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Producing Music Using Negative Harmony

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ABSTRACT

This project uses Negative Harmony as a basis and reference point for producing original songs in the style of instrumental jazz and funk. Negative harmony is a loose term that describes a technique of reharmonization made popular by musician Jacob Collier. While negative harmony is best understood as a reharmonization technique, writing new songs and chord progressions that strive to replace common chord progressions with their negative harmony counterparts can also be an effective way to demonstrate negative harmony. Music can be made with unconventional sounding but harmonically viable chords that challenge both the musician and the listener to grow in the process.

INTRODUCTION

Music can have an incredible impact through many different ways including melodies, harmonies, and chords. One of the greatest mediums through which music impacts the listener is through harmony. Traditionally, the most common and probably one of the strongest harmonic progressions music has to offer involves the dominant to the tonic chord progression, which involves the chord based on the fifth degree (note) of a scale that leads to the chord based on the first degree of a scale. Often referred to as an authentic cadence, this progression can be heard often at the end of songs like Twinkle Twinkle Little Star or Happy Birthday. Another way to justify the importance of the fifth note in a scale is to consider the experiment done by Pythagoras. History dictates that he discovered intervals, or the distance between tones, by dividing a stretched string in simple whole-number ratios[1], which produces an octave and fifth for halves and thirds respectively (On a piano: octave - C to C above, contains 8 white keys; fifth - C to G, 5 white keys).

This phenomenon is related to the later discovered overtone series, which essentially produce the same tones produced by the divided string but within a single note. When a note is played, the pitch we hear is referred to as the fundamental tone[2]. However, there are also tones sounding above the fundamental pitch that are produced at certain frequencies in simple ratios based on the fundamental frequency, or the pitch that we hear. Sounds that do not have a pitch or tone produce non-harmonic overtones that are not in simple ratios. Furthermore, different instruments produce different tones or timbres (sound quality) because they naturally emphasize different overtones in varying degrees. This concept is similar to shades of color.

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[1] Rich, Alan. "Harmony." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., 9 May 2019, https://www.britannica.com/art/harmony-music.

[2] The Editors of Encyclopaedia Britannica. "Overtone." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., 24 Jan. 2018, https://www.britannica.com/science/overtone.

In any case, overtones have helped define the progression from the chord on G to the chord on C as the pillar of harmony. However, though the 5 to 1 harmonic progression is the most common, the theory of harmony has grown significantly throughout the eras of music. Especially through the late Romantic and 20th century periods of music, composers and musicians began exploring different ideas and combinations for harmonic progressions. My research will be focused on one theory in particular that seems quite different from traditional harmony.

Negative Harmony Defined

The goal of this project involves an exploration into what is known as negative harmony. Negative harmony was popularized by Jacob Collier who developed the idea from concepts that Ernst Levy discusses in his book, *Theory of Harmony.* Modern musicians such as Jacob Collier, Herbie Hancock, Cory Henry, etc. often use negative harmony in the context of jazz improvisation. Essentially, negative harmony is part of a collection of ideas articulated by Levy that describes the polarities of notes and chords. Jacob Collier describes it as any key or chord in any key center having a polar opposite, both of which have equal gravity towards the next chord in a harmonic progression[3]. Just as two objects of equal mass experience the same force of gravity by being equidistant from a third object, 'negative chords', though seemingly dissonant and non-traditional by nature, have equal viability as their counterparts. From the perspective of a western classical musician, negative harmony can allow more dissonant chords to function the same way as common chord progressions.

As a result, negative harmony can often be used as a reharmonization technique to creatively make common chord progressions sound different or more interesting. The chromatic

[3]Collier, Jacob. "Interview: Jacob Collier (Part 1)". Interview by June Lee. *YouTube*, 14 April 2017, https://www.youtube.com/watch?v=DnBr070vcNE&t=107s

movements that negative harmony introduces can often be found in jazz. According to Jacob Collier, Levy wrote about negative harmony-like transformation from a more classical mindset, given the fact that jazz harmony[4] at the time had not been largely documented. Thus, the concepts between negative harmony and jazz may seem similar because they explore related topics that are analyzed from different perspectives.

METHODOLOGY

The final product of this project involved an album of 6 original songs that were composed and recorded using a variety of music producing equipment. The songs were meant to display an understanding of negative harmony by writing instrumental songs with chord progressions based on the concept. The structure of the songs was similar to a simple jazz song, which includes a short chord progression with a melody that repeats with sections of improvisation. The instrumentation of each song varied but was largely based on the piano and synthesizers. Since the concept of negative harmony overlaps greatly with jazz, the genre of the songs were close to that category. In terms of genre, I looked to the music of Jacob Collier as well as an artist named Anomalie for inspiration. Both have written and produced songs that use a variety of harmonic techniques ranging from jazz to altered tuning to negative harmony, so I naturally hoped to emulate their style of music for this project.

To write the chord progressions, I used the Index chart in Figure 1 to create and check the validity of the negative harmony inversions.

[4]Ibid

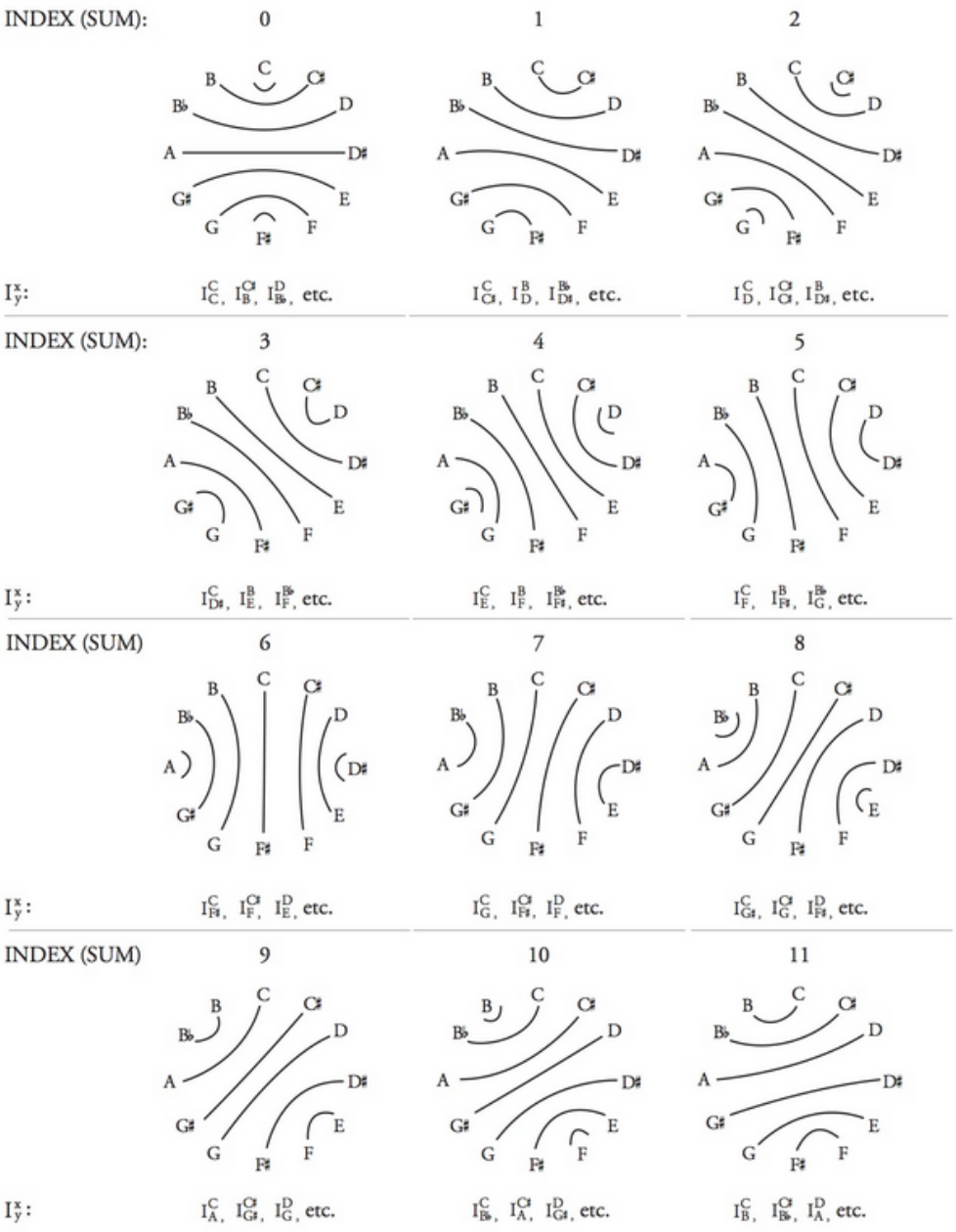

Figure 1 - Inversion chart for Negative Harmony equivalent chords [5]

I essentially wrote the chord progressions in one of two ways. The first involved playing a normal chord progression without any negative harmony and using the inversion chart to reharmonize certain chords with the negative harmony equivalent. For example, in the key of C

[5] Straus, Joseph N. Introduction to Post-Tonal Theory: 4th Edition, W.W. Norton, 2016, pp. 61.
York/London 2016

major, the key center will be defined by C to G, making the index used #7, where the C and G are connected by a line. A common progression used to get to C is D7 - G7 - C (a simple 2-5-1). Beginning with G7, the notes included in the chord are G, B, D, and F. Using Index 7 from the Inversion chart (Figure 2), it can be seen that G is connected to and would be replaced by a C.

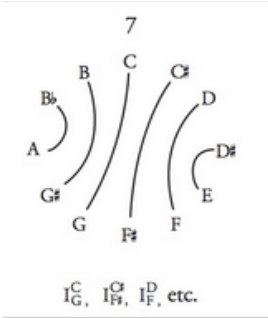

Figure 2 - Index 7 Inversion circle for C major/minor

Continuing with this process, B is connected to and would be replaced by a G#/Ab, D with an F, and F with a D. Rearranged, the inverted notes would make the chord Fm6. If the same is done with the D7 chord, D becomes F, F# becomes C#/Db, A becomes Bb, and C becomes G, which makes the chord Bbm6. Therefore, the progression D7 - G7 - C becomes Bbm6 - Fm6 - C. A pattern with the original progression is that the bass notes move by intervals of a fifth, while the negative harmony inversions move by intervals of a fourth. Using this concept, I was also able to write progressions based more on subdominant relationships, approaching harmonic progressions from the perspective of the circle of fourths instead of the circle of fifths (both of which are simply the opposite direction of the same circle).

Producing a song often includes several different phases including composing, recording, editing, mixing, and mastering. To record the music, I used a variety of instruments such as keyboard, guitar, bass, drums, etc. A large portion of the instruments were actually virtual instruments or virtual synthesizers within the DAWs (Digital Audio Workstation) that I played

through MIDI keyboards. Basically, I was able to play a wide range of instruments that I did not physically have because the electronic MIDI keyboards can act as triggers for the virtual instrument sounds. For example, I used a MIDI keyboard to play and record electronic drums, synthesizers, bells, guitars, piano, electric piano, etc. There are an immense amount of possibilities with MIDI keyboards, so long as one has the sound libraries downloaded onto their computer. I currently have sound libraries from Roland, Arturia, and others in addition to stock plugins through the DAWs. However, I will largely be using keyboard and synthesizer sounds from Spectrasonics Keyscape and Omnisphere.

