A Composition Project: an Original 12-tone Fugue Modeled After J. S. Bach's BWV 847

Ilana Joyce Cady
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Honors Thesis

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An Original 12-tone Fugue Modeled after J.S. Bach’s BWV 847

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ABSTRACT

A Composition Project:
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A prominent feature among great composers is they often attempt to expand the boundaries of expectation and strive to discover fresh, new, and innovative styles. Throughout the musical periods, composers have established standard compositional forms; among these processes is the fugue. The specific goal of this project is to explore the compositional techniques of the 12-tone system developed by Arnold Schoenberg in 1921, and apply these techniques to fugal writing. In this process I am taking Bach’s fugue, BWV 847, and using it as a blueprint for my original 12-tone fugue. I follow the same overarching structural pattern of BWV 847—retaining the number of voices, related pitch selection and usage of the middle section, while submitting them to the paradigms of 12-tone serialism. I chose to employ techniques such as complex rhythmic patterns, pitch selection based on 20th century practices, and serial relationships that create the feeling of the traditional components of the fugue. This composition moves the fugue form in an unexpected and more progressive direction and attempts to give a meaningful definition to fugue writing with 12-tone principals.
INTRODUCTION

The fugue is one of the more complex musical forms developed in the Baroque period. Its rules are centered on tonal relationships. J.S. Bach is the most notable composer of this genre. Throughout the musical periods—Baroque, Classical, Romantic, and 20th century—composers continued to use the fugue while maintaining the basic rules established in the Baroque period. It was not until the 20th century when composers such as Dmitri Shostakovich and Paul Hindemith began to experiment with fugues of free tonality. Although they moved away from typical tonal relationships seen in Baroque music they retain tonal centers throughout their fugue compositions. A genre that truly negates all usage of tonality is the 12-tone system created by Arnold Schoenberg in 1921. It is a system of composition designed to ensure the absence of tonality.

For this project I chose to combine 12-tone principles with fugal writing. This composition combines the overarching form of a Baroque fugue as well as some stylistic writing choices with 12-tone pitch material; resulting in a new type of fugue that looks to other avenues besides tonal relationships to create meaningful definition.

DEFINITION OF TERMS

In order to understand my compositional process it is important to define terms such as fugue, tonality, and the 12-tone system. While I will not go into depth for each term, I will give a brief overview to provide better understanding of my composition.
The fugue was established as early as the 14th century. It comes from the Latin word “fuga and is related to fugere: ‘to flee’ and fugare: ‘to chase.’” 1 It is a piece that is designed to involve counterpoint, or canonic imitation between the voices. Each voice is independent of the other and could be played alone. The Baroque fugue can be defined as featuring “the independence and integrity of each [voice] until the last two bars, when chords are introduced to lend fullness and finality.” 2

The fugue has three main sections: first exposition, middle section, and final statement. The first exposition features the complete statement of the subject in each voice. 3 The subject is the first musical idea introduced in the fugue, as well as the basis for the entire composition. The opening statement of the subject is answered by the second voice a fifth higher. This sets up the relationship between the tonic key and the dominant key. The final statement of the theme in a three-voice fugue is again stated in the tonic key. The middle section allows the composer tonal ‘freedom.’ They are able to choose relative or related keys. Composers of the 20th century used the development section to choose any key no matter its relationship to the tonic. This section also gives freedom with regard to usage of the subject and countersubject and allows for the introduction of different techniques such as stretto, inverted subject, and false entry of the subject. 4 The final statement begins by stating once again the main subject in the tonic key.

2 ibid
3 This means that each voice will have a turn stating the fugue’s subject in succession, which usually but not always, takes place in the order of soprano, alto, bass. Although soprano, alto and bass are not referring to vocal parts these are the names used in general when discussing the separate voices, if more than three voices, tenor etc. will be used.
4 The countersubject is a figure that is repeated in another voice against the main subject every time the subject appears. Stretto is a compositional technique that features the overlapping statements of the main subject. This is seen in many fugues during the development section.
Tonality serves as the basis for music from the Baroque to early 20th century eras. It is built on a hierarchy of tones and triads that relate to one another. For instance in C major, the most important triad and or note is C (I), this is the tonic key, and home note. The next important is the dominant chord, G (V). Following those two chords in importance would be the pre-dominant F (IV). Each chord relates to the tonic in some way, an example would be the common archetypical chord pattern, I-IV-V-I. Beginning on a tonic chord the music moves to a predominant chord, which leads to the dominant, which then resolves back to the tonic. This basic pattern can be found in almost all popular music. These relationships define the compositional choices seen in many of the Baroque, Classical and Romantic fugues. The 20th-century fugues feature tonal centers but move away from the strict tonal relationships seen in the other fugues.

