STRATEGIES AND TECHNIQUES FOR

MULTIPLE–VOICE JAZZ PIANO IMPROVISATION

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DEDICATION

In loving memory of my father Fernando Vial,

whose beautiful piano playing introduced me to the world of music.

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ABSTRACT

Structured primarily as a method book, this thesis offers an introductory look at a variety of techniques jazz pianists can use to develop the ability to improvise with multiple voices at the instrument. Drawing inspiration from African American, West African, Central African, South American and European musical sources, the text includes relevant historical background, analyzed score excerpts and transcriptions, practice exercises, and six complete original scores by the author. Counterpoint, harmonization, chordal and bass ostinatos, timeline referents, *clave,* polyrhythm and polymeter are some of the musical concepts discussed. The music of the Gbaya people of the Central African Republic, Geri Allen, J.S. Bach, Aladari Dembélé, Toumani Diabaté, , Vernel Fournier, Fred Hersch, Keith Jarrett, Brad Mehldau, Charlie Parker, Bud Powell, Joshua Uzoigwe and many others is examined, as performed on instruments including drums, thumb pianos, harp-lutes, xylophones, piano and harpsichord. Philosophies, approaches and concepts by several musicians, including the author, are included.

RESUMÉ

Structurée principalement comme un livre de méthode, cette thèse propose une introduction à une variété de techniques que les pianistes de jazz peuvent utiliser pour développer leur capacité à improviser avec plusieurs voix sur l'instrument. S'inspirant de sources musicales afro-américaines, ouest-africaines, centrafricaines, sud-américaines et européennes, le texte comprend un contexte historique pertinent, des extraits de partitions et des transcriptions analysées, des exercices pratiques et six partitions originales complètes de l'auteur. Le contrepoint, l'harmonisation, les ostinatos d'accords et de basses, les référents temporels, la *clave*, la polyrythmie et le polymètre sont quelques-uns des concepts musicaux abordés. La musique du peuple Gbaya de la République centrafricaine, de Geri Allen, J.S. Bach, Aladari Dembélé, Toumani Diabaté, Vernel Fournier, Fred Hersch, Keith Jarrett, Brad Mehldau, Charlie Parker, Bud Powell, Joshua Uzoigwe et bien d'autres est examinée, telle qu'elle est interprétée sur des instruments tels que tambours, pianos à pouces, harpes-luths, xylophones, pianos et clavecins. Les philosophies, approches et concepts de plusieurs musiciens, dont l'auteur, sont inclus.

INTRODUCTION

Outline

The piano is often described as being an orchestra in and of itself. In the hands of the right player, it can suggest the sound of a jazz big band, a jazz combo, or even eighty–eight tuned drums[1]. But what about the sonorities of thumb pianos, harp–lutes and xylophones? As a percussive chordophone instrument, the piano shares many characteristics with these instruments. More importantly, thumb pianos, harp–lutes and xylophones all carry African musical histories wherein multiple–voice improvisation plays an important role – as is the case with the piano in jazz. There is a profound connection between these instruments, and the way they are played, that merits deeper study.

This text offers an introductory look at a variety of concepts and techniques that jazz pianists can use to develop the ability to improvise with multiple voices at the instrument. It is structured as a combination thesis/method book. Drawing inspiration from African American, West African, Central African, South American and European musical sources, the text includes relevant historical background and analyzed score excerpts and transcriptions. I have also included many practice exercises, and six

[1] In Val Wilmer's book, *As Serious As Your Life: Black Music and the Free Jazz revolution, 1957–1977*, the chapter on Cecil Taylor is appropriately titled "Eighty-Eight Tuned Drums".

complete original scores which use many of the techniques and concepts discussed throughout the text.

Counterpoint, harmonization, chordal and bass ostinatos, timeline referents, polyrhythm, and polymeter are the primary musical concepts discussed in this text. The music of the Gbaya people of the Central African Republic, Geri Allen, J.S. Bach, Aladari Dembélé, Toumani Diabaté, Vernel Fournier, Fred Hersch, Keith Jarrett, Brad Mehldau, Charlie Parker, Bud Powell, Joshua Uzoigwe and many others is examined. I also discuss philosophies, concepts and approaches of musicians whom I greatly admire, as well as my own.

While there there are several significant works that highlight the connection between jazz and African music (see Kubik 2005; Wilson 1974; Chemillier et al. 2014), to my knowledge, this is the first thesis/method book to present these concepts and techniques across cultures. I believe it is the first text to demonstrate how African musical techniques associated with hand drums, the *kora (double bridge harp–lute),* the *sanza* (thumb piano) and the *balafon* (gourd–resonated xylophone) can all be applied to jazz piano.

These varied points of departure can inspire us, offer new musical perspectives, and demonstrate the myriad possibilities that exist at the piano for multiple–voice improvisation.

Background

The findings presented in this document are the culmination of years of studying, practicing, experimenting and playing. They reflect my interest in finding the connections between different musical practices across cultures and seeking out intercultural musical collaborations. Throughout my career as a performer, composer and improviser, I have collaborated extensively with musicians from the USA, the Caribbean, Latin America and West Africa in a wide range of popular, folkloric and contemporary idioms. In learning how to play within these different traditions, transcribing, learning music by ear and playing along with recordings have been essential activities.

Improvisation has always been central to my artistic practice. When I endeavour to master a musical idea or concept, I will often improvise within narrow parameters to facilitate the process; this thesis includes many exercises borne from this approach. I rarely write *études*, but many of my compositions originate in improvisations where I am consciously working within particular musical constraints and trying to develop a specific concept, be it rhythmic, harmonic, melodic, textural, etc. Consequently, I have included excerpts from many of my compositions to illustrate some of these concepts. The appendix also includes six complete scores.

This thesis contains exercises of varying difficulty levels, which would be suitable for high school students, college students and professionals alike. While many different

approaches will be discussed, it is worth noting that each pianist will choose to develop specific expressive and musical techniques according to their particular interest and aptitudes. For example, Dave McKenna was renowned for his ability to walk bass lines, play chords and improvise treble melodies simultaneously — but there are many equally great pianists (notably Bud Powell) that never played walking bass lines. I recommend that students try all the techniques and concepts in this text, then focus on developing those that are most interesting to them.

Goals

For this doctoral project, my main goals were to (1) greatly improve my ability to improvise using multiple–voice techniques in order to generate polyphony, polyrhythm and counterpoint at the piano, and (2) share my findings in the form of a combination thesis/method book, to help players of all levels develop these skills. I hope the reader will find this text helpful for their own development.

Methodology

I have contextualized my ideas within a personal research–creation framework drawing from my practice as a pianist, multi–instrumentalist, composer and improviser. Autoethnography has been central to my process. Over the years, I have consistently recorded my practice sessions and performances, listening back to them to evaluate and reflect upon my progress. Many of the exercises and concepts presented in this text are based on ideas which were initially created and recorded in the practice room.

In Chapter 9 of the *Handbook of Autoethnography* ("Artistic Autoethnography: Exploring the Interface Between Autoethnography and Artistic Research"), Brydie–Leigh Bartleet outlines non–linearity, improvisation and embodiment as three key traits of artistic autoethnographies. (Jones, S.H. et al. 2016, 137) On the role of improvisation in this research, Bartleet writes: "Improvisatory modes of inquiry allow autoethnographers to explore open spaces where the unplanned and unexpected are central to the research process. (Jones, S.H., et al. 2016, 138) For the musician–composer–improviser, this is especially true.

Notational Considerations

French ethnomusicologist Simha Arom and his colleagues (including Vincent Dehoux, Fabrice Marandola and Natalie Fernando) have often used a non–metered and non–measured style of notation for their transcriptions of African music. Arom rejects the idea that beat structures are present in African music; consequently, he is opposed to using meters and barlines in his transcription because of the accent structures they may imply. (Arom 1991, 154–55) This makes his transcriptions very difficult to read.

Eugene Novotney disagrees with Arom's notion, citing modern jazz literature as proof that standard Western notation is sufficiently equipped to render African structural concepts related to meter and polyrhythm:

> When one considers the modern jazz idiom, it becomes obvious that the Western notational system allows for a wide range of expression and interpretation of rhythmic nuance. Certainly the actual feel of jazz music cannot be portrayed through notation. Instead, the notation acts as a guide, with maximum responsibility placed on the user of the notation to research, through observation, imitation, and participation, the proper 'feel' of the music. I propose that this is also the case with African musics. Certainly, the notation acts as a guide for the recreation of musics, but it is only powerful in the hands of a trained interpreter. (1998, 275)

For this paper, I have opted to use conventional metered and measured Western notation for all musical examples, including my own transcriptions of African music. This thesis is designed first and foremost for jazz pianists, who are accustomed to metered and measure notation and "reading between the lines" when it comes to rhythmic expression. The most notable example of this is swung eighth notes, which are rarely notated with triplet symbols. Jazz musicians can also read music that is notated in 4/4 and interpret it with a time feel or implied meter of 6/8 or 12/8, or play "in the cracks" — with eighth notes sounding in between straight and swung.

No method of notation can fully convey the subtlety of highly rhythmic music. The reader is greatly encouraged to listen to the source recordings while looking at the

transcriptions, with the understanding that the latter are a visual reference suitable for inclusion in a text such as this one.

The Problem with Current Jazz Pedagogy

University jazz programs typically require students to learn repertoire by the most significant jazz composers of the last 120 years, at most. If a jazz history class discusses earlier African–American music (such as ragtime, work songs and spirituals) it is usually in passing; African or African diasporic music from outside of the USA, Brazil or Cuba is rarely mentioned or listened to in most classes.

In contrast, most jazz university students must study and analyze the works of canonical European classical composers, generally from 1600 to the present day. While the connection between European music and jazz is very important, I would argue that the relationship between African music and jazz is even more significant — and routinely neglected in jazz pedagogy.

Solo and collective improvisation, cyclical forms, polyrhythm, polymeter, "swing" feel, modal interchange, and the "blues" sound are some of the key musical attributes which jazz has inherited from African music. I encourage jazz students to listen to as much music from Africa and its diaspora as possible and read about the social and cultural history of Africans in the Americas. This relates directly to the development of African American music including jazz. Learning about music from Africa and its diaspora can give students a comparative perspective on the ethos that

shaped African American musical and social practices. Listening, studying and learning how to play African music can also directly impact how we approach the African American musical art form known as jazz.

CHAPTER 1: PHILOSOPHIES, CONCEPTS and APPROACHES to PRACTICING

Introduction

This chapter discusses philosophies, concepts, and approaches to music making which have been a great help to me in the practice room, recording studio, on stage and in my overall development as a musician. In the second half of the chapter, I cover some specific techniques and approaches that have strengthened my hands and improved my ability to improvise with multiple voices at the piano.

Mental, Physical, Emotional and Spiritual States

The importance of our mental, physical and emotional states when playing music cannot be overstated. We should aim to be physically and mentally relaxed when practicing and performing. Yoga, proper stretching (before and after playing), and regular exercise not only help mind and body in general; they can also specifically help our ears. Studies have shown that yogic relaxation techniques can improve auditory reaction times (Naik 2021), and exercise training can improve hearing ability. (Cristell, Hutchinson, and Alessio 1998). For piano–specific stretches, I highly recommend Penelope Roskell's book *The Complete Pianist: From Healthy Technique to Natural Artistry*. Being physically relaxed can have a significant, positive impact on our tone at the instrument. Conversely, if we are physically tense this can lead to a harsh tone.

It is equally important to remove all negative thoughts, self–judgement and self–criticism about our playing, especially while performing. We must strive to remove any

fear of failure, of sounding bad or making mistakes. (For those who struggle with these issues, Kenny Werner's book *Effortless Mastery* is an excellent reference.)

Wayne Shorter, Herbie Hancock, Fred Hersch, Keith Jarrett, Brad Mehldau, Chick Corea, Danilo Pérez and Paul Bley have all repeatedly highlighted the importance of taking risks when playing — which certainly requires courage. Shorter calls this "fear–training". (Pérez 2022)

Especially as improvising musicians, our ability to concentrate and be fully present in the moment are key. The success of an ensemble performance largely depends on our individual and collective ability to listen deeply to one another, be spontaneous, and connect to everyone in the band *and* the audience. Saxophonist Charles Lloyd, drawing upon Zen Buddhist philosophy, has spoken frequently of the importance of approaching every performance with a "beginner's mind". (Handy 2022)

Most musicians have had the experience of playing something that they felt did not come from their own mind, but rather from a greater force that was guiding them towards playing in a specific way. Whether we describe this as a meta–physical, spiritual or religious experience, anyone who has experienced it cannot deny this phenomenon exists. In his 2016 interview with the Library of Congress, producer Quincy Jones stated, "I always say you have to leave space for God to walk into the room." (Jones 2016). Others have referred to this as "getting into the zone", and Keith Jarrett has said that his greatest gift was being able to access this state of inspiration

consistently in performance. The spiritual experience of connecting to a higher power while playing music is a deeply personal one. While striving to connect with our deepest selves (and a higher power, if this is what we believe in), we must also make sure we don't become disconnected from the other musicians or the audience — playing music is a shared, communal experience.

If You Can't Rehearse the Unknown, then How Do You Prepare?

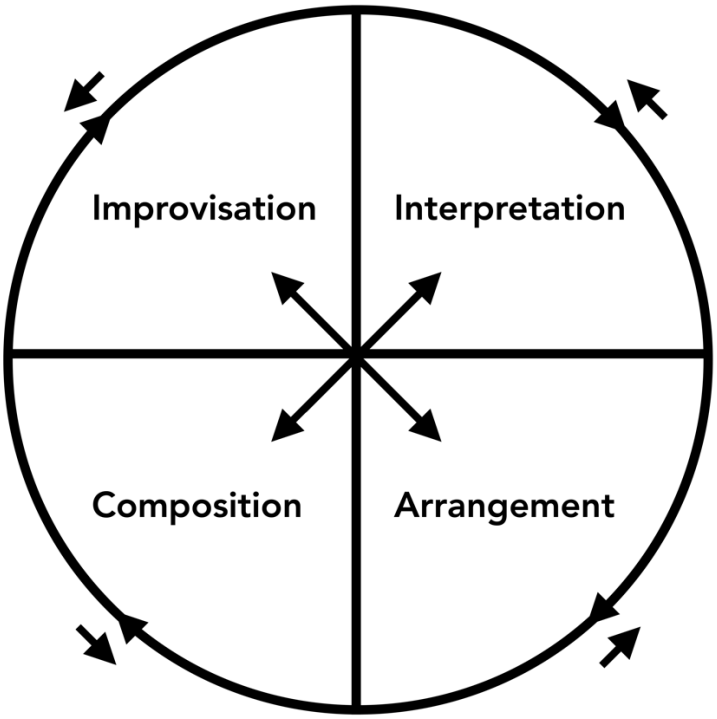
In an interview with NPR, saxophonist and composer Wayne Shorter said: "This music, it's dealing with the unexpected ... No one really knows how to deal with the unexpected. How do you rehearse the unknown?" His answer: "The challenge is you have to be in the moment ... You better. The moment's going to get you." (Shorter 2013)

Quite simply, if we want to be able to improvise with any concept or approach, our command of it at the piano will largely determine the musical outcome. The more prepared we are with specific techniques, the more comfortable we will feel being able to improvise with them fluently.

The Circle of Improvisation, Interpretation, Arrangement and Composition

As jazz musicians, our musical activities fall within what I conceptualize as the Circle of Improvisation, Interpretation, Arrangement and Composition, shown in Figure 1. Throughout our artistic practice, engaging with one of these activities can naturally lead to any of the other three.

Figure 1: The Circle of Improvisation, Interpretation, Arrangement and Composition



Our own original compositions, or those of others, can become springboards for improvisation. Improvisations can also lead to the creation of an arrangement, a composition, or simply be "compositions in real time" that require no further elaboration or revision.

The works of other composers can also inspire us to create arrangements and variations. In jazz, reharmonization is a common tool in this regard. Thelonious Monk's "Skippy" provides an interesting example. Monk created an arrangement of Vincent Youmans and Irving Caesar's "Tea for Two" featuring a substantial reharmonization of the chord progression. He recorded it with bassist Oscar Pettiford and drummer Art Blakey for his 1956 Riverside album *The Unique Thelonious Monk*.

Ostensibly, Monk's reharmonization led him to compose a new melody outlining this new chord progression, which he named "Skippy"after his wife Nellie's sister, Evelyn, who also went by that name. (Kelley 2010, 33) In the bebop era, it was common for jazz musicians, notably Charlie Parker, to write "contrafacts" — original melodies composed on existing chord progressions from standards. In this case, Monk initially did the opposite, recontextualizing a standard melody by playing completely different chords underneath it. Then, he went even further, removing the original melody and writing a new one over his new chords. (He recorded "Skippy" in 1952, predating his recording of "Tea for Two", but within the jazz community it is commonly assumed that the former is based on the latter.)

In *The Universal Mind of Bill Evans*, the titular pianist states: "I feel that jazz is not so much a style as it is a process of making music. It's the process of making one minute's music in one minute's time. Whereas when you compose, you can make one minute's music and take three months…" (Evans et al. 1966)

In interviews, pianist and composer Danilo Pérez has often mentioned a related concept developed by the Wayne Shorter Quartet – "comprovisation" – an approach where all the members of the group would spontaneously create a composition, in the moment. (Pérez 2022)

Simple Building Blocks

Accomplished jazz drummers can improvise complex polyrhythms with great clarity. Attempting this at the piano can be very challenging, since harmonic and melodic decisions must also be made concurrently. Endeavouring to improvise several melodic lines at the piano using polyrhythm is a daunting task, and the student must begin with the simplest possible materials.

In *The Universal Mind of Bill Evans*, Evans states:

> It's better to do something simple, which is real. It can still be satisfactory, but it's something you can build on because you know what you're doing. Whereas if you try to approximate something, which is very advanced, and don't know what you're doing, you can't advance that, build on it. (Evans et al. 1966)

Working with small, basic musical building blocks is the key to developing the ability to improvise with multiple voices at the piano. The student may ask — how do we know when we have mastered a building block idea, technically, conceptually, or otherwise? The answer: when we have the utmost flexibility to improvise with it, and it feels natural and easy to do so.

Separating Musical Elements

In order to have the maximum amount of flexibility with small, basic building blocks, we need to be able to break down musical ideas into their individual

components or facets. Some players (young and old) acquire jazz vocabulary by transcribing lines or learning them from an existing transcription. They will then insert them into their solos, playing them with identical rhythm and phrasing as the original. Not only does this approach lack spontaneity, but it also limits the expressive potential of saying something musically in the moment, and telling the listener something about who you are. All you are really telling the listener is that you learned to play, for example, a Charlie Parker line, and *maybe* that you also like his music. In contrast, being able to separate and combine different musical elements gives us the maximum amount of flexibility with the material, allowing us to truly improvise in the moment.

Two Ways of Practicing: "Woodshed Mode" and "Performance Mode"

I believe there are two primary and equally beneficial modes of practicing: "woodshed mode" and "performance mode". In "woodshed mode", we will often work analytically at the microscopic level to improve specific elements of our musicianship, taking as much time as necessary to make progress. This could mean playing very slowly with a metronome, trying out different fingerings, repeating a section of a chord progression until we are comfortable improvising over it, practicing scales and arpeggios, working towards more precise execution of difficult passages, etc.

The benefit of "woodshed mode" is being able to stop and start at any time through a practice session to address whatever issues may arise. These issues may

relate to our physical technique, aural recognition skills, capacity to memorize and retain music, our ability to stay focused, and many other aspects. The improvement we hear in our playing due to working in "woodshed mode" can be enormous. But it is important to put this improvement to the test by also practicing in (and conceptually differentiating it from) "performance mode".

In episode 10 of Ken Burn's *Jazz* television documentary miniseries ("A Masterpiece by Midnight: 1960 to the Present"), critic Nat Hentoff describes how Cecil Taylor "would have concerts, imaginary concerts, and he would play a complete repertory to this audience that wasn't there. And he said that kept ... not only his spirit going, but he was still able to get his music through even ... into the air." (Burns 2001)

Mentally preparing to give a concert, and then playing this "imaginary concert" without stopping can be an extremely beneficial way of practicing. This is the ultimate way to practice in "performance mode". While not identical to an actual performance, it can certainly help prepare us to perform on stage and in the studio at a high level.

In a 2009 interview with David Shenk for The Atlantic, Keith Jarrett said something similar:

> When I was younger, I didn't even want to hear piano music [leading up to a concert]. I wanted to be completely unaware of piano sounding things, and then walk on the stage and have it be new, have it be a fresh thing. But now, within two weeks of a tour, I come to the studio at least

> once a day, at what would normally be concert time. In other words, at approximately 8:30pm, I might practice for an hour. And some of those days, I might be playing the Goldberg Variations, or something that does my fingers good to be moving in a way that's different than what I do when I'm doing solo. And other times I'm doing a sort of dress rehearsal for a solo concert ... As if I'm in a concert, but not caring how long something goes on and not being — actually, very interesting things happen in here that don't happen in live concerts, because I have more patience. So I might be playing some kind of dissonant silliness for quite a bit longer, and because it goes on longer, I find things that I wouldn't find, that I haven't been able to get to very often in public. If I have a good practice session, meaning something happened that I didn't expect to happen, it just gives me more confidence in the actual thing. "Aha, OK, so that can happen."" (Jarrett 2009)

When practicing in "performance mode", it can also be useful to establish additional parameters. For instance, Charlie Parker was renowned for his ability to improvise meaningful, coherent and beautifully structured short solos, usually one chorus (32 bars) in length. On some recordings he is even heard playing breath–taking solos that last only eight measures. This is a specific skill that requires practice.

Additionally, it can be useful for pianists to practice improvising solo introductions. These can be practiced *rubato* or in time, with an open harmonic concept or related to a specific chord progression, and with or without a specific number of measures in mind.

These practice ideas can also be repeated, creating a "performance mode" situation more similar to studio work, where it is common to record multiple takes of the same piece.

It is also interesting to note that "woodshed mode" operates at the conscious and analytical cognitive level, while "performance mode" uses a mix of conscious and sub–conscious thought put into action. Ideally, "performance mode" should not include analysis or self–criticism. For the purpose of self-evaluation, I highly recommend recording practice sessions and performances regularly. Listening back to our own playing can give us self reinforcement about the positive aspects of our musicianship and help us evaluate what aspects of our playing need improvement.

Learning Modalities at the Piano

In her 2002 article for the Piano Pedagogy Forum journal, Susanna Garcia identifies three main modalities associated with learning at the piano: visual, auditory and tactile/kinesthetic. (2002, 85–86) It is beneficial to self–evaluate our modal weaknesses and strive to ameliorate them. Our modal strengths can also be used to

great advantage, if external factors such as time constraints, scheduled performances or exams require us to learn a lot of music in a short period of time.

Turning a "Seed Idea" into an Exercise

We can take inspiration from a particular passage of music and create exercises to facilitate a deeper comprehension and mastery of its components. One small but valuable compositional detail can be the basis for an entire exercise that could then be cycled through different keys, scales, and chord types. It may be an inversion of an interval, a change of motion from parallel to oblique, or a momentary departure from the tonality that catches the ear. Creating an exercise that focuses on this subtle element and explores it throughout the piano can be a useful way to incorporate that "seed idea" into one's own vocabulary as an improviser and composer. Various seed ideas will be explored throughout this paper.

Multi–Tasking / Holistic Piano Practice

I believe in a holistic teaching methodology that incorporates instrumental technique, accretion of musical vocabulary, ear training, transcription, analysis, and memorization of repertoire. I believe in a practice methodology that draws exercises out of historical repertoire ("standards", be they traditional African songs or jazz tunes) and language/vocabulary (for example, improvised solos). This way, the student may simultaneously learn important repertoire and acquire and develop new skills, such as polyrhythmic and polyphonic improvisational ability. Subsequently, these skills can be

used in any number of other compositions or musical situations; they become part of the musician's personal "toolkit".

With the long–term objective of multiple–voice improvisation in mind, it can be beneficial to use a holistic practice method incorporating several different elements which can be worked on simultaneously. These are (1) strengthening the left hand, the right hand, and playing of both hands together, (2) increasing personal repository of rhythmic, melodic, and harmonic vocabulary from the standard jazz language, (3) developing the ability to hear rhythm, melody, and harmony more precisely by constant aural engagement with the music (instead of reading), and (4) developing the ability to memorize tunes and retain musical information. While these individual aspects of pianism and musicianship are goals in and of themselves, I believe that when worked on together, they can help pianists to eventually develop the ability to improvise contrapuntally.

Each pianist must decide when it is appropriate to "multi–task" when practicing. In some situations, this may allow the student to work on several aspects simultaneously, with no negative consequences. In other instances, it may make more sense to fully concentrate on one musical element and not be concerned with multi–tasking.

Strengthening the Left Hand with Bebop Scales and Heads

To successfully improvise multiple voices of the same subdivision level (e.g., eighth note level) simultaneously, the left hand must be capable of executing lines as easily as the right. An excellent way to prepare the left hand for this task is to practice scales, arpeggios and bebop melodies ("heads") with only the left hand, as well as with both hands. Charlie Parker and Bud Powell compositions are particularly well suited to this task.

The pianist will be faced with the challenge of negotiating two different sets of fingerings simultaneously. Mark Levine's *The Jazz Piano Book* includes piano fingerings for standard scales and helpful advice on how to approach fingering. (2011, 94–96) David Baker's *How to Play Bebop* series offers an in–depth look at bebop scales, to which pianists can annotate their preferred fingerings.

When learning a bebop head, it is important to make a mental (or written) note of which fingerings work for different passages. There are often more than one set of useable fingerings for a given passage, and the pianist should choose those that are most comfortable and, ideally, can also be used in other keys. For octatonic (eight note) bebop scales, I find it helpful to divide the scale into two separate tetrachord (four note) groups. I will make a note of the most natural fingerings for each hand within each tetrachord, and then work on combining both tetrachords to form the complete scale. In my experience, this can help determine the best fingerings for

bebop heads, since four note scale patterns often form the connective tissue for eighth note–based bebop lines. Eventually, one will be able to improvise bebop lines, in unison with both hands, without having to think about fingerings.

Playing bebop melodies with the left hand or both hands will immediately reveal weaknesses in piano technique, and the pianist must address these methodically to overcome them. To that end, playing all scales (standard heptatonic and octatonic bebop scales) in unison with both hands is a good complement to working on bebop heads.

Practicing Scales and Scalar Patterns

It is important to practice scales with both hands in unison at different subdivision levels: quarter, eighth, eight note triplets, sixteenth notes, etc. It is also worthwhile to play scales and scalar line patterns at all dynamic levels and with varied note accents and articulation — they will sound and feel different when played in this manner. In his book *It's About Music: The Art and Heart of Improvisation*, Jean–Michel Pilc also recommends playing with contrasting levels of dynamics (e.g., piano, mezzo piano, mezzo forte) and articulation types (e.g., legato, staccato, marcato) between hands. (2013, 216) This can be very challenging, but it will also make the pianist more aware of balance between both hands, and the multitude of expressive possibilities that exist by varying dynamics and note durations.

All material should also be practiced with different swing "percentages" — that is, variation in the amount of implied triplets in eighth note lines. Vijay Iyer describes this as "ratios" of swing. (1998, 63) I have found it useful to practice all lines with 0%, approximately 50%, and 100% swing feel, with the same percentage in both hands. Once the pianist is comfortable doing this, it can be interesting to try different swing percentages in each hand.

The left and right side of the body (particularly the fingers, hand, wrist, arm, shoulder, and back) may feel different according to specific material being practiced (in this case, swing percentages). The goal is to have the physical sensation and aural/musical result be as balanced as possible. Another valuable way to practice eighth note level scales is every upbeat accentuated, but no triplet implication (i.e., “0%” swing feel). This creates a specific kind of groove that was commonplace in the bebop and hard bop eras.

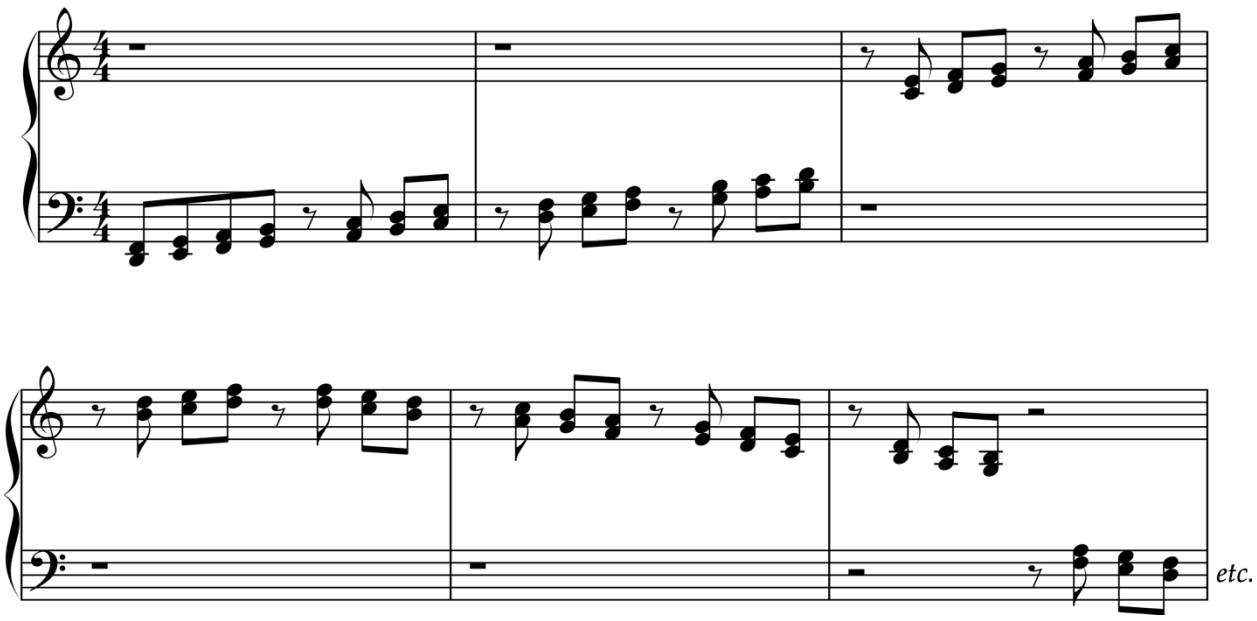
Moving Away from Constant Subdivision Level Streams

Once we are comfortable playing constant scalar streams at various subdivision levels, we can begin to use rhythmic groupings for scale practice. In a performance situation, it can be musically effective to play long lines using one subdivision level (e.g., eight note or sixteenth note level), but breaking up the line with different rhythmic groupings is an equally important musical skill to work on.

The student is encouraged to practice harmonized (or unison) scales using many different rhythmic groupings, through the whole range of the piano. Doing so will highlight any weaknesses in groove, rhythmic accuracy, synchronizing the fingers, fingering problems, etc.

Figure 2 shows a rhythm I like to use for practicing scales, harmonized here in thirds.

Figure 2: D Dorian Scale Harmonized in Thirds with Simple Rhythmic Grouping



Thinking Rhythm First

In his book *Forward Motion*, Hal Galper quotes Dizzy Gillespie from an interview with Mike Longo:

> "You construct from a point of the rhythm. Melody conforms with what you have in your mind. How you want the rhythm to go. Then you put your notes to that. I think of rhythm first." (2003, 62)

Galper elaborates:

> "In other words the key to playing syncopated phrases is to **think rhythmically instead of melodically. If you think of the rhythm first, the rhythm will automatically select the proper notes out of the continuous 8th note line that is running through your ears**". (2003, 62)

Rather than rhythm, some musicians think about variables such as sound, melody, or lyricism as the point of departure for their phrasing, achieving altogether different results. Ultimately, every musician's improvisational process is different. However, it is worthwhile to experiment with prioritizing a specific variable as the point of departure, to see how it changes the musical outcome of one's improvisation. And thinking "rhythm first" is crucial when improvising polyrhythms using multiple voices at the piano.

Differentiating Voices in a Musical Texture

Register, timbre, articulation, note duration and dynamics are some of the parameters that can help us differentiate two voices in a musical texture. In Indonesian gamelan, jazz, baroque and many other musics, simultaneous melodic lines are differentiated not only by register and instrumental tone color, but also by isometric

rhythm. That is to say, the various strata that make up a given musical texture will often operate at different subdivision levels. For example, jazz often features bass lines with larger note values (whole, half and quarter notes) contrasting with tenor and treble range instruments often playing shorter note values (quarter, eighth, sixteenth notes etc.).

The simplest example of rhythmic differentiation in jazz occurs when a bassist plays a walking bass line consisting primarily of quarter notes, while a soloist improvises mostly at the eighth note level. This is an intentional oversimplification: in reality, a soloist may use a variety of rhythmic subdivisions and a bass player will often add rhythmic embellishments. However, in this example, two different rhythmic strata (quarter notes in the bass and eighth notes in the treble) are present most of the time.

Pianists are comfortable with this strata combination because they often accompany themselves playing walking bass lines in the left hand while improvising with the right. But what happens if you try to do the same thing with hands crossed? Most pianists would find this much more difficult. Likewise, improvising eighth notes in the left hand and quarter notes in the right can prove challenging. Therefore, we must proceed methodically and practice improvising using different subdivision combinations, maintaining isorhythmic consistency.

Since rhythmic figures are usually made up of combination of different note values, we must work with the individual rhythmic subdivision types before attempting

to combine polyrhythmic figures (such as those made up of eighth and sixteenth notes). This graded approach is similar to Fux's species counterpoint method (Mann and Edmunds, 1965), here applied to improvising with isorhythmic strata combinations.

In a piano context, register and note duration are the two most important initial parameters to consider when working on two–voice improvisation. The relationship between bass and treble melodies has deep–rooted musical associations for the listener (and player alike). For instance, in a jazz performance, the pianist can choose to suggest the presence of a bassist by playing whole and half notes in the low register with the left hand and walking quarter–note bass lines.

The Two–Column Approach

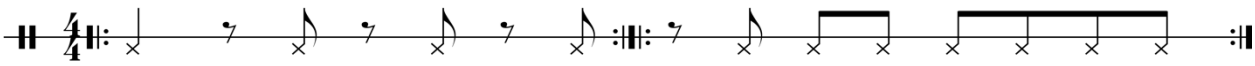
In a 1990 interview with *Rhythm*, Tony Williams stated:

> "Playing jazz drums, you have to know how to play the [ride] cymbal beat and you have to know how to coordinate that with the hi–hat and coordinate that with the bass drum and the left hand. The only way I learned how to do that was by playing this jazz beat [on the ride], ching–a–ding, ching–a–ding, ching–a–ding, ching–a–ding. I can play that beat constantly without ever stopping it. I can play a whole bunch of other stuff with my left hand and never change that. I can play that beat constantly through all this other stuff. Now, to be able to just do that is an accomplishment." (Riley 1994, 16)

This quote exemplifies the basic philosophy behind my Two–Column Approach. I created this approach to break down elements of a musical problem into their constituent parts, with the goal of eventually mastering them. The concept is to isolate two musical elements and visualize them as being in two separate columns. They can then be used as parameters for any type of improvisation, polyrhythmic exercises, etc. Figure 3 shows some examples. Note that "RH" refers to the right hand, "LH" refers to the left hand.

Figure 3: Examples of the Two–Column Approach

Column 1 (Left Hand)	Column 2 (Right Hand)
LH improvises eighth notes	RH improvises quarter notes
LH improvises dotted quarter notes	RH improvises quarter notes
LH plays fixed ostinato	RH improvises freely
LH improvises melodies with rhythm:	RH improvises melodies with rhythm:



In this list, the first two examples use rhythmic differentiation between both hands as discussed earlier. In the third example, the left hand plays an ostinato that is unchanging and predetermined, while the right has the complete freedom to improvise. Here, the goal is to be able to consistently play the left–hand ostinato with a strong groove and time, while the right improvises effortlessly and "in the pocket". In the fourth example, each hand must improvise melodies while adhering strictly to the

notated rhythmic cells. The two cells form an interlocking rhythmic figure derived from "Chasin' the Bird".

The Drummer's Approach to Practicing Multiple–Voice Patterns

When drummers are working on polyrhythms, they will often master the rhythms individually and then combine them, before switching the patterns so that the left hand plays what was previously played by the right hand, and vice versa. This is an essential skill if one wishes to be able to fully utilize the polyrhythm, and it can also make the musician hear and feel the relationship between the two rhythms in a different way. Similarly, changing the orchestration of the polyrhythm by moving it around the kit can be technically challenging, but also change our perception of the individual rhythms and how they connect to each other.

These techniques are equally applicable to the piano, and once again can be even more difficult at this instrument because of how we orient ourselves in music, for example by playing roots and fifths in the bass register and melodies in the treble. When this relationship is inverted it can sometimes be cognitively disorienting. Pianists may also be accustomed to accompanying themselves ("comping") with specific rhythmic patterns in the left hand, while improvising primarily eighth note level melodies in the right hand. If this relationship is reversed, even relatively simple accompaniment and solo improvisation can be hard, as the "Cantaloupe Island" exercise in Chapter 4 demonstrates.

We need to hear precisely how two given rhythms line up, and feel comfortable accessing that polyrhythmic texture regardless of the key, chord, etc. In a "real" musical setting, we will incorporate the polyrhythmic concept as a drummer would, while also making harmonic decisions and intervallic decisions, given the parameters of that moment, personal taste, etc. The register that each hand is playing in will also influence our decision making, as will the presence (or absence) of a bass player.

The Foreground/Background Approach

Jazz pianists who have mastered any type of left–hand chords will undoubtedly notice that this allows them to put that accompaniment "on the back burner" and devote more of their mental faculties to the task of improvising right–hand lines when soloing. Those who have spent considerable time playing stride piano know that even complicated left–hand accompaniment patterns (using a combination of roots, fifths, tenths and/or close position chords) can become almost automatic, again freeing up the mind to focus on right–hand soloing.

Jazz organists must also frequently multi–task at the instrument, improvising right–hand lines while accompanying themselves with chords (played by either hand) and bass lines (played by their left hand and feet). Different organists employ varying strategies to this end. For instance, Jimmy Smith would often play a pre–set bass line through the form of a tune and repeat it for every chorus, presumably allowing him to

focus on generating more spontaneous right–hand lines. I call this the Foreground/Background Approach.

In this example, the right–hand improvisation Is mentally in the foreground, while the background task (the pre–determined walking bass line accompaniment in the left hand) runs on "auto–pilot", thus requiring less cognitive effort.

Keyboardist and composer Larry Goldings found a different solution to the mental challenge of multiple–voice improvisation, which also contributed to his distinctive organ playing style. In a 2016 interview with Leo Sidran, he discusses how he approached playing the organ from the outset:

> "I really was trying to think of myself as making a statement there (with bass lines) and making a statement here (with right hand lines) as much as I could ... I don't really think I have the independence of the hands, limbs the way someone like Brad Mehldau has, or Keith Jarrett or Abdullah Ibrahim … he can play these, you know, repetitive figures in his left hand … I can't actually do that very well. I can do it better if it's slower. But, my approach was, because I'm interested in interesting bass lines, sometimes I alternate in my brain ... Three bars here are going to be kind of hip, and then I can play simply in my right hand or lay out, and I think maybe that's one of the reasons why I don't normally go for the real chops kind of, as Ran Blake used to call it, "diarrhea of the hands" ... approach on the right

> hand. Because I generally find that a lot of notes get boring ... and it's just not the way I think. (Goldings 2016)

The Foreground/Background Approach can also be combined with the Two–Column Approach. Using the parameters established by each column, the left hand can play by an accompaniment pattern while the right hand improvises, after which the hands can switch roles. Once comfortable doing this, the pianist can attempt to fully improvise with both hands simultaneously, with or without the Two–Column Approach parameters.