After recording, there are stages of editing, mixing, and mastering. Quite often, editing simply involves putting together multiple takes of tracks to create a comprehensive, seamless final track for each instrument. Editing takes care of the timing and tuning of all the tracks, eliminating any mistakes in speed or pitch. After editing, I would move on to mixing, which involves adjusting the volume levels of all the instruments and audio tracks. In addition, I could EQ, or equalize the frequencies of the tracks. By adjusting the frequencies of each instrument and audio file, I would be able to be very specific in the sound I produced. Mixing also involves compression, reverb, and other effects to enhance the overall sound of the song. The final step involves mastering, which essentially finishes the song by adding effects that are similar to the mixing phase but are designed more for unifying the song and the sound as a whole. To accomplish these tasks, I used Ableton Live as my DAW of choice because it lent itself well to the type of music I hoped to create.

It should be noted, however, that the goal of this project was the composition of songs and not their full production. Mixing and mastering are done through the process of subjective hearing and are largely based on ‘what sounds good’. There is therefore no definable way to fully

determine whether a song is done or not and when is the uniformly accepted time to release them. Because I can always continue to mix and master the songs in the future, I focused on the composition and editing stages of the songs. As long as I finished the recording and editing of the songs, I believed that I had accomplished the goal of this project in writing songs based on negative harmony. Another way to define their completion was in the song's arrangement. As stated previously, the structure of the songs were meant to mimic jazz combo tunes, so if the song contained at least one melody, chord progression, and solo section, that would have essentially been the minimum requirements for the songs I was writing. Finally, because music as an art form is subjective, it was difficult to place a measurable line to know when I was done with the album and with each song, so I attempted to use my best judgement along with the thoughts of others who heard the songs when determining their completion.

RESULTS

Compositions

The compositions sounded better than I had expected, and I was surprised to have people enjoy hearing them and be interested in the theory behind the chords. Writing the chord progressions was a fairly quick and easy process, as I would often sit at a piano for about 30 minutes to an hour and be able to come up with a new progression without too much of a problem. When I did get stuck, I would keep a raw recording with my phone and let it sit for some time before coming back to it with a fresh mind to finish the progression. Expanding the progressions to a full song, however, took longer than expected, because I would often know the chords to play and the melody that goes along with it, but I was often unsure of how to build the song as a whole and have it develop from a beginning to an end. The more I worked on the songs, however, and added instruments and melodies and solos, the easier the process became.

Throughout many of the songs, there seemed to be a pattern of descending chords, where the progressions always felt as though they were falling. I would usually use a negative chord in a descending motion, where the next chord would be separated by a fourth below. For example, I would use progressions like Fm6 to C or Cm6 to G and have the bass line fall from F to C or C to G. This was an interesting development because, from my perspective as a musician, it contrasted the rising motion and brighter sounds of authentic cadences that use chords separated by fifths, such as G7 to C. Subjective as this observation might be, I liked to think of my songs having a darker, more minor, or perhaps an even warmer sound to them because of the descending negative chords.

Recordings

The songs as previously mentioned were recorded through Ableton Live. Although they are not completely done in terms of mixing and mastering, the demos, or unfinished versions of the full song, were uploaded to Soundcloud as .wav files. I plan to fully mix and master the songs in the future and reupload them to be available for playback. The link is included below:
Soundcloud link: https://soundcloud.com/user-754600674-172558534/sets/first-steps

ANALYSIS

Song Notes

Brazil (See Ex. 1 in Appendix)

Brazil was named due to its similarity to another popular jazz/latin funk song called *Spain* by Chick Corea. In *Spain*, there is a basic verse and chorus section with a set melody that is iconically characterized by the sound of the electric piano and flute. There is also a soli section with the entire band playing in unison a line that is fast and syncopated. After these sections are played, the musicians take turns soloing over the main chord progression until the melodies and

unison sections come back in the end. I have always loved that song and wanted to write something similar, but with my own style and chord progression, specifically with negative harmony in mind. The specific country of Brazil comes from a friend, Lucas Aguiar, who is Brazillian himself and plays electric guitar on this track. Along with some other fellow musicians, I had a collaboration with Lucas in mind as I was making and naming this song, hence the title ‘Brazil’.

Brazil finds complexity not in the arrangement, but mostly in the time signatures and tempo. The chord progression is actually quite simple, using only 5 chords in this order:

Am - Gm6 - D6/F# - Fm6 - Dm6

Though the number of chords is not difficult, the theory is not as explicitly connected. The key of this piece is based in A minor, but not all of the negative harmony substitutes come from the same index. The last chord before the progression loops back to the Am is a Dm6, which is based on index 1 of the inversion charts [Figure 3].

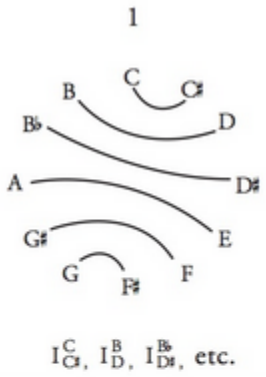

Figure 3 - Index 1 for A minor

The Dm6 is the negative harmony substitute for E7, where the E translates to A, the G# translates to F, the B translates to D, and the D translates to B. The chord before that is a somewhat out of place reference to the relative major of A minor, which is C major. The Fm6 is actually based on index 7 [Figure 4].

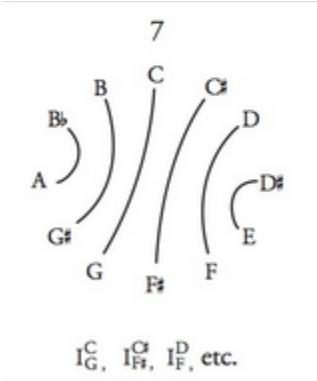

Figure 4 - Index 7 for C major

Based on index 7, Fm6 is the negative harmony substitute for G7, where G translates to C, B translates to G#/Ab, D translates to F, and F translates to D. The Fm6 essentially acts as a passing chord that pays homage to the relative major of the key center, which is also the major III; the next chord is a IVm6. Essentially, the Fm6 leads to a ghosted III (C Maj) chord that steps back up to the IVm6, the Dm6. This form of harmonization is similar to secondary dominants, where a chord outside of the original key center is justified by leading to a chord within the key center. The outside chord, however, uses the notes and harmonic movements in the key of the chord to which it is leading, not the original key center. In this case, I have replaced the secondary dominant chord with its negative harmony equivalent.

Finally, the Gm6 is based on yet another index, index 11 [Figure 3].

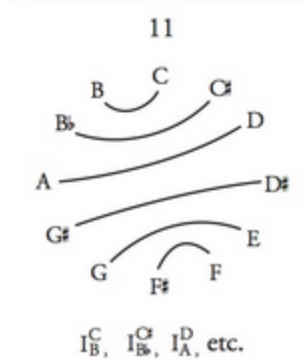

Figure 3 - Index 11 for D Major.

The Gm6 is a negative harmony substitute for A7, where the A translates to a D, the C# translates to a Bb, the E translates to a G, and the G translates to an E. The Gm6 essentially acts as a passing chord to lead to the DMaj.

The tempo of the song is set at 210 bpm with a fast swing. The chords are more or less spread out and do not move too quickly, but playing them at that tempo is what makes the song itself difficult to perform. Furthermore, the time signature for the main chorus and melody is in 5/4, making the downbeat sometimes hard to find with an extra beat. A 5/4 beat is often split into 2 and 3 beats or 3 and 2 beats to make it easier to 'feel'. The tempo and syncopations of this particular piece, however, make it hard to group the measures into any combination of beats other than 5. In other words, there is clear way to count the measures except in a full 1-2-3-4-5. Combined with a fast tempo, *Brazil* proved more difficult than other songs when it came to recording an improvisation solo. However, the end result was that much more satisfying.

After the initial chorus melody and progression, the band vamps on octaves of A, building up to my own version of "Spain's" unison lick. During the band tutti section of *Brazil*, however, there are several stylistic and time choices I made to make the lick more interesting. Firstly, the unison section is played in straight 8th notes instead of the swing feel from the chorus

of the song. Additionally, the section begins in 4/4 for 3 measures, switches to 5/4 for two measures, 6/4 for one measure, and 3/4 for one more measure. This repeats twice, and then goes back to the original chord progression with a swing feel. All of the instruments in the band proceed to take a turn soloing over the progression, even the bass and drums, before returning to the unison section to end the song. In a true live performance, any of these sections could *theoretically be repeated for however many solos or choruses are needed. In any case, this piece, due to its tempo, time signatures, and odd meter, is likely the most difficult piece out of the album, but certainly one of my favorites.

City Jam (See Ex. 2 in Appendix)

City Jam was the first song I composed for this project, and has a general sound that is similar to background or lo-fi (low-fidelity) music. I thought of a bustling city as the setting for the imagery of this song, but there is also certainly a calming mood that makes it more gentle and soft than a traffic-filled cityscape. To describe a picture of a city, I used samples of real sounds that one might encounter in that setting, including a jet landing, a subway train, ambient sounds of a city park (people talking, dogs barking), and the sound of a car door shutting. These samples along with a fairly simple beat provide a backdrop for a smooth piano melody and chord progression that finds its home in the simplicity of C major (no sharps or flats).

The chord progression walks through various negative harmony chords, many of which serve as alternate secondary dominants that lead to the next chord. After establishing the key with a Cmaj7 chord, I went to Dm6, which is the negative harmony equivalent of E7 in the key of Am [Figure 4]. E7 contains the notes E, G#, B, and D, which, based on the inversion circle [Figure 4], translate to A, F, D, and B respectively. Rearranged, those notes spell D-F-A-B, or a

D minor chord with an added 6. E7 is the dominant seventh chord for Am, which consequently allows me to replace it with Dm6 to lead to Am, the next chord in the progression.

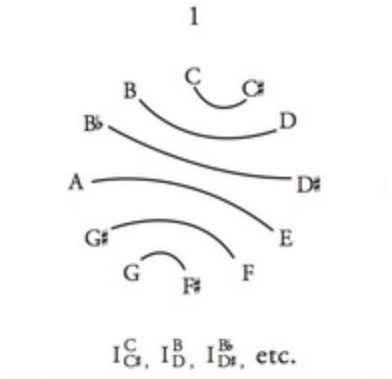

Figure 4 - Inversion circle for Am

In a similar fashion, I then went to Cm6, which is the negative harmony equivalent of D7, the dominant to Gm [Figure 5].

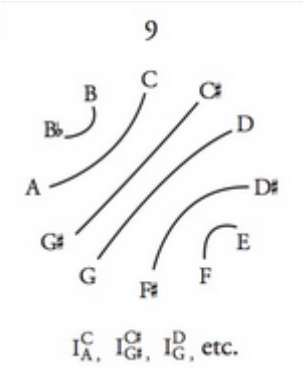

Figure 5 - Inversion circle for Gm

I then went to Abm6, which is the negative harmony equivalent of Bb7, the dominant to EbMaj [Figure 6].

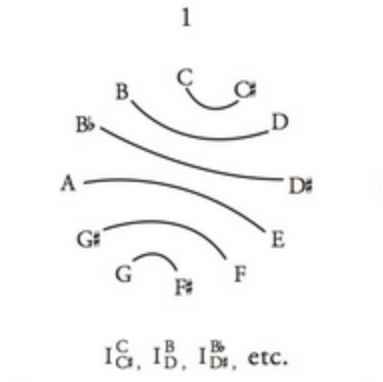

Figure 6 - Inversion Circle for Eb (D#)

Finally, the chord progression finds its way chromatically to Fm6, which is the negative harmony equivalent of G7, the dominant to C [Figure 7].

