

An Infinite Circle is a Straight Line

For solo piano

Ian Percy

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... a thousand sounds of Pi ...

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Analysis Score: Cycles 1 – 7

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The majority of this multiple movement work for solo piano was composed systematically from the first 1,000 decimal digits of Pi during the summer of 2012. Using a combination of Arnold Schoenberg's dodecaphonic technique and Arvo Pärt's extended tone rows, the piece started life as an analytical exercise, a theoretical study into the musical possibilities of composing with the linear properties of eternal numbers.

This is an analysis score documenting the process for all seven of the original cycles.

Pi is an eternal number; it is infinite and linear but is part of the equation used to calculate the circumference of a circle; a cyclic and self-contained shape. The composer was attracted by this contradiction and was intrigued by the realisation that if Pi is an 'infinite decimal', it could also be argued that the precise circumference of a circle is an unobtainable pursuit (an infinite elusive). Whilst researching the fundamentals of Pi, one stumbled across an area of research (or mode of thinking) referred to as 'philosophical mathematics', which, until then, one would have considered to be an oxymoron. A quotation accredited (with some dispute) to Johannes Kepler (1571-1630) stating that 'an infinite circle is a straight line' offered just 'a splash' of external narrative (and a title for the piece). Others have mused how, therefore, the maximum triangle must also be a straight line ...

The Rules of the Game:

1. The cycles are a systematic setting of the first one thousand decimal digits of Pi.
2. Numbers are translated to musical pitch via Schoenberg's 12-tone system. C was chosen as 0, but the system is transposable.
3. Whenever 1, 0 or 1, 1 appear in the sequence, they are treated as 10 and 11. Without this anomaly (referred to as the 10/11 anomaly), Cycle One would outline a decachord (10-tone language) instead of the total chromatic (12-tone language).
4. Instead of returning to 0 at the octave (as in Schoenberg's method), the system was extended at each cycle (e.g. 0 = C2, 12 = C3 and 24 = C4 etc.), which expanded the registral span at each iteration and introduced an architectural sense of textural and timbral development.
5. Cycle One uses 0 – 11 (one chromatic octave), Cycle Two uses 0 – 23 (two chromatic octaves) and Cycle Three uses 0 – 35 etc.
6. Every single digit (1 – 9) is equal to the duration of a semi-quaver.
7. Every double digit (10 – 83) is equal to a quaver (two semi-quavers).
8. There are many repeated digits in the infinite decimal of Pi, which led to a lot of semi-quaver reiterations, so repeated numbers are given the durational value of the combined digits: 8, 8, 8 equals a dotted-quaver (three semi-quavers) and 9, 9, 9, 9 equals a crotchet (four semi-quavers).

Simply Systematic:

One recalls exploring a variety of initial approaches whilst trying to uncover fragments of music within this linear eternal and the processes were excessively time consuming to document in score form, but once the 'rules of the game' were established, it was literally a case of 'inputting the data' and sitting back to let the systems and cycles unfold, entertained by the musicality one had discovered. The articulation and dynamics added during final realisation of the performance score simply enhanced the phrases that were already present; like applying oil to wood to emphasise the grain and preserve its natural beauty. One could pose the question: Whose music is this? Perhaps it belongs to the Akashic Record? Perhaps it is mine?

Variable Form:

This is a virtuosic piece. Cycle Seven borders on a 'mission impossible' and is perhaps more practical for performance as a duo for two players at one piano. Cycle Six demands elite acrobatics from the pianist and Cycle Five requires a high level of stamina, technique and agility. The music clearly belongs to the same evolutionary strand as George Antheil's *Ballet Mécanique* (1924) and Conlon Nancarrow's mid-twentieth-century studies for automated player pianos, and this collection was initially conceived as a theoretical exercise (not for the concert hall), but it is difficult to deny the inherent musicality in these cycles (and the capabilities of the modern pianist), so ...

Notation: This is an extremely chromatic score, so in order to dilute the number of accidentals, the following rules were strictly observed:

- a. The barline cancels all accidentals.
- b. Both staves are considered separate, so no cautionary naturals are offered.
- c. Accidentals (and their cautionaries) only apply to notes in that specific register.
- d. Whenever there are cross-staff beamed notes, no rests are given in either stave.

In Conclusion:

The Cycles were composed through systematic translation of the first one thousand decimal digits of Pi into musical pitch, and, when using these rules, sounds like a form of contemporary chromatic Jazz. One is left wondering how the next 1,000 digits would sound if new rules were conceived in the context of a plainchant setting for SATB, or perhaps a modernist work for pitched percussion ...

An Infinite Circle is a Straight Line

... a thousand sounds of pi ...

Cycles 1 - 7

[Analysis score]

Ian Percy

Note: Whenever 1, 0 or 1, 1 appear in the cycle, they are treated as 10 (B♭) and 11 (B♮) ...

Note: The barline cancels all accidentals.

Cycle 1 (a first of seven): The total chromatic ...

A ♩ = 104 Cycle 1: One octave span (0 - 11) C4 - B4 [transposable to any pitch at any register]: No reiterations (suspensions marked with an asterisk) ...

poco accel.

1 4 1 5 9 2 6 5 3 5 8 9 7 9 3 2 3 8 4 6 2 6 4 3* 8 3 2 7 9 5 0 2 8* 4 1 9 7 1 6 9 3 9* 3 7 5 10 5 8 2 0 9 7 4 9 4* 5 9 2 3 0 7 8 1 6 4 0 6 2 8 6 2 0 8 9* 8 6 2 8 0 3 4 8 2 5 3 4 2 11 7 0 6 7 9 8 2 1 4 8 0 8 6 5 1 3 2

Note: This is a setting of the first one thousand decimal digits of Pi. Each single digit (0 - 9) is given the durational value of a semi quaver and each double digit (10, 11 etc.) is given the value of a quaver.

Note: There are a lot of repetitions in this infinite number, so repeated integers are given the combined duration of the repetitions (e.g. 9, 9, 9 would last for a dotted-quaver [three semi-quavers] and 8, 8, 8, 8 would last for a crotchet [four semi-quavers]).

Note: Whenever 1, 0 or 1, 1 appear in the cycle, they are treated as a 10 (B♭) and (B♮). Without this anomaly, 10 and 11 would never appear and this would therefore be a 10-tone row instead of a 12-tone row. This is referred to as 'the 10/11 anomaly'.

♩ = 108

[4 8 1 11]

[8 5 2 1 10]

8 2 3 0 6* 4 7 0 9 3 8 4* 6 0 9 5* 0 5 8 2* 3 1 7 2 5 3 5 9 4 0 8 1 2 8 4 8 11 1 7 4 5 0 2 8 4 10 2 7 0 1 9 3 8 5 2 11 0 5** 9 6 4* 6 2* 9 4 8 9 5 4 9 3 0 3 8 1 9 6 4* 2 8* 10 9 7 5 6* 5 9 3* 4* 6 1 2 8 4 7

5 6 4 8 2 3* 7 8 6 7 8 3 1 6 5 2 7 1 2 0 1 9 0 9 1 4 5 6 4 8 5 6* 9 2 3 4 6 0 3 4 8 6 10 4 5 4 3 2 6* 4 8 2 1 3* 9 3 6 0 7 2 6 0 2 4 9 1 4 1 2 7 3 7 2 4 5 8 7 0* 6* 0 6 3 1 5* 8* 1 7 4 8* 1 5 2 0 9 2 0 9 6 2 8 2 9

2 5 4 0 9 1 7 1 5 3 6 4 3 6 7 8 9 2 5 9 0 3 6 0* 11 3* 0 5 3 0 5 4 8* 2 0 4 6* 5 2 1 3 8 4 1 4 6 9 5 1 9 4 1 5 11 6 0 9 4 3* 0 5 7 2 7 0 3 6 5 7 5 9 5 9 1 9 5 3 0 9 2 1 8 6 11 7 3 8 1 9 3 2 6 11 7 9 3 10 5 11 8 5

22

f

poco rit. [♩ = 104]

4 8 0 7 4* 6 2 3 7 9* 6 2 7 4 9 5 6 7 3 5 1 8* 5 7 5 2 7 2 4 8 9 1 2* 7 9 3 8 1 8 3 0 11 9 4 9 1 2 9 8 3* 6 7 3* 6 2 4* 0 6 5 6* 4 3 0 8 6 0 2 1 3 9 4 9 4 6 3 9 5 2* 4 7 3 7 1 9 0 7 0 2 1 7 9 8 6 0 9 4 3 7 0 2 7*

29

mf *pp* *ppp*

poco accel. ♩ = 108

0 5 3 9 2 1 7 1 7 6 2 9 3 1 7 6 7 5 2 3 8 4 6 7 4 8 1 8 4 6 7 6* 9 4 0 5 1 3 2 0** 5 6 8 1 2 7 1 4 5 2 6 3 5 6 0 8 2 7* 8 5 7* 1 3 4 2 7 5 7* 8 9 6 0 9 1 7 3 6 3 7 1 7 8 7 2 1 4 6 8 4* 0 9 0 1 2* 4 9 5 3 4 3 0 1 4 6

36

pp *p* *mp* *mf*

B ... a beginning of the end ...

5 4 9 5 8 5 3 7 10 5 0 7 9 2* 7 9 6 8 9 2 5 8 9 2 3 5 4 2 0 1 9* 5 6 11 2 1 2 9 0 2 1 9 6 0 8 6 4 0 3 4* 1 8 1 5 9 8 1 3 6 2 9 7* 4 7* 1 3 0 9* 6 0 5 1 8 7 0 7 2 11 3 4 9***** 8 3 7 2 9 7 8 0 4 9* 5 10 5 9 7

43

ff *mf*

3 1 7 3 2 8 1 6 0 9 6 3 1 8 5 9 5 0 2 4* 5 9 4 5* 3 4 6 9 0 8 3 0 2 6 4 2 5 2* 3 0 8 2 5 3* 4* 6 8 5 0 3 5 2 6 1 9 3 11 8* 1 7 10 10 0* 3 1 3 7 8 3 8 7 5 2 8* 6 5 8 7 5 3* 2 0 8 3 8 1 4 2 0 6 1 7 1 7* 6* 9 1 4

50

f *mf*

poco rit.