CHAPTER 2: BACHIAN/NON–BACHIAN COUNTERPOINT and HARMONIZATION

Introduction

This chapter includes introductory concepts and exercises designed to help jazz pianists learn how to harmonize melodies and create counterpoint, using ideas found in the music of Johann Sebastian Bach. It also includes examples of Bachian approaches found in jazz, as well as examples of non–Bachian harmonization and counterpoint techniques.

Speaking of the connection between Bach and jazz, jazz pianist Barry Harris once stated:"... we are not only jazz musicians. We are the continuation of improvisation that has been going on for years — centuries. We are the continuation of classical theory, classical improvisation. We are classical musicians." (De Lima 117–118) Harris knew that Bach was a great improviser and composer, and saw jazz as being connected to that lineage.

Bach and The Circle of Improvisation, Interpretation, Arrangement and Composition

In the quest to develop the ability to improvise with multiple voices at the piano, it is extremely beneficial to study the music of Johann Sebastian Bach. Bach's musical activities included composing, performing, teaching, arranging other composers' music and improvising. In addition to improvising in a performance context, he was also known to play compositions by others and subsequently improvise on the material as way to stimulate his own compositional output. (Cole 2000, 96) All his musical activities

can be conceptualized within the Circle of Improvisation, Interpretation, Arrangement and Composition.

Because Western harmony is a central aspect of Bach's music, the most logical and direct way to implement his ideas into a jazz context is to focus on standard repertoire that uses typical Western chord progressions and cadential schema. Additionally, what one learns about phrasing and forward motion from Bach can also be applied within a modal jazz context.

Four Types of Contrapuntal Motion

As this chapter will cover different approaches to harmonizing a melody, it is pertinent to consider the four types of contrapuntal motion available in a two–voice texture. The four types of contrapuntal motion are:

(1) Parallel motion: voices move in the same direction with the same intervals

(2) Similar motion: voices move in the same direction but with different intervals

(3) Contrary motion: voices move in opposite directions

(4) Oblique motion: one voice stays the same while the other voices move up or down

Bach's Approach to Harmonizing Melodies

Pianist Warren Bernhardt recounted fellow pianist Bill Evans' connection to Bach as follows:

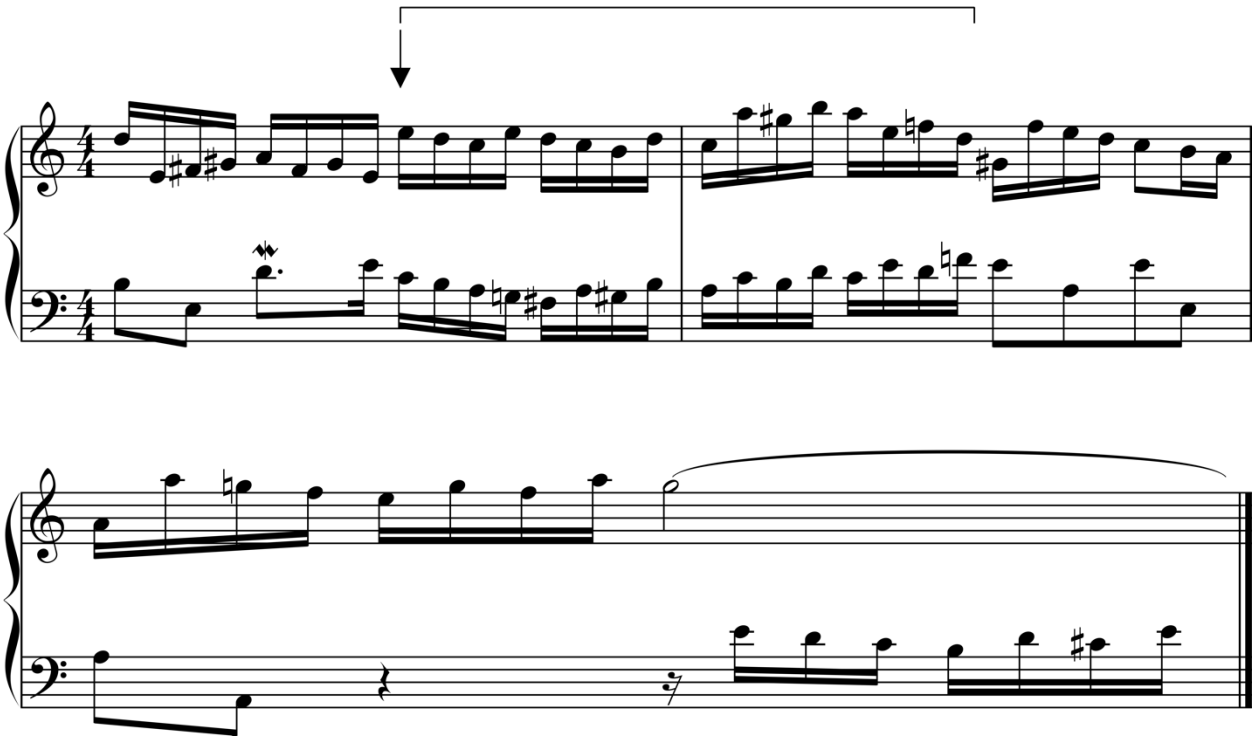
> "Bill introduced me to the Bach two– and three–part Inventions, which he loved dearly and sight–read almost to perfection. We marveled at their architecture and mathematical purity. He was convinced that the Inventions were the perfect exercise for a pianist, not too difficult, but each one a finger–bender and a gem." (Pettinger 150)

Bach's Inventions provide the ideal point of departure for gleaning musical insights about counterpoint and linear harmonization of melodies. His music often uses scalar melodic patterns harmonized in thirds and sixths, and it can be very useful to harmonize scale patterns in this manner, using the framework of a jazz standard or basic Western chord progression before exploring harmonizing with other intervals.

Practicing scales in a constant subdivision stream (e.g., eighth notes) immediately calls attention to harmonic rhythm and the temporal placement of chord and non–chord tones. Depending on where we begin a scalar line (harmonized or not), it will become clear what adjustments must be made so that chord tones land on downbeats, and lines resolves harmonically.

Once the basic harmonized scales have been mastered through all registers of the piano, we can begin experimenting with directionality; that is, changing the direction of the scalar line in different ways. Bach's Invention No. 1 provides a good introductory example of melodic harmonization using thirds and sixths, with a subtle change in directionality. Figure 4 shows measure 13 from Invention No.1.

Figure 4: Measure 13 of J.S. Bach's Invention No. 1 (BWV 772)



The passage indicated by the arrow begins with scalar, stepwise parallel motion (descending thirds) before the treble voice leaps back up for one note and then continues to descend stepwise. This brief instance of contrary motion serves to invert the parallel thirds into sixths, creating intervallic variety.

The next logical step is to work on specific patterns, playing them methodically through each scale degree. Bach's music is replete with such patterns; they provide great directional variety and demonstrate the infinite possibilities of developing motivic material from scale–based melodic cells. Playing these types of patterns through different scales related to a chord progression will make the student more aware of the inherent voice–leading possibilities when moving from chord/scale to chord/scale.

Figures 5 and 6 show several examples from Bach's Invention No. 3 in D Major (BWV 774).

Figure 5: Measures 5 and 6 from J.S. Bach's Invention No.3 in D Major

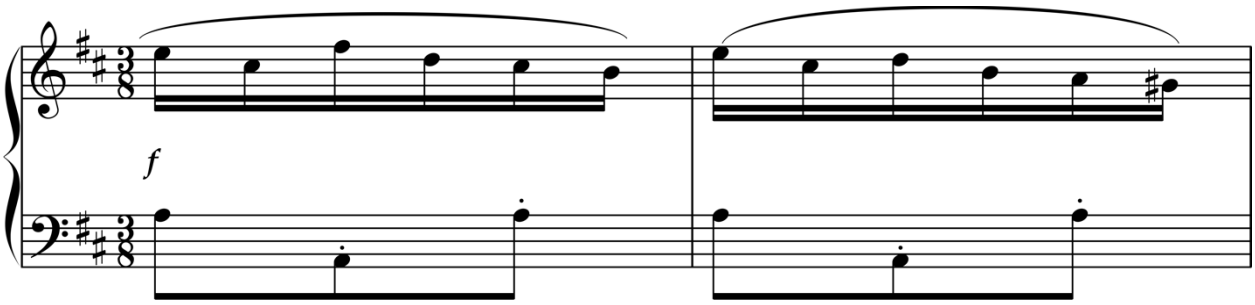
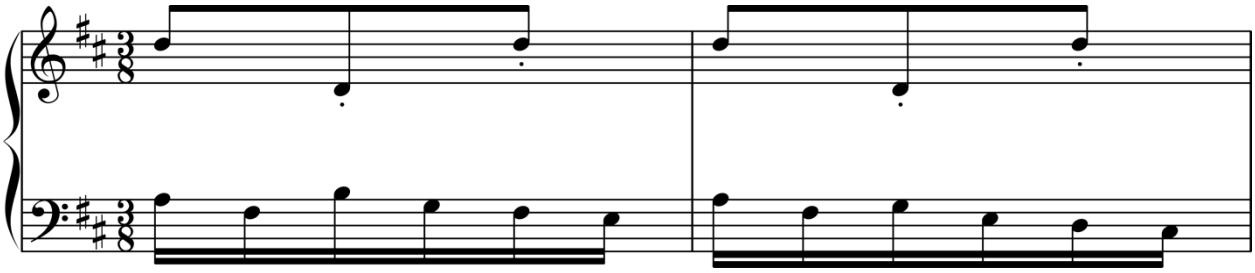


Figure 6: Measures 47 and 48 from J.S. Bach's Invention No.3 in D Major

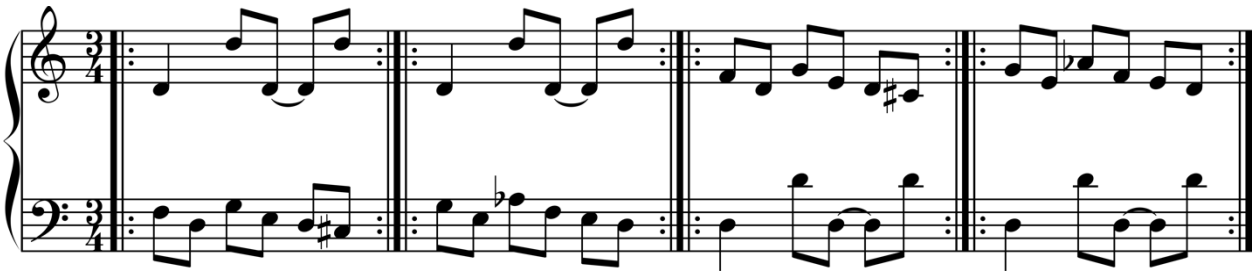


In contrast to the previous example featuring melodic harmonization with thirds and sixths, these examples use a scalar melody played in counterpoint to an ostinato pedal. The right–hand scalar pattern and left–hand ostinato from mm. 5–6 reappear in mm. 47–48, transformed and with voices inverted.

Figure 7 shows an exercise based on this scale pattern and incorporating the idea of an ostinato contrapuntal pedal figure. The pattern has been adapted to 3/4 time, with an idiomatic jazz waltz ostinato rhythmic pattern and contour. The pitches

have been changed to express a whole/half (W/H) diminished scale, often used as a "tonic diminished "sound in jazz.

Figure 7: Exercise Based on a Scale Pattern from J.S. Bach's Invention No.3 in D Major



The repeated measures show the pattern built on the first and second scale degrees, starting with the ostinato in the right hand and scale pattern in the left, and then with the voices reversed. This exercise can be continued by playing the pattern on every scale degree, and then with voices switched. (Cognitively, I found this exercise easier than the original Bach pattern, because here the voices move in similar motion on beat two.)

The Herschian/Bachian Approach to Four–Voice Improvisation

Near the end of his life, Bill Evans described additional benefits of playing Bach's music to Jim Aikin:

> "Bach changed my hand approach to playing the piano. I used to use a lot of finger technique when I was younger, and I changed over to a weight technique. Actually, if you play Bach and the voices sing at all, and sustain the way they should, you can't really play it with the wrong

> approach. It's going to straighten you out in a hurry if you have a concept of what it should sound like." (Pettinger 1998, 39)

In a series of articles written for Keyboard Magazine and Downbeat, Fred Hersch describes his approach to improvising four–voice contrapuntal harmony in a jazz context. (2012, 76) Bruno Heinen interviewed Hersch for his doctoral thesis, and clearly outlines what he calls the "Herschian" or "Herschian/Bachian" approach, since Hersch draws heavily from Bach for his method. Taken together, these documents provide the student with excellent step–by–step instructions on how to develop the ability to improvise four–voice harmony at the piano.

Hersch considers Bach's Chorales to be the voice–leading "bible" and suggests that students play one chorale a day until they have gone through the whole book – a task that takes about a year to complete, since there are 377 chorales. (2012, 77) He recommends that students play the chorale phrase by phrase, starting with playing all six of the possible two–voice combinations (treble and bass, tenor and bass, alto and tenor, etc.), followed by the four possible three–voice combinations, and finally all four voices simultaneously. (Heinen 2019, 12)

In Hersch's instructional video course for the Open Studio jazz website, he also mentions a good intermediary step — playing the melody and bass notes of a standard while improvising a countermelody in the alto voice. Once the student is comfortable with this, they can add the fourth voice, the tenor.

In sum, the Herschian approach allows the student to steadily learn Bach's entire four–part chorale repertoire and eventually internalize the principles of inner and outer voice movement found therein. This can then be applied to jazz harmony and standards, creating a completely different approach to chord playing with less static harmony or preconceived voicing movement.

"Little Voice Leading Scenarios"

I once attended a masterclass where Brad Mehldau said that if you play Bach regularly, you will start to hear more contrapuntal possibilities simply by virtue of spending that time with Bach's music. At another masterclass, Mehldau mentioned many of the techniques, including varying the distance between two contrapuntal voices, using ostinati in the right or left hand, crossing over the hands, and simply practicing improvising a countermelody with the left hand while playing a standard melody in the right. (Hum and Tosoff 2014)

In an interview with classical pianist Kirill Gerstein, Mehldau (himself a student of Fred Hersch) describes how he would come up with "voice leading strategies" and "little voice leading scenarios" while working on new repertoire. (Mehldau 2020) From performance to performance of any given song, these strategies or scenarios could presumably return quite frequently, albeit in different ways, with other aspects of musical expression (rhythm and phrasing, tone colour) being improvised. This imbues each performance with a feeling of spontaneity, even if the contrapuntal harmonic

aspect of the music is somewhat pre–determined. Indeed, within a jazz performance there can be a wide range of material, ranging from completely improvised, to partially improvised, to completely arranged or pre–determined.

Counterpoint in Charlie Parker's "Chasin' the Bird"

Charlie Parker wrote only two compositions that use melodic counterpoint: "Ah–Leu–Cha" and "Chasin' the Bird". Both tunes implicitly draw upon the New Orleans front–line brass tradition of improvised polyphony. Brian Priestley describes "Chasin' the Bird" as "two simultaneous and interlocking melodies played contrapuntally by alto and trumpet". (2006, 59) The original version has both melodies playing in the treble clef, with some pitches overlapping, but for pianistic purposes it is easier to start with the melodies in different clefs, as shown below.

The rhythmic interplay from measures 6–7 is interesting, as shown in Figure 8.

Figure 8: Measures 5–8 of Charlie Parker's "Chasin' the Bird"

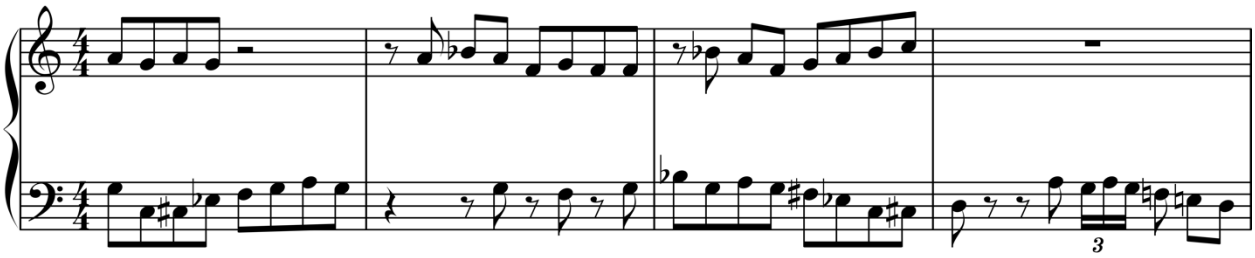
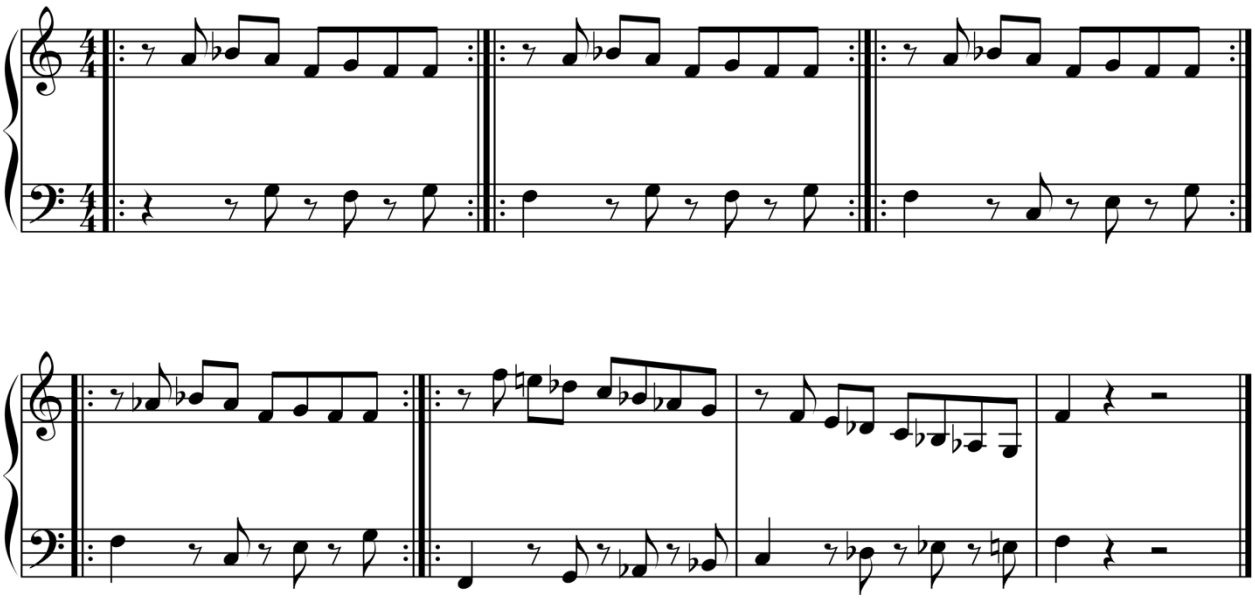


Figure 9 shows an exercise based on this rhythmic interplay. For this exercise, a downbeat has been added in measure 2 and a few pitches have been changed in

measures 3–4. Measures 5–7 features a harmonic minor scale with a chromatic passing note and contrary motion.

Figure 9: Polyrhythmic Exercise based on "Chasin' the Bird"



It is important to loop each bar until rhythmic accuracy, swing, and groove are consistent, before proceeding to the next. The goal is to be able to hear how these two rhythmic cells interlock. Once this is achieved, the student can practice improvising the melodic and harmonic content in real time, while maintaining the interlocking rhythms as shown. Moving the voices closer together with overlapping pitches, as in the original, can also be challenging and musically interesting.

Non–Bachian Approaches to Harmonizing Melodies

In contrast to the ubiquitous use of thirds and sixths in baroque music, African music and various world folk music traditions often have melodies harmonized with other intervals including seconds, fourths and fifths. Since jazz is essentially the meeting

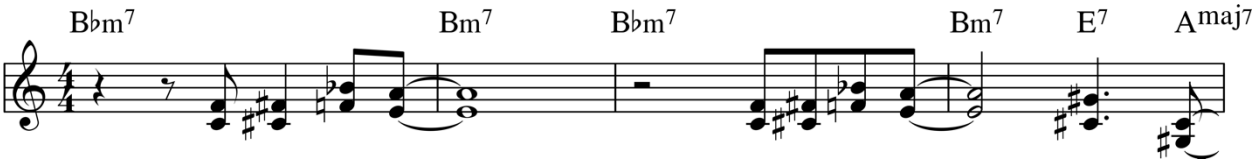
place of European and African musical practices and aesthetics, it can be musically effective to harmonize melodies using virtually any interval of a scale, bending the "rules" of Western harmony. One way to practice this is harmonizing a scale (or entire chord progression) with every interval, proceeding methodically through each one. This may present some fingering challenges to the pianist — yet another benefit of this approach. In tandem, one could work on harmonizing a jazz standard using different intervals, to hear the multitude of extant possibilities. A helpful exercise is to compose a countermelody for a jazz standard, using an intervallic restriction and/or motion restriction.

André White's "Monderful"

"Monderful" is a composition by drummer and pianist André White, recorded for his 2000 album *Signal* (on Cornerstone Records) and featuring guitarist Ben Monder, saxophonist Kirk MacDonald and bassist Neal Swainson. A contrafact based on the chord progression of "Along Came Betty" by Benny Golson, "Monderful" begins with two melodic phrases harmonized mostly in perfect fourths.

This melody, shown in Figure 10, exemplifies how the mood of a song or melody can be dramatically altered when it is harmonized with different intervals. In this case, the perfect fourths (and inverted perfect fourth) further highlight the chromatic movement of the chord progression (Bb–7 to B–7), as well as suggesting an almost otherworldly harmonic space.

Figure 10: Opening Harmonized Melody of André White's "Monderful"



Harmonizing the Altered Scale

Because of its unusual intervallic structure, harmonizing the Altered scale can lead to a variety of different intervals sounding one after another. Figures 11 and 12 use the rhythm of the classic jazz cymbal pattern. Figure 11 explores harmonizing the A Altered scale beginning with a major third. Starting this scale with a major third harmonization leads to a succession of perfect and augmented fourths, creating an interesting and unusual sound.

Figure 11: A Altered Scale with Major Third, Perfect Fourth and Tritone Harmonization

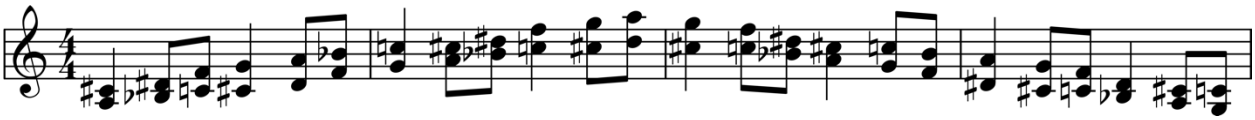
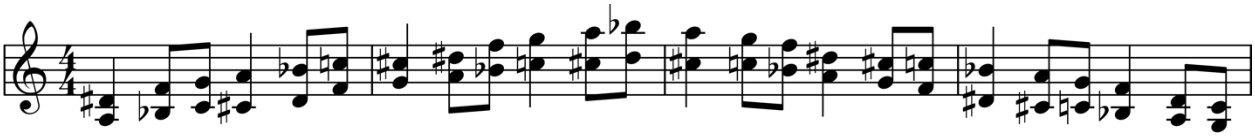


Figure 12 shows the A Altered scale beginning with a tritone. Because of its intervallic structure, this leads to intervals of perfect fifths, minor sixths and tritones.

Figure 12: A Altered Scale with Tritone, Perfect Fifth and Minor Sixth Harmonization



Pianists including Herbie Hancock, Joe Zawinul and Chick Corea have all explored two–voice harmonizations of this type.

Harmonizing Scalar Lines in Contrary Motion

Mastery of bebop linear melodic language involves a deep understanding of how octatonic scales work. Octatonic scale patterns can "buy you some time" by allowing you to anticipate a resolution to a chord tone, four notes ahead of time. Once you have mastered them, you can change their rhythmic contour in myriad ways and still benefit from this inherent quality, as shown in Figure 14. Octatonic scale patterns can also be broken down into tetrachords and used as "connective tissue" in combination with other patterns to make longer lines. These scales can also be harmonized easily in contrary motion, with both voices resolving naturally on strong beats with chord tones. Figure 13 shows a C dominant bebop scale played in contrary motion at the eighth note level.

Figure 13: C Dominant Bebop Scale in Contrary Motion

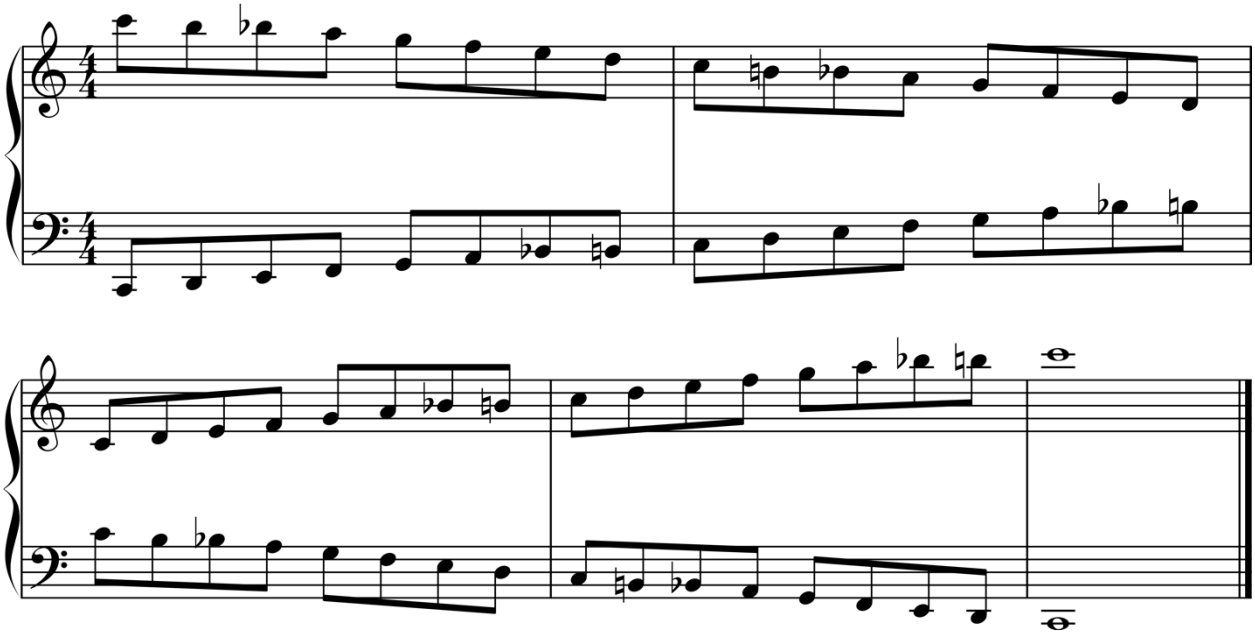


Figure 14 shows a rhythmic variation incorporating triplets on beat two, while still resolving in the same way.

Figure 14: Rhythmic Variation on C Dominant Bebop Scale in Contrary Motion

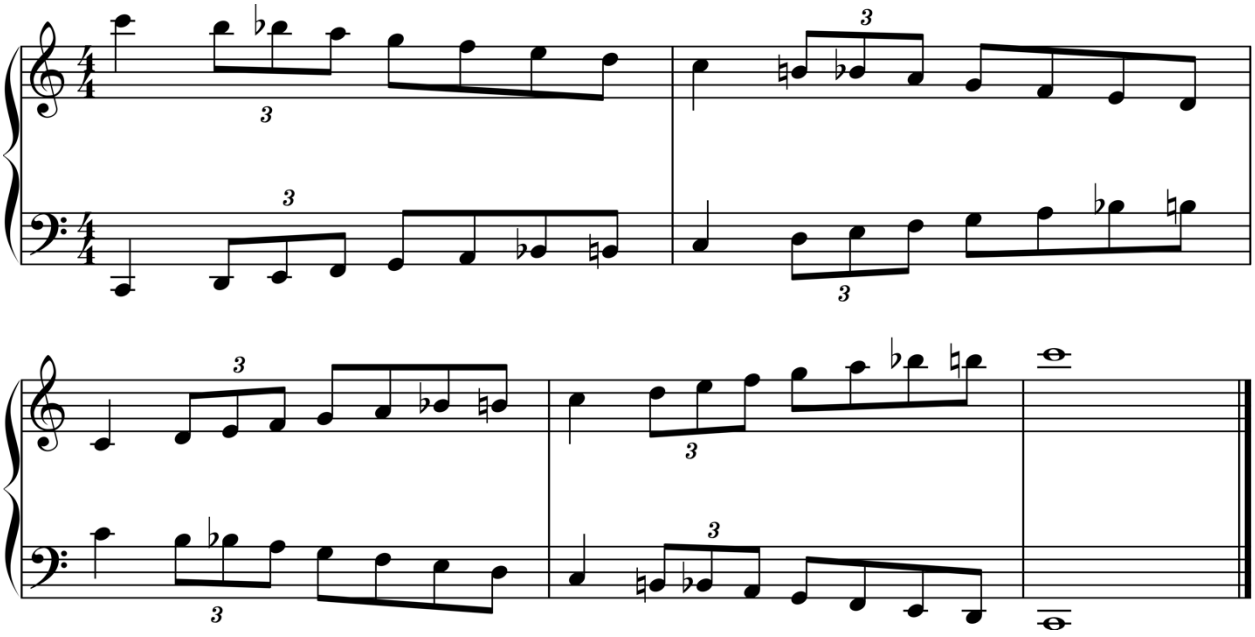


Figure 15 incorporates a C dominant bebop scale harmonized in contrary motion and overlayed onto a two measure rhythmic phrase. It shares some similarities to the melody heard at the Eb modulation of Billy Strayhorn's "Take the 'A' Train" and the shout chorus of Dexter Gordon's "Cheesecake".

Figure 15: C Dominant Bebop Scale Rhythmic Phrase Harmonized in Contrary Motion

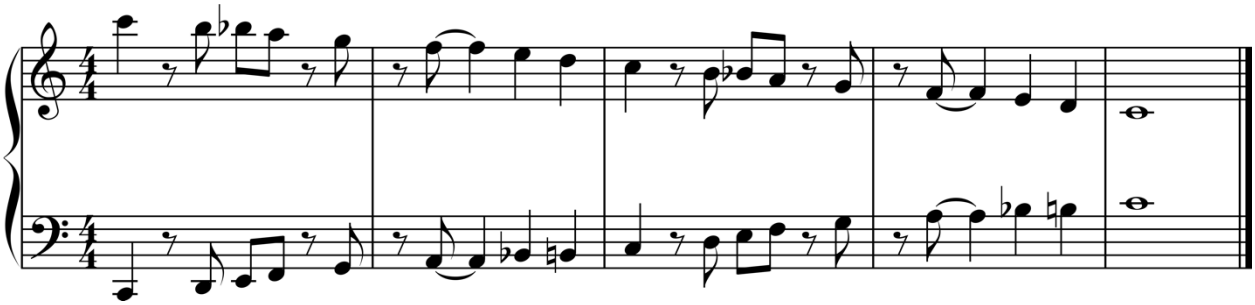


Figure 16 shows the F minor bebop scale, harmonized in contrary motion.

Figure 16: F Minor Bebop Scale Harmonized in Contrary Motion

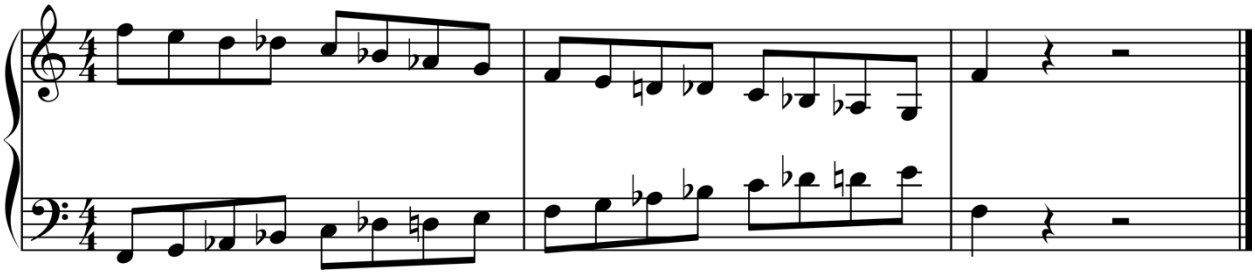
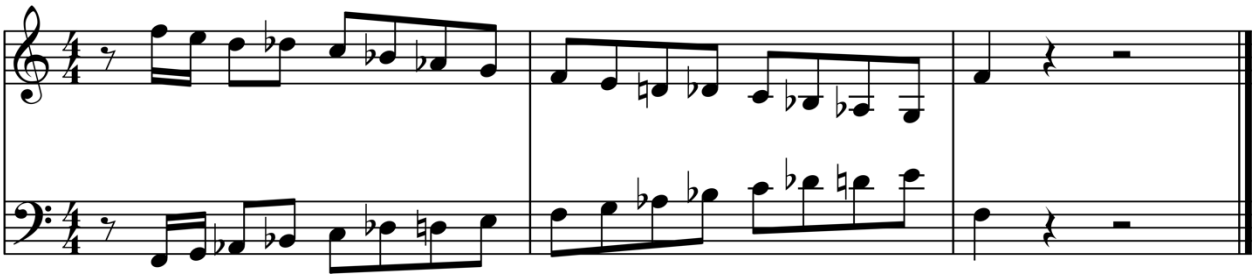


Figure 17 shows the same harmonized scale with a rhythmic variation often heard in bebop phrasing.

Figure 17: Rhythmic Variation on F Minor bebop Scale Harmonized in Contrary Motion



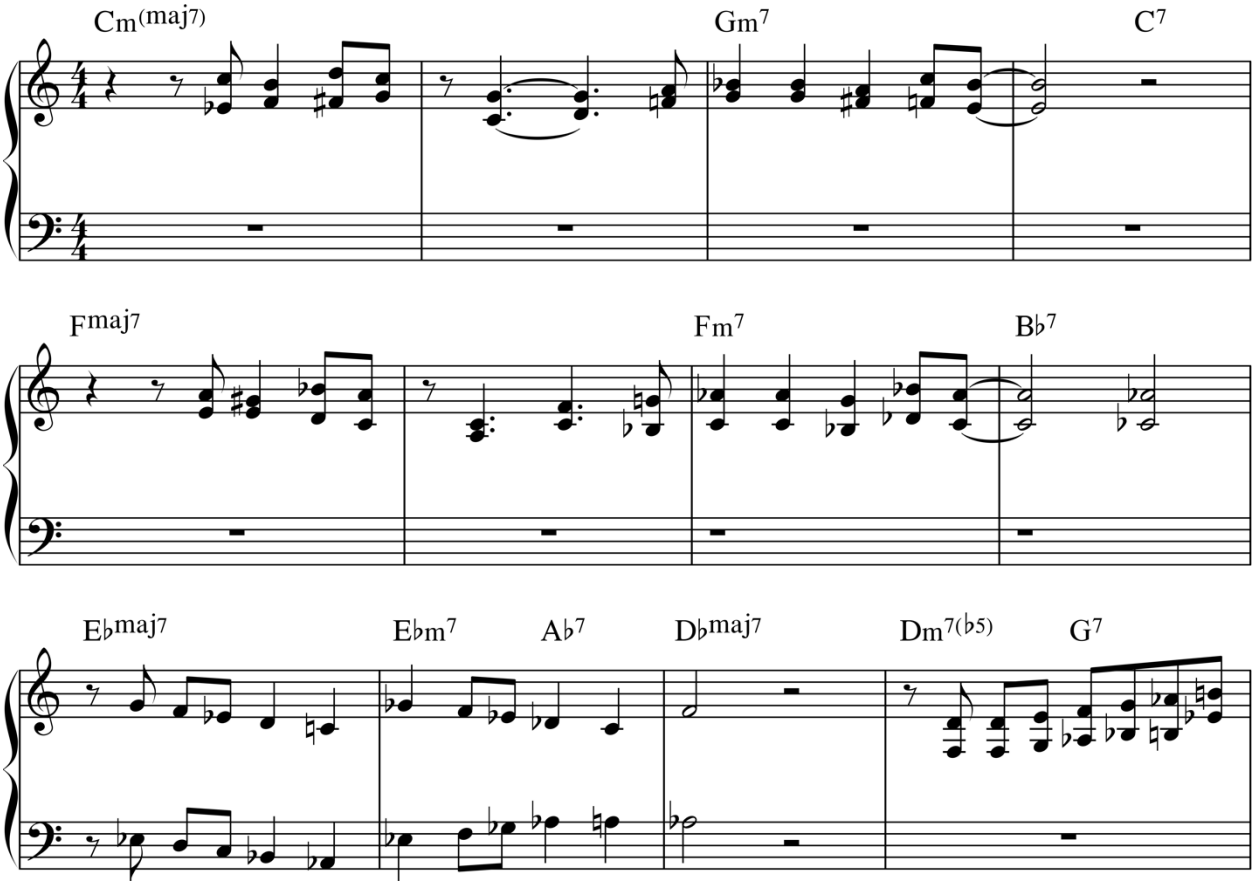
By practicing scales this way, the student will begin to hear and anticipate two logical resolution points of the scale simultaneously, while continuing to develop their overall ability to hear and generate contrapuntal lines.

Chuck Wayne's "Solar"

"Solar" is a composition by guitarist Chuck Wayne, which was originally titled "Sonny", before being slightly altered and copywritten by trumpeter Miles Davis. Figure 18 shows my arrangement of the piece, with a countermelody that uses a mix of parallel, similar, contrary and oblique motion. This piece is an interesting case study

because most of the melody lends itself to typical Bach harmonization. However, we must make many harmonization decisions that could imply different chordal and modal substitutions. For the minor chords, do we want to use Natural, Harmonic or Dorian modes? For the major chords, do we want to use Ionian or Lydian? Changing only one note can imply a tritone substitution or a completely different chord. How much chromaticism do we want to use? Once again, we are breaking the rules, and European classical, African and world folkloric aesthetics come together.

Figure 18: Harmonization of Chuck Wayne's "Solar"



In addition to writing é*tudes* or arrangements, it is valuable to take a specific interval and practice harmonizing with it through an entire chord progression. If that particular sound world is explored through the entire form, it will facilitate accessing those colors in the context of an improvisation, when we may choose to only use it in a certain part of the form.

Once comfortable harmonizing a scale with every interval, the next step is to work on harmonizing diatonic arpeggios. Since many melodies are made up of scalar stepwise motion combined with leaps of larger intervals, these two skills will facilitate improvising and harmonizing a tonal melody more easily.

