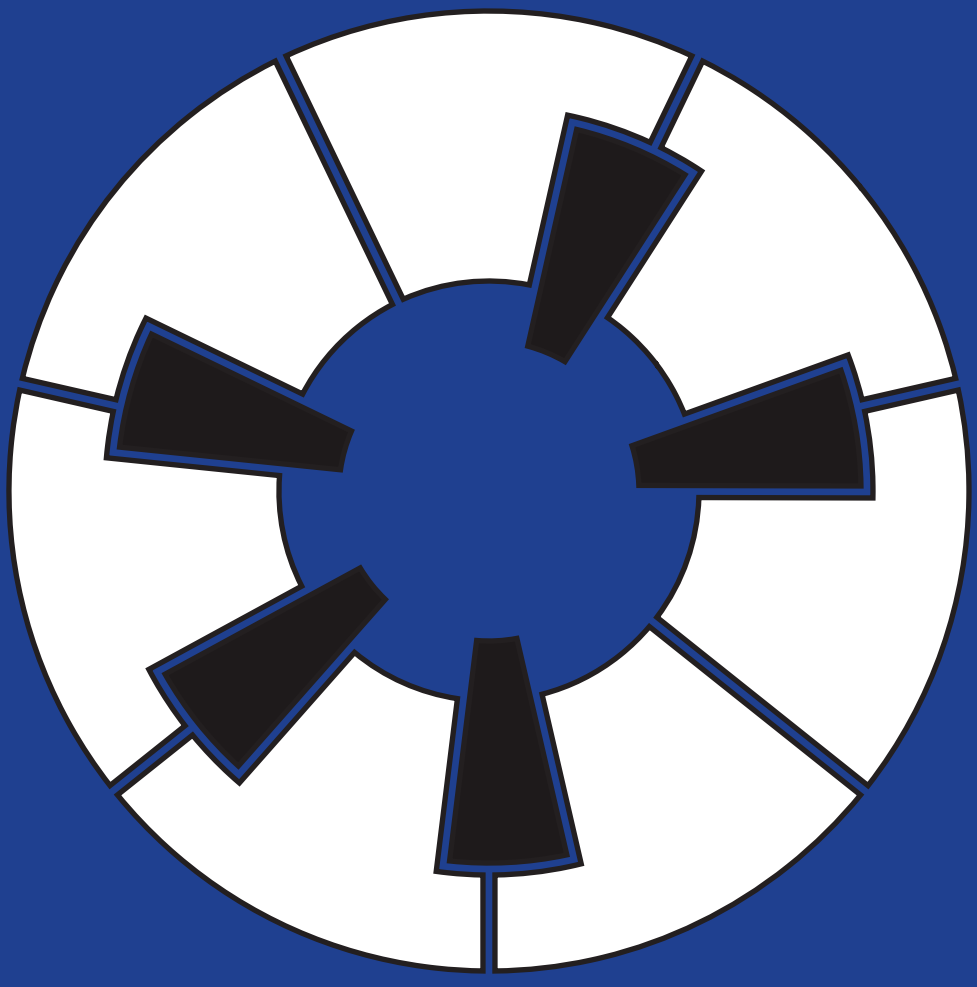
Meditations on Piano Practice

An Overview of Musical Skills

First Edition



Joel MB Parker

MEDITATIONS ON PIANO PRACTICE

Meditations on Piano Practice

An Overview of Musical Skills:

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Canada

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Cover design by Kegan Burns.

To musicians in the continuous process of developing their expressive visions. May this book shine a light on your endless journeys to new beginnings.

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Preface

This book is a journal of exercises covering skills on ear training and piano technique, designed for pianists, composers, artists, and/or curious readers. It can be used by musicians with skills at an intermediate and advanced level in piano and/or musical form.[1] If used in conjunction with my "Meditations on Music Composition",[2] it will produce the most optimal results. My goal in writing this book is to create a method that is accessible to the widest audience; be aware, beginner-level topics will not be addressed, so a beginner will likely need to have guidance or be motivated to master these ideas.

The idea that the mind is the most powerful tool for creating music is a universal opinion of great teachers and artists. It can be generalized as something like the unity of the inner ear (pitch, rhythm), physical sensation, memory, spontaneity, and formal, cultural, and spiritual aspects of music. Performing on the piano and composing is the act of expressing a unity of music (all the details), and therefore it is more efficient to master the inner ear and mind *before* primarily focusing on the final destination. In other words, learning ear training and form simultaneously is more productive than learning a great deal of piano first. This idea is reflected and emphasized in the structure of this book. A functional amount of form will be discussed then applied to the spheres of ear training and piano. Form is a very important tool to aid memory and improvisation, so take advantage by becoming a master of musical language. Artists do not have to be masters of musical language/form to create and perform at the highest level, but it will speed up every aspect of the process.

All of the exercises in this book can be practiced without a piano (a drawn diagram or visual of an octave helps when singing solfege or memorizing music). It is recommended, when practicing solfege, to have some tuned reference like a guitar.

[1] Throughout the text I replace the traditional term "theory" with the more appropriate term "form(s)". "Music theory" is a misnomer because it implies weak or no concrete application for creating or understanding music. The ultimate achievement or goal of the so called "music theory" is the categorization, identification, organization, and generation of musical form(s). The term form and study of form implies a complete multilayered hierarchical understanding of structure that seems explicitly more useful than the alternative.

[2] To be published.

Acknowledgments

I'd like to give thanks to the handful of readers who helped me to edit a more complete draft. A special thanks to my family, who supported this work to make it a reality.

Terms and Abbreviations

Tone rows (rows/tropes): When the twelve notes (C-B) are played in a respective register in a technical and/or characteristic ordering. May be transposed, inverted, retrograded, retrograde-inverted, rotated, or permuted by subsets contained in row. Traditionally used as an abstract ostinato pattern.

Semitones up: Plus sign, +

Semitones down: Minus sign, -

Chords/scales: Referred to by a tonal nickname or pitch class set in prime form[3] (e.g. Am and/or (0,3,7) respectively).

Canons: Any form of overlapping imitation(s): P, R, I, RI, augmented, diminished, time interval, free, transformed, rotated, and so on.

Sequence, sequencing: A melodic pattern repeated at a new interval and/or pitch.

Solfege: The "alphabet" for the twelve music pitches with twelve syllables. Develops the memory of intervals, pitches, sonority, piano, and melody. Very useful for composing/memorizing—indispensable! Can be transposed or altered; these transformations will be addressed.

Transposition (P): A melody or row is shifted up or down.

Inversion (I): A melody or row is played upside down.

Retrograde (R): A melody or row is played backwards.

Retrograde-inversion (RI): A melody or row is played backwards and upside down.

Drum Patterns: a descriptive term for any alternating bass and chord, or bass and tenor (usually one hand) accompaniment pattern.

[3] See Allen Forte, *The Structure of Atonal Music.* (New Haven and London: Yale University. 1973) to learn about prime form and pitch class sets.

I Transposable Solfege: Introduction

Solfege is one of the keys to mastering the inner ear. In the simplest terms it can be thought of as a sing-able twelve syllable/letter "alphabet" for the twelve pitches/notes. This mental association of pitches and syllables is the foundation for memory and reading of intervals, pitches, harmony, sonority, melody, and piano. Solfege is practiced by singing a pitch (note) and its assigned syllable (letter) simultaneously. Anyone (except maybe the tone deaf?) can improve and hone this tool to help them connect closer to music.

It is true that, for some musician's, solfege is more valuable to learn than for others. Those born with the genetic trait of **perfect pitch** quickly develop permanent memory of tuned pitches/frequencies, and thus do not need solfege, although it can still help. Perfect pitch *cannot* be learned by anyone without the genetic trait and is rare. The more common **relative pitch** musicians do not have the capacity to develop permanent memory of tuned pitches but can memorize intervallic structure,[4] and use short term memory of pitch. For those with relative pitch, solfege improves the short term memory of pitches and activates the long term memory of intervals. An **interval** is the distance between two pitches counted by the number of steps, semitones, piano keys, it takes to get from one pitch to another.[5] In solfege the practical limit of sing-able intervals is a major 9^{th} or fourteen semitones (keys), otherwise, mastering all eleven intervals within the octave (not including the octave or unison) allows the inner ear to implicate or synthesize any large non-sing-able interval (bigger than fourteen semitones or out of sing-able range) internally. If you have relative pitch, solfege is indispensable when tackling challenging music.

Tonal and non-tonal singing will be outlined separately, but they are best practiced simultaneously, with tonal singing a small part of the longer non-tonal practice. In the very beginning, tonal singing practice eases the association of solfege syllables, pitches, intervals, sonority, and piano. Non-tonal singing practice allows for the mastery and memorization of these features. It is recommended to start non-

[4] Some animals use echo location to perceive spatial surroundings, relative pitch users are similar in that a sounded tuned note temporarily illuminates interval space. Sustained notes continuously illuminate interval space for their duration.

[5] The physical phenomenon of intervals is described as the ratio of two pitches. In practice intervals are commonly understood as a discrete quantity.

tonal singing when possible because memorizing intervals, solfege, sonority, and piano, is significantly accelerated when practicing the non-tonal solfege.

Two quick metaphors can illustrate why non-tonal singing is worth practicing. Athletes train with weights, cardio, and cross training. In weightlifting, athletes commonly isolate a muscle and progressively lift heavier weights to fortify and strengthen the muscle. Solfege is similar, in that “intervals” are isolated and exercised with progressively more challenging patterns, and the result is a carved memory of the interval. On that same hand, like a cook, we are tasting all the ingredients or possibilities so we can create the widest spectrum of the best dishes. In order to do so, we have to taste as much as possible to mature a palate.

It’s hard to overemphasize the importance of learning solfege. Neglecting to learn this skill will be a grave disservice to potential personal growth as a musician.

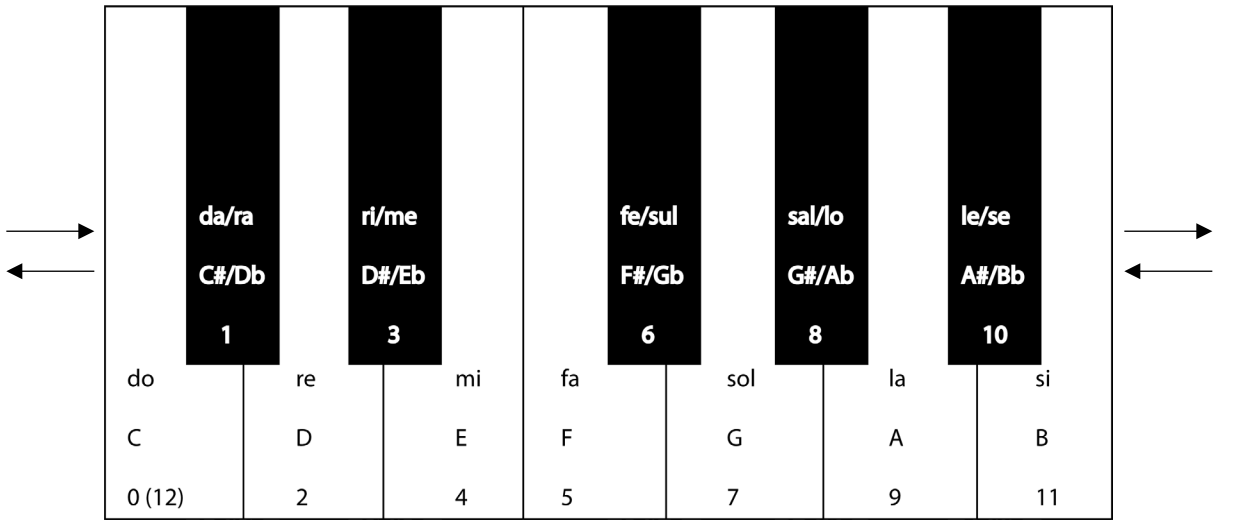
Please note: The following exercises are meant for musicians with training in voice. If you are not careful, they can be dangerous and result in strain or injury to the voice. This book is not made for training in voice, but training of ear and piano.

Solfege does not need a piano to be practiced! However, having a tuned reference is recommended.

II Transposable Solfege: Tonality

Solfege was invented in the middle ages as a tool to aid the memory of intervals and sonority.[6] Likewise, in modern times it is used to achieve the same goals; however, some differences appear when singing chromatic tones (extended solfege), and modulations (transposable "do"). The typical learning process of tonal solfege follows two paths: singing scales and singing chord progressions. These are the foundations of an inner ear for tonality. Intervals can be practiced in a static manner or memorized tunes but it is important to move to a non-tonal interval practice as soon as possible, because tunes can negatively impact the spontaneous process of sight reading. Even though we will rarely use all the vowel modifiers in transposable "do" for tonality, here are optional vowel modifiers[7] and some diagrams (see Figure 1-4) that need to be memorized. This is one possibility of solfege modifiers out of several and it is important that others are explored before choosing one to memorize. Make sure to draw and redraw diagrams until memorized.

Figure 1. Piano keys and solfege.



[6] Guido of Arezzo devised a solfege system to facilitate memorization of the first six notes of a major scale. It was also used like transposable do in a simple manner.

[7] John Hullah, *Hullah's Method of Teaching Singing,* 2nd ed. (London: Longmans, Green and Co., 1880). xv (solfege vowel modifiers)

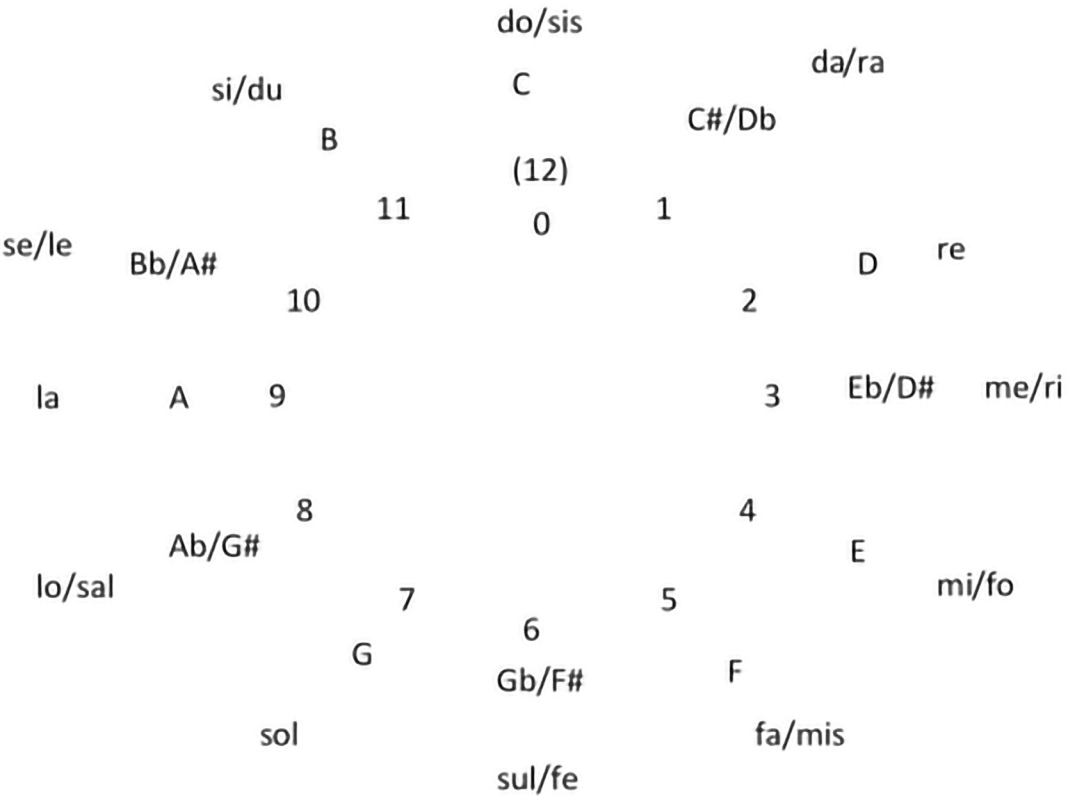


Figure 2. Chromatic clock/pitch class clock and solfege. Circle of fifths clock can be made also, 0 (12), 7, 2…etc.

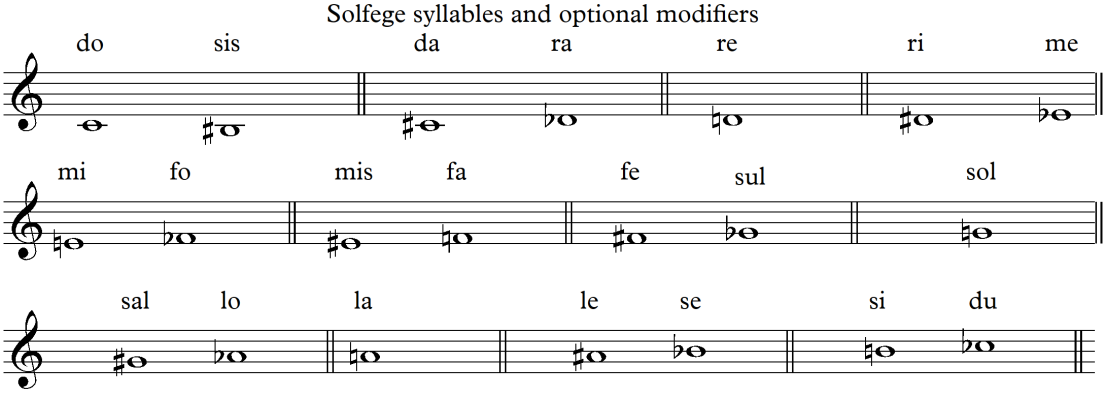


Figure 3. Solfege and notes.

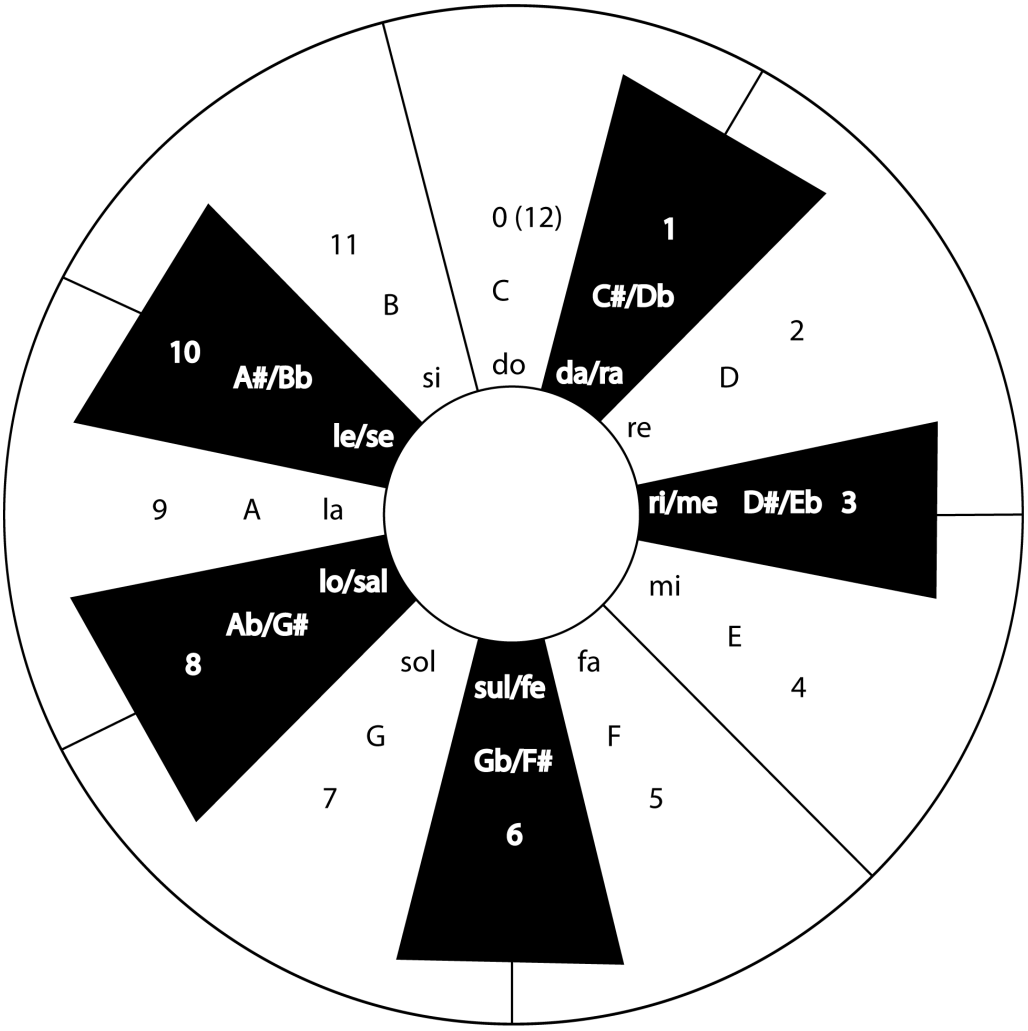


Figure 4. Donut/pinwheel/clock/dial/compass/map piano. Note: the donut piano is a mirror about the G#/Ab (8 o'clock) and D (2 o'clock) axis.

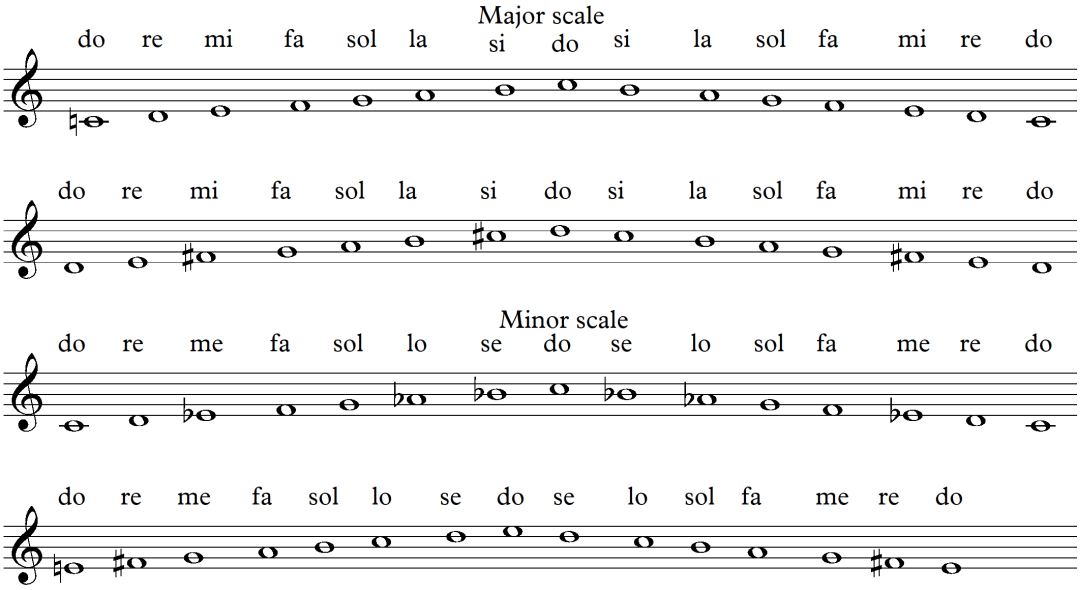


Figure 5. A major and minor scale using transposable do in tonality.

In the very beginning, starting by singing major and minor scales (Figure 5) familiarizes the process of using solfege syllables. Scales need to be sung on different transpositions to develop the ear's memory. Do not practice scales starting on the same note every day. They can be varied by adding melodic motives (see contour cells page 68).

The next step, perhaps the most useful in the tonal practice, is to sing chord progressions by arpeggiation, using chords in different inversions that modulate or cadence into new keys (see Figure 6-7). Using a working understanding of harmony and form(s), manipulate formulas for modulations, cadences, colorings, and mode mixture to embellish progressions. When a new key is established, the idea is that the "do" will become the tonic note of the new key. This is why transposable do is helpful for navigating tonality, because it acts as a shortcut to memorizing intervals versus using every modifier. Using this logic, outline a number of common progressions and invent new ones too.

Tonic (major or minor)	Predominant	Dominant
I vi iii	ii, iii, IV Vi, V/V, etc. Ger +6, N6, French +6, Ct07	V Aug6th dim7

Figure 6. A chord succession chart.

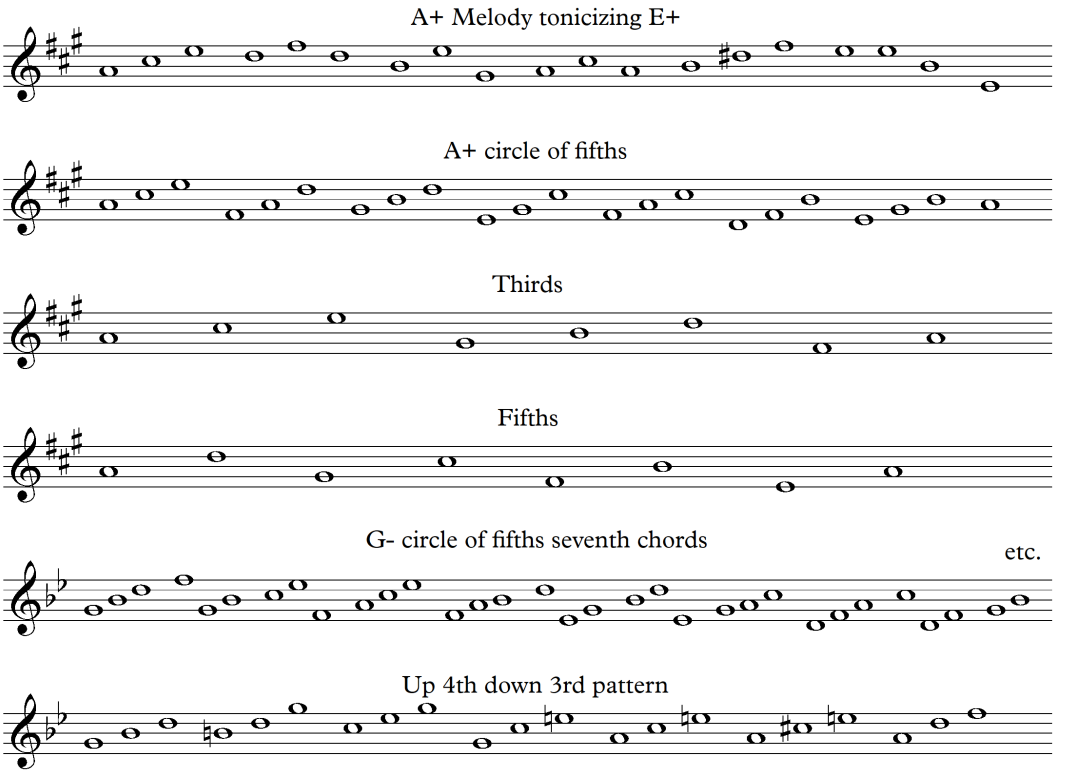


Figure 7, 1-6. Melody, circle of fifths in triads, thirds, fifths, circle of fifths with seventh chords, up 4 down 3 triad pattern.

Some musicians arpeggiate close to a starting note or tonic, or jump around all over; both are worthwhile practicing. When proficiency in modulating around closely related keys is achieved try modulating to any key and colour typical progressions by using altered chords, substitutions, melodic mediants, tritones, minor seconds, mode mixture and finally awkward sequences. Sequences other than the circle of fifths are usually hard to sing, but fortunately non-tonal singing solves this problem and most problems found in tonal singing.

III Other Solfege Possibilities

In the beginning of *Chapter 2 Transposable Solfege: Tonality*, there are four diagrams (Figure 1-4) depicting one possible solfege system—specifically, traditional solfege plus vowel modifiers. This chapter will walk through two alternatives of how to articulate and practice solfege.

Interval solfege

As the heading suggests, the main difference between traditional solfege and interval solfege is that interval solfege articulates the interval and not the pitch being sung. The problem of devising such a system lies in avoiding reference to traditional solfege syllables, since memorization can be confusing for crossovers. Luckily, there are ten consonants not used from the alphabet that can be paired with vowels to easily make a total of more than twelve unique syllables. Here is a chart (Figure 8) with some possibilities:

Intervals	Twelve intervals	Semitone count	Interval class variation
Unison	Ze	Ohm	ohm
Min 2nd	Zah	One	oh
Maj 2nd	Se	Two	ah
Min 3rd	Sah	Three	Ee
Maj 3rd	Ke	Four	go
Perf 4th	Kah	Five	Eh
Tritone	Pe	Six	uu
Perf 5th	Pah	Seven	Eh
Min 6th	We	Eight	go
Maj 6th	Wah	Nine	Ee
Min 7th	Ve	Ten	Ah
Maj 7th	Vah	Eleven	oh
octave	Ze	Ohm	ohm

Figure 8. Table showing interval solfege possibilities.

Interval solfege works by taking the size of the interval into account and not the direction, although it is possible to design it that way too. For additional specificity, “oh” and “oo” vowels can be added to the twelve-interval solfege to indicate descending intervals. Any compound interval uses its respective simple interval syllable. The interval class variation has inverted intervals use the same syllables.

Inverted solfege and singing melodies retrograded, inverted, or retrograde-inverted

Practicing music transposed, retrograded (backwards), inverted (upside-down), and retrograde-inverted (backwards-upside-down)[8] crystalizes a well rounded perspective of the music.[9] When reading a melody **retrograded (R)** the music is read from right to left, from the last system to the first system, with the *sounding durations* of the notes preserved—i.e. roughly how a record would sound if it was played backwards. When reading a melody **inverted (I)** the music is read "normally" (left to right), the rhythm and intervals are preserved but the melodic directions (up or down) are swapped/reversed. Inversions can have one of twelve axes, but for practical purposes the *G# and D* axis will be emphasized, this is because the piano is a mirror image about this axis (see Figure 4 and Figure 11-13). To see where the mirror occurs observe: the piano octave D to D is a mirror/palindromic image about the G# (Figure 11), and the piano octave G# to G# is also a mirror/palindromic image about the D (Figure 12). From a sight reading perspective a pianist inverting a melody about the G# and D axis will visualize an accurate result faster, versus a pianist thinking of the individual intervals all the notes will be gradually displaced and interchanged by. Reading a melody **retrograde-inverted (RI)** the music is read right to left, last system to first system, the sounding durations of the notes preserved, and also upside-down. Inverting about the G# and D is easiest when reading retrograde-inversions since—to reiterate—the piano is a mirror image about this axis. If performing an I or RI, visualizing a "mirror piano" and using **inverted solfege** (see Figure 9-10 and Figure 13) simplifies the process of articulating melodies in this manner: the solfege for the original melody and the I paired together, and the solfege for R and RI paired together have the *same* solfege syllables! It takes practice to learn to read the score from these points of view, nevertheless it is well worth it; practicing music this way strengthens memorization (see page 59).

Figure 9 and Figure 10 show how the R, I, RI, of the original melody will *sound*. In practice **the reader will only *see/read* the top melody** when performing R, I, and RI.

[8] See terms and abbreviations page xiii.

[9] Practicing in the normal direction **P**, plus **R**, **I**, and **RI**, is identical to the athletic skill of being able to dribble or shoot a basketball with the right-hand and left-hand, forwards and backwards from many starting points on the court.

Figure 9. Melody from G minor fugue in the second book of the Well-Tempered Clavier. Subsequent sounding readings R, I, and RI, of original melody.

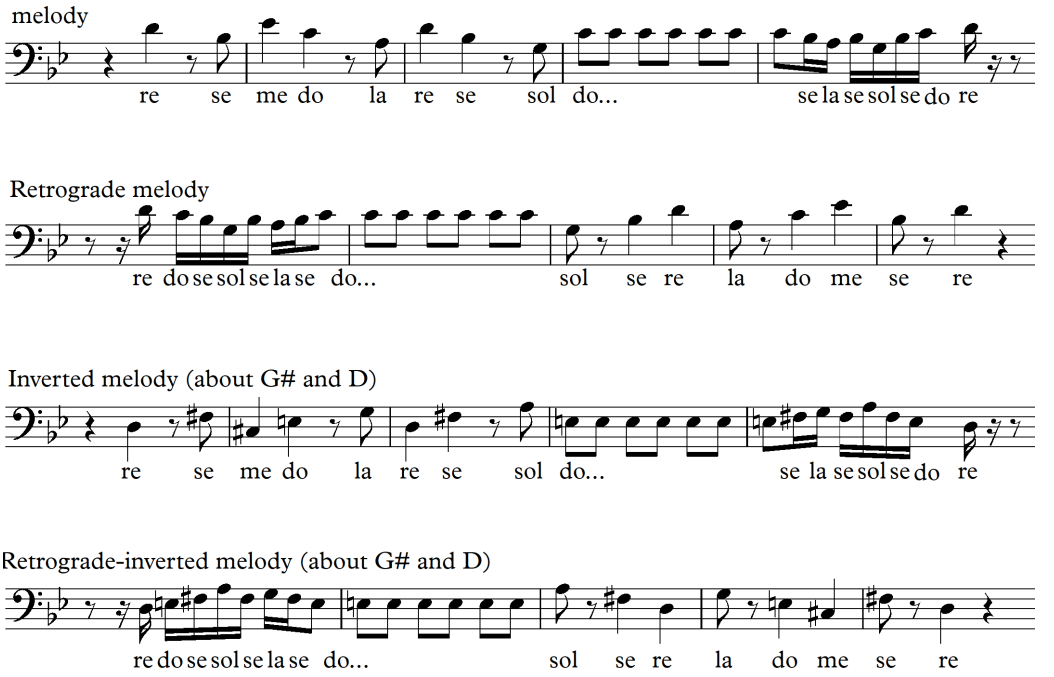
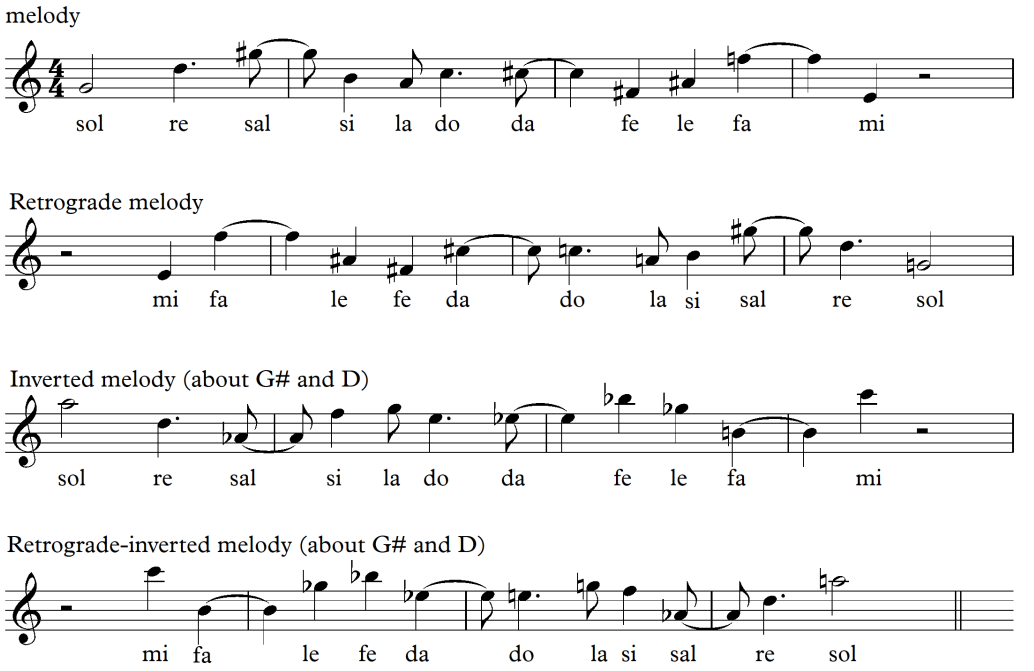


Figure 10. A non-tonal melody. Subsequent sounding readings R, I, and RI, of original melody.