[♩ = 72]

[6* 1 11]

7 3 0 3 5 9 8 2 5 3 4 9 0 4 2 8 7 5* 4 6 8 7 3 11 5 9 5 6 2 8 6 3 8* 2 3 5 3 7 8 7 5 9 3 7 5 1 9 5 7* 8 1 8 5 7* 8 0 5 3 2 1 7 1 2* 6 8 0 6* 1 3 0* 1 9 2 7 8 7 6* 11 1 9 5 9 0 9 2 1 6 4 2 0 1 9 8

57

mp *p* *pp* *ppp*

Note: In Cycle 2 there will never be a no.1 (unless it is affected by the 10/11 anomaly), as it will always be part of a double-digit. The amount of no.2s will also be reduced by 30%.
This does not negate the influence of the note C# (no.1), as it is statistically just as likely to appear as the number 13 as any other double-digit number. However, this starts to dilute the amount of notes in the very lowest register of the span, making the results sound more musical and also evolves naturally within the system.

Note: The barline cancels all accidentals and any accidentals refer only to that specific register.

Cycle Two (a second of seven): Two octaves in 24 notes ...

C ♩ = 112 Cycle 2: Two octave span (0 - 23) C4 - B5 [transposable up maximum of 2 octaves or down a maximum of 3 octaves and a minor third]: No reiterations (suspensions marked with an asterisk) ...

[8 2 14 8]

14 15 9 2 6 5 3 5 8 9 7 9 3 23 8 4 6 2 6 4 3* 8 3 2 7 9 5 0 2 8* 4 19 7 16 9 3 9* 3 7 5 10 5 8 20 9 7 4 9 4* 5 9 23 0 7 8 16 4 0 6 2 8 6 20 8 9* 8 6 2 8 0 3 4 8 2 5 3 4 2 11 7 0 6 7 9 8 21 4 8 0 8 6 5 13 2

poco rit.

♩ = 108

[0 5 8 2 23 17 2]

[8 5 2 1 10]

8 23 0 6* 4 7 0 9 3 8 4* 6 0 9 5* 0 5 8 22 3 17 2 5 3 5 9 4 0 8 12 8 4 8 11 17 4 5 0 2 8 4 10 2 7 0 19 3 8 5 2 11 0 5** 9 6 4* 6 22 9 4 8 9 5 4 9 3 0 3 8 19 6 4* 2 8* 10 9 7 5 6* 5 9 3* 4* 6 12 8 4 7

poco accel.

♩ = 112

[2 7 1 20]

5 6 4 8 23 3 7 8 6 7 8 3 16 5 2 7 12 0 19 0 9 14 5 6 4 8 5 6* 9 23 4 6 0 3 4 8 6 10 4 5 4 3 2 6* 4 8 21 3* 9 3 6 0 7 2 6 0 2 4 9 14 12 7 3 7 2 4 5 8 7 0* 6* 0 6 3 15 5 8* 17 4 8* 15 20 9 20 9 6 2 8 2 9

2 5 4 0 9 17 15 3 6 4 3 6 7 8 9 2 5 9 0 3 6 0* 11 3* 0 5 3 0 5 4 8* 20 4 6* 5 21 3 8 4 14 6 9 5 19 4 15 11 6 0 9 4 3* 0 5 7 2 7 0 3 6 5 7 5 9 5 9 19 5 3 0 9 21 8 6 11 7 3 8 19 3 2 6 11 7 9 3 10 5 11 8 5

[2 13]

[0 9 2 18]

85

mf mp

4 8 0 7 4* 6 23 7 9* 6 2 7 4 9 5 6 7 3 5 18 8 5 7 5 2 7 2 4 8 9 12 2 7 9 3 8 18 3 0 11 9 4 9 12 9 8 3* 6 7 3* 6 2 4* 0 6 5 6* 4 3 0 8 6 0 21 3 9 4 9 4 6 3 9 5 22 4 7 3 7 19 0 7 0 21 7 9 8 6 0 9 4 3 7 0 2 7*

[8 9 1 22]

[8 6 0 2 13]

[2 17 9 8]

92

f mf

poco rit. [♩ = 108] poco accel. ♩ = 112

[2 17 17] 0 5 3 9 21 7 17 6 2 9 3 17 6 7 5 23 8 4 6 7 4 8 18 4 6 7 6* 9 4 0 5 13 20 0* 5 6 8 12 7 14 5 2 6 3 5 6 0 8 2 7* 8 5 7* 13 4 2 7 5 7* 8 9 6 0 9 17 3 6 3 7 17 8 7 21 4 6 8 4* 0 9 0 12 2 4 9 5 3 4 3 0 14 6

[2 14]

99

mp p mf mp

D ... a beginning of the end ...

[2 12 9 0 2 19 6 0]

5 4 9 5 8 5 3 7 10 5 0 7 9 22 7 9 6 8 9 2 5 8 9 23 5 4 20 19 9 5 6 11 21 2 9 0 21 9 6 0 8 6 4 0 3 4* 18 15 9 8 13 6 2 9 7* 4 7* 13 0 9* 6 0 5 18 7 0 7 2 11 3 4 9***** 8 3 7 2 9 7 8 0 4 9* 5 10 5 9 7

106

ff *mf*

poco accel.