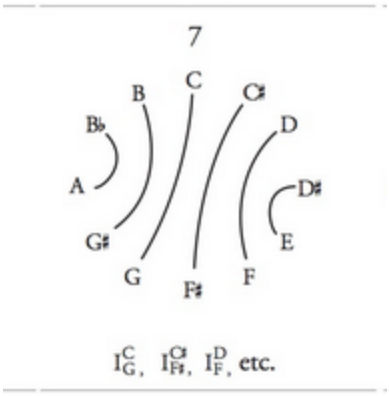

Figure 7 - Inversion Circle for C

Essentially, the chord progression is a string of negative harmony chord equivalents that eventually lead into Eb major for a measure or two and then back to C. The bridge on the other hand explores more into the key of Eb, alternating for a time between the Mediant of Eb, which is Gmin7, and the subdominant, AbMaj7. This falls back to Ebmaj7 and Fm6, which again is the negative harmony equivalent of the dominant seventh chord of C that leads back to the home key. At the end of the bridge, I step down from EbMaj7 to Dm7 and then to Db7b2. The Db

chord is essentially a tritone substitution, replacing a more common G7 that would bring the progression back to a CMaj7 to start the main chorus once again.

End of the Road (See Ex. 3 in Appendix)

This song began as a very simple progression that was written in 7/4 time. I began with the desire to write a progression with an odd time signature. I chose 7/4 because it offered a slower groove that seemed to skip a beat at the end. The unsatisfying feeling of only having 7 beats instead of 4 or 8 allowed me to write a more emotional chord progression in the key of Ab minor, a quite unusual key that shares the same key signature as its relative major, Cb Major. Both of these keys use all of the flats, which makes for an interesting challenge when it comes to actually playing this piece. Similar to Jacob Collier's views of a flat accidental, the flat keys, or the circle of 4ths having a darker tone, I have always liked to think of flats and flat keys as having a rounder, sometimes warmer, often sadder sound, as opposed to keys with sharps such as G or D. Especially in the keys of Ab or Db, the melodies and chord progressions always seemed to lend themselves to a darker sound. A way of thinking about this concept is understanding that the flat accidental mechanically brings the pitch of a note down a half-step. Personally, this helps to understand the flat keys as having a lower emotional template, or a darker tone. Combining this with the unsatisfactory absence of the 7/4 time signature, I came up with a simple chord progression that, in my opinion, holds deep emotional value, one that felt most like a bittersweet feeling of farewell. This led to the title of *End of the Road*.

The base chord progression went as follows: Abm - Eb - Gbm6 - F half-diminished - FbMaj7 - Dbm6. For a large portion of the song, this chord progression repeats and is varied by the instruments that join or the melodies and improvisations that are played. The negative

harmony substitutes can be found in the Gbm6 chord and the Dbm6 chord of the progression. Both are based on Index 11 of the inversion charts [Figure 8].

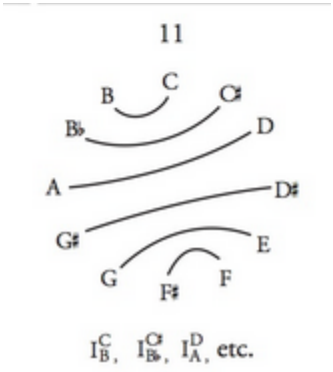

Figure 8 - Index 11, Inversion circle for G#/Ab minor (relative major: Cb major)

The Gbm6 is a negative replacement for Bb7, with Bb translating to C#/Db, D translating to A/Bbb, F translating to F#/Gb, and Ab/G# translating to D#/Eb. The translated chord results in Db, Bbb, Gb, and Eb, or Gbm6 with the Gb as the root. In a similar fashion, the Dbm6 is a negative replacement for Eb7, with Eb/D# translating to G#/Ab, G translating to E/Fb, Bb translating to C#/Db, and Db/C# translating to Bb. Together, the translated chord results in Ab, Fb, Db, and Bb, making Dbm6 with Db as the root. The Bb7 and Eb7 relate to the common 2-5-1 chord progression based in the key of Ab minor, so the negative replacements, like their quintal-based counterparts, lead back down to the Ab minor root chord. The Eb, F half-diminished, and FbMaj7 chords are passing chords to help outline the negatively translated 2-5-1 progression (Gbm6 - Dbm6 - Abm) and help the leading tones move more chromatically.

The original demo of this song was simply that chord progression played over an electric piano with a bass line and drum loop to accompany it. I held this loop for months before I finally realized where I wanted to take the song. There was a point where I had recently received a free plugin from Spitfire Audio[6]. They were giving away their BBC Symphony Orchestra plugin that

[6] https://www.spitfireaudio.com/shop/a-z/bbc-symphony-orchestra-discover/

included sections from the orchestra including strings, woodwinds, brass, and percussion. Using this plugin, I pursued the route of expanding the 4-bar loop I had made months before into an orchestral piece that resembled an intense movie soundtrack.

After an acoustic piano intro, I recorded several melodies and improvisation sections over the same chord progression using different keyboard sounds. The first solo instrument resembles a celeste, and outlines the first melody. After, I used a lead guitar-sounding keyboard to play a solo with intensifying energy, which was accompanied by continuously stacking layers of strings, pads, and other instruments.

This eventually leads to a bridge section where the overall timbre of song transitions into an orchestral movement. The chord progression changes to a classic rising progression that moves as follows:

Abm - Eb - Abm/Cb - FbMaj7 - Dbm6 - Abm - Eb - Abm/Cb - FbMaj7 - Eb/G

Like before the Dbm6 is a substitute for Eb7 in the key of Abm, and helps bring the loop back around to the Abm root in the first half of the loop. Then, to conclude the chord progression with a familiar chord that has an incredible amount of gravity towards the root, I used the Eb/G to lead everything back to Abm. Playing this chord progression is the acoustic piano, which outlines the basic chords. On top of this, a large portion of the orchestra is playing moving, driving lines that continuously move the energy forward. The lines between the woodwinds and strings weave within one another, and the french horns are giving an emotional melody to ride the energy of the accompaniment. Finally, this section concludes with an 808-like bass drop with these enormous orchestral hits and rising strings that bring back the original chord progression

where full stops are drawn. All parts of the orchestra are playing, the original bass, drum loop, and electric piano hold the foundation of the progression, and a lead guitar rides the melody and solo. This section of maximum intensity is the crux of this piece and the final moments of whatever battle this soundtrack-esque piece might accompany.

At the end of this section, however, everything drops abruptly to let a vibraphone-like keyboard pluck out the resonant and echoing chords of the same progression. This time, accompaniment is carried by the same bass line and a filtered version of the drum loop, and a short melody by the acoustic piano. The song ends with a single Abm chord that rings until the sound dies, thus concluding what seems to me most like an excerpt from an orchestral movie soundtrack. The emotional energy I set out to achieve using the odd time signature, negative harmony, and unconventional flat key was completed in a sense by the orchestral sounds from the Spitfire Audio BBC Symphony Orchestra plugin, all of which allowed me to create something so intense with only two chord progressions.

As a side note, the transcription of this piece does not include all of the orchestral parts or solos. For this project, the goal was to create chord progressions using negative harmony and make songs based on those modal interchanges. I sought to base the transcriptions of the pieces on jazz lead sheets, which often only employ a single line melody with outlining chords. Granted, this piece was not anywhere near a jazz chart with set improv sections, for example, but it did have some places where I would imagine a solo to exist. Thus, I outlined the basic chords and melodies and general sections of this piece but chose not to include every single violin or flute part in the transcription. Although I could transcribe the orchestral parts, doing so would naturally lead to also transcribing the solos and specific accompaniment parts, which is outside

of the scope of this project of focusing on the chord progressions, their functional viability and relationships, not the literal transcriptions of my compositions.

Because this piece was more orchestral, I also found myself writing more about the song as a whole rather than focusing on the theory and chord progressions. In a way, this resembled program notes and a song bio rather than a theory analysis, which explains the extended content about the instruments and specific sections.

Fat Cat Abbey (See Ex. 4 in Appendix)

As I was writing this song, I wanted to go for a more funky, dark sound where I could really play with the style and energy without making something too complicated. I settled with the key of F minor, whose tonic triad includes the notes F, Ab, and C. The imagery of cats and alleys are commonly used in jazz, often leading to the phrase 'Fat Cat Alley'. Instead of 'Alley', I opted for '*Fat Cat Abbey*', whose acronym would create a rearranged F minor chord when including the 'Ab' from 'Abbey'. The combination of a jazz 'cat' and religious 'abbey' not only spells out the key but also makes for an interesting juxtaposition that I like to believe reflects the goal of my project in using negative theory for common modal interchange.

I came up with a fairly simplistic chord progression that alternates between Fm7 and Bbm6, which is the negative harmony equivalent of C7, which is the dominant seventh chord in the key of F minor. Based on the inversion circle for the key of F [Figure 9], the dominant seventh chord based on C7, or C, E, G, and Bb, would translate to F, Db, Bb, and G respectively.

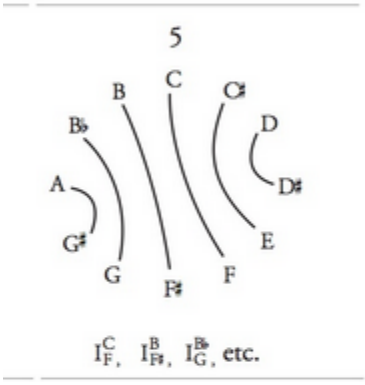

Figure 9 - Index 5, inversion circle for F

The melody plays around these two chords and leaves a space for a lick that the band plays in unison that follows the bass line to Bb: C-Eb-Bb. At the end of the chorus progression, there is a simple turnaround that steps from Db to C7 to lead back to the Fm7. After the melody, there is a synth lead that plays a solo over the same progression. Following the solo, there is a band soli section that repeats the chorus progression with some alternate chord progressions that lead back to Fm7. This section is largely led by the keys and organ and includes the following changes:

In measure 12, the chord progression changes to Em6-Bm6/D-F#7$^{b9\#11}$/C#-Fm7. The chords are built on a bass line that walks down E-D-C#-(C)-F. Em6 and Bm6 are negative harmony counterparts to G#7 and C#7 respectively, both of which lead to a F# dominant chord.

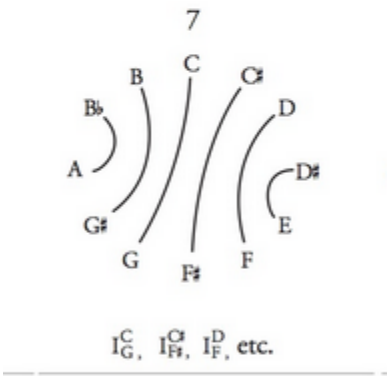

Figure 10 - inversion circle for F#

The F#7 chord is a tritone substitution of C7 that leads back to Fm7. I essentially used the ideology of secondary dominants to choose negative harmony counterparts of F# that would lead to itself that in turn makes a chromatic tritone substitution to Fm7, the main key.

Measures 20 and 23 do not relate to negative harmony and are better thought of as chromatic leading chords that step to Fm7. Over the chords in measure 23, there is another band run that somewhat outlines the chords and eventually passes over a whole tone scale to land on Ab for the following Fm7 chord.

After the band soli section, the chord progression changes as well as the instrumentation to reveal a much brighter sounding interlude. Measures 32-49 could be thought of as the bridge, and plays in the key of F major, the parallel major to the original key. The main progression that repeats twice steps up by whole steps in chords from Db to F. After, there is a chord progression that steps down from Bb to F through the chords Bbm6-F/A-AbMaj7-Gm7-F#7 (tritone substitution) - Fm7. Essentially, I intended the entire progression to lead to Fm7 from the Bbm6, which again is the negative harmony equivalent of C7. After we arrive at Fm7, we go back to jumping between Dbmaj7 and C7, until the music builds back into the beginning progression and melody with the full band coming back for the final choruses. The song finishes with an organ solo that is accompanied by the clavichord. Both slowly fade into silence.