Chick Corea's Mirror Image Approach to Harmonizing

In his book, *A Work in Progress: ...on Being a Musician*, Chick Corea describes another method of harmonizing a melody, as an outgrowth of practicing "mirror–image exercises" at the piano. Corea learned such exercises from a Rossomandi piano exercise book shown to him by his piano teacher Salvatore Sullo. (2002, 11)

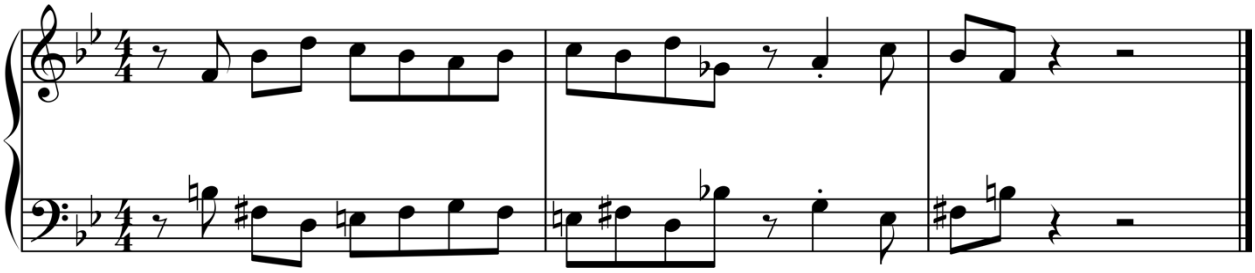
> "This is where one hand plays in an exact mirror image to the other. It helps reinforce the motion desired by the original hand. (You'll find the central point of the keyboard's "mirror–image" to be the notes D or Ab.) ...Of course, you can invent endless mirror exercises depending on what fingers and finger motion you would like to limber or strengthen. In each

> case, the left hand should mimic the fingering of the right hand and vice versa." (2002, 10–11)

After showing a few such exercises, Corea also shares a "mirror–image" based harmonization of Charlie Parker's "Dexterity", shown in Figure 19. He describes it as follows:

> ("Dexterity") shows how any melody can be taken and made into a mirror for the left hand — thus strengthening the grasp of that phrase for the right hand. And, of course, it works as well the other way — with the right hand mirroring the left to strengthen the left." (Corea 2002, 10)

Figure 19: Chick Corea's "Mirror–Image" Harmonization of Charlie Parker's "Dexterity"



This type of approach can greatly improve the pianist's ability to play lines in rhythmic unisons with evenness and precision and make them more aware of wrist and forearm movement. Interestingly, it can also open up new and different ideas for harmonizing a melody in contrary motion.

CHAPTER 3: TIMELINE REFERENTS, THE STANDARD PATTERN AND *CLAVE*

Introduction

Timeline referents are an essential element of music from Africa and its diaspora. They can be heard through every era of jazz. In this chapter, we will explore this topic and see the many ways in which *claves* can shape multiple–voice expression in a jazz piano setting.

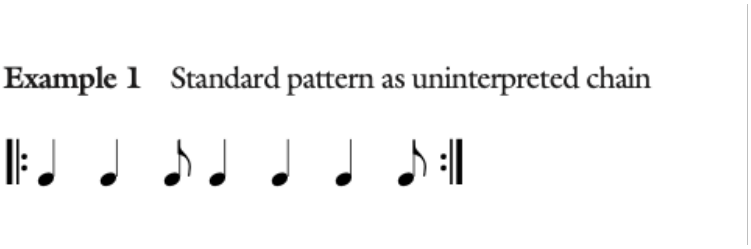
The Standard Pattern in African Music

In his essay "Structural Analysis or Cultural Analysis? Competing Perspectives on the 'Standard Pattern of West African Rhythm'", Kofi Agawu states:

> Throughout West and Central Africa, as well as parts of the African diaspora, the rhythmic pattern shown in Example 1 is pervasive. Known among specialists as the "standard pattern," it is one of a class of similarly functioning patterns referred to as "time lines." A time line—also called bell pattern, bell rhythm, guideline, time keeper, *topos*, and phrasing referent— is a distinctly shaped and often memorable rhythmic figure of modest duration that is played as an ostinato throughout a given dance composition. (Agawu 2006, 1)

(Example 1 from Agawu's essay is reprinted on the following page as Figure 20.)

Figure 20: Example 1 from Kofi Agawu's "Structural Analysis…" Essay



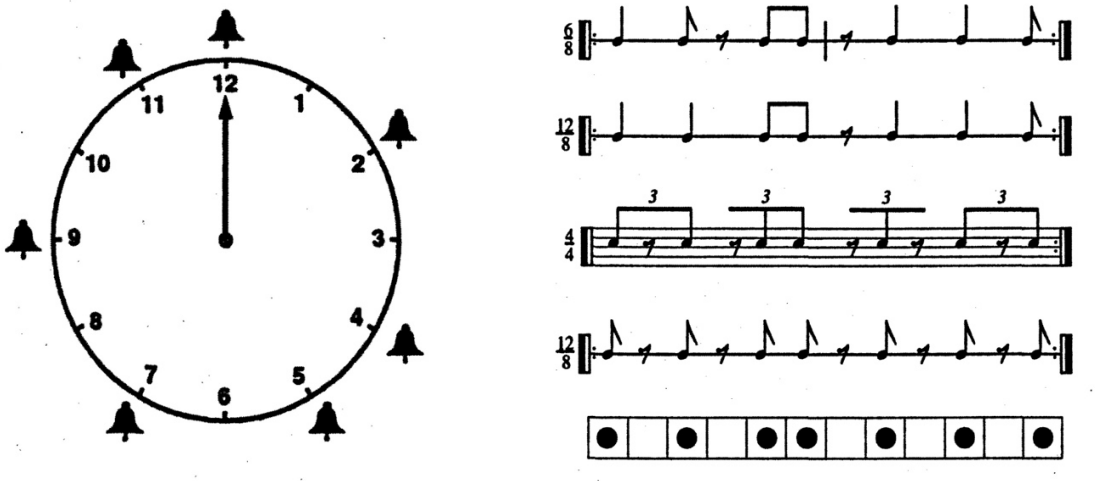
David Locke, in his essay "Principles of offbeat timing and cross–rhythm in southern Eve dance drumming", writes:

> A regular and recurrent rhythm pattern played on the bell provides the time referent by which members of the performing group reckon alignment of their rhythm patterns, song melodies, and dance movements ... Not only is the basic musical period established by the bell pattern but its distinctive rhythm shape influences all aspects of the music and dance." (1982, 217)

The "standard pattern" is widely known by its Cuban name, the *Bembé*. In his essay "Classification and Phylogenetic Analysis of African Ternary Rhythm Timelines", Godfried T. Toussaint describes the Bembé visually and conceptually as a neverending clock that runs so fast that it completes a full revolution in two seconds. The clock "strikes a bell on the hours of twelve, two, four, five, seven, nine, and eleven, for a total of seven strikes per clock cycle, with the first strike of the cycle at twelve. The resulting pattern rings out the predominant African rhythm time–line…the *Bembé*…" (2005, 23)

Toussaint includes a picture of this clock, as well as five other visual and notated representations of this pattern. Figure 21 reproduces these images.

Figure 21: Godfried T. Toussaint's Visual Representations of the Bembé Bell Pattern



N.B. The lowest line on the right image uses box notation to represent this rhythm.

The concept of a phrasing referent appears in many African diasporic musics throughout the Americas, from Montevideo to New Orleans. In Cuba, it is referred to as the *clave*. In their book *The Clave Matrix: Afro–Cuban Rhythm: Its Principles and African Origins*, David Peñalosa and Peter Greenwood write: "*Clave* is a Spanish word meaning 'code,' or 'key'– as in the key to a mystery or puzzle, or 'keystone,' the wedge–shaped stone in the center of an arch that ties the other stones together." (2007, 85)

Son, *rumba*, *cinquillo* and *tresillo* are the most common Afro–Cuban claves — that is, rhythmic patterns or cells with similar organizing functions. In fact, all four are derived from the "standard pattern" described earlier. Significantly, these claves can all

be felt and played in a triple or duple–pulse structure. (Peñalosa and Greenwood 2007, 85)

In his book *The Essence of Afro–Cuban Percussion & Drum Set*, Ed Uribe describes how the "standard pattern" evolved into the son and rumba claves, moving from 12/8 or 6/8 to cut–time or 4/4 in the process. Figures 22 and 23 reproduce his notated examples illustrating this. (1996, 36)

Figure 22 shows how the African 6/8 bell pattern ("standard pattern") has the same "accent relationship" as the duple meter pattern below it. (Uribe 1996, 36) This pattern includes the accents for both the son and rumba claves. On the left, the eighth note subdivisions are notated. On the right, only the accented notes remain.

Figure 22: Ed Uribe Clave Illustration #1

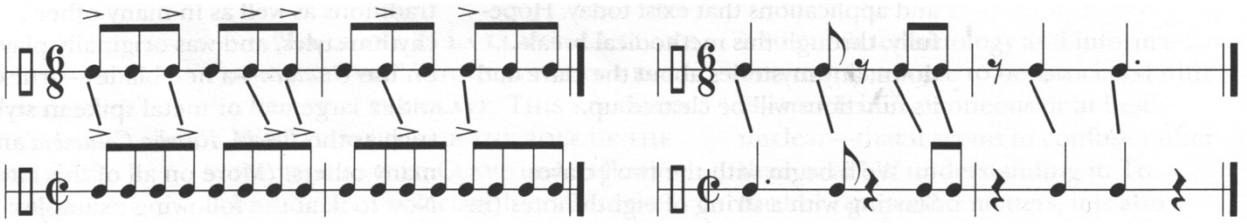
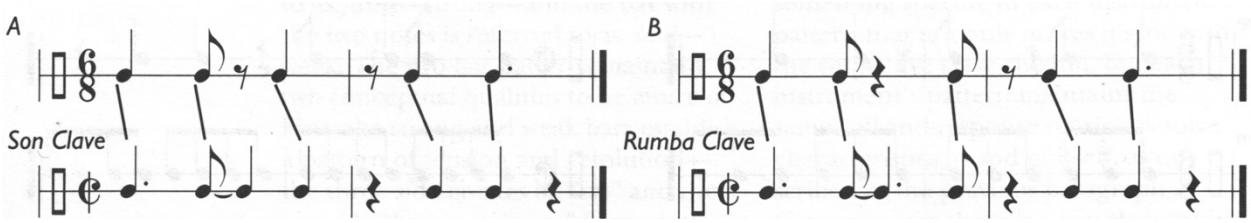


Figure 23 shows the direct relationships between the two specific 6/8 claves that evolved into the son and rumba claves. Uribe writes: "…it is easy to see how one pattern relates to, and evolved from, the other." He urges us to "keep in mind that though this looks one way when notated, in actual playing the interpretation of the rhythm falls somewhere "in the cracks" between the two meters." (1996, 37)

Figure 23: Ed Uribe Clave Illustration #2



American scholars and musicians versed in jazz and Latin music will sometimes apply the term clave in a reverse chronological way, to the original African bell pattern from which it descends. It is also used more generally to describe a wide variety of rhythmic patterns that are recurrent and have the structural characteristics described above.

Although it is always used as a tool for temporal organization, the way in which a timeline pattern interacts with all other rhythm lines in a polyphonic texture are strongly and uniquely codified and often reflect regional musical traditions. As a result, when analyzing African music, care must be taken to not impose one geographically specific set of musical tendencies (*vis–à–vis* the relationship of different rhythms to a central timeline pattern) on music from another region, however close.

Hegemony or Absence of Common Practice?

In his article "Comparisons of African and Diasporic Rhythm: The Ewe, Cuba, and Martinique", Julian Gerstin cautions against what he perceives as an emerging hegemonic tendency in academia: to examine the function of the standard pattern/timeline in all African and African Diasporic music solely through the analytical

lens developed by prior significant studies on the music of Cuba and the Ewe people of Ghana. He writes that this risks "applying an Ewe/Cuban–centric framework to African/Diasporic music with other rhythmic sensibilities. The mainstream view can overlook or distort crucial elements of rhythm in non–Ewe, non–Cuban African/Diasporic musical cultures." (2017, 1)

Kofi Agawu appears to question the veracity of this claim in "Representing African music: Postcolonial notes, queries, positions". He also adds another dimension to the debate by contextualizing his thoughts within a postcolonial analysis, questioning the motivations of those who insist on developing their own theories about African music without building upon the existing body of scholarly of work. He states:

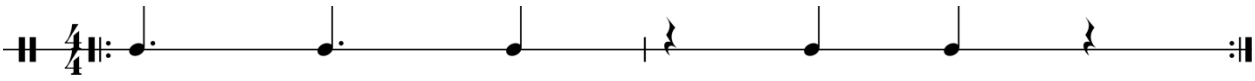
> For those suspicious of hegemony in any form, the absence of a common practice is welcome insofar as it undermines the possibility that a single, ostensibly "correct" way of understanding African rhythm can ever emerge. Others, however, will lament the practical circumstances that have allowed scholars to overlook or deliberately ignore the work of their predecessors so that they can rediscover Africa freshly, sleep with a virgin Africa, so to speak, own their bit of territory. The retreat from developing a general theory has in turn facilitated the propagation of certain myths, including notions such as polymeter, additive rhythm, and cross rhythm, among several others. (Agawu 2014, 72)

For example, in the view of scholars including Agawu, Gerard Kubik and Eugene Novotney, A.M. Jones' 1958 book *Studies in African Music* includes myths and inaccuracies that risk being perpetuated if not highlighted and vigorously rejected. This is not to fully discount Jones' contribution to ethnomusicology; he made some of the earliest field recordings (on acetate discs) of many different African musics, over 100 of which are available through the British Library Sound Archive website. Steve Reich was also greatly influenced by *Studies in African Music*, incorporating musical examples from the book into his early works, despite their notational flaws. (Marandola 2019)

Jazz and Clave

One very identifiable example of clave in African American music is the *tresillo* rhythm, which Wynton Marsalis has referred to as the clave of New Orleans jazz. (Marsalis, 2011). The tresillo is the "three" side of the clave de son, has three hits and is shown in the first measure below.

Figure 24: 3–2 Son Clave



Academic papers often group clave patterns into streams of eighth or sixteenth notes and write them numerically: the tresillo would thus be 3+3+2 (or 123 123 12) repeated ad infinitum.

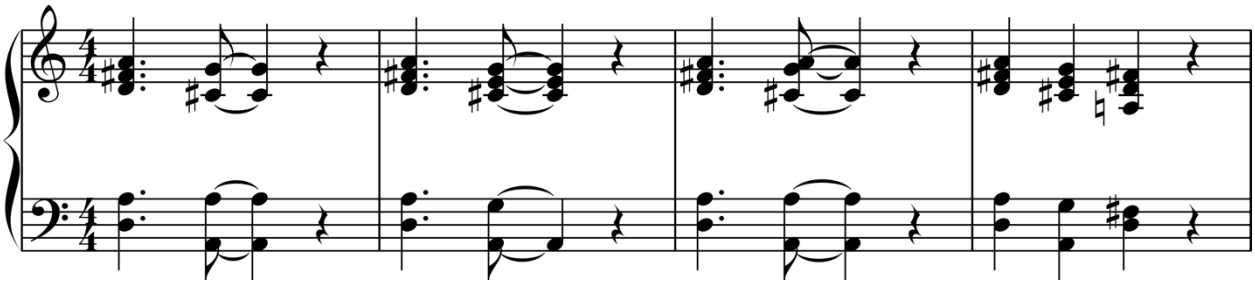
The tresillo is the most fundamental timeline pattern in Sub–Saharan African music and Latin American music. It is also known as the *habanera*, *tango* or *tangana* rhythm. Jelly Roll Morton most likely heard this rhythm as part of Cuban, Haitian, Latin American and Spanish songs in New Orleans, due to the cultural and socioeconomic ties that city has to the Caribbean. This is one of the important rhythmic components of what Morton called "The Spanish Tinge".

Related claves abound in African American music. For example, the Charleston rhythm is essentially a tresillo clave with the last beat omitted. Chris Washburne notes that "throughout the 1800s the unique mix of Spanish, French, English, Native American, Caribbean, and African cultures provided a complexity ... assuring early jazz a wealth of inspirations. (Washburne 1997, 61)

Washburne also observes that in many early jazz compositions "the principal melodic figure of a composition would fit the clave configuration. Because the composition was built around the motive, much of the performance had rhythms corresponding to the clave rhythm." (Washburne 1997, 74)

Jelly Roll Morton and his Red Hot Peppers' 1926 Bluebird recording of "The Chant" features a melody and ensemble hits outlining the first two notes of the tresillo clave. Figure 25 shows a piano reduction of these hits, first heard at 0:05 on the recording.

Figure 25: Clave Section Hits from Jelly Roll Morton's "The Chant" (at 0:05)



(In contrast, pieces like Lil Hardin Armstrong's "Struttin' with some Barbecue" uses two and four syncopation to great effect.)

In my opinion, a lot of the rhythmic tension, excitement and swing found in jazz occurs when clave rhythms are set up against a rhythmic framework where beats two and four are accentuated. In fact, the accent on the two and four can also be regarded as an American clave of sorts.

In a 2014 interview, Joe Chambers stated: "the clave in jazz is '2' and '4', that's where we feel it". (Schnorr 2014, 128) Two and four accentuation in jazz likely originates in the fundamental syncopation heard in African American work songs and Baptist church music, where participants would stamp their feet on beats one and three and clap on two and four. This is the basic template for a lot of African American drumbeats, from jazz to funk to rock.

One need only look at the way that jazz tunes are counted in — musicians will snap their fingers on two and four to indicate swing feel. Similarly, musicians will often practice with the metronome on beats two and four. By comparison, Afro–Cuban

bands will often count in a tune by having a percussionist play the clave rhythm by itself. In my experience as a listener and a performer, a great deal of rhythmic excitement and swing can come about by superimposing a tresillo clave or son clave type figure, and then resolving to the "American" clave of two and four accentuation.

Clave rhythms find expression in melodies, section punches, drum grooves and bass line ostinatos in many African and African diasporic musics, including jazz. In the ragtime and early jazz through to the stride piano era, pianists like Jelly Roll Morton, Fats Waller and James P Johnson would play the Charleston rhythm primarily as a left hand bass line, or bass and chords figure. The rhythmic pattern is named after Johnson's 1923 composition "The Charleston".

In the 1950's, Jamal pioneered the use of the Charleston rhythm as a "chord stab" figure superimposed over a bass player walking "in four". Jamal would accompany himself with these chord figures in the left hand, while soloing with the right hand. This distinctive style greatly influenced Red Garland's own comping approach in the first Miles Davis Quintet. (Davis himself was also greatly influenced by the Ahmad Jamal Trio's arrangements and rhythmic approach, modelling some of his quintet's pieces on them.)

Ahmad Jamal's arrangements of standards also feature rhythm section figures and phrasing in clave. While many jazz groups utilize arrangements that alternate between "Latin" and "swing", Jamal would superimpose sets of contrasting rhythmic

ostinatos even within one section of a tune. His trio with drummer Vernel Fournier and bassist Israel Crosby had a huge repertoire of arranged ensemble figures and contrasting rhythmic ideas that they could insert into different sections of a tune to create surprise and excitement. Many of these were clave–based. They could be resolved to swing feel, creating a resolution and feeling of relaxation in the music. Figures 26 and 27 shows the standard swing drum set pattern, and its relationship to the son and rumba claves.

Figure 26: Standard Swing Drum Set Pattern and Clave de Son

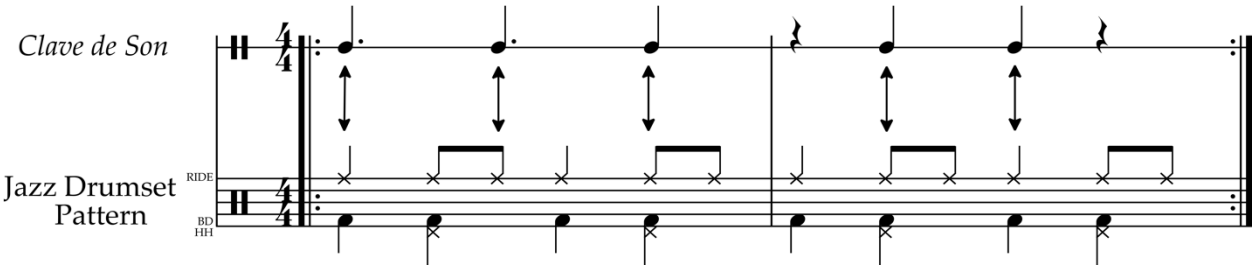
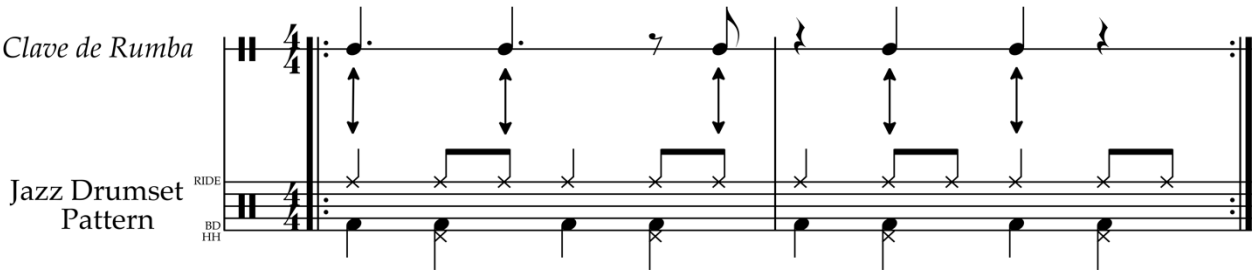


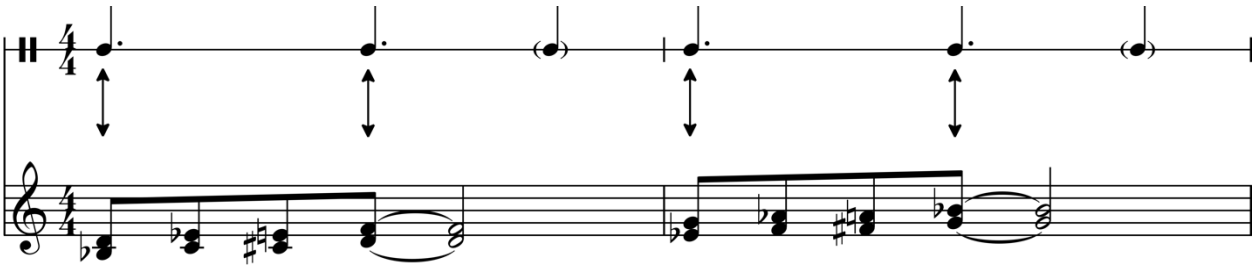
Figure 27: Standard Swing Drum Set Pattern and Clave de Rumba



Thelonious Monk compositions such as "Rhythm–A–Ning", "Bye–Ya" and "Green Chimneys" also feature melodies that align with tresillo and son claves, only to resolve to the two and four.

It is interesting to note that the beats one and three can be perceived as a musical "call" and two and four a "response". Similarly, in 3–2 and 2–3 claves, one side is the call, the other the response. The response is perceived musically as a landing point, or rhythmic area of resolution. This is the reason why oscillating between different claves in jazz or superimposing them momentarily can be so musically effective. Figure 28 shows Monk's composition "Blue Monk" and the tresillo clave.

Figure 28: Thelonious Monk's "Blue Monk" and the Tresillo Clave



A simple exercise to practice jazz clave independence would be to play the melody of Thelonious Monk's "Green Chimneys" in the left hand, while improvising with the right. Once this is comfortable, the hands can alternate roles.

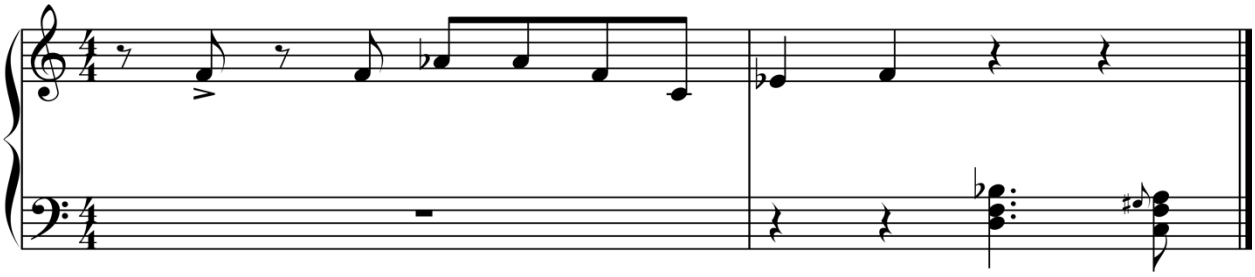
The first two hits of the tresillo can be heard in African American work songs and field hollers, gospel, blues and jazz. In the Black church, the 'amen' response from European church music finds African expression through the call and response between the pastor and the congregation, and often uses these hits.

In Richard Desinord's 2022 doctoral thesis, "That Gospel Sound: Harmony as Genre in Contemporary Black Church Music", he writes:

> Often in Black churches, one will hear congregants express agreement with a particular line from a pastor or other speaker by exclaiming "Amen!" In this context, the exclamation has the same meaning and function as it does at the end of prayer, and by extension, the end of a hymn: it declares that the truth has just been spoken. If we take the plagal cadence's most well–known association with the word "Amen," we can posit that its role as a form–defining gesture of closure has migrated from the very end of a piece, where it typically harmonizes "Amen," to the ends of sections within a piece, functioning as a harmonic replacement for the cries of "Amen" during a spoken section of a church service. (Desinord 2022, 61–62)

The common response in the Black Baptist church is a syncopated "Yes, Lord", using the rhythm of the first two tresillo hits, on beat three and the 'and' of beat four. This response is used instrumentally in many jazz compositions, including John Coltrane's "Blue Train", Hank Mobley's "A Baptist Beat", and Bobby Timmons' "Moanin'", as shown in Figure 29.

Figure 29: Opening Line of Bobby Timmons' "Moanin'"



Other clave rhythms abound in many different eras of jazz. Here are several from the bebop period. Sonny Rollins' composition "Strode Rode" begins with a clave–based melody, as show in Figure 30.

Figure 30: "Strode Rode" First Melodic Phrase

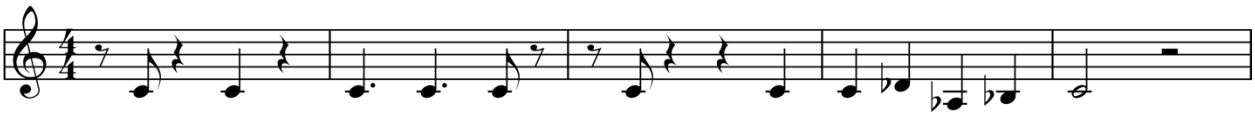
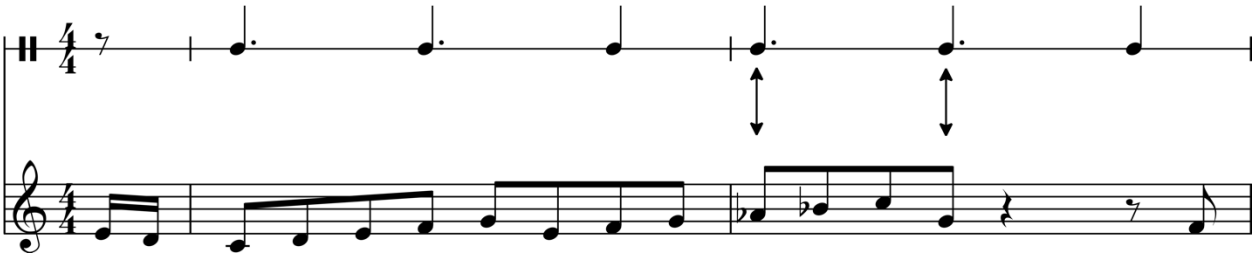


Figure 31 shows the opening line of Bud Powell's "Dance of the Infidels", which uses the first two hits of the tresillo to accentuate a phrase ending.

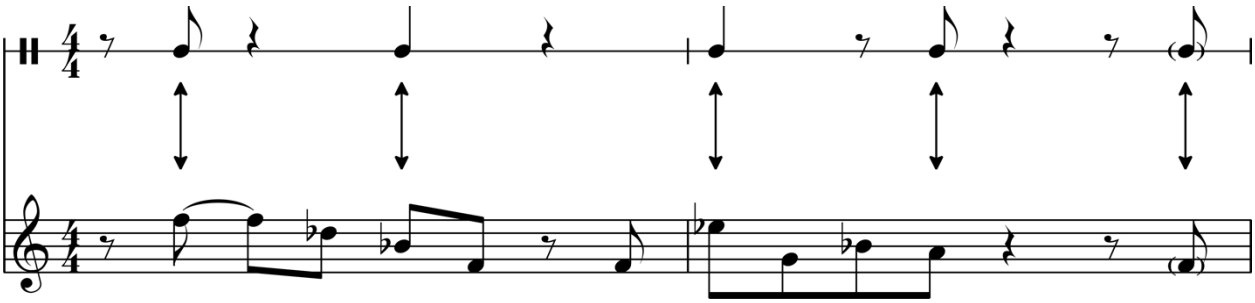
Figure 31: Opening Line of Bud Powell's "Dance of the Infidels"



Although Charlie Parker's music often features melodies with streams of eighth notes, his phrases often subtly outline a clave as well. Sometimes it will be the melodic

range or the accentuation of certain notes in a phrase that suggest a clave, as in the first two measures of "Segment", shown in Figure 32.

Figure 32: First Two Measures of Charlie Parker's "Segment" and Clave



Although the first phrase above ends on the note F, the finality of the preceding Bb tonic note on a downbeat corresponds to the clave accentuation shown above it. The F note is not central to the phrase — if omitted in performance, it would still sound like *Segment* and feel complete. In contrast, the A note in the second measure is essential, could not be omitted, and also emphasizes the clave.

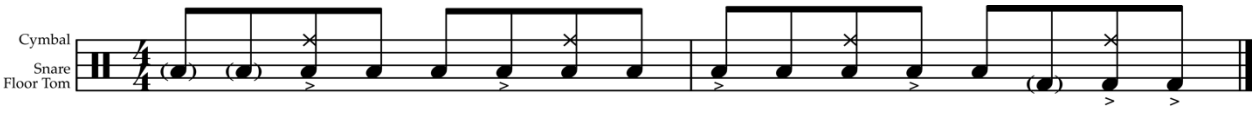
The genius of the standard swing pattern, mostly played on the ride cymbal, is that it naturally includes multiple claves such as son, rumba, the tresillo and the two and four clave. Drummers can accent certain strokes to emphasize different claves, responding rhythmically to the soloist and the rhythm section, without taking up too much space.

Incorporating Clave Accentuations into Scale Practice

Eighth note level drum patterns can easily be adapted to eighth note piano lines. Ahmad Jamal's classic arrangement of Poinciana with bassist Israel Crosby and

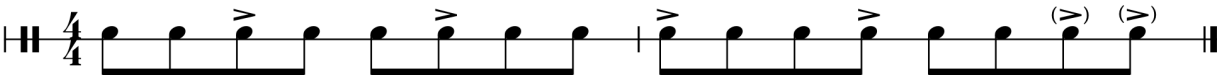
drummer Vernel Fournier was featured on the 1958 Argo album *Ahmad Jamal at the Pershing*: *But Not For Me*. Fournier famously adapted the Two Way Pocky Way groove associated with marching bands from the New Orleans Mardi Gras Indians tradition to the drum set. At 6:04, he plays a near–continuous stream of eighth notes on the snare drum (with snares off) and floor tom. The eighth notes are grouped mostly into threes as follows: 12 123 123 123 123 12. This "three over four" cross–rhythm resolves into the 4/4 meter since the last two eighth notes are grouped together.

Figure 33: Vernel Fournier's Drum Set Pattern on "Poinciana" (at 6:04)



NB. Snares are off, ride cymbal is played with butt end of stick and snare and toms are played with a mallet. The x–shaped note head on the snare line indicates an accented stroke. Figure 34 shows a simplified visual notation for the accented eighth note stream played on the snare drum and floor tom:

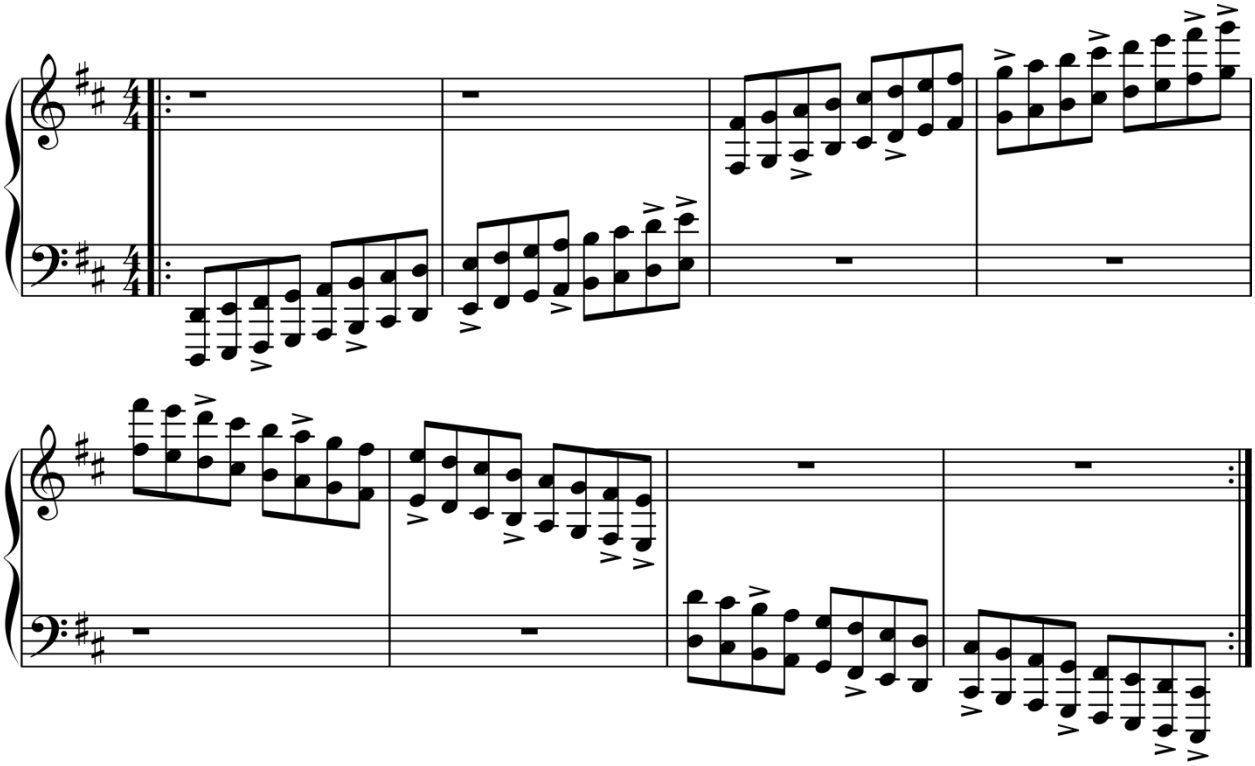
Figure 34: Simplified Version of Vernel Fournier's Drum Set Pattern on "Poinciana"



This accent pattern is typical of the *clave* rhythms so predominant in New Orleans jazz and Caribbean music.

Figure 35 demonstrates how scales can be practiced with clave accents. As mentioned in Chapter 1, it would be beneficial to practice this with at least three different eighth note time feels — straight, swing and "exaggerated swing".

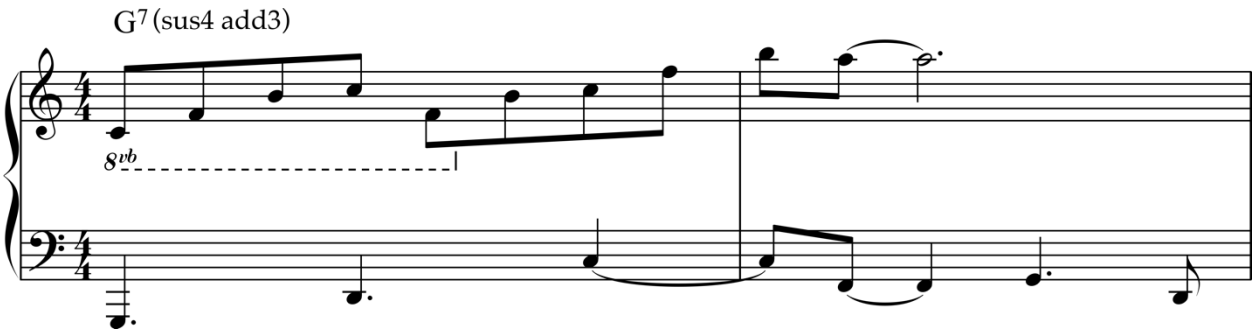
Figure 35: Scale Exercise with Clave Accentuation



"Gang of Three"

My composition "Gang of Three", recorded and released on my eponymous 2019 Chromatic Audio album featuring bassist Dezron Douglas and drummer Eric McPherson, has a bass line ostinato and treble melody built around a clave. Figure 36 shows the principal treble and bass melodies from "Gang of Three".

Figure 36: Principal Treble and Bass Melodies from "Gang of Three"



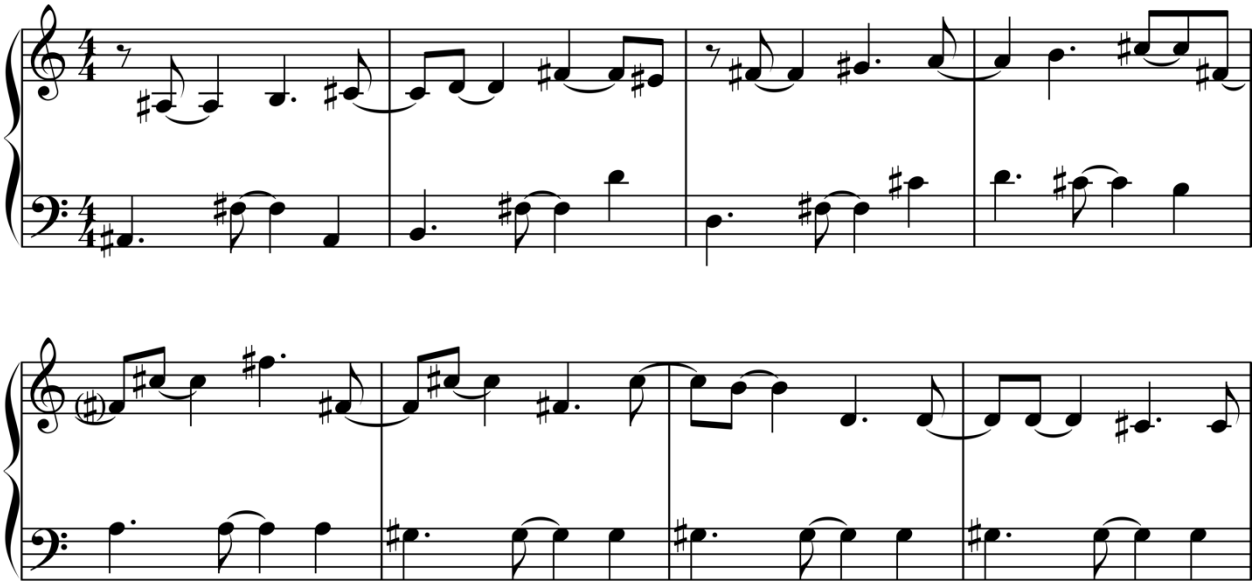
In the first measure shown above, the treble melody features a three–note arpeggio grouped at the eighth note level, similar to the clave accentuation found in Figure 35. Meanwhile, the bass line implies a cinquillo clave often heard in New Orleans jazz.

"La Máscara del Jaguar"

I recorded my composition "La Máscara del Jaguar" for my 2015 Chromatic Audio album *conception/oblivion* with bassist Mike De Masi and drummer Greg Ritchie. Figure 37 shows an excerpt from my improvised solo introduction to the piece.

In this introduction, I adhere to the tresillo rhythm in the left hand, mostly expressing the harmony using a combination of roots, fifths and tenths. My right hand plays syncopated melodic phrases that interlock rhythmically with the tresillo, never doubling it, but highlighting its presence by playing before and after it. At the end of the third measure in Figure 37 (at 0:10 on the recording), a countermelody in the tenor momentarily moves to the foreground because of its stepwise motion.