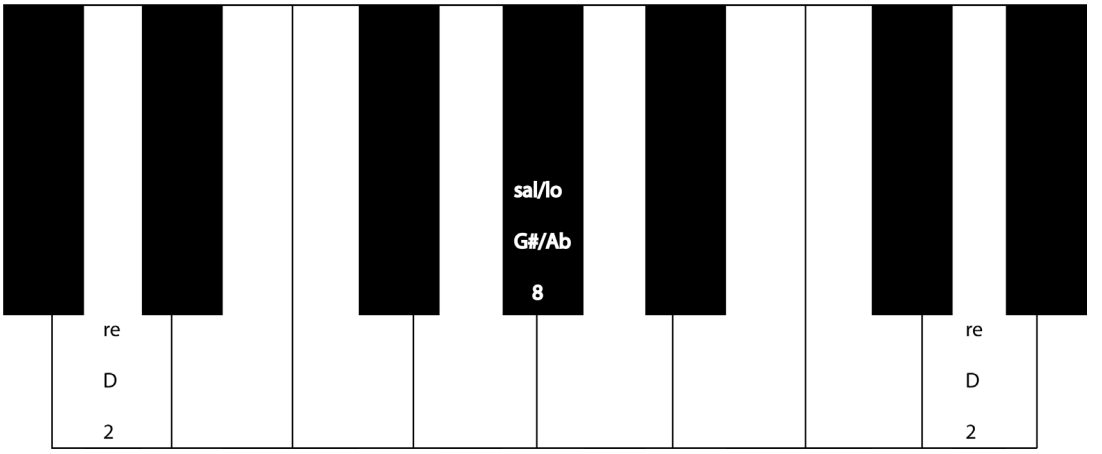


Figure 11. Mirror octave D to D with the G# reflecting in the middle.

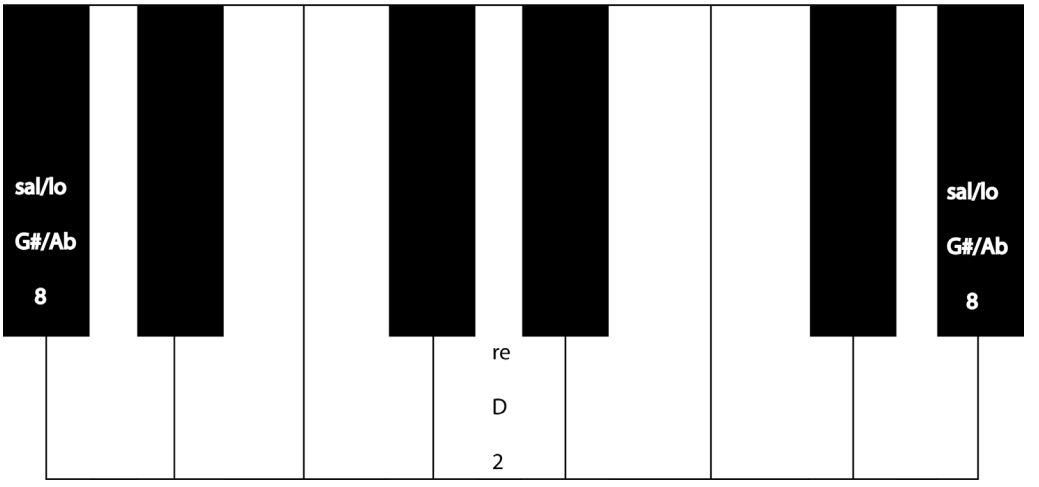


Figure 12. Mirror octave from G# to G# with the D reflecting in the middle.

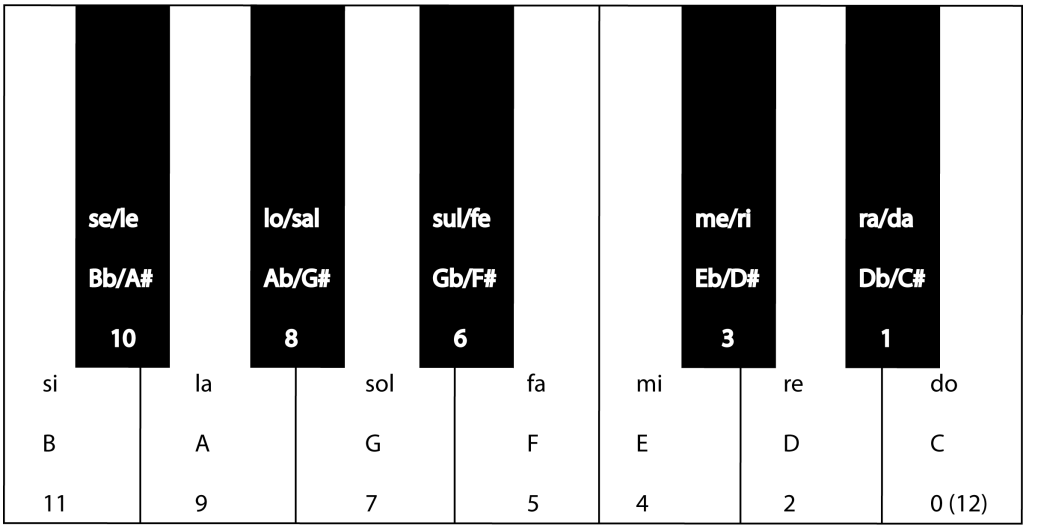


Figure 13. "Mirror" piano and solfege, created by inverting about the G# and D axis.

IV Transposable Solfege: Non-Tonal

An uncomfortable difference between singing a tonal style versus non-tonal style is the obscured or nonexistent feeling of a do or tonic in the non-tonal style. Memory is tested, and one must memorize a piano and solfege to see and feel these intervals (see Figure 1-4). Fortunately, memorizing the solfege, intervals, and piano, becomes easier with the following exercises. Basic skills in arithmetic (addition and subtraction) are needed to learn these exercises. Even though simple arithmetic makes the exercises easy to understand they are difficult to perform—especially in the beginning. It takes time to attain a level of comfort and precision with the intervals, solfege, and sonority, so be patient; disciplined daily practice will reap fruitful rewards. (Make sure to use a tuned reference to check intonation)

Steps to memorizing intervals and solfege:

1. Sequence intervals (min 2nd to maj 9th) up and down the octave or vocal range. (Make sure to transpose solfege syllables and patterns)
2. Mix and sequence more complicated sonorities and chords 3-4 notes, with variable contour up and down vocal range.
3. Sing tone rows.
4. Use solfege variations—interval solfege, inverted/upside-down solfege, transposition—and repeat steps 1 to 3.

For further study on non-tonal singing try Modus Novus,[10] which has a nice selection of melodies that can be sight read.

Sequencing intervals (Figures 14-22)

The term sequence is rarely, if ever, used to describe non-tonal texture—but in the long run it still makes sense to apply it now and then. A sequence can be described as a melodic or harmonic pattern repeated at a new interval, pitch, and/or transposition, from the initial starting note. When practicing the first step to memorizing intervals and solfege, micro or miniature sequences will be created (i.e., the melody—an interval—is repeated at a new pitch/interval). The interval is sequenced until the periodic end of the pattern or a little bit past is reached,[11] then

[10] Lars Edlund, *Modus Novus: Studies in Reading Atonal Melodies* (Riga: Nordiska Musicforlaget, 1964).

[11] Note: the beginning of all the sequence patterns is written in the examples, but, for the majority, the period is not completed. It is the reader's responsibility to sing the complete period and sing the reverse when practicing.

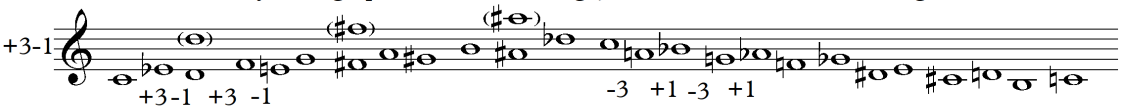
the pattern is performed in the opposite direction. By practicing in this manner multiple settings and possibilities for that interval are studied and mastered.

It is easiest to sing these patterns first because only two intervals are used (x,y); by singing the possibilities of these simple patterns, memorization of intervals and solfege begins. After intervals are sequenced, a level of proficiency with solfege, intervals, and sonority identification will emerge. It will likely take a month or so before all intervals can be sequenced in a single practice session. Practical adjustments in register will sometimes be necessary to avoid straining the voice in order to complete the sequence patterns. When proficiency is established, experiment with other contours—up up, down down—to test agility. If comfort with solfege syllables and intonation is achieved in any one “key” or pattern make sure to transpose the *solfege syllables* to many, if not all keys.

Minor 3rd practice

make sure you sing up and down the range, with interval directions changed.

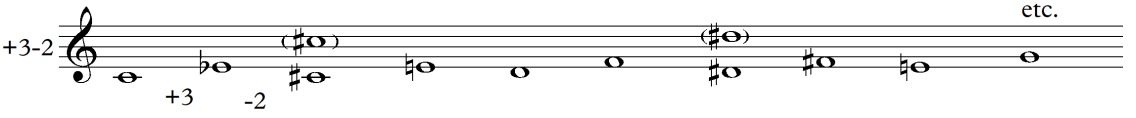
+3-1



make sure to transpose patterns

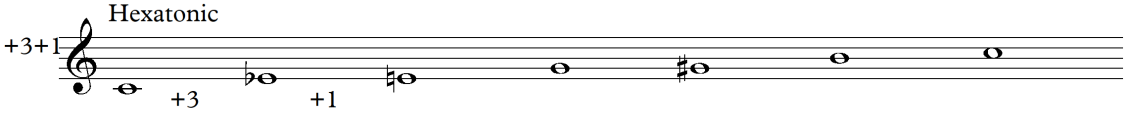
etc.

+3-2



Hexatonic

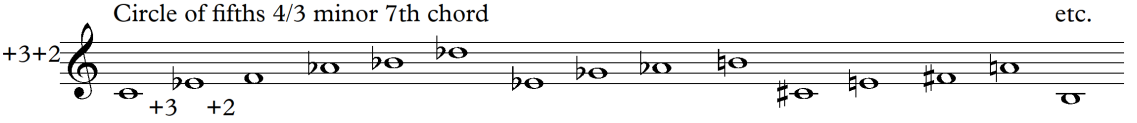
+3+1



Circle of fifths 4/3 minor 7th chord

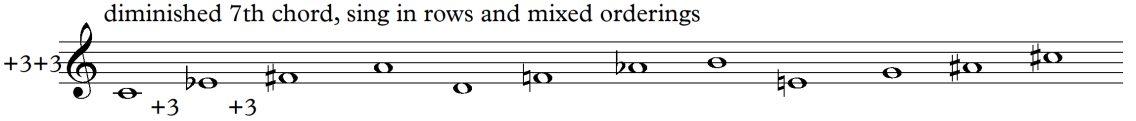
etc.

+3+2



diminished 7th chord, sing in rows and mixed orderings

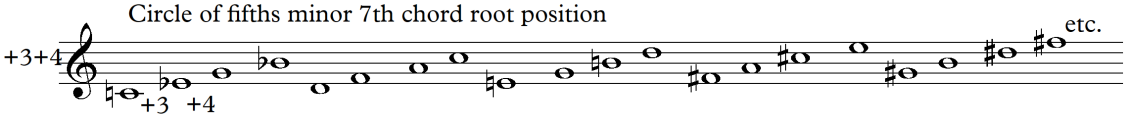
+3+3



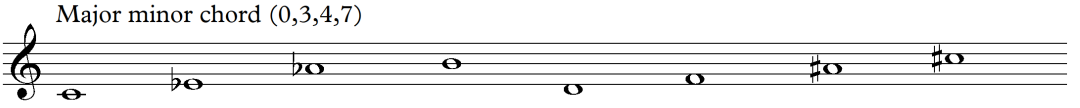
Circle of fifths minor 7th chord root position

etc.

+3+4

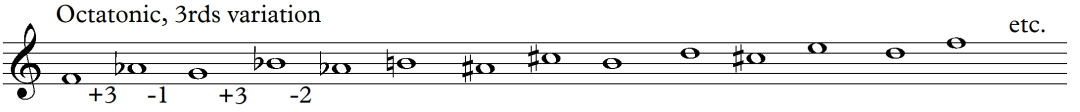


Major minor chord (0,3,4,7)

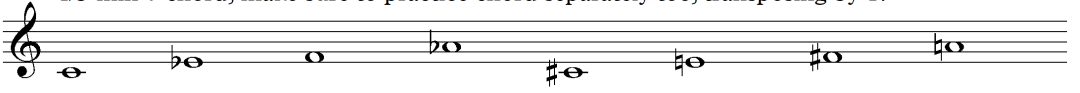


Octatonic, 3rds variation

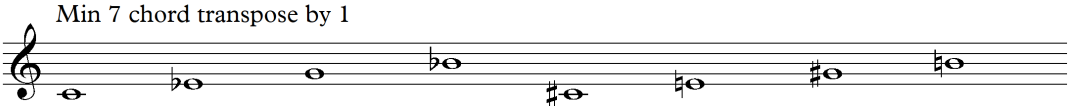
etc.



4/3 min 7 chord, make sure to practice chord separately too, transposing by 1.



Min 7 chord transpose by 1



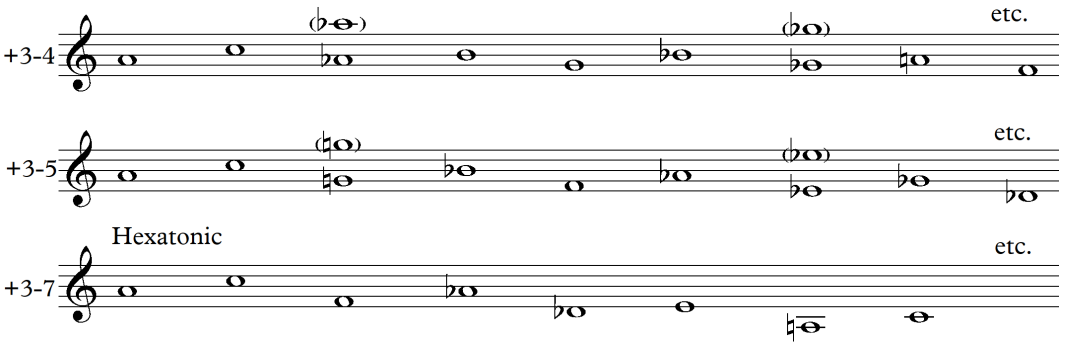


Figure 14. Minor 3rd practice.

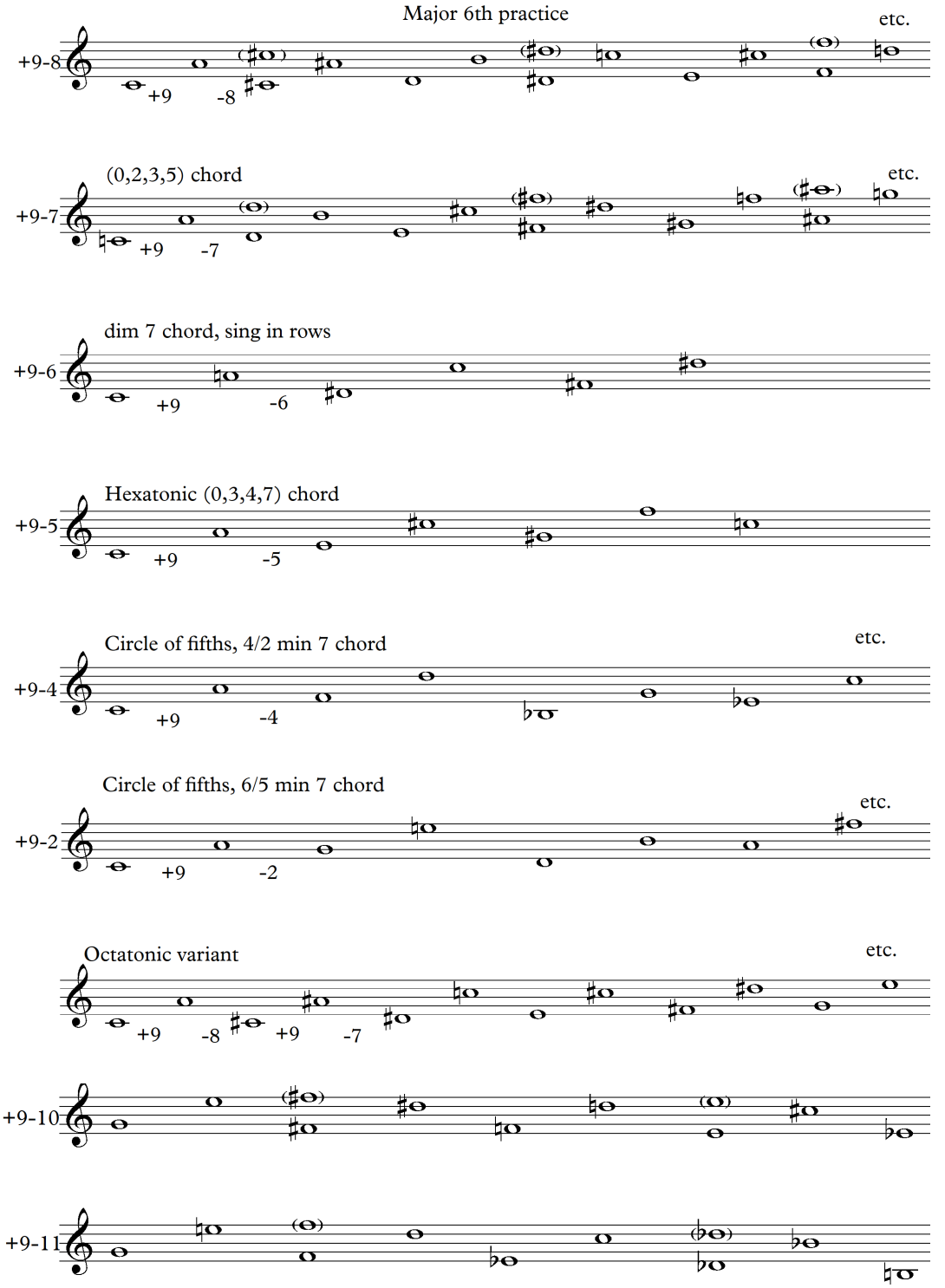
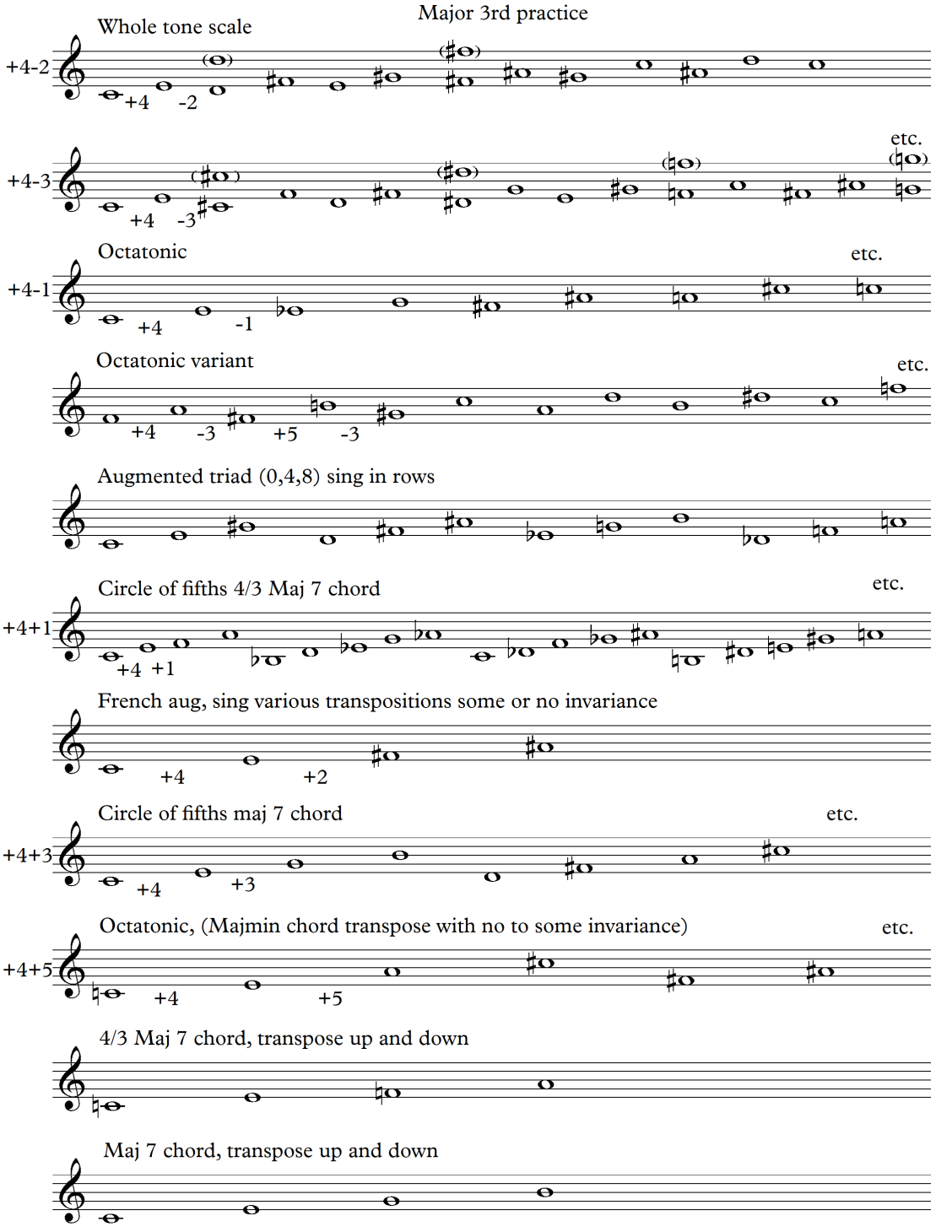


Figure 15. Major 6th practice.


Major 3rd practice
Whole tone scale
+4-2
+4
-2
etc.
+4-3
+4
-3
Octatonic
etc.
+4-1
+4
-1
Octatonic variant
etc.
+4
-3
+5
-3
Augmented triad (0,4,8) sing in rows
Circle of fifths 4/3 Maj 7 chord
etc.
+4+1
+4
+1
French aug, sing various transpositions some or no invariance
+4
+2
Circle of fifths maj 7 chord
etc.
+4+3
+4
+3
Octatonic, (Majmin chord transpose with no to some invariance)
etc.
+4+5
+4
+5
4/3 Maj 7 chord, transpose up and down
Maj 7 chord, transpose up and down

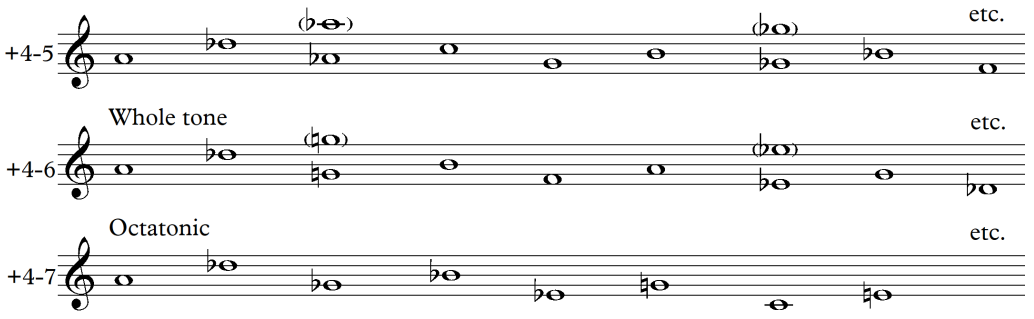
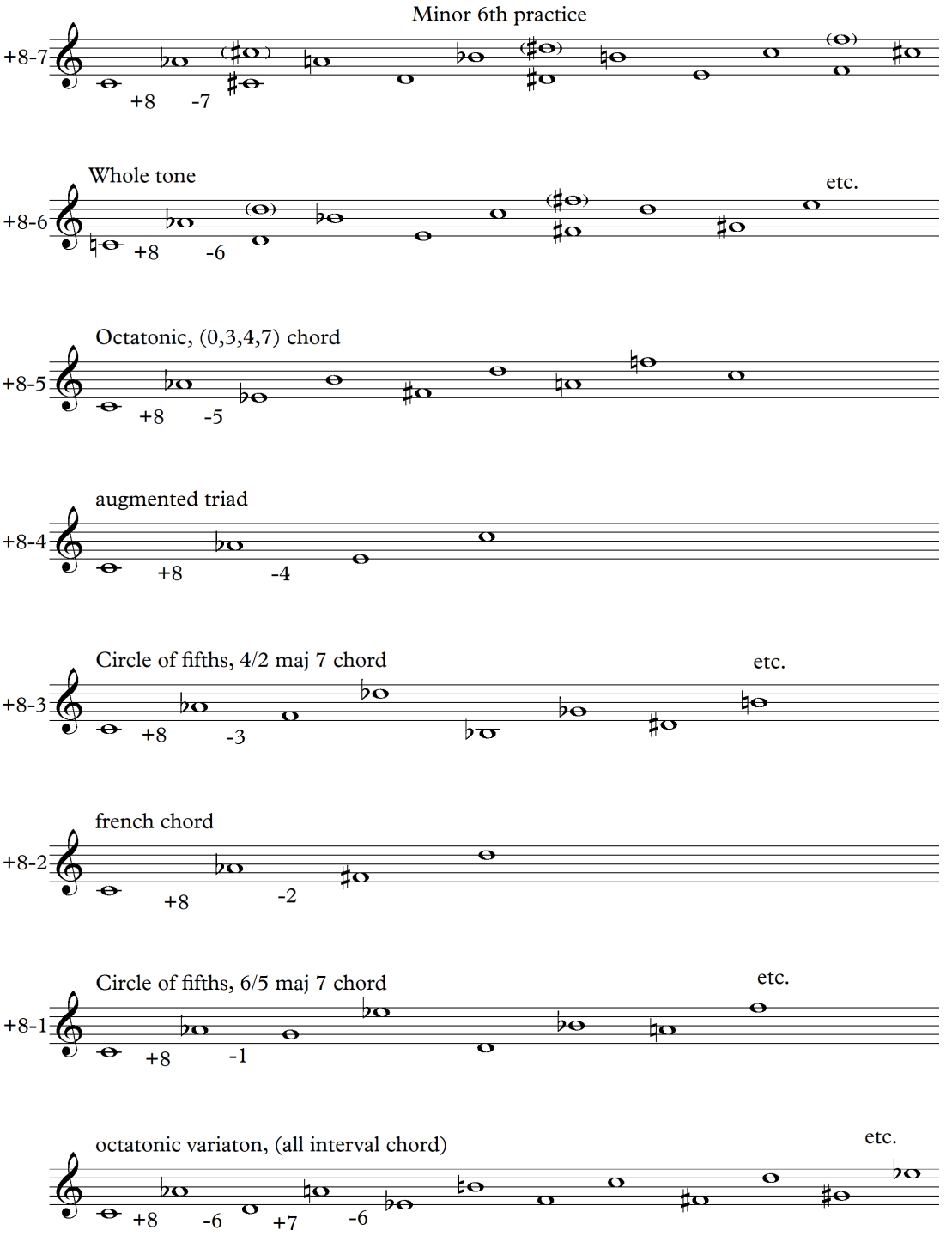


Figure 16. Major 3rd practice.


Minor 6th practice
+8-7
+8
-7
Whole tone
+8-6
+8
-6
etc.
Octatonic, (0,3,4,7) chord
+8-5
+8
-5
augmented triad
+8-4
+8
-4
Circle of fifths, 4/2 maj 7 chord
+8-3
+8
-3
etc.
french chord
+8-2
+8
-2
Circle of fifths, 6/5 maj 7 chord
+8-1
+8
-1
etc.
octatonic variaton, (all interval chord)
+8
-6
+7
-6
etc.

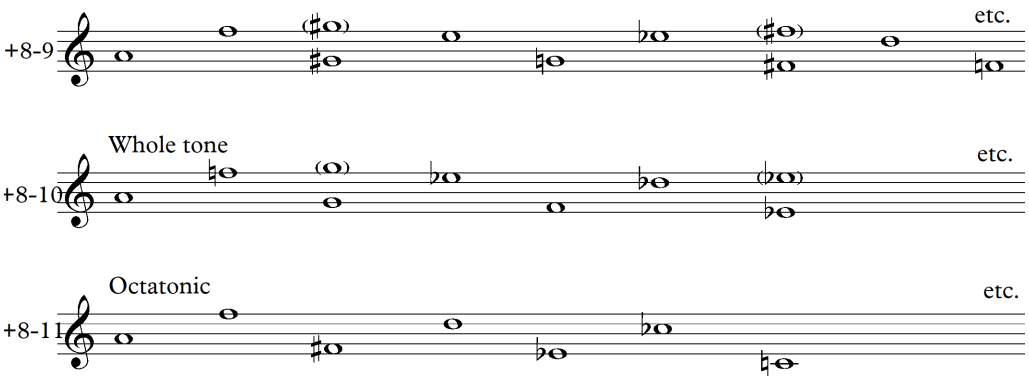
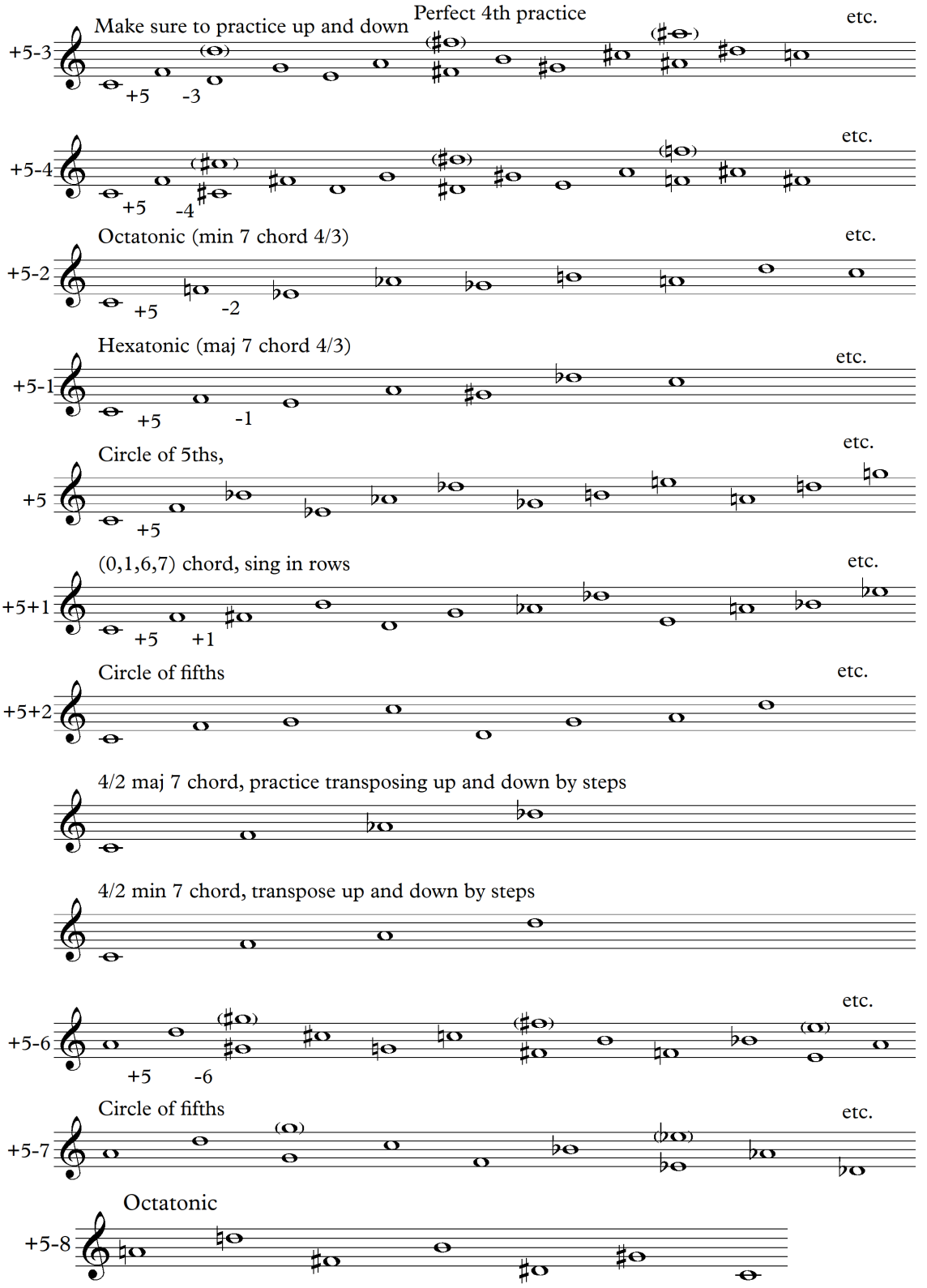


Figure 17. Minor 6th practice.


