

**(In)Determinacy:**

**Incorporating Openness in Programmed Music and Performance**

Sara Wentworth

PhD in Digital Arts and Humanities

National University of Ireland, Cork

School of Music and Theatre - Department of Music

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Digital Arts and Humanities Head of Department: Professor Brendan Dooley

Supervisor: John Godfrey

# **PARANOIA**

extracted

full document:

<https://cora.ucc.ie/handle/10468/4043>

## Introduction

*Paranoia*<sup>1</sup> was created for percussionist Alex Petcu, as part of a composition workshop at the UCC School of Music. I felt personally on edge at the time, and I wished to use repetitive, irregular rhythms to portray a stressful uncertainty... to create a sense of tension and unease. The piece was later played again by Alex as part of *Quarter*, an event by Makeshift Ensemble on February 1st, 2014 in the Corcadorca Theatre Development Centre in the Triskel Arts Centre in Cork.

## Theory

The score for *Paranoia* was derived from the concept of a graphic score as musical notation, as well as from algorithmic visual programming.

The piece was initially inspired by Steve Reich's phasing techniques, in which two separate voices progress at separate speeds, and the challenges of notating irregular rhythms. When approaching the notation of such a phenomenon to be played by human performers on traditional instruments, Reich was faced with the issue of notating timings that didn't conform well with traditional notational standards. In *Piano Phase*,<sup>2</sup> for two pianos, his solution was to combine notation with written commands.

*Piano Phase* begins with both pianos playing the same one-measure, twelve 16th-note sequence. The notation is segmented: traditionally notated segments, each consisting of a twelve note measure, are joined by un-notated, loosely timed segments. In these un-notated segments, piano 1 is instructed to 'hold tempo 1,' while piano 2 is instructed to 'accelerate very slightly' over a number of measures.

Excerpt from *Piano Phase*

♩. = ca. 72

Repeat each bar approximately number of times written. / Jeder Takt soll approximativ wiederholt werden entsprechend der angegebenen Anzahl. / Répétez chaque mesure à peu près le nombre de fois indiqué.

The musical score consists of two staves. The first staff has three measures of music, each with a repeat sign and a multiplier: 1 (x4-8), 2 (x12-18), and 3 (x16-24). The second staff also has three measures, with multipliers (x4-16) and (tempo 1). Performance instructions include 'mf non legato', 'fade in', 'hold tempo 1', 'accel very slightly', and 'a. v. s.'. The notation includes right-hand (r.h.) and left-hand (l.h.) parts with specific rhythmic values.

Figure 1

When traditional notation resumes, the first note of the second piano's original twelve note cycle has phased to the second note of the measure, while the 12th note of the previous cycle becomes the first note of the new cycle. In this manner, the second piano incrementally accelerates, causing its twelve-note cycle to slide forward until it returns to its original placement in regards to the repeated, unchanging cycle of the first piano.

Pattern of *Piano Phase*

Piano 1	Piano 2	Piano 1	Piano 2	Piano 1	Piano 2
1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	12 1 2 3 4 5 6 7 8 9 10 11	1 2 3 4 5 6 7 8 9 10 11 12	9 10 11 12 1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12	8 9 10 11 12 1 2 3 4 5 6 7	1 2 3 4 5 6 7 8 9 10 11 12	7 8 9 10 11 12 1 2 3 4 5 6	1 2 3 4 5 6 7 8 9 10 11 12	6 7 8 9 10 11 12 1 2 3 4 5
1 2 3 4 5 6 7 8 9 10 11 12	5 6 7 8 9 10 11 12 1 2 3 4	1 2 3 4 5 6 7 8 9 10 11 12	4 5 6 7 8 9 10 11 12 1 2 3	1 2 3 4 5 6 7 8 9 10 11 12	3 4 5 6 7 8 9 10 11 12 1 2
1 2 3 4 5 6 7 8 9 10 11 12	2 3 4 5 6 7 8 9 10 11 12 1	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12		

figure 2

When invited to compose a percussion score, I decided to experiment with similarly sliding tempos. I did not pursue the phasing of musical phrases as Reich did, but instead pursued a more purely mechanical acceleration of tempo using only rhythms of three one-note 'voices,' more similar to Conlon Nancarrow's *Canon X*.<sup>3</sup> Though *Canon X* was created for player piano, the score was written in standard notation, *sans* measures, with only a delineated segment marked to represent half a second. The notes on the upper stave gradually become more spaced apart, while the notes of the lower stave gradually become closer together.