[♩=112] *poco rit.*

♩=108

[4 2 5 2 23 0 8 2 5]

3 17 3 2 8 16 0 9 6 3 18 5 9 5 0 2 4* 5 9 4 5* 3 4 6 9 0 8 3 0 2 6 4 2 5 22 3 0 8 2 5 3* 4* 6 8 5 0 3 5 2 6 19 3 11 8* 17 10 10 0* 3 13 7 8 3 8 7 5 2 8* 6 5 8 7 5 3* 20 8 3 8 14 20 6 17 17 7 6* 9 14

113

ff *mf* *f* *mf*

poco rit.

[♩=72]

[2 17 1 22]

7 3 0 3 5 9 8 2 5 3 4 9 0 4 2 8 7 5* 4 6 8 7 3 11 5 9 5 6 2 8 6 3 8* 23 5 3 7 8 7 5 9 3 7 5 19 5 7* 8 18 5 7* 8 0 5 3 21 7 12 2 6 8 0 6* 13 0* 19 2 7 8 7 6* 11 19 5 9 0 9 21 6 4 20 19 8

120

mp *P* *PP*

Note: In Cycle 3 there will never be a no. 1 or 2 (unless they are affected by the 10/11 anomaly), as they will always be part of a double-digit. The amount of no.3s will also be reduced by 50%. This dilutes the amount of notes in the very lowest register of the span, making the results sound more balanced in terms of timbre and also evolves naturally within the system as the span increases.

Note: The barline cancels all accidentals and any accidentals only refer to that specific register. Whenever there is a cross-stave beamed note, no rests are written in either stave.

Cycle Three (a third of seven): Three octaves, but what register ...

E ♩ = 116 Cycle 3: Three octave span (0 - 35) C3 - B5 [transposable up maximum of two octaves, or down a maximum of two octaves and a minor third]: No Reiterations (suspensions marked with an asterisk) ...

14 15 9 26 5 35 8 9 7 9 32 3 8 4 6 26 4 33 8 32 7 9 5 0 28 8 4 19 7 16 9 3 9* 3 7 5 10 5 8 20 9 7 4 9 4* 5 9 23 0 7 8 16 4 0 6 28 6 20 8 9* 8 6 28 0 34 8 25 34 2 11 7 0 6 7 9 8 21 4 8 0 8 6 5 13 28

127

pp p mp

Musical score for measures 127-133. The score is written for piano in treble and bass clefs. It features a complex rhythmic pattern with various dynamics: *pp* (pianissimo), *p* (piano), and *mp* (mezzo-piano). The melody in the treble clef consists of eighth and sixteenth notes, often with accents. The bass clef provides a steady accompaniment of eighth notes. The key signature has one sharp (F#).

[8 5 21 10]

23 0 6* 4 7 0 9 3 8 4* 6 0 9 5* 0 5 8 22 31 7 25 35 9 4 0 8 12 8 4 8 11 17 4 5 0 28 4 10 27 0 19 3 8 5 2 11 0 5** 9 6 4* 6 22 9 4 8 9 5 4 9 30 3 8 19 6 4* 28 8 10 9 7 5 6* 5 9 33 4* 6 12 8 4 7

134

mf mp mf

Musical score for measures 134-140. The score continues from the previous system. Dynamics include *mf* (mezzo-forte) and *mp* (mezzo-piano). The rhythmic complexity remains, with frequent accents and cross-stave beaming between the two staves. The key signature remains one sharp.

5 6 4 8 23 3 7 8 6 7 8 31 6 5 27 12 0 19 0 9 14 5 6 4 8 5 6* 9 23 4 6 0 34 8 6 10 4 5 4 32 6* 4 8 21 33 9 3 6 0 7 26 0 24 9 14 12 7 3 7 24 5 8 7 0* 6* 0 6 31 5* 8* 17 4 8* 15 20 9 20 9 6 28 29

141

mp mf

Musical score for measures 141-147. Dynamics include *mp* (mezzo-piano) and *mf* (mezzo-forte). The score concludes with a final cadence in the treble clef. The key signature remains one sharp.

25 4 0 9 17 15 3 6 4 3 6 7 8 9 25 9 0 3 6 0* 11 33 0 5 30 5 4 8* 20 4 6* 5 21 3 8 4 14 6 9 5 19 4 15 11 6 0 9 4 33 0 5 7 27 0 3 6 5 7 5 9 5 9 19 5 30 9 21 8 6 11 7 3 8 19 32 6 11 7 9 3 10 5 11 8 5

148

4 8 0 7 4* 6 23 7 9* 6 27 4 9 5 6 7 35 18 8 5 7 5 27 24 8 9 12 27 9 3 8 18 30 11 9 4 9 12 9 8 33 6 7 33 6 24 4 0 6 5 6* 4 30 8 6 0 21 3 9 4 9 4 6 3 9 5 22 4 7 3 7 19 0 7 0 21 7 9 8 6 0 9 4 3 7 0 27 7

155

poco rit. [♩ = 112] poco accel. ♩ = 116

0 5 3 9 21 7 17 6 29 31 7 6 7 5 23 8 4 6 7 4 8 18 4 6 7 6* 9 4 0 5 13 20 0* 5 6 8 12 7 14 5 26 35 6 0 8 27 7 8 5 7* 13 4 27 5 7* 8 9 6 0 9 17 3 6 3 7 17 8 7 21 4 6 8 4* 0 9 0 12 24 9 5 34 30 14 6

162

F ... a beginning of the end ...