Figure 37: Excerpt from Improvised Piano Intro of “La Máscara del Jaguar” (at 0:08)



CHAPTER 4: BASS LINE and CHORDAL/BASS LINE OSTINATOS in JAZZ

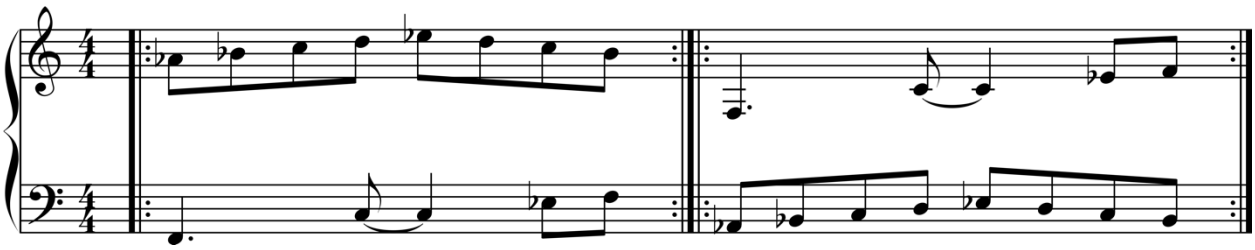
Introduction

Bass line ostinatos, often played in the left hand on the piano and doubled by a bass player, are a common music element heard in every era of jazz. As jazz pianists, our goal is to internalize these bass lines and hold the groove down so well that we can improvise single note lines in the right hand, accessing all our vocabulary and comfortably exploring new ideas. It is equally important to learn how to improvise chords with the right hand while maintaining the left hand ostinato, as this skill is also used frequently when accompanying others.

Herbie Hancock's "Cantaloupe Island"

"Cantaloupe Island" by is a classic Herbie Hancock composition that many jazz pianists learn early on. Figure 38 shows a simple introductory exercise to gain rhythmic and melodic independence while maintaining the bass line ostinato.

Figure 38: "Cantaloupe Island" Exercise

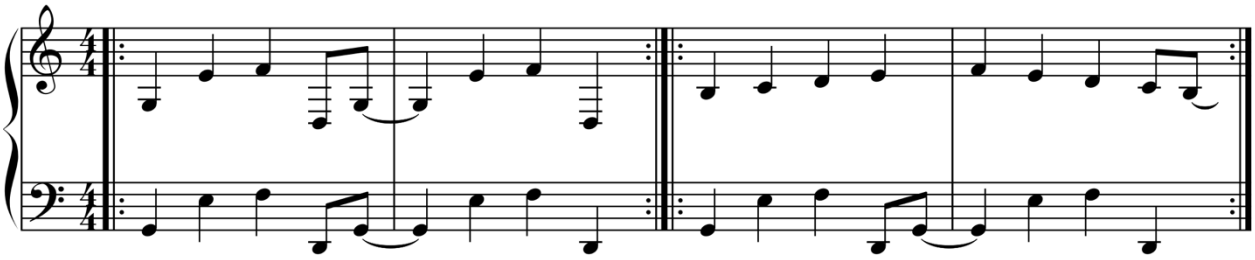


Keeping the ostinato going, the pianist can practice improvising a steady stream of eighth note patterns adhering to the shape written above. A pattern can be chosen spontaneously and then repeated to steadily improve time feel, groove and accuracy while playing it against the bass ostinato. Patterns from the F Dorian and F minor pentatonic scales are a good place to begin. Once this is comfortably executed, the voices can be switched so that the bass ostinato is played in the right hand and the improvised, repeating pattern is played in the left hand. Crossing the hands creates an additional physical and mental challenge, as well as providing the pianist with insight into how the feel of the keyboard changes in different registers.

Cedar Walton's "Bolivia"

Figure 39 shows another surprisingly difficult exercise built around an ostinato bass line interlocking with a secondary melodic line. In the first and second repeating measures, the bass line ostinato is played unison with both hands. In the third and fourth repeating measures, it is harmonized with a treble melody that anticipates the downbeat in the second bar, where the bass line does not. When this ostinato is repeated, a mirror effect is created as the two rhythms interlock identically. The treble melody in the second bar is a looping pattern derived from the G Mixolydian scale, but it is only a point of departure — the goal is to be able to improvise any number of melodies using this rhythmic shape, against the fixed ostinato. When played with both hands, even such a basic syncopation can be difficult at first.

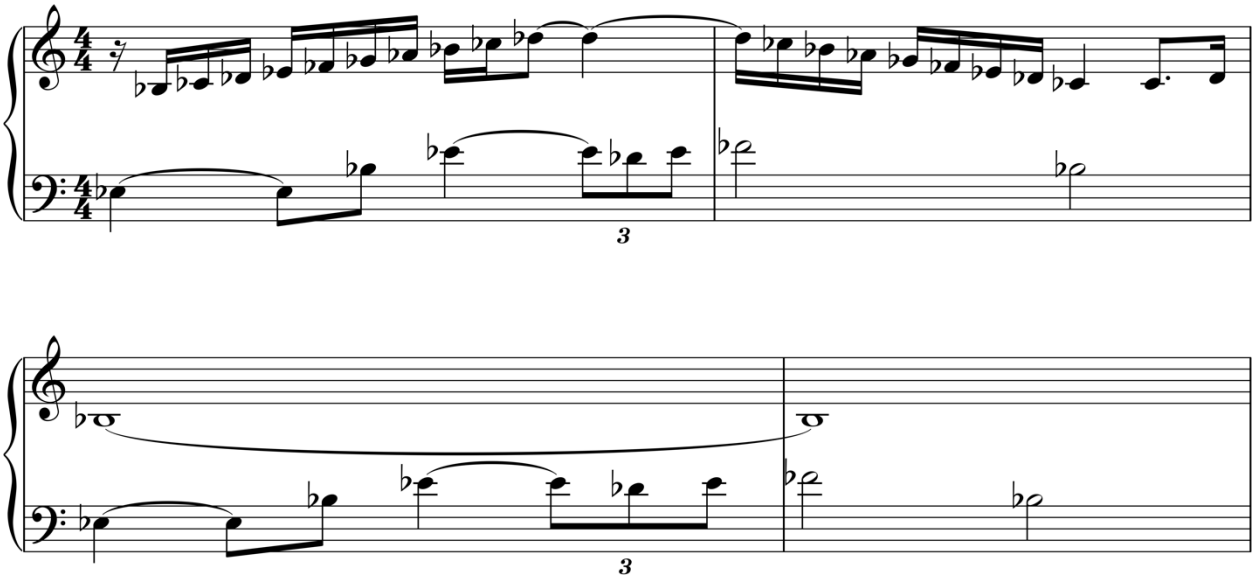
Figure 39: Two–Voice Anticipation Exercise on Cedar Walton's "Bolivia"



Joe Chambers' "Caravanserai"

Multi–instrumentalist and composer Joe Chambers has recorded his piece "Caravanserai" several times. Figure 40 shows an excerpt from the arrangement he used on his 2023 Blue Note album "Dance Kobina".

Figure 40: Excerpt from Joe Chambers' "Caravanserai"

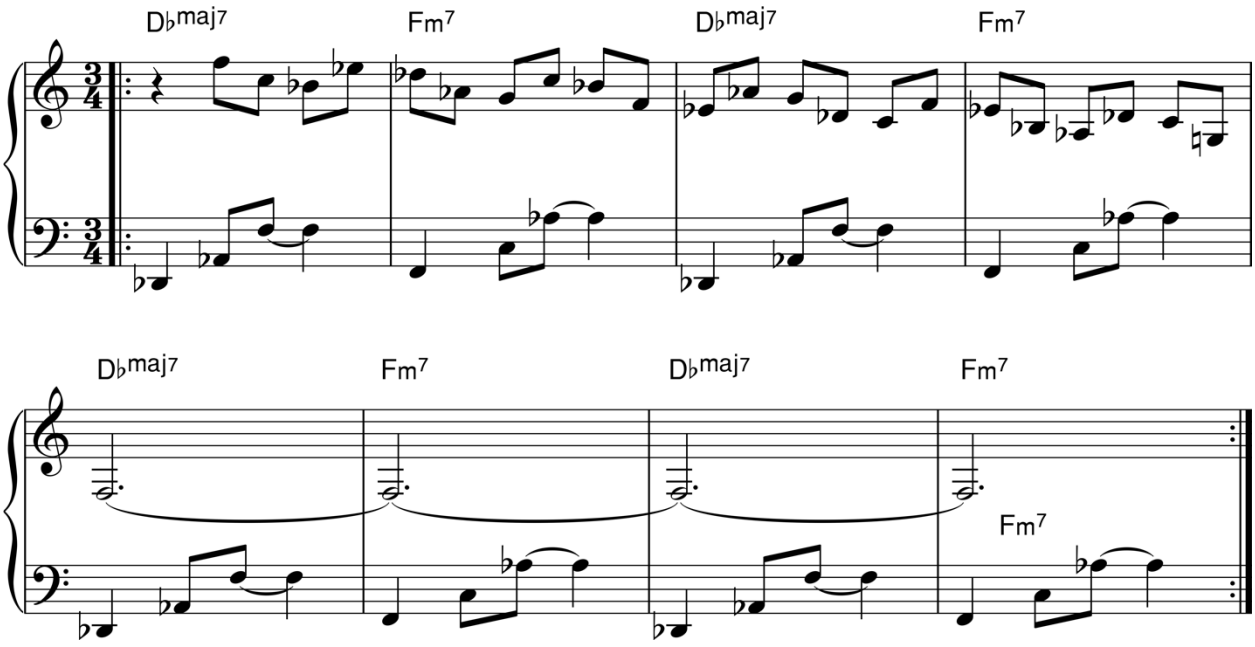


One challenging aspect of this counterpoint is the sixteenth notes in the treble line, interspersed with triplets, half, quarter and eighth notes in the bass.

"Waltz for Mabes"

Figure 41 shows the intro/outro section of my composition "Waltz for Mabes". This section features a bass line (consisting of roots, fifths and tenths) played in counterpoint to a treble melody with a repeating intervallic sequence (fourth down, second down, fourth up). During the outro, it can serve as a vamp for improvisation.

Figure 41: "Waltz for Mabes" Intro/Outro Bass and Treble Melodies

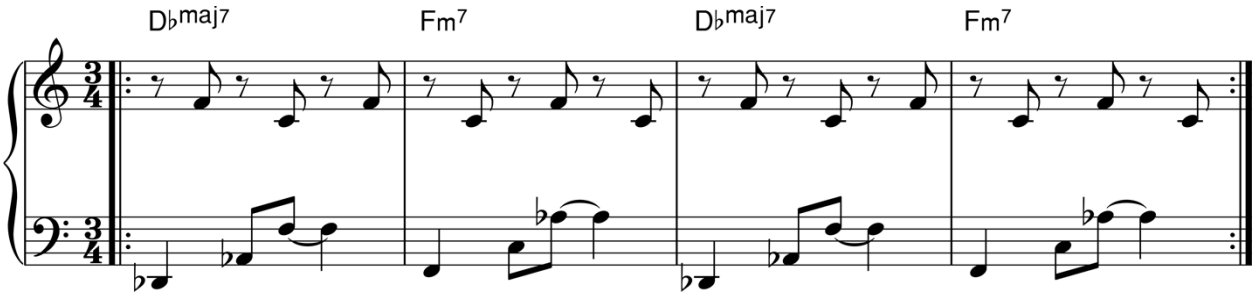


In my own practicing, I have noticed how challenging it can be to maintain the bass line in the left hand while improvising simple right hand phrases that result in a polyrhythmic texture.

Figure 42 shows a preliminary polyrhythmic exercise with eighth note up beats in the right hand, played on F and C notes. I find it surprisingly difficult, perhaps

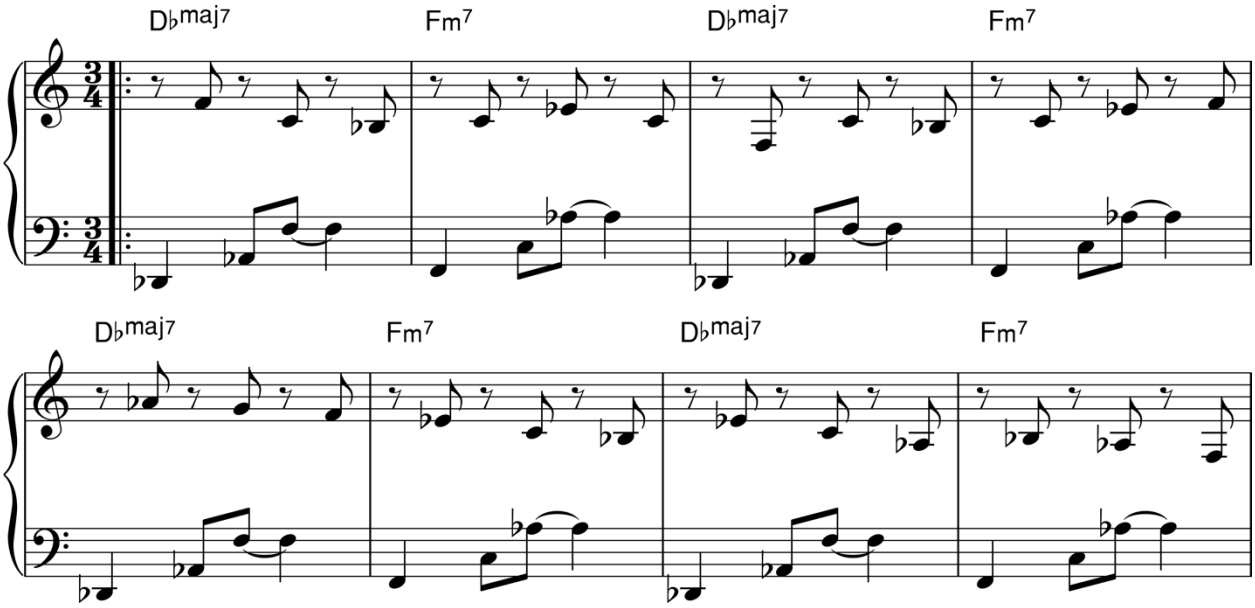
because the two lines intersect rhythmically in only one place within the measure: on the 'and' of two.

Figure 42: Waltz for Mabes Polyrhythm Exercise 1A



Once the polyrhythm is mastered, we can begin to play more sophisticated melodies with the same rhythm, as shown in Figure 43.

Figure 43: Waltz for Mabes Polyrhythm Exercise 1B



It is worthwhile to practice these types of exercises with different note durations and articulations. In the case of "Waltz for Mabes", use of the sostenuto pedal, longer note

values and legato touch can change how we hear the rhythmic interaction of the lines, how the time feels, and the overall emotional impact of the music.

Bud Powell's *Un Poco Loco*

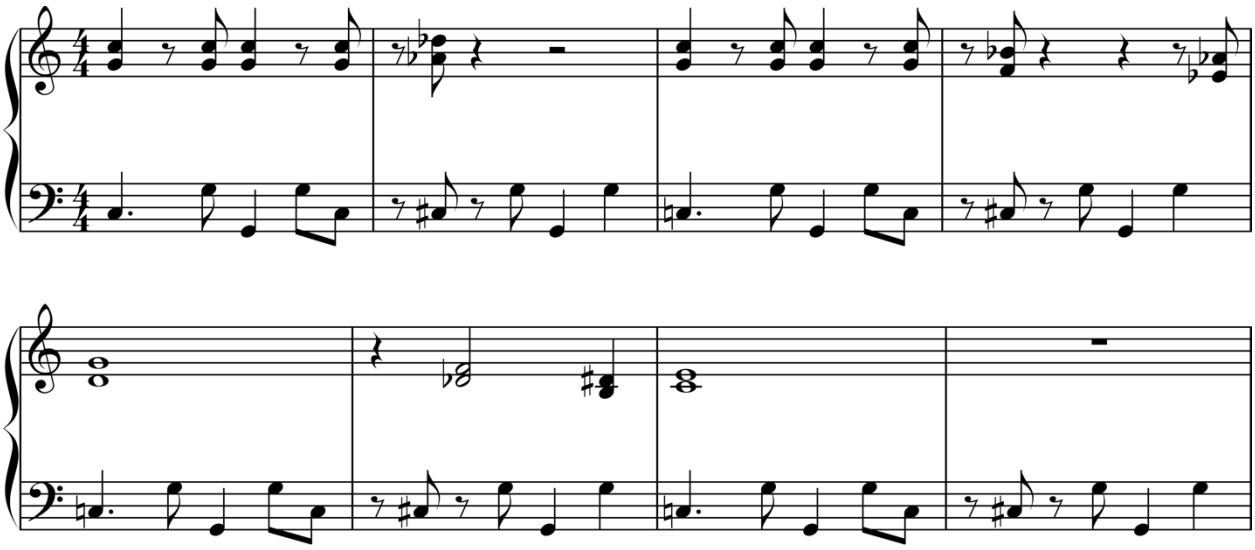
Powell's landmark composition "Un Poco Loco" was released in 1952 on the Blue Note album *The Amazing Bud Powell Volume One*. This original piece features bassist Curly Russell, and drummer Max Roach playing a now–famous drum groove with a 5–5–6 clave. Although Roach is usually credited as the originator of the groove, drummer Donald Bailey said in an interview that Bud Powell created it and played it for him on the drums (with some difficulty) in Philadelphia before it was recorded. (Alberts 2011, 120)

On this recording, Powell's remarkable piano playing has a multidimensional quality in and of itself that strongly recalls the rhythmic interaction of an African or African diasporic percussion ensemble. As a trio, Powell, Roach and Russell make musical allusions to Afro–Cuban music, West Indian calypso and Brazilian samba music throughout the piece. At 1:41, Powell improvises the following chord melody over the signature ostinato bass line of the composition, as shown in Figure 44.

The dyads played in the right hand strongly recall rhythmic patterns played by the *tamborim* section in Brazilian E*scolas de Samba*. The mostly parallel fourths played with identical timing conjure the image of a tamborim (small, round metal frame drum)

section playing in rhythmic unison. At the same time, the left–hand bass line ostinato brilliantly evokes the sound of the *surdos*, the bass drums in Escolas de Samba.

Figure 44: Bud Powell on "Un Poco Loco" (at 1:41)



Surdos one, two and three (*primera, segunda, terceira*) are all represented within the bass line, differentiated by register and rhythm. The low C and G notes (first and fifth chord tones) of the bass line played on beats 1 and 3 are identical to what the primera and segunda surdos play, and the off–beat eighth notes (mainly a Db and higher G) are very similar to what the surdo de terceira play in a samba school– a syncopated, improvisatory third voice melody in the upper part of the bass register.

To be able to improvise with these simultaneous, interlocking drum patterns at the piano can be cognitively challenging — our brain and ears are processing a lot of information and adjusting to the rhythmic, harmonic, intervallic and melodic implications of these new sound combinations. In creating exercises based on this type

of material with the aim of achieving polyrhythmic independence, it is apparent that part of the difficulty arises from the points when the rhythmic attack points do or do not coincide. A rhythmic event will establish a precedent in the mind of the listener, only to be disrupted by an unexpected syncopation. The rhythmic stability of downbeat–oriented patterns is contrasted by anticipations and delays of the other patterns.

Since a great solo will employ a variety of interesting rhythms, mastering different rhythms individually can facilitate their successful incorporation into a real time, polyrhythmic improvisation.

In the quest for rhythmic independence between hands and fingers, it is important to start slowly and simply. At the original tempo (half note = 128) it can be surprisingly difficult to play something as seemingly simple as right–hand chords on beats 2 and 4, while maintaining the left–hand ostinato. I found it helpful to loop the first bar of the ostinato and improvise different rhythmic patterns in the right hand, before doing the same thing with the second bar, and finally the whole pattern.

Sometimes I will run a right–hand chromatic scale in quarter notes, eighth notes, or other subdivisions against such an ostinato. Then I will play fragments of the chromatic scale using a specific rhythmic pattern, against the same ostinato, as shown in Figures 45 and 46. At this point my brain is processing chromatic/intervallic information as well as learning how to play a specific polyrhythmic combination. The

rhythmic pattern of the top phrase (1 2 + 3 4 +) is commonly heard in many African and African diasporic musics, and with swung eighth notes it is the standard ride pattern in jazz.

Figure 45: "Un Poco Loco" Exercise #1

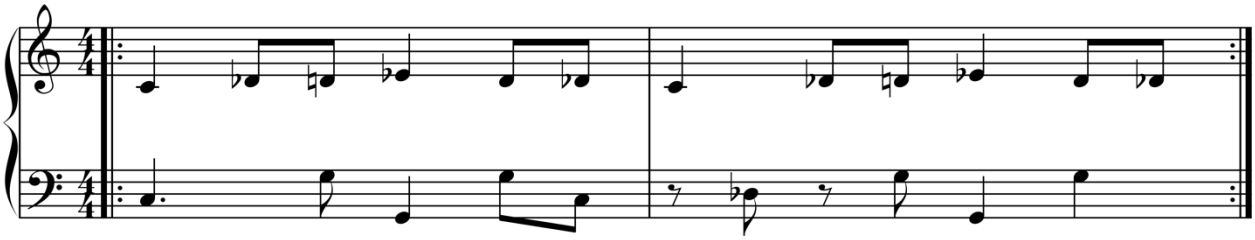
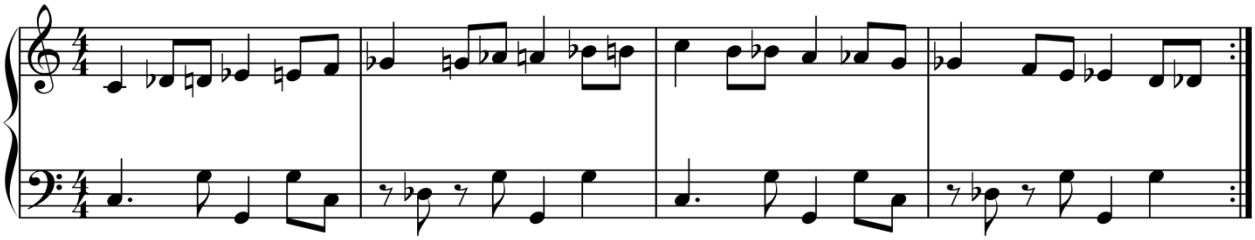
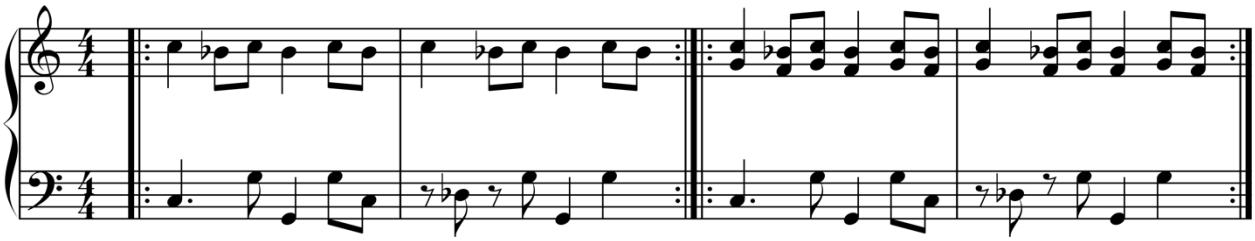


Figure 46: "Un Poco Loco" Exercise #2



If this is too difficult, I will switch to simpler pitch material, and then try harmonizing it with the same polyrhythmic combination, as shown in Figure 47.

Figure 47: "Un Poco Loco" Exercise #3



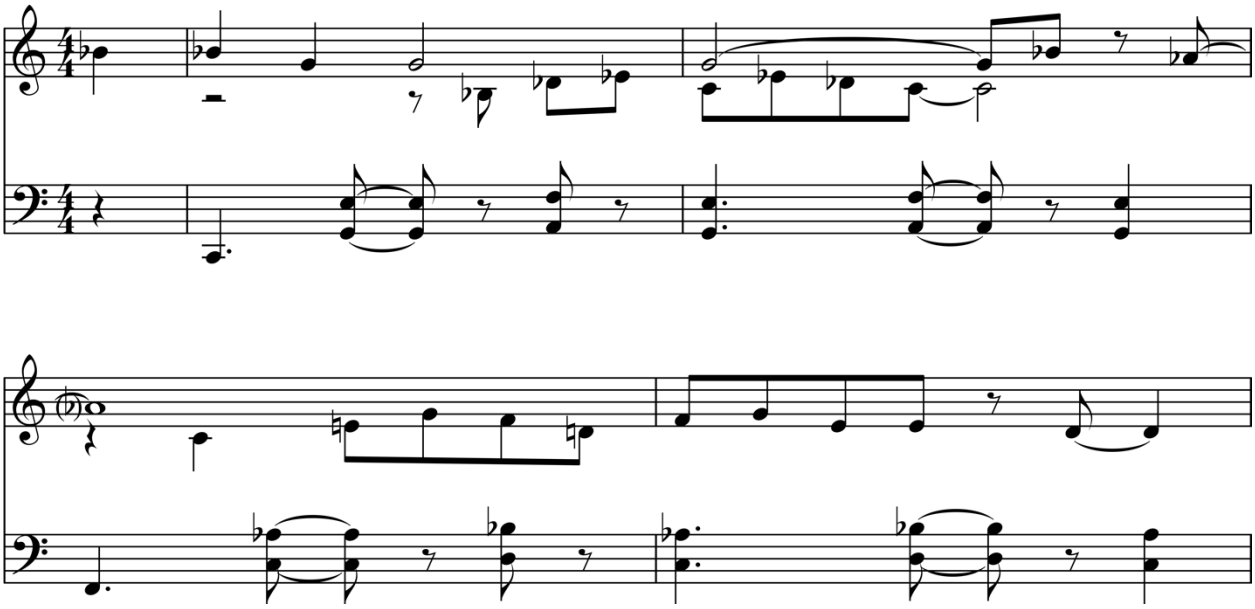
Working on small pieces of musical language both slowly and methodically can allow us to gradually accrete new polyrhythmic vocabulary and successfully incorporate it into our improvisations.

Keith Jarrett's Version of "What Is This Thing Called Love?"

Keith Jarrett recorded his arrangement of Cole Porter's "What Is This Thing Called Love?" in Paris in 1999, with his long–time trio mates bassist Gary Peacock and drummer Jack DeJohnette. It appears on their 2000 ECM album "Whisper Not". Throughout the solo piano introduction and "head in", Jarrett plays a tresillo based left–hand pattern incorporating a bass line and chords, while playing the melody and improvising with the right. Jarrett varies the note duration and articulation of his left hand patterns somewhat, but it is still a recognizable pattern, albeit with subtle variations.

During the "head in" he introduces a fourth voice, improvising a counterline to the melody statement as shown in Figure 48 on the following page.

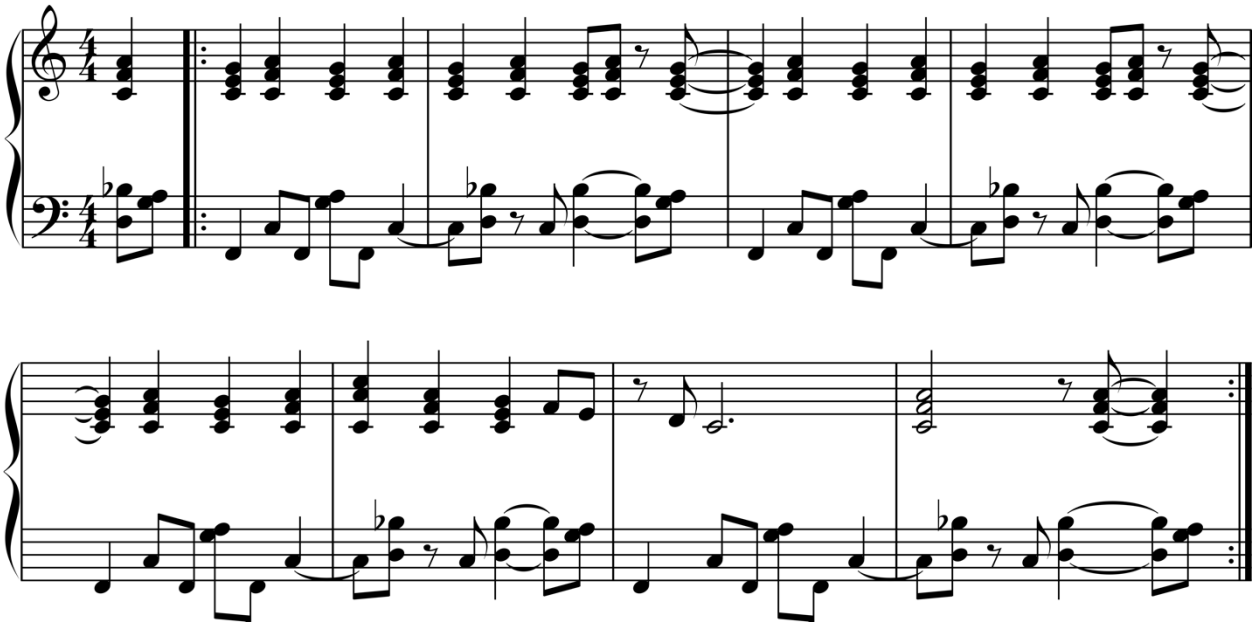
Figure 48: "What Is This Thing Called Love?" (at 1:47)



Keith Jarrett's "Tokyo '84 Encore"

"Tokyo '84 Encore" (from Jarrett's *Last Solo* DVD) is performed at a fast tempo and features up to a five–note chordal texture with syncopated rhythms in both hands. Jarrett plays the theme slightly differently every time, varying his rhythmic phrasing and adding subtle ghost notes and accents. Figure 49 (on the following page) approximates the principal theme, a bass line and chord melody, played on the "head in".

Figure 49: Theme from Keith Jarrett's "Tokyo '84 Encore"

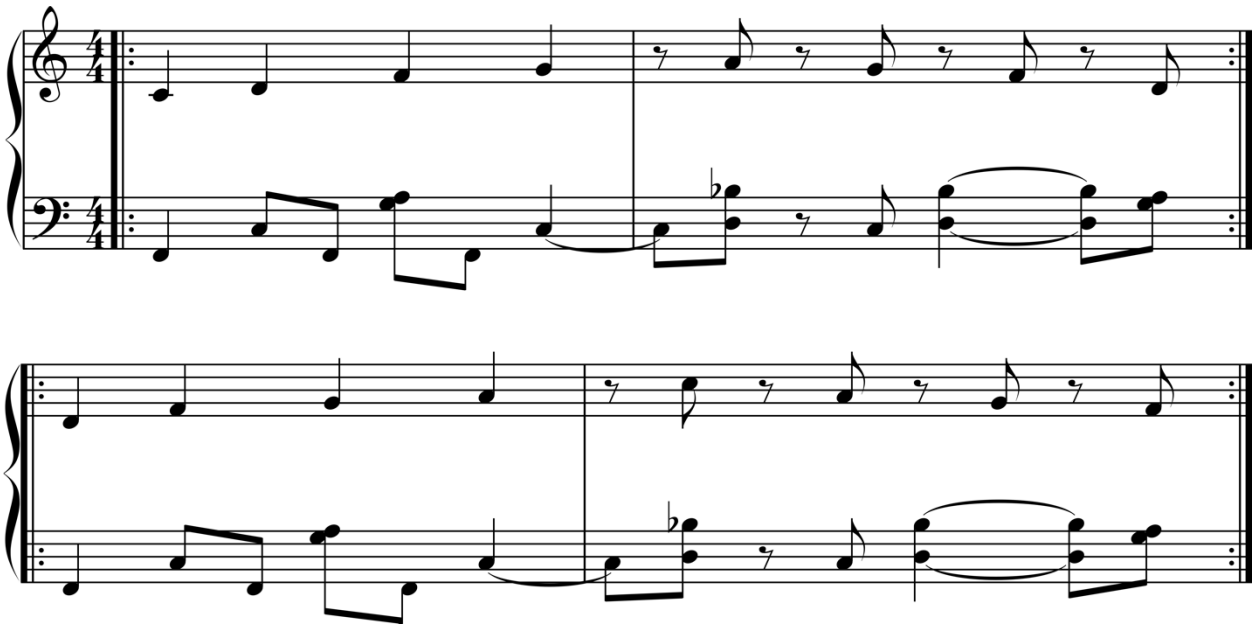


For the solo section, Jarrett maintains the left–hand ostinato and chords while improvising with the right. I find the principal challenge of "What Is This Thing Called Love?" and "Tokyo '84 Encore" to be maintaining a high level of groove in the left hand while simultaneously being able to improvise freely with the right.

It is important to practice these types of pieces at a slow tempo, staying relaxed and focused on the groove, tone production and rhythmic precision. For "Tokyo '84 Encore", I found it valuable to practice chromatic scalar lines in the right hand, initially as quarter notes then as eighth notes, while playing the left–hand groove, choosing a specific articulation and dynamic for both hands. Simply synchronizing the fingers of both hands with specific subdivision relationships can be very challenging at this tempo, and with such an active left–hand accompaniment pattern. The chromatic scale

is well suited for this piece, because if you start it on middle C and go to the highest C on the piano and back down, it resolves at the top of the form.

Figure 50: Pentatonic Melody Exercise with Fixed Rhythm for "Tokyo '84 Encore"



Figures 51 and 52 show two simple polyrhythmic exercises based on an F major scale played with a repeated rhythmic grouping.

Figure 51: "Tokyo '84 Encore" Simple Polyrhythmic Exercise #1

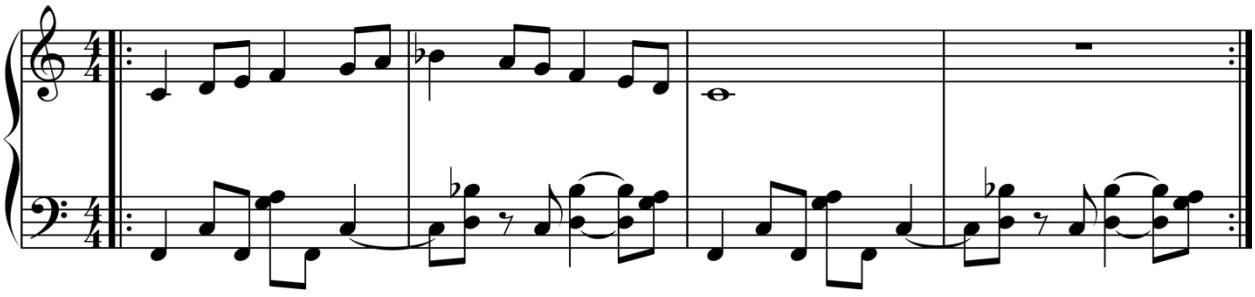
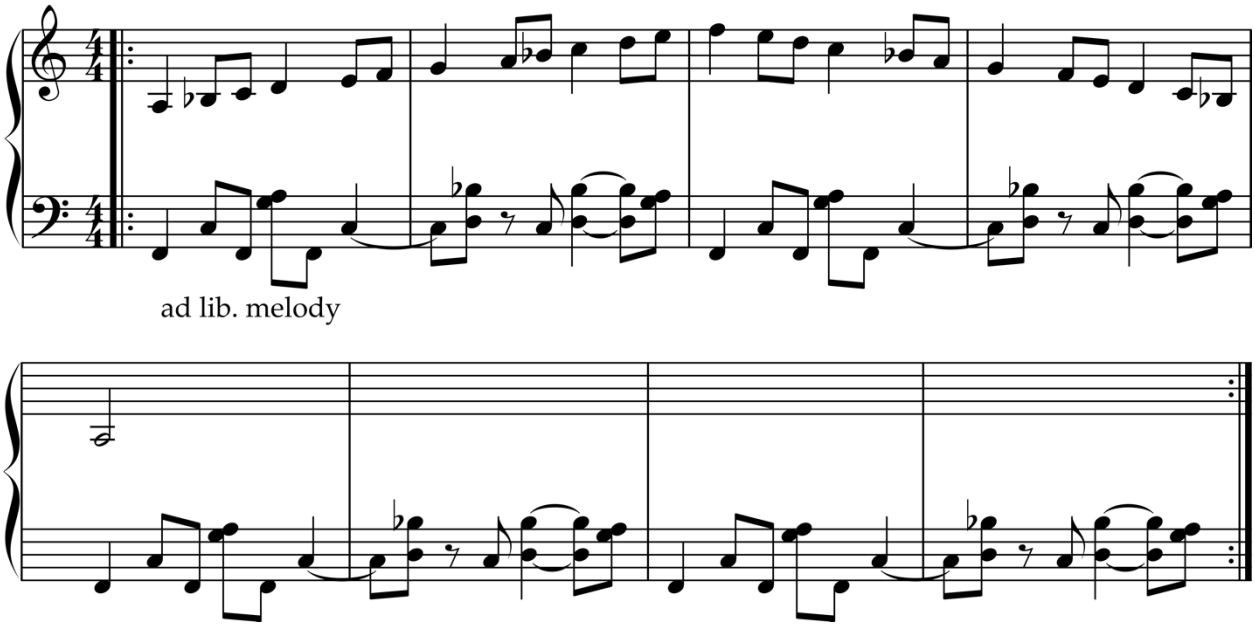


Figure 52: "Tokyo '84 Encore" Simple Polyrhythmic Exercise #2



When learning the bass line, it can be helpful to loop the first measure (always at a slow tempo) until you can comfortably execute it with proper fingering and groove. Then the second measure can be looped in a similar manner, before connecting the two.

In learning how to play the right–hand chord melody of "Tokyo '84 Encore", I found it necessary to remove the lowest voice of the chord, and individually isolate the two rhythmic patterns found in the melody before connecting them together.

Choose a phrase duration and rhythmic shape and improvise through the F major scale over the ostinato. Note how difficult it can be to improvise melodies on the downbeat while the left hand plays syncopated notes and pickups (as in the G–A dyad at the end of the ostinato).

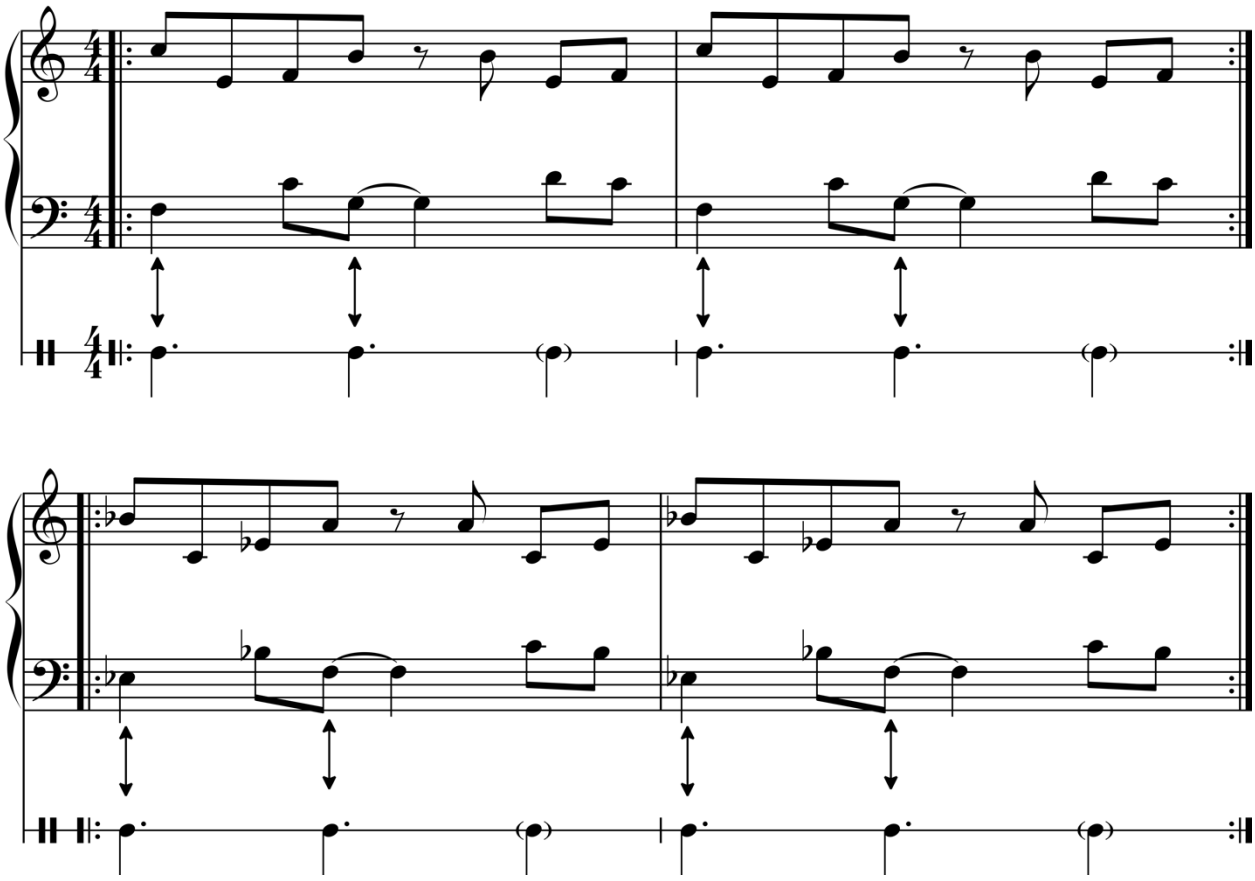
Both in general and with "Tokyo '84 Encore" specifically, it is important to identify, from a cognitive standpoint, what is difficult about the material one and the particular task at hand (in this case, maintaining the ostinato in the left hand while improvising with the right.) Sometimes, predetermined individual parts may be easy to play separately but prove mentally challenging when played together. This may be for rhythmic, melodic, harmonic, technical, or other reasons. Breaking things down to their smallest possible increments is often necessary, and beneficial.