Excerpt of first measures of *Canon X*

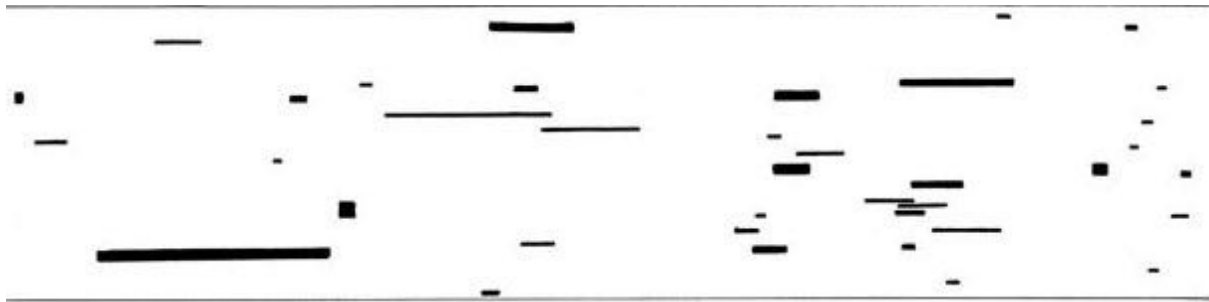
The image shows a handwritten musical score for the first measures of *Canon X*. At the top, there is a horizontal line with a double bar at the right end, labeled "= 120". To the right of this line is the number "(21)" and further right is a small "1.". Below the line, the instruction "All notes staccato" is written. The score consists of two main parts. The upper part is a single bass clef staff containing six notes that are progressively more widely spaced from left to right. The lower part is a grand staff (treble and bass clefs) containing a complex, dense sequence of notes that become increasingly compressed and overlapping from left to right. The notation is handwritten and includes various markings such as "PP" (pianissimo) and "1/2" (half note).

figure 3

In *Paranoia*, I wished to create a different notational language using imagery that would illustrate this method without the need of words. To do this, I used the idea of Earle Brown's composition *4 Systems*,<sup>4</sup> written for David Tudor, in which each piano note is

notated in horizontal black lines, with the vertical position delineating the note's position on the keyboard, and the horizontal position, as in classical notation, delineating time.

Excerpt of *4 Systems*



*Figure 4.*

The score has a short note at the bottom, stating: “May be played in any sequence, either side up, at any tempo. The continuous lines from far left to far right define the outer limits of the keyboard. Thickness may indicate dynamics or clusters.”<sup>5</sup>

This form of notation allows the performer more room for interpretation than classical notation as the given notes are suggestive rather than explicit dictations. Therefore, tempo, dynamics, and even, to a point, what notes are played, are all determined by the pianist. In an endeavor as tricky as phasing tempos with oneself, I decided that this form of openness was ideal.

In creating the score, I decided that in my piece, there would only be three 'notes,' or percussive objects, in the piece. Each hit is represented by a dot, and each note is represented by a different color. The three notes are separated vertically according to pitch.

I chose to add dynamics in classical notation, as I felt that, in conjunction with the changing tempos, they would add a sense of ebb and flow to the piece and give it a sense of urgency. I debated including these in the visual language of the score by altering the sizes of the dots, but I felt this would distort the visual harmony of the piece, which I feel is integral to maintaining precision of rhythm. Similar to Brown's piece, I added instructional text preceding the visual score.

## **Technical Devices**

To implement an accurate incremental decrease in the relative locations of beats, I turned to Processing,<sup>6</sup> an open-source creative coding environment created to facilitate algorithmic image and music. I wrote a short program to recursively draw dots, adding an incremental amount of distance between each dot as they are drawn. Using the Processing.pdf library, I exported the results to Portable Document Format (PDF), which is a vector format easily handled by Adobe Illustrator.

Once I had imported the document to Illustrator, I re-arranged the dots in various ways to compose the score. I changed the colors, reversed lines, and re-aligned segments to create a piece with flow and forward momentum.

## **Summary**

Alex Petcu is an extremely talented percussionist, and he added to the piece more than I could ever have hoped. His choice of instruments included three woodblocks, which he played with two hard mallets, one in each hand. His version ended up being about four

minutes. To accomplish the independently accelerating voices, he needed more beats than notated to make smooth transitions between standard rhythmic relationships, mentally envisioning divisions of a notational beat into sextuplets, octuplets, and so on, until reaching the desired speed with both rhythms.

After the initial workshop with the piece, Alex requested another version with larger dots, for a performance as part of *Quarter*. In this new version, I adjusted my parameters in the Processing sketch, and repeated the previous re-arrangement process. I excluded the last two lines of instruction, so that whoever might play the piece could decide for themselves what best suits their preferences and abilities. Thus, instrumentation and tempo are left open to the performer.

Alex's interpretation of the piece had several strengths. One strength lay in the choice of woodblocks for instrumentation. The sharp, clear strikes created interesting echoes in the room. In the quicker, louder segments, from my vantage point in the room during the initial workshop, the ceiling seemed to rattle in harmony with the sound of the woodblocks. Though I was unable to attend the second performance of the piece, I was told it had a similar effect in the Corcadorca space.

Another unpremeditated strength lies in the physicality of the performance of the piece. The struggle to phase smoothly between two hands was apparent both in the music, and in his expression and body language while playing. This added an extra layer of tension to a piece already meant to portray an anxious state.



## **Conclusion**

*Paranoia* was my first attempt at composing a generative score for a human performer. Though this piece utilized no chance processes in the creation of the score, the visual nature of the score as well as the level of difficulty left it open for interpretation by the preferences and abilities of the performer. Having had a good experience with it, this sense of openness and unreliability intrigued me, and heavily influenced my following works.

Notes

1. On the accompanying USB drive, see Paranoia/audio/AlexPetcu\_Paranoia\_UCC.wav for UCC recording, Paranoia/score/Paranoia\_v1.pdf for the score used in the UCC workshop, and Paranoia/score/Paranoia\_v2.pdf for the score used in the *Quarter* show.

2. See Reich.

3. See Nancarrow.

4. See Earle Brown.

5. See Earle Brown.

6. See Ben Fry.