Full Swing in a Summer Moon (See Ex. 5 in Appendix)

This song is one of the more jazz-like songs, in that it has a characteristic jazz combo instrumentation and multiple solo sections. Jazz combos often consist of a small rhythm section and one or more soloists. In the case of *Full Swing in a Summer Moon*, I used an acoustic piano, a string bass, drums, and a flute. In between the chorus and bridge sections of the song, the flute,

string bass, and piano take turns soloing over the chord progression, which in it of itself is quite simple as well. The title reflects my perspective on the jazz swing elements that influenced this song as well as a calm scene where I thought I might hear such a piece, but the imagery bears no more significant meaning than that.

As I mentioned before, the chord progression is somewhat simple, finding its center in the key of G, a rather bright key in my opinion because of the single F# in the key signature. After establishing the key with the first chord of GMaj7, the chords go as follows: GMaj7-Am7-Cm6-D7#11-Gmaj7. The use of negative harmony comes with the Cm6, which is the negative inversion for D7, the dominant seventh chord that leads to GMaj7. Based on the inversion circle for G major, the notes of D7 - D, F#, A, C - translate to G, Eb, C, and A respectively, which, when rearranged, form Cm6 [Figure 11].

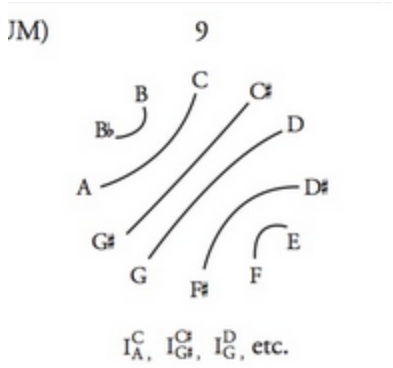

Figure 11 - Index 9, inversion circle of G

Although the Cm6 is supposed to lead to the GMaj7 as a negative equivalent to D7, I found it interesting to place it right before the D7#11, which, when combined with the Am7 in the measure before, creates a movement that rises up and away from the tonic chord. Jacob Collier mentions the gravity of harmonic progressions that allows both the dominant seventh chord and its negative harmony equivalent to lead to the tonic chord of a certain key. Like in

physics, gravity allows things to fall naturally towards a large body (namely the earth), and energy must be exerted within a system to create movement in the opposite direction. Along with the brightness of the G major key, I like to think of the movement of the bass line in “Full Swing” creating a situation where energy is needed to move away from Gmaj7 to the Cm6. The harmony seems to move even further away with the D7#11 before satisfyingly falling back down to GMaj7 again. For me, this song and chord progression was an interesting experiment in using negative harmony to create energy that moves away from the gravitational center of the tonic chord.

The bridge involves a pattern of switching between Am7 and Cm6, which again is the negative harmony equivalent of D7 in the key of G. In the middle, there is also a Dm6, which is the negative harmony equivalent of E7 in the key of A that eventually leads to the Am7 in the next measure. [Figure 12]

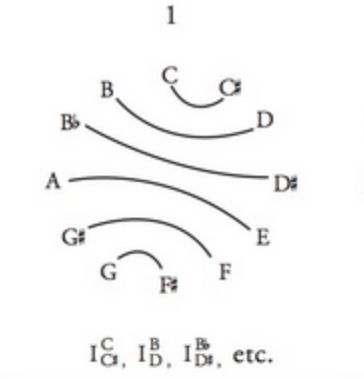

Figure 12 - Index 1, Inversion circle of A

In between, there is a Bb7add9, which serves as a tritone substitution passing chord to also draw the harmonic progression back to the Am7. Finally, the bridge concludes with a cascading chromatic series of quartal chords that lead back to the Gmaj7 of the chorus.

The Subway Sparrow (See Ex. 6 in Appendix)

The Subway Sparrow is certainly one of the simpler songs in terms of arrangement, and is quite similar to *Full Swing in a Summer Moon*. Both are most like the songs that a jazz combo might play; a simple melody over a chord progression that is repeated to allow for improvisation and solos. After finishing the song, I could visualize an urban setting, so I added a looped royalty-free track of the sounds of a subway train as an added texture of white noise in the background, hence the name *Subway Sparrow*. I also used a vibraphone-like instrument to play the main melody and solos, giving it a soft, fluttering vibe, hence the sparrow. The key is generally in a bright G major, and the time signature is in common time, 4/4. The novelty of The Subway Sparrow can be found most in the subtleties of the recorded tracks and the derivation of the chord progression.

The key of the song is not immediately apparent when analyzing the chord progression. The progression spans 8 measures, and goes as follows:

Amb6 - Emb6 - Bmb6 - Am7 -
Amb6 - Emb6 - Bmb6 - CMaj7 -
Amb6 - Emb6 - Bmb6 - Bb6 - Am7 - Amb6 -
Emb6 - Bmb6 - EbMaj7

The chord progression actually ends on an EbMaj7, a somewhat foreign key to G major. In fact, the tonic chord of GMaj is actually never played throughout the entire progression or throughout the song for that matter. The chords that are intended to drive the key center to G are the chords that end each line, namely the Am7 or CMaj7. The Am7 functions as the ii in the key

of G, and the CMaj7 functions as the IV. Furthermore, the Bb6 chord in the third line is simply a chromatic passing chord to get to the already established Amb6. The EbMaj7 could also serve as an interesting passing chord that would lead to a D7 chord, the V7 that would eventually fall to the I or G major chord under normal harmonic functions. However, the negative harmony functions are not quite as straightforward. In fact, the Amb6, Emb6, and Bmb6 are negative harmonies that come from a different inversion index that would normally be used for G major. Normally, negative harmonies in G would use Index 9 [Figure 13] as the inversion reference.

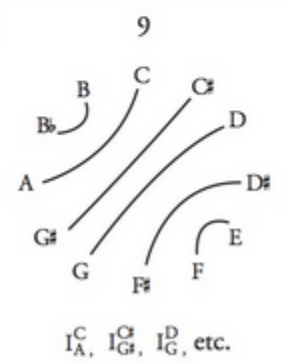

Figure 13 - Inversion chart for G major

Instead, the chords used in this song use Index 6 as the inversion reference [Figure 14].

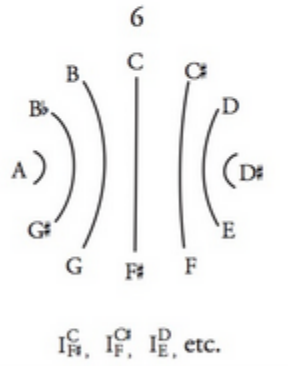

Figure 14 - Alternate inversion chart

Essentially, the core of the progression for this song uses a inversion index 6 with a basis of F#-C as the 'key center'. The chords Amb6, Emb6, and Bmb6 actually lead to F#-half-diminished, the vii chord that would normally lead to the tonic chord of G major. Based on index 6, Amb6 relates to DMaj7, Emb6 relates to GMaj7, and Bmb6 relates to CMaj7. Using the inversion chart as reference, DMaj7 inverts to Amb6 where D translates to E, F# translates to C, A translates to A, and C# translates to F. For GMaj7, G translates to B, B translates to G, D translates to E, and F# translates to C. For CMaj7, C translates to F#, E translates to D, G translates to B, and B translates to G. It is important to note that, by definition, this is not negative harmony. Normally, the inverted chords would have a M6 added to the minor triad; Am6 instead of Amb6, for example. However, the chords represented here do bear a fair amount of resemblance to negative harmony, which I believe was enough for me to use it in this song. In a similar fashion, the chords here take a normally 5th-based progression (D down to G down to C) and invert it to a 4th-based progression (A to E to B). Although the index used to make the inversions is unconventional, it still uses the chart consistently within itself, and simply uses major seventh chords instead of major-minor seventh chords.

After experimenting with these unconventional negative harmony chords and interchanging them with more accurate negative inversions like Am6 or Em6, I concluded that the more accurate inversions simply did not sound as good. I wrote the progression with melody in mind, and although G major seemed the best fit for the progression as a whole, I wanted to keep the chords as they were, unconventional as they may be. Although I began this project with the pursuit of negative harmony in mind, I did so with the intent to explore chords that are not often used in popular music and justify their use based on their harmonic viability. I wanted to explore alternate ways of viewing and hearing music, and be open to new things. In keeping with

that mindset, this song and its ‘unconventional’ chords could be a part of ‘breaking the tradition’ of ‘conventional negative harmony’ and further prove that rules in music are often not meant to be kept, but can serve guidelines for discovering new and beautiful things.

CONCLUSION

In conclusion, negative harmony is a concept in music theory that gives a classical perspective on jazz-like harmonies. Although it was derived from a music theorist that approached negative harmony from an extremely technical viewpoint, the concept itself did not seem too unfamiliar while I was composing my pieces. The application and sound of negative harmony was certainly an interesting tool to work with, and produced unique chord progressions that I would have otherwise not considered. The greatest insight negative harmony gave to me as a musician and composer was a way into justifying the more liberal use of harmonic progressions based on fourths. Many of the negative harmony inversions I used took dominant or secondary dominant chords and turned them into a form of minor subdominant chords. As Jacob Collier mentions in his interview, it is almost like looking at the circle of fifths in the opposite direction, making it a circle of fourths (Collier). I am also a proponent of the strong association of color and feeling with different keys, chords, or melodies[7], and by seeing negative harmony as a gateway to the circle of fourths, the concept almost acts as a pivot point to change the color of a piece to a darker, warmer, more minor but still beautiful sound. Regardless of my personal perspective on music and sound, I feel as though I was able to successfully write a number of songs using negative harmony that people have enjoyed listening to (from what I’ve been told), and I have expanded my understanding of music theory.

[7] For example, the sharps sound brighter and flats sound warmer, or darker. Therefore, the keys that use sharps like D or G are incredibly bright, while the keys of F or Bb have a darker, much warmer feeling to them.