5 4 9 5 8 5 3 7 10 5 0 7 9 22 7 9 6 8 9 25 8 9 23 5 4 20 19 9 5 6 11 21 29 0 21 9 6 0 8 6 4 0 34 4 18 15 9 8 13 6 29 7* 4 7* 13 0 9* 6 0 5 18 7 0 7 2 11 34 9***** 8 3 7 29 7 8 0 4 9* 5 10 5 9 7

169

31 7 32 8 16 0 9 6 31 8 5 9 5 0 24 4 5 9 4 5* 34 6 9 0 8 30 26 4 25 22 30 8 25 33 4* 6 8 5 0 35 26 19 3 11 8* 17 10 10 0* 31 3 7 8 3 8 7 5 28 8 6 5 8 7 5 33 20 8 3 8 14 20 6 17 17 7 6* 9 14

176

poco rit.

[♩ = 72]

7 30 35 9 8 25 34 9 0 4 28 7 5* 4 6 8 7 3 11 5 9 5 6 28 6 3 8* 23 5 3 7 8 7 5 9 3 7 5 19 5 7* 8 18 5 7* 8 0 5 32 17 12 26 8 0 6* 13 0* 19 27 8 7 6* 11 19 5 9 0 9 21 6 4 20 19 8

183

Note: In Cycle 4 there will never be a no.1, 2 or 3 (unless they are affected by the 10/11 anomaly), as they will always be part of a double-digit. The amount of no.3s will also be reduced by 70%. This dilutes the amount of notes in the very lowest register of the span, making the resuts sound more balanced in terms of timbre and also evolves naturally within the system as the span increases.

Note: The barline cancels all accidentals and any accidentals only refer to that specific register. Whenever there is a cross-staff beamed note, no rests are written in either stave.

Cycle Four (a fourth of seven): Let's just 'go for it' ...

G ♩ = 120 Cycle 4: Four octave span (0 - 47) C2 - B5 [transposable up maximum of two octaves, or down maximum of two octaves and a minor third]: No reiterations (suspensions are marked with an asterisk) ...

14 15 9 26 5 35 8 9 7 9 32 38 46 26 43 38 32 7 9 5 0 28 8 41 9 7 16 9 39 9 37 5 10 5 8 20 9 7 4 9 44 5 9 23 0 7 8 16 40 6 28 6 20 8 9* 8 6 28 0 34 8 25 34 2 11 7 0 6 7 9 8 21 4 8 0 8 6 5 13 28

190

23 0 6* 47 0 9 38 44 6 0 9 5* 0 5 8 22 31 7 25 35 9 40 8 12 8 4 8 11 17 45 0 28 4 10 27 0 19 38 5 2 11 0 5** 9 6 44 6 22 9 4 8 9 5 4 9 30 38 19 6 44 28 8 10 9 7 5 6* 5 9 33 44 6 12 8 47

197

5 6 4 8 23 37 8 6 7 8 31 6 5 27 12 0 19 0 9 14 5 6 4 8 5 6* 9 23 46 0 34 8 6 10 45 43 26 6 4 8 21 33 9 36 0 7 26 0 24 9 14 12 7 37 24 5 8 7 0* 6* 0 6 31 5* 8* 17 4 8* 15 20 9 20 9 6 28 29

204

25 40 9 17 15 36 43 6 7 8 9 25 9 0 36 0* 11 33 0 5 30 5 4 8* 20 46 6 5 21 38 41 46 9 5 19 41 5 11 6 0 9 43 30 5 7 27 0 36 5 7 5 9 5 9 19 5 30 9 21 8 6 11 7 38 19 32 6 11 7 9 3 10 5 11 8 5

211

mp

4 8 0 7 44 6 23 7 9* 6 27 4 9 5 6 7 35 18 8 5 7 5 27 24 8 9 12 27 9 38 18 30 11 9 4 9 12 9 8 33 6 7 33 6 24 40 6 5 6* 43 0 8 6 0 21 39 4 9 46 39 5 22 47 37 19 0 7 0 21 7 9 8 6 0 9 43 7 0 27 7

218

mf mp

poco rit. [♩ = 116]

poco accel. ♩ = 120

0 5 39 21 7 17 6 29 31 7 6 7 5 23 8 46 7 4 8 18 46 7 6* 9 40 5 13 20 0* 5 6 8 12 7 14 5 26 35 6 0 8 27 7 8 5 7* 13 42 7 5 7* 8 9 6 0 9 17 36 37 17 8 7 21 46 8 44 0 9 0 12 24 9 5 34 30 14 6

225

p pp mf

H ... a beginning of the end ...