Make sure to practice up and down
Perfect 4th practice
etc.
+5-3
+5
-3
+5-4
+5
-4
Octatonic (min 7 chord 4/3)
+5-2
+5
-2
Hexatonic (maj 7 chord 4/3)
+5-1
+5
-1
Circle of 5ths,
+5
+5
(0,1,6,7) chord, sing in rows
+5+1
+5
+1
Circle of fifths
+5+2
4/2 maj 7 chord, practice transposing up and down by steps
4/2 min 7 chord, transpose up and down by steps
+5-6
+5
-6
Circle of fifths
+5-7
Octatonic
+5-8

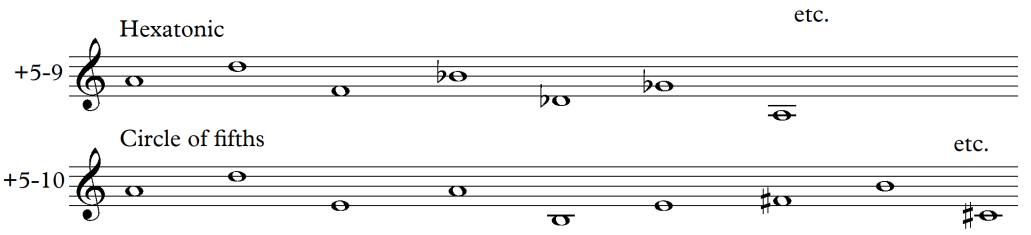


Figure 18. Perfect 4th practice.

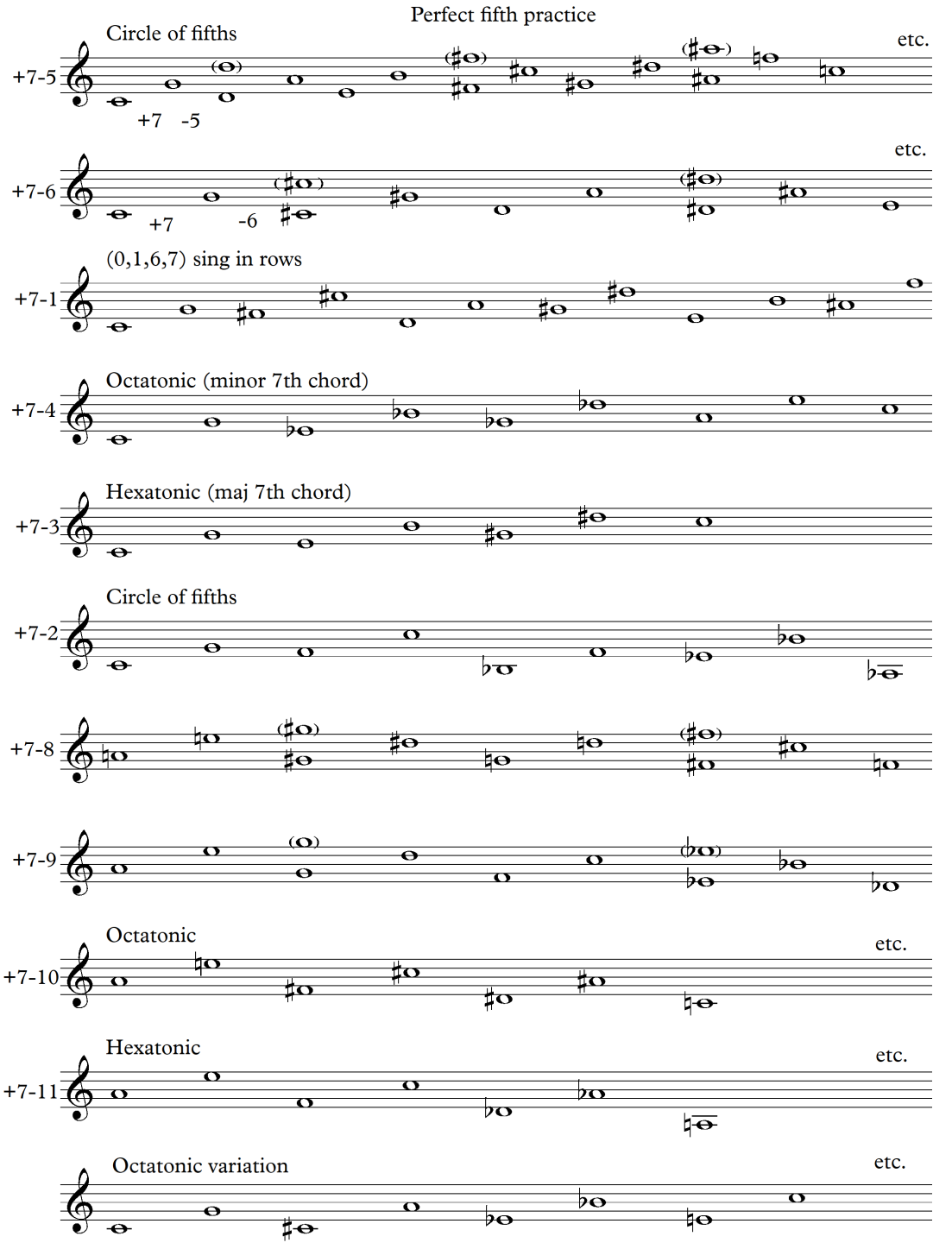


Figure 19. Perfect 5th practice.

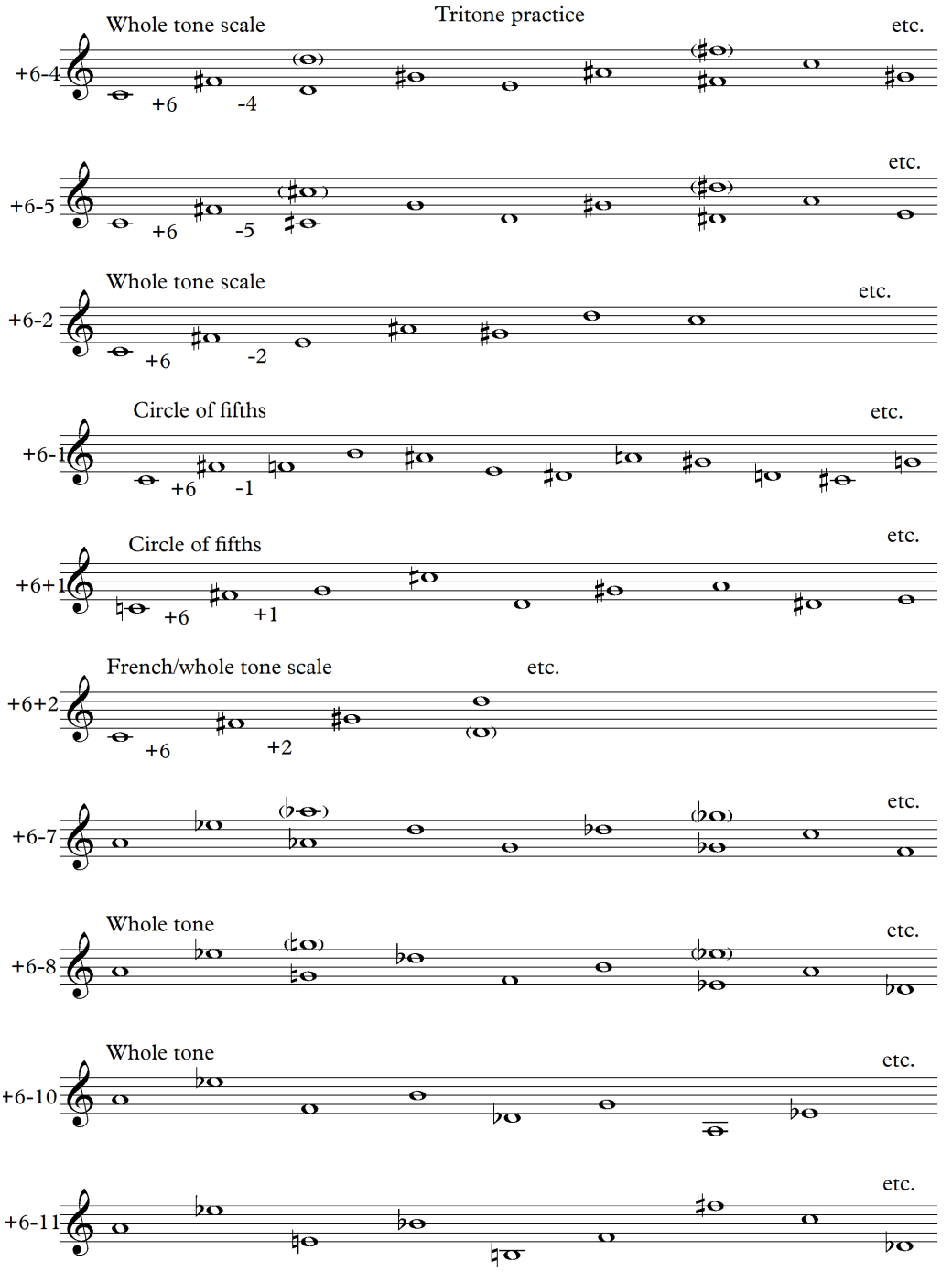
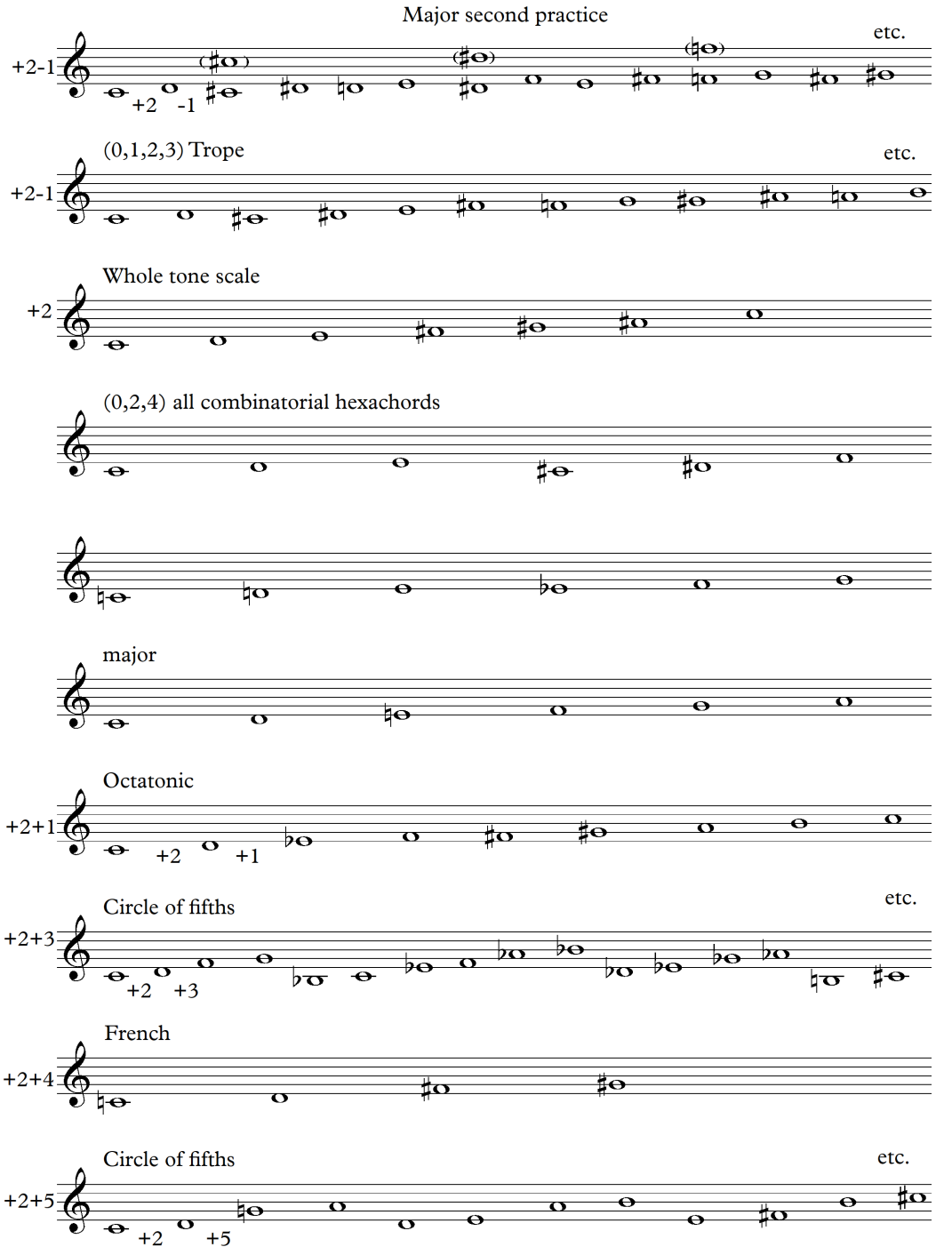


Figure 20. Tritone practice.


Major second practice
etc.
+2-1
+2
-1
(0,1,2,3) Trope
etc.
+2-1
Whole tone scale
+2
(0,2,4) all combinatorial hexachords
major
Octatonic
+2+1
+2
+1
Circle of fifths
etc.
+2+3
+2
+3
French
+2+4
Circle of fifths
etc.
+2+5
+2
+5

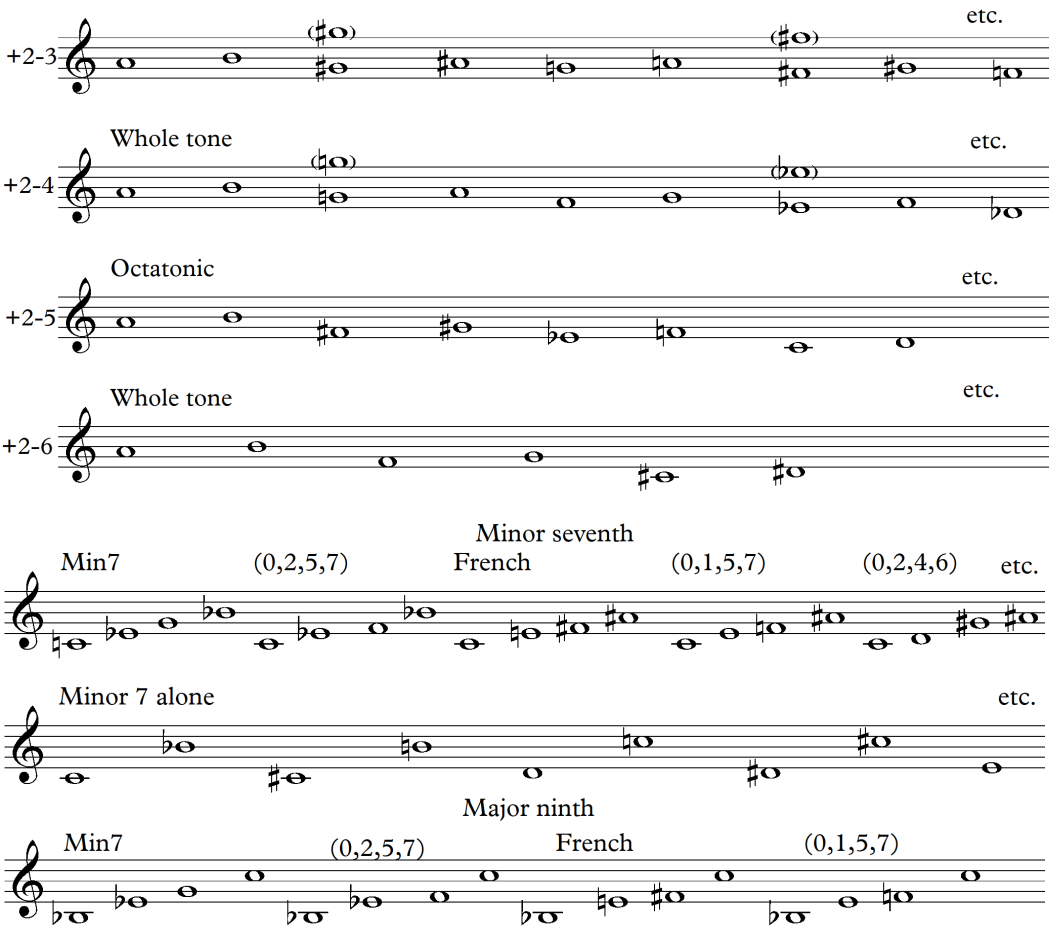
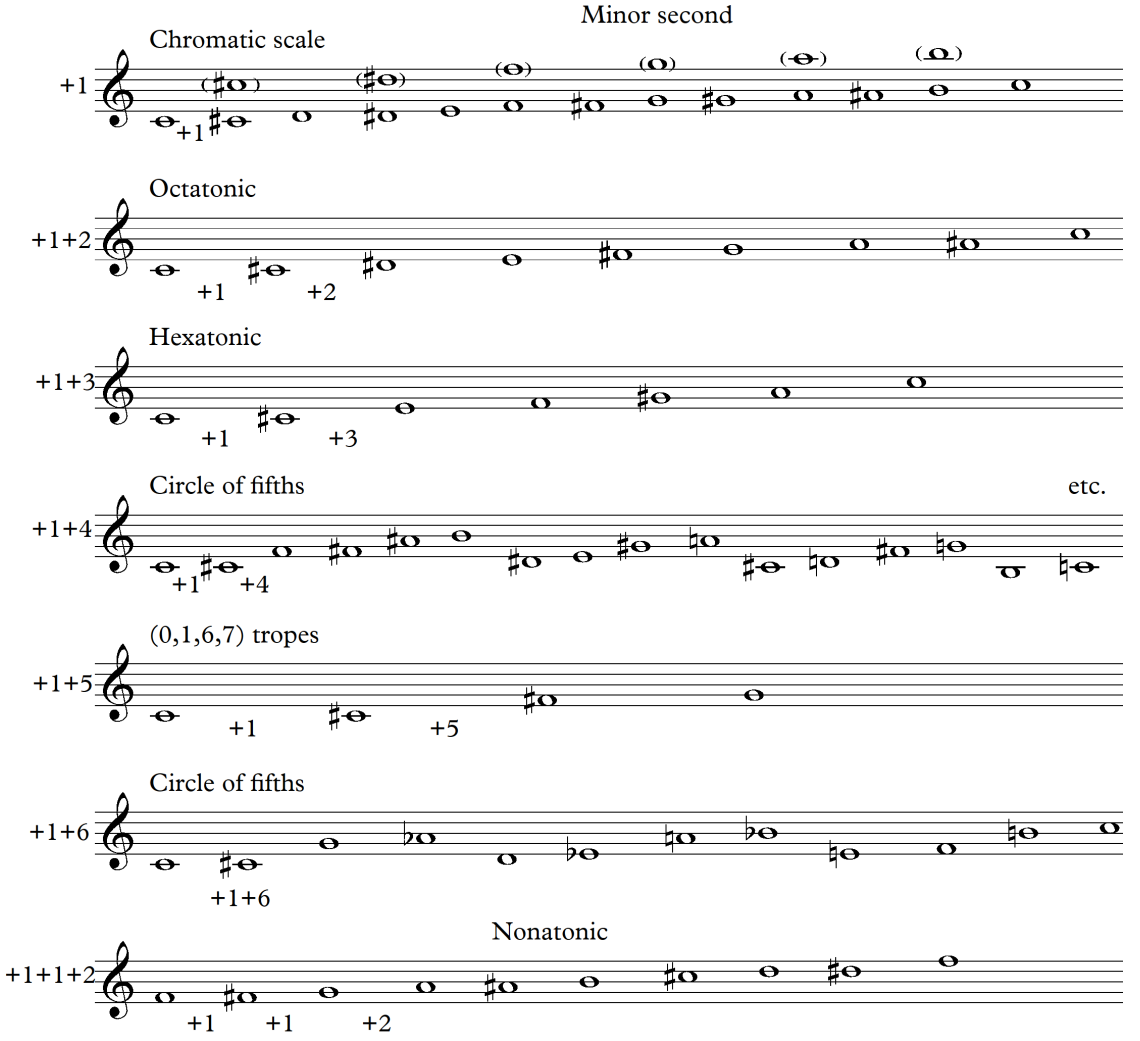


Figure 21. Major 2nd, minor 7th, and major 9th practice.

In the beginning, for the functionally skilled singer, the leap of a min 7 is large enough and relatively rare enough melodic interval that it can be challenging to practice with accuracy. The best way to begin memorizing them is practice arpeggiating multiple catchy chords—Min 7, (0,2,7), (0,2,5,7), (0,2,6,8), etc.—to feel the steps between the min 7 interval (Figure 21). After multiple transpositions of multiple chords that have a min 7 on the outside, remove the notes in-between and sing. The min 7 will now be practiced like the maj 2 respectively, to a point. This process can be imitated for maj 9 intervals by singing inside notes and transposing.


Minor second
Chromatic scale
+1
+1
Octatonic
+1+2
+1
+2
Hexatonic
+1+3
+1
+3
Circle of fifths
etc.
+1+4
+1
+4
(0,1,6,7) tropes
+1+5
+1
+5
Circle of fifths
+1+6
+1+6
Nonatonic
+1+1+2
+1
+1
+2

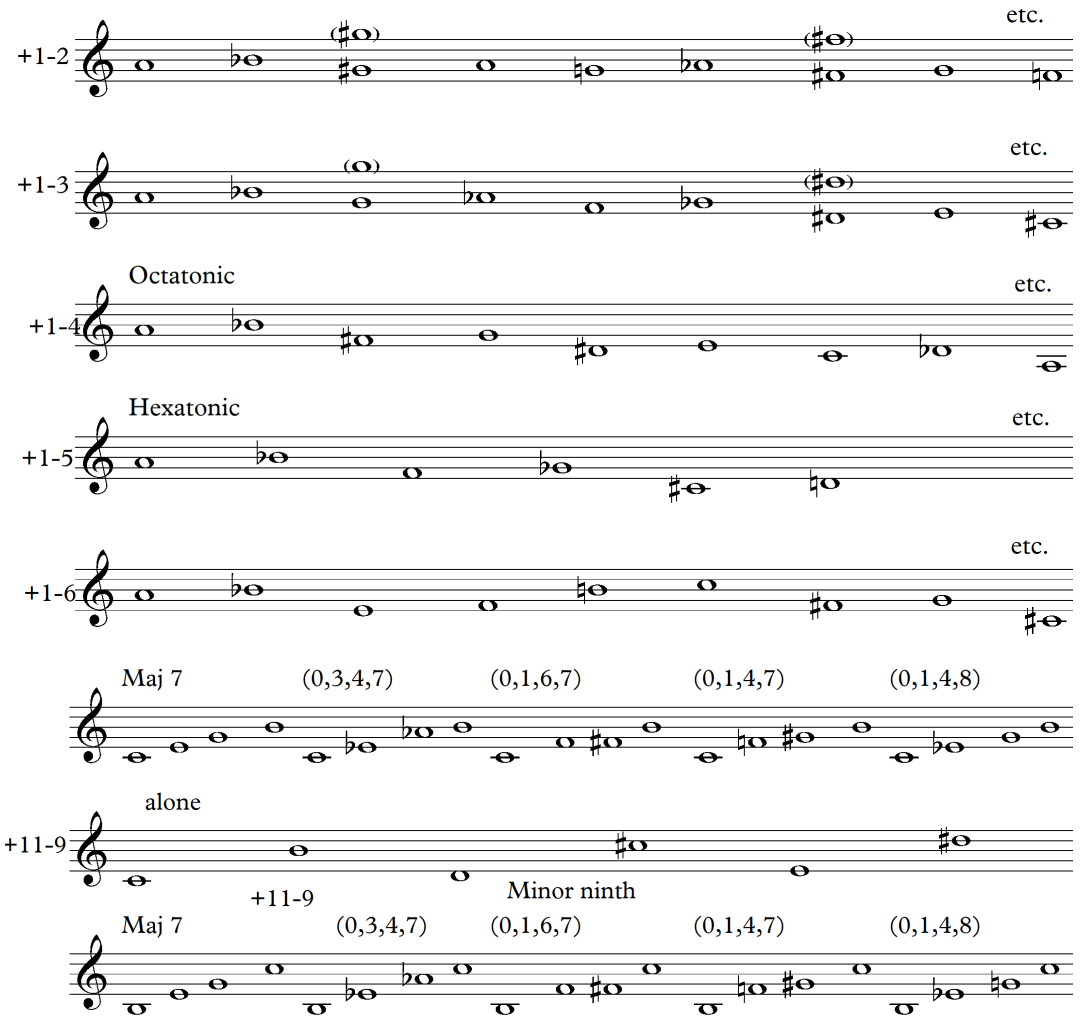


Figure 22, Minor 2nd, major 7th, and minor 9th practice.

The maj 7 and min 9 interval also can feel risky to pull out of the hat. The method for memorizing the maj 7 and min 9 are the same as the min 7 and maj 9 (page 27). Sing some catchy chords—(0,1,6), (0,1,6,7), maj 7, dim+1, etc. (Figure 22)

Sequencing chords

When moderate proficiency in sequencing intervals is established, try sequencing three to four-note chords with varying interval combinations and contours (see contour cells page 68). It is not unreasonable to begin singing rows at this stage, because easy tone rows have "sequenced" chords sometimes. Juxtapose (any) contrasting intervals—like the perfect 4th and 5th—to create chords and sonorities, choose a contour cell, then sequence up and down vocal range (Figure 23).

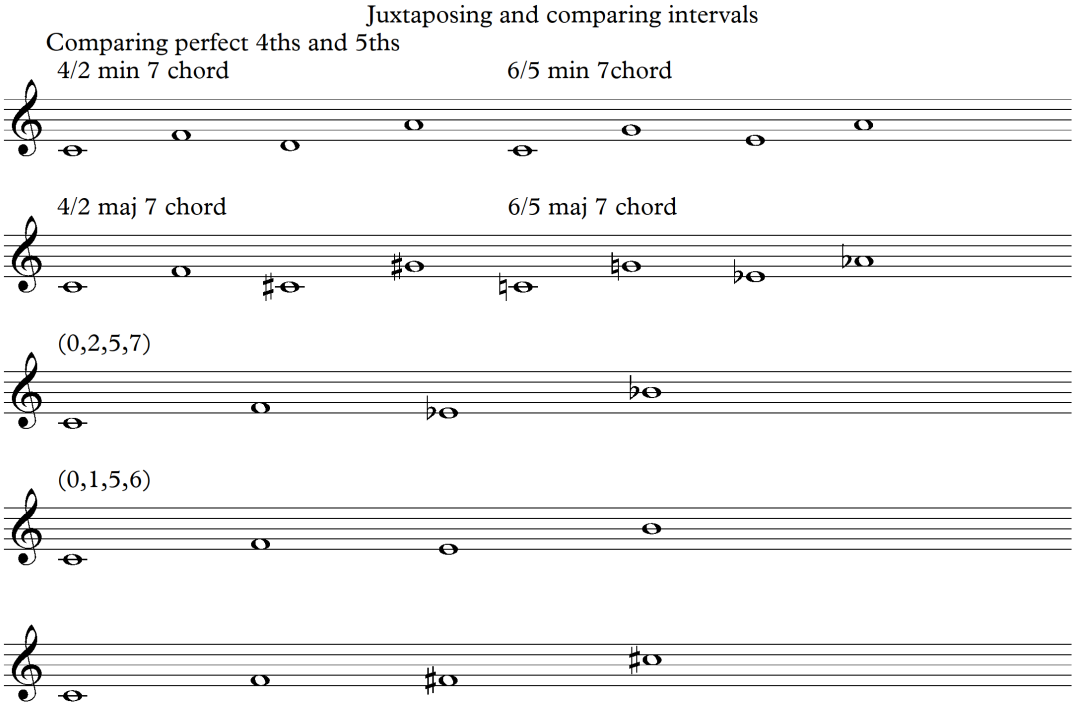


Figure 23. Mixing and juxtaposing intervals practice example.

Some tone rows, overview, and suggested practice

Consider this tone row (Figure 24).

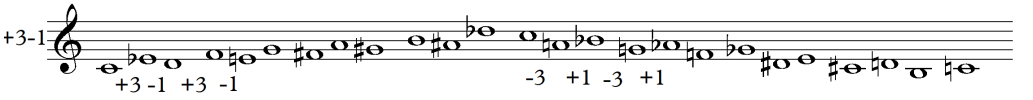


Figure 24. Repeated interval pattern of 3 vs. 1. (Corresponds to Figure 25)

This should look familiar from the preceding section on sequencing intervals, which (surprise!) includes a few tone rows sprinkled here and there. As said on page 3, two diagrams that need to be memorized are the chromatic clock/pitch class clock and the donut piano (i.e., Figure 2 and Figure 4). If this is done, memorizing and singing tone rows becomes easier. Tone rows are traditionally presented in

matrixes,[12] and/or arrays,[13] which most musicians find confusing. If visualized as an image (Figure 25), they become immediately intuitive: continuous line on a chromatic clock, or with unordered subsets as sticks (dyads), triangles (trichords), and box shapes (tetrachords).[14] These images generalize the "progressions" of non-tonal music, just like roman numeral (II-V-I... etc.) analysis generalizes progressions in tonal music.

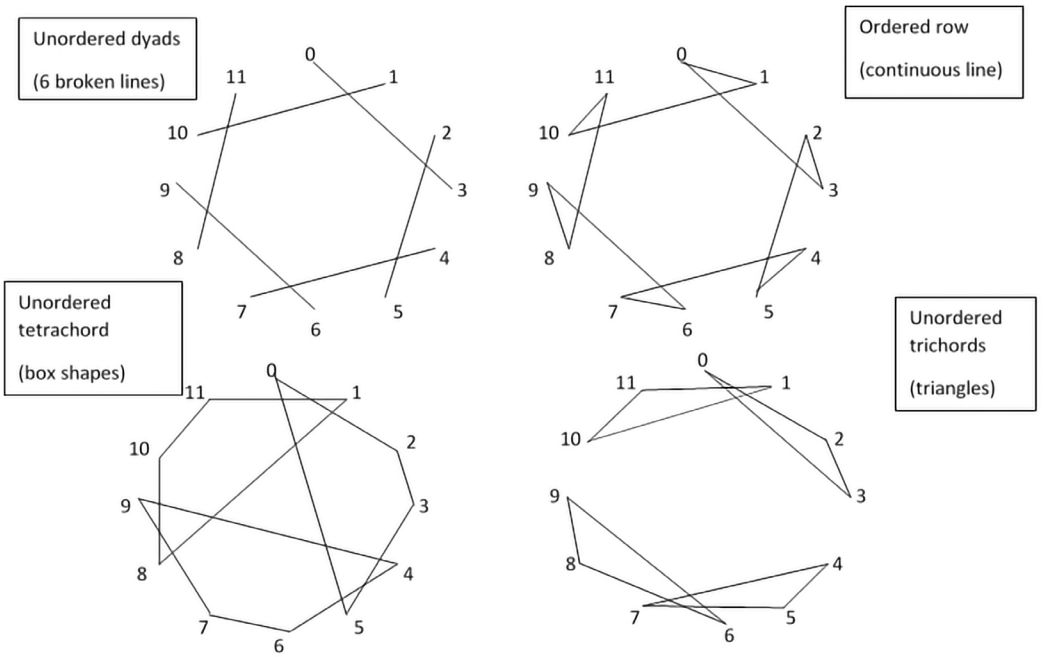


Figure 25. Clockwise from top left 1-4: unordered dyads/sticks, continuous line, unordered trichords/triangles, unordered tetrachords/box shapes. Analysis of tone row, Figure 24, ascending. Figure 24 descending is a rotation of images 1-4 counter-clockwise by 1 (subtract all numbers by 1).

As a pedagogical tool, it is worthwhile to expose younger musicians to tone rows as a means to master the inner ear. Remember, the point of this training is to have all the colors of the rainbow in your back pocket, ready to pull out at a moments notice. Tone rows are the toughest solfege patterns any non-singer (and maybe singer) will ever need to sing in their entire career. Fortunately, there are easy

[12] A tool used by Schoenberg to organize the transformations of a row P, R, I, and RI forms.
[13] Stravinsky used this tool organize rotations of a row.
[14] I was trying to find all tone rows a couple years ago and stumbled on this idea of simplifying that process. It looks like this trick has been used before by youtuber: Vi Hart. 2013 "https://www.youtube.com/watch?v=4niz8TfY794&t=1485s" see at 25-minutes to view the graphic illustration of the music. The video is informative on this technique of composing.

rows, and we will work toward the hard ones. Figure 24 is easy to memorize, because only two intervals are used—3 up 1 down, and reversed 3 down 1 up (see Figure 25, no. 2 or top right). Notice that this row emphasizes three sets for tetrachords and trichords—(0,2,3,5), (0,1,2,3), (0,1,3), respectively. These unordered presentations of the row are important to be aware of, because the memory of these subsets accelerates the speed and spontaneity of practice.

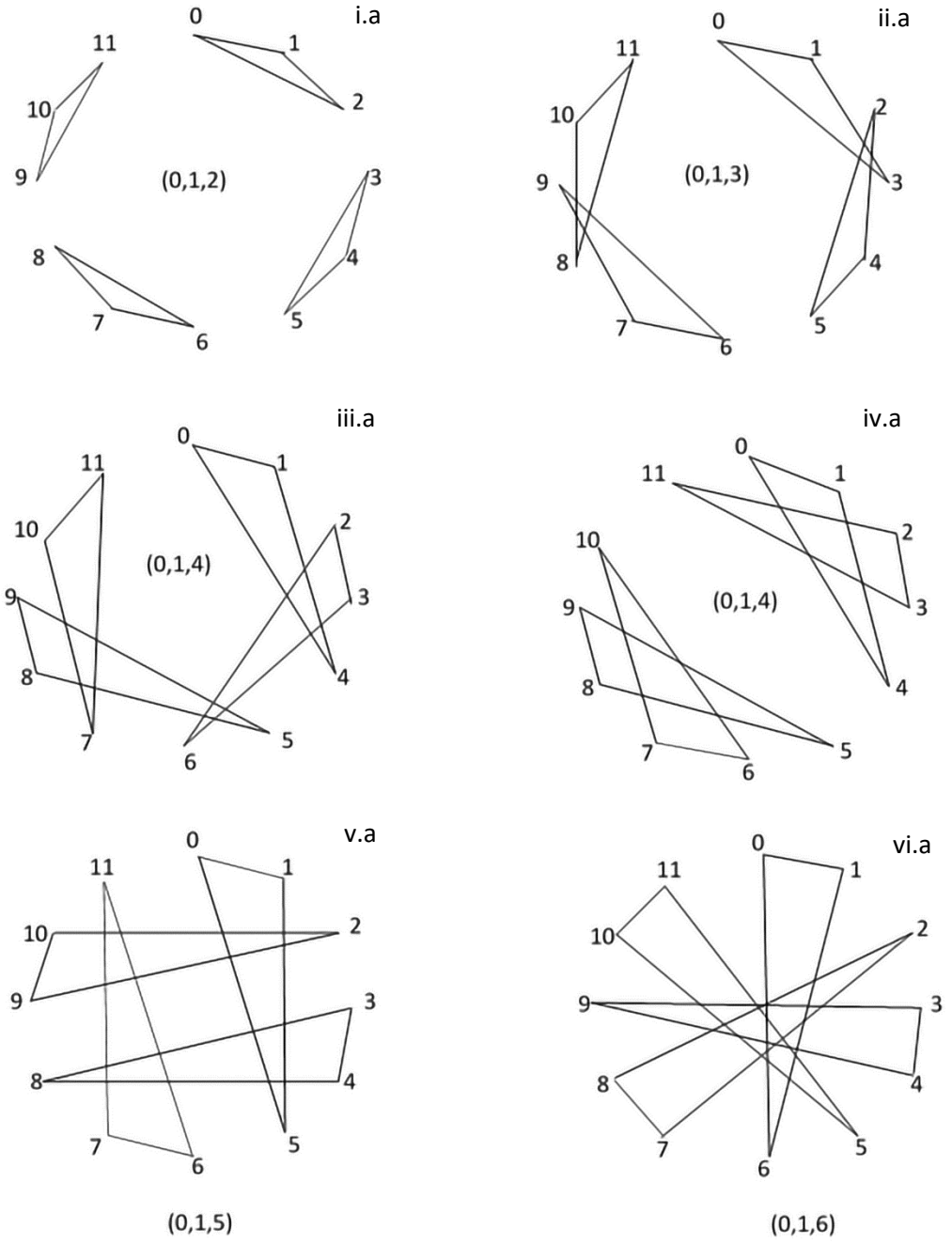
Ideally, rows should be invented and sung spontaneously. To get to that point might be confusing and frustrating, but there are steps that simplify this challenge. A **simple row** (Figure 26) repeats the same dyad six times (all completed from singing sequenced intervals, though there are other unordered possibilities), the same trichord four times, and/or the same tetrachord three times. This is the beginning of singing rows, and there are not that many.[15] A **mildly hard row** (Figure 27) has three or two of the same trichord or two of the same tetrachord. A **hard row** (Figure 28) has two or none of the same trichords. and the most difficult rows have no trichord or no tetrachord in common. In the following exercises (Figure 26-28), rows are organized by unordered trichords or tetrachords because this is easier to visualize and navigate different possibilities.[16] We are starting with the simplest rows for all twelve trichords.