Geri Allen's "Feed the Fire"

Geri Allen's recorded "Feed the Fire" live and in the studio several times. The principal theme features a treble melody, interlocking middle register lines, and a bass line ostinato doubled by piano and bass, which punctuates the first two strokes of the tresillo clave.

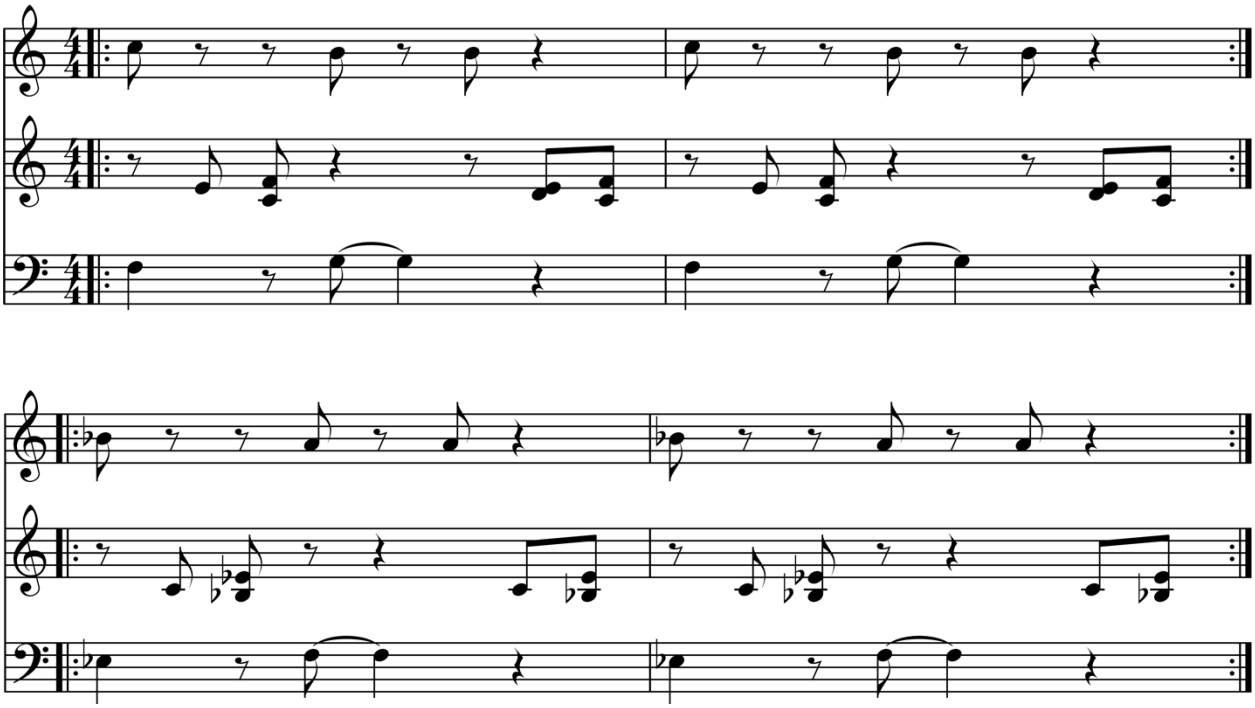
Figure 53 (on the following page) shows all the piano parts of the principal theme, as played by Allen on her 1997 Storyville album *Some Aspects of Water* with bassist Palle Danielsson and drummer Lenny White. The tresillo clave is also shown.

Figure 53: Principal Theme from Geri Allen's "Feed the Fire" (and Tresillo Clave)



Allen plays the left–hand bass line in the tenor range from Eb3 to D4, while the right–hand treble melody spans C4 to C5. Consequently, the two lines are close enough in register that the listener can perceive polyphony with 3 or 4 distinct voices: the high treble melody, bass melody, and an inner voice melodic area which also includes dyad (two note chord) punctuations. Figure 54 (on the following page) shows the melodies on individual staves.

Figure 54: "Feed the Fire" Polyphonic Texture Separated into Individual Melodies



All the parts interlock in a pleasing and exciting way that reminds me of Afro–Cuban piano *montunos* as well as African interlocking textures such as those found in the preceding examples by Dembélé and Diabaté, as well as the vocal music of the Aka people in Central Africa.

CHAPTER 5: *KUMBENGO* AND *BIRIMINTINGO* CONCEPTS IN MANDE MUSIC

Introduction

Similar to the jazz examples cited in Chapter 4, Mande music from West Africa features bass line ostinatos, interlocking middle register voices, polyrhythmic activity and improvisation. This chapter will provide a brief background on Mande musical practices, describing some of the key concepts present in the music. Toumani Diabaté's performances of "Jarabi" and Aladari Dembélé's "Voyassi" will also be discussed and analysed.

Background on Mande music, *Jalis* and the *Kora*

In Mande society, *jalis* (also known as *jelis* or *griots*) are "musicians, singers, public speakers, oral historians, praisers, go–betweens, advisers, chroniclers, and shapers of the past and present." (Charry 2000, 91). They often play the *kora,* a 21–string harp lute with a double bridge, to accompany themselves or other jalis in the telling of historical epics from different eras of Mande civilisation.

Regarding the kora, Margit Cronmueller Smith writes:

> It is an extremely versatile instrument which is fluent in all forms of Mande expressions. This phenomenon may be the reason of the jeli's cultivation of a myriad of different textures and timbres on the kora. This consciously pursued variety of expressions concerning textures and timbres is matched by a wide parameter of pitch and dynamics. These predominant

> traits of Mande instrumental music are planted in the formal structure of Mande kora composition. It is dialogical per se and frequently has more than two voices. In order to highlight the polyphonic relief, the jeli of outstanding quality lifts out various voices from the underlying rhythmic–harmonic background. Thus, a repetition of a pattern never sounds like the previous one, even though the same notes are played.
>
> (Smith 2011, 35)

Mande music utilises heptatonic scales closely resembling Western major, natural minor, Dorian and Lydian modes. (Knight 1971, 25) Diatonic chord progressions based on triads are common, as are scale patterns similar to those found in the Western heptatonic system.

The kora is played by only the index finger and thumb of each hand. Ostinato bass lines interlock with chordal inner voices to create a polyphonic expression of a harmonic progression, which supports a melodic improvisation in the highest voice. Between all these voices, a continuous, undulating flow of notes carries the music forward, with distinct melodic and rhythmic phrases moving from the background to the foreground at different times. Kora music is highly flexible by necessity, as different performance circumstances require a variety of approaches. (Smith 2011, 17)

A kora performance of a traditional Mande song will often begin with an introductory flourish, after which the rhythmic and harmonic structure are established

by the bass line ostinato and interlocking voices in the middle register — the *kumbengo*. Senegambian kora repertoire frequently employs binary form, with a chord progression of two, three or four chords. (Charry 2000, 170)

The melody is traditionally sung or played instrumentally over this framework, after which an extended thematic improvisation on the theme forms the body of the performance.

In his doctoral thesis *Microstructures of Feel, Macrostructures of Sound: Embodied Cognition in West–African and African–American Music*, Vijay Iyer writes:

> "The major role of improvisation in many oral musical traditions, combined with the important function of groove, make possible alternative notions of musical form that do not conform to the recursive hierarchies of tonal–music grammars. A teleological concept of form, in which the meaning of music is taken to be its large–scale structure, may be replaced with an alternative, modular approach, in which the meaning of music is located in the free play of smaller constituent units. (1998, 38)

The *Kumbengo* and *Birimintingo* Concepts

In Mandinka, the word *bengo* means 'to meet, agree, harmonize'. The concept of *kumbengo* is derived from this word and can refer to many different aspects of music: rhythm, tonality, harmony, playing in tune, and accompaniment. (Charry 2000, 313–24)

In his doctoral thesis, Roderic Knight states:

> A kumbengo is identified by the bass line and the harmonic progression, composed of octaves, fifths, and some thirds or triads. The melody in the upper register is quite variable. To the kumbengo may be added the birimintingo, consisting of melodic embellishments, vocal lines played on the instrument, and improvised melodies, which are usually composed on short motifs strung together in sequential treatment. (1973, 348–49)

Discussion of kumbengo in this paper relates specifically to the polyrhythmic and polyphonic patterns that 'come together' to form the accompaniment which expresses the framework of Mande song structures.

In the same way that jazz pianists must master an ostinato in the left hand before being able to simultaneously freely improvise in the right, the jali identify a similar relationship between the kumbengo and the birimintingo. In its most general sense, the term birimintingo ('rolling') refers to any improvised, instrumental solo passage in the higher register that serves to contrast with the kumbengo. (Racanelli 2012, 156–57) In its most narrow meaning, it can be defined as "fast descending melodic flourishes, often highly ornamented, which bear signs of Muslim musical influence." (Charry 2000, 167–68)

In her book *The Mandinka balafon: An Introduction with Notation for Teaching*, Lynne Jessup writes:

> The birimintingo is an opportunity for the jali to display his virtuosity by incorporating descending runs, ornamental patterns, faster moving melodic themes, octave displacement, and improvised passages into the music ... The running passages are often intricately embellished and very rapid ... Rhythmic variety is added by retarding or accelerating the pulse and by using notes which either anticipate or sound immediately after the pulse. Other ornamentations such as grace notes, mordents, turns and compression of musical figures into a single pulse are birimintingo and all illustrate the virtuosity of the jeli. (1983, 40)

Jeli Nyaine Suso states that "if you know your kumbengo well, you will have no trouble with the birimintingo because good birimintingo depends on leaving and returning to the kumbengo smoothly." (Knight 1973, 81–82, as cited in Jessup 1983, 40)

Background on "Jarabi"

Although the Mandinka people of West Africa have a standard song repertoire that dates back at least 800 years, "Jarabi" (also known as "Kankan Yarabi" or "Diaraby") is a very unusual piece in the Mande musical repertoire for several reasons: (1) It was composed in the 1950's, which is quite recent compared to most Mande

repertoire, (2) the most well–known version is by Malian guitarist Fanta Sacko, a *jelimuso* or female griot, who popularized the *Bajourou* (meaning 'big strings' or 'big tune') style that adapted kora and *donsongoni* (hunter's harp) techniques to the guitar, (3) it is romantic in nature, contrasting greatly with the praise songs that make up most traditional Mande repertoire, and (4) it shows the influence of Caribbean popular music. (Charry 2000, 263)

The tonality of "Jarabi" is built on the 6th scale degree of the *Sauta* (lydian) scale and is therefore equivalent to the Dorian mode. (Charry 2000, 161) Sacko's 1971 recording highlights the Cuban influence so common in that era, with lines that sound inspired by the *tres*, a Cuban guitar with three pairs of strings. The playing on her recording sometimes outlines a tonic minor (i) to dominant seven flat 9 (Vb9) progression, while at other moments the V chord is minor. (Diabaté's versions use V minor chords exclusively.)

When improvising over such a theme, the principal challenge for the soloist is to sustain interest, create variation after variation, and tell a story with a dramatic, narrative arc that will compel the listener, all the while referring to the melody and expressing the essence of the song.

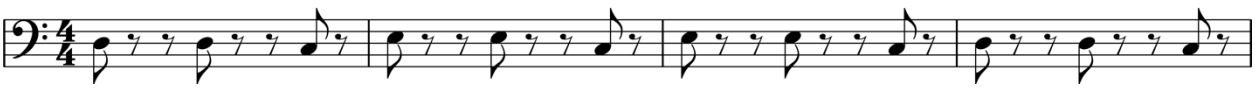
Analysis of Toumani Diabaté's Recordings of "Jarabi"

Toumani Diabaté is widely considered to be the most important kora player and jali of his generation. Diabaté recorded "Jarabi" for his second album *Kaira,* released in

1988 on Hannibal Records. This version is notable for its lyricism, internal logic, thematic development, and clarity of polyrhythmic and polyphonic expression. There is a great variety in the amount of "swing" (implied triplet accentuation) that Diabaté plays, even within one phrase. In fact, it often even differs from voice to voice — a line in the middle register may have "straighter" eighth notes at the same time as the top voice and bass ostinato are more "swung". These micro–timing variations are an essential element of West African musical expression, and one of the most important determining factors in a successful performance.

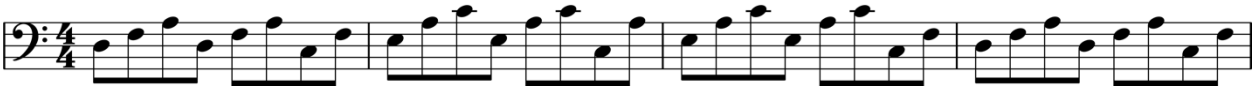
Interestingly, Diabaté's 2008 solo performance of "Jarabi" from the compilation album *Live from the Old Town School Vol. 4* includes a brief explanation of the individual components that constitute the kumbengo. Diabaté begins by playing the bass line, which clearly outlines the tresillo clave, as shown in Figure 55. (N.B. the tuning in the *Old Town School* version is closest to D; on the version from *Kaira* it is closest to Eb.)

Figure 55: "Jarabi" Bass Line from *Old Town School* (at 0:06)



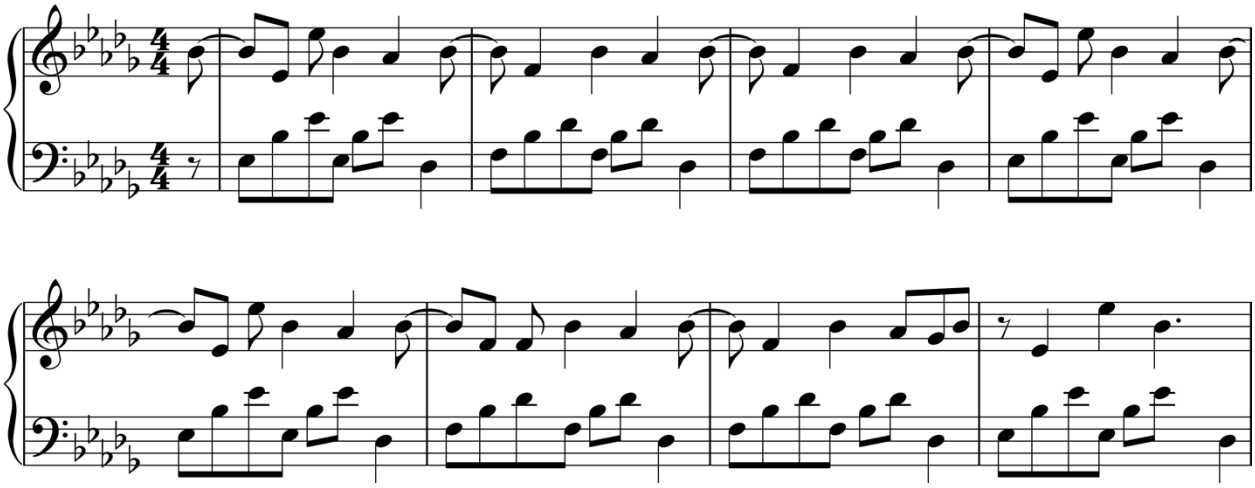
Then he adds the middle voice accompaniment pattern that fills in the rhythm, creating a stream of arpeggiated chords, as shown in Figure 56.

Figure 56: "Jarabi" *Old Town School* Arpeggio Pattern (at 0:38)



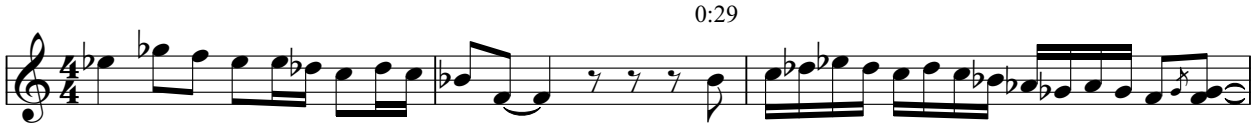
Together, these form the basic accompaniment pattern over which Diabaté will improvise, mostly in the treble register.

Figure 57: Diabaté's Solo on "Jarabi" from *Kaira* (at 1:02)



In Diabaté's studio version of "Jarabi", he embellishes and ornaments the melody of the song throughout. The first significant birimintingo is heard at 0:29, in the middle of the melody statement, as shown in Figure 58.

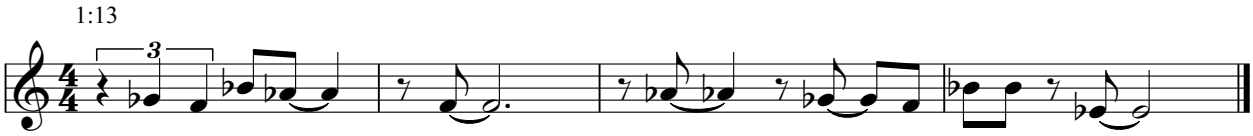
Figure 58: Diabaté's Solo on "Jarabi" from *Kaira* (at 0:29)



According to the jali, "it is the solo that makes the sweetness of music". (Smith 2011, 146) Throughout the recording, Diabaté intersperses virtuosic runs with clear and

lyrical passages that do not fit the narrow definition of birimintingo; neither are they based on the melody of "Jarabi". Figure 59 shows an example starting at 1:13.

Figure 59: Diabaté's Solo on "Jarabi" from *Kaira* (at 1:13)



These lyrical moments imbue the performance with a reflective quality, where time almost seems to stand still in the higher register, while the bass ostinato continually moves forward at its regular pace. Indeed, the musical expression of tenderness perfectly conveys the subject matter of the song.

Figure 60 shows Diabaté improvises a phrase (at 1:02) consisting entirely of eighth note up beats and pedalling on the 4th and 5th degrees of the scale.

Figure 60: Diabaté's Solo on "Jarabi" from *Kaira* (at 1:02)

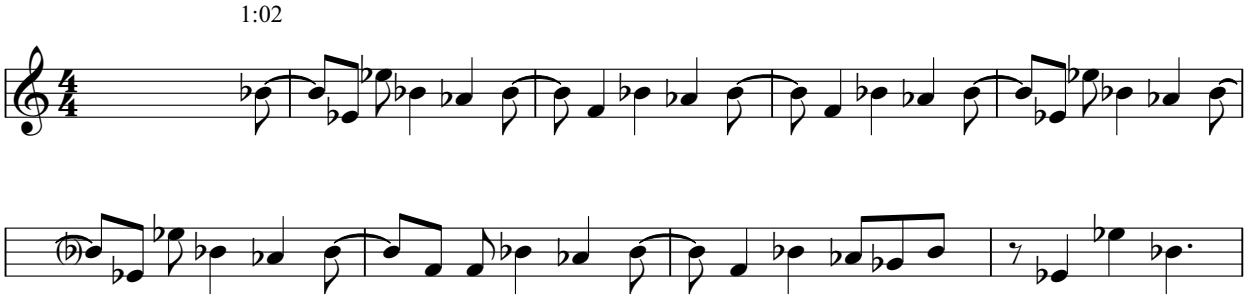
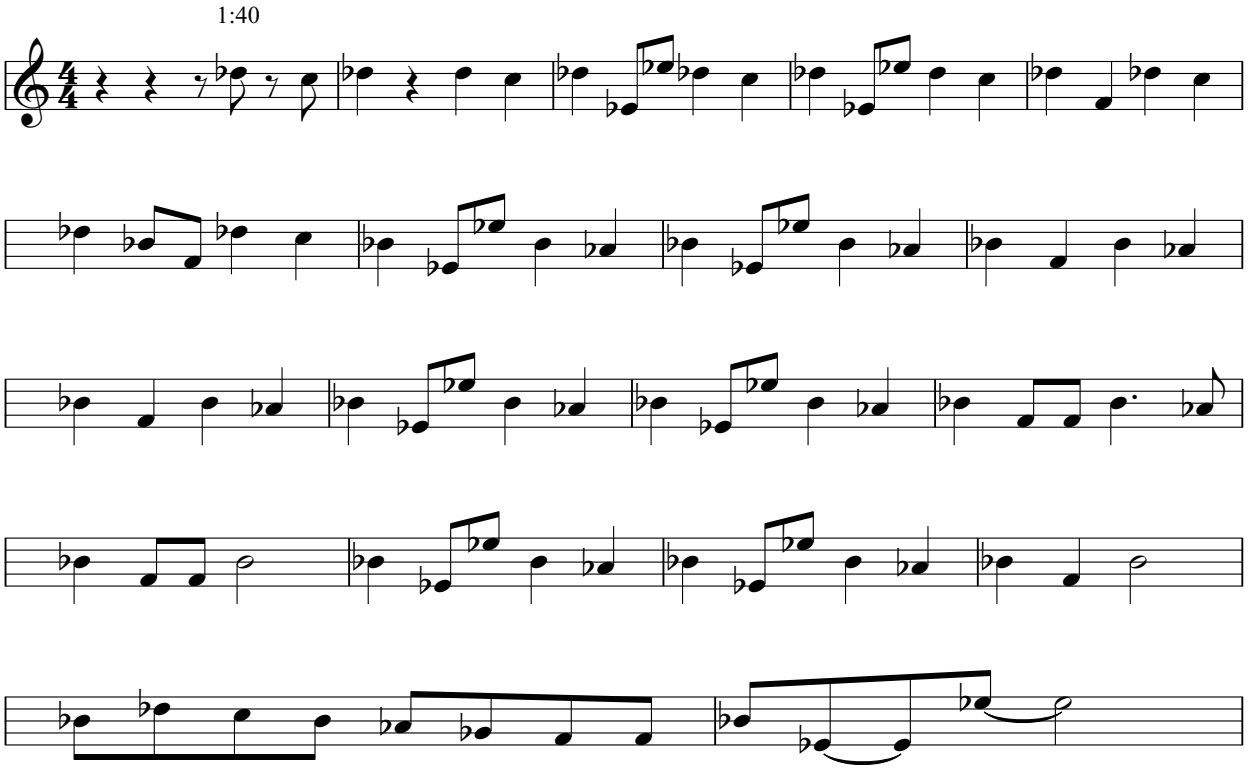


Figure 61 shows the motive returning at 1:40, now appearing mainly on the downbeats and starting on scale degrees b7 and 6, before descending to the 4th and 5th.

Figure 61: Diabaté's Solo on "Jarabi" from *Kaira* (at 1:40)



Simultaneously, one of the inner voices in the middle register plucks out a continuous sustained Bb on the 'and' of beats one and three, providing a rhythmic counterweight to the downbeats heard in the treble. (At 2:51–2:58, Diabaté also plays what could be considered a melodic elaboration on the rhythmic motive first heard at 1:03.)

From 2:11–2:19, Diabaté silences the primary treble melody area and begins to improvise using two lower inner voices from the kumbengo accompaniment. This refreshing timbral change is indicative of the registral stratification that is so common to Mande kora music. One can hear rhythms and melodies in three distinct areas – the

treble, middle and bass registers. (Charry 2000, 180). As Margit Cronmueller Smith states: "In order to highlight the polyphonic relief, the jeli of outstanding quality lifts out various voices from the underlying rhythmic–harmonic background." (Smith 2011, 35)

In *Mande music: Traditional and modern music of the Maninka and Mandinka of Western Africa*, Eric Charry writes:

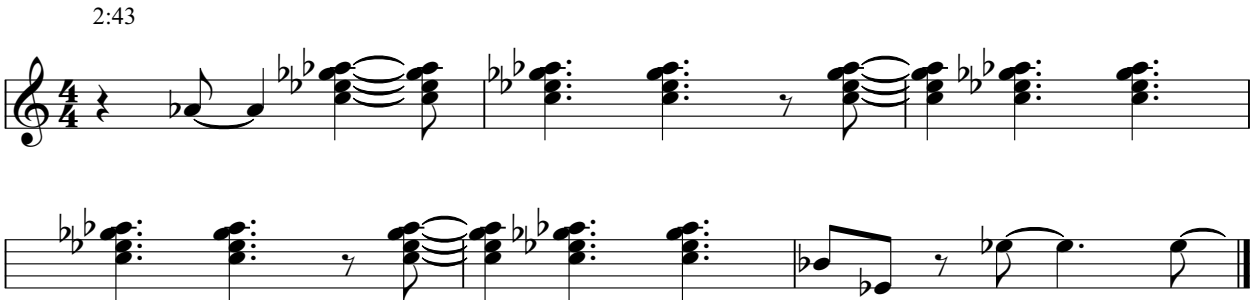
> Polyrhythm, a fundamental rhythmic feature found in much of Africa south of the Sahara, is exhibited in Mande music as a play of two or four equally spaced beats in the same durational space as three equally spaced beats (or vice versa), often resulting in an ambiguity of a single overriding beat sequence (meter). This ambiguity — being able to feel a particular performance in more than one meter — is creatively exploited by African musicians in performance and is one of the most difficult aspects of music in Africa for non–Africans to grasp. A similar effect may also take place on a micro level, where the spacing of the strokes between each beat may be inflected one way or another toward a binary or ternary interpretation. (2000, xxvii)

Polyrhythmic and polymetric expressions are always present in Mande music. At 3:28, in Diabaté's "Jarabi" solo from *Kaira*, a succession of eighth note up beats in the middle of the chord texture quickly morph into galloping double–time rhythm. From

3:31–4:00, he gradually reshapes the treble melody to suggest a 6/8 meter, while the ostinato bass line and chords continue in 4/4.

The tresillo clave pattern is often used to imply 6/8 meter within a 4/4 context, as Diabaté does with his chord work at 2:43, shown in Figure 62. Additionally, the superimposition of an Ab7 chord over the Eb and Bb minor chords of the kumbengo progression creates, to my ears, a surprising polytonal dimension not heard elsewhere in the performance.

Figure 62: Diabaté's solo on "Jarabi" from *Kaira* (at 2:43)



All of these in–the–moment, intelligent and nuanced musical choices are remarkably similar to how Keith Jarrett improvises over ostinato–based repertoire and provide great insight on how to approach improvising within this kind of musical framework.

Aladari Dembélé's "Voyassi"

"Voyassi" is 24–minute epic song by the Burkinabe *griot* Aladari Dembélé. Released in 1988 on the album *Sodassiya,* it features him singing and accompanying himself on the *balafon bwaba*, a curved balafon played by Bwaba *griots* in Burkina

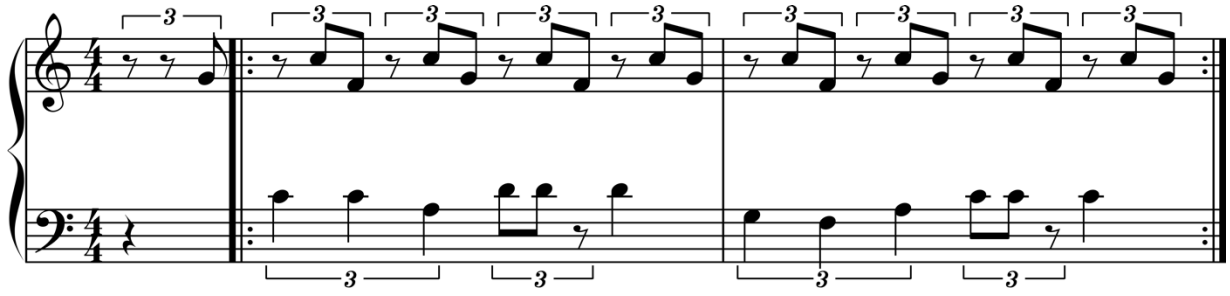
Faso. Dembélé's nephew is Mamadou Koita, a Montréal–based musician with whom I have collaborated for many years. Koita told me that he knew the piece by the title "Bobo–Dioulasso", and that his uncle named it after that city in Burkina Faso where he had been living.

Singing in the Mande language of Dyula, Dembélé offers a comical recounting of his own personal history as a military deserter and criticizes the military and the government throughout. (Koita 2021) Musically, it is a *tour–de–force* largely because of Dembélé's incredible vocal performance, but his accompaniment is notable as well.

The song is built around a two–measure ostinato groove played on the balafon bwaba. The groove consists of a bass line and treble line that interlock — the kumbengo. Dembélé subtly varies the intervals and rhythms throughout, incorporating ghost notes and unexpected rhythmic shifts as well as refined dynamic shading and expressive micro tempo changes.

Figure 63 shows the most frequently played variation of the two–measure ostinato.

Figure 63: "Voyassi" Main Ostinato



In an extended length piece built around a short two–measure ostinato, rhythmic and melodic variations stand out, even if they are part of the accompaniment texture. Some of the rhythmic variations serve to punctuate the ends of vocal phrases. Dembélé varies the bass line ostinato and tenor line more often when he is not singing, filling in the gaps. Figure 64 shows treble and bass line variations Dembélé plays at 1:28. N.B. Koita describes this piece as being 'in 4', hence the notated meter.

Figure 64: Dembélé's Treble and Bass Line Variations (at 1:28)

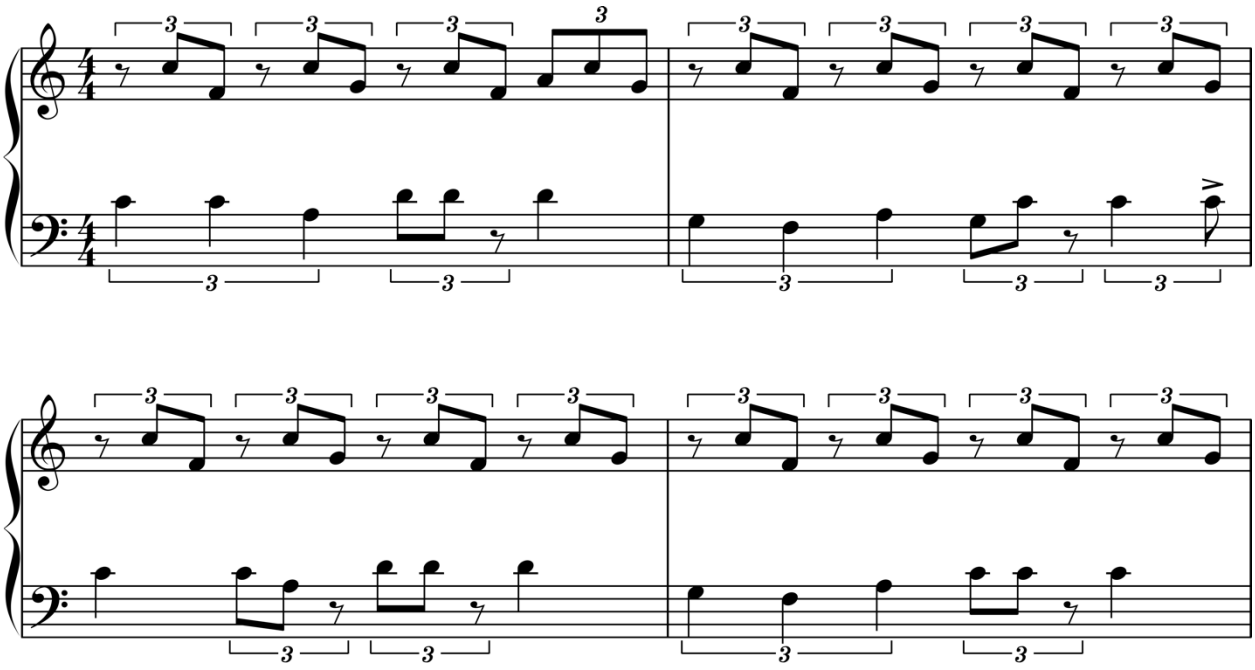
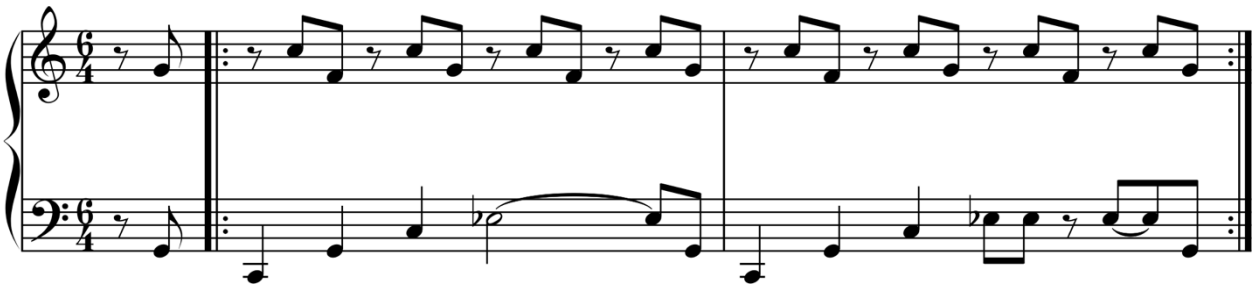


Figure 65 shows an arrangement idea for Wayne Shorter's "Footprints" that incorporates some of Dembélé's ideas. The bass line combines rhythmic phrasing elements from "Voyassi" with Shorter's original bass line. The treble/middle ostinato part from "Voyassi" now becomes a right hand pattern for the pianist to play under

another musician's playing of the principal melody. In this example, the middle ostinato part has been harmonically transposed to create a stark suspended chordal sound.

Figure 65: "Footprints" Arrangement Idea inspired by Dembélé's "Voyassi"



CHAPTER 6: POLYMETER, POLYRHYTHM and DRUMMISTIC PIANO CONCEPTS

Introduction

In this chapter, I will discuss polymeter, polyrhythm, and "drummistic" piano concepts. While two practice exercises (for "Dance Kobina" and "Strawman Shaman") are included in this chapter, the remaining examples are ethnomusicological transcriptions and excerpts from my own original pieces, demonstrating how I have incorporated different polyrhythmic, polymetric, and "drummistic" concepts from Africa and its diaspora into my compositions.

Chants à Penser and "Ba Di Heim Ha Naa Dai"

French musician and ethnomusicologist Vincent Dehoux worked extensively in Central Africa studying different musical traditions, interviewing musicians and making field recordings. His field research with the Gbaya people of Central Africa culminated in his book *Chants à Penser* and numerous albums for record labels including Ocora, VDE and Le Chant Du Monde. On the album *Centrafrique: Musique Gbaya – Chants à Penser (2)*, Dehoux recorded various singers and *sanza* (thumb piano) players performing traditional *chants à penser* (thinking songs) — songs that often deal with themes of love, longing and nostalgia. György Ligeti called this music "very simple" and "equal to Mozart's music". (Albèra 1997, 81)

I was transfixed by the chanting melody of one of the songs on the album, "Ba Di Heim Ha Naa Dai". I also loved the subtle and intricate rhythmic phrasing employed

by the sanza players, which moved effortlessly between duple and triple meters. Figure 66 shows the initial expression of the two–measure melody chant/ostinato upon which the song structure is built, while Figure 66 shows a rhythmic variation played at 0:22.

Figure 66: "Ba Di Heim Ha Naa Dai" Melody Chant/Ostinato

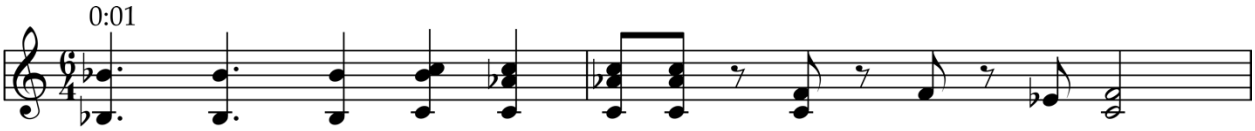
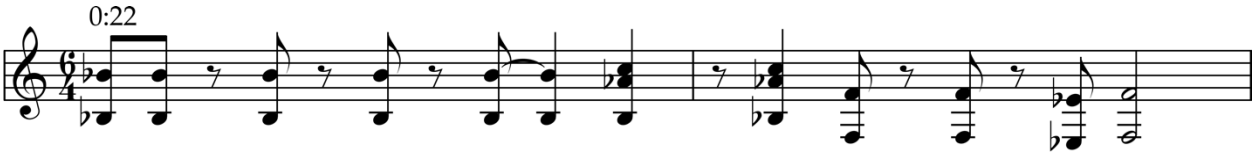


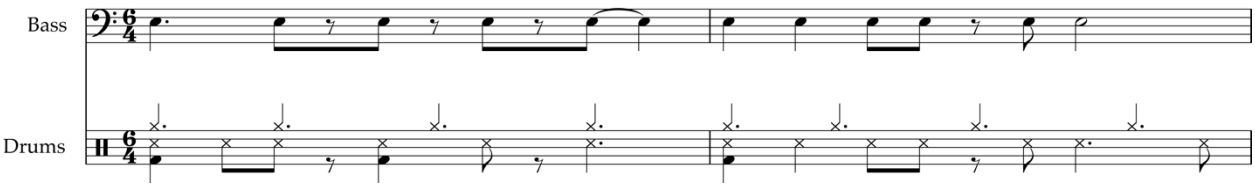
Figure 67: "Ba Di Heim Ha Naa Dai" Rhythmic Variation (at 0:22)



"Put Your Spikes In"

"Ba Di Heim Ha Naa Dai" was one of the principal inspirations for my composition "Put Your Spikes In", which also appears on 2019 album *Gang of Three*. Its influence can be heard in the principal bass line ostinato and drum groove of the piece, as shown in Figure 68.

Figure 68: Principal Bass Line Ostinato and Drum Groove from "Put Your Spikes In"

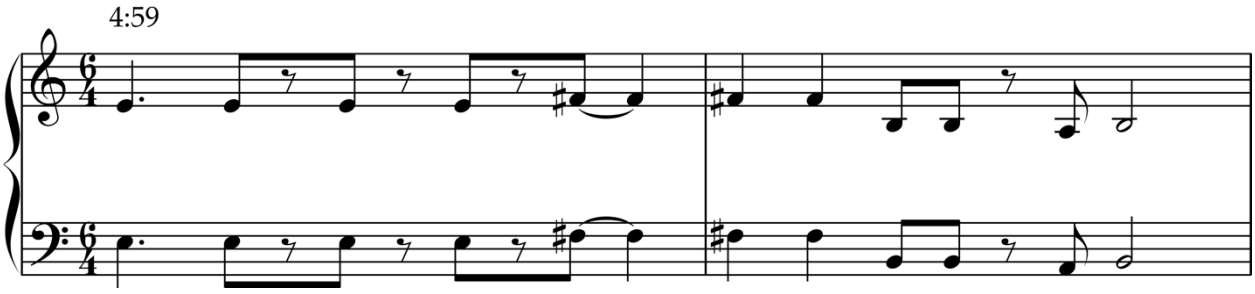


This piece shows my continued compositional interest in using the dotted quarter to suggest multiple meters simultaneously to the listener. (This concept is also

employed in a variety of ways in my pieces "Chacarera para Wayne", "Jabok", "Senderos" and "Dance Kobina".)