5 4 9 5 8 5 37 10 5 0 7 9 22 7 9 6 8 9 25 8 9 23 5 42 0 19 9 5 6 11 21 29 0 21 9 6 0 8 6 40 34 41 8 15 9 8 13 6 29 7* 47 7 13 0 9* 6 0 5 18 7 0 7 2 11 34 9***** 8 37 29 7 8 0 4 9* 5 10 5 9 7

232

f *ff* *mf*

31 7 32 8 16 0 9 6 31 8 5 9 5 0 24 45 9 45 5 34 6 9 0 8 30 26 42 5 22 30 8 25 33 44 6 8 5 0 35 26 19 3 11 8* 17 10 10 0* 31 37 8 38 7 5 28 8 6 5 8 7 5 33 20 8 38 14 20 6 17 17 7 6* 9 14

239

poco rit.

[♩ = 72]

7 30 35 9 8 25 34 9 0 42 8 7 5* 46 8 7 3 11 5 9 5 6 28 6 38 8 23 5 37 8 7 5 9 37 5 19 5 7* 8 18 5 7* 8 0 5 32 17 12 26 8 0 6* 13 0* 19 27 8 7 6* 11 19 5 9 0 9 21 6 42 0 19 8

246

mp *p* *pp* *ppp*

Note: In Cycle 5 there will never be a no.1, 2, 3 or 4 (unless they are affected by the 10/11 anomaly), as they will always be part of a double-digit. The amount of no.5s will also be radically reduced by 90%. This dilutes the amount of notes in the very lowest register of the span, making the results sound more balanced in terms of timbre and also evolves naturally within the system as the span increases.

Note: The barline cancels all accidentals and any accidentals only refer to that specific register. Whenever there is a cross-staff beamed note, no rests are written in either staff.

Cycle Five (a fifth of seven): The hills are growing steeper ...

I ♩ = 120 Cycle 5: Five octave span (0 - 59) C2 - B6 [transposable up maximum of one octave, or down a maximum of a compound minor third]: No reiterations (suspensions are marked with an asterisk) ...

14 15 9 26 53 58 9 7 9 32 38 46 26 43 38 32 7 9 50 28 8 41 9 7 16 9 39 9 37 5 10 58 20 9 7 49 44 59 23 0 7 8 16 40 6 28 6 20 8 9* 8 6 28 0 34 8 25 34 2 11 7 0 6 7 9 8 21 48 0 8 6 51 32

253 *mf*

8 23 0 6* 47 0 9 38 44 6 0 9 55 0 58 22 31 7 25 35 9 40 8 12 8 48 11 17 45 0 28 4 10 27 0 19 38 52 11 0 55 59 6 44 6 22 9 48 9 54 9 30 38 19 6 44 28 8 10 9 7 56 6 59 33 44 6 12 8 47

260

56 48 23 37 8 6 7 8 31 6 52 7 12 0 19 0 9 14 56 48 56 6 9 23 46 0 34 8 6 10 45 43 26 6 48 21 33 9 36 0 7 26 0 24 9 14 12 7 37 24 58 7 0* 6* 0 6 31 55 8* 17 48 8 15 20 9 20 9 6 28 29

267

25 40 9 17 15 36 43 6 7 8 9 25 9 0 36 0 0 11 33 0 53 0 54 8* 20 46 6 52 13 8 41 46 9 51 9 41 5 11 6 0 9 43 30 57 27 0 36 57 59 59 19 53 0 9 21 8 6 11 7 38 19 32 6 11 7 9 3 10 5 11 8 54

274

Musical score for measures 274-280. The score is written for piano in treble and bass clefs. It features a complex melodic line in the right hand with many slurs and ties, and a rhythmic accompaniment in the left hand. The key signature has one sharp (F#) and the time signature is 4/4. The piece concludes with a final cadence in measure 280.

8 0 7 44 6 23 7 9* 6 27 49 56 7 35 18 8 57 52 7 24 8 9 12 27 9 38 18 30 11 9 49 12 9 8 33 6 7 33 6 24 40 6 56 6 43 0 8 6 0 21 39 49 46 39 52 24 7 37 19 0 7 0 21 7 9 8 6 0 9 43 7 0 27 7

281

Musical score for measures 281-287. The score continues from the previous system. It maintains the same key signature and time signature. The right hand has a more active melodic line with frequent slurs and ties, while the left hand provides a steady accompaniment. The piece ends with a final cadence in measure 287.

0 53 9 21 7 17 6 29 31 7 6 7 52 38 46 7 48 18 46 7 6* 9 40 51 32 0* 56 8 12 7 14 52 6 35 6 0 8 27 7 8 57 7 13 42 7 57 7 8 9 6 0 9 17 36 37 17 8 7 21 46 8 44 0 9 0 12 24 9 53 43 0 14 6

288

Musical score for measures 288-294. The score continues from the previous system. It maintains the same key signature and time signature. The right hand has a more active melodic line with frequent slurs and ties, while the left hand provides a steady accompaniment. The piece ends with a final cadence in measure 294.

J ... a beginning of the end ...

54 9 58 53 7 10 50 7 9 22 7 9 6 8 9 25 8 9 23 54 20 19 9 56 11 21 29 0 21 9 6 0 8 6 40 34 41 8 15 9 8 13 6 29 7* 47 7 13 0 9* 6 0 51 8 7 0 7 2 11 34 9 9* 9 9* 8 37 29 7 8 0 49 9 5 10 59 7

Musical score for measures 295-311. The score is written for piano in G major. The right hand features a melodic line with various ornaments and dynamics, while the left hand provides a rhythmic accompaniment. Dynamics include *f*, *ff*, and *mf*. The piece concludes with a fermata over the final chord.