All of the following rows should be transposed (+ or -), inverted (upside down/mirror), retrograded (backwards), retrograde-inverted (backwards and upside down), rotated, and permuted to acquire a sensitivity of possibilities. Sketching rows on manuscript paper is helpful in the very beginning and when experimenting with difficult patterns. Note: The presentation of the rows in part "b" of the figures is one possibility, it is expected the rows will be sung with variations in an improvisatory fashion. Continually transitioning/progressing from one row to a different row is the level of agility that is to be strived for.

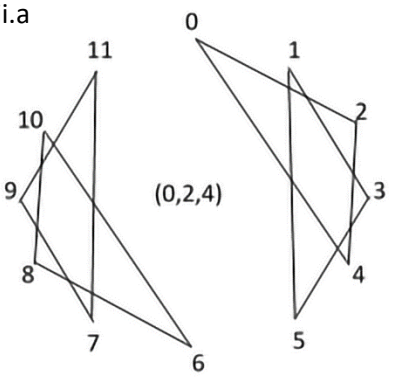
[15] There are not many simple rows but there are an undetermined number of mild and hard rows. The rows presented here represent the tip of the iceberg and it is expected the reader will explore more possibilities.

[16] Other unordered partitions are possible: six dyads, 3-4-5, 3-2-1-4-2 etc. Also, there are many ways to visualize tone rows, see appendix page 87-92 for a few other possibilities.

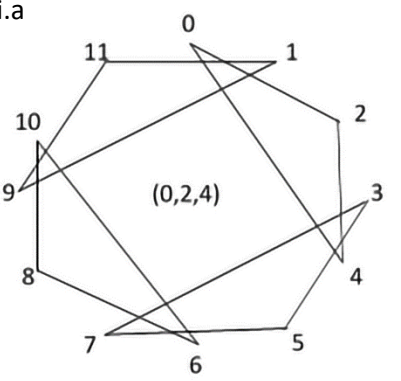
Figure 26. i-xxiii.a, plus respective staff notation i-xxiii.b. Simple tone rows.



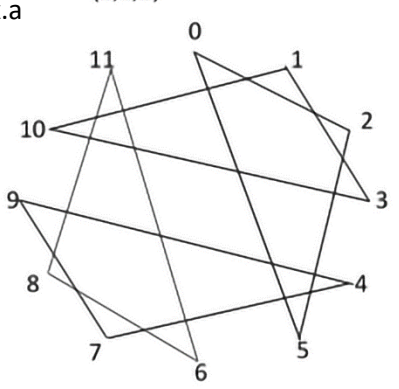
vii.a



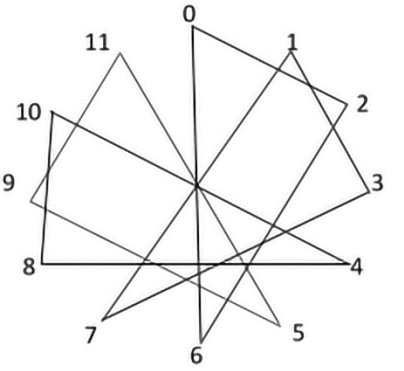
viii.a



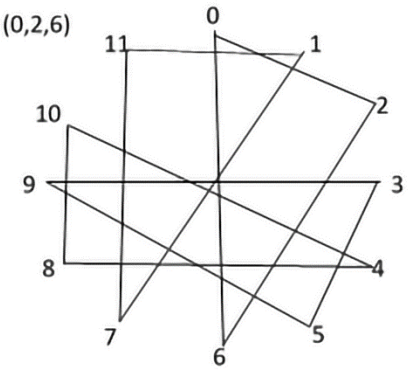
ix.a



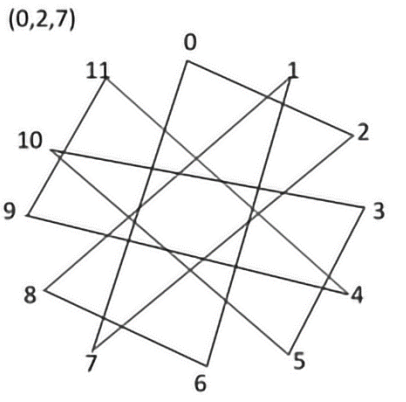
x.a



xi.a

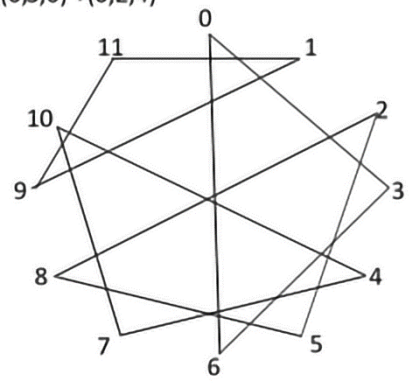


xii.a



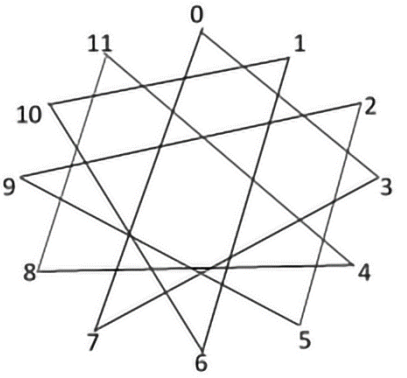
xiii.a

(0,3,6) +(0,2,4)

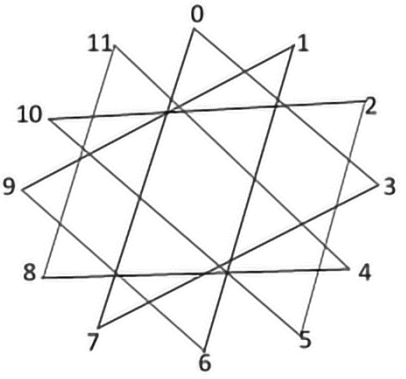


(0,3,7)

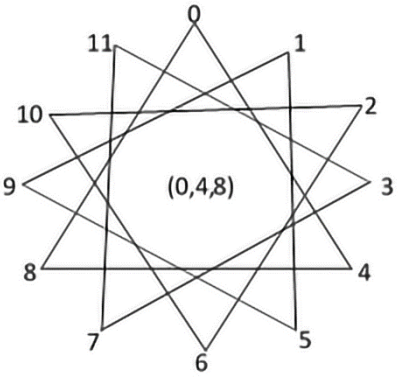
xiv.a



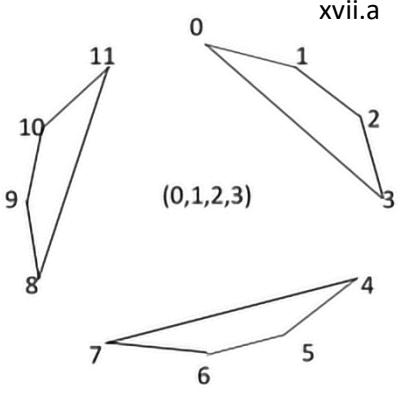
xv.a



xvi.a

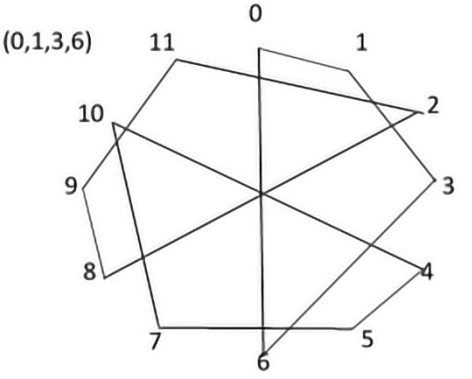


xvii.a



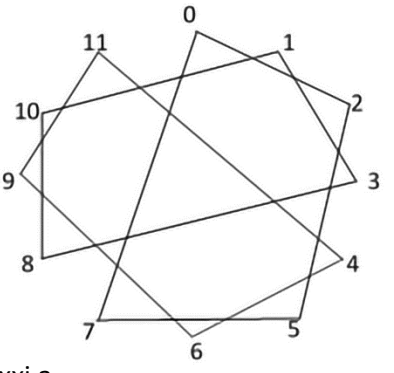
xviii.a

(0,1,3,6)

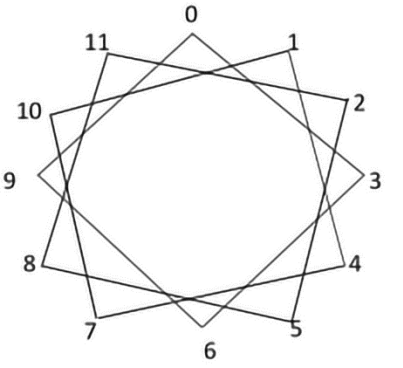


xix.a

(0,2,5,7)

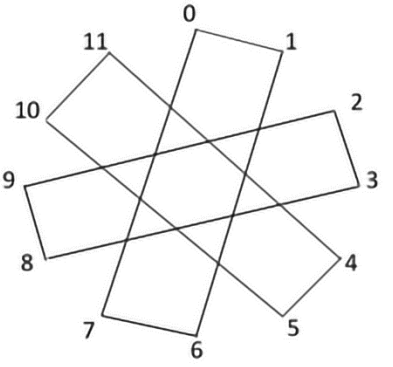


xx.a



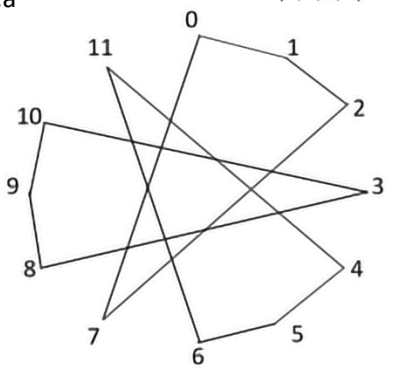
xxi.a

(0,1,6,7)



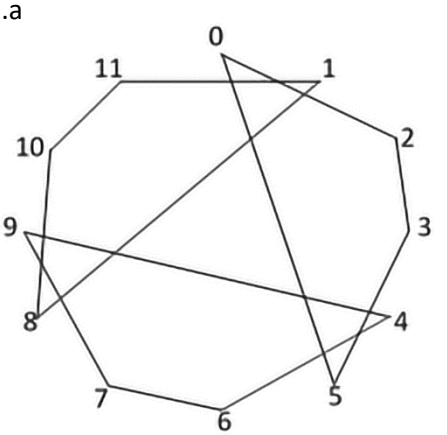
xxii.a

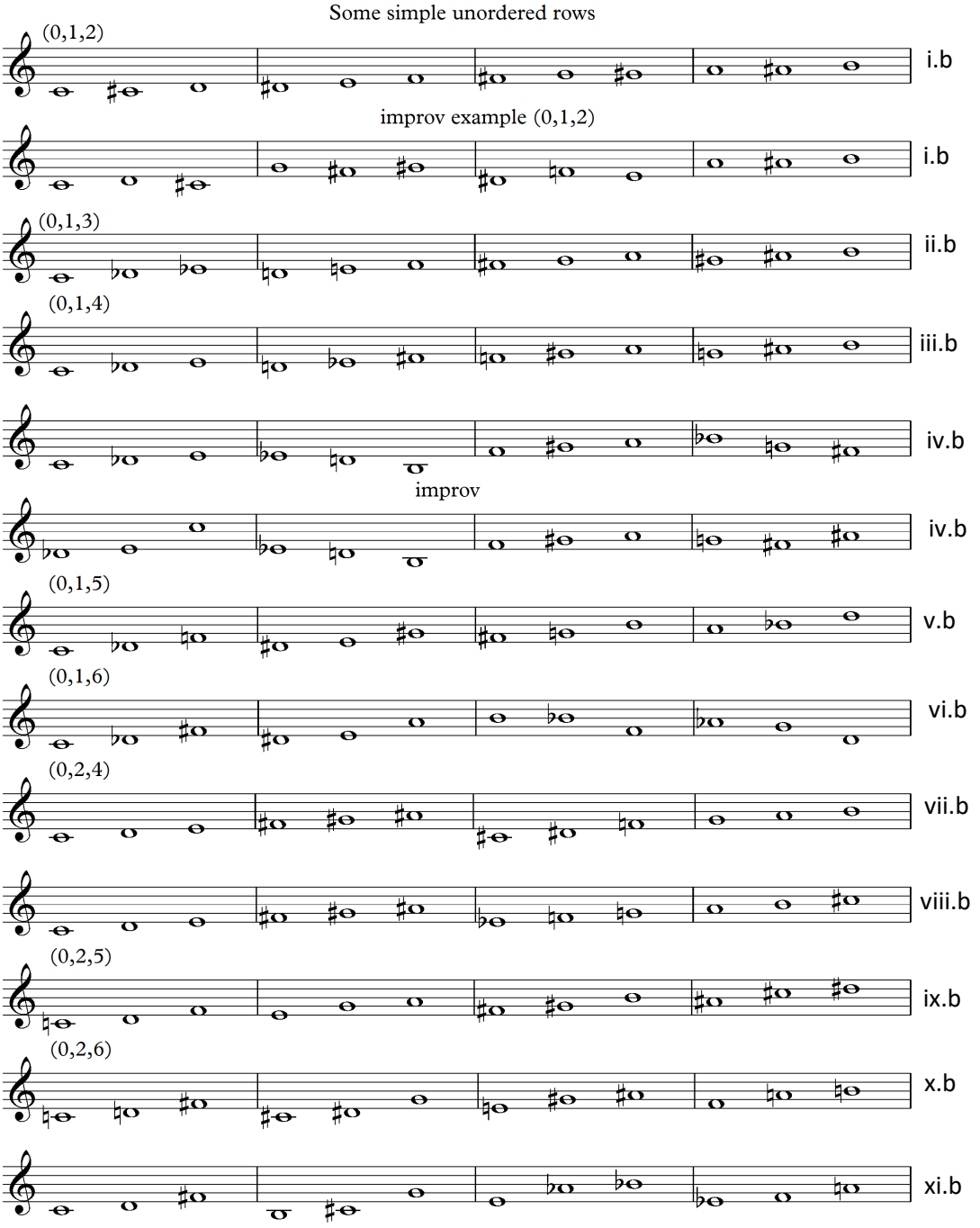
(0,1,2,7)

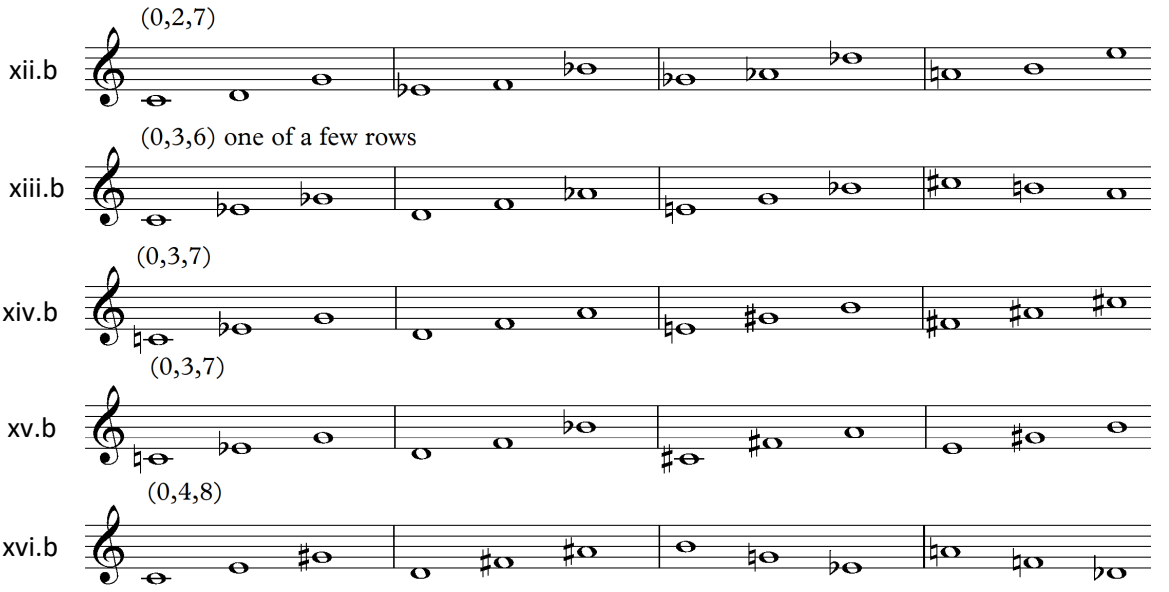


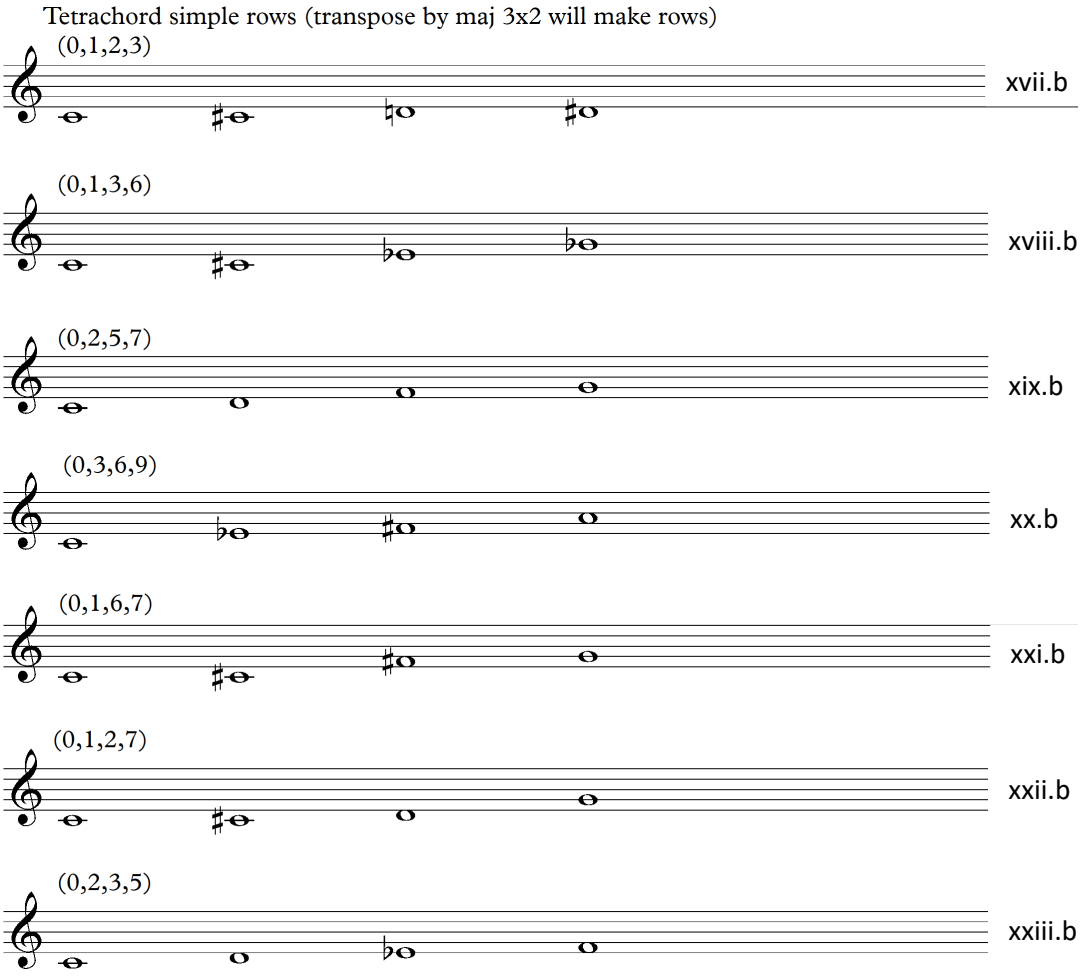
xxiii.a

(0,2,3,5)




Some simple unordered rows
(0,1,2)
i.b
improv example (0,1,2)
i.b
(0,1,3)
ii.b
(0,1,4)
iii.b
iv.b
improv
iv.b
(0,1,5)
v.b
(0,1,6)
vi.b
(0,2,4)
vii.b
viii.b
(0,2,5)
ix.b
(0,2,6)
x.b
xi.b


(0,2,7)
xii.b
(0,3,6) one of a few rows
xiii.b
(0,3,7)
xiv.b
(0,3,7)
xv.b
(0,4,8)
xvi.b

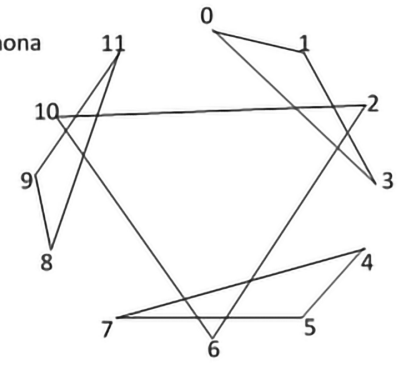


If it is comfortable to sing basic rows, try finding the rest of the mildly difficult rows. The more complex rows become, the more possibilities emerge. Singing rows with four different trichords, three different tetrachords, and/or six different dyads is generally the complexity that needs to be strived for. Here are some mildly hard rows (Figure 27):

Figure 27. i-x.a diagrams and i-x.b notes. Some mildly hard tone rows.

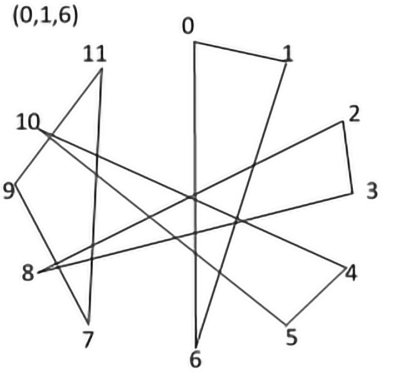
i.a

(0,1,2) nona



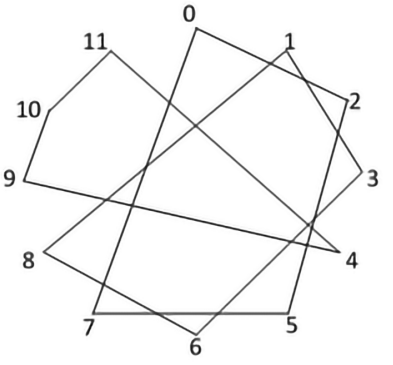
ii.a

(0,1,6)



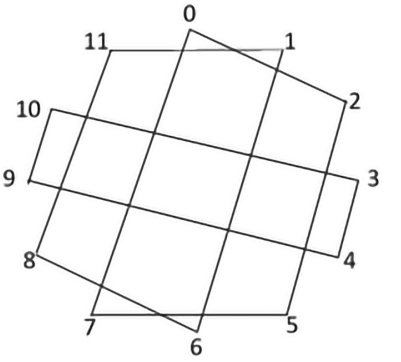
iii.a

(0,2,5,7)



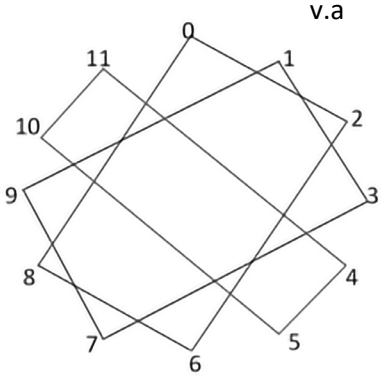
iv.a

(0,2,5,7)



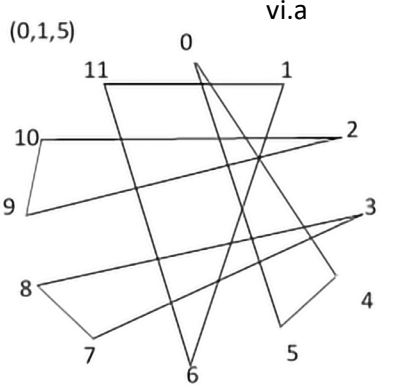
v.a

(0,2,6,8)



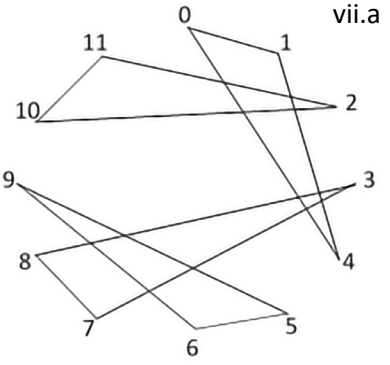
vi.a

(0,1,5)



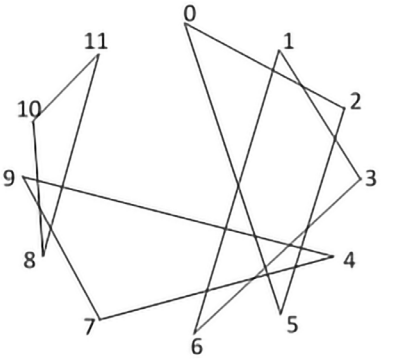
vii.a

(0,1,4)

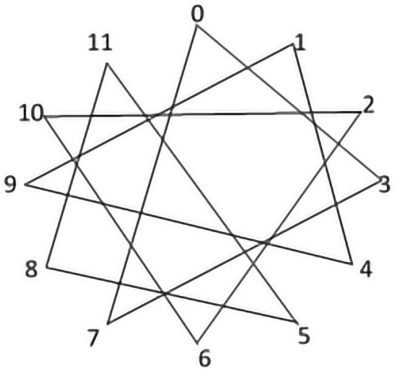


viii.a

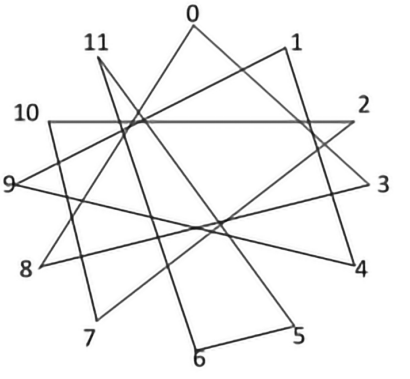
(0,2,5)



ix.a



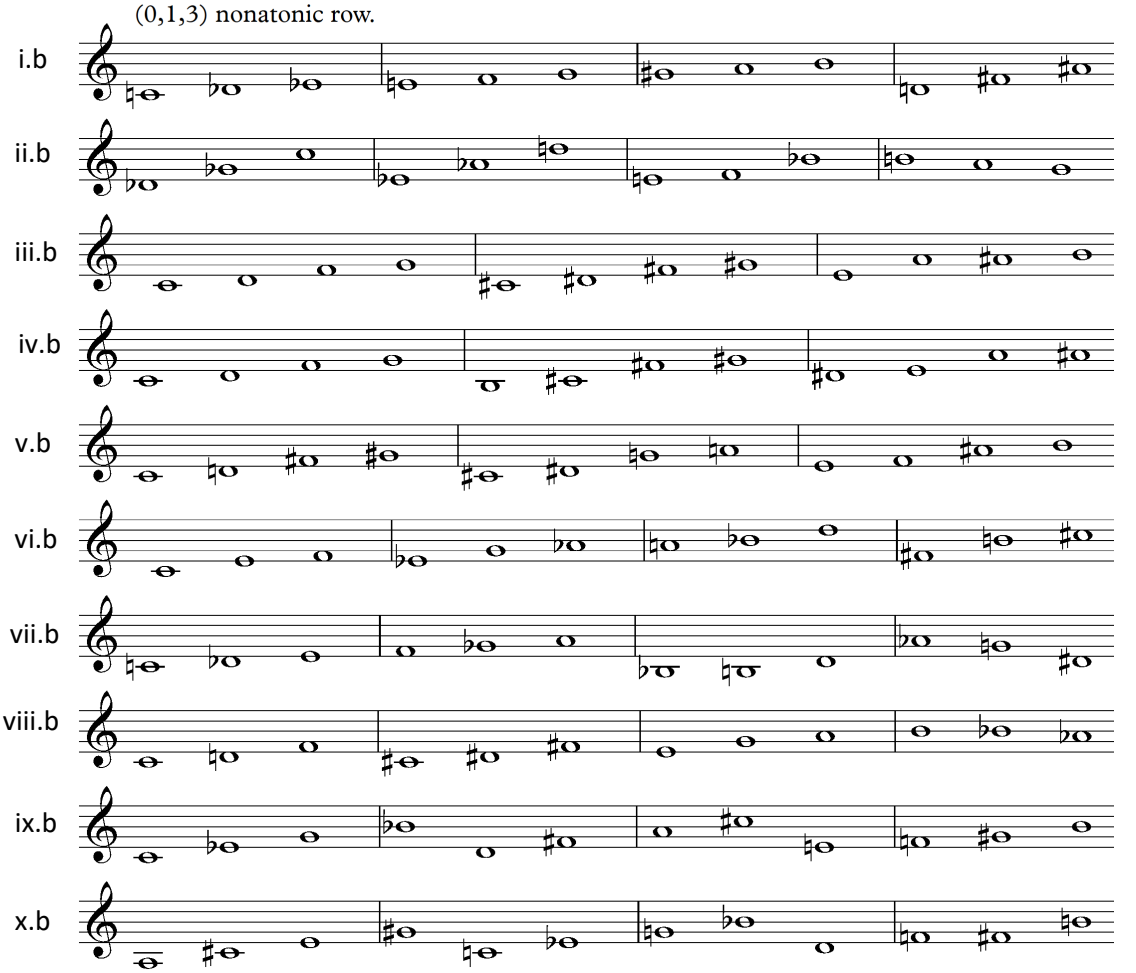
x.a



Some unordered mildly hard rows

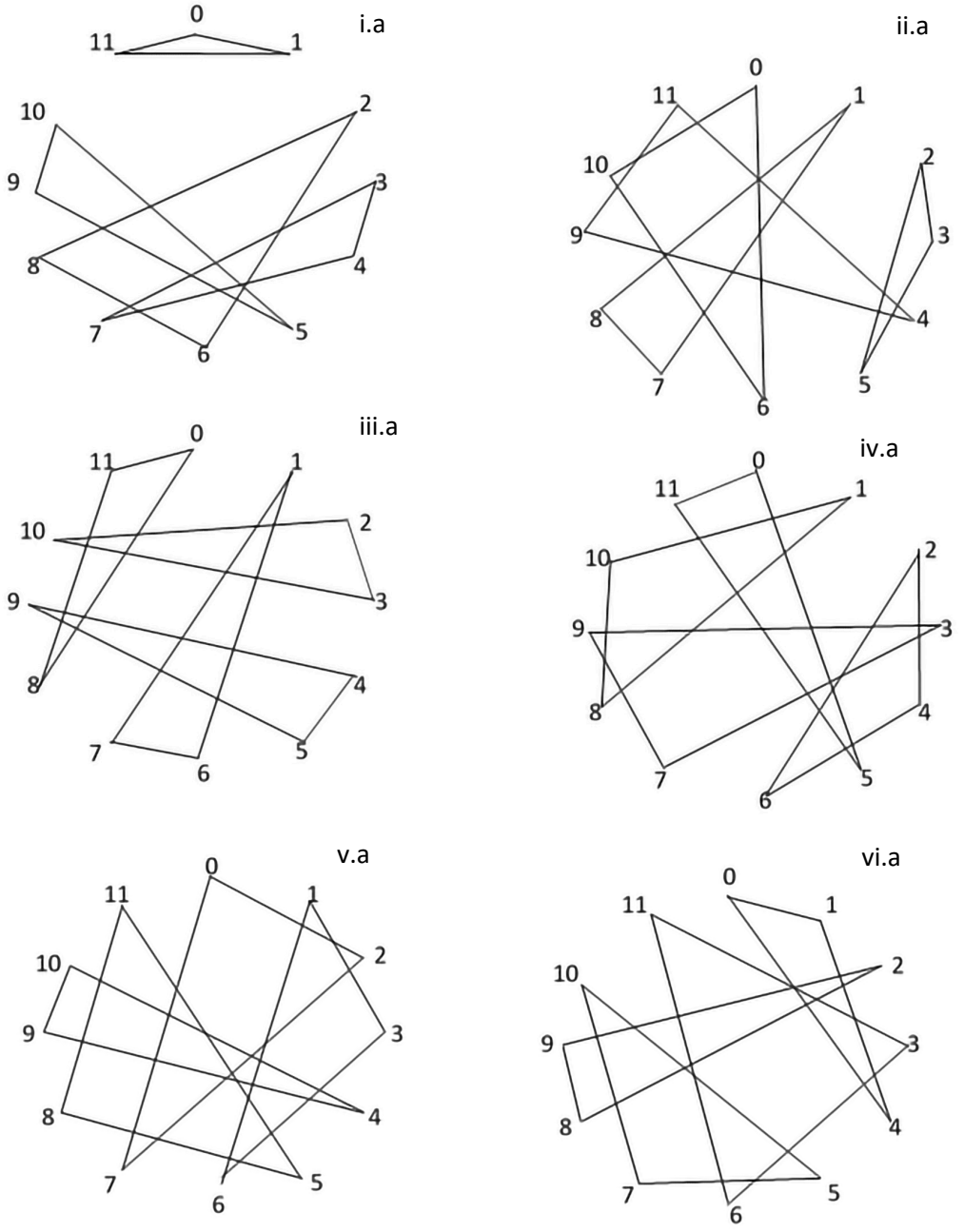
(0,1,6),(0,2,7),(0,1,2),(0,3,6),(0,2,5) all can be mild nonatonic rows.