The melody of "Ba Di Heim Ha Naa Dai" was also paraphrased and incorporated into the final section of the piece, as shown in Figure 69.

Figure 69: Ba Di Heim Ha Naa Dai" paraphrased in "Put Your Spikes In" (at 4:59)



After the piano and bass state the melody in unison, it is repeated several times and harmonically recontextualized with a series of different chord progressions played underneath it.

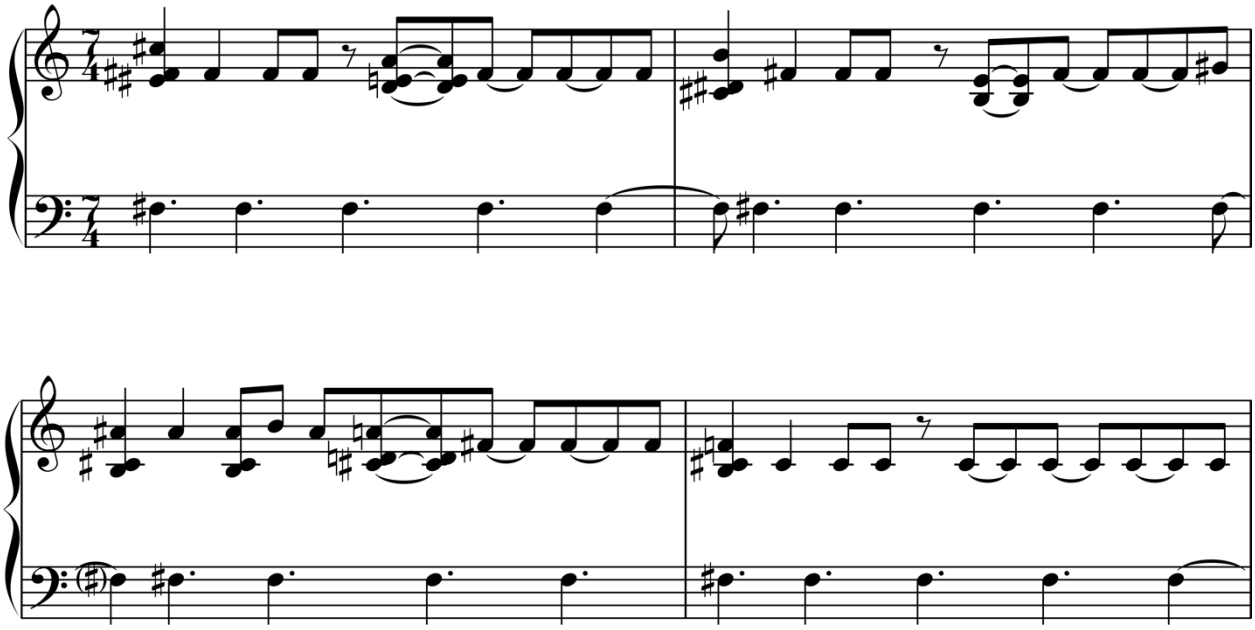
"Jabok"

I recorded my composition "Jabok" with bassist Martin Heslop and drummer Tommy Crane and released it on my 2020 Chromatic Audio album *When Is Ancient?.* The introduction features an insistent dotted–quarter F# pedal point within the 7/4 composition, creating a "six over seven" cross–rhythm. In 7/4, the cross–rhythm lines up and resolves every three measures, as shown in Figure 70.

This idea shows the influence of one of my early mentors, Joe Chambers, with whom I studied at the New School in the early 2000's. Chambers' composition *Gazelle*

Suite (as recorded on M'Boom's 1992 album *Live At SOB's*) begins with *batá* and *bongó* drums playing interlocking patterns in 9/8. Eventually the rest of the band establishes an ostinato consisting of alternating 7/4 and 9/4 measures, while the 9/8 patterns continue over it.

Figure 70: "Jabok" Introduction with "Six over Seven" Cross–Rhythm



Fabrice Marandola has also noted the similarity between the resolution of the cross–rhythm in "Jabok" and an Ouldémé harp piece he heard in Cameroon, "Chek i Mada I Tazan". That piece has a melodic cycle of 19 unaccented *minimal operation*

values[2], which must be played three times before the first note coincides again with the *pulsation*[3]. (Dehoux, Fernando, Le Bomin, and Marandola 1997, 96–97)

"Dance Kobina"

My original composition "Dance Kobina" was first recorded with my percussion ensemble in June 2022. The group included Joe Chambers on vibraphone and Tommy Crane on drums. Subsequently, In August 2022, I recorded it with Chambers on drums for his Blue Note album, which he named after my composition. Although it was not necessary for Crane nor Chambers to play a consistent stream of dotted–quarters on these recorded performances, this cross–rhythm is still central to the rhythmic organisation of the composition. It guides the implied metric transition to the bridge as shown in Figure 71.

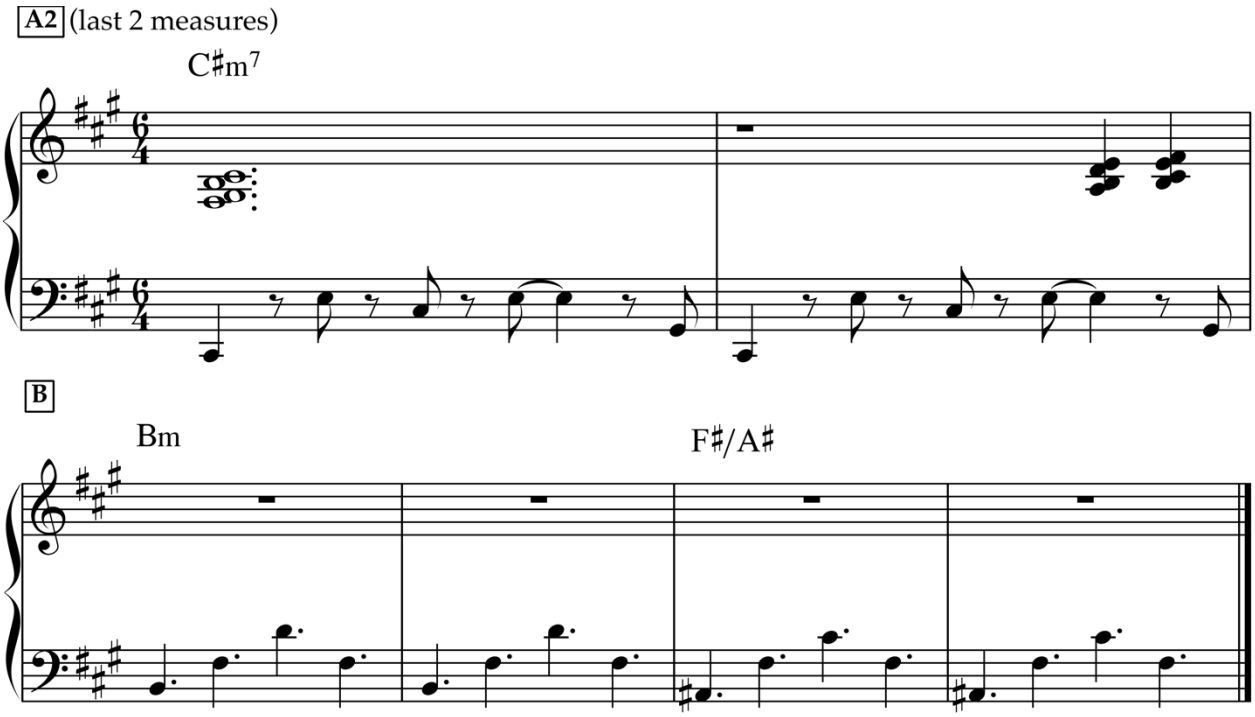
Although the score is written in 6/4 to facilitate ease of reading, the metric relationship between sections can be characterized as follows: the A sections can be felt in 3/2 (almost like a samba in "3" — Milton Nascimento and Ronaldo Bastos' "Cravo e Canela" from the album *Clube da Esquina* is a good reference) while the B and C sections can be felt in 3/4 (fast jazz waltz) or 6/8. Tension and excitement can be

[2] In *African Polyphony & Polyrhythm*, Simha Arom defines the *minimal operation value* as "the smallest *relevant* duration obtained after subdivision; all other durations are multiples of this value. (Arom 1991, 231)

[3] Arom defines the *pulsation* as "an isochronous reference unit used by *a given culture* for the measurement of time". (Arom 1991, 230)

created when musicians superimpose suggested meters from one section on to another.

Figure 71: "Dance Kobina" Transition from A2 to Bridge

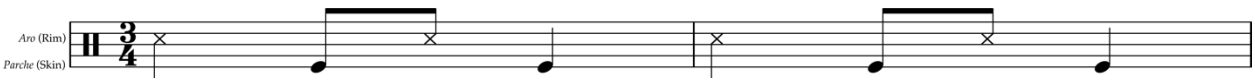


Chacarera para Wayne

My composition "Chacarera para Wayne" also appears on my album *Gang of Three*. The piece is technically an *aire de chacarera*, because it uses the traditional rhythm of the *chacarera* within a non–traditional structure. (Cruz 2016, 10). Like many South American folkloric musics, the rhythm of the chacarera can be felt in multiple meters simultaneously — most notably in 6/8 and 3/4. It is common for folkloric pieces to be written in 6/8, 3/4, or both meters. Drum fills played on the *bombo legüero*, the

traditional Argentine folkloric drum, can also occasionally imply a metric overlay of 4/4 or 2/4. The basic rhythm of the chacarera is shown in Figure 72.

Figure 72: Chacarera Rhythm (as played on the Bombo Legüero)



I wanted to highlight the polymetric facet of the chacarera, and its African roots, so I structured "Chacarera para Wayne" with the A section in 3/4 and the B section in 6/8. The C section is written in 6/8 but explores the rhythmic tension of phrases that suggest both meters. (Please refer to the appendix for the full score.)

Throughout the recording, I reference the rhythm played on the *parche* (skin) of the bombo with left hand bass notes, doubled by Douglas on bass. At times, I suggest the rhythmic variations typically played on the *aro* (rim) of the bombo with my right hand melodic phrasing.

"Senderos"

"Senderos" also appears on *When Is Ancient?.* The phrasing of the chords and melody also shift from implying 3/4 to 6/8 or 12/8. Figure 73 shows the first four measures notated in 3/4 and 6/8, according to the notational convention of Argentine folklore. Figure 74 shows the first four measures in 12/8 notation (equivalent to eight measures in 3/4 or 6/8). In Figure 74, the implied metric shift begins at measure 3.

Figure 73: Senderos Score Excerpt with 3/4 and 6/8 Notation

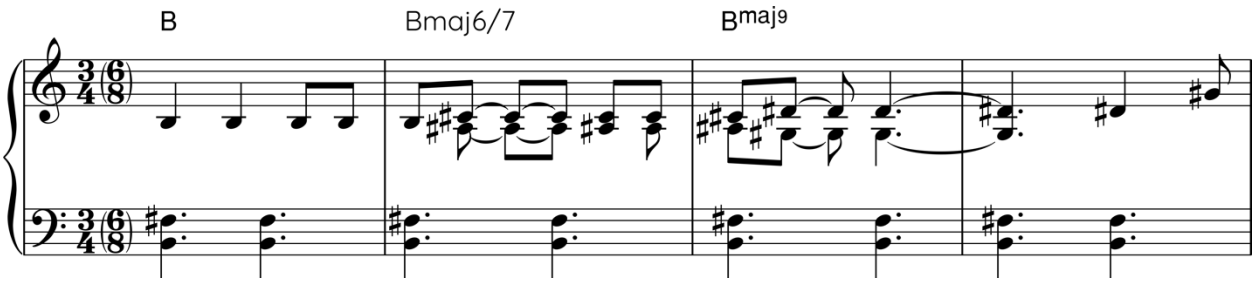
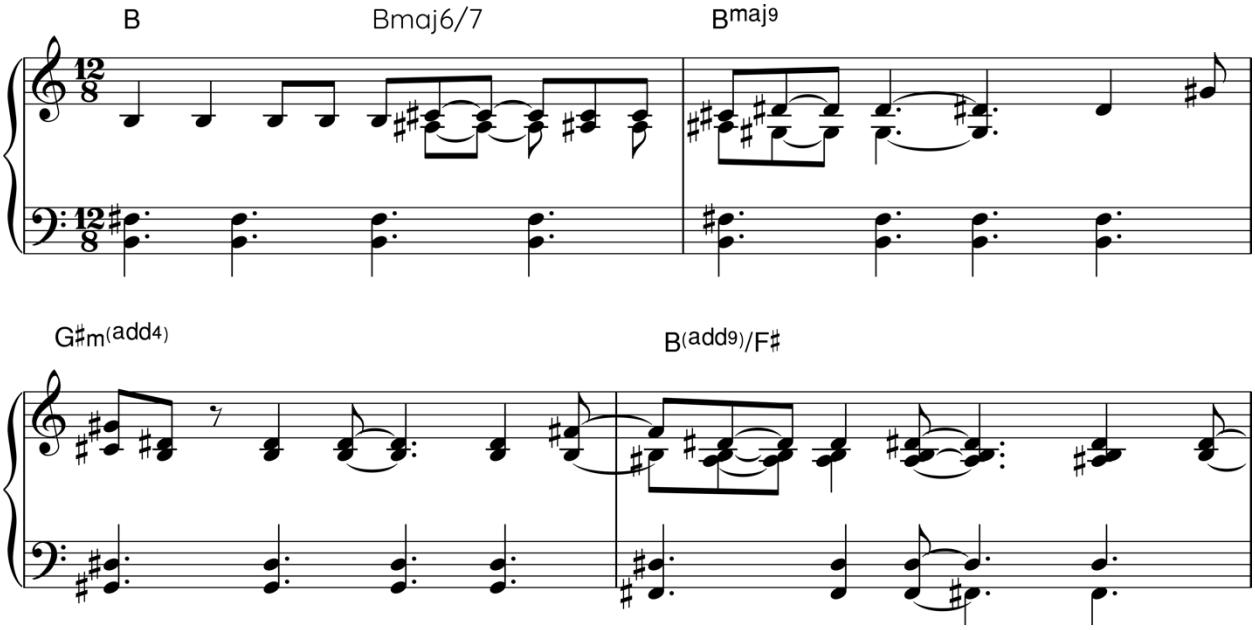


Figure 74: Senderos Score Excerpt with 12/8 Notation



Drummistic Piano Concepts

Because of its tonal, timbral and registral properties, the piano is ideally suited for the adaptation of both solo and ensemble percussion music. The fact that pianists have two hands and ten fingers also helps. With these physical and instrumental resources, it is possible to play multiple drum parts and preserve the register, textural density, and pitch content of the original percussion music. Hand and finger independence play a crucial role in the process of adapting drum ensemble music to

the piano. Playing the individual rhythms on a drum before playing them on the piano can also be very helpful, as it allows us to focus on the rhythm and not be concerned with specific pitches.

Joshua Uzoigwe's Talking Drums 1: Ukom

Joshua Uzoigwe is considered one the most important exponents of the African Pianism movement. His piano piece Talking Drums I: Ukom was inspired by the ritual drum ensemble music of his ethnic group, the Igbo people of south–east Nigeria. Stephen Oluranti offers a detailed analysis of Ukom in his doctoral thesis on polyrhythm and African pianism, stating that the piece is coherent because of the "consistent occurrence of polyrhythms incorporated within ostinato patterns" and regular "opportunities" for those polyrhythms to be interwoven into the musical texture. (2012, 35)

In his article on "drummistic" piano composition, Christian Onyeji cites Uzoigwe's Ukom as a prime example of such a work. He contends that pieces such as Ukom require the pianist to adapt their technique to evoke the dynamics, tone, touch and note release of a drum. He also discusses the compositional possibilities of using the pianists left hand and right hand to express the call and response dialogue of two talking drums. (2008, 169) Onyeji writes:

> Although drummistic piano music is essentially contemplative, the performer imaginatively evokes the appropriate performance of

> traditional music. The performer adjusts his/her psyche and feels as though he/she is playing drum(s) in an ensemble. The left and right hands are imaginatively adjusted to imitate the application of the hands on the drums. The performer attempts to release the hands from the domi–nance of either one — what I refer to as emancipation of the hands. Any piano player is aware of the dominance of the right hand over the left hand. It is essential for drummistic piano players to free both hands so as to enable them to interact and dialogue as separate performers in the manner that traditional drummers perform. The operational dynamics entail emancipation of the two hands as well as an empowerment of the left hand, giving it equal strength to the right hand. (2008, 167)

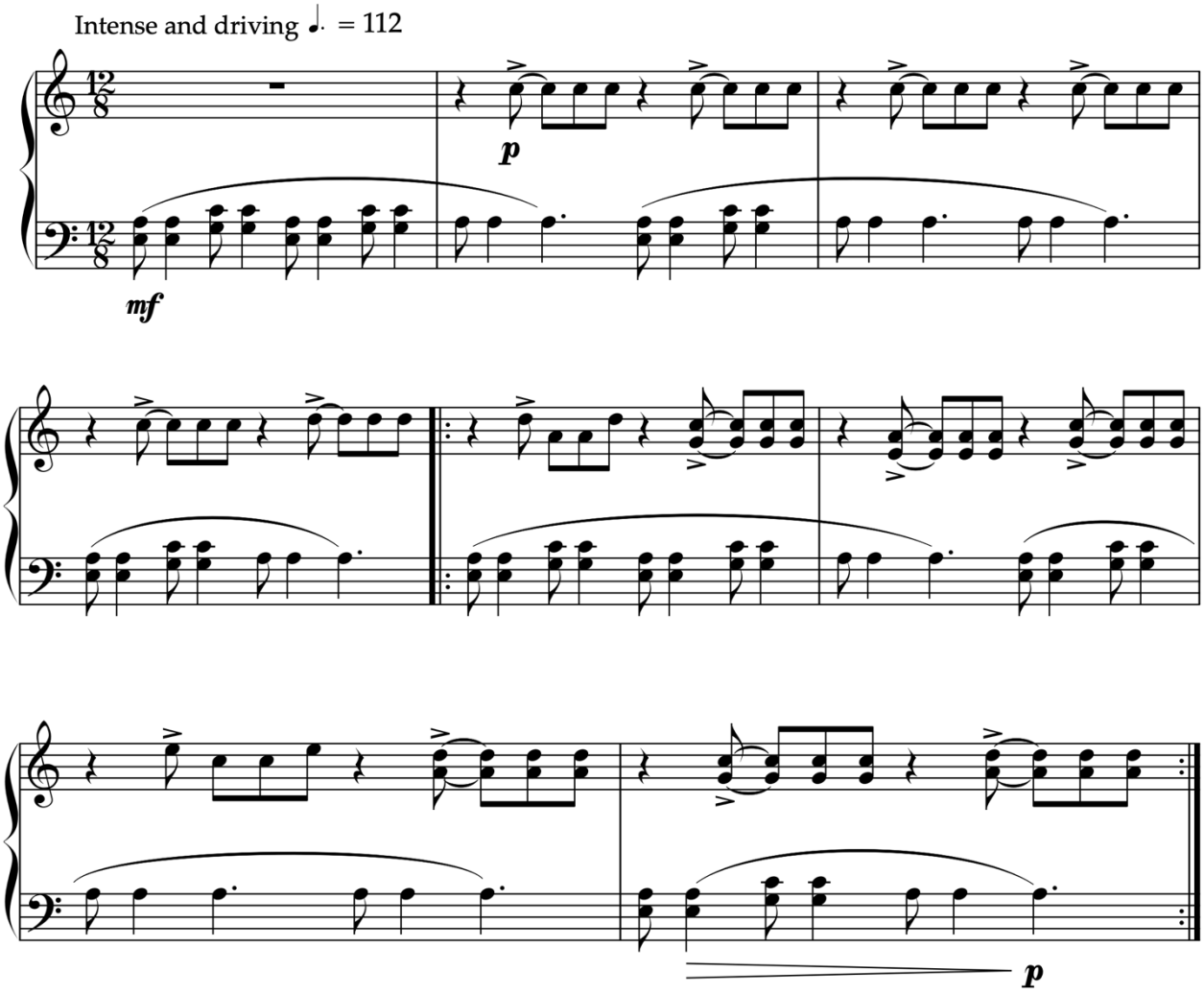
Although he does not address an improvisation methodology, Oniyeji's advice is equally applicable in this context, recalling the Circle of Improvisation, Interpretation, Arrangement and Composition discussed earlier. He states:

> My approach to the composition and teaching/learning of drummistic piano works is to first reduce sound patterns to drum mnemonics. In other words, I reduce melodic lines to drum thematic patterns. Such patterns immediately relate musical ideas to the familiar feel of my cultural sonic milieu. The cultural relationship personalizes the patterns, enabling me to draw consciously from the sound choices, giving the sonic materials a

cultural base. I am then able to drum the thematic patterns, sing them, and, more importantly, feel them not as alien abstract sounds but as sounds with which I have a level of cultural affinity.[4] (2008, 168)

The first eight measures of Uzoigwe's Talking Drums 1: Ukom are shown in Figure 75.

Figure 75: Measures 1–8 of Joshua Uzoigwe's Talking Drums 1: Ukom



[4] The above paragraph brings up issues of cultural "insider/outsider" identity and inter-cultural performance practice which are outside the purview of this thesis but should nevertheless be given due consideration by the reader.

Measure 5 of this piece exemplifies the interlocking polyrhythmic textures heard in Ukom traditional music. Almost any measure of this piece can be isolated and looped to increase one's own personal vocabulary of African polyrhythms.

A simple exercise to master this specific polyrhythm would be to improvise the harmonic and melodic content while preserving the interlocking rhythmic figure. A more complex exercise would be to loop the interlocking rhythmic phrases at measure 9 while improvising the harmonic and melodic content. Once these small polyrhythmic cells are mastered, they can be combined in infinite ways.

Returning to Pure Polyrhythm

Oniyeji's recommendation to reduce sound patterns to drum mnemonics provides an interesting complement to the pedagogical methods described by Jean–Michel Pilc in his 2013 book *It's About Music: The Heart and Art of Improvisation*. Pilc discusses various ways to achieve a higher level of groove, swing and rhythmic ability away from the piano, by connecting to our body and inner rhythmic sense. (2013, 50) I call this "returning to pure rhythm" or, in the case of this chapter, "pure polyrhythm". The pianist should strive to be able to execute any polyrhythmic cell using only their body as the instrument, to ensure it is fully inculcated. Even without a metronome, it will become crystal clear if the polyrhythm has become second nature and can be expressed with a high level of groove.

Drum ensemble–inspired piano solos and compositions such as Powell's "Un Poco Loco" and Uzoigwe's "Talking Drums 1: Ukom" can be immensely helpful in aiding the student to acquire polyrhythmic improvisational skills. By learning and transcribing these pieces, we will have ample material from which to develop exercises that isolate specific, challenging polyrhythmic cells. Once mastered, these cells can be successfully incorporated into our personal rhythmic vocabulary and utilized in myriad ways.

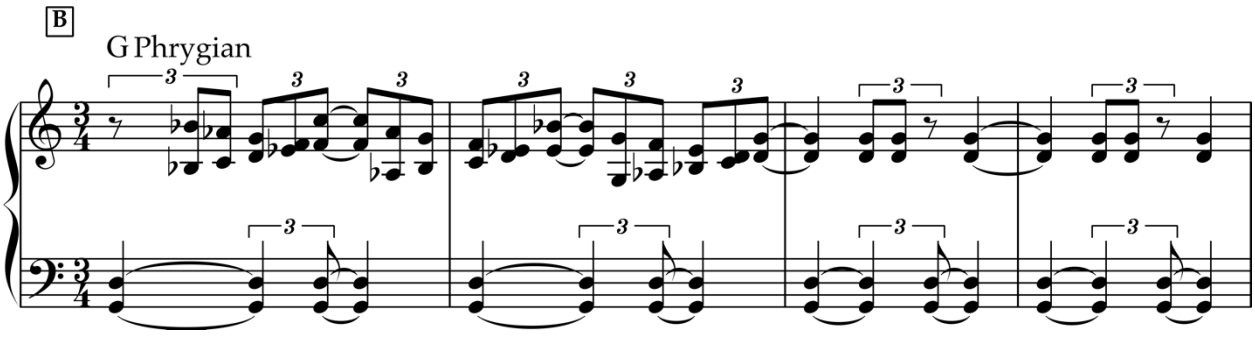
"12 Distancias"

I wrote "12 Distancias" in 2022 and recorded it with my percussion ensemble featuring Joe Chambers in June of that year. The rhythm and phrasing of the melody are directly inspired by drummer Tony Williams, particularly his playing on 1960's albums by Miles Davis and Herbie Hancock. One characteristic of his playing style was playing odd groupings of note streams. Similarly, throughout the melody of "12 Distancias", eighth note triplet–based phrases are heard with unusual groupings that resolve in unexpected ways.

The melody of the B section, harmonized in contrary motion, is built around a five note rhythmic phrase with a six note grouping. The phrase begins on the second eighth note triplet of the first measure, creating an anticipated resolution on the last eighth note triplet of the second measure which can be "punched" or accentuated by the band. As a composer, I thought of the rhythm and phrasing first, before choosing

the piches, similar to Dizzy Gillespie's approach as mentioned by Hal Galper. Figure 76 shows the first two measures of the B section from "12 Distancias".

Figure 76: First Two Measures of B Section from "12 Distancias"



Drum patterns and exercises can also help players of all instruments conceptualize complex rhythmic groupings and execute them more accurately. I have found this to be the case with my own piano playing, as well as with the mallet players and bass players with whom I have worked.

"Strawman Shaman" and "Dance Kobina" Drum Pattern Exercises

When musicians have difficulty with the rhythmic aspect of my compositions, I will sometimes show them a drumming exercise that elucidates the underlying rhythmic and metric framework, indicating the important attack points and subdivision levels around which the phrases are designed. Figure 77 shows the opening measures of my 2019 composition "Strawman Shaman", along with drum rudiment notation indicating sticking and where important accents fall in the melodic phrases.

Figure 77: Drum Pattern Exercise for "Strawman Shaman"

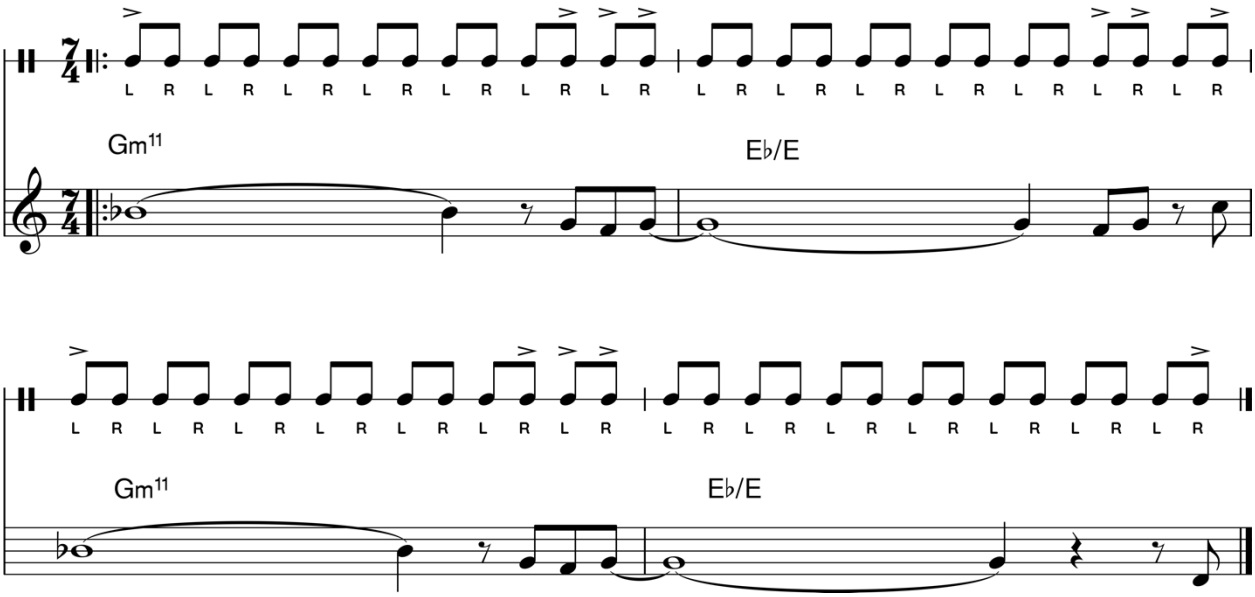
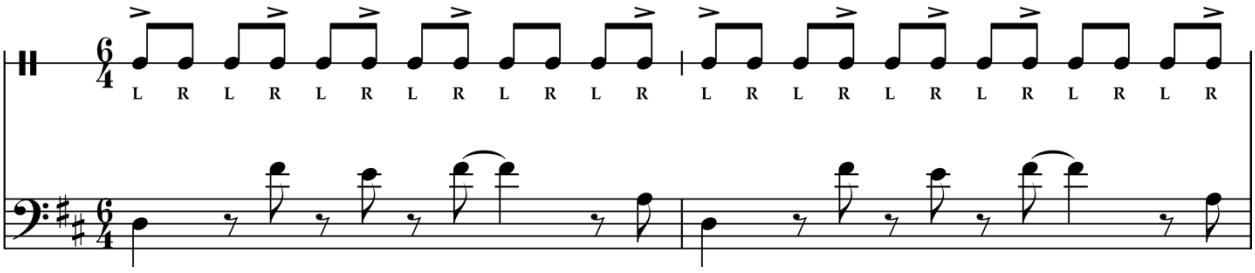


Figure 78 shows a similar drum exercise that I use to show rhythm section players how to lock into the groove established by the bass line in the A section of my composition "Dance Kobina".

Figure 78: "Dance Kobina" Drum Pattern Exercise and A Section Bass Line



The A section bass line shares similarities with the type of recurring off–beat rhythmic patterns played by tamborim players in Brazilian Escolas de Samba. Since these off–beats are occurring at the eighth note level, it can be helpful to integrate the pattern into a consistent stream of eighth notes, in the manner of a drum rudiment exercise, with the accents indicating the actual bass hits.

CHAPTER 7: CONCLUSION

Summary

This text has offered an introductory look at many different approaches to developing contrapuntal, polyrhythmic and polymetric ideas, drawing from African American, West African, Central African, South American and European musical examples. Relevant historical background has also been provided. I have discussed the guiding philosophies, concepts and approaches of musicians whom I greatly admire, and shared many of my own. I have also included numerous practice exercises and examples from my original compositions.

Limitations

Some of the exercises in this text are introductory in nature, and most suitable for high school and college level students. Those wishing to undertake more advanced studies on Bachian counterpoint, and how it is used in jazz by Fred Hersch, Keith Jarrett and Brad Mehldau, are encouraged to read the doctoral theses of Dimitrije Vasiljevic ("Jazz Piano Counterpoint: History, Analysis, and Exercises") and Bruno Heinen ("Counterpoint in Jazz Piano with Specific Relation to the Solo Work of Fred Hersch"). Also, pianists Sullivan Fortner, Dan Tepfer and Eric Lewis are all finding individual ways to develop contrapuntal jazz improvisation, and the latter two have been actively documenting their practice methods online.

An essential element of solo and ensemble playing in jazz is expressive micro–timing and "time feel". While I have touched on it in several parts of this paper, for further reading I suggest Vijay Iyer's doctoral dissertation ("Microstructures of Feel, Macrostructures of Sound: Embodied Cognition in West–African and African–American Music").

For further reading on clave, I highly recommend *The Clave Matrix: Afro–Cuban Rhythm: Its Principles and African Origins* by David Peñalosa and Peter Greenwood.

Potential Areas of Future Research

Related areas of future research could include: (1) an in–depth analysis of Charlie Parker's improvised melodies, to see how his phrases line up with different claves and bebop drum vocabulary, (2) piano orchestrations of polyrhythmic drum patterns found in Cuban *Guagancó and Batá* drumming styles, and (3) piano orchestrations of West African interlocking rhythmic patterns, as documented in Hartigan, Adzenyah, and Donkor's *West African Rhythms for Drumset*. The last two ideas, beginning as piano orchestration projects, could greatly help the pianist develop the ability to improvise using specific polyrhythmic vocabulary found in these Cuban and West African drumming traditions.

Final Reflections

To acquire the ability to improvise contrapuntally with a high level of groove and clarity, it is crucial to begin with very simple building blocks, combining them slowly

and carefully. With a regular practice routine and a methodical approach, I believe it is possible to eventually improvise contrapuntally using the concepts and profound internal logic that is the hallmark of great contrapuntal music, be it from Europe, Africa or the Americas.

In reflecting on this doctoral project, I realize that simply thinking about the different concepts and points of departure discussed in this text has led me to improvise much more contrapuntally. I have become increasingly aware of many ways to harmonize melodies and orchestrate at the piano, using the full range of the instrument. I have also become more conscious of the great potential for interaction between both hands in any improvisatory moment — this was first and foremost a mental/conceptual breakthrough that changed the way I play, and practicing specific exercises was secondary.

My overall experience practicing with specific–parameter improvisation exercises, such as those included in this paper, leads me to conclude that their value lies beyond the particular material on which they are based. Working on these types of exercises regularly greatly strengthened my ability to improvise with using different subdivision levels in each hand and polyrhythms. For the more difficult pieces, like Keith Jarrett's "Tokyo '84 Encore", I noticed that regularly practicing polyrhythmic phrasing exercises over the left hand ostinato yielded noticeable improvement within a

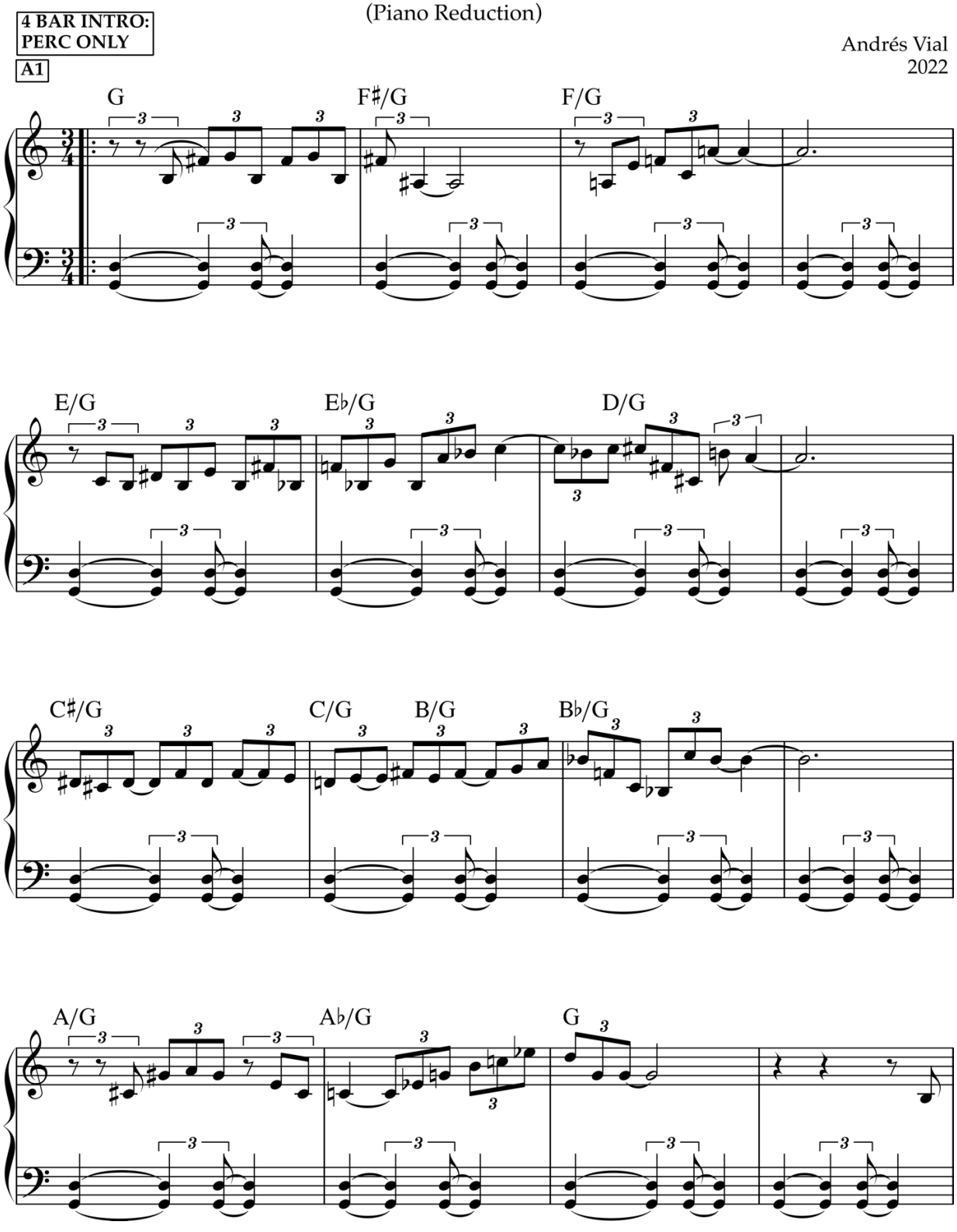
relatively short period of time — even if the first couple of practice sessions were very difficult.

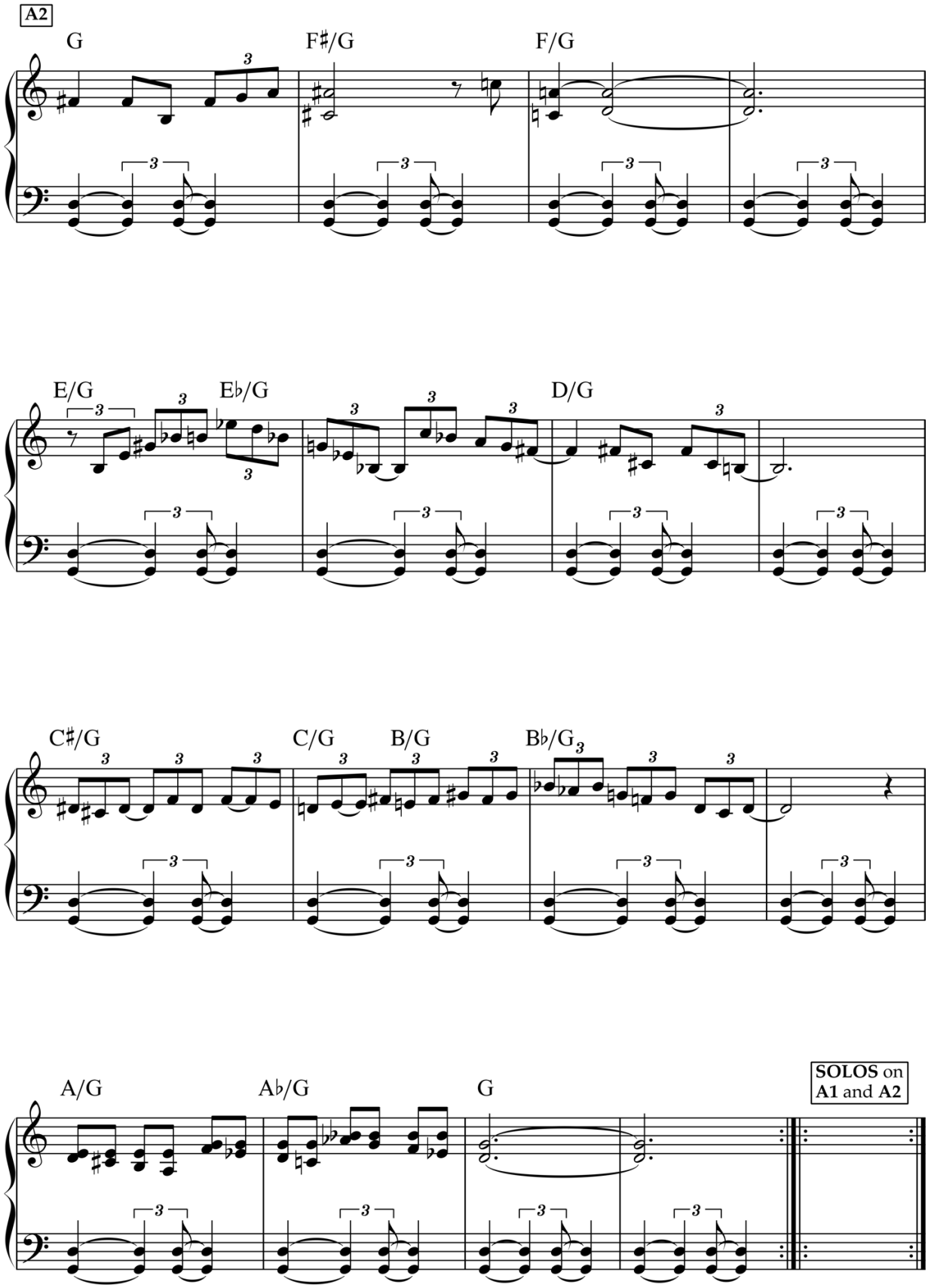
Taken as a whole, I hope that the ideas and materials presented in this thesis will be useful to students who want to learn to improvise with multiple voices at the piano, and that it will open their horizons to the infinite possibilities that exist when we sit down at the keyboard.