Arnold Schoenberg’s 12-tone system is a “method of composition in which a fixed permutation, or series, of elements is referential.” Negating tonality, 12-tone serialism moves to create equality among all 12 tones, including half steps. 12-tone compositions are built around a home row or prime row. This row is the selected order of 12 pitches chosen by the composer. After a note is played, the music cannot return to that note until the rest of the notes in the row have been played. In order to provide a wider selection of possible combinations of available pitch material in a 12-tone composition, Schoenberg created the matrix, which is a grid that contains all of the available pitch material for a specific composition. The matrix contains the where rules are less strict. Inverted subject would be flipping the intervals in the original subject to be reversed, or in the opposite direction.

5 In one system of analysis, roman numerals are used to label each chord in the common practice era (1600-1910).
four possible variations of the prime row, specifically the retrograde (R, the prime row backwards), the inversion (I, the prime row inverted), the retrograde inversion (RI, the inversion, backwards), and all eleven transpositions of P, I, R, and RI.  

COMPOSITIONAL PROCESS

The idea for this project was inspired from two courses I took: Counterpoint (MUCT425) and Romantic and 20th-Century Music History (MUHL448). In the courses, we studied Baroque counterpoint along with some Romantic and Neo-Classical fugues. The complexity that goes into writing a fugue inspired me to choose this specific form as the basis for my composition. Along with MUCT425, MUHL448 illuminated the methods of 12-tone serialism. Although many 12-tone pieces are full of surprising and unexpected sounds, the compositional process behind the scores is exciting. Composers put much thought behind the pitches, cells, and rows chosen to create their pieces.

I decided to start by looking at a fugue that I had played in previous years, Bach’s BWV 847. This fugue contains many compositional ‘textbook’ fugue elements; therefore I thought it was an appropriate place to start. I then analyzed the fugue and used its basic outline as a model for my original composition. I maintained the number of voices, usage of the middle section and some smaller elements such as sequencing, inversion of the subject and stretto.

My composition came in two major drafts. The first can be described as more of a translation of Bach’s fugue into 12-tone. The piece begins with the opening subject and is followed with a counter subject made up of a triplet figure. I kept this triplet figure running.

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7 See appendix 1
8 See appendix 2
9 See appendix 3
throughout most of the piece. I say that it is more of a translation because of the triplet motion, which is comparable to the running sixteenth motion in Bach’s fugue. When you compare tonal pieces versus some 12-tone pieces, the structure of lines is completely different. 12-tone pieces are often more angular and may use less continuous motion. I use a computer program called Finale to score my piece, by doing so however I eliminate the element of writing from a keyboard. This makes it easy to write rhythmically difficult passages and have the computer playback the piece perfectly. The problem I faced with this first draft came when I attempted playing it myself. When the draft was played on the computer it sounded completely different then when I attempted it myself.

I had liked this first draft until I attempted to play it. It then became clear that the texture was too dense. Simultaneous lines in Baroque, Classical and Romantic music often add up to a single harmony. When trying to translate this idea of a continuous line in 12-tone however, the element of a harmonic sum is gone because each note now stands on its own. This adds stress and thickness to the ear as well as the brain when trying to read and understand the piece. The lack of tonal function and expectation also taxes the brain and ear. I decided that I had to reevaluate how to write the piece in a way that the brain and ear could have moments of density and moments where all three voices were present but not overwhelming.

I had attempted to stick with the Baroque element of counterpoint and perpetual motion, which caused me to create this continuous line of triplets. It was clear after this first failed attempt that I would have to consider breaking away from this model of counterpoint because it did not work identically with 12-tone pitch material.
After this set back I began a new draft almost from scratch.\textsuperscript{10} I looked at other 12-tone pieces written by Schoenberg and Berg and realized that in order to alleviate the previous stress, I would have to move to a more angular feel in rhythm and pitch grouping; I dropped the perpetual motion triplets. In this second draft I added the idea of chords and occasional short rests. This allowed me to create unique rhythms that would play a succession of quick notes rather than spread them out allowing for the brain to have moments of dense material and others that were spread out.

Another challenge I faced was answering the question of why. This question came in many forms throughout the composition, the biggest being a question of why I chose the pitch material that I did. The difficulty with composing a tonal fugue lies in the subject. Most tonal melodies or subjects cannot be played simultaneously by inversions of the melody and or a countersubject melody and still make sense. In 12-tone, there is no requirement for tonal sense so any rows may be combined contrapuntally; leaving composers with the issue of where is the artistic or compositional challenge to compose with no natural boundaries. Shortly after starting the actual composition I created controls to assist me in the area of creating meaning. The first control comes during the exposition and the final statement. During these two sections each time all three voices are sounding at the same time their matrix rows need to add up to 7. I decided to consider prime (P) rows and inversion (I) rows, positive numbers, and retrograde (R) and retrograde inversion (RI) negative numbers. For example the first time the three voices sound together in measure 5, the rows used are R1, I8, and P0. This was a way to meaningfully select pitch material for these two sections of the piece. Another control that applies only to the exposition and final statement is a rhythmic control. Again when all three voices are playing

\textsuperscript{10} See appendix 4
simultaneously each must maintain one of the three rhythms that I introduce in the exposition. This creates congruency throughout the piece and the two rhythms that are not the main subject act as countersubjects.