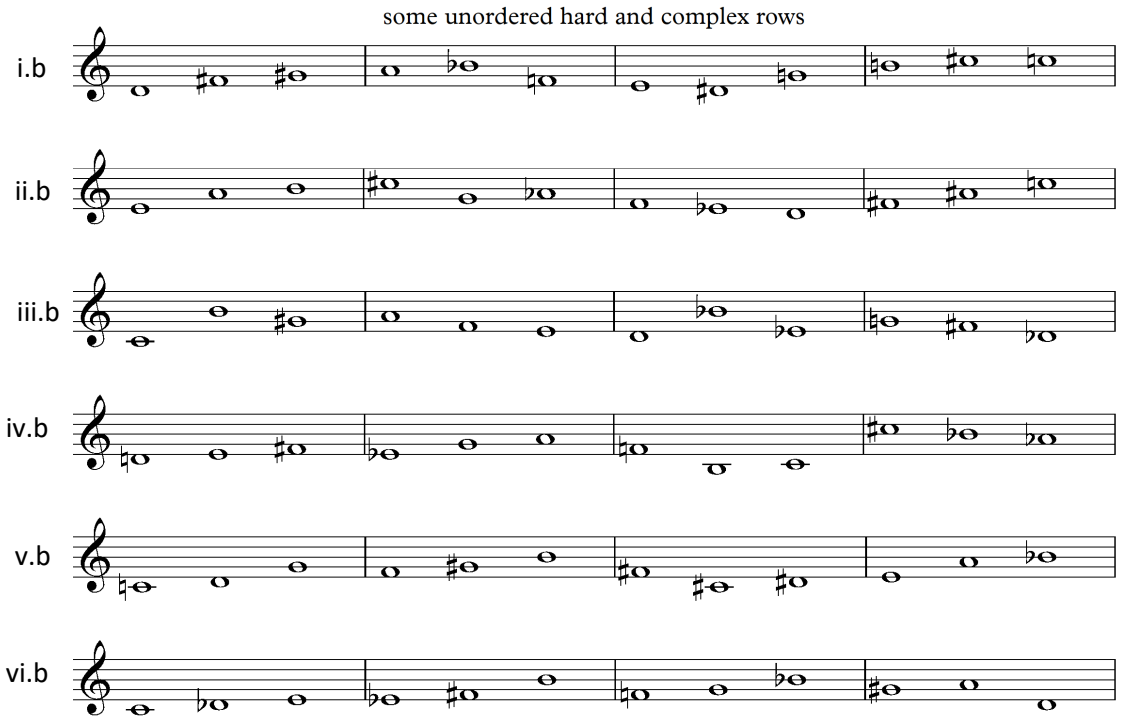
(0,1,3) nonatonic row.



Here are some hard tone rows (Figure 28):

Figure 28. i-vi.a diagrams and i-vi.b notes. Some hard tone rows.





The last step is to combine the pitch training with rhythm and other compositional variation to improvise or write rows. Writing them out is the easier way to begin. Singing continually changing contrasting complex rows is impressive.

Some extra details, notes

All of these steps are, in the end, to be practiced with speed. The beginning will be slow, but gradually everything will slowly unify and open the inner ear. Speed will come. This should be a good foundation for building a worthy ear.

If the voice is tired by singing, remember that *whistling* is an almost tireless substitute.

Make sure to sing and practice these scales (see Figure 29). The melodic minor, bebop, and octatonic are foundational to the Jazz art.[17] The classical composers also used the bebop scales occasionally.

Try improvising canons with another instrument leading or following your voice, tonal and/or non-tonal, timed or not timed, with contour or no contour.

When sequencing chords (page 30) there are opportunities to explore richer, complex, diverse, interval patterns in comparison to the simpler sequenced intervals (page 13). These can be row like.

Transpose the *solfege syllables* of a melody or excerpt you are memorizing to all keys and all R, I, RI (36) forms (see pages 9 and 60). Continuously transpose the solfege syllables to new keys in a sort of loop.

Sing the inverted melody in normal solfege and also inverted solfege. This exercise will emphasize the duality of melodic direction.

Practice singing the all-trichord hexachord (0,1,2,4,7,8) and its complement (0,1,2,5,6,8), and the adjacent hexachords to it (0,1,2,4,6,9)-(0,1,3,4,6,8) and (0,1,2,4,7,9)-(0,1,3,5,6,8). These have a gorgeous bluesy, romantic, dissonant, and sophisticated atonal sound.

Do not practice things that are unmusical, and/or boring.

Solfege does not need a piano to be practiced!

[17] Mark Levine, *The Jazz Theory Book* (Petaluma: Sher Music Co., 1995). Levine covers most of these scales in depth, and their role in jazz music.

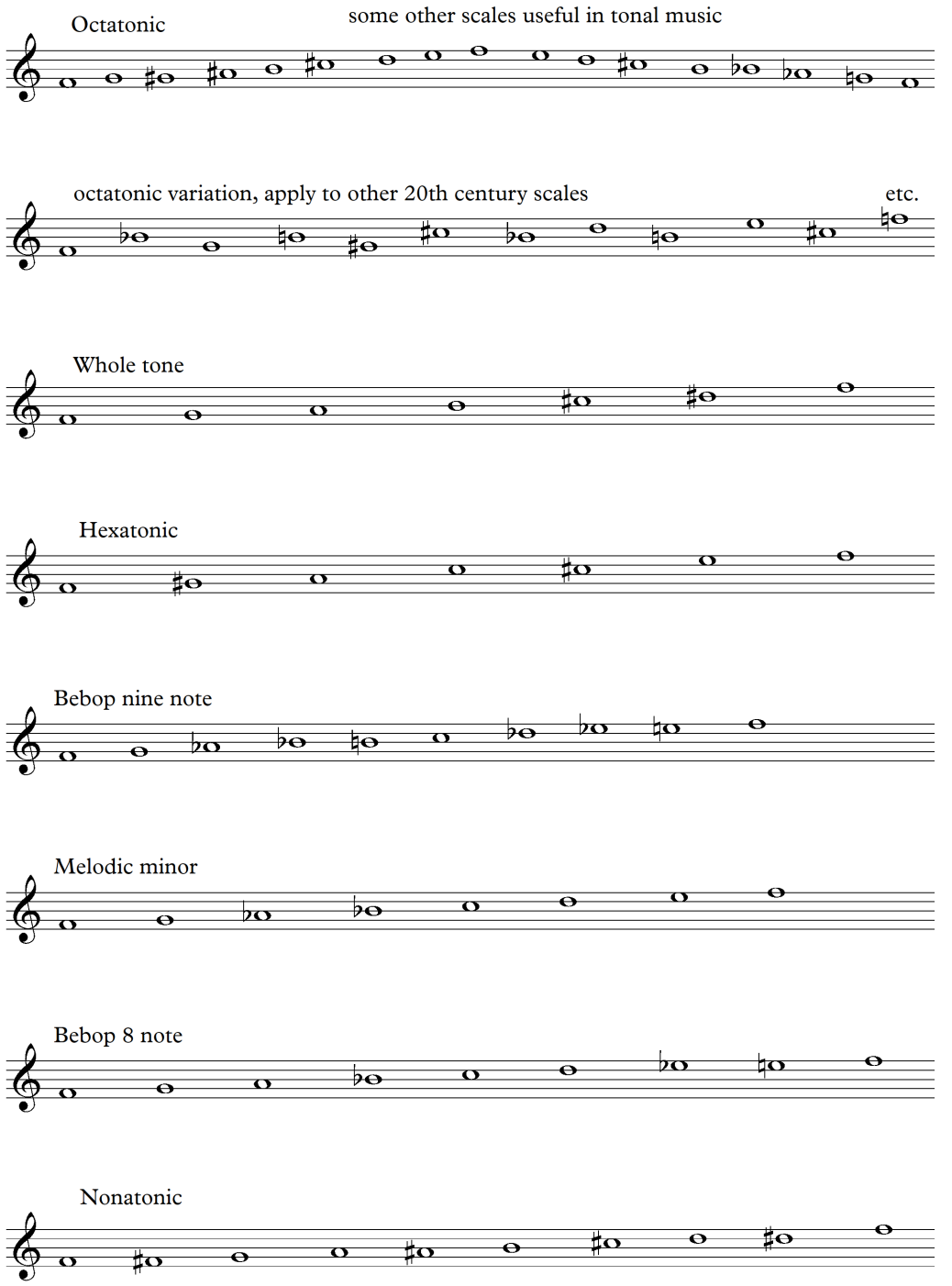


Figure 29. Octatonic, variation, whole tone, hexatonic, bebop nine note, melodic minor, bebop eight note, and nonatonic scale.

V Rhythm

Rhythm is, for the most part, intuitively easier than pitch to understand. At the same time, there are challenges that are worthwhile to continually readdress and overcome in the performance of rhythms. The challenge this chapter will address is feeling multiple (2-4) unique accents of an underlying pulse simultaneously. These manipulations are more complex (especially when applied to piano) than any solo piece the common practice period (Bach to Brahms) would demand a musician to perform rhythmically. The trick is practicing polyrhythms, manipulating cells inside polyrhythms, and then extending these rhythms to "invisible" drums (2 drums, 3 drums, 4 drums, 5 etc.).

Let's look at a couple ratios first—2:3 and 3:4 (see Figure 30). [18]

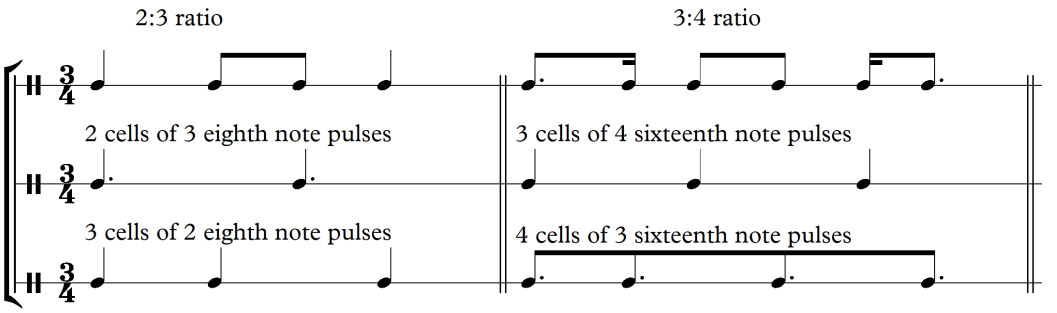


Figure 30. An analysis of the rhythm on the top line into two ostinato groupings of pulse. 2:3 and 3:4, respectively.

The two patterns in Figure 30 are frequent encounters in the common practice period. Figure 31 shows a variation of the 2:3 rhythm.

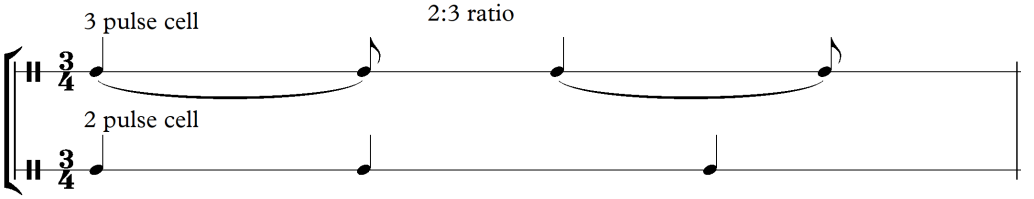


Figure 31. A variation on the 2:3 rhythm.

[18] Joseph Schillinger, *The Schillinger System of Musical Composition* (New York: Carl Fischer Inc. 1946). Book 1, theory of rhythm: Pg 8, and 9, show a rhythm analysis of these ratios.

Figure 32 shows a variation of the 3:4 pattern:

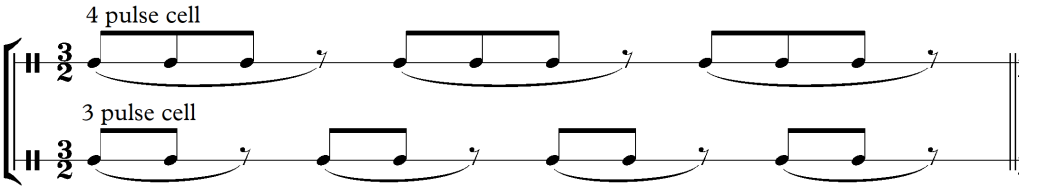
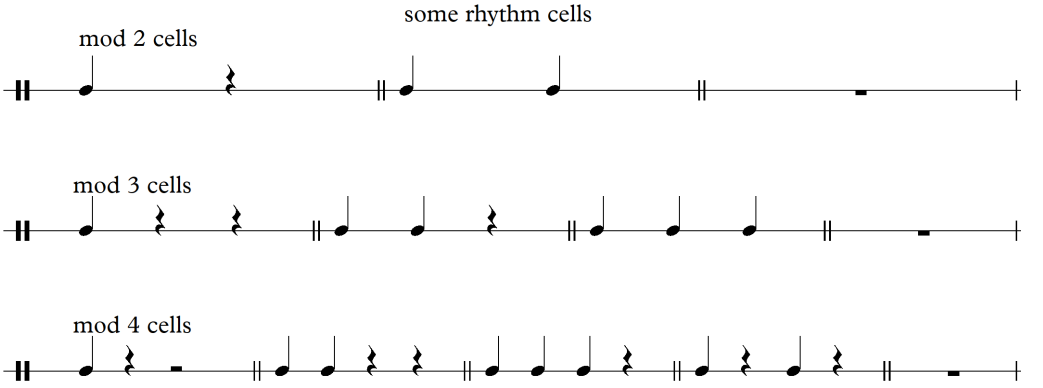


Figure 32. A variation on the 3:4 rhythm.

There are a number of combinations that can be made with cells to create periodic rhythms. Most of the time, however, rhythms are not harder than polyrhythms of the 3:4 ratio in the common practice period.

The next level is to apply new ratios—2:5, 3:5, 4:5, 3:7, 4:7, 5:7, 5:8… etc.—and experiment with the recurring cells in each case (Figure 33). Six may not be necessary to practice, because it is too similar to 3 and not as hard as 7. Memorizing the rhythms—5 in one hand, 7 in another—is impressive. Figure 34 illustrates a few possibilities, but they should all be explored and practiced, especially ones that have 2-4 attacks in each cell. After the basic exercises are comfortable, try the "Ligeti" variations (see Figure 35), achieved by juxtaposing different accents on the pulse; these are significantly harder. The rhythm exercises directly relate to the warmup tongue twister exercise on the piano (see page 66).

Figure 33. Some cells that can be combined to create periodical polyrhythmic phrases.



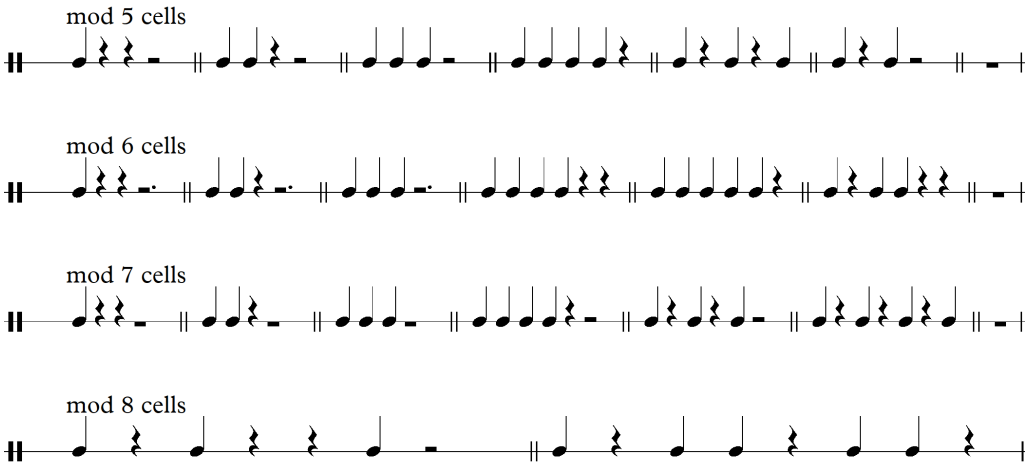
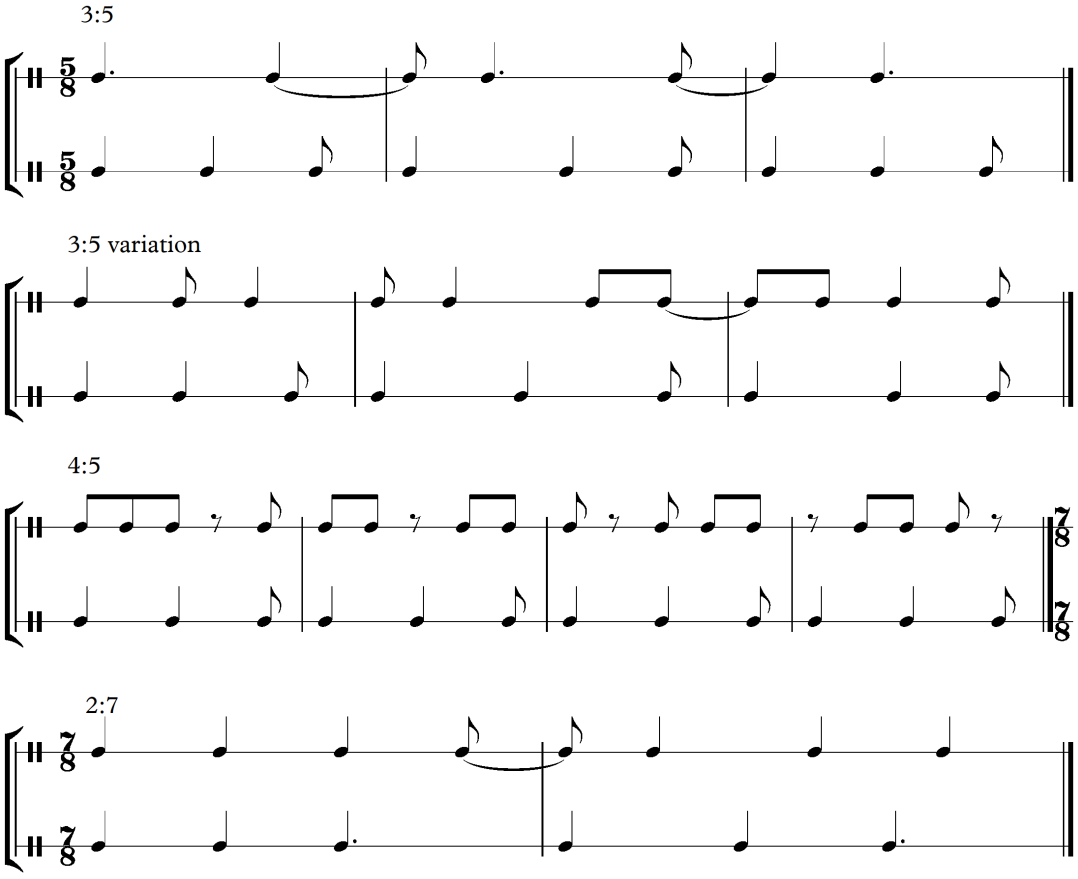
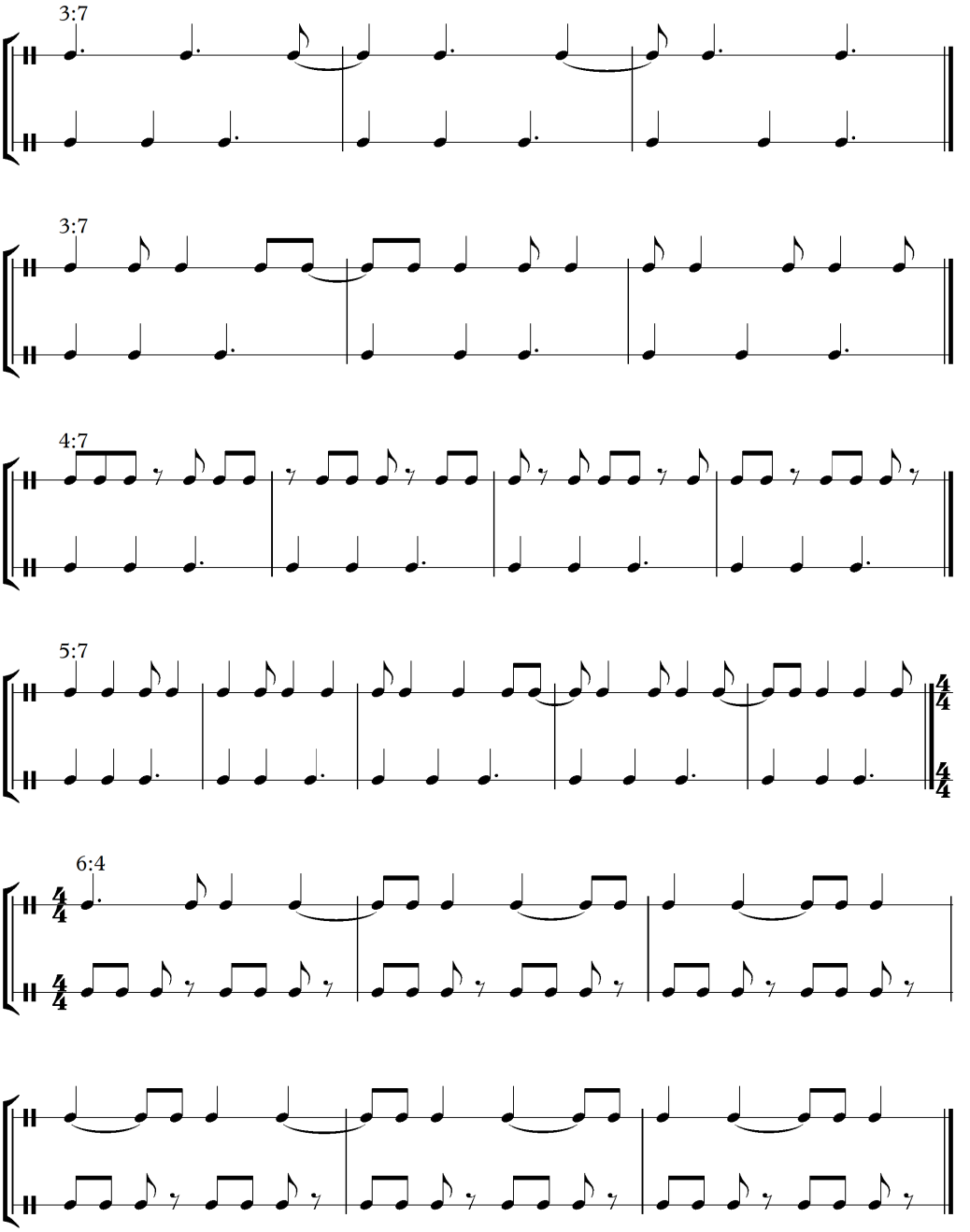
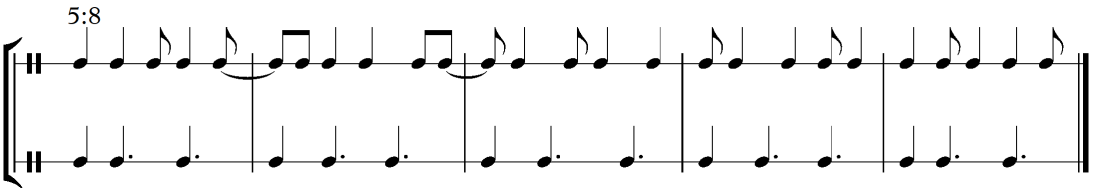


Figure 34. Some polyrhythmic phrases created from the combined cells.[19]



[19] Make sure to swap left hand and right hand playing the top line and bottom line rhythms, and vice versa.

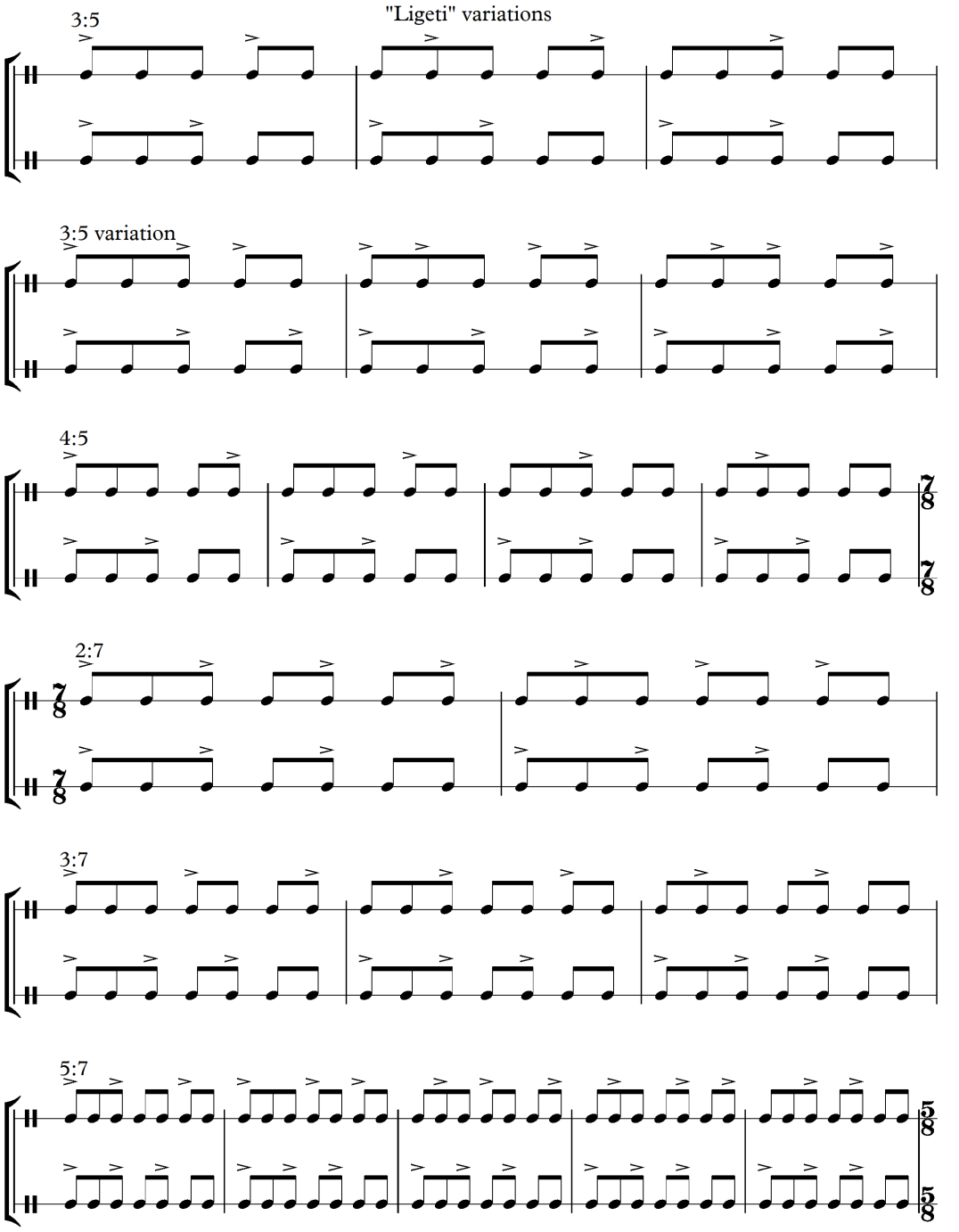

3:7
3:7
4:7
5:7
6:4

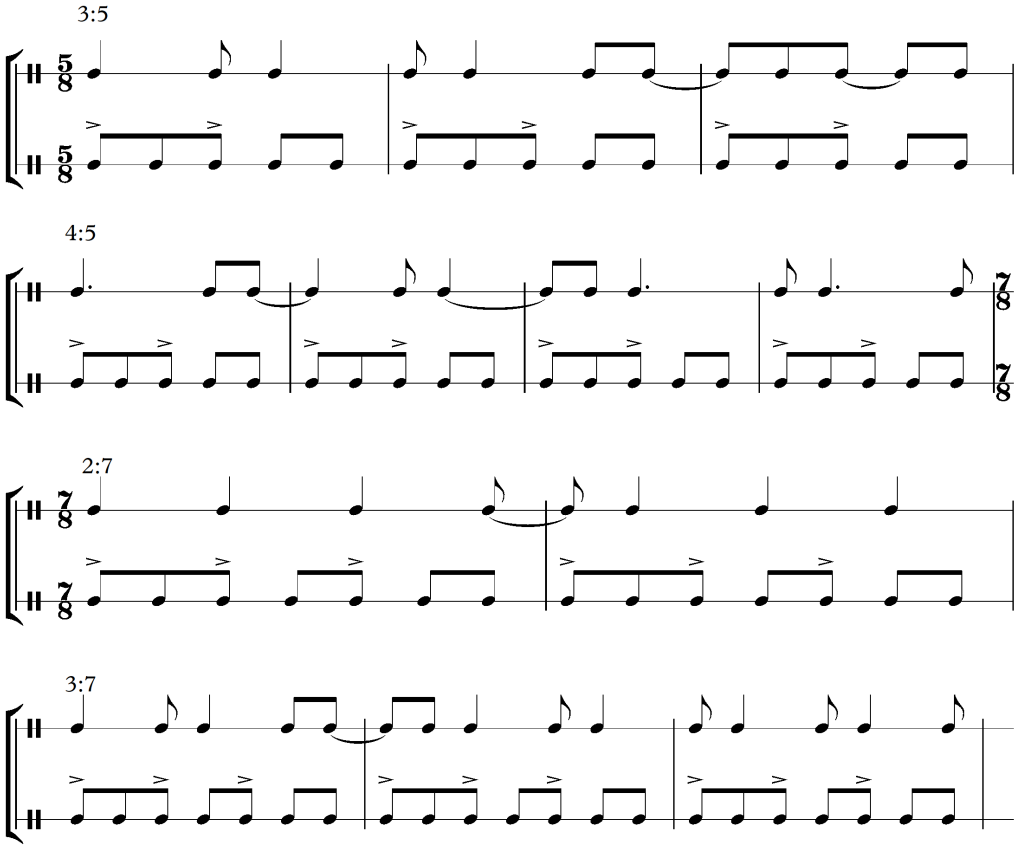


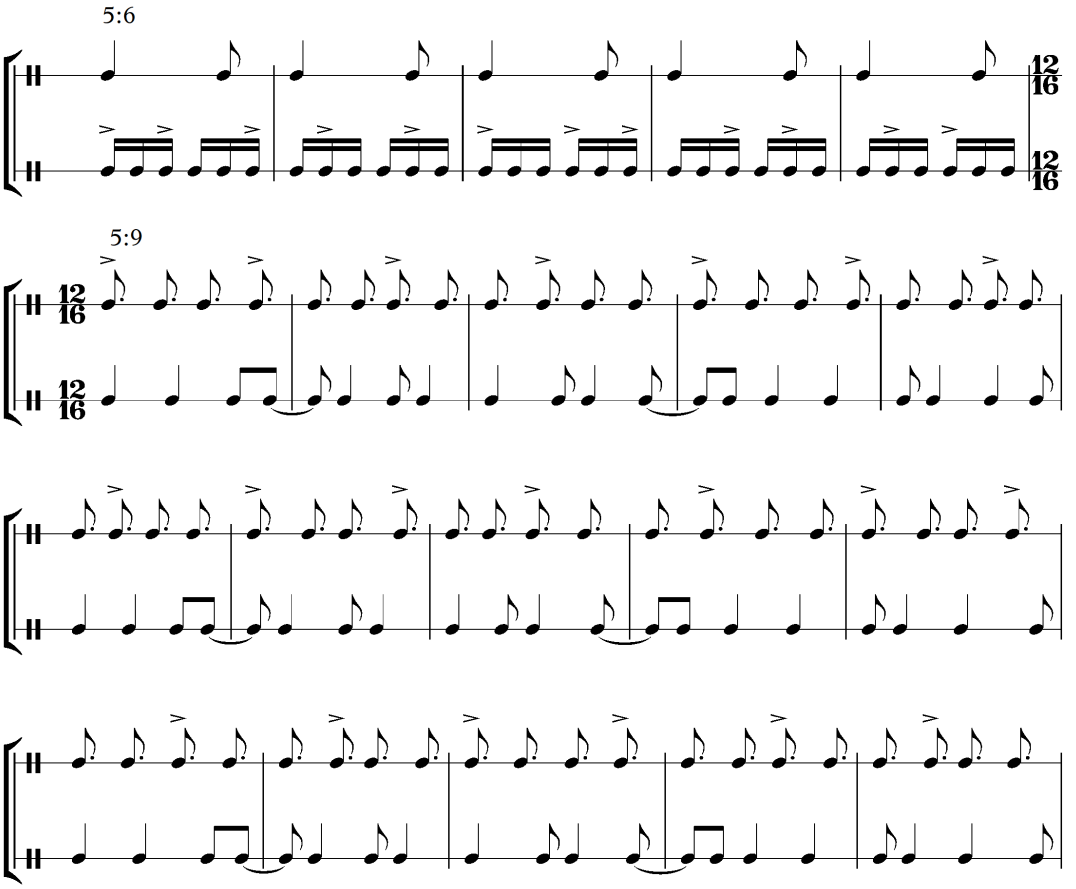
Ligeti variations

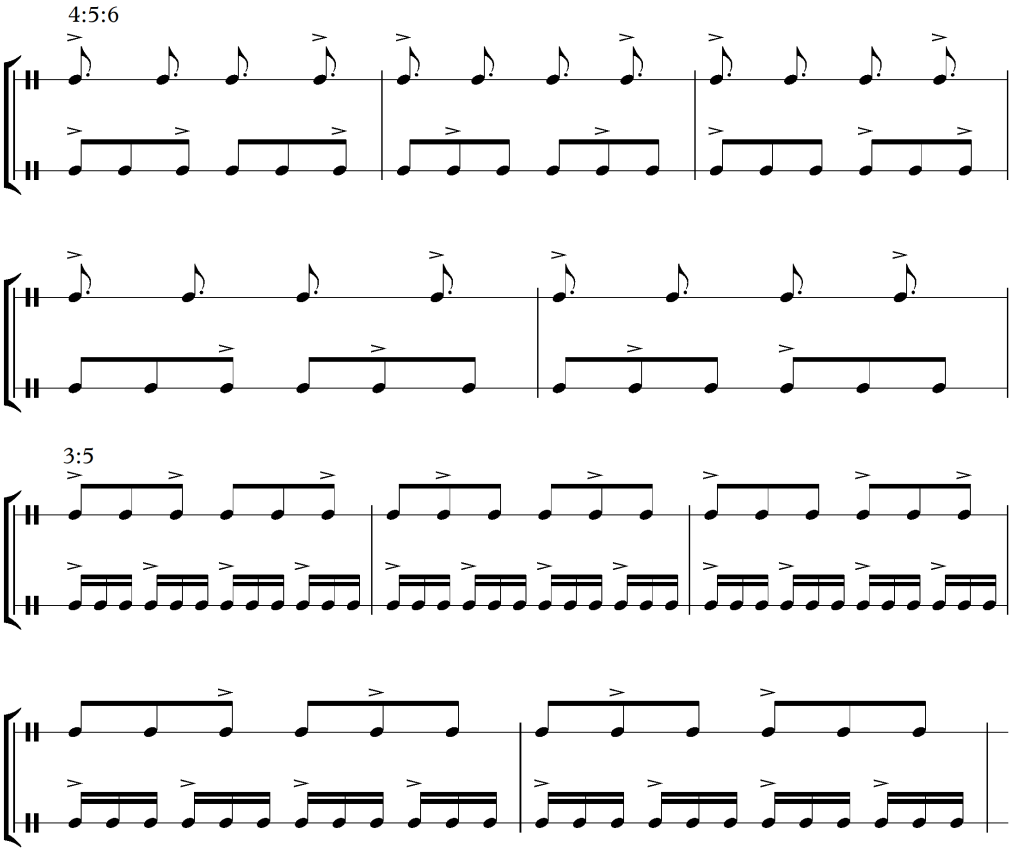
The “Ligeti” variation (see Figure 35), though not an original idea, is the incessant attack of a pulse interspersed with prominent accents. I was listening to Ligeti’s piano etudes when I was inspired with the idea for the variations, hence the nickname.