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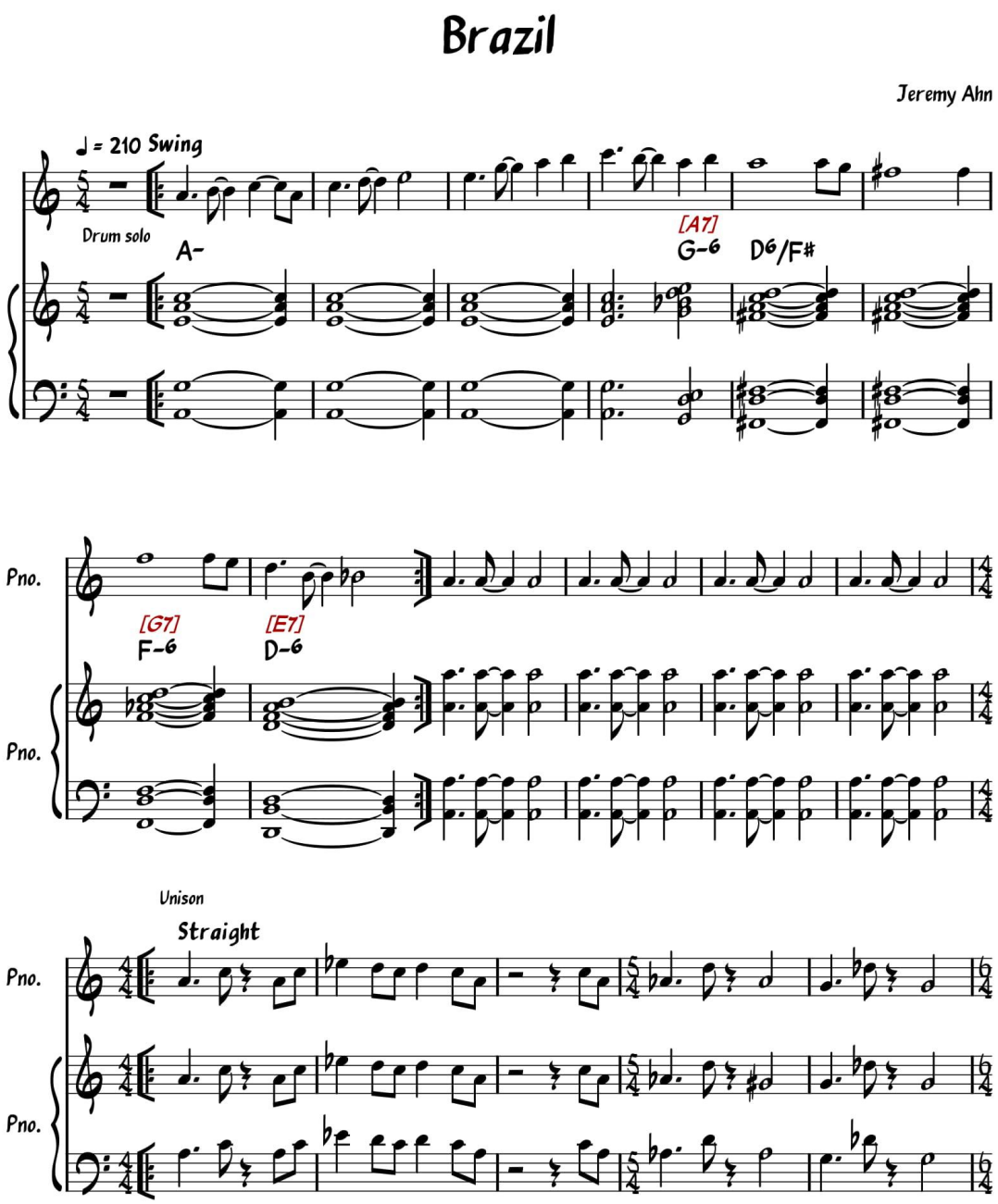
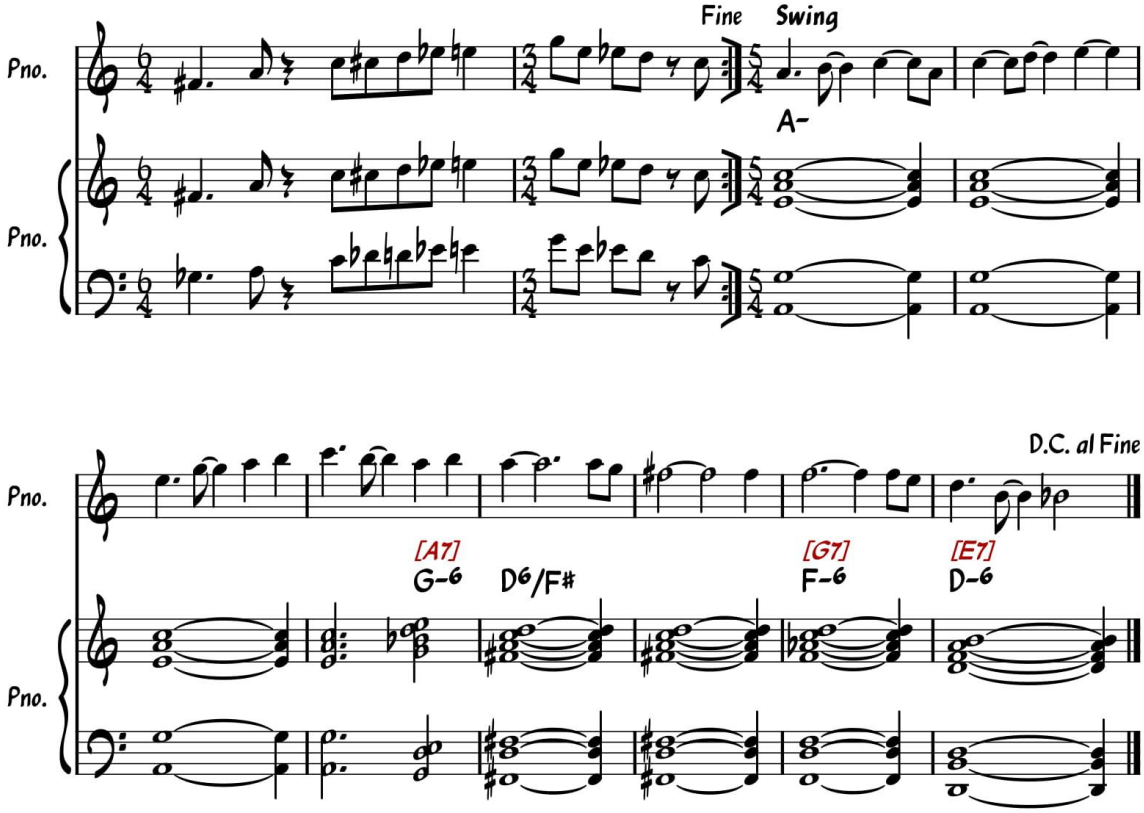
APPENDIX

Ex. 1: *Brazil*




Fine
Swing
A-
Pno.
Pno.
D.C. al Fine
Pno.
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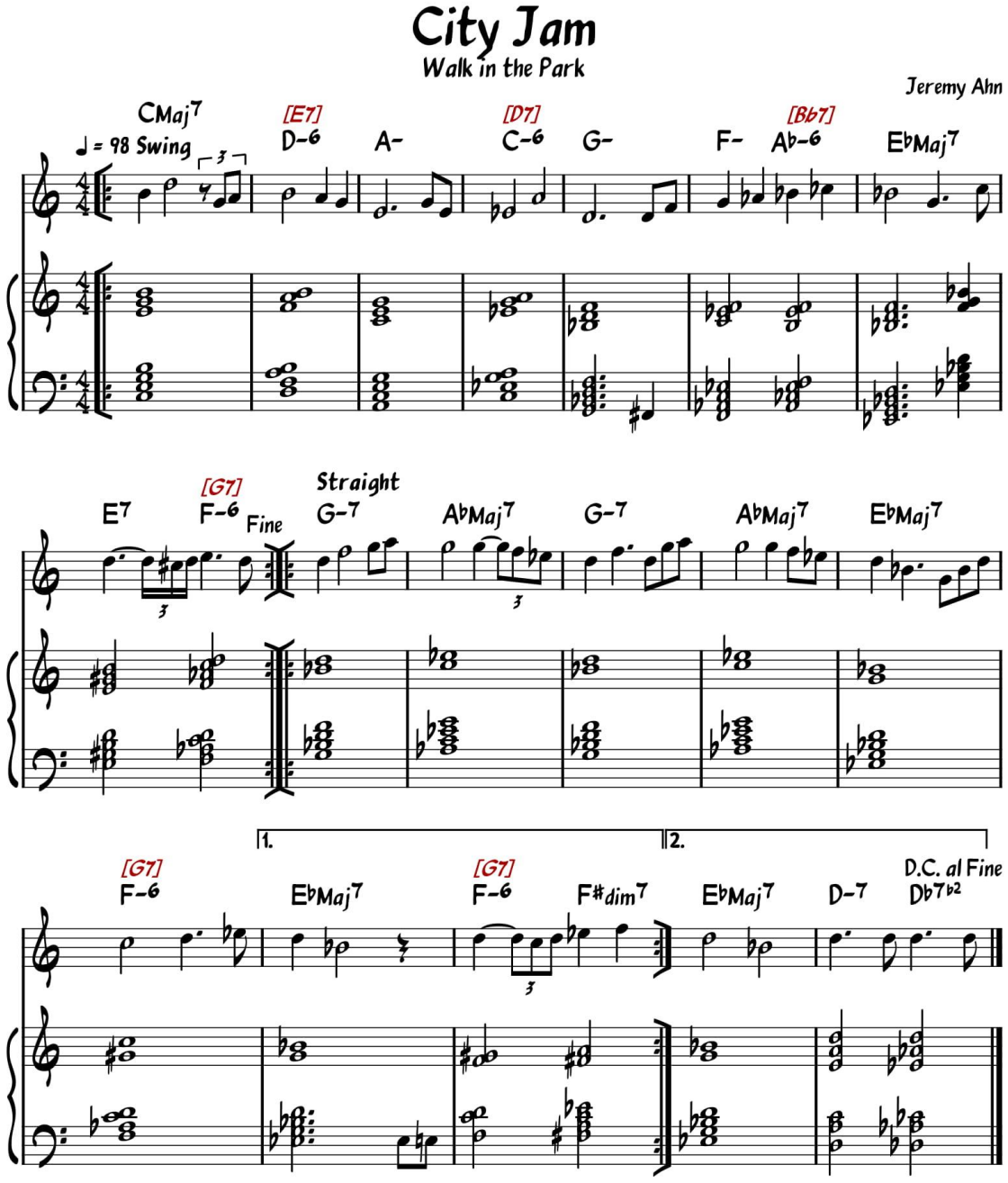
G-6
D6/F#
[G7]
F-6
[E7]
D-6
Pno.

Ex. 2: *City Jam*


City Jam
Walk in the Park
Jeremy Ahn
♩ = 98 Swing
CMaj7
[E7]
D-6
A-
[D7]
C-6
G-
F-
[Bb7]
Ab-6
EbMaj7
E7
[G7]
F-6
Fine
Straight
G-7
AbMaj7
G-7
AbMaj7
EbMaj7
1.
2.
[G7]
F-6
EbMaj7
[G7]
F-6
F#dim7
EbMaj7
D-7
D.C. al Fine
Db7b2

