, and Pno3. The score is written in treble and bass clefs. Above the staves, there are tempo markings: $\text{♩} = 107$ and $\text{♩} = 55$ for the first section, $\text{♩} = 173$ and $\text{♩} = 66$ for the second section, and $\text{♩} = 123$ and $\text{♩} = 76$ for the third section. The first section starts at measure 40. Pno1 has a dynamic marking of *mp* and *pp*. Pno2 has a dynamic marking of *mp* and *pp*. Pno3 has a dynamic marking of *pp*. There are also some performance markings like accents and slurs.

30

43 $\text{♩} = 89$ $\text{♩} = 144$ $\text{♩} = 107$

Pno1

Pno2

Pno3



44 $\text{♩} = 89$ $\text{♩} = 123$ $\text{♩} = 89$

Pno1

Pno2

Pno3

47 $\text{♩} = 144$ $\text{♩} = 89$ $\text{♩} = 123$ $\text{♩} = 173$

Pno1 *p*

Pno2

Pno3 $\text{♩} = 144$ $\text{♩} = 89$ $\text{♩} = 123$ $\text{♩} = 173$



48 $\text{♩} = 107$ $\text{♩} = 173$ $\text{♩} = 107$ $\text{♩} = 173$ $\text{♩} = 76$ $\text{♩} = 89$

Pno1

Pno2

Pno3 $\text{♩} = 107$ $\text{♩} = 173$ $\text{♩} = 107$ $\text{♩} = 173$ $\text{♩} = 76$ $\text{♩} = 89$

49 $\text{♩} = 107$ $\text{♩} = 89$

Pno1

Pno2

Pno3



50 $\text{♩} = 107$ $\text{♩} = 123$

Pno1

Pno2

Pno3

34

♩ = 233

51 ♩ = 107 ♩ = 89 ♩ = 76 ♩ = 144 ♩ = 107 ♩ = 89 ♩ = 233 ♩ = 144 ♩ = 107 ♩ = 89 ♩ = 233 ♩ = 144

Pno1

Pno2

Pno3



52 ♩ = 76 ♩ = 89

♩ = 280 ♩ = 107 ♩ = 173

Pno1

Pno2

Pno3

53

mp *pp* *pp* *pp* *pp* *pp* *pp* *pp* *pp*

pp *pp* *pp* *pp* *pp* *pp* *pp* *pp* *pp*

mp *pp* *pp* *pp* *pp* *pp* *pp* *pp* *pp*

mp *pp*

pp *pp* *pp* *pp* *pp* *pp* *pp* *pp* *pp*

mp *pp*

The musical score is for three pianos, labeled Pno1, Pno2, and Pno3. It consists of three systems of staves. The first system (measures 53-56) features Pno1 with a treble clef and a bass clef. The treble clef part has notes with dynamic markings *mp* and *pp*. The bass clef part has notes with dynamic markings *pp*. Pno2 has a treble clef and a bass clef. The treble clef part has notes with dynamic markings *pp* and *pp*. The bass clef part has notes with dynamic markings *pp*. Pno3 has a treble clef and a bass clef. The treble clef part has notes with dynamic markings *mp* and *pp*. The bass clef part has notes with dynamic markings *pp*. Above the first system, tempo markings are given: $\text{♩} = 89$, $\text{♩} = 76$, $\text{♩} = 280$, $\text{♩} = 107$, $\text{♩} = 173$, $\text{♩} = 89$, $\text{♩} = 76$, $\text{♩} = 66$, $\text{♩} = 89$. Above the second system, there is a *mp* marking. Above the third system, tempo markings are given: $\text{♩} = 89$, $\text{♩} = 76$, $\text{♩} = 280$, $\text{♩} = 107$, $\text{♩} = 173$, $\text{♩} = 89$, $\text{♩} = 76$, $\text{♩} = 66$, $\text{♩} = 89$. The score includes various musical notations such as notes, rests, and dynamic markings.

54 $\text{♩} = 107$ $\text{♩} = 123$ $\text{♩} = 144$

Pno1

Pno2

Pno3

$\text{♩} = 107$ $\text{♩} = 123$ $\text{♩} = 144$

55 $\text{♩} = 173$ $\text{♩} = 199$ $\text{♩} = 233$ $\text{♩} = 280$ $\text{♩} = 322$ $\text{♩} = 377$ $\text{♩} = 453$ $\text{♩} = 521$ $\text{♩} = 610$ $\text{♩} = 18$ $\text{♩} = 199$ $\text{♩} = 18$ $\text{♩} = 521$

Pno1

Pno2

Pno3

ff

ff

ff

56

$\text{♩} = 322$ $\text{♩} = 521$ $\text{♩} = 29$ $\text{♩} = 18$ $\text{♩} = 199$

Pno1

Pno2

Pno3

$\text{♩} = 322$ $\text{♩} = 521$ $\text{♩} = 29$ $\text{♩} = 18$ $\text{♩} = 199$

57 $\text{♩} = 29$ $\text{♩} = 521$ $\text{♩} = 610$ $\text{♩} = 29$

Pno1

Pno2 *ff*

Pno3 *ff* *ff*



58 $\text{♩} = 521$ $\text{♩} = 610$ $\text{♩} = 18$ $\text{♩} = 521$ $\text{♩} = 29$

Pno1

Pno2 *ff*

Pno3 $\text{♩} = 521$ $\text{♩} = 610$ $\text{♩} = 18$ $\text{♩} = 521$ $\text{♩} = 29$