Figure 35. Ligeti variations.




3:5
4:5
2:7
3:7

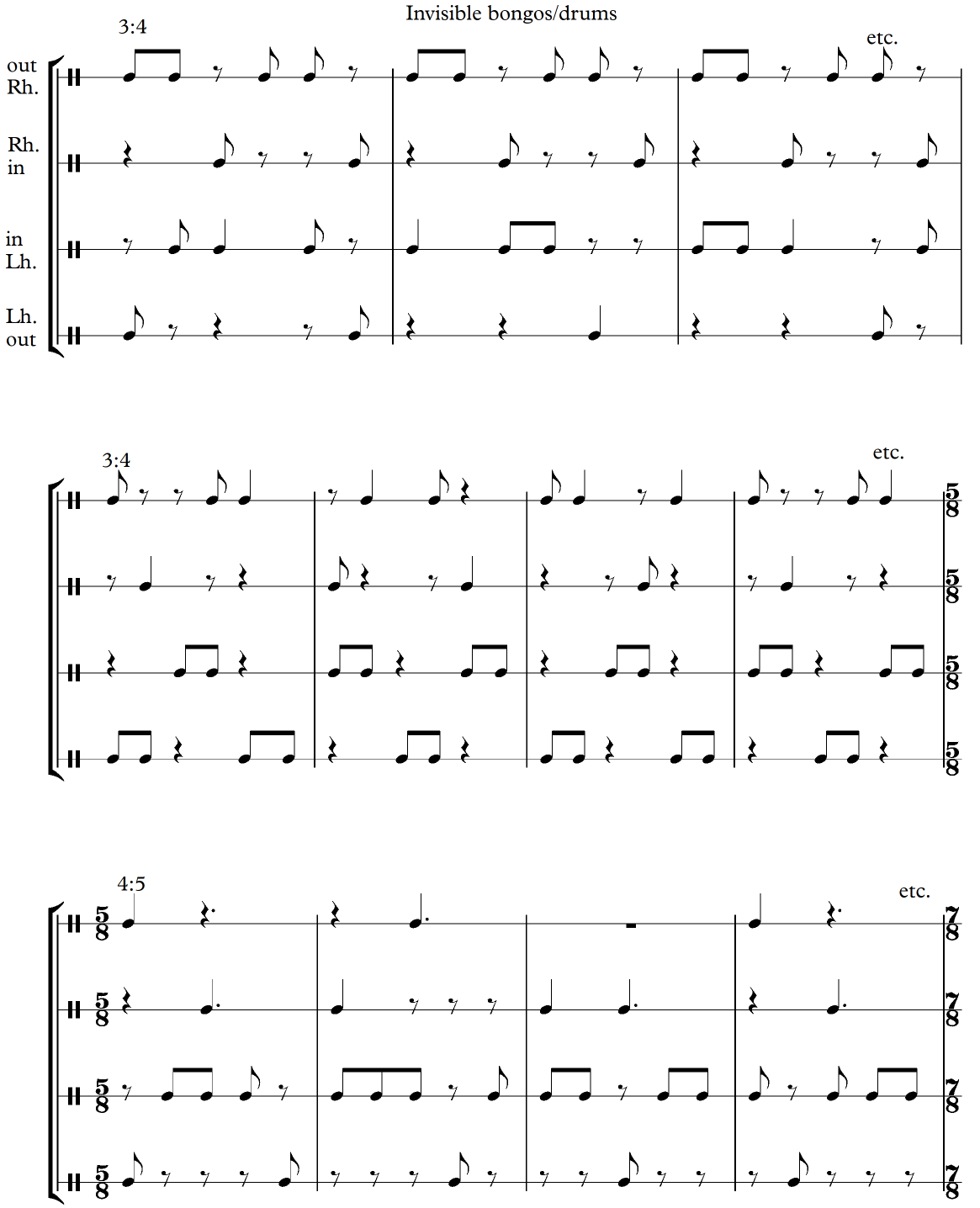

5:6
5:9

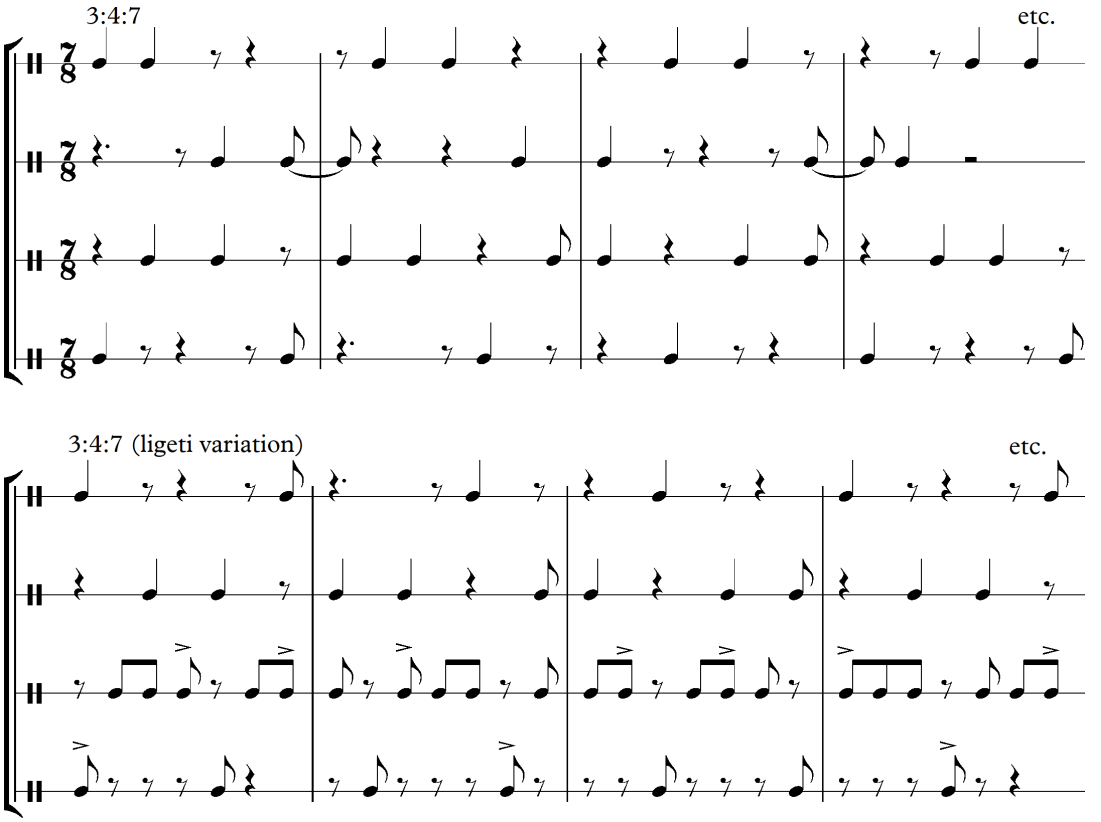


Invisible drums/bongos

After two contrasting rhythms can be comfortably performed, three and four rhythms can be attempted (see Figure 36). Pianists, in a sense, can generalize a great deal of their arm movement to four invisible “bongos” or “drums”. Most of the time both arms have two drums each, one on the inside (the middle register of the piano, a blurred area for both hands but usually a distinct enough separation) and one on the outside (the upper register for the right hand and the low register for the left hand on the piano). Movement from the “in” drum, to the “out” drum by each arm is called the lateral movement and is related to bass chord patterns (waltzes, rags, strides, etc.) and also to a less obvious extent scales and arpeggios. Perform these rhythms with invisible bongos and/or make-shift contrasting timbre. The periodic structure of these patterns is long (hence etc.) due to the phenomenon of contour; which is explained and demonstrated in the tongue twister exercise (see page 66). *These following rhythms are organized by one contour cell and one rhythm cell in each hand (see page 68).*

Figure 36. Four invisible bongos/drums.





Finally, rhythms can all be extended to combine feet/legs and vocalizing for a total of five unique rhythms (including both arms). If feet are combined the same principle of four invisible bongo drums (or foot pedals in the case of drums, or full manual in the case of an organ), is to be applied. Practicing like a drummer (and/or organist!) matures the comprehension and performance of rhythms.

Note(s)

Practicing rhythms with hand crossovers and/or superposition is probably worthwhile. Also, add this technical complexity to the tongue twisters.

Practice rhythm canons, leader and follower at different time intervals. Make sure to interchange voices.

Rhythm can be organized like tone rows, (see appendix page 87-92).

Make sure to swap left hand and right hand playing the top line and bottom line and vice versa.

Rhythms do not need a piano to be practiced!

VI Piano Technique and Notes

Reading

Pianists, like most musicians, need to nurture the skill of memorization. Lucky musicians have a knack for picking up pieces quickly, whereas average musicians need to practice memorization and develop every other conceivable advantage. A long term plan of pieces to learn is the best place to start: visualizing a future self playing certain repertoire will orient the musician's pace, practice, and preparations—the simplest most important preparation being reading![20] The majority of music you plan to play should be reread at least once a year.

Aside from preparatory reading for performance, reading is itself a recreational and enlightening joy. Exploring wide arrays of content nurtures insight into style, taste, and artistic means utilized by composers to achieve expressive goals: substantial exposure to palates of piano music is a must! Reading lots of repertoire builds and reinforces literacy, and makes memorization easier when time demands. The more composers one is exposed to, the more musical wisdom, taste, and literacy will be established. Here is a list of some suggested composers to explore by, ideally, reading their entire corpus of work for keyboard.

- Bach
- Beethoven
- Chopin
- Mozart
- Schubert
- Haydn
- Schumann
- Rachmaninoff
- Faure
- Brahms
- Cesar Frank
- Debussy
- Ravel
- Scriabin
- Bartok
- Schoenberg
- Webern
- Berg
- Paul Hindemith
- Ligeti

[20] "It is astonishing how fast you can learn a work that you have sight-read a few times over the years even if it is several decades since the last reading." Charles Rosen, *Piano Notes: The Hidden World of the Pianist* (St Ives: Penguin Books, 2004), 93.

Memory (learning pieces)

To optimize memory, one needs to have a comfortable grasp of a few topics—form and/or some language to describe compositions and technique.[21] Form is generally the weakest, and it is necessary to remedy this by mastering the most difficult forms of sonatas, and fugues. If this is done memorization can become a powerful organized process. This is because memory is like composing into the mind, or carving an image into the mind. It is best to think of memory as a dynamic, reshape-able, circular, self reinforcing process.[22] If memory is mastered it is possible to memorize and practice entire pieces through silent reading! Below are steps to help organize memory of music:

Preparatory memorization

1. Analyze the piece thoroughly for harmony, texture, and form, write a graph of events and details, and slowly build a hierarchy of relationships. Describe meanings and characteristics of all layers: entire movements to brief moments.
2. Find a section or passage—say, A section-first period-antecedent—and practice the whole 4m or 1-2m sub-phrase. Follow these next steps to help memorize a phrase.

Memorization loop and steps[23]

1. If possible, sing the top line in solfege in time and play the bottom simultaneously at a stable tempo. Speak the solfege if it's un-sing-able. Switch top and bottom. In the same manner, play the passage P, R, I, and RI. (See page 9, for a review of how to read R, I, and RI. Also, see page 60 for how to read and play P, R, I, RI on piano.)
2. If there are canons sing them in solfege. R, I, RI, and P.
3. Describe local features, phenomena, normal or odd devices, and motives out loud. Describe psychological impact, mood, and effect.
4. Sing rhythmic pattern in a contrasting pulse or grouping (e.g., 4/4 time 16 pulse; sing a grouping of 3 or 5 to the music).
5. Create and play rhythmic, figuration, contour, and articulation variations for passage if perpetuum mobile or very awkward. (See page 62)

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[21] "The pupil with theoretical knowledge of music will soon discover that this … process will quickly enable him to grasp the import of a composition." Walter Gieseking and Karl Leimer, *Piano Technique* (New York: Dover Publications, Inc., 1972), 18.

[22] "I have to keep re-learning… It makes for many new encounters and never allows one to feel unduly secure in reproducing some old hat!" Alfred Brendel, *Alfred Brendel on Music* (Chicago: A Cappella Books. 2007), 373.

[23] All these steps can (and should) be practiced without a piano through silent reading. If the absence of a piano is too challenging, try visualizing a piano and "play" it on some surface like a table! (Maybe try drawing one too?!)

6. Describe each movement separately, out-in sideways-over lateral cut-off, supination-pronation, jump, trill, solid, broken etc.
7. Close eyes, and silently recall everything just played.
8. Repeat all steps several times in a fast-rapid succession, then do all steps from memory (away from the music), ideally with eyes closed. Move onto the following module, phrase, or block. Do this until the block is learned, and combine both from memory. Continue until a section is learned, then learn a new section separately and combine them both from memory.
9. Play piece P, R, I, RI, and identify structural features out loud from this perspective.
10. Being able to walk through and visualize the entire piece silently is the most difficult step, but it is very necessary for a performance. Describe the hierarchy of all features and relationships in the piece from memory, out loud.
11. Repeating all steps over a period of days will improve the clarity and structure of the audiovisual and abstract memory of the music.

Playing/Reading P, R, I or RI on the piano

Playing/reading P, R, I, and RI on piano is roughly identical to singing a melody in that way (see page 9-12) with a few logistical differences. If playing R or RI (backwards direction), the right hand and left hand play, more or less, all movements and the *sounding* durations of the notes in reverse. In R and RI, some sounding notes will not make sense to play on piano: for example, a sustained "bass" note on an arpeggiation or waltz accompaniment will sometimes not be heard/played in reverse. If playing I or RI (upside-down), the left hand will play the top clef in the "bass", and the right hand will play the bottom clef in the "soprano".

Inversions about the G# and D axis are optimal for memory on the piano—since the piano is a mirror about this axis (see Figure 4 and Figure 11-13), all movements/fingerings of the right hand and left hand in the I or RI will be mirror images (i.e. the "same") of the respective left hand and right hand movement in the original passage.[24] On the common 88-key piano this means the D4 (the D above middle C) is the central pivot point, and the G#3 and G#4 (tritone above and below D4) will be close references for inversions. Any other axis should be thought of as a transposition of the inversion i.e., a transposition of the upside-down/mirror piano.

Practicing inversions, I and RI, on piano matures a sympathetic awareness of each hand's role in the music: technical, musical, rhythmic, characteristic, melodic, accompaniment etc., since the left hand and right hand normally have biased functional purposes to fulfill in the music texture. As a result of the inversions they

[24] Notice: outside of the music, hands are literal mirrors of each other!

will have to *learn* the others responsibilities; the left hand will be thinking "oh, so this is what the right hand feels and looks like and what I look like from a distance!" and the right hand will be thinking "oh, so this is what the left hand feels and looks like and what I look like from a distance!". A primary focus of practicing retrogrades, R and RI, on piano is to feel the technical, rhythmic, and melodic components of the music in reverse, and hear the sounding durations in reverse.

Practicing transpositions (P) the music is performed, more or less, technically identical to the original "key" of the piece, meaning fingerings etc. stay the same. Playing twelve transpositions/keys of a small phrase/passage/bit, say, 1-4 measures in a continuous *loop* accelerates the memory of intervals, harmony, sound, and fingerings. At first, play all transpositions *reading* the score, then do it from "*memory*" in all twelve keys. This exercise functions as a processing of the memory of the original musical idea's key into *all* keys and the conscious effort to process the excerpt forces the mind to abstract higher perspectives of the musical idea. Though it sounds painstaking and tedious the practical results of it are usually relevant to many effects seen in pieces with musical flare, especially etudes: many etudes have a simple device of blazing through many keys. This simple exercise functions like a short cut to memorizing sections which will usually repeat (verifiable by checking) the same material in a new key, and allows the mind to focus on the piano, movement, form, and sound, versus being overly distracted by the page. Awkward/confusing/insecure phrases/passages/bits of the piece that might be boring to practice can become fun and refreshing if they are continually transposed in a loop by memory, since it becomes a *new discovery 11 times, or 47 times if you transpose the R, I, and RI*![25] If it's too hard to process two measures in this way try one measure or smaller and make sure to do this from memory looking at the piano. Sequencing by circle of fifths or semitone will go to all keys but other patterns will go to all keys too (see sequencing intervals page 13). Beyond helping with the skill of memorization it is extremely useful as an improvisational (compositional) device: try improvising a one measure idea and transpose it to all keys then R, I, RI it to all 36 other possibilities.

The normally slow, conscious, thoughtful effort to read and memorize a piece from these perspectives (P, R, I, and RI) compounds into a thorough, sage-like understanding of the piece. *All these variations: playing the piece transposed, inverted, retrograded, and retrograde-inverted seems to fortify not only the conscious and subconscious audiovisual, technical, physical, formal etc., memory of the music but also improves the skill of sight-reading!*

[25] It is overdoing it to play every small part in all P, R, I, RI (48) forms. Use all 48 possibilities for challenging/annoying/blurred/insecure parts or incredibly difficult music.

Perpetuum mobile, awkward passages, and Cortot

Pieces with an unyielding pulse, figuration, and/or awkward passages, can be problematic obstacles for memorization and continuity of playing. The tongue twisters help a great deal to feel a fluidity of phrasing; alas, they are not enough to prepare a flawless execution alone. The late Alfred Cortot[26] used rhythmic articulation, and also figuration variations of passages, to accent technical features and tease excerpts into fundamental components. Variations are also useful to stimulate memorization, because the continuous pulse and figuration in perpetuum mobile can become empty or meaningless when repeated incessantly. Likewise, awkward passages can be memorized and smoothed out faster with variations.

Variations, somewhat related to the initial passage, usually have the same foundation of harmony. Transposition, articulation, and rhythmic changes are probably the simplest variations; however, it is also possible to create a different figuration by manipulation of rhythms, contours, intervals, and pitches. For the sake of economy, I'll leave it up to the reader to create complex textural changes. Here are some rhythmic variations (Figure 37) for three-note, two-note, and four-note groupings, respectively:

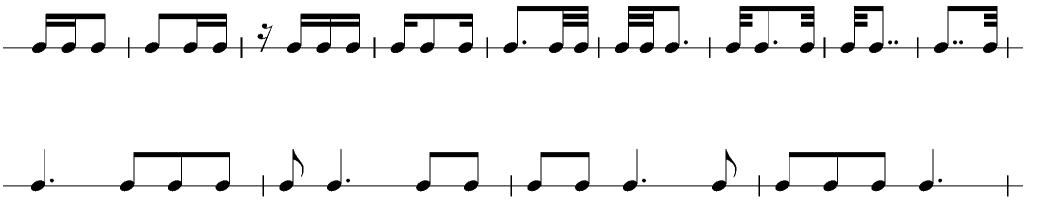

Figure 37. Some rhythmic variations for perpetuum mobile pieces, excerpts or awkward passages.

Along with the more basic rhythmic variations, it is useful to apply hybrid rhythms like these (Figure 38):

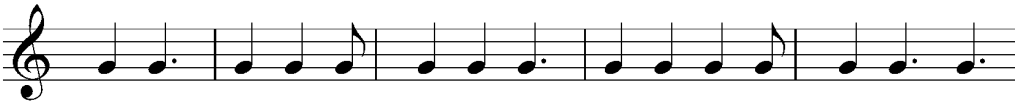

Figure 38. Some hybrid rhythm variations.

Hybrid rhythms and accents can help the hand navigate movement, especially for awkward passages. Make sure to rotate the order of the hybrid attacks and accents. Variations are usefully applied to the passage in P, R, I, and RI forms.

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[26] Alfred Cortot, *Cortot Chopin, 12 Studies op. 25 for Piano,* trans. M. Parkinson (Paris: Editions Salabert, 1951); Ibid., *Cortot Chopin, 12 Studies op. 10 for Piano*, trans. M. Parkinson (Paris: Editions Salabert, 1930).

Health concerns

Many musicians are extremely committed and sacrifice much of their time to succeed, but taking care of physical health is essential to success. Work out, eat healthy, and sleep. Injury is the most heartbreaking experience for a musician, and remember you are always likely to have an extra hour or two to practice in the future. Being unable to practice because of a serious injury is traumatizing. In the event injury occurs, one can learn by reading/memorizing music silently, studying form, practicing solfege, practicing rhythm, and maybe even composing. These are very positive ways to spend time, and possibly just as valuable in the long term.

Composing and improvising

Writing music is a useful exercise to assess one's immediate overarching experience of music. Writing a complete piece or idea in different styles once a day will make weaknesses in ear training, form, style, and taste evident; at the same time, don't dwell too long on the details. In fact, if possible, I recommend writing with great speed over deadly slow. This is akin to playing a piece at tempo, since the spontaneous demand to create solutions or manipulate devices progresses the music. Likewise, improvising achieves much the same as composing, with less inner ear. This is because patterns and figurations learned by muscle memory are easier to recreate compared to complex or refined solutions. This is connected to and benefits from practicing solfege, rhythm, reading, piano, and form.

Watching pianists and other musicians

It is wise to compare your playing with that of the greats. Here is a list of some pianists to watch:

- Alfred Brendel
- Maurizio Pollini
- Daniel Barenboim
- Vladimir Ashkenazy
- Martha Agerich
- Radu Lupu
- Arthur Rubinstein
- Krystian Zimerman
- Thelonious Monk
- Bill Evans
- Herbie Hancock

When watching these performances, you will not uncover technical practice—rather, you witness the end result of thoughtful practice. This means that the performance ought to look something like their execution. Of course, there are many other pianists to watch. A particularly good rule of thumb is that as long as they make it look easy to play, they are doing it right. Other musicians, like conductors and singers, are interesting to watch because their body movements can be choreographed into piano playing.

Listening to recordings

Listening to old recordings is probably a better place to start than modern recordings, because audio editing through splicing, cutting tape and/or more recently digital tracks, did not exist back in the day. The flawless perfection of modern recordings distorts many amateur's expectations of how music is created. Here are a few old recording artists:

- Alfred Cortot
- Artur Schnabel
- Edwin Fischer

Along with the more leisure exercise of listening to recordings try transcribing and learning a song by listening to recordings. This is a common exercise jazz musicians practice and it opens up a different perspective of how to focus learning a piece of music. All of the artists listed in the previous heading also have many great recordings.

Technique

Having a relaxed body and dynamic posture is the simplest technical element and is best cultivated by working out,[27] stretching, living a healthy lifestyle, and resting. Otherwise, the broadest technical challenge of piano can be focused at the arms.[28] Using the arms, movement at the piano is achieved several ways: in-out, up-down, left-right (lateral movement), supination-pronation (rotation), under-over (supple wrist) and side-to-side (supple wrist), fingers (including the thumb) gently contracting or extending, and weight transfer or pivot of arm weight to finger(s). When movement is described, there is usually a mixture of all these elements and dichotomies interacting.

The question is, what is the easiest way to combine and coordinate all these variables into movement or technique? The answer is gyrating three-dimensional: elliptical, loop, and/or circular motions.[29] Although seemingly simple, these motions are optimal for the majority (if not all) of piano technique—with the proper adjustments depending on the context. These circle-ish shapes are complex because

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[27] In my opinion, the best way to feel and understand the basic muscular interaction of the arms, shoulders, back, torso etc., is experience in resistance training. It helps the comprehension of all movement. Check out Frederic Delavier, *Strength Training Anatomy,* 3rd ed. (France: Human Kinetics, 2010), for insight into body movement.

[28] Neil Stannard, *Piano Technique Demystified: Insights Into Problem Solving* 2nd ed. (2014). Stannard emphasizes the importance of the arm, especially the forearm in playing.

[29] "With experienced, well-schooled, pianists all these movements (waves, loops) are hardly perceptible to the naked eye, but they are there, they exist, and retain all their force through proper, well-organized work." Heinrich Neuhaus, *The Art of Piano Playing*, trans. K.A. Leibovitch (London: Kahn and Averill, 1993), 103.

the several parameters of movement are in constant flux and interchange (in-out, up-down, supination-pronation, etc.) and, depending on the movement, are not consistently synchronized for all cases. In spite of not being easy to generalize, the circle motions still simplify the majority of passages. In practice, a pianist looking at a passage will be thinking consciously or subconsciously: where does the circle(s) go, how is the circle(s) going to look, and what is the best circle(s) to use to play this passage? Sometimes there will be no "best" answer but personal preference. These motions seem to preserve momentum at a minimal effort, so passages with speed are less work.

Rigid, brittle, stiff wrists, fingers or arms, must be avoided at all costs. Wrists are, at most, gently fixated in a non-arched/non-contorted position, or are more commonly supple (flexible) in playing. In playing, the supple wrist may flex up and down, side-to-side in a circle as a result of the arm moving up and down (biceps and triceps), left and right (lateral movements), supinating and pronating (arm rotation). Like the wrists; rigid, brittle, stiff fingers must be avoided. Fingers are, at most, gently fixated or more commonly supple (flexible), contracting or extending only when necessary. The finger(s) may be static or gently contract or extend while transitioning and balancing the arm weight. The arms are relaxed somewhat like the wrists and fingers, but have the largest spectrum of movement from microscopic to dramatically large. It is best to think of the arms, wrists, and fingers elegantly working together as a single unit.

Loop(s), circle(s) and/or elliptical(s) motions are good for scales, arpeggios, jumps, trills, tremolo, repeated notes, single notes, and motives. These loop motions don't need to be used for everything, but they are hard to time—which is why they need to be practiced.

Balancing and Synchronizing Loops/Circles/Ellipses Exercise: Tongue Twisters

In most musical passages the arms and hands—themselves playing at different speeds, rates, and directions—face a technical problem that is much more difficult than finding fingerings and independence of fingers. The independence of movement/loops—shifting and pivoting weight, pronation-supination (rotation), in-out, up-down, left-right (lateral), under-over (supple wrist), and side-side (supple wrist)—is what needs to be practiced. This is because music texture commonly has at least two contrasting rhythmic and melodic ideas assigned to each hand simultaneously: the melody and accompaniment, melody and countermelody, canonic imitation, or contrasting figurations.

The following exercises (see Figure 39-40) simulate the movement/loops that the arms will articulate by combining ubiquitous contours,[30] and in this way solve the problem of coordinating independence of movement/loops. Usually, two unique motives are being played composed of two unique rhythmic cells, and two unique contours—all four of which are not synchronized and thus have a long periodic structure. I call these tongue twisters for the piano. The easy part of this exercise, at least for the beginning, is choosing a comfortable set of notes, say (0,2,5,7) and in a relaxed position for the hand. I tend to isolate 1,2,4,5 fingers over the middle finger, because the middle is the most stable. This exercise is optimal for a number of reasons, mainly because it:

- Facilitates the sensation of independent loops (gyrating motions), weight transfer, and balance that is needed to play the most difficult music created for the piano.
- Builds a foundation of rhythm that is more advanced than anything the common practice period demands, along with a powerful sensation of pulse.
- Rotates accents on contours, juxtaposes contours out of sync, thus imposes an ambivalent perspective of contour and builds memory of contours.
- Surveys contours and, to a lesser extent, rhythms which occur in virtually every style of music.
- Requires focus and an ability to generate the whole thing, since it is not practical to memorize the entire patterns. This is close to an improvising skill.
- Improves improvisation dramatically.

[30] Contours are probably the most general way of organizing musical ideas, therefore it follows that navigating contours simplifies the challenges of playing complicated music. Most contours used in this exercise will be three or four “notes” in length. Contour can also be organized like tone rows, see appendix page 87-92.

- Simulates movement: transitions of arm weight, rotation, and balance. These are fundamental skills to combat the technical problems of scales, arpeggios, and leaps. Therefore, all can be artificially practiced and simulated in a neutral position. The larger lateral motion of the arm is a dimension that creates arpeggios, scales, jumps, and leaps. Large lateral motion should be practiced in the exercise after the neutral position variations are comfortable or functional.
- Helps coordination of accents with Ligeti variations.
- Improves playing in every style.
- Improves sight reading.
- Mirrors many characteristic/functional ostinato/obbligato/accompaniment/contrapuntal/motivic patterns.
- **All of the tongue twisters can be practiced without a piano!**[31]

These exercises are best practiced slow. Slow, exaggerated, relaxed motions and accurate rhythms are more desirable than only accurate rhythm. As speed increases motions will look smaller or more compressed, but relaxation and ease will never waver. Once a pattern or set of patterns becomes easy and boring find a more difficult pattern or set of patterns and master those. For example, after using one contour and rhythm against many permutations of other contours, rhythms and itself, chose another contour and rhythm and repeat the same or similar process.

It is helpful to think of the tongue twisters as movement simulators. Just as space pilots have electronic simulators, musicians work (on principle) by trouble-shooting/generalizing/simulating many different scenarios and possibilities, so the widest array of problems can be solved.