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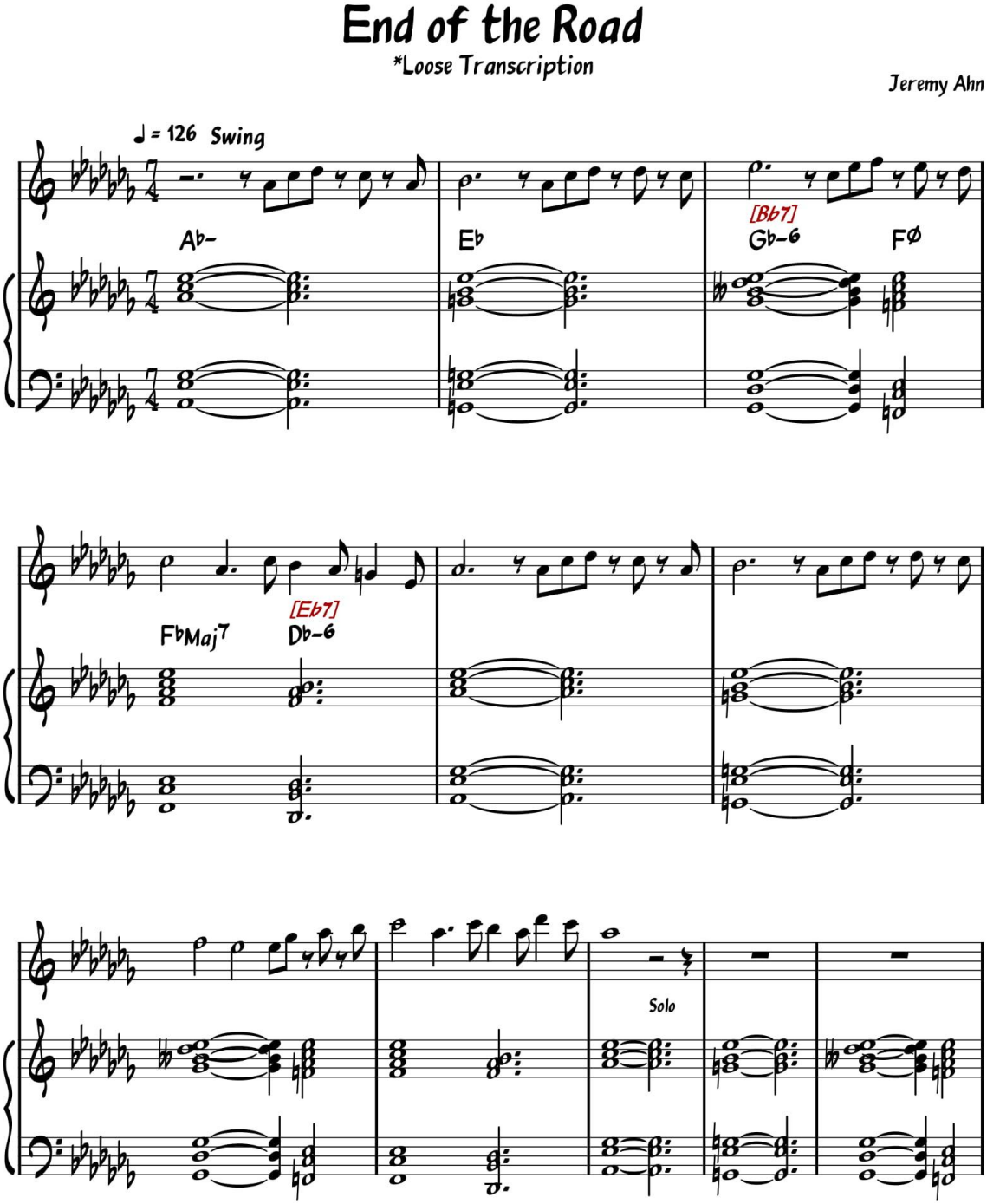
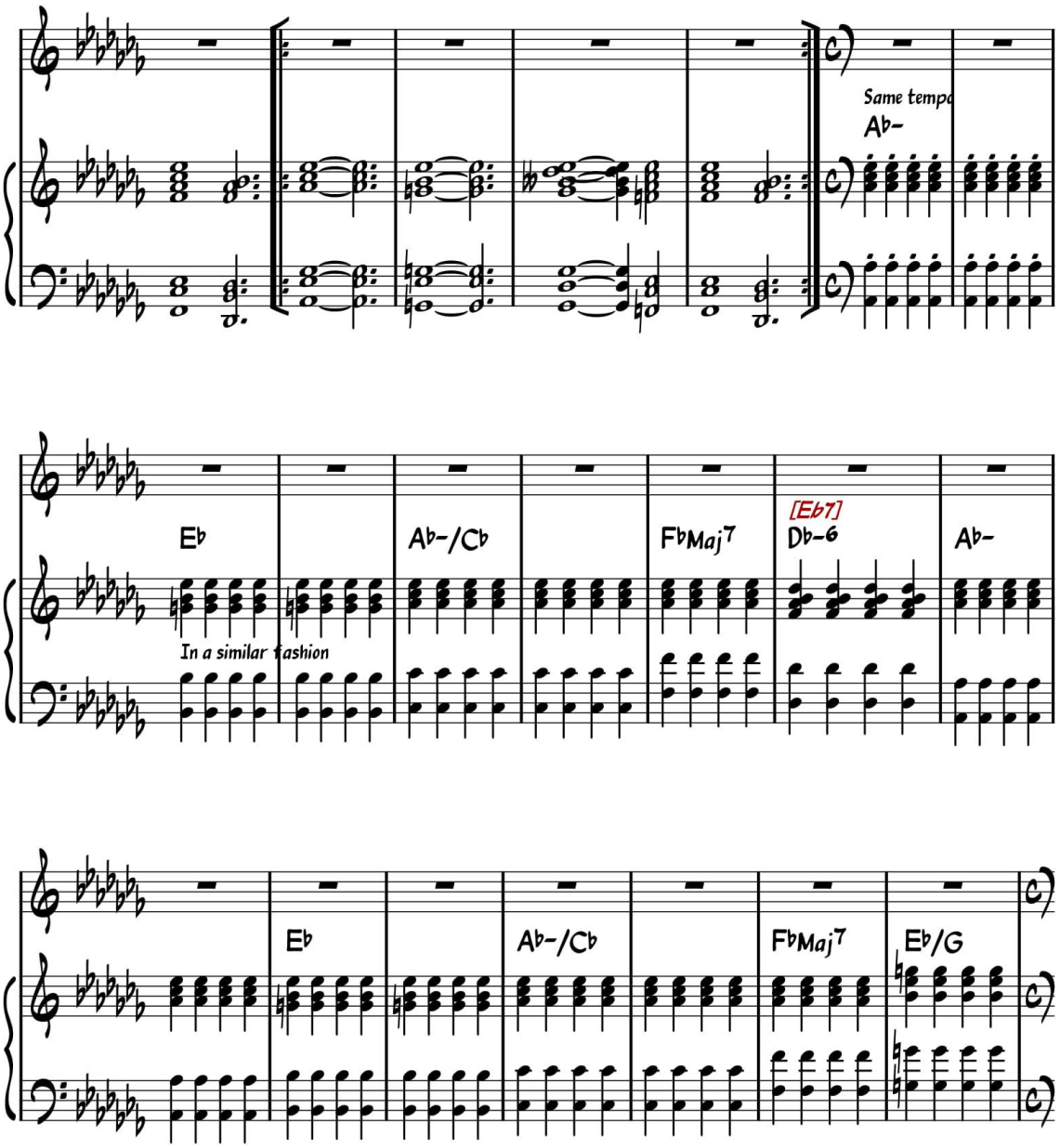
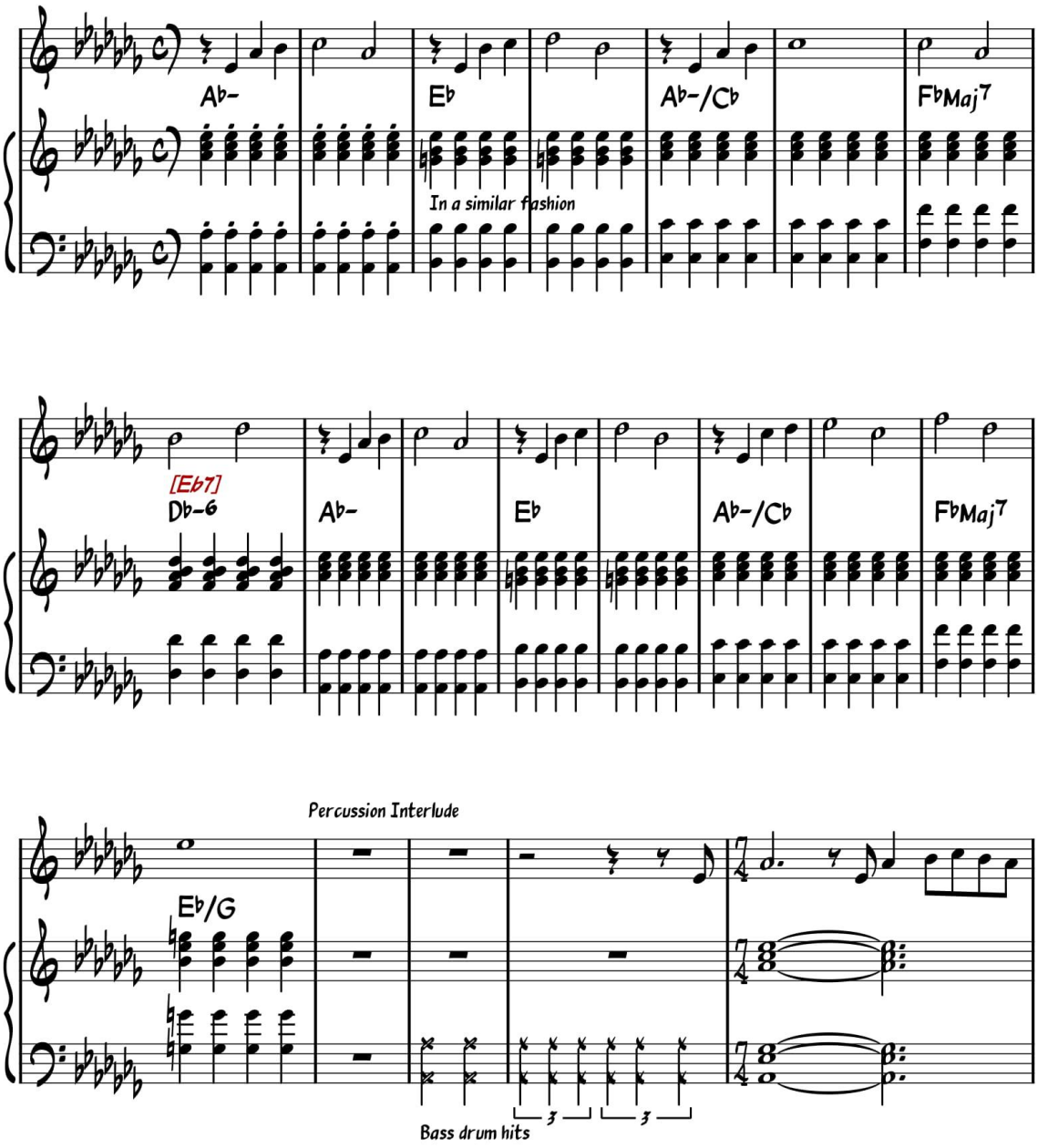
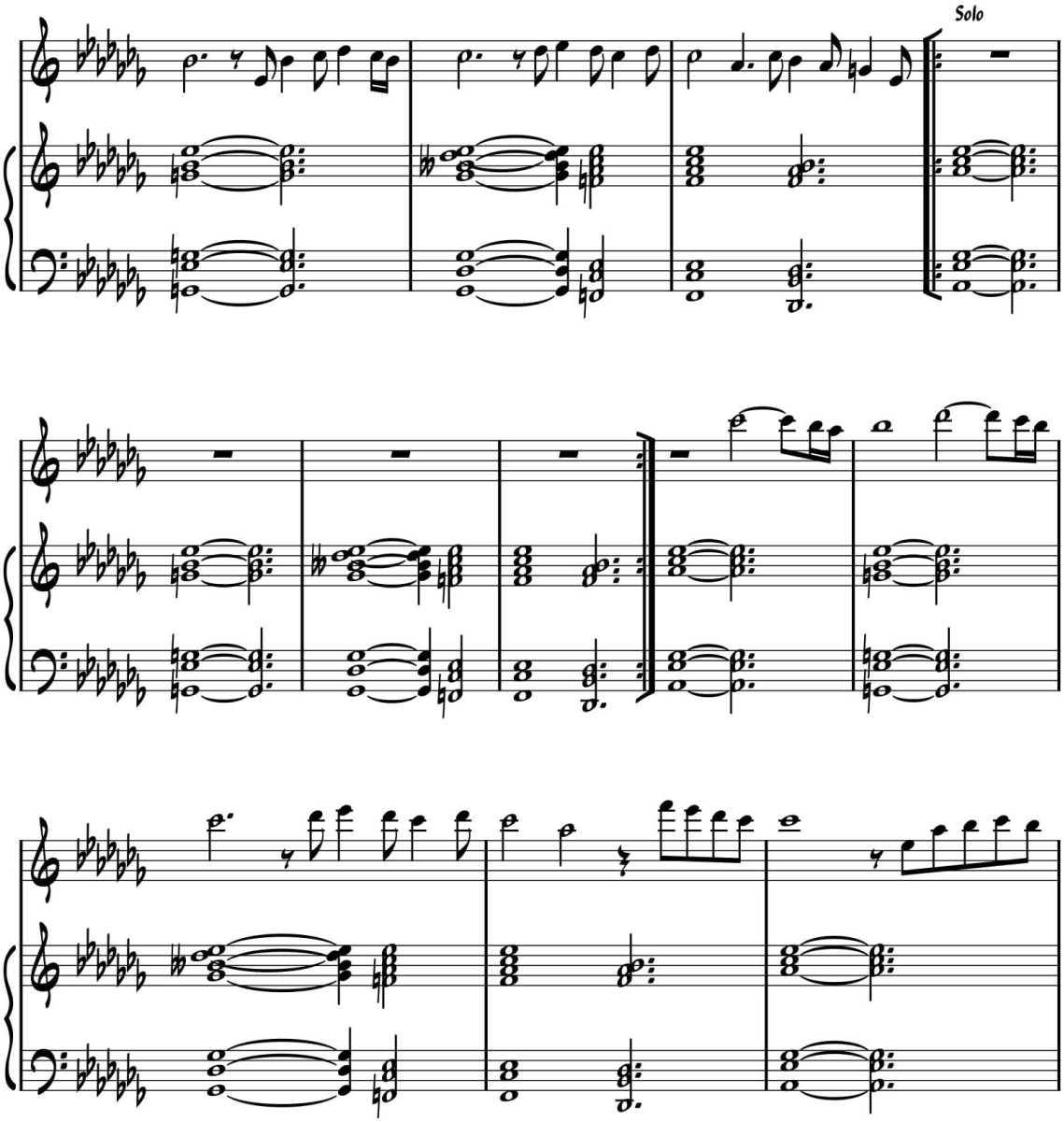
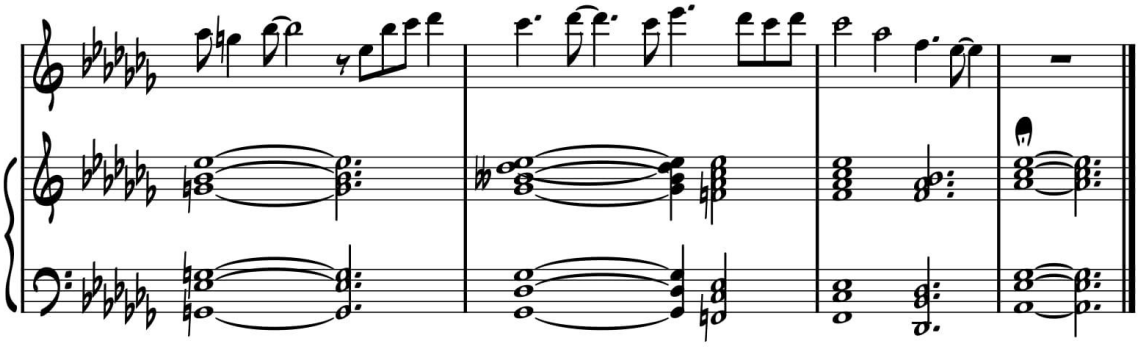