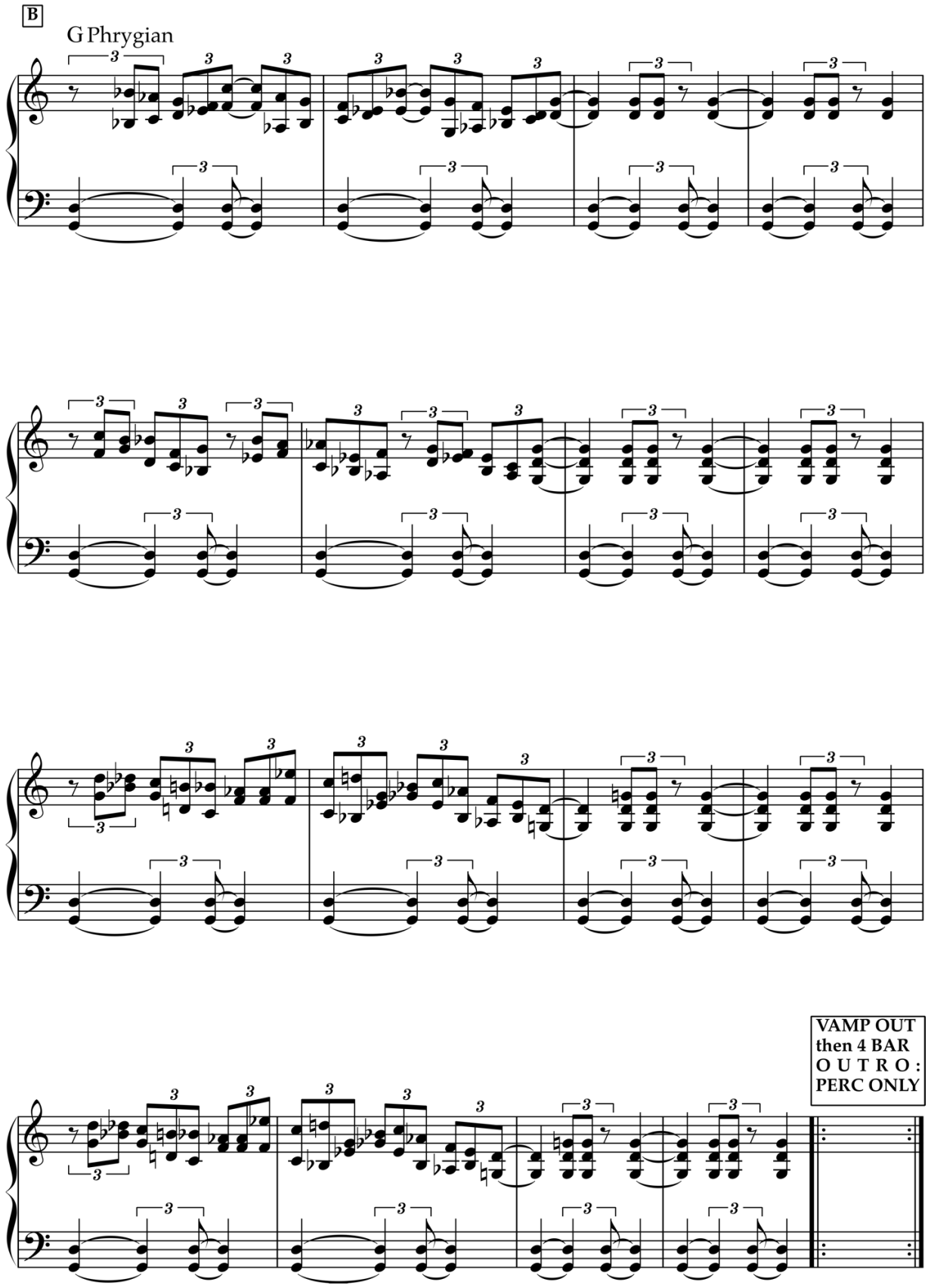
12 Distancias

(Piano Reduction)

Andrés Vial
2022



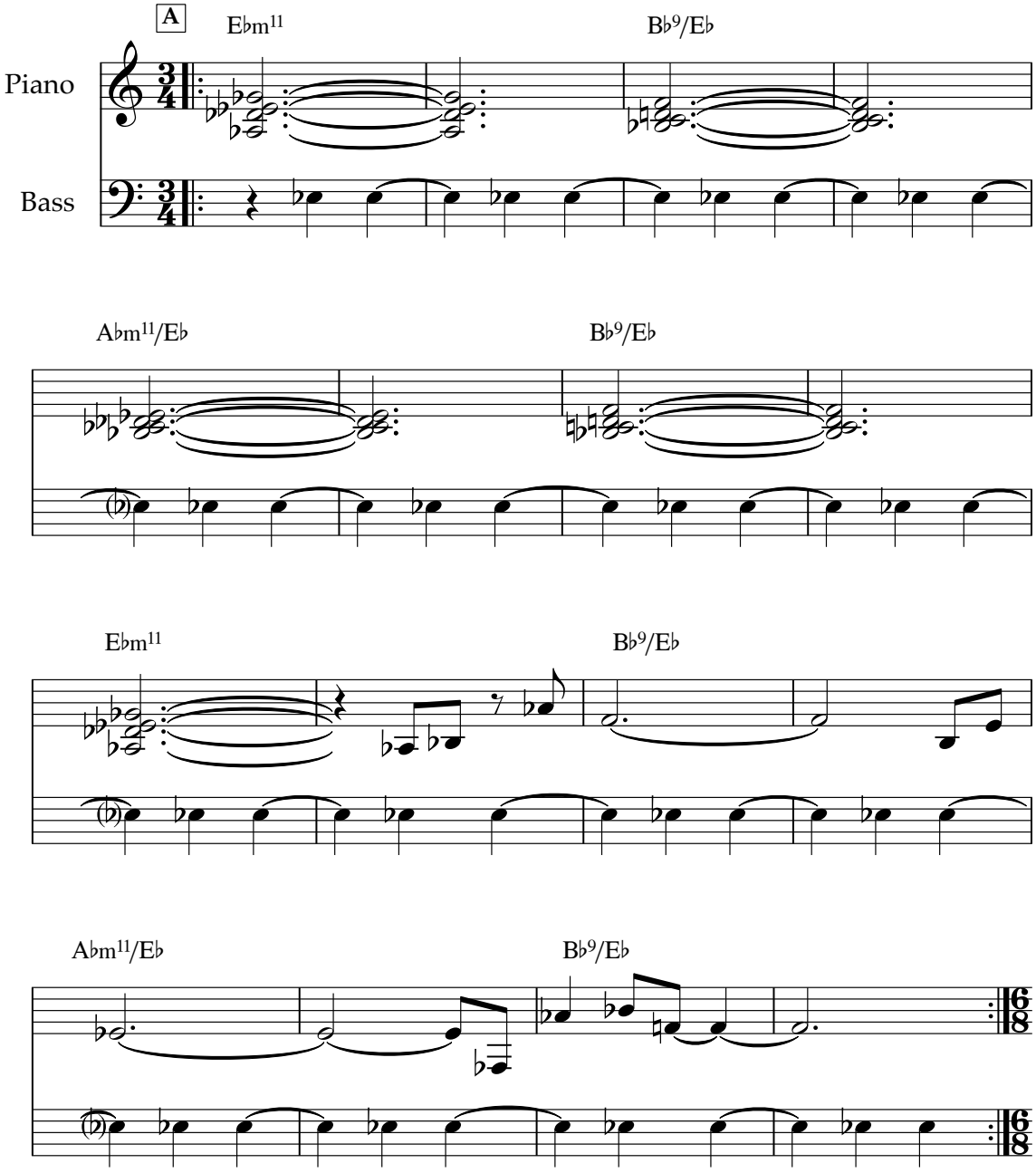

A2
G
F♯/G
F/G
E/G
E♭/G
D/G
C♯/G
C/G
B/G
B♭/G
A/G
A♭/G
G
SOLOS on
A1 and A2

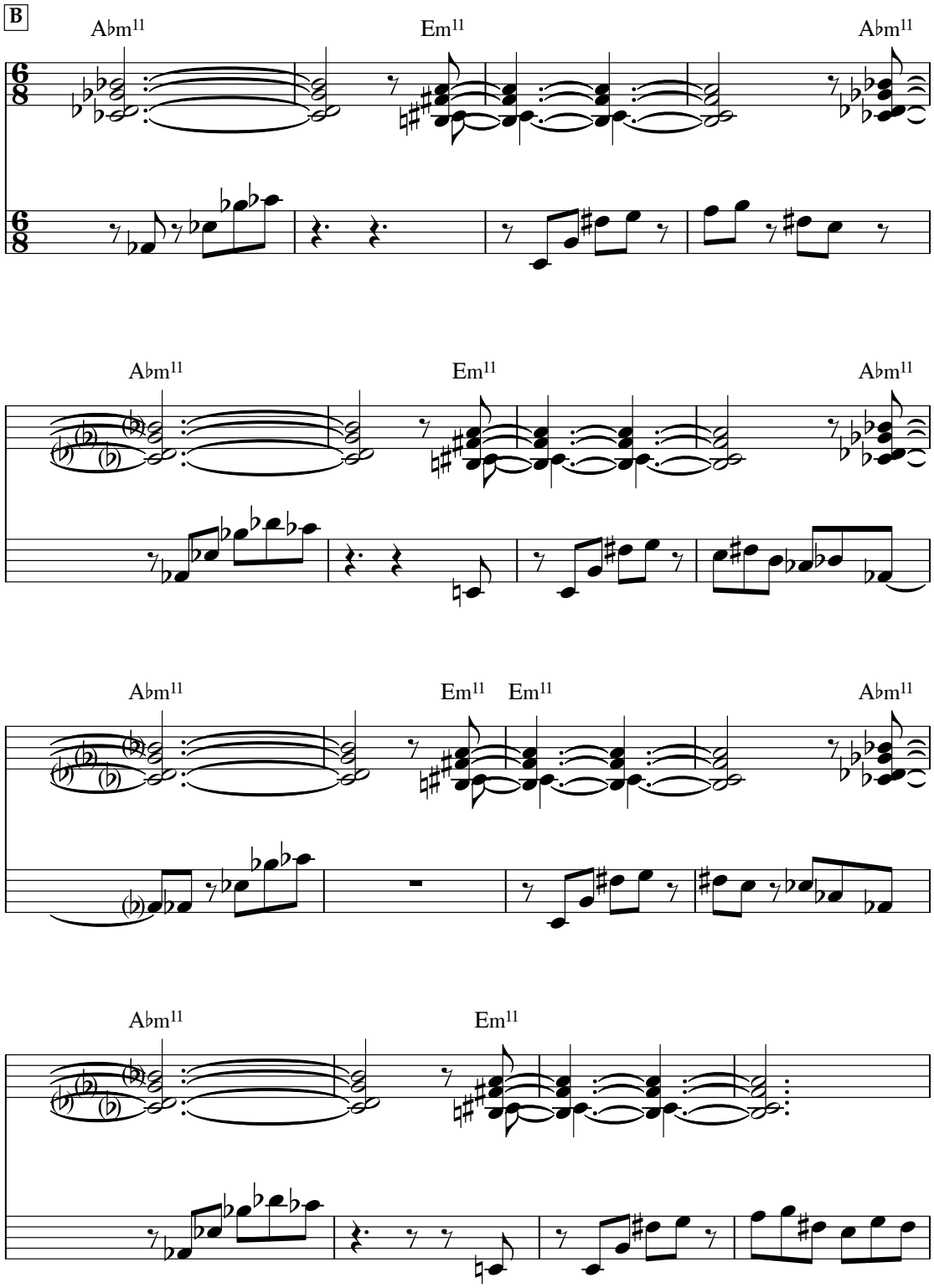

B
G Phrygian
VAMP OUT
then 4 BAR
O U T R O :
PERC ONLY

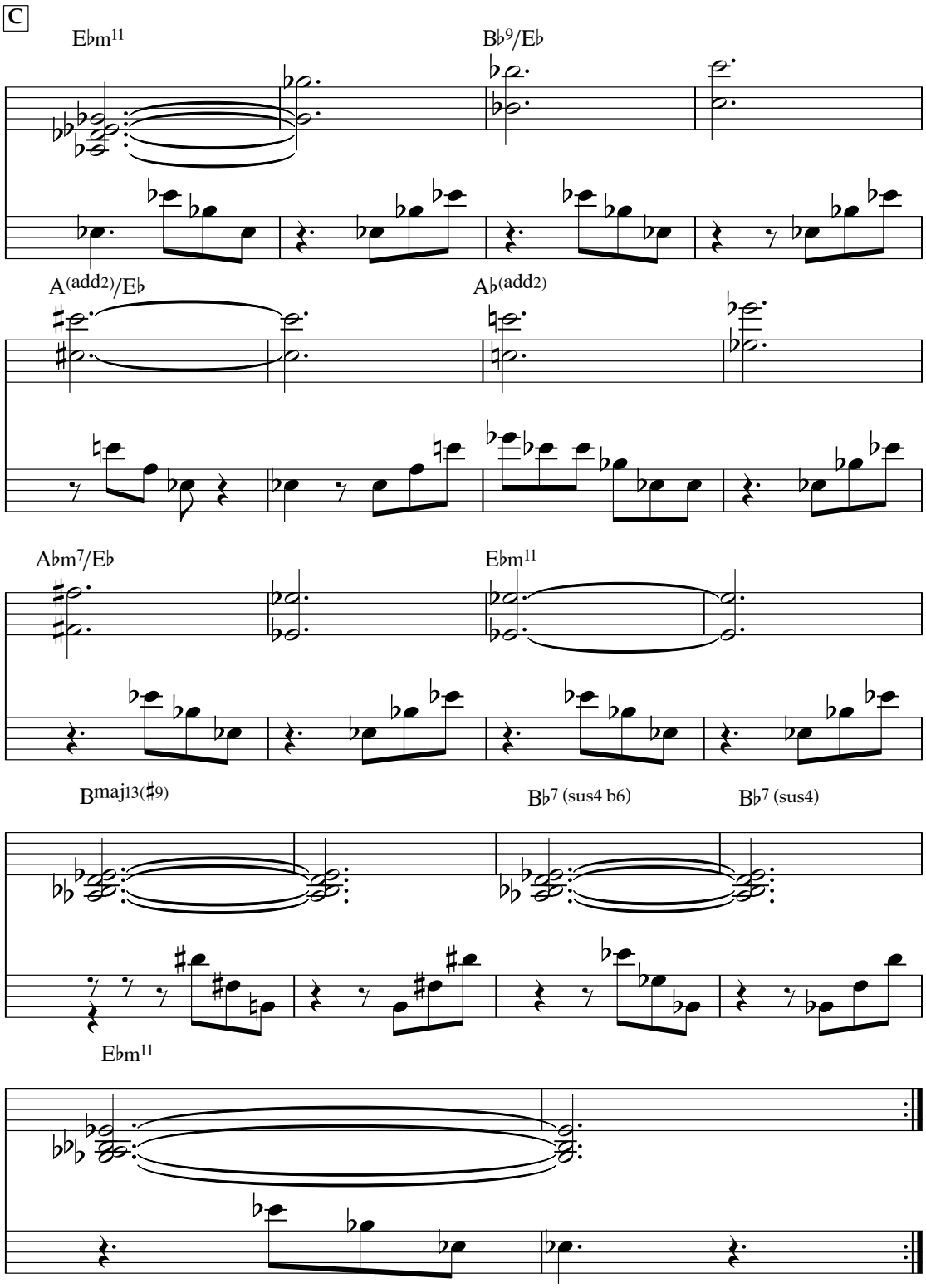
As heard on Andrés Vial / *Gang of Three*
(Chromatic Audio, 2019 Cat #CHROMA 040419)

Chacarera para Wayne

Andrés Vial




B
A♭m11
Em11
A♭m11
A♭m11
Em11
A♭m11
A♭m11
Em11
Em11
A♭m11
A♭m11
Em11


C
E♭m11
B♭9/E♭
A(add2)/E♭
A♭(add2)
A♭m7/E♭
E♭m11
Bmaj13(♯9)
B♭7 (sus4 b6)
B♭7 (sus4)
E♭m11

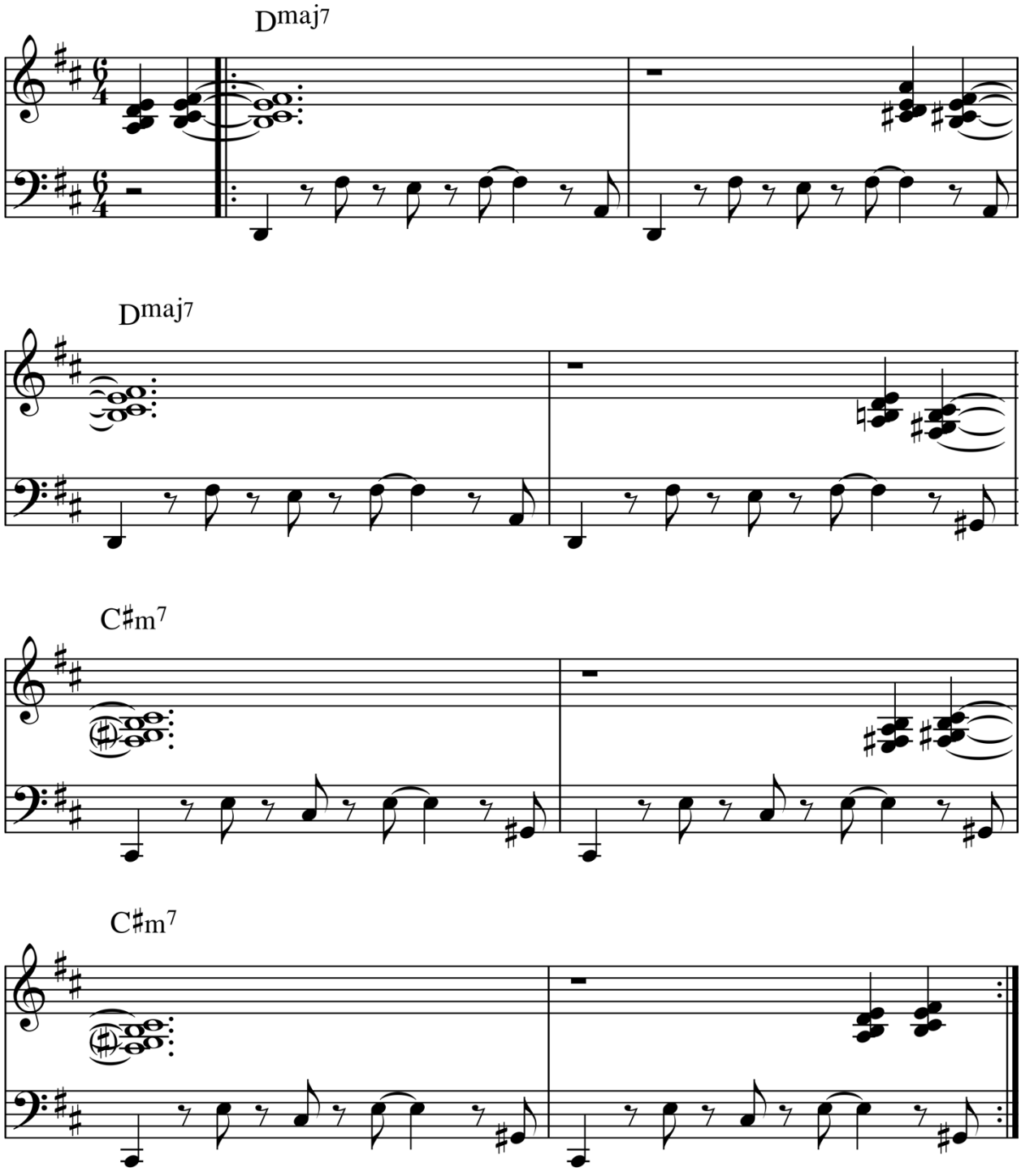
As heard on Joe Chambers/*Dance Kobina*
(Blue Note Records, 2023 Cat #B003604502)

Dance Kobina

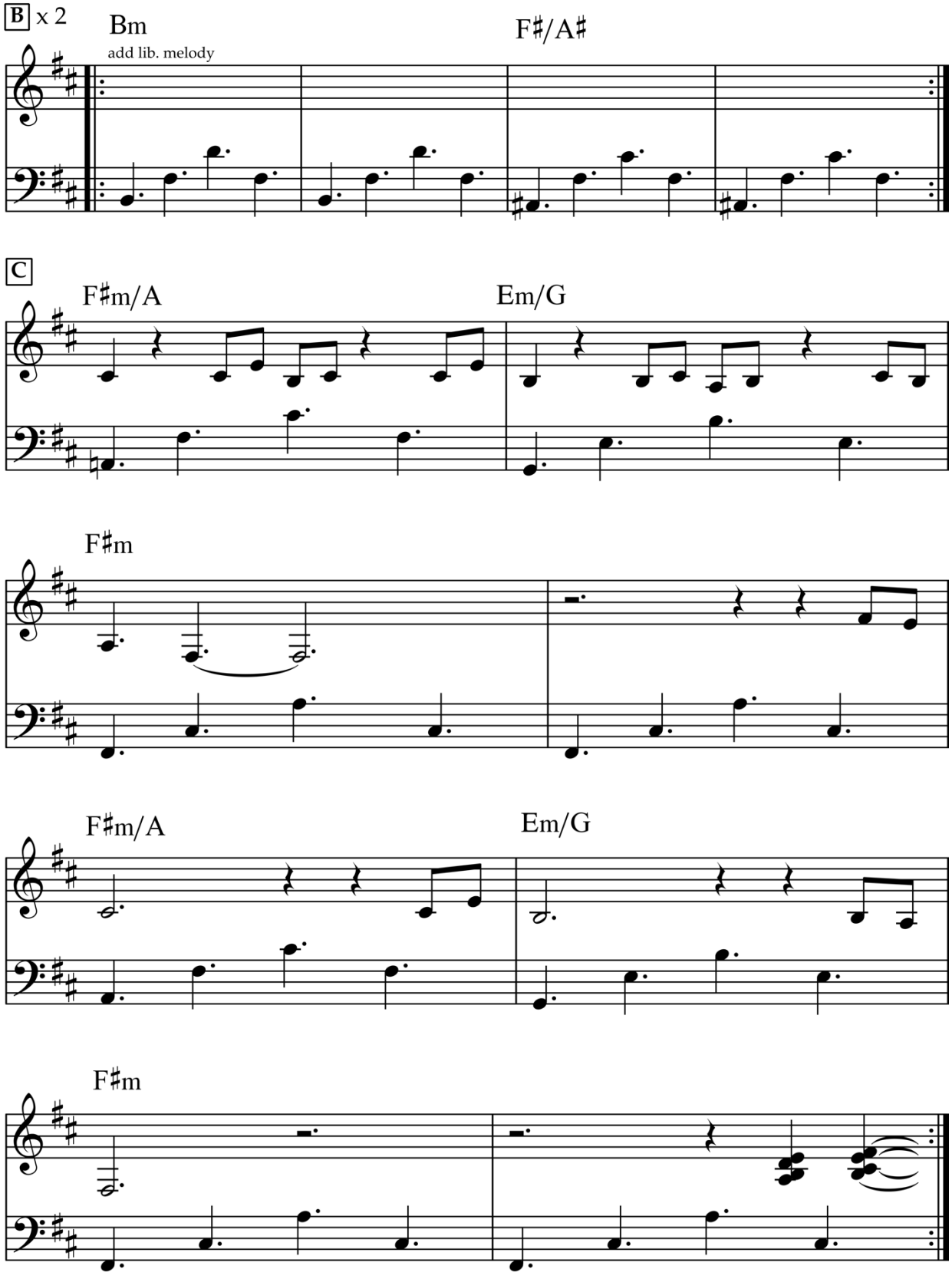
♩=225

Andrés Vial
2021

A x 2



Dance Kobina P.2

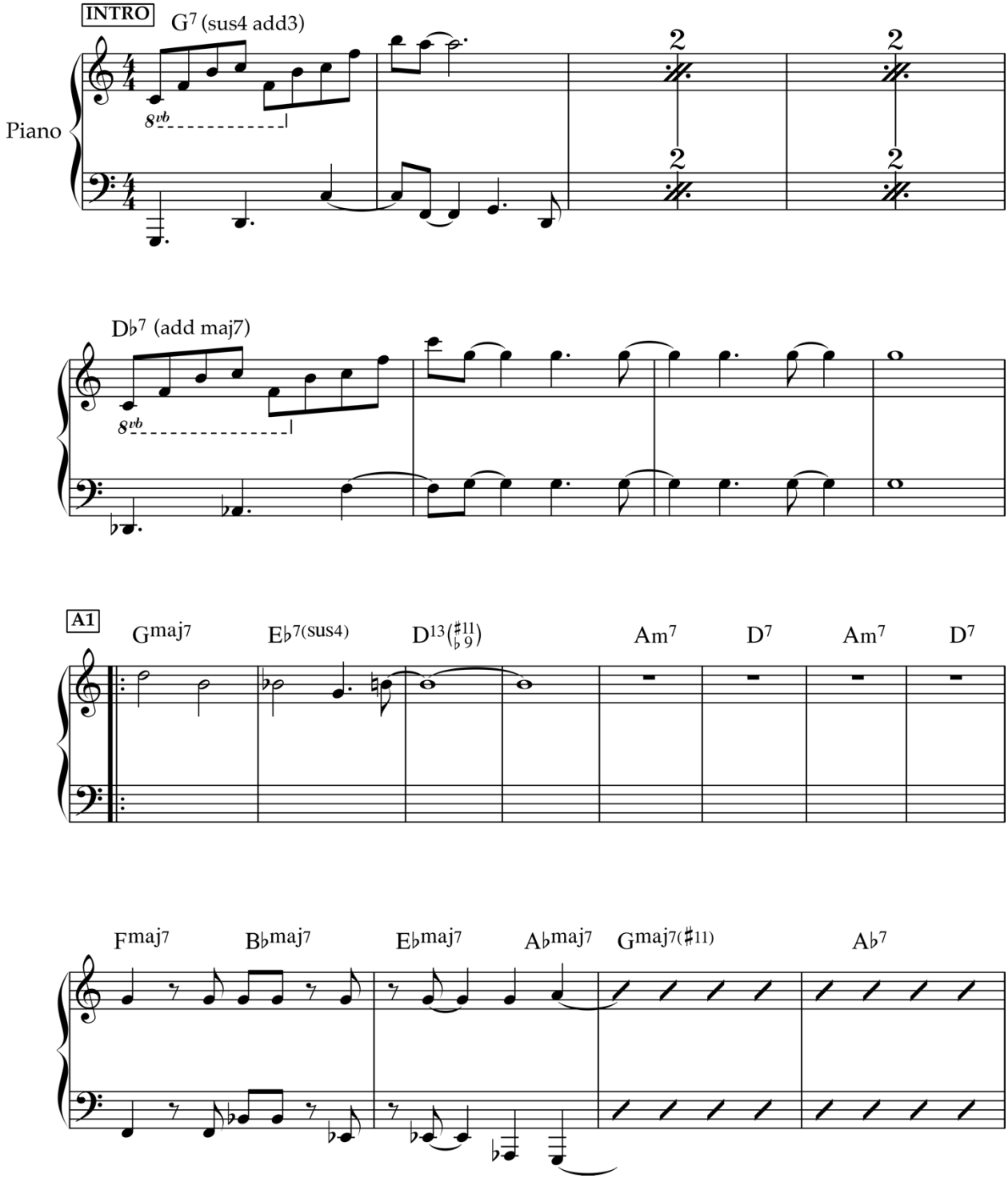


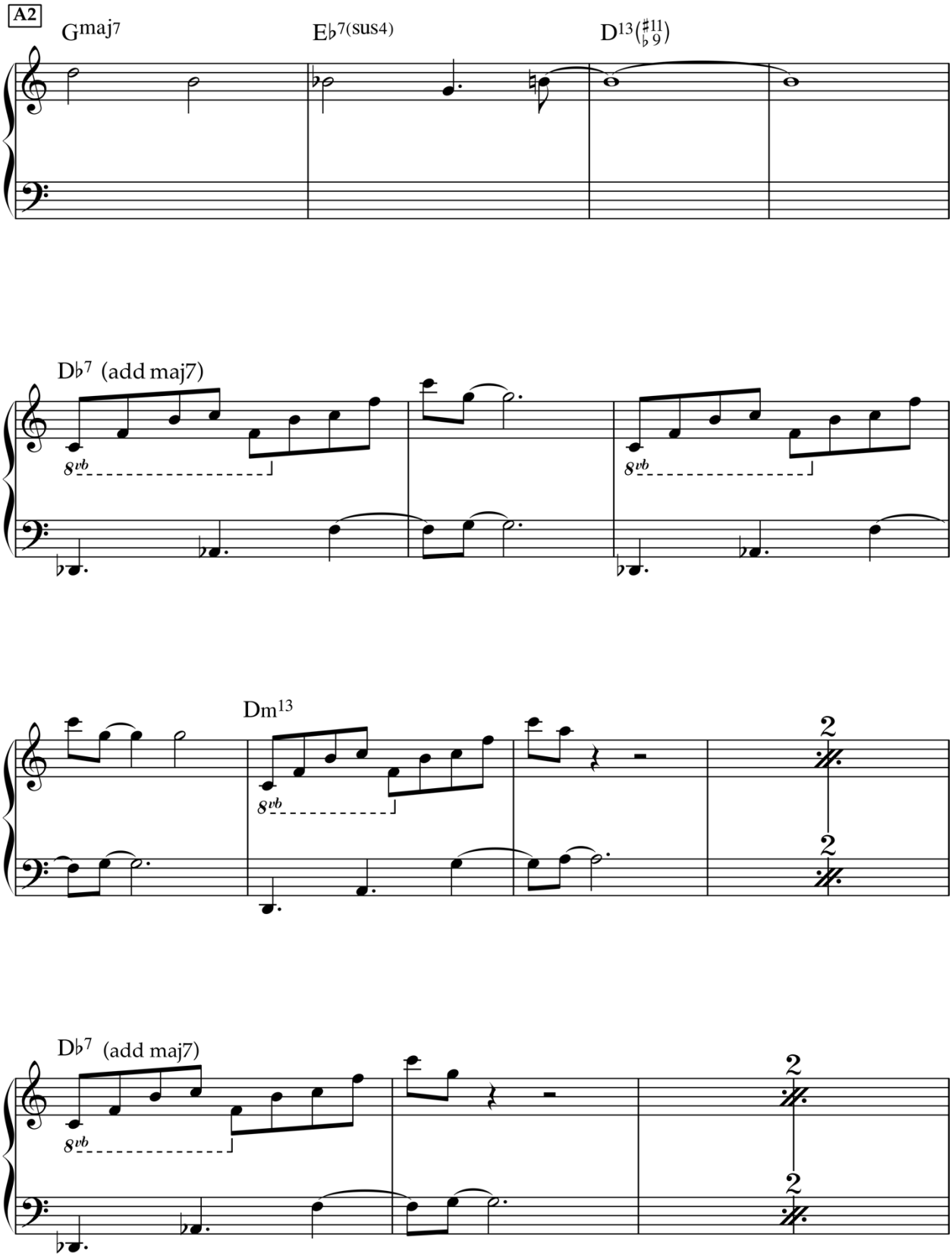
As heard on Andrés Vial / *Gang of Three*
(Chromatic Audio, 2019 Cat #CHROMA 040419)

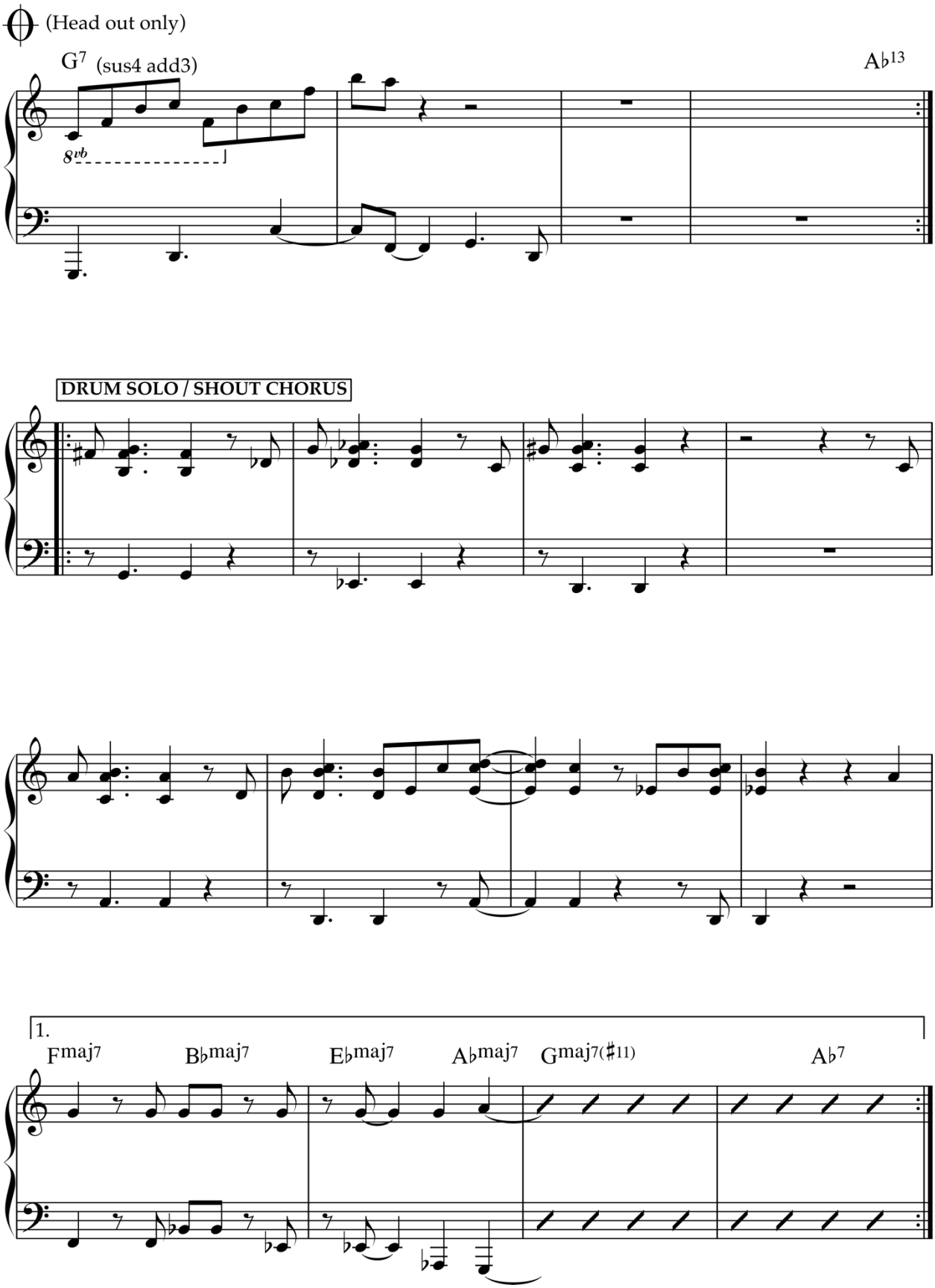
Gang of Three

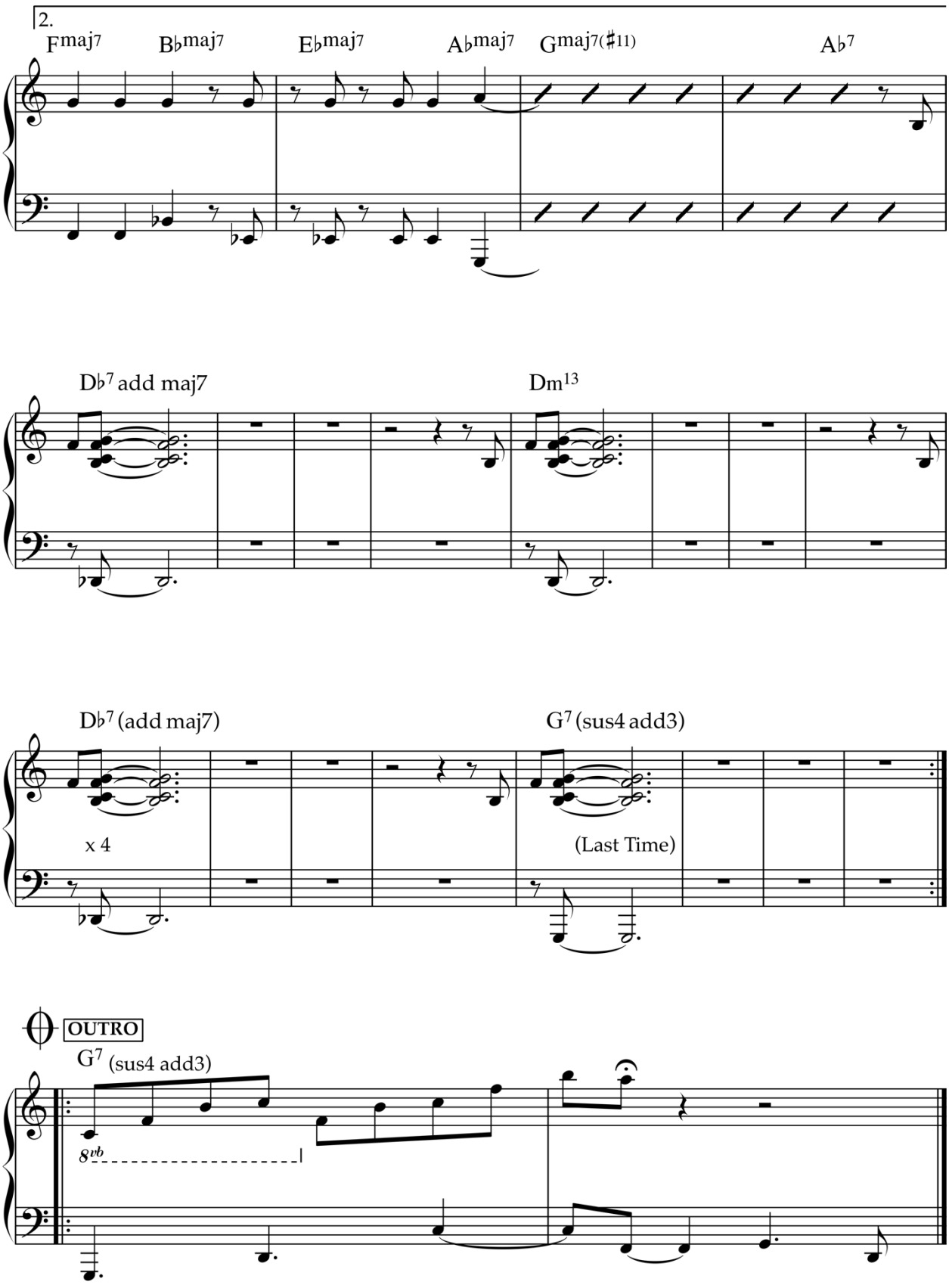
♩ = 172

Andrés Vial




A2
Gmaj7
E♭7(sus4)
D13(♯11 ♭9)
D♭7 (add maj7)
8vb
8vb
Dm13
8vb
2
2
D♭7 (add maj7)
8vb
2
2