♪ = 123 ♪ = 89 ♩ = 11 ♪ = 29

♪ = 107

59

Pno1

Pno2

Pno3

♪ = 123 ♪ = 89 ♩ = 11 ♪ = 29 ♪ = 107

f *mf* *p* *mp* *mp* *mp*

61

$\text{♩} = 89$ $\text{♩} = 76$

Pno1

Pno2

Pno3

mp

mp

mp

mp

63 $\text{♩} = 107$

Pno1

mp

mp

mp

Pno2

mp

mp

♩ = 144 ♩ = 66 ♩ = 89 ♩ = 76 ♩ = 107

65

Pno1

Pno2

Pno3

The musical score is divided into three systems, each for a piano (Pno1, Pno2, Pno3). The first system (Pno1) starts at measure 65. It features a treble clef with a 4/4 time signature and a bass clef with a 4/4 time signature. The tempo markings are ♩ = 144, ♩ = 66, ♩ = 89, ♩ = 76, and ♩ = 107. The Pno1 part has a melodic line in the treble clef with a slur and a fingering of 5. The Pno2 part has a melodic line in the bass clef with a slur and a fingering of 5. The Pno3 part has a sparse accompaniment in the bass clef. The second system (Pno2) starts at measure 65. It features a treble clef with a 4/4 time signature and a bass clef with a 4/4 time signature. The tempo markings are ♩ = 144, ♩ = 66, ♩ = 89, ♩ = 76, and ♩ = 107. The Pno2 part has a melodic line in the bass clef with a slur and a fingering of 5. The Pno3 part has a sparse accompaniment in the bass clef. The third system (Pno3) starts at measure 65. It features a treble clef with a 4/4 time signature and a bass clef with a 4/4 time signature. The tempo markings are ♩ = 144, ♩ = 66, ♩ = 89, ♩ = 76, and ♩ = 107. The Pno3 part has a sparse accompaniment in the bass clef.

69 $\text{♩} = 107$ $\text{♩} = 89$

Pno1 *p* *mp* *mp*

Pno2 *mp* *mp*

Pno3 *mp*

$\text{♩} = 107$ $\text{♩} = 89$

71 $\text{♩} = 107$

Pno1

mp

mp

mp

mp

Pno2

mp

mp

$\text{♩} = 107$

Pno3

73 $\text{♩} = 280$ $\text{♩} = 76$ $\text{♩} = 107$
 $\text{♩} = 377$ $\text{♩} = 89$

Pno1

mp

Pno2

mp

Pno3

76 ♩ = 76 ♩ = 107 ♩ = 66

The score is divided into three systems, each for a different piano (Pno1, Pno2, Pno3). Each system contains two staves (treble and bass clef). The music is in 2/4 time and features complex rhythmic patterns, including sixteenth and thirty-second notes. Dynamic markings include *mp* (mezzo-piano) and *ff* (fortissimo). Tempo changes are indicated by ♩ = 76, ♩ = 107, and ♩ = 66. The score includes various musical notations such as slurs, ties, and articulation marks.

Pno1

Pno2

Pno3

80 ♩ = 107

Pno1

Pno2

Pno3

♩ = 107

82

ff

$\text{♩} = 66$ $\text{♩} = 107$

Pno1

Pno2

Pno3

85 $\text{♩} = 107$ $\overset{9}{\text{-----}}$ $\text{♩} = 18$ $\text{♩} = 199$ $\text{♩} = 18$ $\text{♩} = 199$ $\text{♩} = 123$ $\text{♩} = 18$

Pno1 *mp* *p* *p*

Pno2 *p*

Pno3 $\text{♩} = 107$ $\overset{9}{\text{-----}}$ *mp* $\text{♩} = 18$ $\text{♩} = 199$ $\text{♩} = 18$ $\text{♩} = 199$ $\text{♩} = 123$ $\text{♩} = 18$ *p* *p*

Detailed description: The score is for three pianos. Pno1 has a treble and bass staff. Pno2 has a bass staff. Pno3 has a treble and bass staff. The piece starts at measure 85 in 5/4 time. Pno1's treble staff has a melodic line with a 9-measure phrase starting at measure 85, marked *mp*. Pno1's bass staff has chords and a melodic line, marked *p*. Pno2's bass staff has a melodic line, marked *p*. Pno3's treble staff has a melodic line with a 9-measure phrase starting at measure 85, marked *mp*. Pno3's bass staff has chords and a melodic line, marked *p*. The score changes to 6/4 time at measure 94. Pno1's treble staff has a whole rest, marked *p*. Pno1's bass staff has chords, marked *p*. Pno2's bass staff has a melodic line, marked *p*. Pno3's treble staff has a whole rest, marked *p*. Pno3's bass staff has chords, marked *p*. Tempo markings are $\text{♩} = 107$ and $\text{♩} = 18$. Dynamic markings are *mp* and *p*.

87 ♪ = 199 ♪ = 322 ♪ = 280 ♪ = 123 ♪ = 18 ♪ = 199 ♪ = 377 ♪ = 453

Pno1

Pno2

Pno3

♪ = 199 ♪ = 322 ♪ = 280 ♪ = 123 ♪ = 18 ♪ = 199 ♪ = 377 ♪ = 453



88 ♪ = 322 ♪ = 173 ♪ = 280 ♪ = 377 ♪ = 123 ♪ = 89 ♪ = 47 ♪ = 7

Pno1

Pno2

Pno3

♪ = 322 ♪ = 173 ♪ = 280 ♪ = 377 ♪ = 123 ♪ = 89 ♪ = 47 ♪ = 7