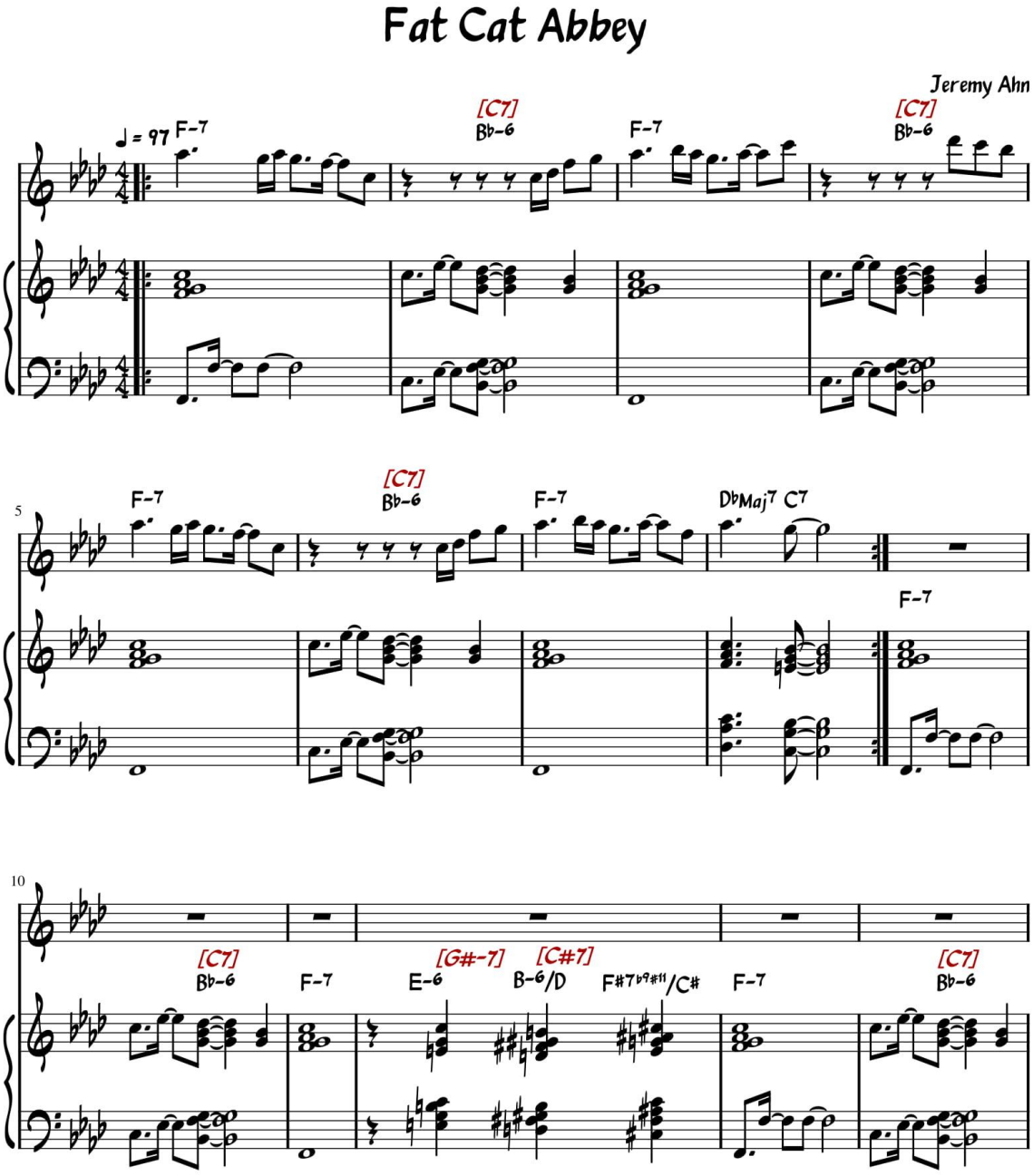

Same tempo
Ab-
Eb
Ab-/Cb
Fb Maj7
[Eb7]
Db-6
Ab-
In a similar fashion
Eb
Ab-/Cb
Fb Maj7
Eb/G

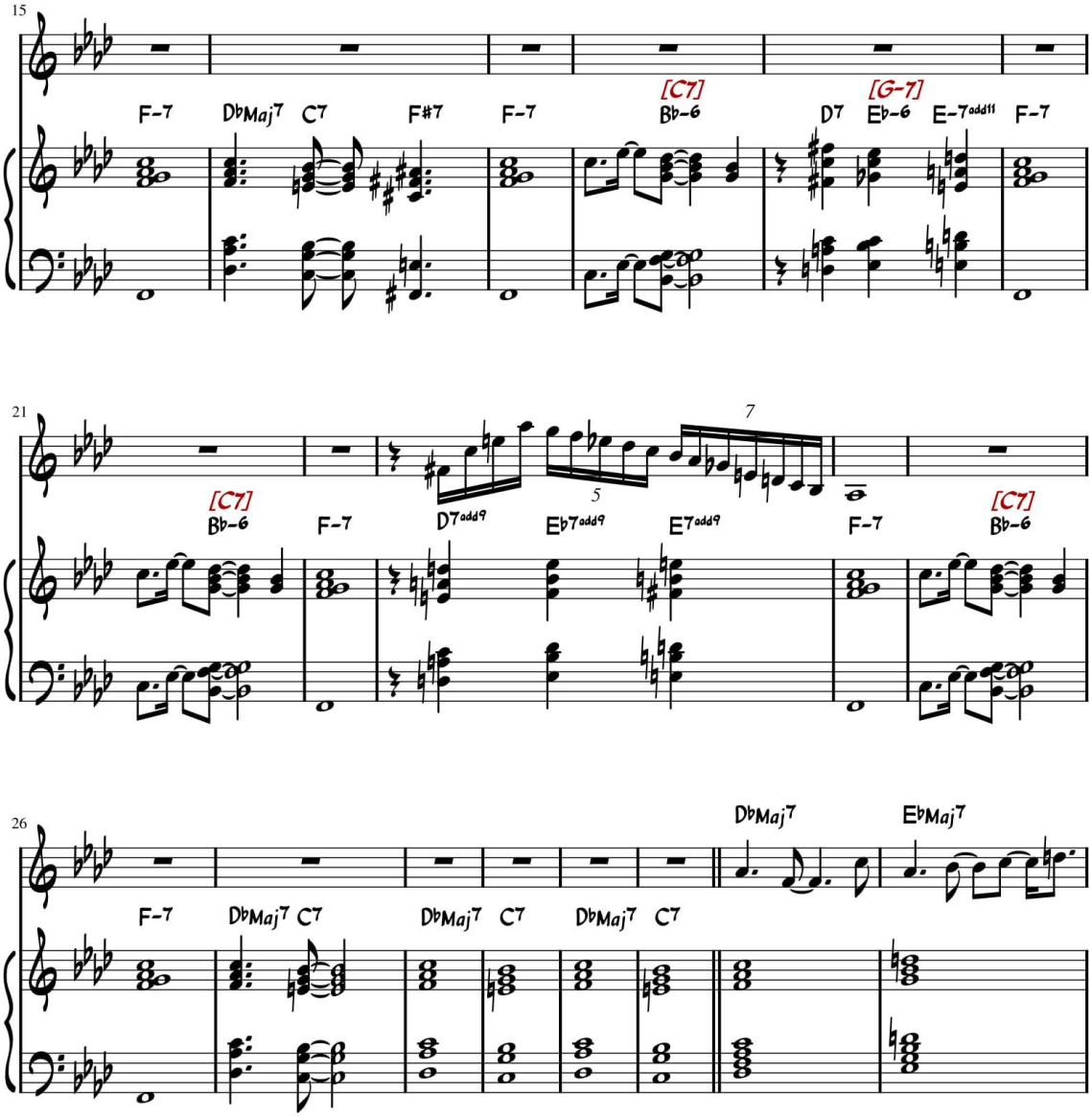

Ab-
Eb
Ab-/Cb
FbMaj7
In a similar fashion
[Eb7]
Db-6
Ab-
Eb
Ab-/Cb
FbMaj7
Percussion Interlude
Eb/G
3
3
Bass drum hits