(Head out only)
G7 (sus4 add3)
A♭13
8vb
DRUM SOLO / SHOUT CHORUS
1.
Fmaj7
B♭maj7
E♭maj7
A♭maj7
Gmaj7(♯11)
A♭7


2.
Fmaj7
B♭maj7
E♭maj7
A♭maj7
Gmaj7(♯11)
A♭7
D♭7 add maj7
Dm13
D♭7 (add maj7)
G7 (sus4 add3)
x 4
(Last Time)
OUTRO
G7 (sus4 add3)
8vb

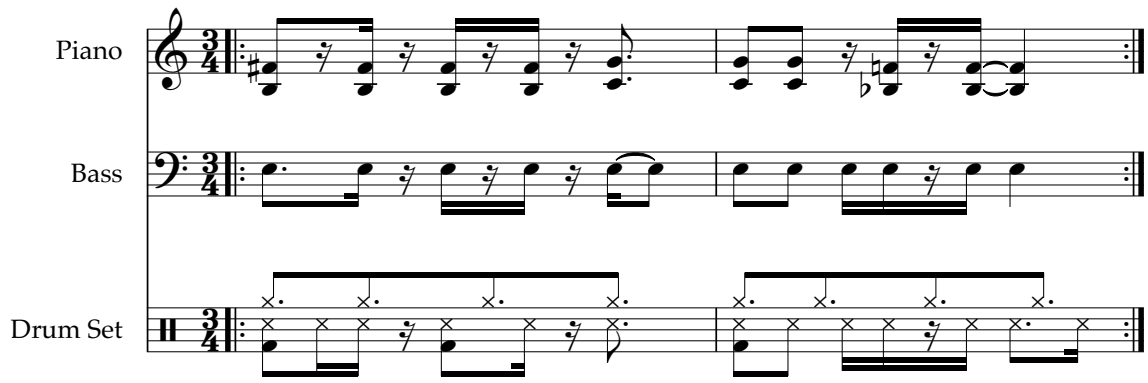
As heard on Andrés Vial / *Gang of Three*
(Chromatic Audio, 2019 Cat #CHROMA 040419)

Put Your Spikes In

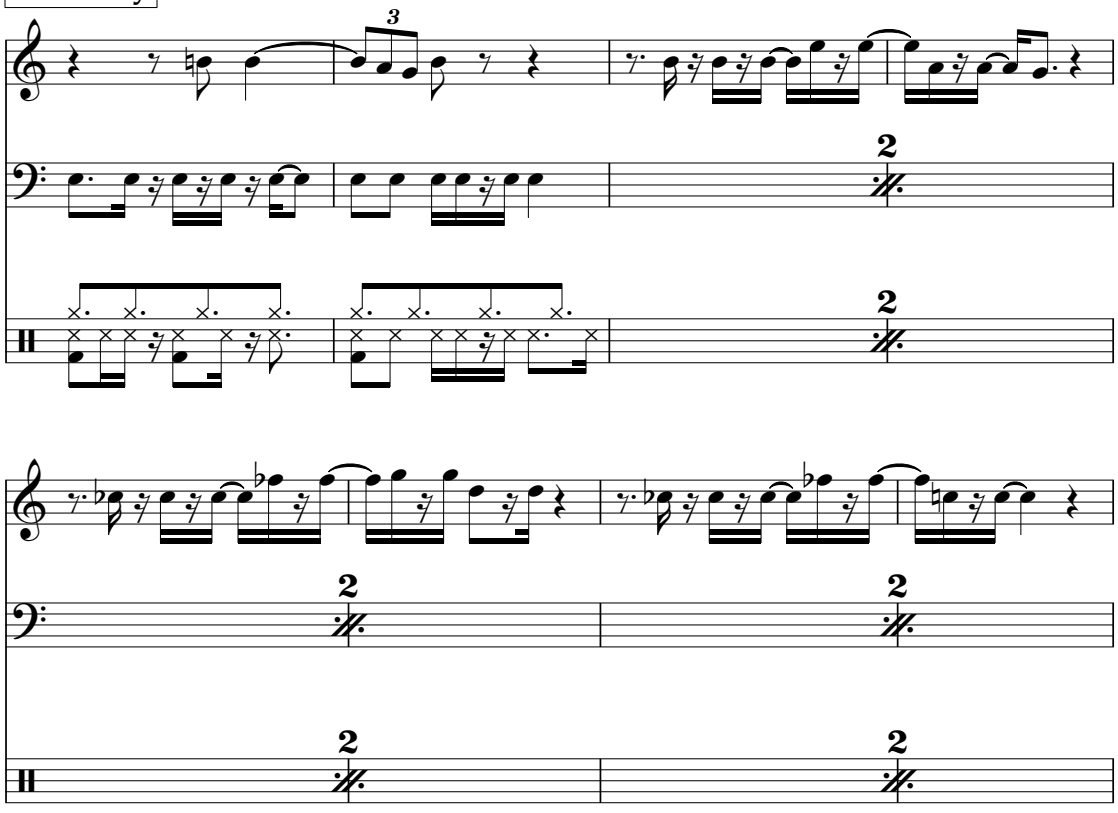
♩ = 105

Andrés Vial

INTRO x 4

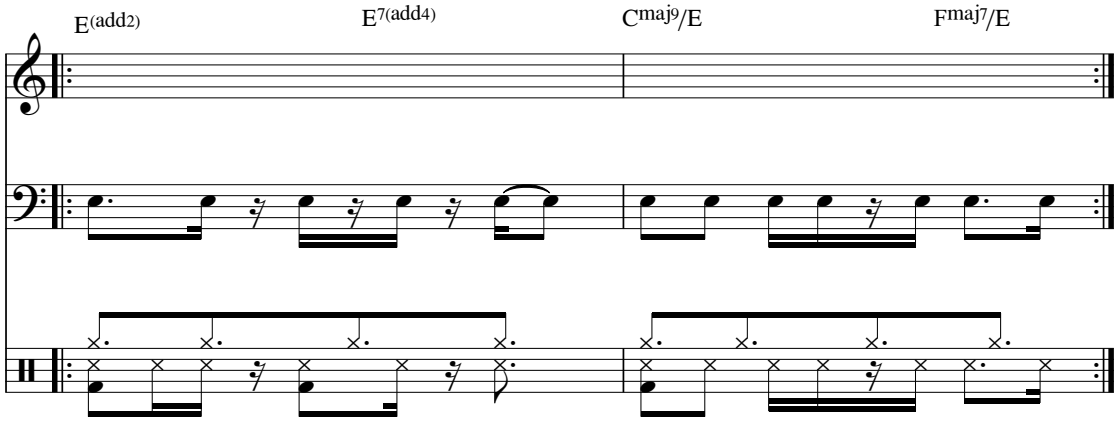


A Melody

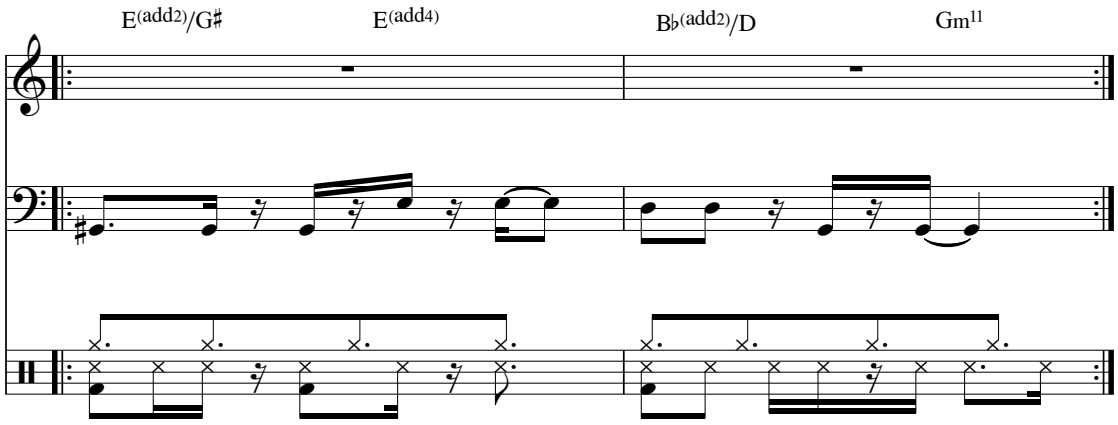


B x 4 **C x 4** **A Melody** **B x 4** **C x 4**

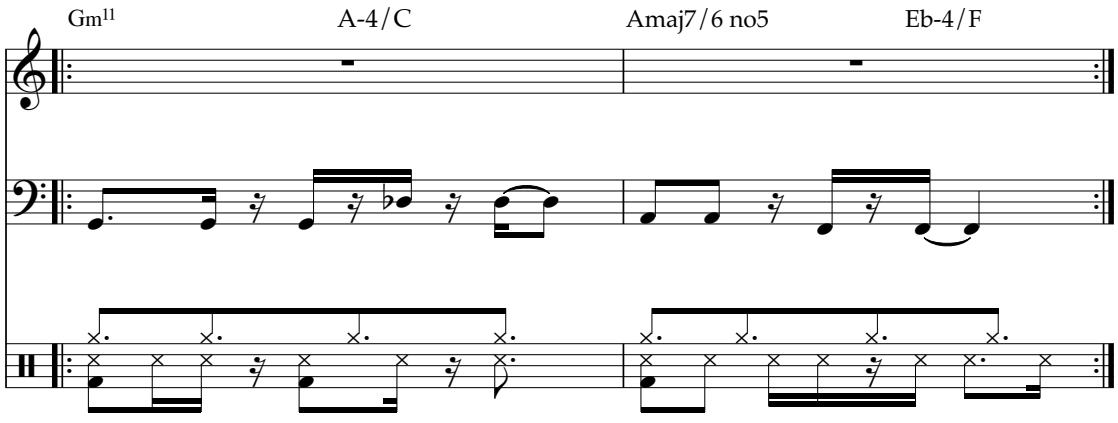
SOLOS **A x 4**



B x 4

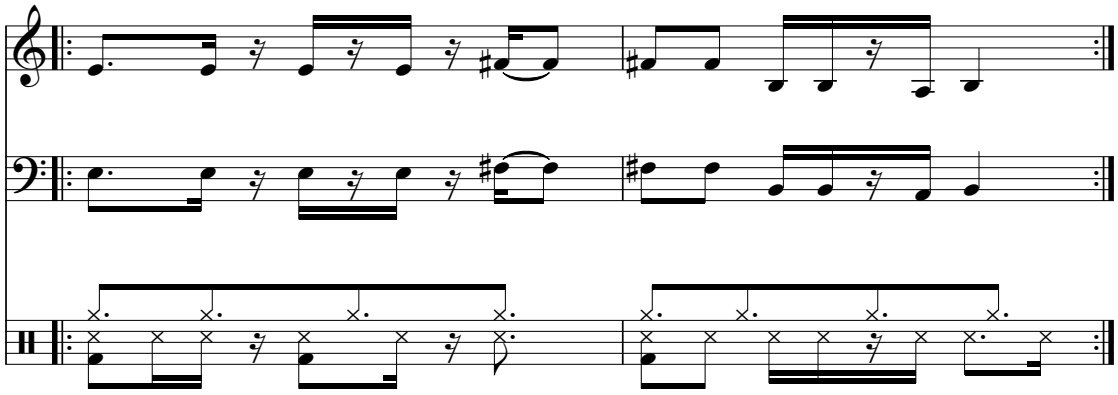


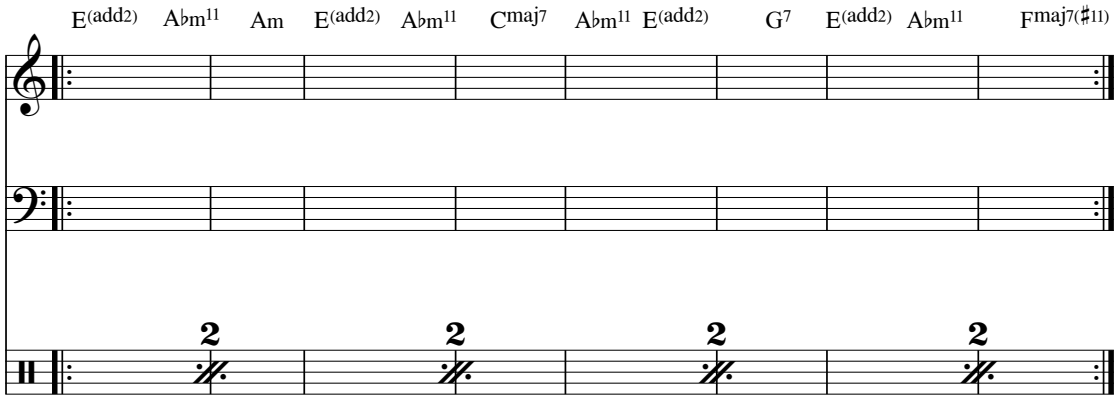
C x 4



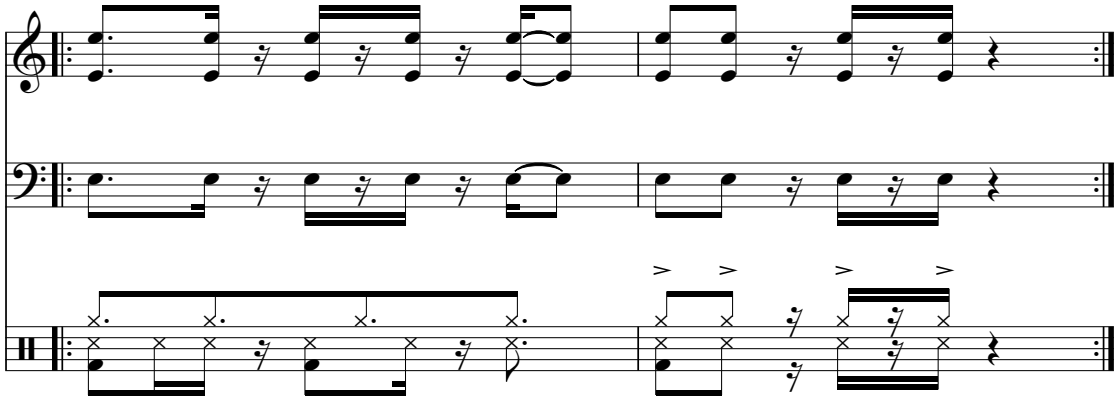
Open Vamp

D x 4 "Ba-di-heim-ha-naa-dai"





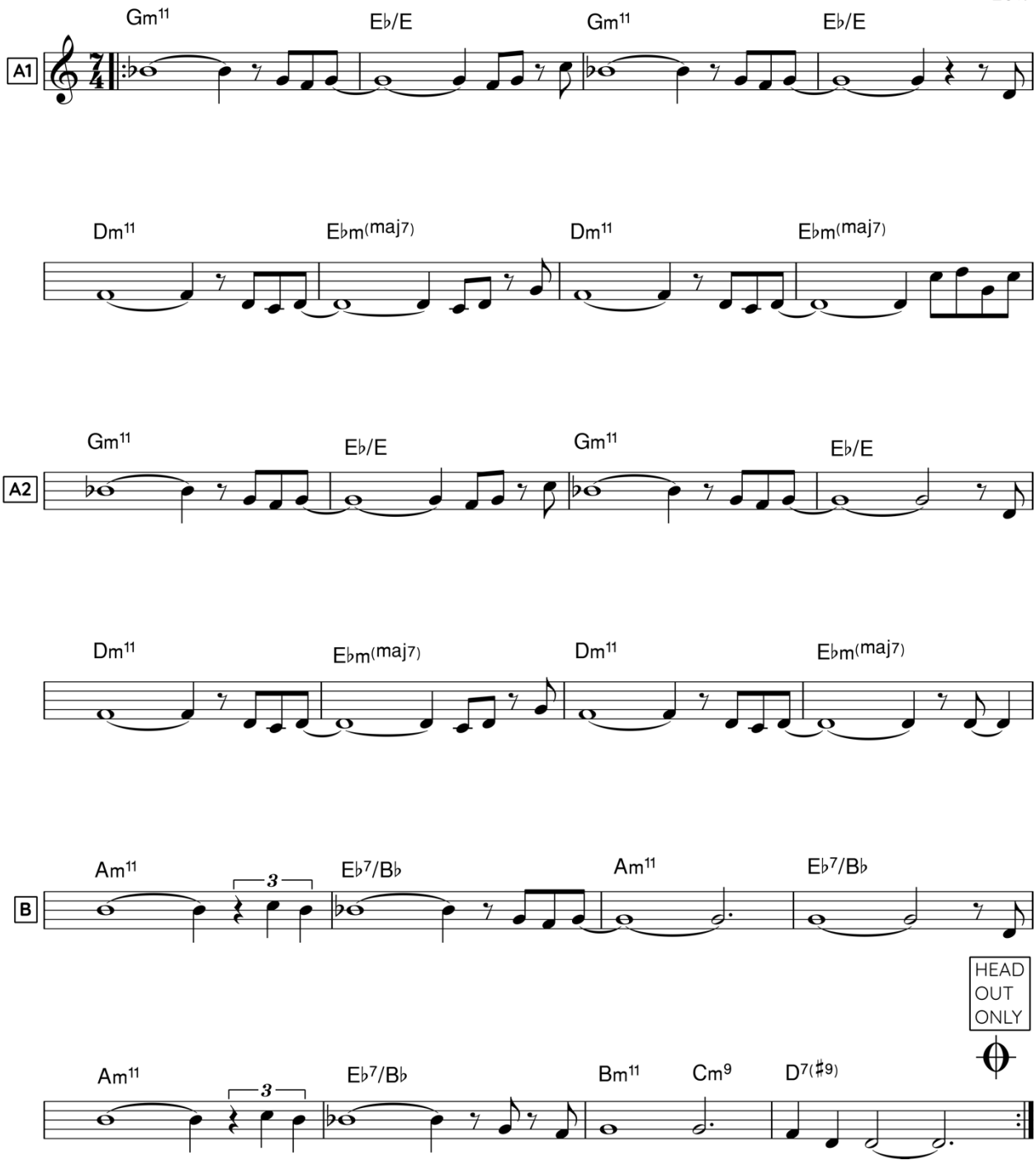
OUTRO



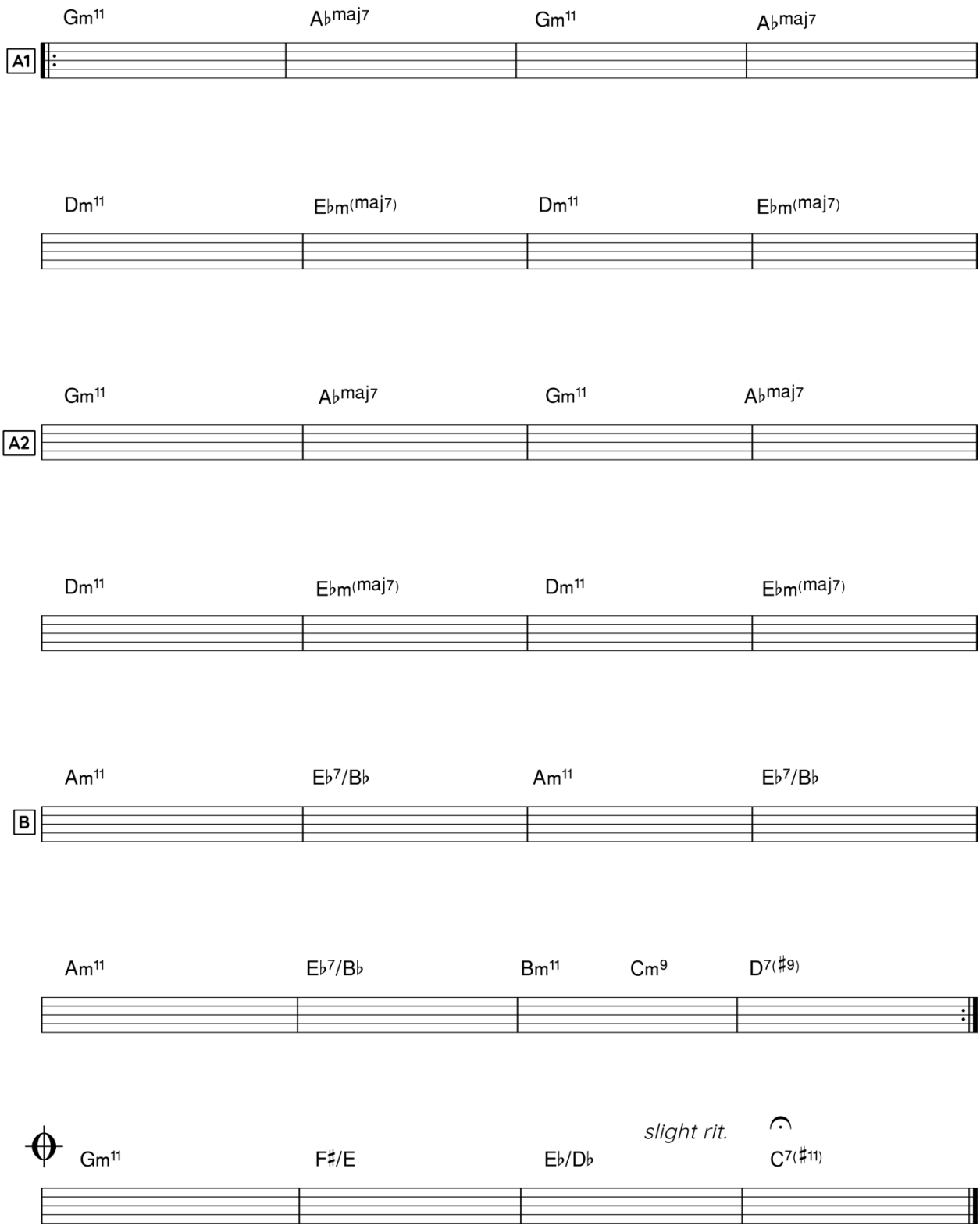
Strawman Shaman

♩=262

Andrés Vial
2019



SOLOS


Gm11 A♭maj7 Gm11 A♭maj7
A1
Dm11 E♭m(maj7) Dm11 E♭m(maj7)
Gm11 A♭maj7 Gm11 A♭maj7
A2
Dm11 E♭m(maj7) Dm11 E♭m(maj7)
Am11 E♭7/B♭ Am11 E♭7/B♭
B
Am11 E♭7/B♭ Bm11 Cm9 D7(♯9)
slight rit.
Gm11 F♯/E E♭/D♭ C7(♯11)

WORKS CITED

Albèra, Philippe. "Entretien Avec György Ligeti." *Musiques en création: Revue Contrechamps / numéro spécial.* 80–87. Éditions Contrechamps, 1989.

Alberts, Don. *A Diary of the Underdogs*. Lulu Press, 2011.

Agawu, Kofi. Representing African Music: Postcolonial Notes, Queries, Positions. Routledge, 2014.

Agawu, Kofi."Structural Analysis or Cultural Analysis? Competing Perspectives on the "Standard Pattern" of West African Rhythm." Journal of the American Musicological Society 59(1): 1–46. 2006.

Allen, Geri. "Feed The Fire." Track 1. *Some Aspects of Water*. Storyville, 1997. Digital Recording.

Arom, Simha. *African Polyphony and Polyrhythm: Musical Structure and Methodology*. Cambridge University Press, 1991.

Baker, David. *How to Play Bebop: For All Instruments. The Bebop Scales and Other Scales in Common Use*. Alfred, 1985.

Blakey, Art and The Jazz Messengers. "Moanin'." Track 1. *Moanin'*. Originally released in 1959. Blue Note Records. Digital Recording.

Burns, Ken. *Jazz*. "Episode 10 – A Masterpiece by Midnight." PBS, January 31, 2001.

Cole, Warwick. "Improvisation as a Stimulus to Composition in Bach's Partita Ii." Bach 31, no. 1 (2000): 96–112.

Corea, Chick. *A Work in Progress:... on Being a Musician*. Chick Corea Productions, 2002.

Chambers, Joe. "Dance Kobina." Track 2. *Dance Kobina.* Blue Note Records, 2023. CD.

Chambers, Joe. "Caravanserai." Track 4. *Dance Kobina.* Blue Note Records, 2023. CD.

Charry, Eric. *Mande music: Traditional and modern music of the Maninka and Mandinka of Western Africa.* University of Chicago Press, 2000.

Chemillier, Marc, Jean Pouchelon, Julien André, and Jérôme Nika. "La Contramétricité Dans Les Musiques Traditionnelles Africaines Et Son Rapport Au Jazz" [Contrametricity in African Traditional Music and its Relation to Jazz]. [In Fr]. *Anthropologie et Sociétés* 38, no. 1 (2014): 105–37.

Corea, Chick. *A Work in Progress:... On Being a Musician.* Chick Corea Productions, 2002.

Cristell, Mark, Kathleen M. Hutchinson, and Helaine M. Alessio. "Effects of Exercise Training on Hearing Ability." *Scandinavian Audiology* 27, no. 4 (1998/01/01 1998): 219–24.

Cruz, Pablo. *El Bombo Legüero en el Folklore Argentino Vol. 1*. 2016.

de Lima, Brian Jude. "Reanimating Dissonance: Cultivating the Antecedents of Barry Harris' Concept of Movement as Multidimensional Pedagogical Tool for Ontario

Post–Secondary Jazz Curricula." 2017.

Dehoux, Vincent. *Chants à Penser Gbaya (Centrafrique).* Editions Selaf, 1986.

Dehoux, Vincent. *Centrafrique: Musique Gbaya – Chants à Penser (2).* Ocora, 1995. CD.

Dehoux, Vincent, Nathalie Fernando, Sylvie Le Bomin, and Fabrice Marandola. "De La Centrafrique Au Cameroun: Un Itinéraire Rythmique." Cahiers de musiques traditionnelles 10 (1997): 81–105.

Dembélé, Aladari. *Sodassiya*. FA 016 _ VL4, 1988. Cassette. N.B. performer's first name is spelled Alla Dari on the cassette.

Diabaté, Toumani. "Jarabi." Track 2. *Kaira*. Hannibal/Chrysalis Records, 1988. Digital Recording.

Diabaté, Toumani. "Jarabi". Track 5. *Live From The Old Town School Vol.4*. Old Town School Recordings, 2006. Digital Recording.

Evans, Bill, Steve Allen, Harry Evans, and Louis Carvell. The Universal Mind of Bill Evans: Jazz–Pianist on the Creative Process and Self–Teaching. Efor Films, 1966.

Galper, Hal. *Forward Motion.* Self–Published, 2003.

Garcia, Susanna. "Learning Styles and Piano Teaching." Piano Pedagogy Forum. Vol. 5, No. 1. January 1, 2002.

Gerstin, Julian. "Comparison of African and Diasporic Rhythm: The Ewe, Cuba, and Martinique." *Analytical Approaches to World Music* 5, no. 2 (2017): 1–90.

Goldings, Larry. Interview by Leo Sidran. *The Third Story with Leo Sidran*. Podcast. May 19, 2016. http://www.third–story.com/listen/larry–goldings

Hancock, Herbie. "Cantaloupe Island." Track 3. *Empyrean Isles.* Originally released in 1964. RVG Edition. Blue Note Records, 1999. Digital Recording.

Handy, Bruce. "The Saxophonist Charles Lloyd, Still Stirring the Soup at Eighty–Four" *The New Yorker.* August 1, 2022. https://www.newyorker.com/magazine/2022/08/08/the–saxophonist–charles–lloyd–still–stirring–the–soup–at–eighty–four

Hartigan, Royal James, Abraham Adzenyah, and Freeman Donkor. *West African Rhythms for Drumset.* Alfred Music Publishing, 1995.

Heinen, Bruno Benjamin. "Counterpoint in Jazz Piano with Specific Relation to the Solo Work of Fred Hersch." PhD Dissertation. Manchester Metropolitan University, 2019.

Hersch, Fred. "Master Class Back to Bach: Keys to Jazz Piano Prowess." Downbeat Magazine, September 2012 issue.

Hersch, Fred. 'Solo Keyboard Columns'. Keyboard Magazine, (227). Vol 21. No 3. 1995.

Hersch, Fred. "Thoughts and Experiments with Solo Piano". Online Video Course. Open Studio Jazz, 2021. https://www.openstudiojazz.com/thoughts–and–experiments–with–solo–piano

Hum, Peter and Amanda Tosoff. "What Brad Mehldau told the piano students" *Ottawa Citizen,* July 14, 2014. https://ottawacitizen.com/entertainment/jazzblog/from–the–jazzblog– archives–what–brad–mehldau–told–the–piano–students

Iyer, Vijay. "Microstructures of Feel, Macrostructures of Sound: Embodied Cognition in West– African and African–American Music." PhD Dissertation. Technology and the Arts, University of California, Berkeley, 1998.

Jamal, Ahmad. "Poinciana (Live at the Pershing Lounge/1958)." Track 6. Disc 2. *The Complete Ahmad Jamal Trio Argo Sessions (1956-62)*. Originally released in 1958 on Argo Records. Verve/UMG, 2010. Digital Recording.

Jarrett, Keith. "Tokyo '84 Encore". Track 4. *Last Solo*. Image Entertainment, 2002. DVD.

Jarrett, Keith, Gary Peacock, and Jack DeJohnette. "What Is Thing Called Love?" Track 1. Disc 2. *Whisper Not (Live in Paris, 1999).* ECM, 2000. CD.

Jarrett, Keith. Interview with David Shenk. *The Atlantic*. 2009. https://www.theatlantic.com/national/archive/2009/10/keith–jarrett–part–ii–the–q–a/27775/

Jessup, Lynn. *The Mandinka balafon: An Introduction with Notation for Teaching*. Art Path Press, 1983.

Jones, A. M. *Studies in African Music Volume I*, Oxford University Press, 1959.

Jones, Stacy Holman, Tony E Adams, and Carolyn Ellis. *Handbook of Autoethnography*. Routledge, 2016.

Jones, Quincy. Library of Congress interview. June 6, 2016. https://www.loc.gov/static/programs/national–recording–preservation–board/documents/QuincyJonesInterview.pdf

Kelley, Robin DG. *Thelonious Monk: The Life and Times of an American Original.* Simon and Schuster, 2010.

Knight, Roderic C. *Towards a Notation and Tablature for the Kora and Its Application to Other Instruments*. African Music 5, no. 1: 23–36. 1971.

Knight, Roderic C. "Mandinka Jaliya: Professional Music of the Gambia. (Volumes I and II)." PhD Dissertation. University of California, Los Angeles, 1973.

Koita, Mamadou. Conversation with author, September 17, 2021.

Kubik, Gerhard. "The African Matrix in Jazz Harmonic Practices." *Black Music Research Journal* 25, no. 1/2 (2005): 167–222.

Levine, Mark. *The Jazz Piano Book*. O'Reilly Media, Inc., 2011.

Locke, David. "Principles of Offbeat Timing and Cross–Rhythm in Southern Ewe Dance Drumming." Ethnomusicology 26, no. 2 (1982): 217–46.

M'Boom. "Gazelle." Track 1. *Live at SOB's*. Mesa/Bluemoon, 1992. CD.

Mann, Alfred, and John Edmunds. *The Study of Counterpoint from Johann Joseph Fux's Gradus Ad Parnassum*. Norton New York, 1965.

Marandola, Fabrice. “Sub–Saharan Africa II: Time, Scales, Polyphonies.” MUPP 694: Ethnomusicology and Contemporary Performance Practice. Course Lecture at McGill University, Montréal, QC September 26, 2019.

Marsalis, Wynton. Interview by Morley Safer. *60 Minutes*, CBS News. June 26, 2011.

Mehldau, Brad and Kirill Gerstein. Kirill Gerstein invites Brad Mehldau: Creativity in improvised and composed music. Youtube video, 159:15, May 31, 2020. https://www.youtube.com/watch?v=uWgi5rqNQ70&t=775s&ab_channel=KirillGerstein

Monk, Thelonious. “Blue Monk.” Track 1. *Thelonious Monk.* Originally released in 1954 on Prestige Records. Concord, 2007. Digital Recording.

Monk, Thelonious. “Tea for Two.” Track 5. *The Unique Thelonious Monk.* Originally released in 1956 on Riverside Records. Fantasy/Concord, 1987. Digital Recording.

Monk, Thelonious. “Skippy”. Track 3. *Genius of Modern Music, Volume 2.* Originally released in 1956. Blue Note Records, 2001. CD.

Morton, Jelly Roll. “The Chant.” Track 3. *Birth Of The Hot – The Classic Chicago "Red Hot Peppers" Sessions (1926–27*). Originally released in 1926. Bluebird/RCA, 1995. Digital Recording.

Naik, Lopamudra. "Effect of Yogic Relaxation Technique on Auditory and Visual

Reaction Times." *International Journal of Research in Medical Sciences* 9, no. 5 (2021): 1473.

Novotney, Eugene D. "The 3: 2 Relationship as the Foundation of Timelines in West African Musics." University of Illinois at Urbana–Champaign, 1998.

Nyaho, William Chapman. "Talking Drums 1: Ukom." Track 1. *Senku: Piano Music by Composers of African Descent, Vol. 1.* MSR Classics, 2003. Digital Recording.

Oluranti, Stephen. "Polyrhythm as an Integral Feature of African Pianism: Analysis of Piano Works by Akin Euba, Gyorgy Ligeti & Joshua Uzoigwe and Àjùlo Kìnìún (Original Composition)." University of Pittsburgh, 2012.

Onyeji, Christian. "Drummistic Piano Composition: An Approach to Teaching Piano Composition from a Nigerian Cultural Perspective." International Journal of Music Education 26 (05/01 2008).

Parker, Charlie. "Chasin' the Bird." Track 8. Disc 2. *The Complete Savoy and Dial Master Takes*. Originally released in 1948. Savoy Jazz, 2002. CD.

Parker, Charlie. "Segment – Song X." Track 9. Disc 2. *Bird: The Complete Charlie Parker on Verve*. Verve Records, 2009. Digital Recording.

Pérez, Danilo. "Danilo Perez's Chrysalis: The Development of an Artist." By George W. Harris. *Jazz Weekly*. https://www.jazzweekly.com/2022/05/danilo–perez–interview/

Pérez, Danilo. Interview by Pablo Held. *Pablo Held Investigates*. Podcast.

October 3, 2022. https://pabloheld.com/en/investigates/danilo–perez

Pettinger, Peter. Bill Evans: *How My Heart Sings*. Yale University Press, 1998.

Peñalosa, David and Peter Greenwood. *The Clave Matrix: Afro–Cuban Rhythm: Its Principles and African Origins*. Bembe Books, 2009.

Pilc, Jean–Michel. *It's About Music: The Heart and Art of Improvisation*. Balquhidder Music/Glen Lyon, 2013.

Powell, Bud. "Dance of the Infidels." Track 3. *The Amazing Bud Powell Volume 1*. Originally released in 1951. RVG Edition. Blue Note Records, 2001. Digital Recording.

Powell, Bud. "Un Poco Loco." Track 12. *The Amazing Bud Powell Volume 1*. Originally released in 1951. RVG Edition. Blue Note Records, 2001. Digital Recording.

Priestley, Brian. *Chasin' the Bird: The Life and Legacy of Charlie Parker*. Oxford University Press, 2006.

Racanelli, David. *Formulaic variation procedures in Mande Griot (Jeli) guitar playing and improvisation*. Analytical Approaches to World Music 2(1): 152–176. 2012.

Riley, John. *The Art of Bop Drumming*. Alfred Music Publishing, 1994.

Rollins, Sonny. *Saxophone Colossus*. "Strode Rode." Track 3. Originally released in 1956 on Prestige Records. RVG Remaster. Concord, 2014. Digital Recording.

Roskell, Penelope. *The Complete Pianist: From Healthy Technique to Natural*

Artistry. CF Peters, 2020.

Sacko, Fanta. "Kankan jarabi." Track 6. *Musique du Mali*. Originally released in 1973 on Bärenreiter-Musicaphon. Bolibana, 1996. Digital Recording.

Schnorr, Christian Konrad. "Joe Chambers: Musical Style and Concept, 1964–1973." PhD Dissertation. University of Illinois at Urbana–Champaign, 2014.

Shorter, Wayne. Interview with Laura Sullivan. "All Things Considered." February 2, 2013. https://www.npr.org/transcripts/170882668

Smith, Margit C. "The Mande Kora: A West African System of Thought." University of Maine, 2011.

Toussaint, Godfried T. "Classification and Phylogenetic Analysis of African Ternary Rhythm Timelines." ISAMA/BRIDGES, 2003.

Uribe, Ed. *Essence of Afro–Cuban Percussion & Drum Set.* Warner Bros. Publications, 1996.

Uzoigwe, Joshua. "Ukom." *Studies in African Pianism IV: Talking Drums for Piano Solo Op* 11, 1998.

Vasiljevic, Dimitrije. "Jazz Piano Counterpoint: History, Analysis, and Exercises." University of Illinois at Urbana–Champaign, 2017.

Vial, Andrés. "Chacarera para Wayne." Track 2. *Gang of Three*. Chromatic Audio, 2019. CD.

Vial, Andrés. "Gang of Three." Track 3. *Gang of Three.* Chromatic Audio, 2019. CD.

Vial, Andrés. "Jabok." Track 3. *When Is Ancient?*. Chromatic Audio, 2020. CD

Vial, Andrés. "La Máscara del Jaguar." Track 5. *conception/oblivion*. Chromatic Audio, 2015. Digital Recording.

Vial, Andrés. "Put Your Spikes In." Track 7. *Gang of Three*. Chromatic Audio, 2019. CD.

Vial, Andrés. "Senderos." Track 2. *When Is Ancient?*. Chromatic Audio, 2020. CD.

Walton, Cedar. "Bolivia." Track 1. *Eastern Rebellion*. Originally released in 1976. Timeless Records, 1989. Digital Recording.

Washburne, Christopher. "The Clave of Jazz: A Caribbean Contribution to the Rhythmic Foundation of an African–American Music." Black Music Research Journal, vol. 17, no. 1, 1997, pp. 59– 80.

Werner, Kenny. *Effortless Mastery*. Jamey Aebersold Jazz, New Albany, 1996.

Wilmer, Val. *As Serious As Your Life*: *Black Music and the Free Jazz revolution, 1957–1977*. 3rd ed. London: Serpent's Tail, 2018.

White, André. "Monderful." Track 6. *Signals*. Cornerstone Records, 2000. Digital Recording.

Wilson, Olly. "The Significance of the Relationship between Afro–American Music and West African Music." *The Black Perspective in Music* (1974): 3–22.