[31] Practicing these exercises on an “imaginary/invisible” piano will achieve the same results as a real piano. This is because the overarching focus on coordinated timed loops/circles/ellipses (supination-pronation, in-out, up-down, under-over-side-side (supple wrist), lateral movement, weight transfer and balance on fingers) is not lost when a real piano is not present. The sounding notes are secondary to the feeling of the gyrating loops/circles/ellipses articulating the rhythm and contour. Use a solid surface like a table. (Also, see memory page 59)

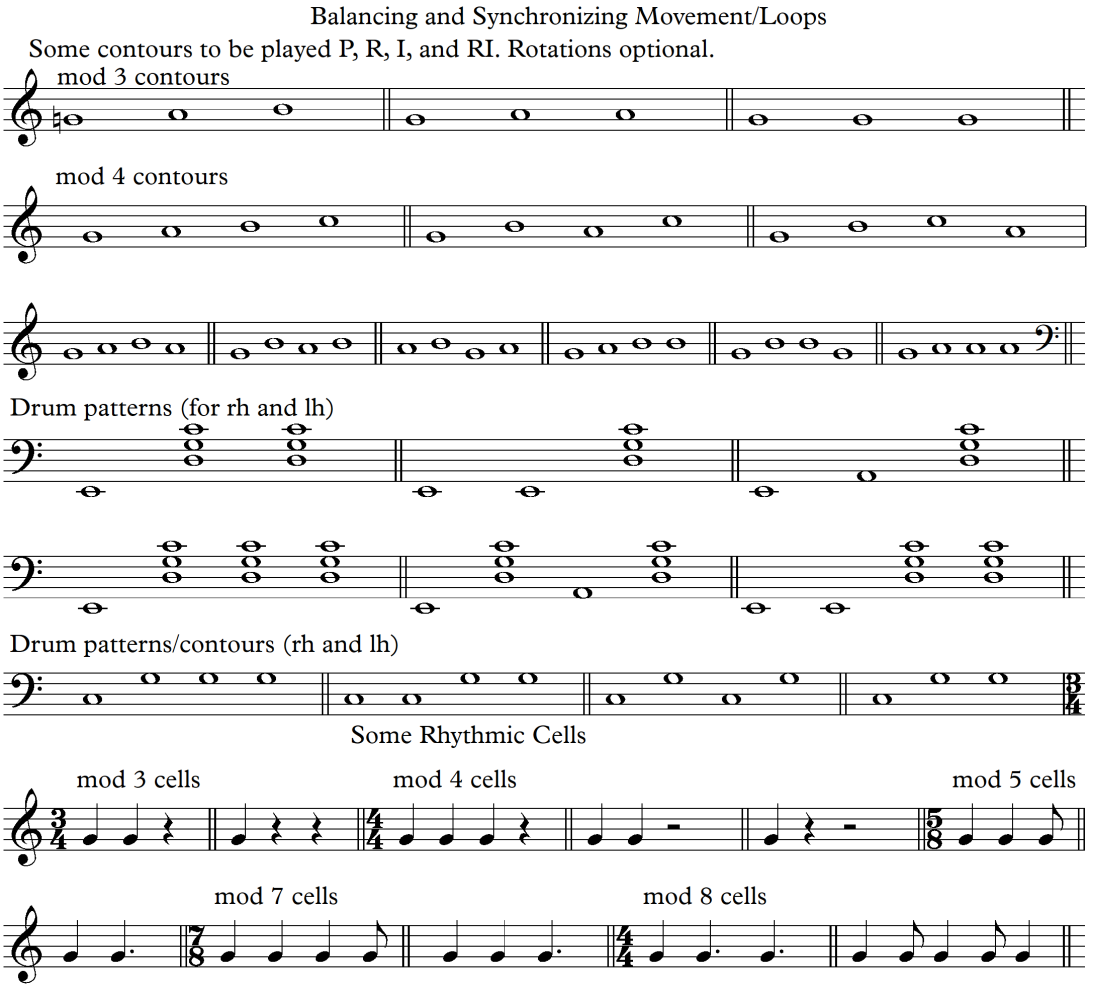
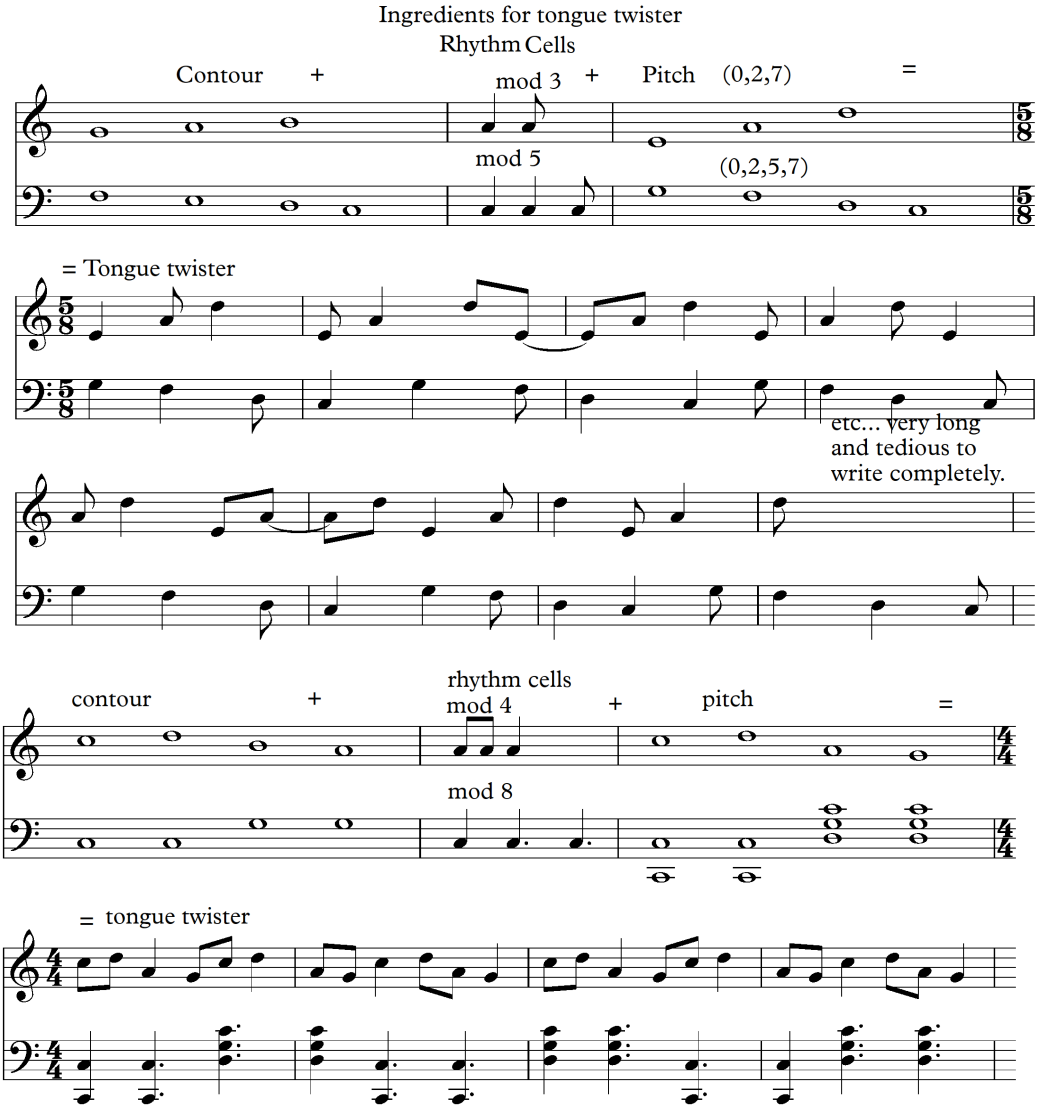
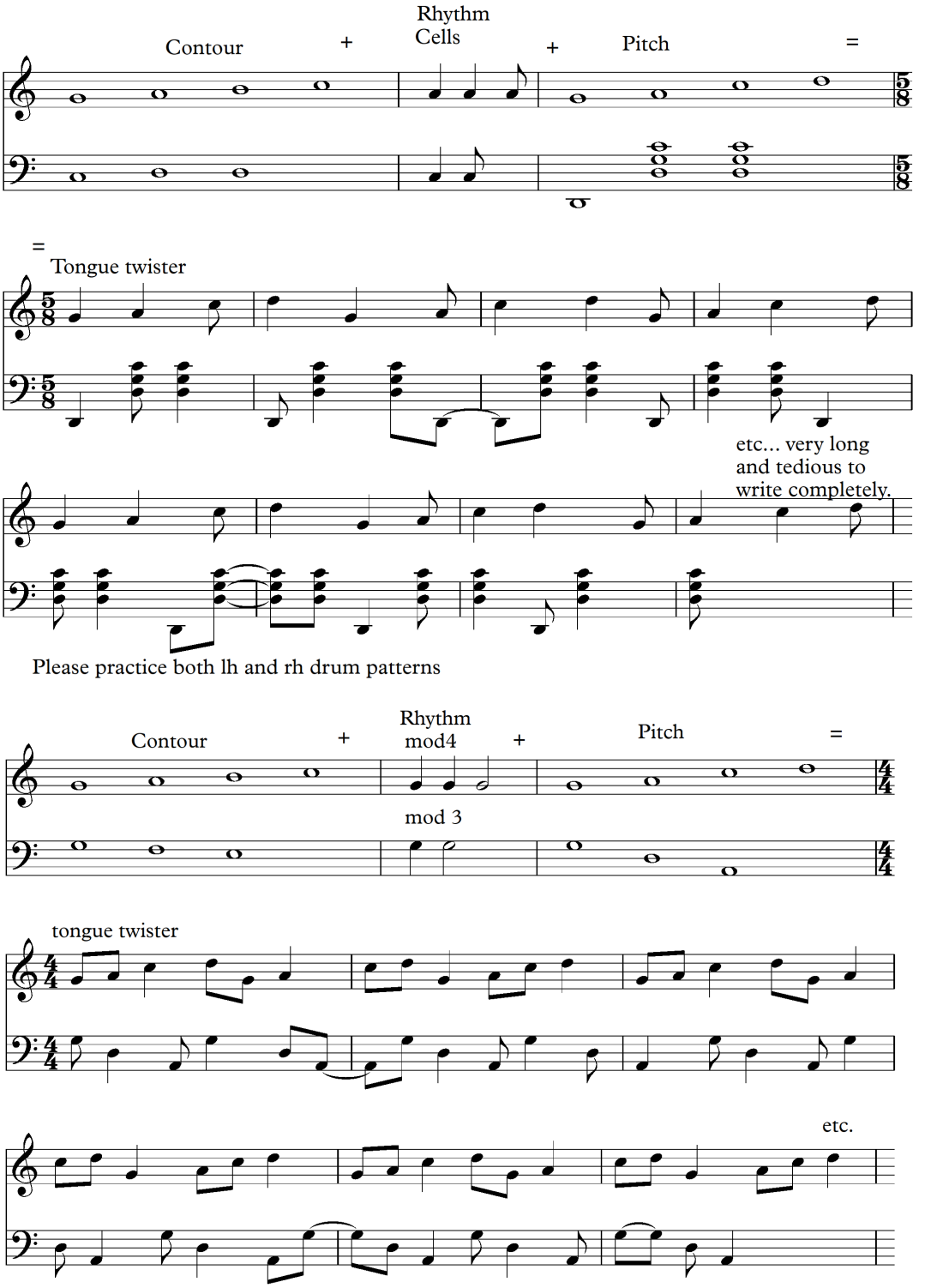


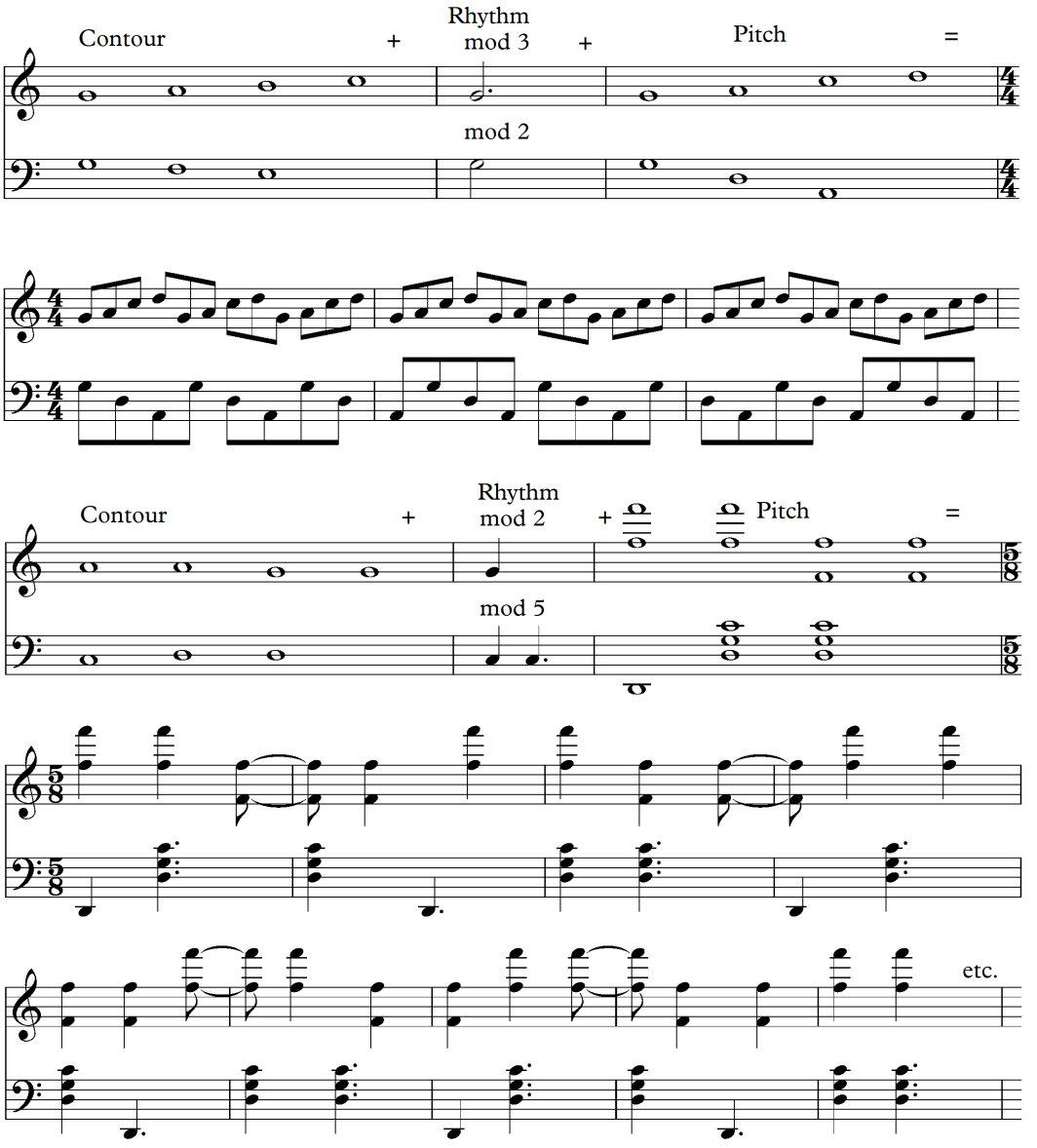
Figure 39. Some contour and rhythm cells to be combined.[32]

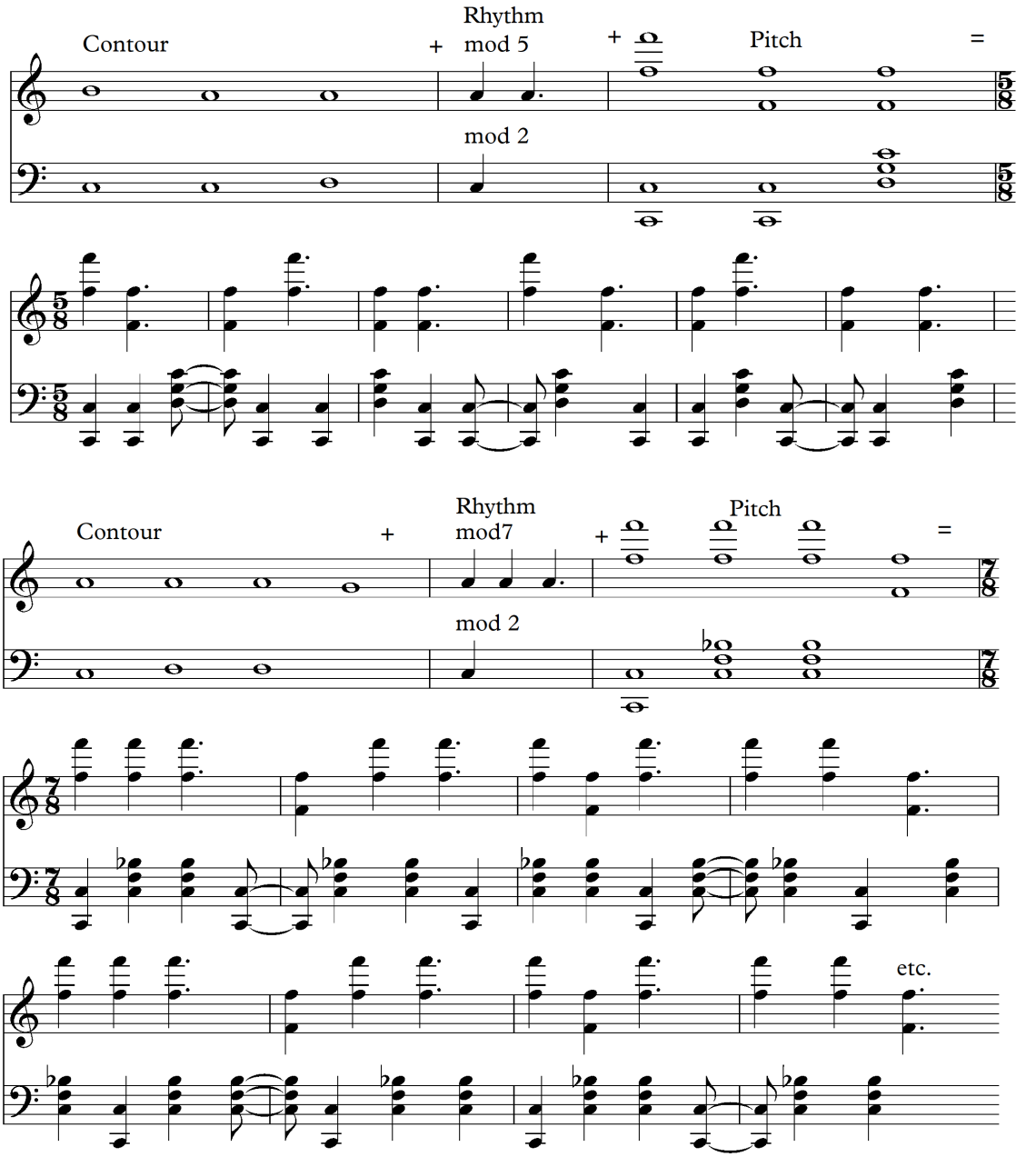
[32] The drum patterns are very difficult if combined with both hands, probably because the lateral movement of both arms unbalances the torso. The pianist becomes like a drummer when the patterns are doubled. These patterns are tough but very practical.

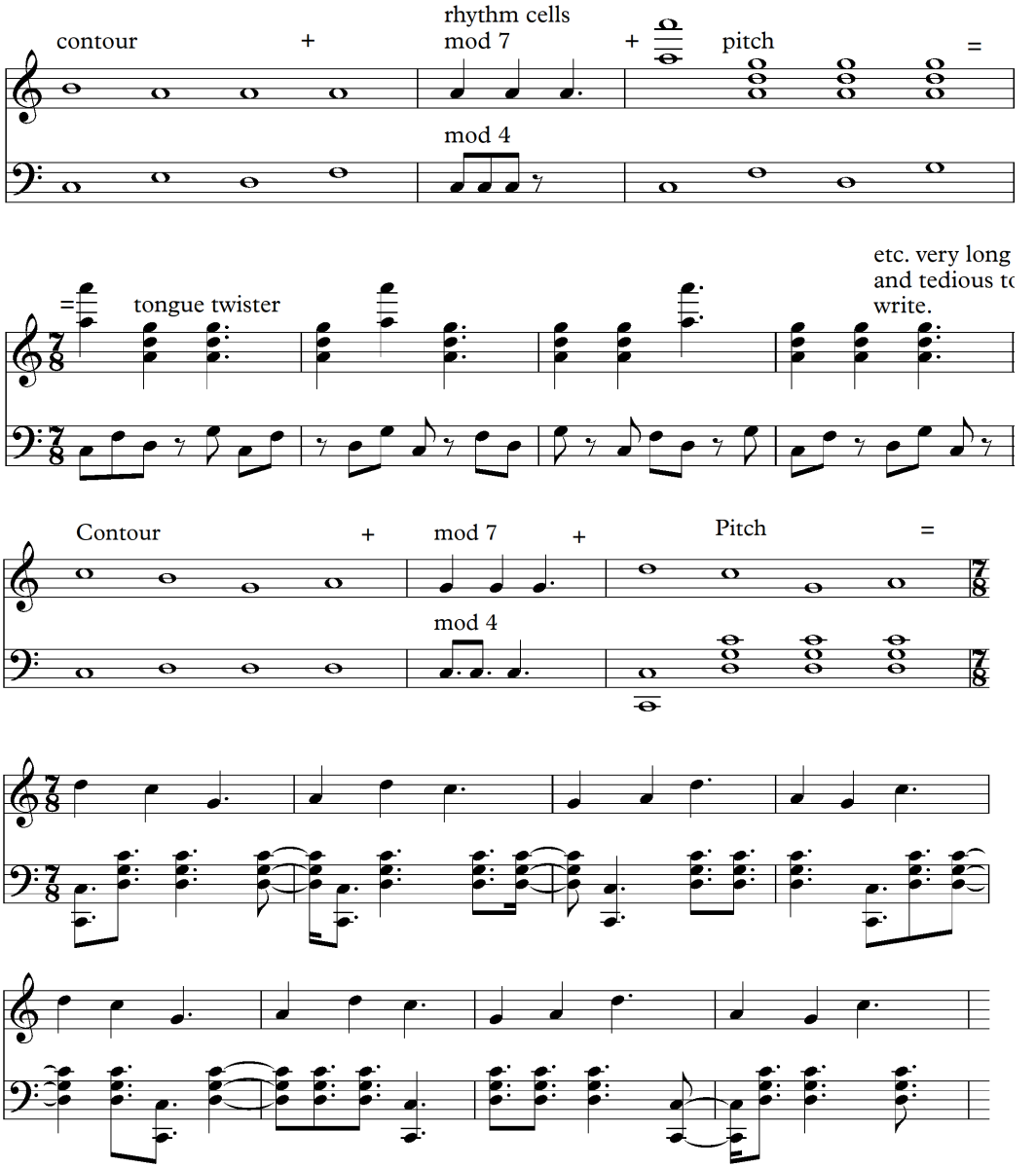
Figure 40. Tongue twisters (pages 69-78) created from combining a unique contour, rhythm, and pitch pattern in both hands.

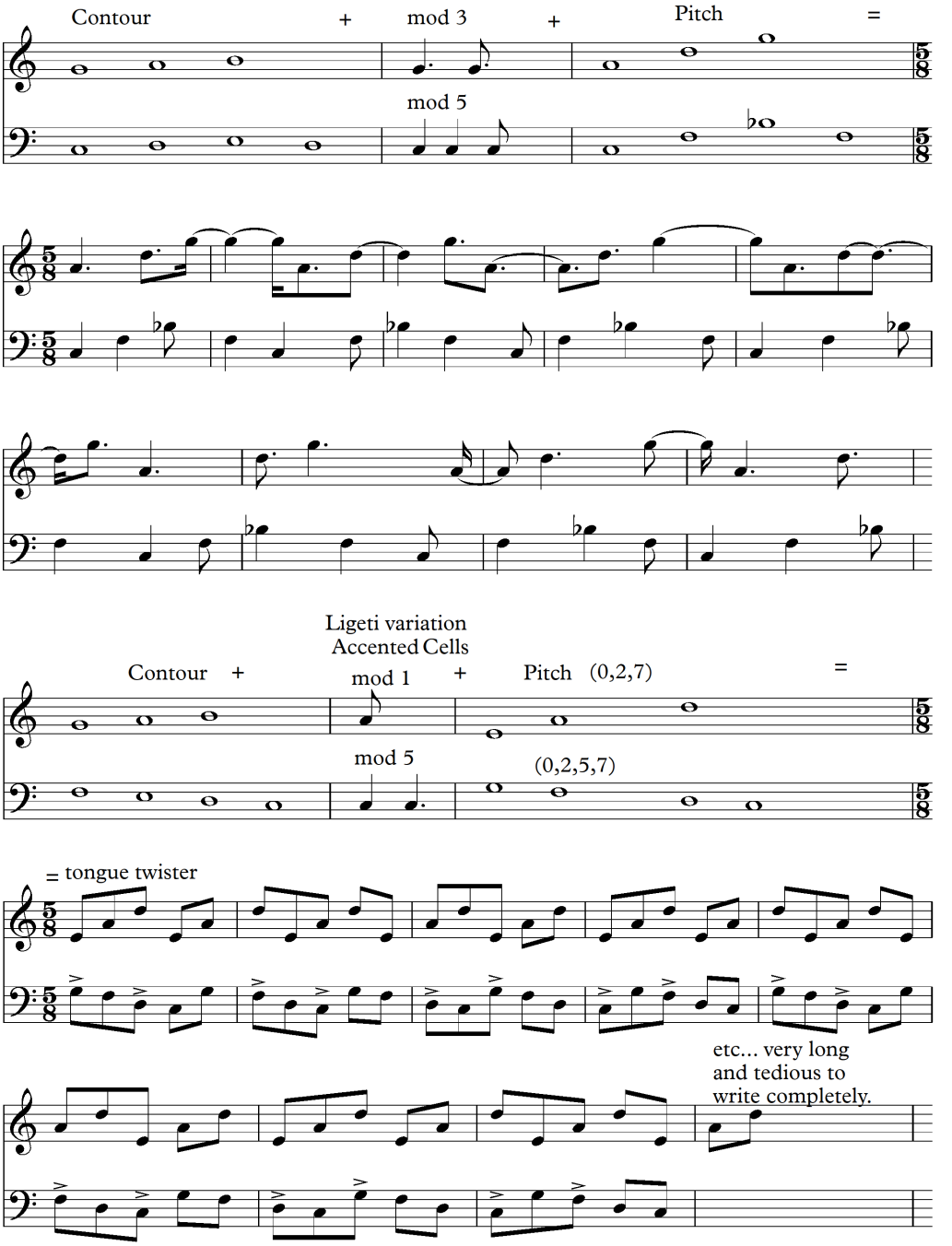


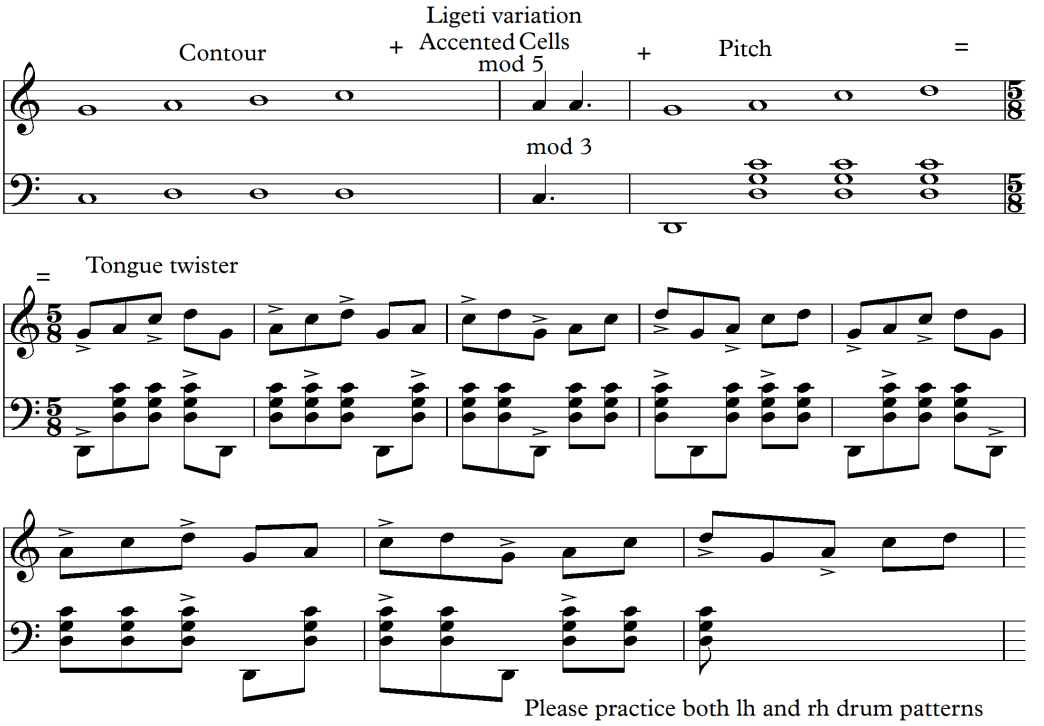

Contour
+
Rhythm
Cells
+
Pitch
=
=
Tongue twister
etc... very long
and tedious to
write completely.
Please practice both lh and rh drum patterns
Contour
+
Rhythm
mod4
+
Pitch
=
mod 3
tongue twister
etc.

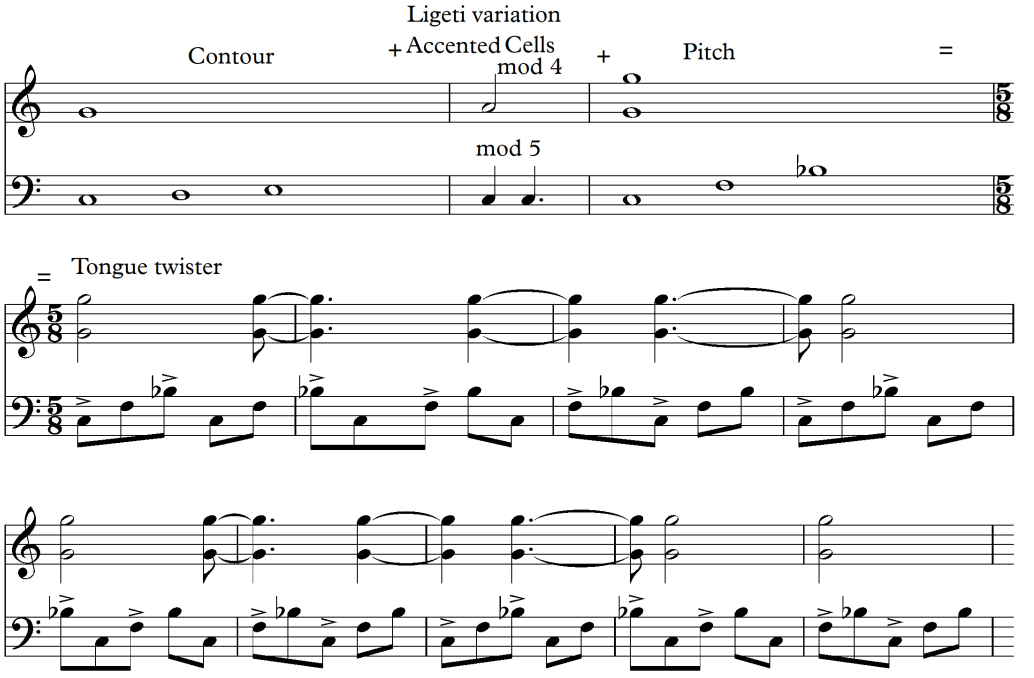

Contour
+
Rhythm
mod 3
+
Pitch
=
mod 2
Contour
+
Rhythm
mod 2
+
Pitch
=
mod 5
etc.

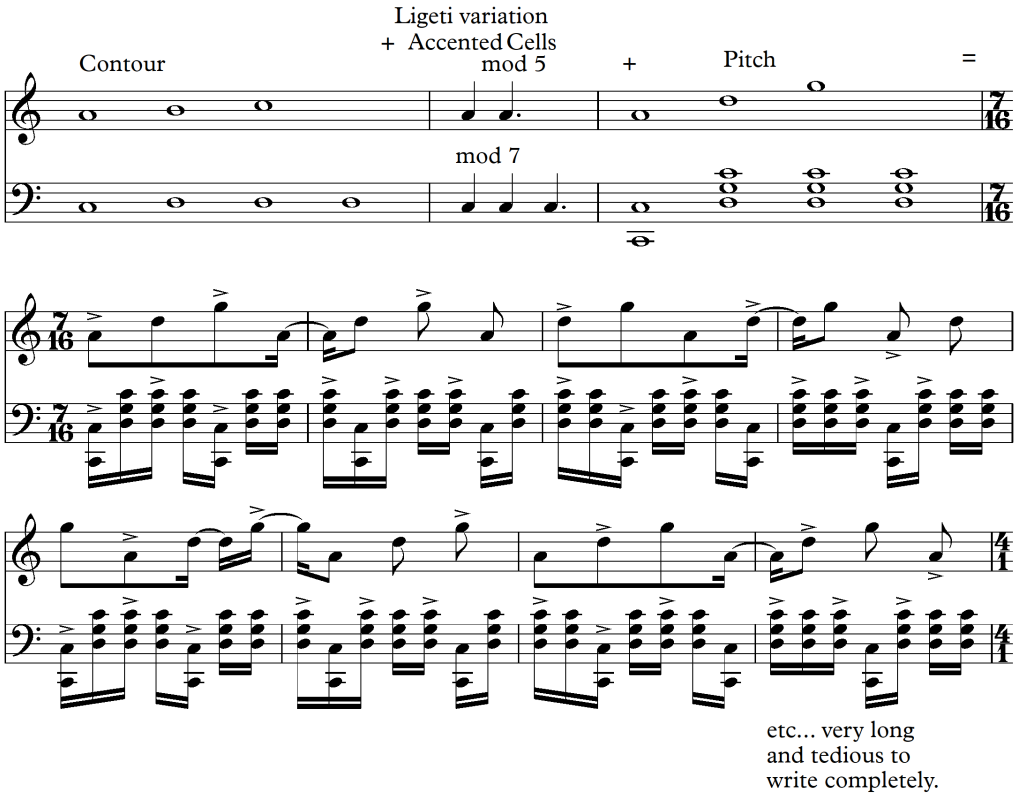

Contour
+
Rhythm
mod 5
+
Pitch
=
mod 2
Contour
+
Rhythm
mod7
+
Pitch
=
mod 2
etc.

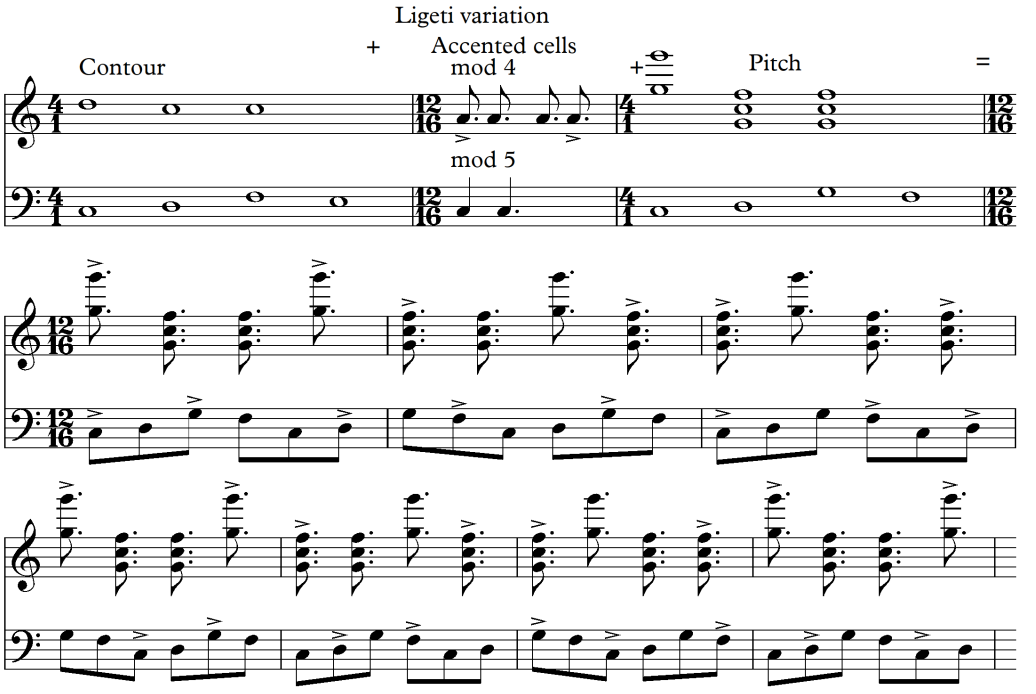

contour
+
rhythm cells
mod 7
+
pitch
=
mod 4
=
tongue twister
etc. very long
and tedious to
write.
Contour
+
mod 7
+
Pitch
=
mod 4

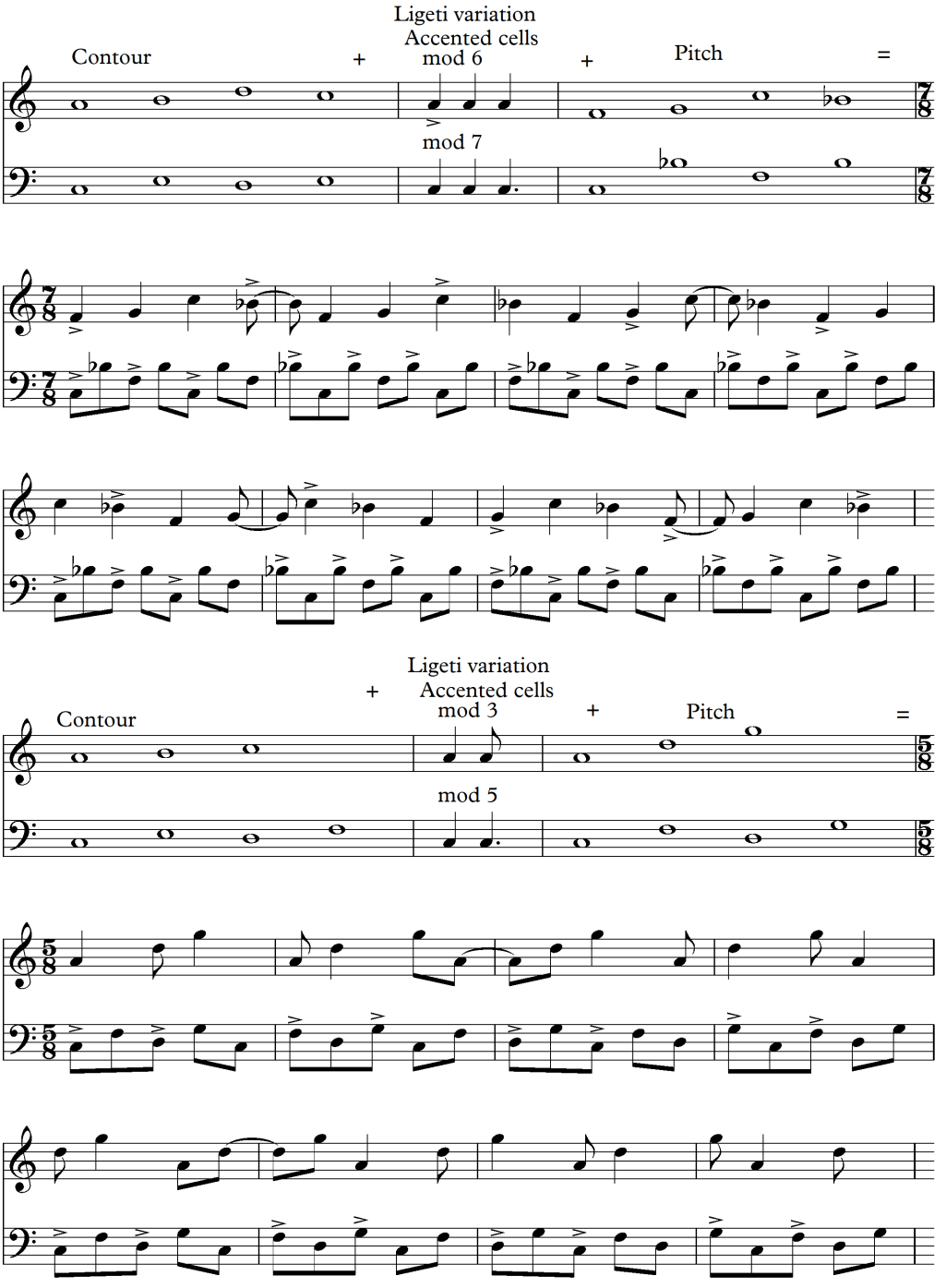

Contour
+
mod 3
+
Pitch
=
mod 5
Ligeti variation
Accented Cells
Contour
+
mod 1
+
Pitch
(0,2,7)
=
mod 5
(0,2,5,7)
= tongue twister
etc... very long
and tedious to
write completely.