Solo



Ex 4: *Fat Cat Abbey*

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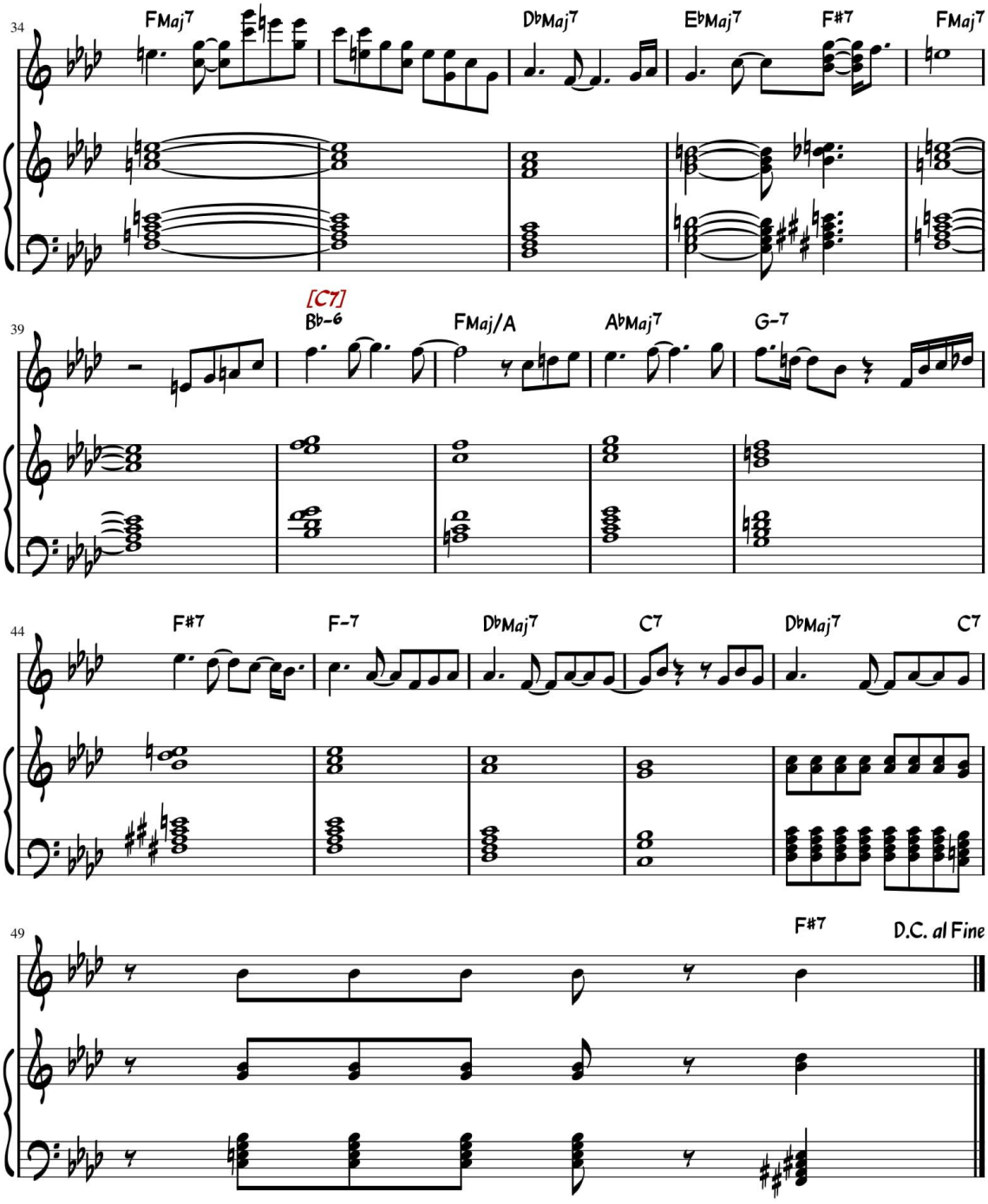
F-7
DbMaj7
C7
F#7
F-7
[C7]
Bb-6
D7
[G-7]
Eb-6
E-7add11
F-7
21
[C7]
Bb-6
F-7
D7add9
Eb7add9
E7add9
F-7
[C7]
Bb-6
7
5
26
F-7
DbMaj7
C7
DbMaj7
C7
DbMaj7
C7
DbMaj7
EbMaj7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FMaj7
DbMaj7
EbMaj7
F#7
FMaj7
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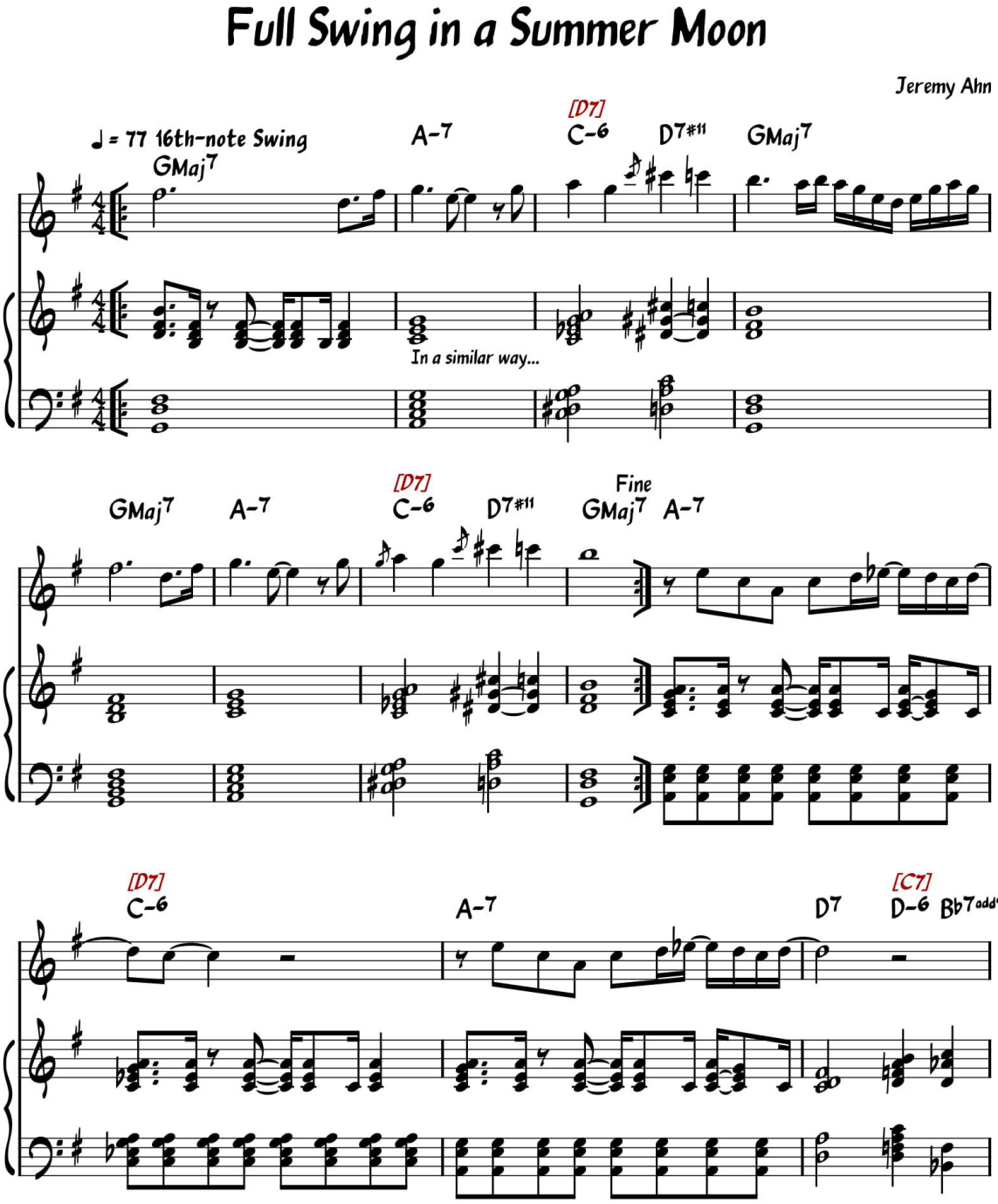
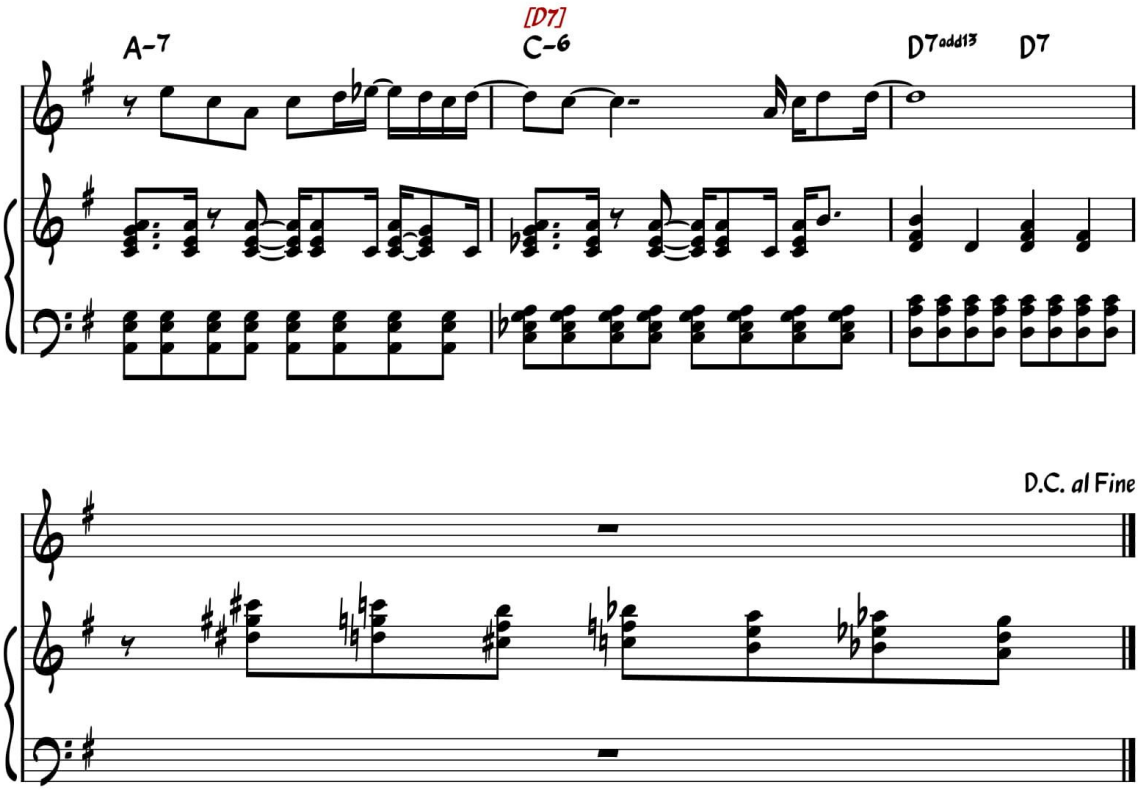
Bb-6
FMaj/A
AbMaj7
G-7
44
F#7
F-7
DbMaj7
C7
DbMaj7
C7
49
F#7
D.C. al Fine

Ex. 5: *Full Swing in a Summer Moon*




A-7
[D7]
C-6
D7add13
D7
D.C. al Fine

Ex. 6: *The Subway Sparrow*