Final Project Description

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Firstly, I chose to use Cage's square root method to structure the piece. This method involves using the square of a chosen number to determine the length of the piece and its sections. For my piece, I chose the number 9, which has a square of 81, meaning that the piece will be 81 measures long. To divide the overall structure of the piece into smaller sections, I divided it into a 4 + 4 + 1 structure, which adds up to 9, the same number as the square root of 81. In other words, I had nine sections in total, each containing nine measures. Then, I further divided the whole piece into three parts - the first part includes four sections containing 36 measures, the same as the second part, and the third part includes one section containing 9 measures. In each section, I divided them into subsections which are in the same 4 + 4 + 1 structure. Thus, the first subsection includes 4 measures, also the same as the second subsection, and then the last subsection includes 1 measure.

For the first four sections of my piece, I mainly used a scale created by sieves. In the second set of four sections, I used a different scale that was similar to the scale I used in the first part. I also increased the rhythm in the second part to create a sense of energy and momentum. In the final section of my piece, I used a completely different sequence of sounds generated with the help of 1/f noise method to distinguish it from the previous parts.

To create the scales for the first two sections of my piece, I use the Equal Temperament Tuning and the sieves method. The sieves method is a way of extracting a well-defined subset of elements from a continuum based on equivalence modulo relations. Sieves repeating at a certain interval can include only mod numbers that are divisors of the interval limit. The sieve pattern will repeat at the interval defined by the LCM (Lowest Common Multiple) of the moduli involved. To create a palindrome (symmetrical sequence) the residual classes of the mods should be symmetrical, i.e. pairs need to add up to the mod number.

Since I want to create a scale that does not repeat at the octave, I use the combinations of mods 2 and 5, to create a non-repeating scale that will repeat after 10 half steps. To make the scale symmetrical, I choose 0 as the residual classes for the mods 2 and 5. Therefore, I got a set of numbers 0, 2, 4, 5, 6, 8, and 10, which indicates the scale C D E F F# Ab Bb. The LCM of the mods is 10, which means that the scale will repeat after 10 half steps, and since the residual classes are symmetrical, the resulting scale is also a palindrome. The interval of the scale is 2, 2, 1, 1, 2, 2, which further confirms that it is symmetrical. To extend the scale, I transpose it to Bb C D Eb E F# Ab. Additionally, I use the nonretrogradable rhythmic sieve to determine the attack points, which are simply on those pitches that appear in my scale.

For the second 4 subsections of my piece, I use the same sieves method and choose 5 and 3 as the modular numbers. To create another symmetrical scale that is not

repeating at an octave, I choose 2 and 3 as the residual class index of mod 5 and 0 as the residual class index of mod 3. The resulting scale is C D Eb F# G Ab A, and after transposition, I get another scale A B C Eb E F F#.

For the last section of my piece, I decided to use a 1/f noise strategy to generate two random sequences of melodies. This strategy involves generating a sequence of random numbers that follow a specific distribution pattern, which is known to produce natural-sounding variations in music. To make the piece more cohesive, I chose to use the notes from the previous scales that were introduced in the earlier sections as the basis for my sequences. For the first four measures of the last section, I created a 16-note melody using the following two steps:

1. I used the following sequence of random numbers:

0.068, 0.217, 0.121, 0.831, 0.405, 0.752, 0.294, 0.711, 0.988, 0.594, 0.190, 0.904, 0.266, 0.129, 0.862, 0.472

2. I mapped each number to a pitch in the previous scale based on which interval it falls into. To do this, I divided the range of possible numbers (0 to 1) into seven intervals, one for each note in the scale. I chose to use the following intervals:

0 to 0.142: C
0.142 to 0.285: D

0.285 to 0.357: Eb

0.357 to 0.571: F

0.571 to 0.714: G

0.714 to 0.857: A

0.857 to 1: Bb

For example, the first number in the sequence (0.068) falls into the first interval (0 to 0.142), so I mapped it to the pitch C. The second number (0.217) falls into the second interval (0.142 to 0.285), so I mapped it to the pitch D, and so on. This resulted in the following sequence of pitches: C, Eb, D, Bb, F, A, Eb, A, Bb, G, D, A, Eb, D, Bb, F. The resulting melody has a random and unpredictable quality due to the 1/f noise strategy used to generate it.

For the second four measures of the final section, I decided to use a different sequence of pitches using the same strategy, based on the second scale I created previously. Here's the process I generated the sequence of pitches:

1. I used the following sequence of random numbers:

0.537, 0.098, 0.672, 0.221, 0.904, 0.340, 0.789, 0.480, 0.956, 0.129, 0.573, 0.751, 0.902, 0.225, 0.385, 0.437

2. I mapped each number to a pitch in the previous scale based on which interval it falls

into:

0 to 0.142: C

0.142 to 0.285: D

0.285 to 0.428: E

0.428 to 0.571: F

0.571 to 0.714: F#

0.714 to 0.857: Ab

0.857 to 1: Bb

Here's the resulting sequence of pitches: F#, C, Ab, D, Bb, E, A, F, Bb, C, F#, Ab, Bb, D, E, E.

To add more details on my piece, I changed the rhythms of the sequence and scales in each sections slightly to make it more interesting. In addition, for the first part of the piece, which consists of the first 36 bars, I used the 1/f method to add a low sequence to make it sound less monotonous. I generated an 8-length sequence and mapped it to pitches in the first scale I created: F#, C, Ab, D, Bb, E, A, F.

Finally, I named my piece as "Dreamcore: Parallel Worlds" because I wanted to add a dreamy quality to the title, which could reflect the mood or atmosphere of my composition. The name "Dreamcore: Parallel Worlds" reflects the two main components of my composition: the dreamy quality suggested by the term "Dreamcore," and the two

main parallel scales suggested by the term “ Parallel”. The scales I created, {C D E F F# Ab Bb} and {C D Eb F# G Ab A}, are both based on the same root note of C, but they differ in several notes, which are like two similar world that exist side by side but never merge, creating a sense of dissonance and tension.