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Mr. Speice

Independent Study and Mentorship

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Research Assessment #7

Date: January 26, 2018

Subject: Science of Harmonies

MLA citation:

Wilkerson, Daniel Shawcross. "Harmony Explained: Progress Towards A Scientific Theory of Music."

*Harmony Explained: Progress Towards A Scientific Theory of Music*, 19 Feb. 2012,  
[arxiv.org/html/1202.4212v1](http://arxiv.org/html/1202.4212v1).

Assessment:

Harmonies are an element of music that instantly elevate the music to another level of enjoyability. These chords of notes embellish the melody and give different tunes and vocal pieces another quality. Personally, harmonies are some of my favorite things to hear in songs. Harmonies are more prominently heard in choral pieces as all parts are given the same amount of volume to be at, but something clever that can be noticed are the harmonies that accompany a singer's voice in today's pop music. Harmonies and their structures are not given much attention by the public, but many ideas go into creating these harmonial structures behind the scenes in the studio. For the reason that I want to be able to create my own subtle harmonies, it is essential to

understand more about harmonies and what makes them ring in one's ear without sounding cacophonous.

To begin, one must understand how sounds work. Learning this previously in AP Physics, sound waves are essentially different waves that can travel throughout space and water. These waves will only produce a sound once the waves hit a surface. In the human biology, it is our eardrums that allow us to hear these soundwaves and interpret their message. Harmonies function in a similar way, but the addition of overlapping sounds have a different effect. A piece of information given in the article that I could connect to what I have learned in choir is how harmonies are made up of a root note and its accompanying 3rd notes. A 3rd note is the 2nd note up played from the root note. This connects to my experience in sight-singing for choir in that the musical triad is made up of the solfege Do, Mi, and So. These notes in the spatial key are the 3rds of the root note (Do). If sung simultaneously, they create a major key harmony.

Much about harmonies factors into the frequency of the waves of the notes played. According to the article, in a chord, the root note is labeled as harmonic one. The second note of the chord has a frequency twice as fast as the root note and is labeled harmonic two. The third note in the chord is labeled as harmon three and has a frequency thrice as fast as that of the root note. This may be what causes the ringing that is heard when a harmony is sung or played. The traveling sound waves clash together and create a smooth and resonant sound.

As harmonies are often with the thirds of the root note, this information can be used to formulate harmonies in the future to embellish the main melody. By utilizing the standing waves of the main melody, each root note can have their own third note that accompanies them in the end product, or could be in the background as subtle decorations of a song. Harmonies can be

found within chords as well, and it would be interesting to see what kind of variations of the chord I could make with while keeping the root note the same. All-in-all this shows the versatility and plasticity of music as a whole. The better understanding of harmonic structures will allow to implement these structures into future music.