To mirror the Bach fugue in my exposition, I open with my P0, which is my home row and main subject theme. I then answer using P7 which is a fifth above (measure 3). This is consistent with the tonic and dominant relationship, however since the piece is not in a specific key it does not have the same tonal affect. The third statement of the subject comes again in P0, which is exactly like the Bach when he states the theme for the last time returning to the tonic key (measure 5).

After the opening exposition I placed a four-measure episode that features sequencing of the first opening rhythmic figure of the subject (measures 7-10). This section is free from the sum-of-7 rule and it is also free from rhythmic boundaries.

Following the episode is the development section beginning in measure 11. Like Baroque fugues, the development section serves as an area with greater compositional freedom. To follow this example I allow myself to use any sum of rows and any rhythmic pattern. In this particular section I decided to change the mood of the piece as well. I slow the tempo down quite a bit and add pedaling. By holding down the pedal over most of this development section it creates a muddy, but ethereal feel. The tempo is not strict and works well with the large range in between voices. I employ stretto in the first few bars using inverted subjects (measure 11-12). I then explore the idea of combinatoriality.\(^\text{11}\) I chose to use this feature in my development section

\(^{11}\) Combinatoriality is “a technique whereby a collection of pitch classes can be combined with a transformation of itself to form an aggregate of all 12 pitch classes.” The first hexachord and the last hexachord will have the same pitch material as a related row pair.
(measures 15-17). I highlight this by adding an eighth note rhythmic pattern that creates a continuation between the rows, connecting the repetition of pitches through the same rhythmic figure one right after the other. Another stylistic addition to the piece is a measure in the middle of the ethereal section that returns to the opening vigor and feel (measure 14). This one measure consists of sixteenth notes in the left hand with angular chords in the right. The rhythmic drive from the left hand carries the bolder feeling from the beginning into the ethereal section. I then return to the ethereal feel for one measure and then move to an accelerando, which provides momentum for the final section (measure 15).

The final section begins with a statement of the subject in the right hand using the P7 (measure18). I chose this row because Bach also states the subject in the dominant before he moves to the final statement in tonic. The final statement of the theme in P0, is in the left hand and as it is played the right hand texture thins out and slows down (measure 20). This is consistent with many fugues that use the last two measures to create finality of the movement and key. I use chords and thinner texture to create the feeling of slowing down. I end on an A which is the last note of P0, and I hold over a G in the right hand which creates dissonance which is consistent with 12-tone theories—allowing dissonance to be free.

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An example of this would be rows P0 and RI5: P0—C Gb F Eb D B Ab G Db E Bb A and RI 5—A G Db E Bb A Gb Eb D C B F. As you can see both hexachords (bold and non-bolded) are comprised of the same pitches. This pattern of repetition can be extrapolated to other related row pairs.
REFLECTIONS

The process of composition is both exhilarating and challenging. There were many moments of frustration, discouragement and excitement. It was invigorating to try new things and to discover different elements about my prime row and to see the different combinations of pitch I could create from my matrix. The composition evolved along with my understanding of the piece and 12-tone genre. I believe I was able to successfully create a meaningful 12-tone fugue because of the controls I supplied for myself. It provided meaning for the selected pitch material. When listening to the piece, the subject can be clearly heard every time it is introduced, as well as recognizable areas of subject fragmentation and sequencing. Many 12-tone pieces are appreciated more for their compositional process versus the realization of notes; my goal was to create a piece that would fall under both categories. I believe I was able to accomplish this. Combining 12-tone principles and the fugue proved to be an exciting and rewarding challenge.
## Appendix 1 - Matrix for “A Three Voice Fugue”

**Twelve Tone Row - Matrix Calculator**

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Appendix 2- Form Analysis of Bach BWV 847

**FUGA II.**

Square box= Main Subject
Circle= Episode section, containing sequencing using fragments of the main subject

Opening Statement of Subject

Subject answer (V)

Third subject entry (ii)

Middle section begins

D.W. XIV.
Appendix 3 - First Draft

Score

Ilana Joyce Cady

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Appendix 4 - Final Compostion

A Three Voice Fugue

Spirited, Jovial

Ilana Joyce Cady

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