31 7 32 8 16 0 9 6 31 8 59 50 24 45 9 45 53 46 9 0 8 30 26 42 52 23 0 8 25 33 44 6 8 50 35 26 19 3 11 8* 17 10 10 0* 31 37 8 38 7 52 8* 6 58 7 53 32 0 8 38 14 20 6 17 17 7 6* 9 14

Musical score for measures 302-308. The score continues the piano piece. The right hand has a more active melodic line with many ornaments. Dynamics include *f*, *ff*, and *mf*. The piece concludes with a fermata over the final chord.

poco rit.

[♩ = 72]

7 30 35 9 8 25 34 9 0 42 8 7 55 46 8 7 3 11 59 56 28 6 38 8 23 53 7 8 7 59 9 37 51 9 57 7 8 18 57 7 8 0 53 21 7 12 26 8 0 6* 13 0* 19 27 8 7 6* 11 19 59 0 9 21 6 42 0 19 8

Musical score for measures 309-315. The score continues the piano piece. The right hand has a more active melodic line with many ornaments. Dynamics include *mp*, *p*, *pp*, and *ppp*. The piece concludes with a fermata over the final chord.

Note: In Cycle 6 there will never be a no. 1, 2, 3, 4, 5 or 6 (unless they are affected by the 10/11 anomaly), as they will always be part of a double-digit. The amount of no. 7s will also be reduced by 10%. This dilutes the amount of notes in the very lowest register of the span, making the results sound more balanced in terms of timbre and also evolves naturally within the system as the span increases.

Note: The barline cancels all accidentals and any accidentals only refer to that specific register. Whenever there is a cross-staff beamed note, no rests are written in either staff.

Cycle Six (a sixth of seven): Wake up, there are mountains to climb and things we can believe in ...

K ♩ = 126 Cycle 6: Six octave (0 - 71) C1 - B6 [transposable up a maximum of an octave or down a minor third]: No reiterations (suspensions are marked with an asterisk) ...

14 15 9 26 53 58 9 7 9 32 38 46 26 43 38 32 7 9 50 28 8 41 9 71 69 39 9 37 51 0 58 20 9 7 49 44 59 23 0 7 8 16 40 62 8 62 0 8 9* 8 62 8 0 34 8 25 34 21 17 0 67 9 8 21 48 0 8 65 13 28

Musical score for measures 316-322. The score is written for piano in treble and bass clefs. It features a complex rhythmic pattern with many rests and dynamic markings including *mp*, *mf*, and *mp*. The notes are primarily eighth and sixteenth notes, often beamed together. There are several accidentals (sharps, flats, and naturals) scattered throughout the piece.

23 0 66 47 0 9 38 44 60 9 55 0 58 22 31 7 25 35 9 40 8 12 8 48 11 17 45 0 28 41 0 27 0 19 38 52 11 0 55 59 64 46 22 9 48 9 54 9 30 38 19 64 42 8* 10 9 7 56 65 9 33 44 61 28 47

Musical score for measures 323-329. This section continues the complex rhythmic and melodic patterns from the previous system. It includes dynamic markings such as *mf* and *mp*. The notation is dense with many rests and accidentals, maintaining the intricate texture of the piece.

56 48 23 37 8 67 8 31 65 27 12 0 19 0 9 14 56 48 56 69 23 46 0 34 8 61 0 45 43 26 64 8 21 33 9 36 0 7 26 0 24 9 14 12 7 37 24 58 7 0* 66 0 63 15 58 8 17 48 8 15 20 9 20 9 62 8 29

Musical score for measures 330-336. The final system on the page shows the continuation of the musical themes. It features dynamic markings like *mf* and *mp*. The piece concludes with a series of beamed notes and rests, ending on a final note in measure 336.

25 40 9 17 15 36 43 67 8 9 25 9 0 36 0* 11 33 0 53 0 54 8* 20 46 65 21 38 41 46 9 51 9 41 51 16 0 9 43 30 57 27 0 36 57 59 59 19 53 0 9 21 8 61 17 38 19 32 61 17 9 31 0 51 18 54

337

8 0 7 44 62 37 9* 62 7 49 56 7 35 18 8 57 52 7 24 8 9 12 27 9 38 18 30 11 9 49 12 9 8 33 67 33 62 44 0 65 66 43 0 8 60 21 39 49 46 39 52 24 7 37 19 0 70 21 7 9 8 60 9 43 70 27 70

344

53 9 21 71 7 62 9 31 7 67 52 38 46 7 48 18 46 7 66 9 40 51 32 0** 56 8 12 71 45 26 35 60 8 27 7 8 57 71 34 27 57 7 8 9 60 9 17 36 37 17 8 7 21 46 8 44 0 9 0 12 24 9 53 43 0 14 65

351

L ... a beginning of the end ...

49 58 53 71 0 50 7 9 22 7 9 68 9 25 8 9 23 54 20 19 9 56 11 21 29 0 21 9 60 8 64 0 34 41 8 15 9 8 13 62 9 7* 47 71 30 9* 60 51 8 70 7 21 13 49 9 9* 9* 8 37 29 7 8 0 49 9 51 0 59 7

Musical score for measures 358-450. The score is written for piano in a two-staff system (treble and bass clefs). The key signature has one flat (B-flat major or D minor). The music features a complex rhythmic pattern with many sixteenth and thirty-second notes. Dynamic markings include *f*, *ff*, and *mf*. The piece concludes with a fermata over the final notes.

31 7 32 8 16 0 9 63 18 59 50 24 45 9 45 53 46 9 0 8 30 26 42 52 23 0 8 25 33 44 68 50 35 26 19 31 18 8 17 10 10 0* 31 37 8 38 7 52 8* 65 8 7 53 32 0 8 38 14 20 61 71 7* 66 9 14

Musical score for measures 365-450. The score is written for piano in a two-staff system. The key signature has one flat. The music continues with intricate rhythmic patterns. Dynamic markings include *mp*, *p*, *pp*, and *ppp*. The piece concludes with a fermata over the final notes.

poco rit.

[♩ = 72]

7 30 35 9 8 25 34 9 0 42 8 7 55 46 8 7 31 15 9 56 28 63 8* 23 53 7 8 7 59 37 51 9 57 7 8 18 57 7 8 0 53 21 71 22 68 0 66 13 0* 19 27 8 7 66 11 19 59 0 9 21 64 20 19 8

Musical score for measures 372-450. The score is written for piano in a two-staff system. The key signature has one flat. The music features a complex rhythmic pattern with many sixteenth and thirty-second notes. Dynamic markings include *mp*, *p*, *pp*, and *ppp*. The piece concludes with a fermata over the final notes.

Note: In Cycle 7 there will never be a no.1, 2, 3, 4, 5, 6 or 7 (unless they are affected by the 10/11 anomaly), as they will always be part of a double-digit. The amount of no.8s will also be reduced by 30%. This dilutes the amount of notes in the very lowest register of the span, making the resuts sound more balanced in terms of timbre and also evolves naturally within the system as the span increases.

Note: The barline cancels all accidentals and any accidentals only refer to that specific register. Whenever there is a cross-staff beamed note, no rests are written in either stove.

Cycle Seven (the seventh of seven): In leaps and bounds - a mission impossible ...

M ♩ = 132 Cycle 7: Seven octave (0 - 83) C1 - B7 (only transposable down a minor third): No reiterations (suspensions are marked with an asterisk) ...

14 15 9 26 53 58 9 79 32 38 46 26 43 38 32 79 50 28 8 41 9 71 69 39 9 37 51 0 58 20 9 74 9 44 59 23 0 78 16 40 62 8 62 0 8 9* 8 62 80 34 82 53 42 11 70 67 9 82 14 80 8 65 13 28

mp *mf*

[Note: E major]

23 0 66 47 0 9 38 44 60 9 55 0 58 22 31 72 53 59 40 81 28 48 11 17 45 0 28 41 0 27 0 19 38 52 11 0 55 59 64 46 22 9 48 9 54 9 30 38 19 64 42 8 81 0 9 75 66 59 33 44 61 28 47

mp

56 48 23 37 8 67 83 16 52 71 20 19 0 9 14 56 48 56 69 23 46 0 34 8 61 0 45 43 26 64 82 13 39 36 0 72 60 24 9 14 12 73 72 45 8 70 0 66 0 63 15 58 81 74 8 81 52 0 9 20 9 62 82 9

N ... the beginning of the end ...

49 58 53 71 0 50 79 22 79 68 9 25 8 9 23 54 20 19 9 56 11 21 29 0 21 9 60 8 64 0 34 41 81 59 81 36 29 77 47 71 30 9* 60 51 8 70 72 11 34 9* 9 9 9* 83 72 9 78 0 49 9 51 0 59 73

Musical score for measures 421-427. The score is written for piano in G major. It features a complex melodic line in the right hand with many accidentals and a more rhythmic bass line. Dynamics include *mf* and *f*. There are several slurs and accents throughout the passage.

17 32 81 60 9 63 18 59 50 24 45 9 45 53 46 9 0 83 0 26 42 52 23 0 82 53 34 46 8 50 35 26 19 31 18 81 71 0 10 0* 31 37 83 8 75 28 8 65 8 75 33 20 83 81 42 0 61 71 77 66 9 14

Musical score for measures 428-434. The score continues the melodic and rhythmic patterns from the previous system. Dynamics include *f* and *mf*. The piece concludes with a final cadence in the right hand.

poco rit.

[♩ = 76]

73 0 35 9 82 53 49 0 42 8 75 54 68 73 11 59 56 28 63 8 82 35 37 8 75 9 37 51 9 57 78 18 57 78 0 53 21 71 22 68 0 66 13 0* 19 27 8 76 61 11 9 59 0 9 21 64 20 19 8

Musical score for measures 435-441. The score is marked *poco rit.* and features a gradual decrescendo. Dynamics include *mp*, *p*, *pp*, and *ppp*. The piece ends with a final chord in the right hand.

An Infinite Circle is a Straight Line

... a thousand sounds of pi ...

For solo piano

Analysis Score: Cycles 1 – 7

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2012/20

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