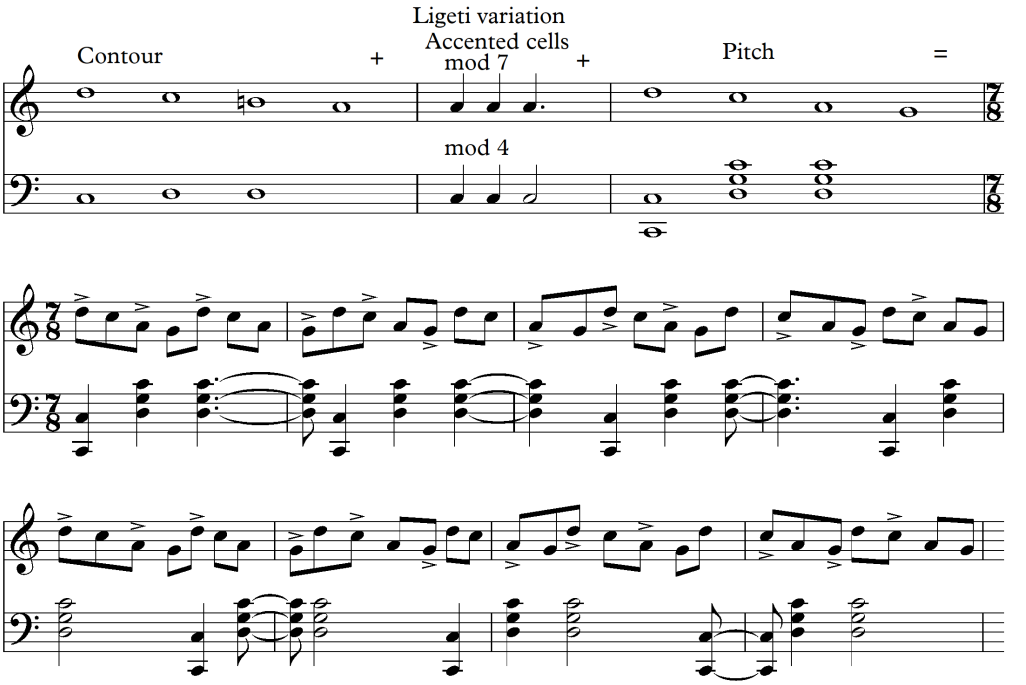

Ligeti variation
Contour
+ Accented Cells
mod 5
+
Pitch
=
mod 3
=
Tongue twister
Please practice both lh and rh drum patterns


Ligeti variation
Contour
+ Accented Cells
mod 4
+
Pitch
=
mod 5
=
Tongue twister


Ligeti variation
+ Accented Cells
Contour
mod 5
+
Pitch
=
mod 7
etc... very long
and tedious to
write completely.


Ligeti variation
+
Accented cells
Contour
mod 4
+
Pitch
=
mod 5


Ligeti variation
Accented cells
Contour
+
mod 6
+
Pitch
=
mod 7
Ligeti variation
Accented cells
+
Contour
mod 3
+
Pitch
=
mod 5



This may take a month or so to get the hang of, so be patient; the results are substantial. The sensation is akin to surfing. The rates of both hands rotating and shifting balance are not synchronized, and this requires focus and relaxation. Because music usually has arms independently rotating, balancing, and shifting weight, it makes sense to practice generalizing motion and performance of motives.

Also, the above examples are by no means exhaustive, only implicative of a much larger set of possibilities. It is expected that the reader will create their own tongue twisters to tackle or explore technical problems (like crossovers or superposition). I encourage the reader to expand on the exercise by adding five contours or new rhythms to make it more complicated. The idea, though, is to be efficient and not tedious. And remember, ***these exercises do not need a piano to be practiced!***

Other technical details and notes

Describing and poeticizing movement and music

There is value in finding real world examples of movement or ideas to compare to the technical act of playing. At a certain point, balancing the technique and theoretical aspects are not enough to attain a perfect release of musical expression. The reflection of music as some omnipotent force contained in all things liberates a confined imagination.

Playing large chords

The wrist and hand need to be relaxed, and the fingers gently fixated. Push arm forward to get strong tone, and don't slam down on keys. May have to arpeggiate.

Movement canons and canons

Movement canons are where a hand begins a certain rhythm and contour pattern/phrase, and this is imitated by the other hand at a certain time interval. If these imitated movements are swapped continuously between both hands a canonic loop is created, a very common phenomenon found in invertible counterpoint and sequences. Learning movement canons smooths out the transition to the challenge of making canons on the piano and of course improvising canons. If movement canons are too challenging try rhythm canons, then contour canons (without rhythm), and then pitch canons (without rhythm and maybe without contour). These canons can be as long and complex as desired: two voice, four voice, two hands, one hand etc.

Fugues

I believe learning contrapuntal texture in one's own hands by reading and self-study is optimal. I would only recommend a good foundation in counterpoint study and form to analyze fugues, preludes, and dances before jumping to the reading game. Small hands are going to have to fake some moments by using the pedal very quickly and jumping. Not surprisingly, learning non-tonal solfege (see page 13) and experience with the tongue twisters (see page 66) improve the playing of contrapuntal texture. Fugues and counterpoint should be played daily.

Trills

Timing all trills is ideal for performance. Here are a number of fingering patterns that should be practiced (Figure 41):

- Two-finger trill: any two fingers
- Three-finger: oscillate one note in two fingers (1 and 2-3, 2 and 3-4, etc.)
- Four-finger: oscillate both notes in two fingers (12-34, etc.)

Trills can be done technically by rotation of arm, fingers alone, or combination of fingers and arm. Moving the arm in and out on the keyboard improves endurance in making longer trills. The balance of the hand between two or more fingers rapidly is the key. Here are some preparatory exercises:

- Start slow and speed up
- 2:3 hemiola, 3:4
    - Trill and melody or accent pulse
- Big circles small circles
- Finger switching

Trills usually take a while to master, so don't give up if you can't get them right away. Make sure to practice left hand trills.

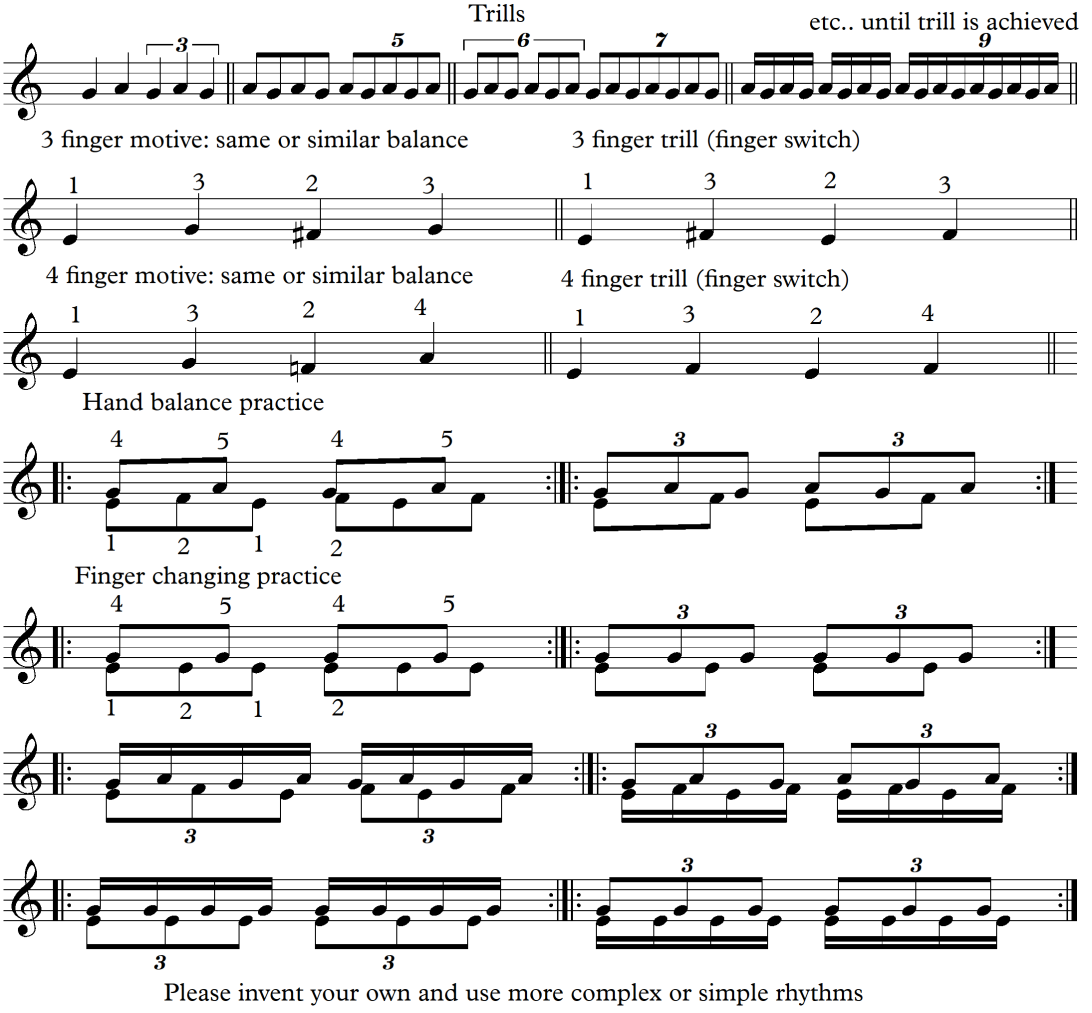


Figure 41. Some trill, hand balancing, and finger changing exercises.

Tongue twisters in a single hand

A difficult extension of the tongue twisters is playing two rhythms in one hand in the form of: alternating dyad and repeated note, tremolo and repeated note, repeated note and repeated dyad, etc.

Transposing works

Don't underestimate the exercise of playing many transpositions (P's) of a phrase/theme/section/piece when learning or memorizing music. It forces one to think and look closely at the score: harmonies, intervals, motives, become more prominent and the eyes stop glazing over notes. The benefits are equivalent to practicing R, I, RI variations.

Practicing and memorizing without a piano

It is possible to memorize and practice music without a piano (see page 59). Working this way is arguably more efficient than playing over passages because the inner ear, visual memory, technical organization, formal hierarchies, and verbal understanding, are not distracted by the sounding piano and therefore can be intensely developed. Imagining a piano and "practicing" on it is acceptable when practicing this method.

Arpeggios, stride waltz or rags 1-2 octave jumps, scales

It is helpful to practice these with rhythmic variations or improvising. Apply the same principles of rotation, balance, and weight transfer to these concepts. The only new technical effort is lateral movement.

If practicing scales, use them all at once in improvising. Utilizing color from mode mixture, modulation, and 20th century scales is a useful exercise to get familiar with the modern palate of harmony.

Avoid boring practice

If you are trying to memorize music and the process is boring either you need to rest or the process has to change! The best remedy in my opinion is making variations of the music and focusing on the really hard spots. Playing a few measures in all keys P, R, I, RI (in most cases that means 48 possibilities) as a sort of loop can really open up insight into a score and focuses the mind on the small structural details of musical ideas. Listening to podcasts or even other music when walking through variations of pieces can alleviate boredom. *The most interesting way to learn music is always the best way.*

Never settle

Never settle for a specific style or routine, and relentlessly seek out harder challenges that at first might seem insurmountable.

Afterword

This book was written with the central goal in mind to help the musical dilettante approach the level of virtuoso if so desired. The overarching focus on mastery of solfege, rhythm, memory, and movement will make it possible for any motivated and dedicated learner to climb great heights as a musician; or at the very least reveal what heights that might and can be reached.

Appendix

More tools and perspectives on using tone rows

Tone rows can be organized with shapes other than circles (Figure 42) in a similar fashion, first seen on page 31. As an introduction and practice method, circles are the easiest way to visualize and grasp tone rows and how to simplify the possibilities of tone rows. However, when *composing* it is worthwhile to use multiple shapes to organize rows. A few examples that come to mind are using rectangles, triangles, diamonds, bipeds, lines, and/or square shapes. These compact shapes combined with the clock diagrams make transposition and inversion much easier to do manually and can be customized for certain rows. Altogether, using circles and these shapes help the organization and composition of melodic and harmonic materials. (see Figure 43 and Figure 44)

Figure 42. Mod 12 clock and points empty, and with partitions of tetrachord set (0,2,5,7).

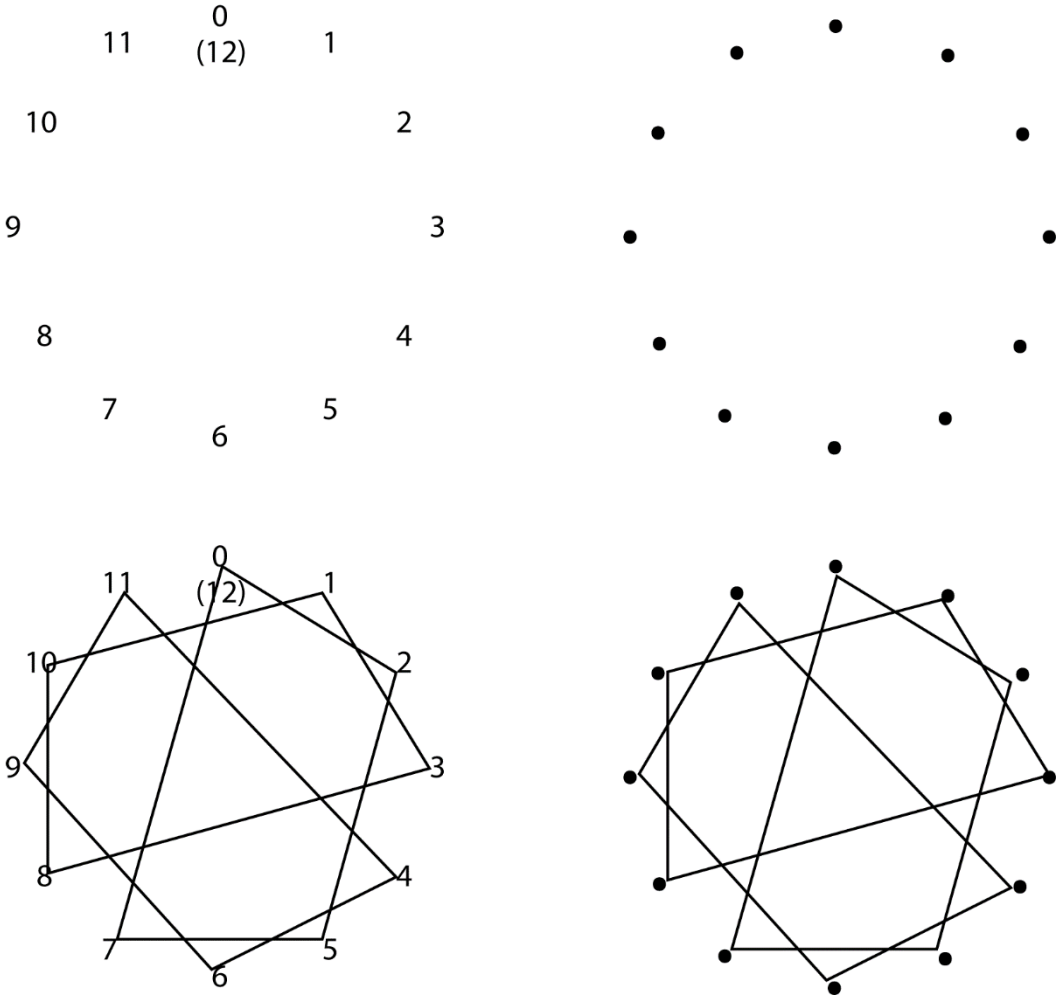


Figure 43. Some possibilities of shapes/organization of 12 points and 12 numbers a—i.

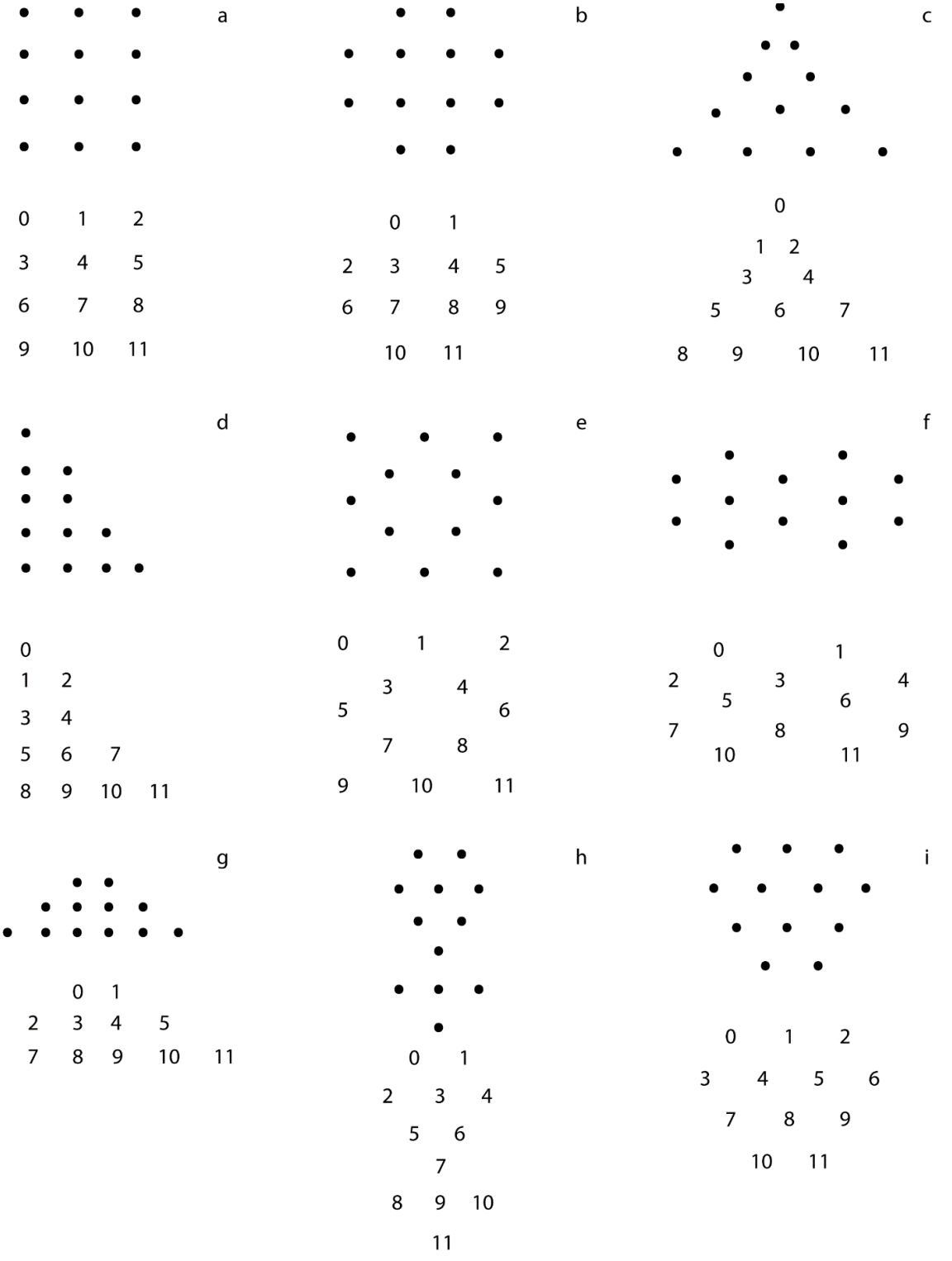
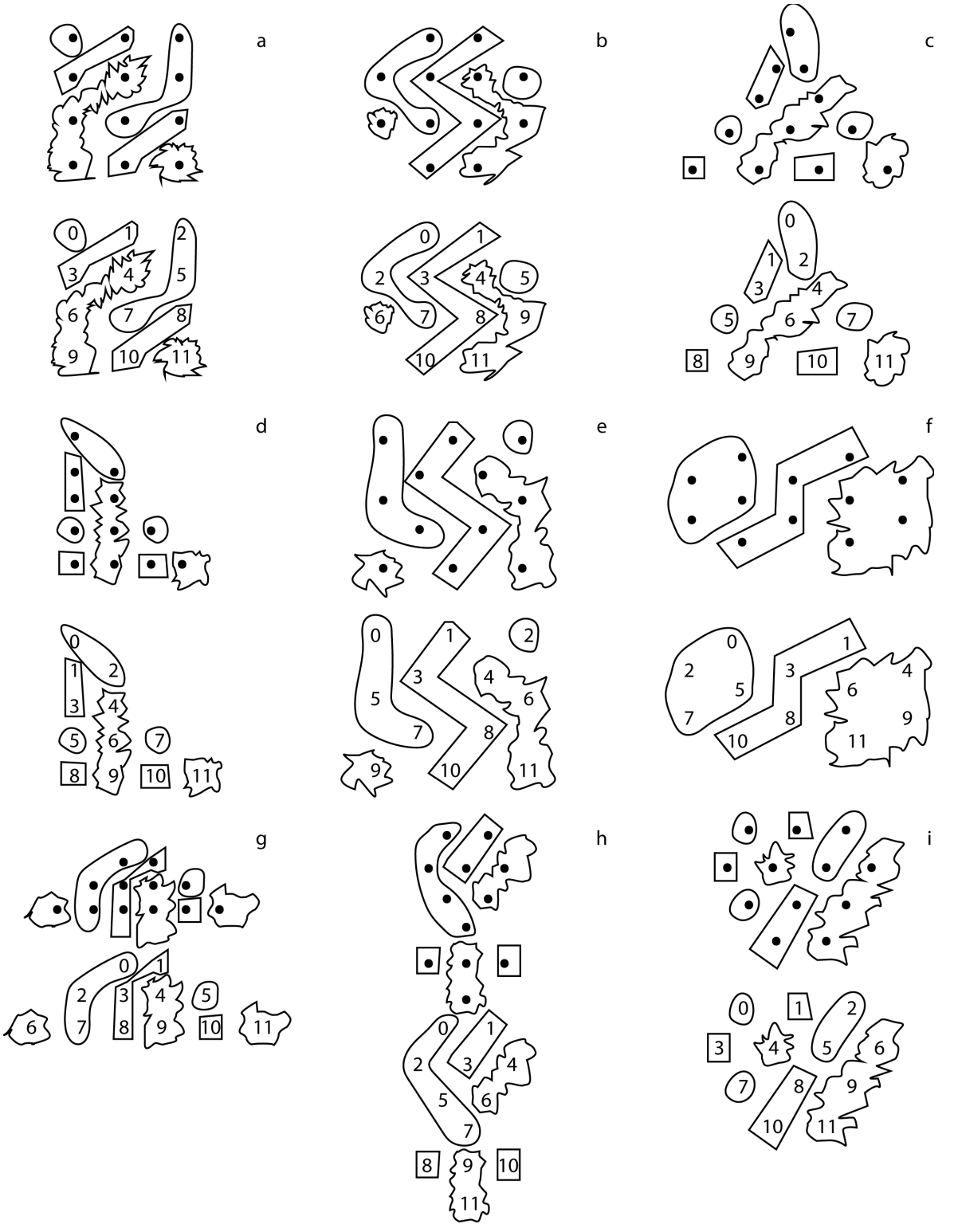


Figure 44. Partitions of a tone row i.e., Figure 42. Smooth (0,2,5,7), straight (8,10,3,1), and jagged (4,6,9,11). a—i. 12 points and 12 numbers.



This leads to a weird fact that *any organization and partition of twelve unique points or dots (in any dimension) is a tone row.* Also, the numbers are place holders for the points and any organization of these numbers is possible (circle of fifths (+5), thirds (+3,-1) etc.). Depending on compositional goals, the arrangement of points and the organization of numbers can be customized for a particular end. These are especially useful tools for *composing* and are not necessary for the performing artist; nevertheless, they offer interesting perspectives on phenomenon that are taking place musically.

Other mod n: Rhythm and Contour can be organized like tone rows

It is more or less implied that pitch, rhythm, and contour (even anything) can be organized like rows at levels other than twelve, and that all the tools to organize pitches can be translated to contour and rhythmic elements. I refer to contour and rhythm "rows" as *cells* because of the relatively shorter length of the material; however, rows and cells can be interchangeable as terms. Variable sized **clock diagrams** mod n and **shapes** mod n are especially useful organizing tools for rhythmic and contour elements, since they are typically grouped smaller than mod 12 (although they can be grouped larger than mod 12 too). These tools are easily customized for compositional goals, and are useful when finding inversions, transpositions and/or other variations/transformations. (see Figure 45 and Figure 46)

Again, mod n points can be organized in any shape(s) (boxes, triangles, diamonds, circles, etc.), dimensions, and counted in any order. All of these strange, organized shapes connect directly to waves, space, and circles: elements which are ubiquitous in descriptions and our understanding of the music art form.

Figure 45. Different mod n "clocks". Can be arranged into shapes and partitions like Figure 43 and Figure 44

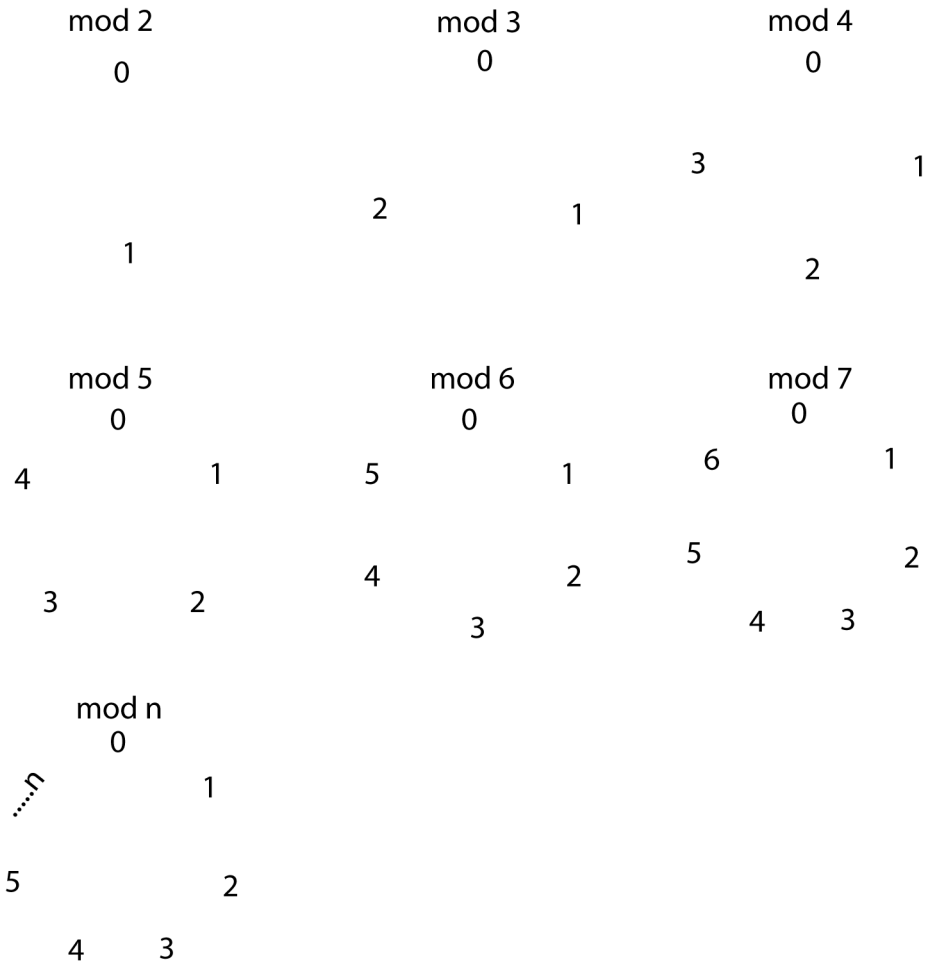
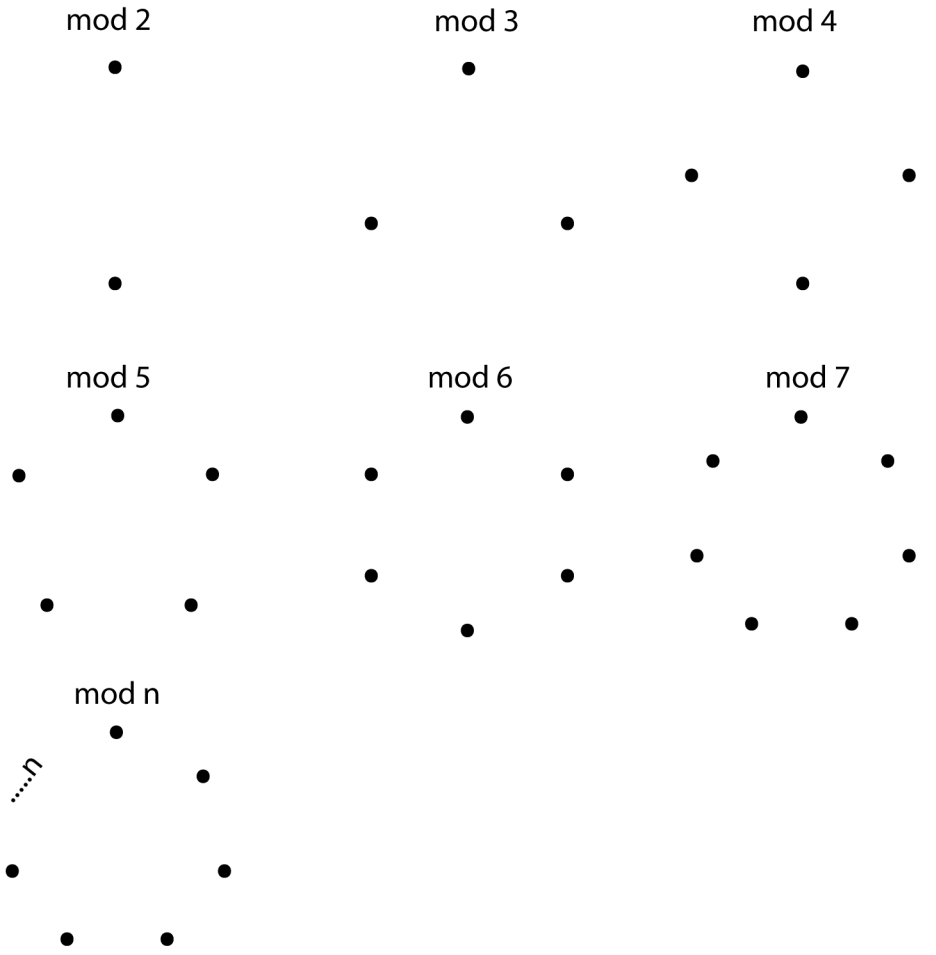


Figure 46. Different mod n "clocks" as points. Can be arranged into shapes and partitions like Figure 43 and Figure 44.



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About the Author

Not a prodigy or supernatural talent, Joel Parker was at first a guitar player. Although his migration to the piano was late, in the long run it was a wise choice for an aspiring composer. Playing piano music from Baroque to present day is an integral part of his composition process, stirring imagination for creativity and solutions. Parker is the writer of “Meditations on Piano Practice” and a soon-to-be-released book on composition to help musicians develop independent voices. His ambitious music, like the “Saxophone Fantasia,” “Piano Trio,” and “Violin Prelude,” shows an artist with sensitivity to grand forms.

Performing artists, teachers, students, and dilettantes have to be efficient in their busy schedules to practice music. These short, comprehensive exercises stimulate, refresh, and challenge an intermediate to advanced musician by providing a broad introduction to fundamental technical and musical skills.

All exercises can be practiced without a piano!