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**Course: Mathematics and arts**

**Project Title: Four Notes Canon**

**Download links:**

<https://drive.google.com/open?id=1gwmLbU9ODI4KHzz6C6s-GOaU3x13KOQL>

**Format: Wav music file**

**External Link: <https://soundcloud.com/kingsan-suen/four-notes-canon>**

### **Artist Statement:**

In Baroque period (early 18<sup>th</sup> century), musicians love to use specific rules to create music and songs. Those music are called Canon. J.S. Bach was one of the specialists in composing Canon. For people in the Baroque period, music has to be in specific form and shape. Nowadays, music emphasizes spiritual meaning. Rules are often considered as obstacles when composing music. Four Notes Canon attempts to ask the question: can meaning be generated when mathematical rules are pushed to an extreme?

Four Notes Canon is a song composed by literally four notes only. There are also specific rules that have been followed when I composed the song. This is an experiment to investigate what can be done when a song is strictly restricted by mathematical rules and symmetry. Is math an aid for us to compose music? Or it is a prohibition of creativity and pleasantness in music?

### **Explanation:**

In this artwork, I am trying to imitate the composing style of Canon and push it to an extreme. The word canon is a compositional technique that uses one melody as a leader with one or more imitative melody. They may be played in different voice and duration. Four Notes Canon attempts to respect the traditional rules with extended restrictions. Not only does it composed of only four notes, but these notes are arranged in specific order.

The real challenge in composing Four Notes Canon is to hide the boredom produced by the repeated pattern. Canon music itself is a combination of rules. Pattern and symmetry are the elements of Canon. The joy and pleasant feeling created by Canon music mainly come from it's repeated and symmetric pattern. Yet, when the same pattern is overused, boredom is created. Four Notes Canon is composed by pushing rules and symmetry to the extreme. Therefore, how to reduce the boredom is the question.

There are two attempts to tackle the problem. First of all, by playing different instruments with different styles and loudness can create different effects. Besides, the arrangement of notes is restricted to one instrument only. For example, when the harp is playing "A>C>D>E" in a very fast manner, the cello can play "E ..... > D ..... C ..... A ....." slowly in the background. In another word, there are still many combination and possibilities.

Secondly, the length of the song can be essential as well. It must not be too long. It should end before audiences start to sense the repetitiveness of the pattern. In Four notes Canon, there are five chapters and each chapter is less than two minutes. The whole song is around 5 minutes and 20 seconds.

To generate meaning, loudness and duration of notes can be crucial. When notes are played rapidly and loudly, an intense feeling is formed. In opposite, when notes are played slowly and quietly, a feeling of sadness is generated in Four Notes Canon. Besides, sound texture generated by different instruments created different music style. Choosing the right instruments can as well enhance the meaning of a song.

## Rules:

There are few rules when composing the songs.

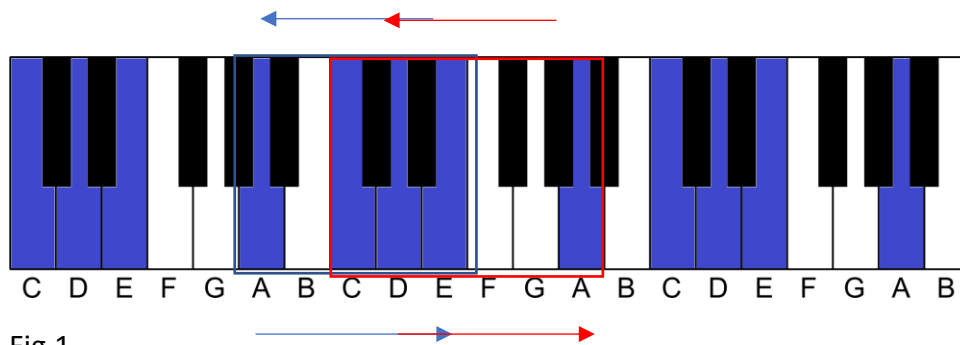


Fig.1

1. It is only composed of A, C, D, E in any octaves (Indicated as blue in fig.1)
2. Cheating notes "F" can be used as an introduction of a new chapter
  - Only once or none in each chapter
  - Can only be placed in the beginning of a chapter
3. A, C, D, E must be arranged according to the following four-note cluster (also see fig.1)
  - Only Possible combinations:
    - (A > C > D > E) Forward, (E > D > C > A) Backward
    - (C > D > E > A) Forward, (A > E > D > C) Backward

Correct example:

. (A > C' > D' > E') > ( E' > D' > C' > A ) > ( E' > D' > C' > A ) .....
4. Clusters can be played in any octaves but notes within the same cluster must be in the same octave or adjacent octave. It must follow the forward and backward pattern mentioned in point 3.
  - Example cluster that violates the rule: (A > C'' > D > E ''')
5. Duration of each note and each cluster is not restricted
6. All kind of instrument is allowed
7. More than one instrument is allowed to be played at the same time

## Technical Part:

Cubase and several virtual instruments have been used to compose the music. The whole piece is composed, arranged and played by me. A midi keyboard has been used in the process of composition.

### Virtual Instrument used:

Harp x2  
Cello x2  
Viola x2  
Violin x2  
Piano  
Flute  
Clarinet  
Trumpet  
Synthetic chior  
Bass Drum

### Screenshot of Cubase:

