GENERATING MUSICAL MATERIAL

a playful approach to nerdy things

inspirations, formulas, explorations, exercises, examples, constructions, compositions, compositional material, etudes

by Giotto Roussies

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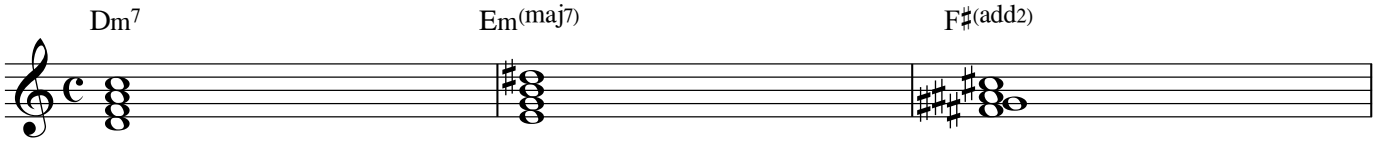
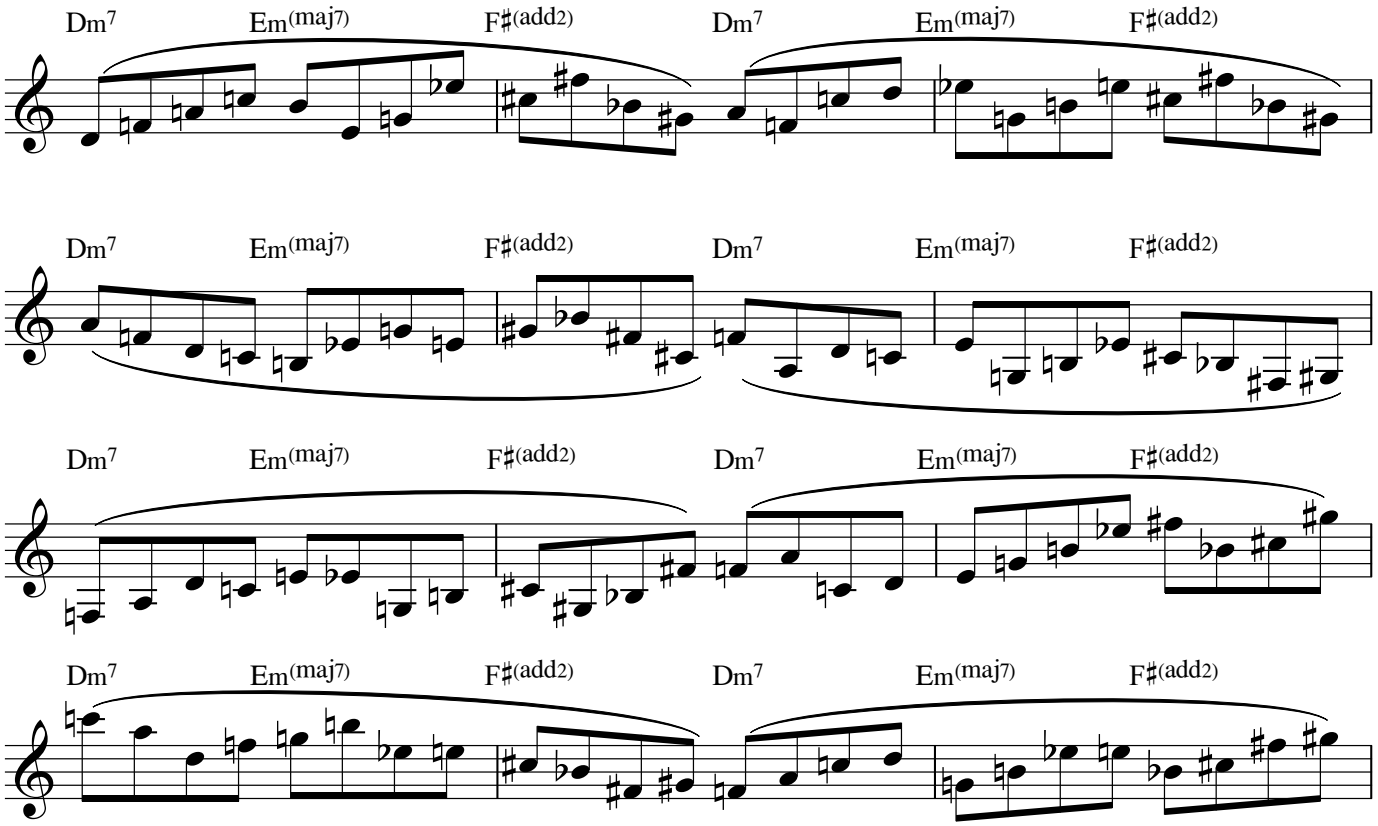
12 tone Structures
Creating Blocks

How can i find a way to easily create 12 tone rows (without using too much brain CPU)?

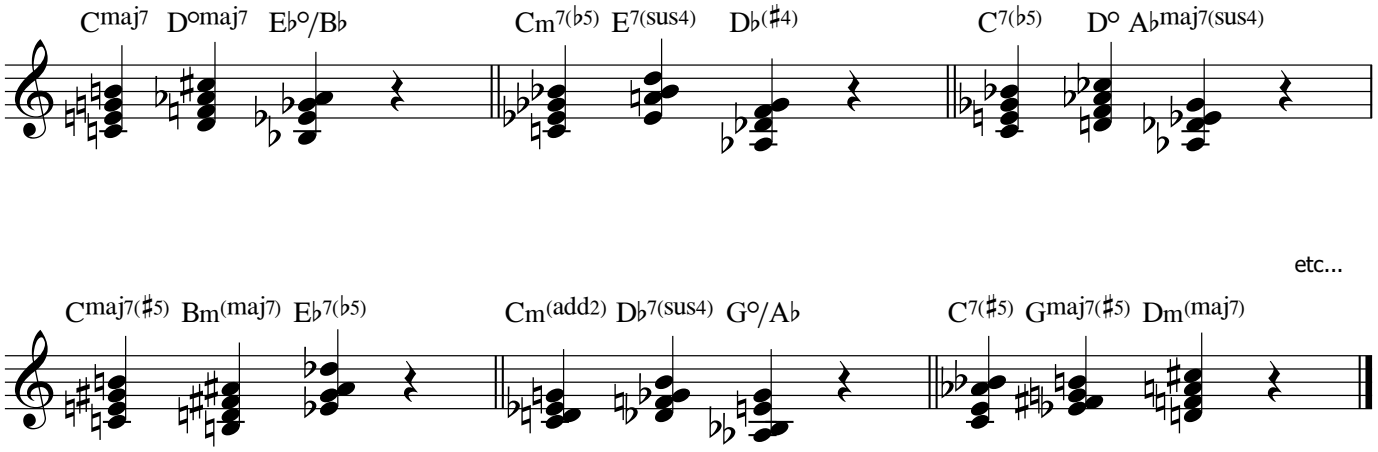
1.Let's create three blocks of four notes that cover all twelve tones, like that, I only need to remember 3 shapes.



2. By sticking to the order of the "chords" and just inverting or changing the direction of the notes I will always be playing a 12 tone row. Here is a random example.



3. Let's look for more variations of this scheme! I just wrote down a few, I tried not to repeat the qualities of the chords.

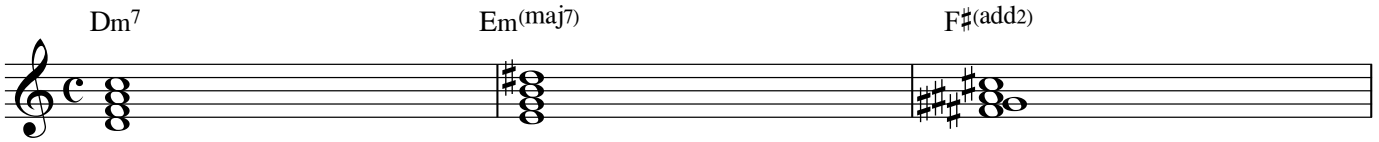


etc...

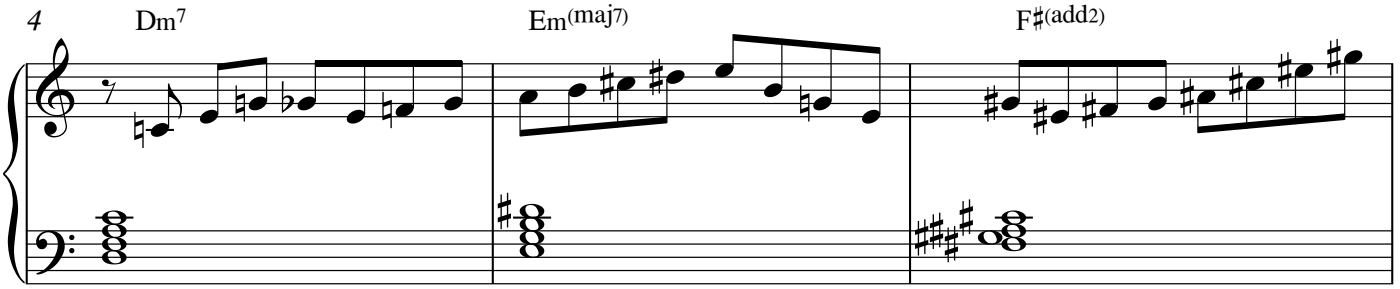
Soloing over the Chords

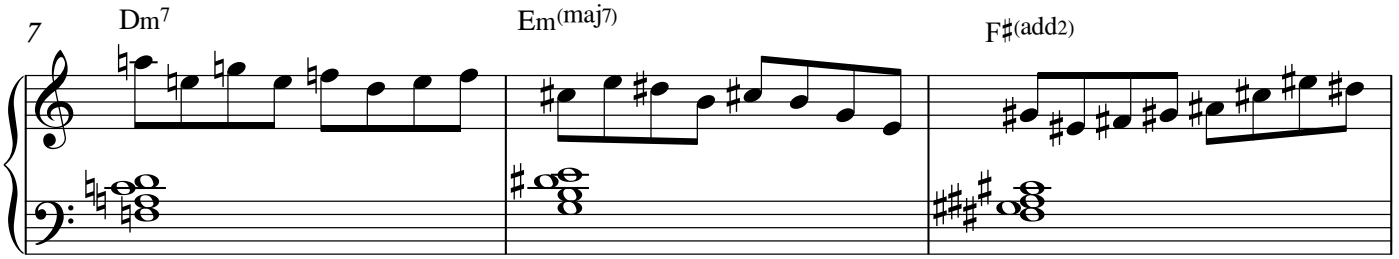
1. Let's go back to the original three chords and play arround with other approaches.
We can treat them as changes for Jazz improvisation and play the voicings in the left hand
while the right hand does what a Jazz improviser would do when seeing these chords on a lead sheet.
the first choice for scales would probably be: D dorian, E melodic minor, F# ionian.

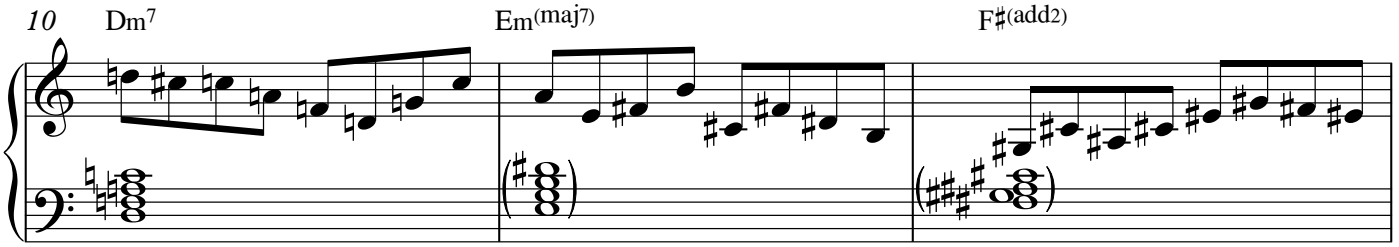
Also try to change the chords every second and fourth bar.
Try to play the left hand sequence with inversions.

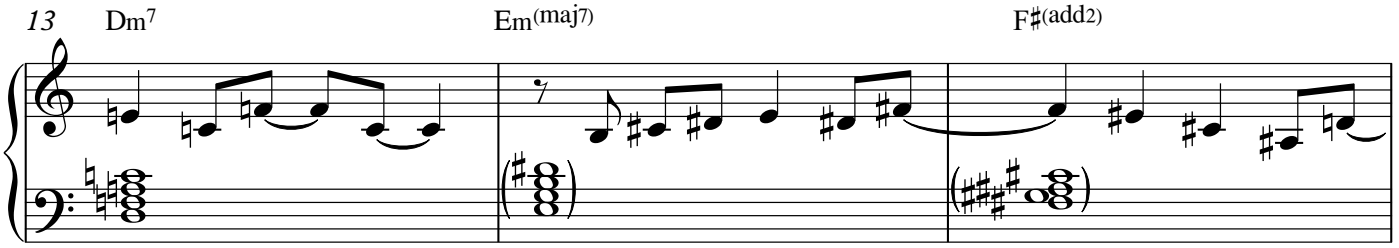


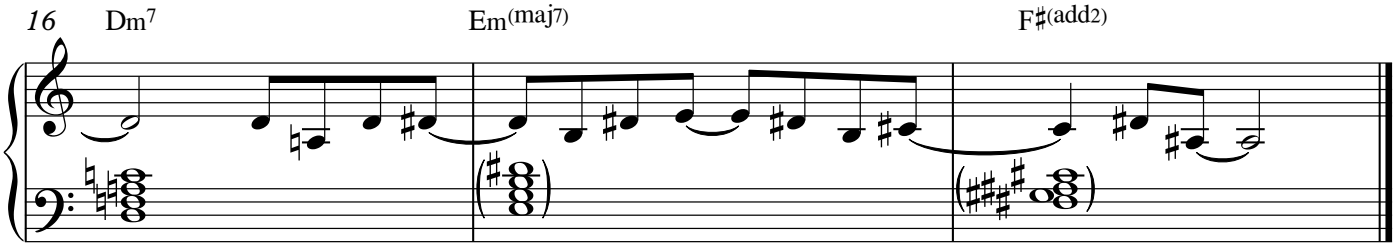
2. Here are some fun Jazz lines.







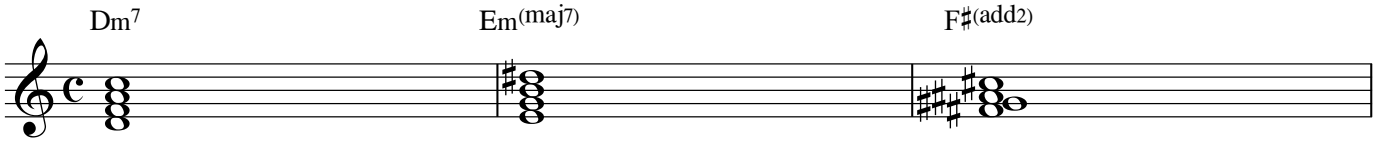




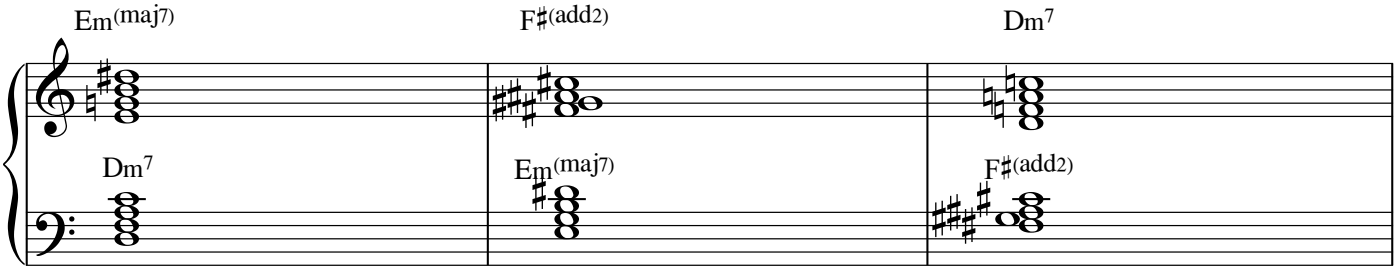
12 Tone Structures
Harmonic Movement 1.

How can I mix these chords to create other harmonic forms?

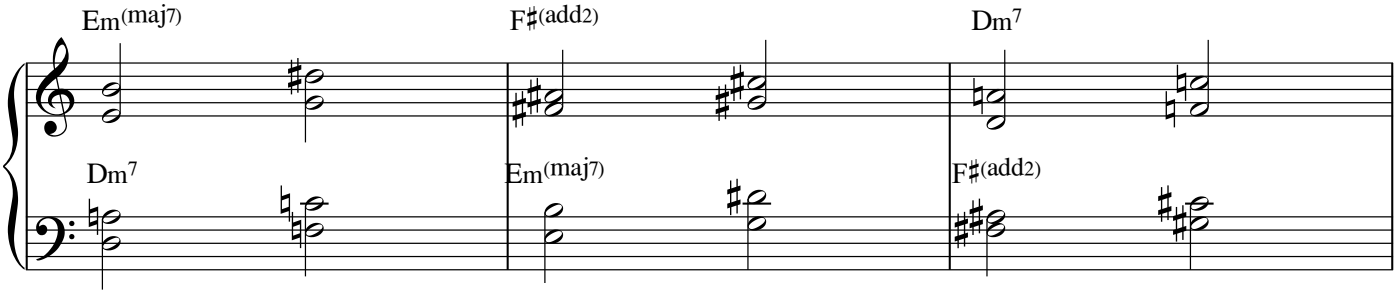
1.Let's get back to the three blocks we started with.



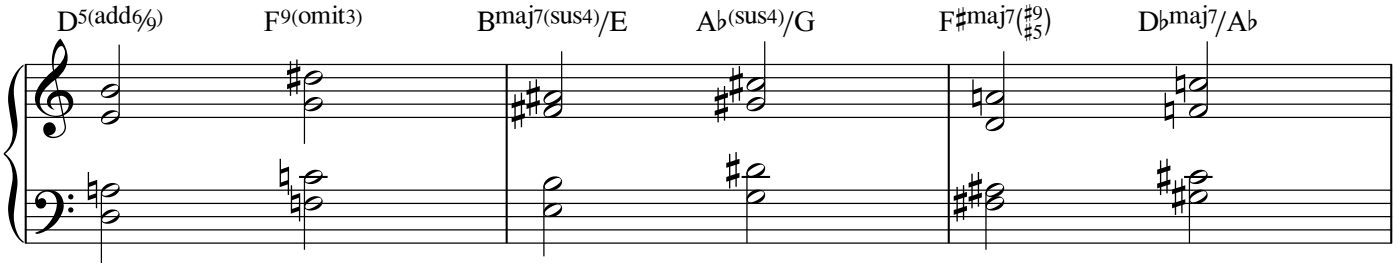
2. First let's pair them up by stacking them on top of each other consecutively. This harmony is very dense so lets thin it out a little bit.



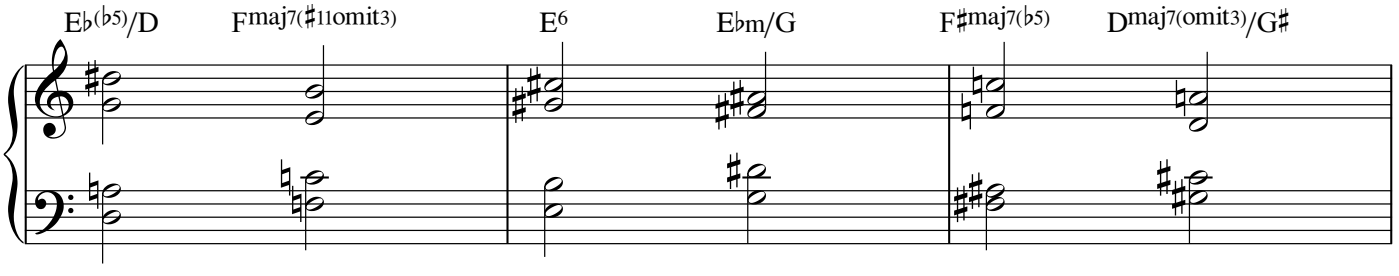
3. So we make pairs out of each block and pair it with the pairs of the next. Wow! this is a cool chord mixing tool! check out the colors.



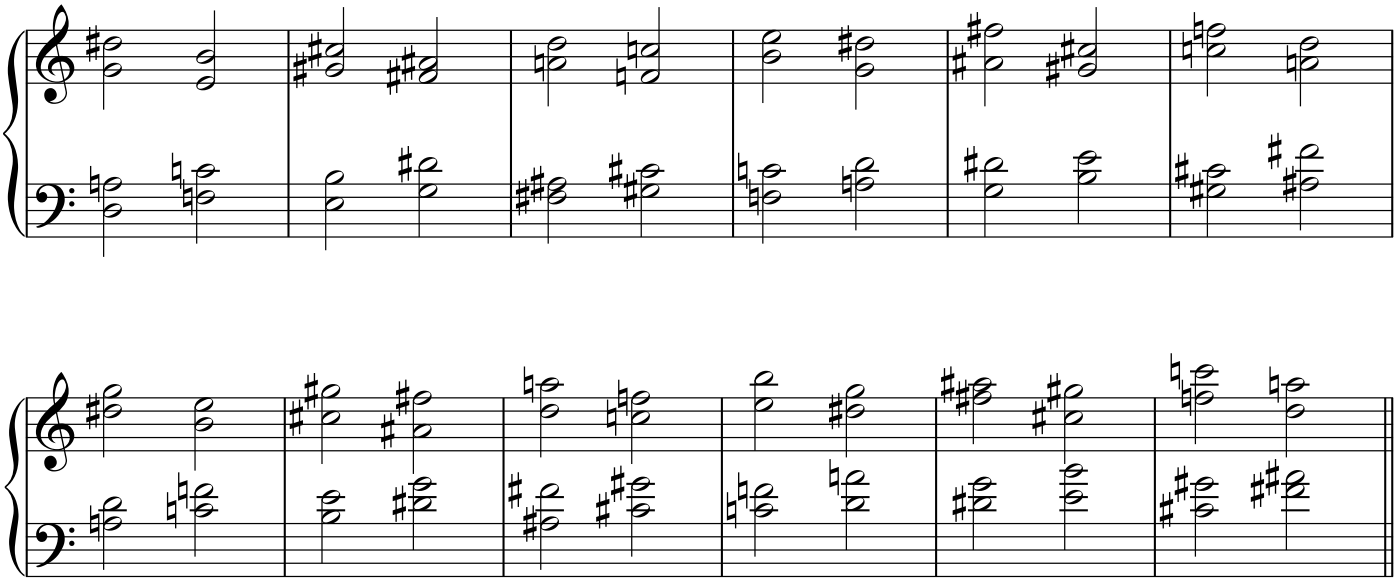
4. Here is how we could call the chords.



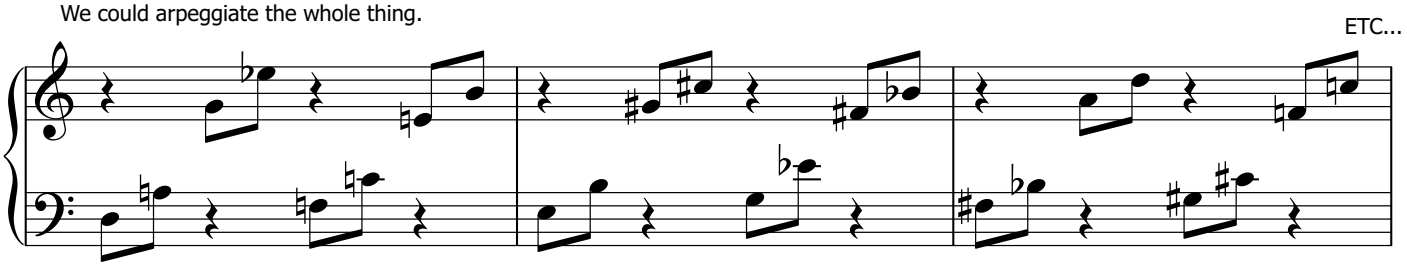
5. Let's see what colors we get when playing the upper pairs in reversed order. This feels a little more dynamic because it creates a counter movement to the lower voices. Also the harmonic colors sound interesting. How can we take up the sequence?



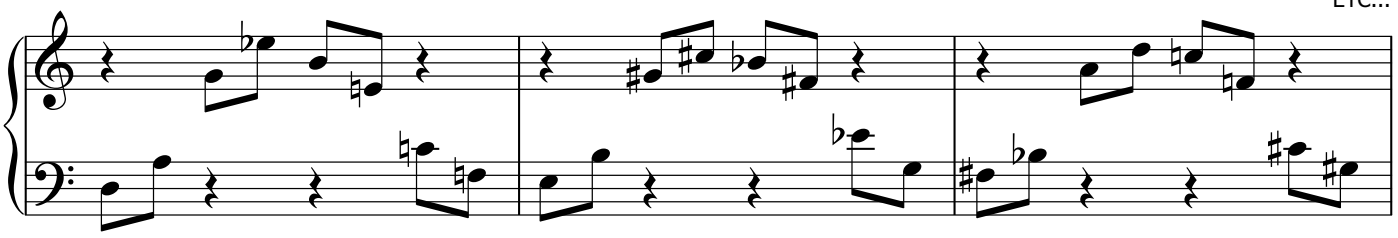
6. Let's do the same thing with the inversions and we end up with this. Try to name the sounds of the chords.



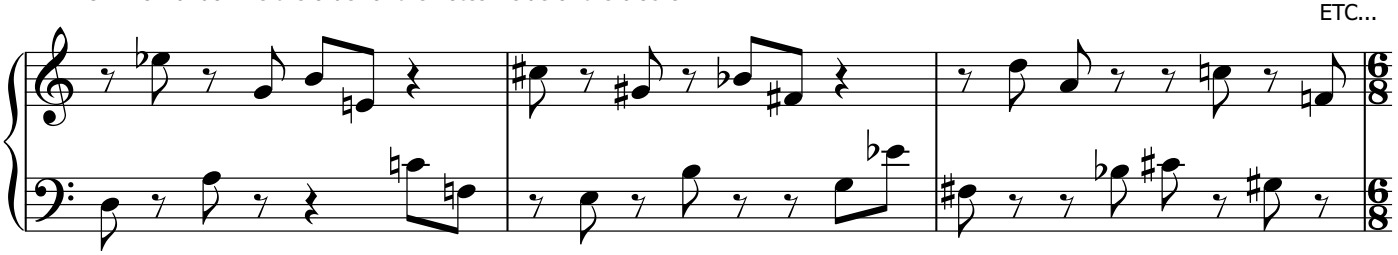
7. Now what can we do with this? Let's play arround and try to find some variations on how to orchestrate the sequence.
We could arpeggiate the whole thing.



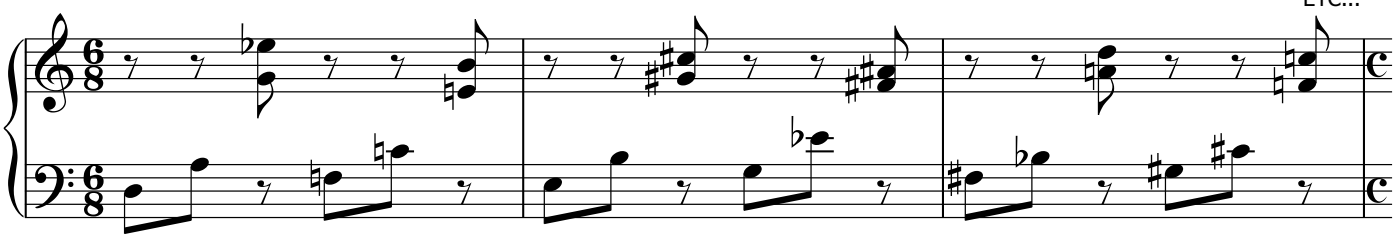
8. We can change the directions...



9. ... or randomize the order of the notes inside of the blocks.

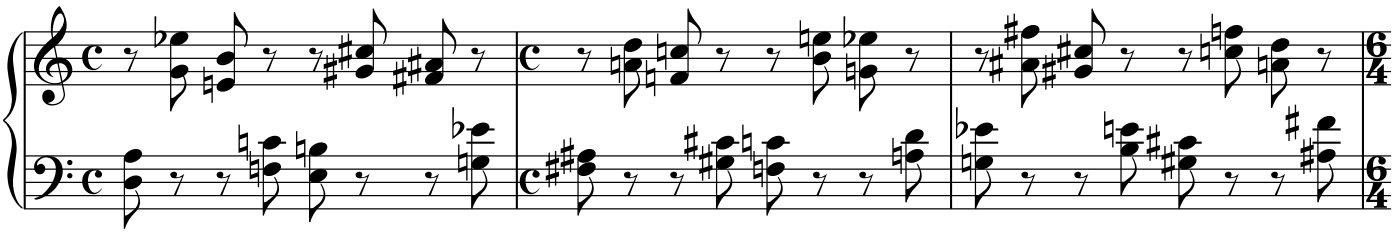


10. ...or use piano techniques that are similar to drumming and combine intervals with arpeggios.



11. This one is purely intervalic drumming.

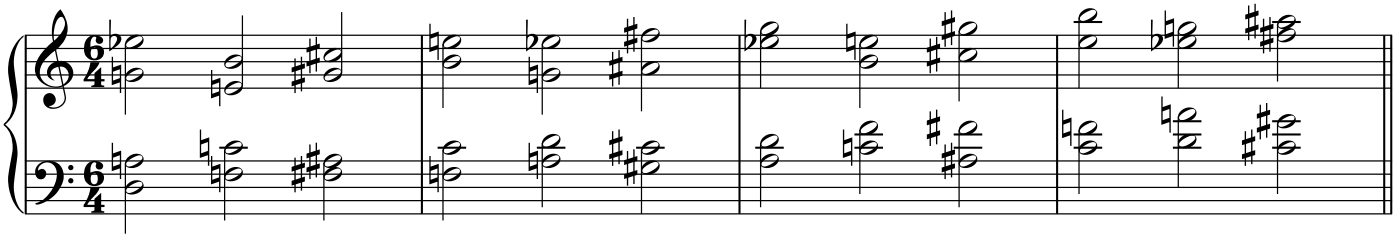
ETC...



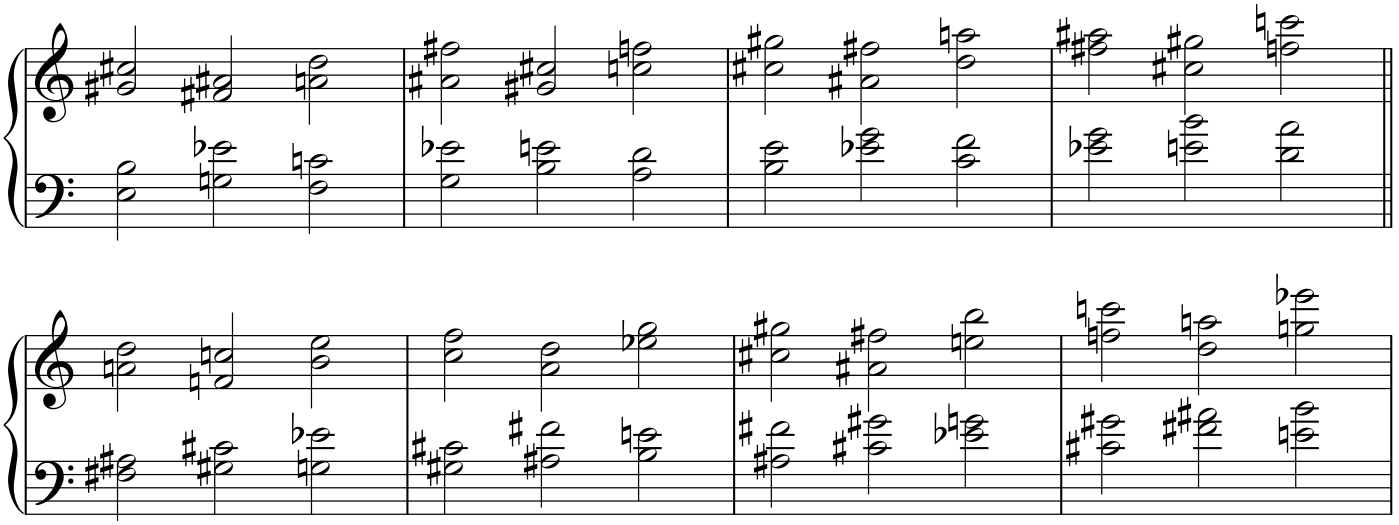
12. These examples can be handled like exercises. Try to play them through the whole sequence as written in point 6.
I advise repeating single bars before going to the whole sequence.
All these exercises will give you a lot of flexibility and ideas when it comes to free improvisation or composition.

Adjustments and Vatiations

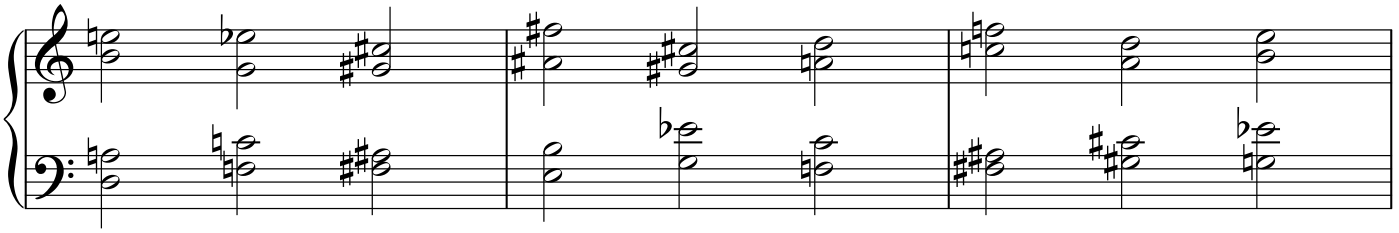
13. The question arises: "do these examples all comply to the twelve tone rule?" and the answer is sadly no.
This is due to the fact that we have three blocks of four notes and can only pair two at a time, so
one Block either stays alone, or, like we did is matched with one block that has already been used thus breaking the rule by repeating notes before all twelve have been played. This example shows a clean 12 tone approach.
In this case I just didnt mix "the outsider" F#add2 with another block but left it standing alone.

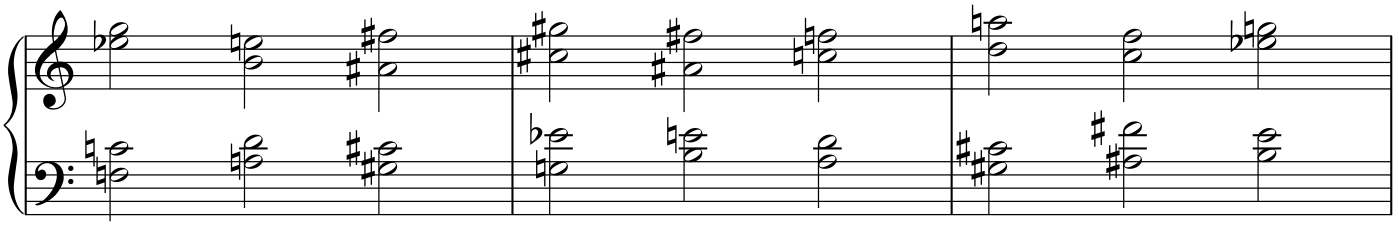


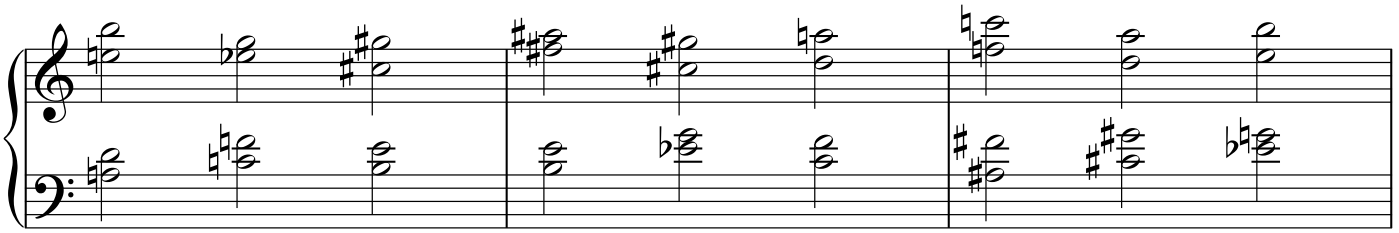
14. When listening to this, it feels like the F# Block is our point of relief. Let's hear into the variations with the other two blocks as "outsiders"

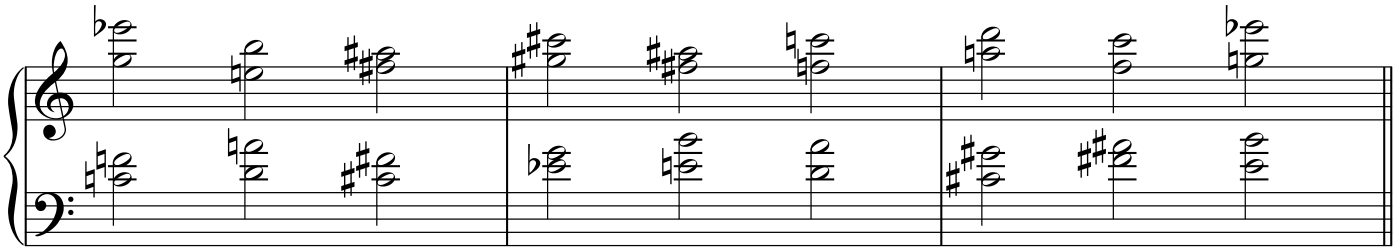


15. How do we make this sound more interesting?
Since the 12 tone rule states that you can repeat a pitch once all 11 others were played,
we can now change the pairs and the outsiders each bar. Note that I had to do some adjustments
to omit tone repetitions by pairing different inversions.

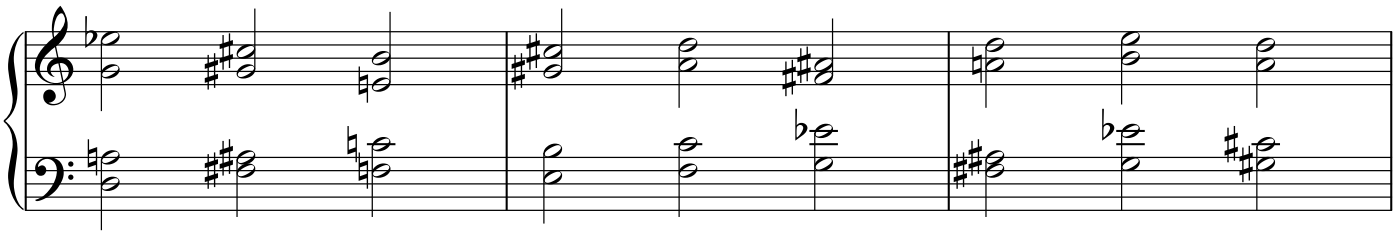


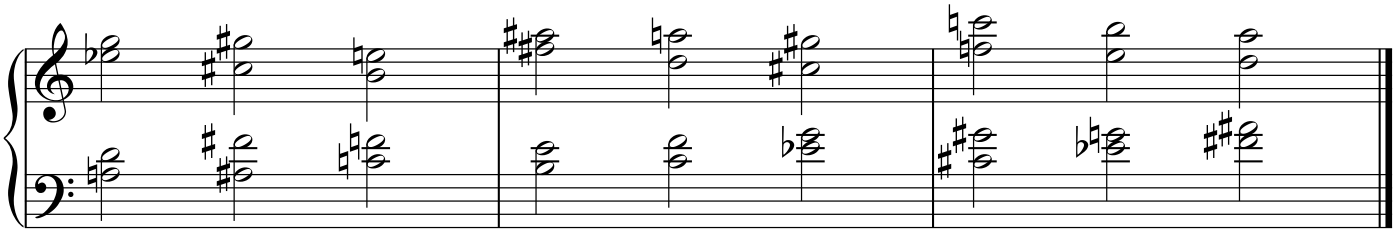






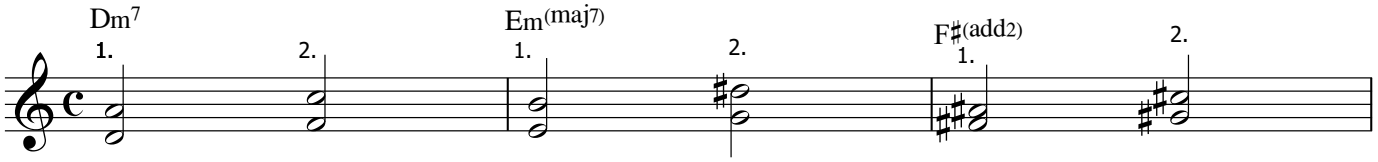
16. To furthermore add variation we will put the "outsider" chord in the middle of the
pairs, this resolves the problem of the tone repetittions so we will stick to the original inversions this time,
but skip inversion 1 and 3 in the sequence since they do cause tone reppetitions and distort the flow of the sequence...



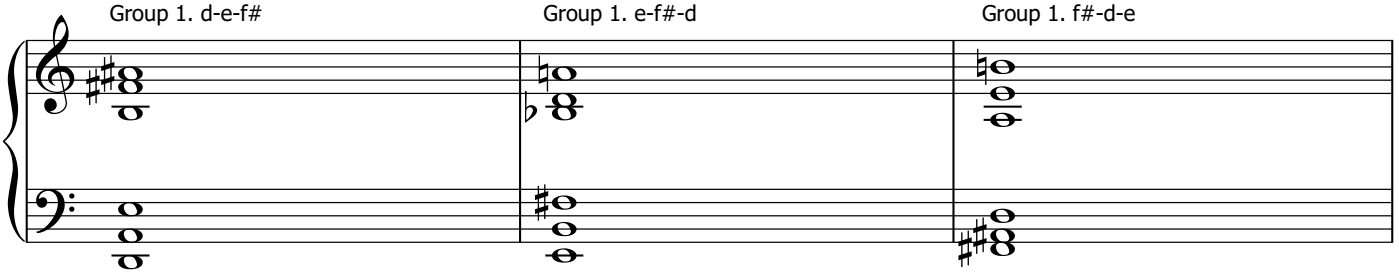


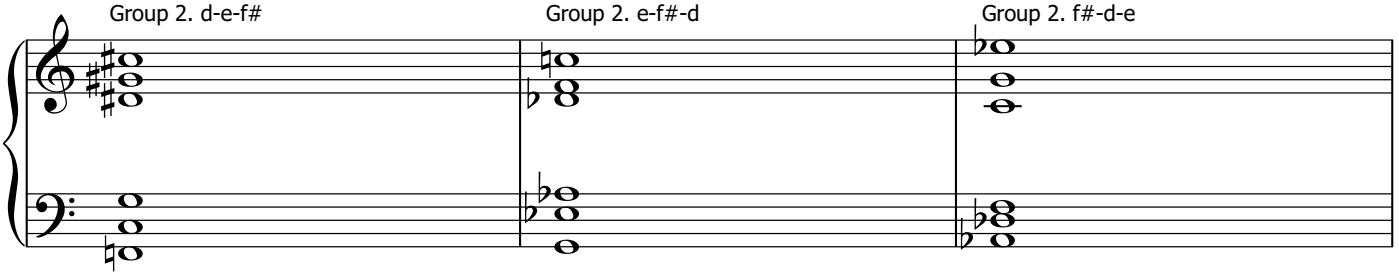
12 Tone Structures
Harmonic movement 2.
what if I take two notes from each block to create six-note chords?

1.Lets pair up our chords first...we'll put them into groups(1. and 2.) so we can easily refer to them later.

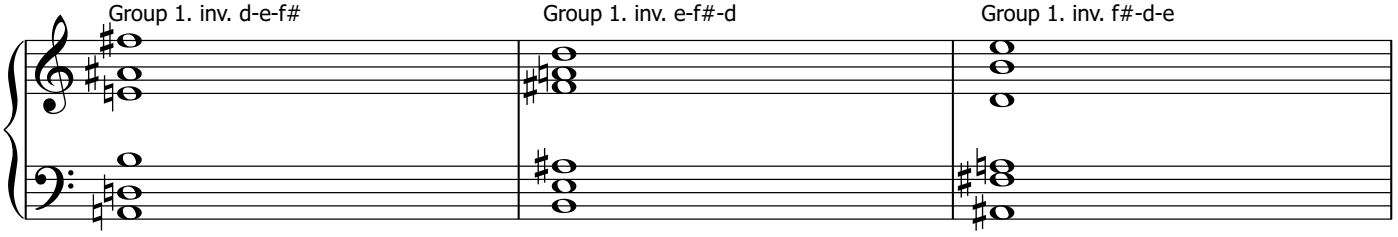


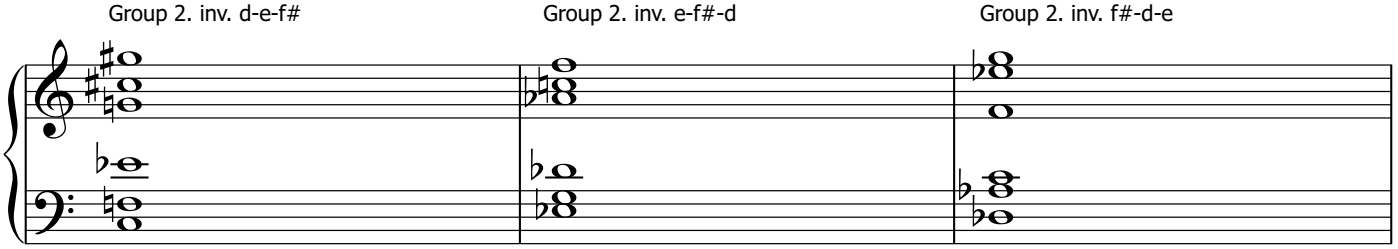
2. ...and stack them up by group 1. and 2. and in the original order(d-e-f#) from bottom to top!



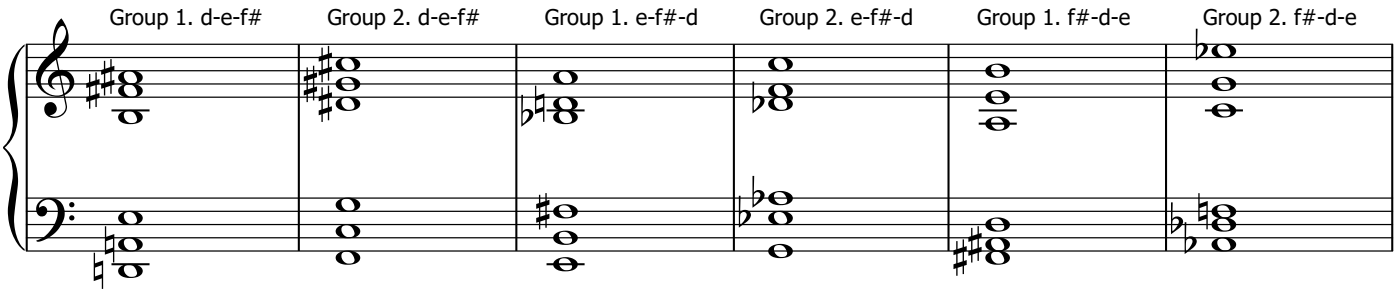


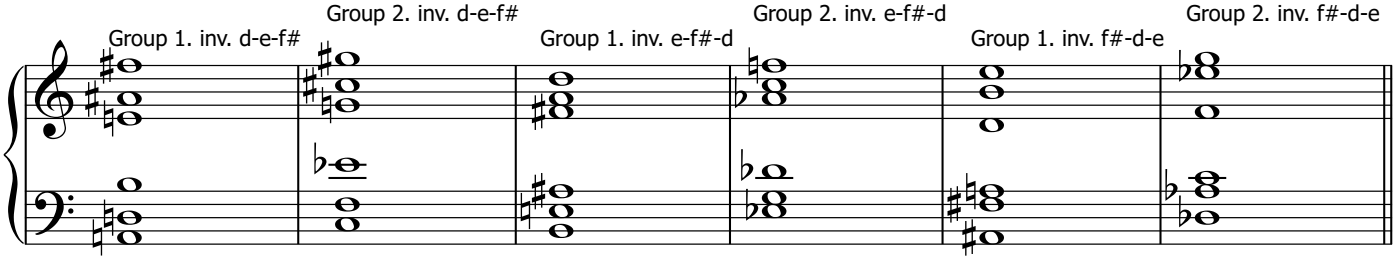
3. Let's go back to step one and invert the intervals. That way we get a whole new set of voicings.





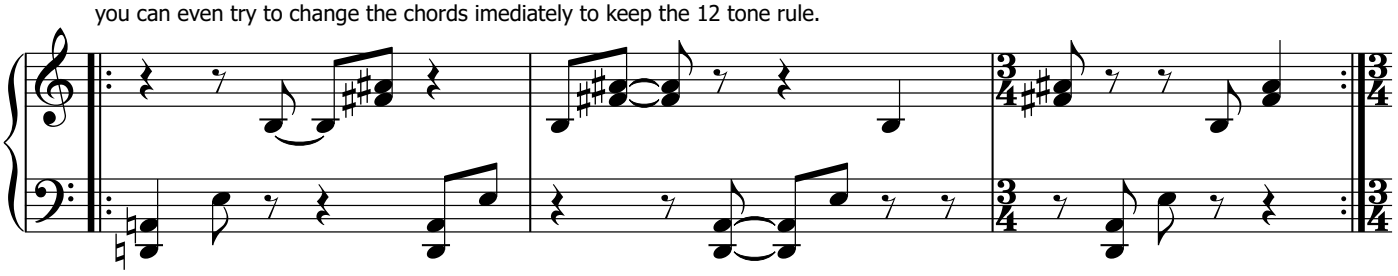
4. Note that group 1. covers 6 of our 12 needed pitches and group 2 holds the second half.
In order for us to create a 12 tone sequence we just have to combine group 1 with group 2.



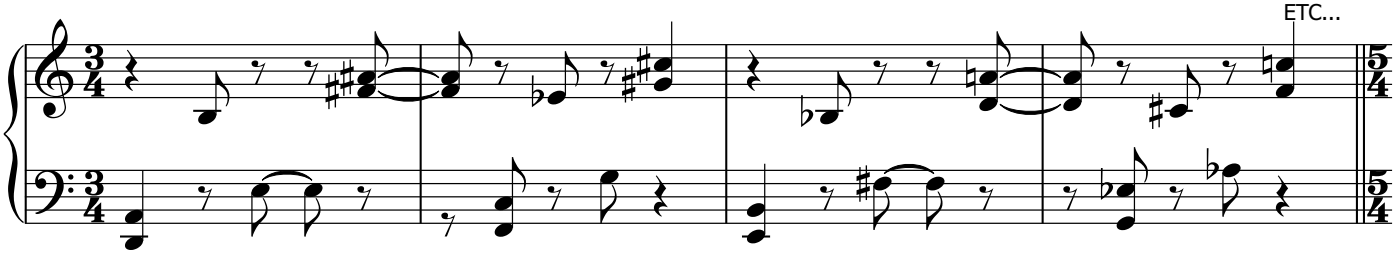


Now we have two pretty sequences, the first one is a little bit more "tonaly stable" since it stays in the same material for 3 chords before changing colors and the second one is the one that complies to the rules by alternating quickly between the two tonal masses. Before going on in collecting material lets play arround with the sequences. As with all the chordal sequences we can always apply these concepts: Arpeggiation, Permutation, Intervallic drumming, Looping, adding rhythm, using the left hand as accompanyment for improvisation. Pick one of them and start applying the concepts! Here are some examples:

5. This is a groove in 11/4 (I kept the barlines in 4 and 3 so it's more convinient to read) Take it through the whole sequence. you can even try to change the chords imediately to keep the 12 tone rule.



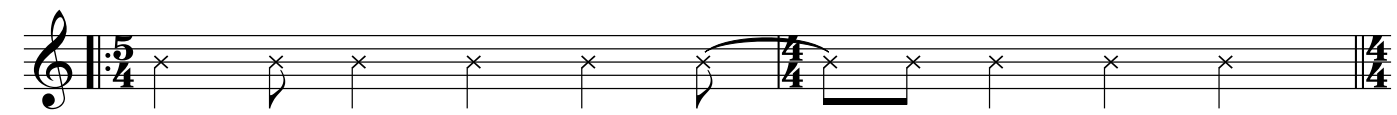
6. Here is another variation of the groove. I flipped the order of the single notes and changed the rhythm to what feels like a 6/4 pattern.



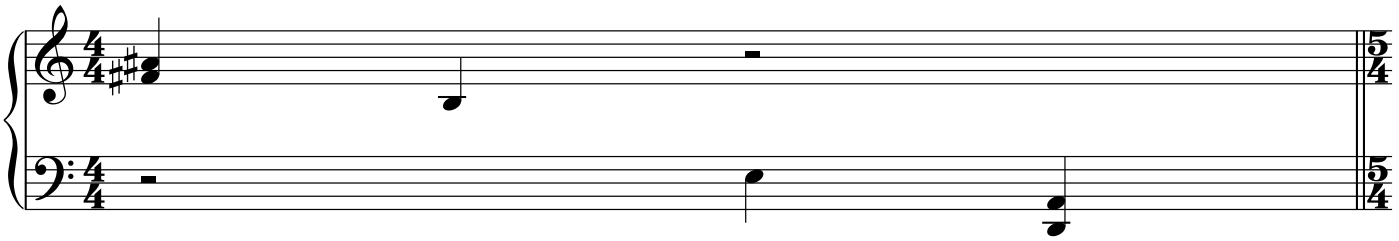
7. Here is a high difficulty drill I came up with: Take a rhythm, that in it's number of rhythmical events doesn't match the pattern of the hands and move it through the pattern anyway. Try to get it right with one chord first and then move on to even change the chords like if nothing happened. Here is anexample: We'll take a rhythm in 9/8 that has just one event more than our hand-note distribution-pattern.

This is our Rhythm:

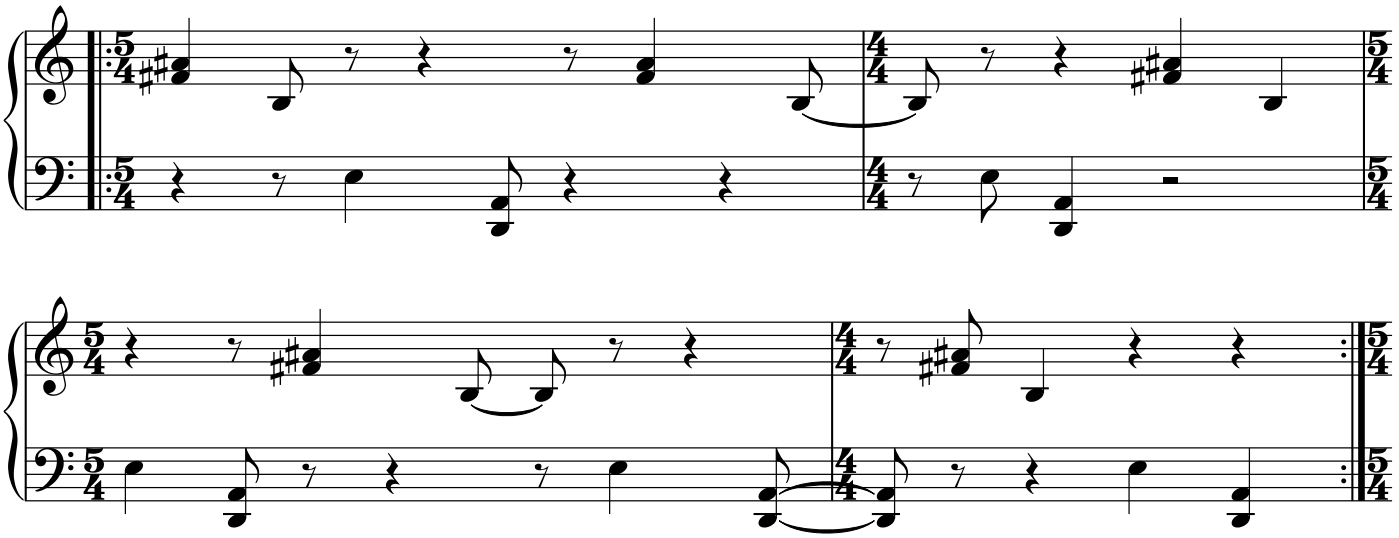
It is actually in 9/8 but to make it eaysier I wrote it down in 9/4 so the up and downbeats can be felt more easily.



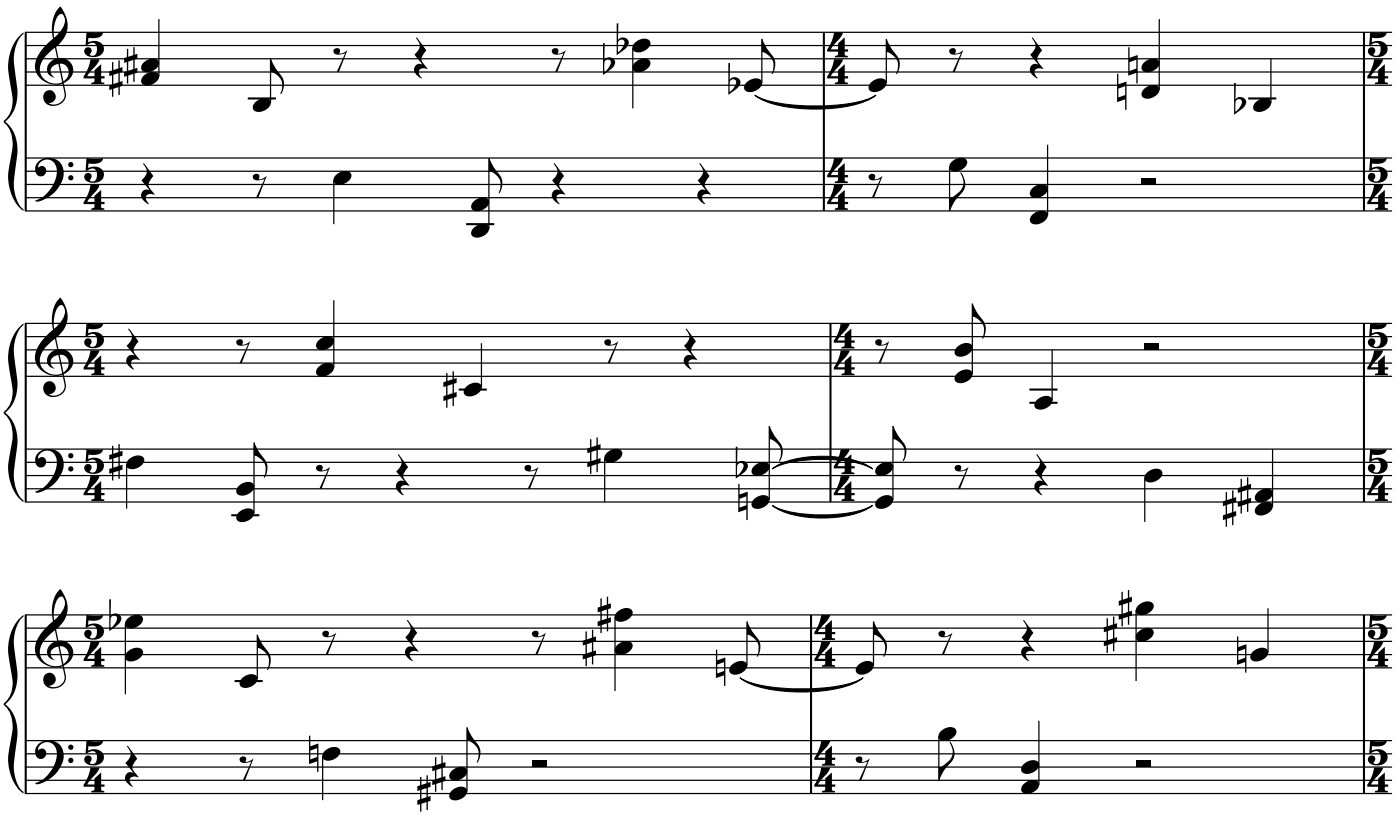
This is our pattern: I kept it fairly easy. It just has a downward movement. The hands play right, right , left left.

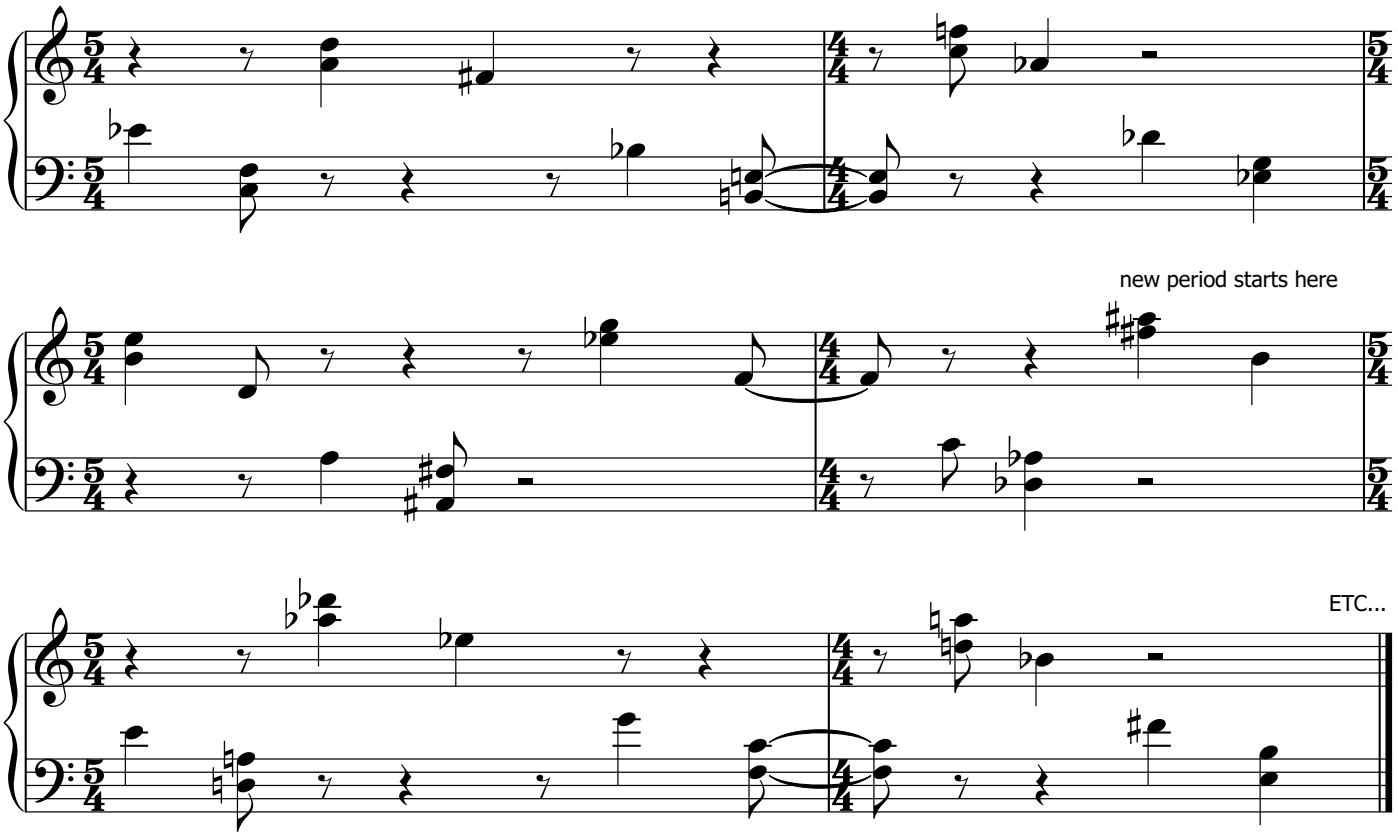


And this is how it looks like when we supperimpose the rhythm over the pattern:



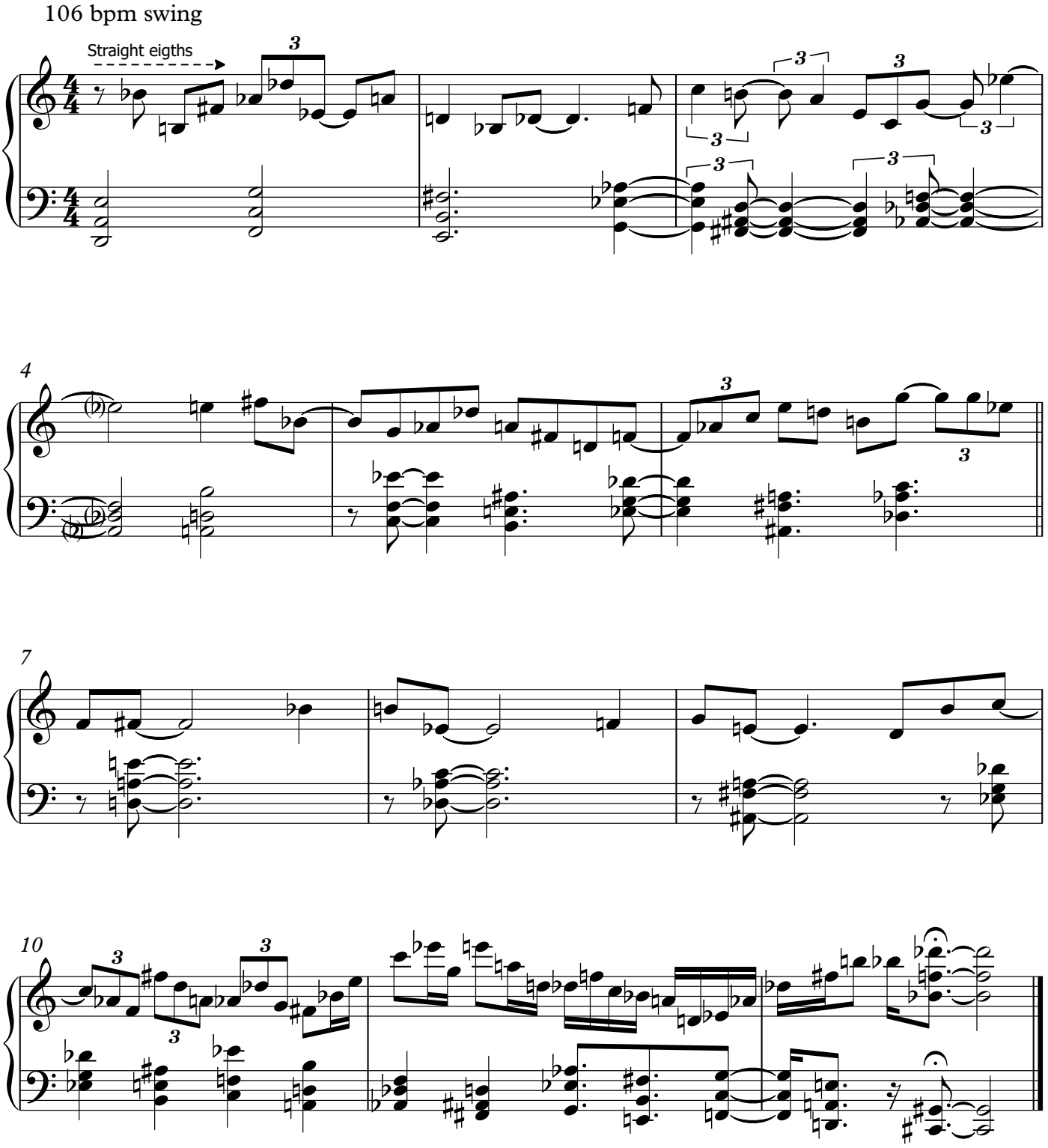
8. Now lets change the chords and complete the sequence.




new period starts here
ETC...

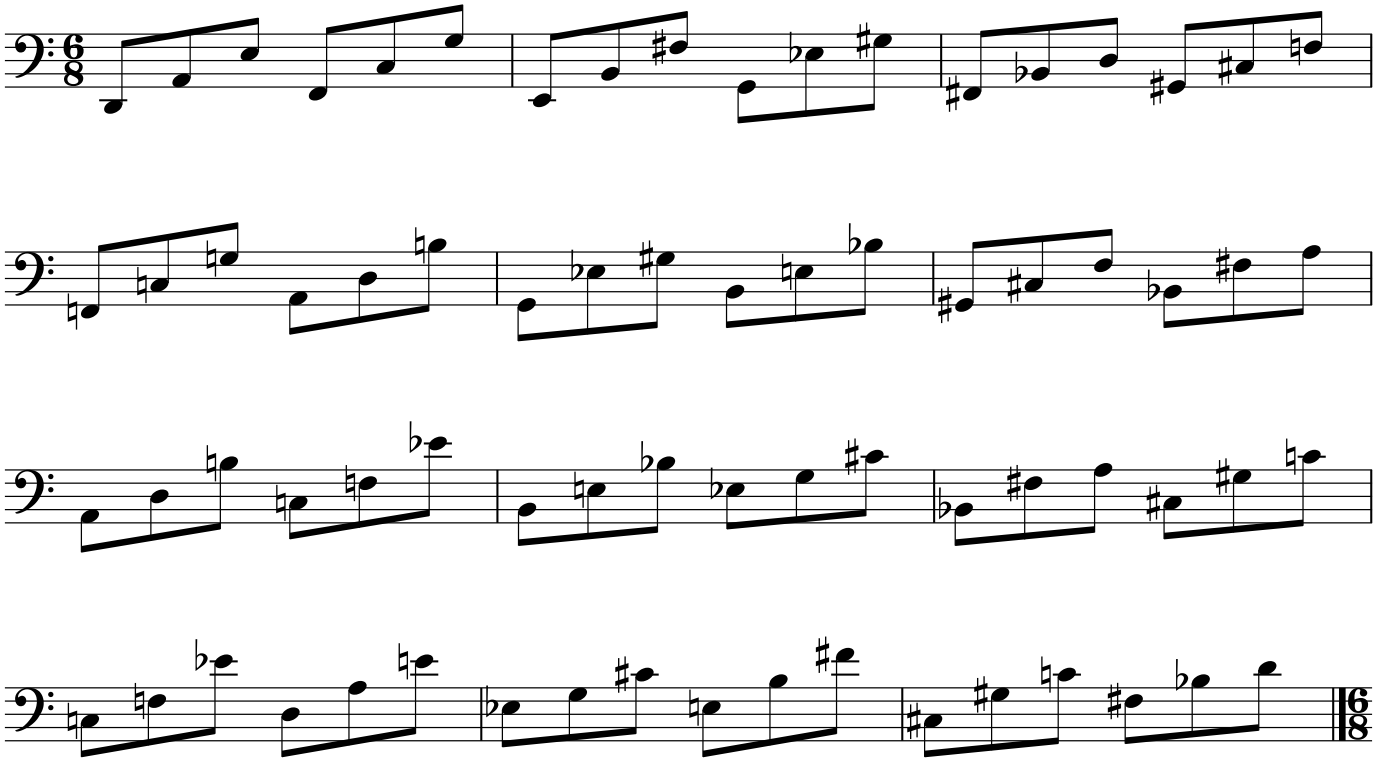
Divided Glimpses

9. Here is a piece I wrote using the three notes of the right hand to make a melody while the left hand plays the three notes as an accompanyment. Since the shapes are all in open position they are very suited for accompaniment, giving a full sound by covering a big range.
Notice that once the sequence is completed(bar 7.) the sequence is then played backwards in the second half of the tune.
Appart from some overlapping notes the only exception to the method as explained above is the last chord, and the tone repetition in the end of the first sequence. The cool thing about this piece is that it coincidentally came to have 12 bars, and that the first cicle ends, with the 6th bar, exactly in the middle.



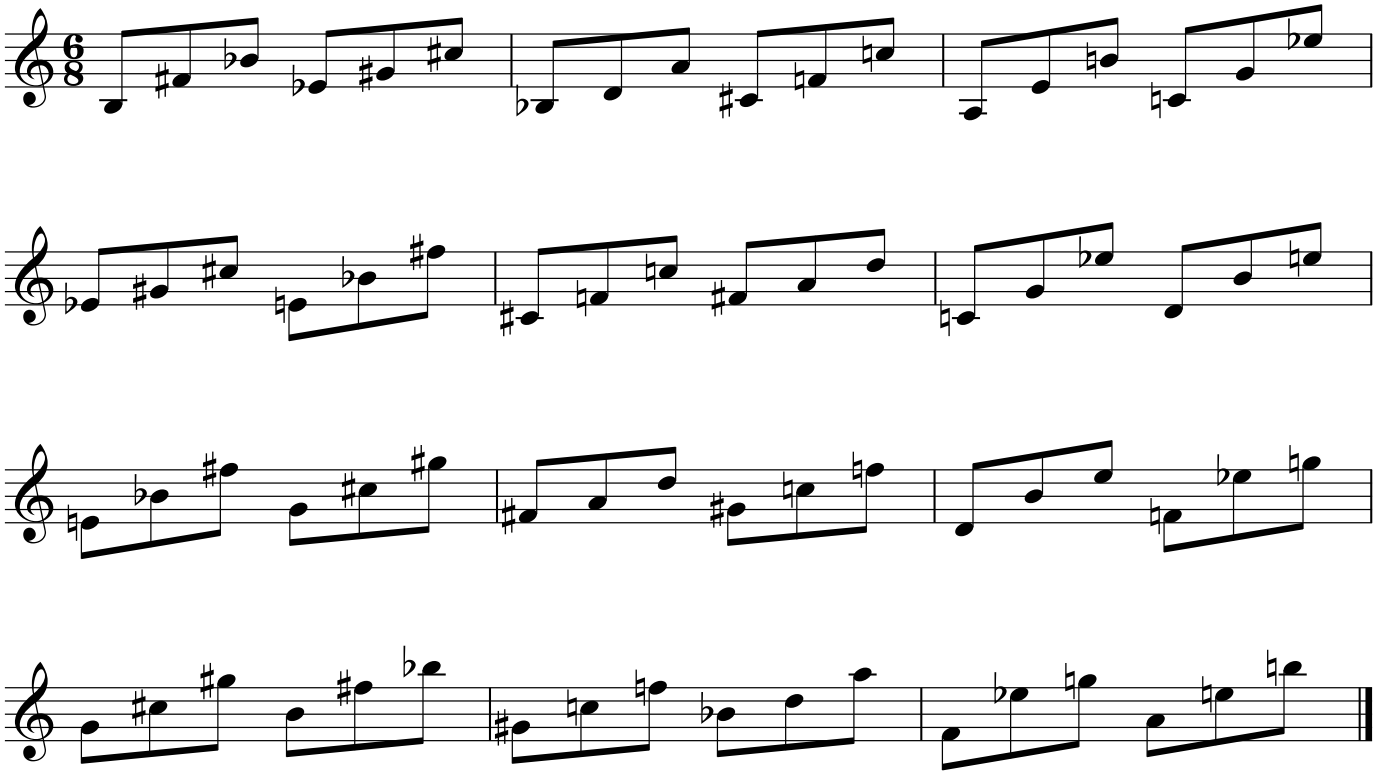
Etude for the left hand

10. Here is a slightly different sequence than point 4. it is based on the original inversions of the chords. You will understand what I mean when playing it. This is an Etude for the left hand only.



Etude for the right hand

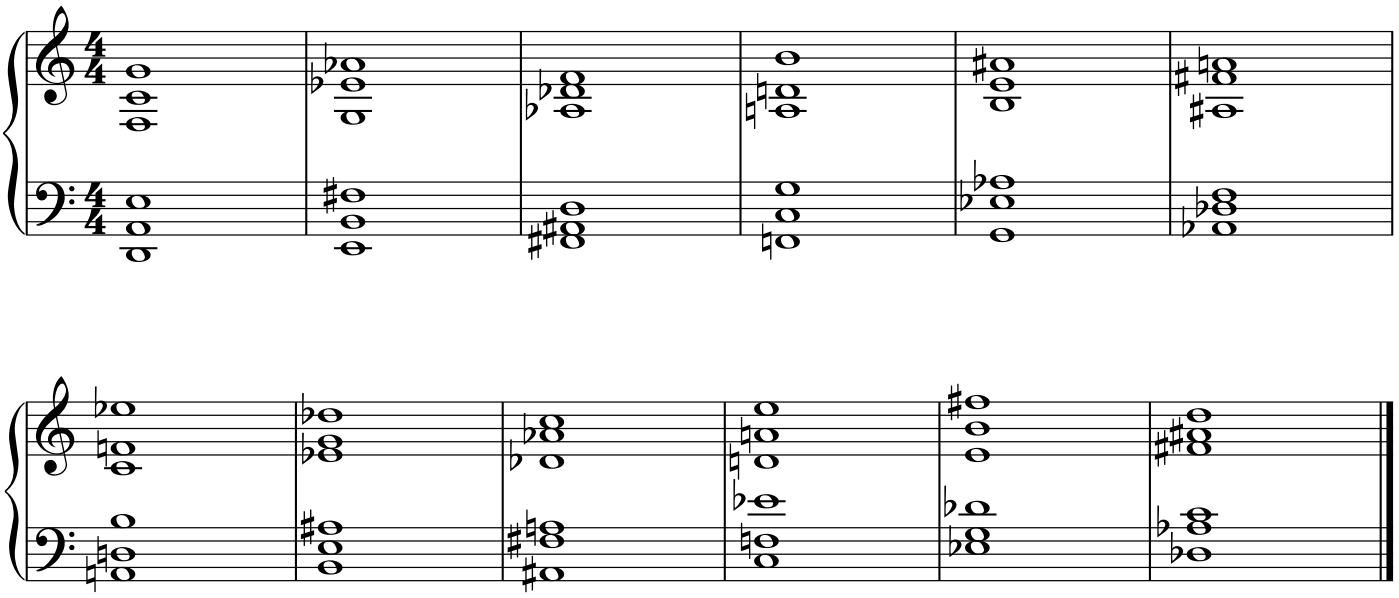
11. Here is the same thing but for the right hand. The sequence can maybe be described as a ladder-approach (2up, one down etc...)



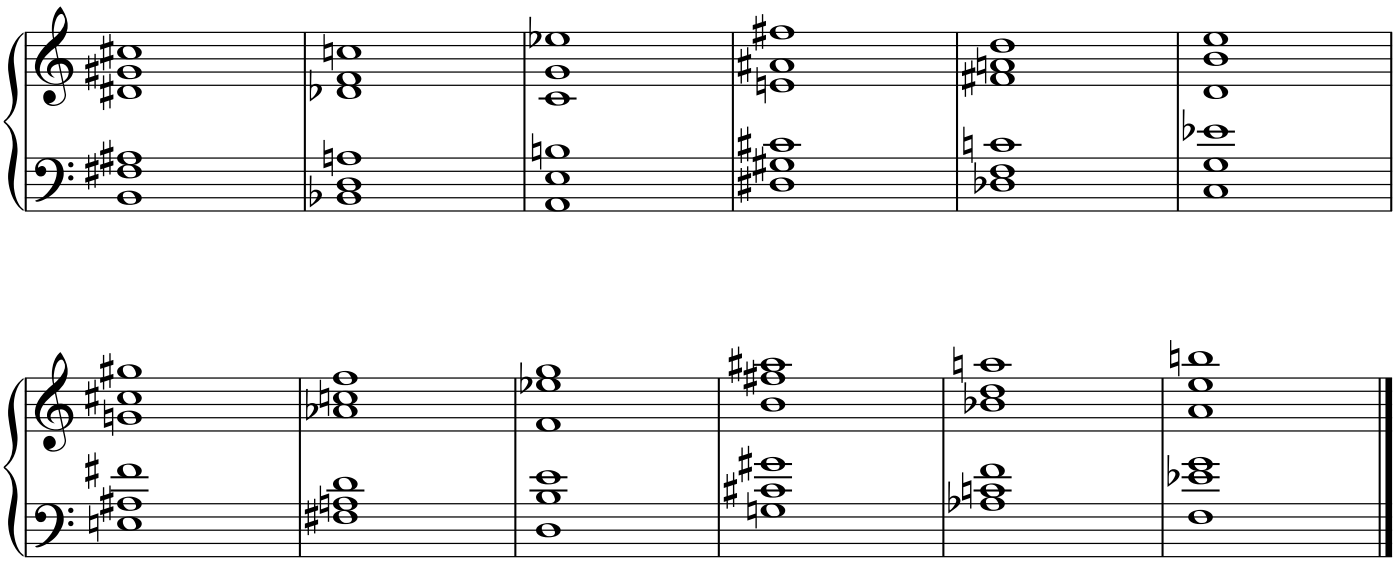
Different pairings

12. I investigated more and asked myself this: kKnowing that group 1. and group 2. are complementary, that means that group 2. has the missing 6 tones that group 1. doesnt have and vice versa, why dont we pair them up in one chord, how would that sound? So I took the previous sequence from point 10. and started stacking up the chords next to each other each hand seperately, meaning the left hand material (bass clef) stayed together as one family and the right hand material formed another.

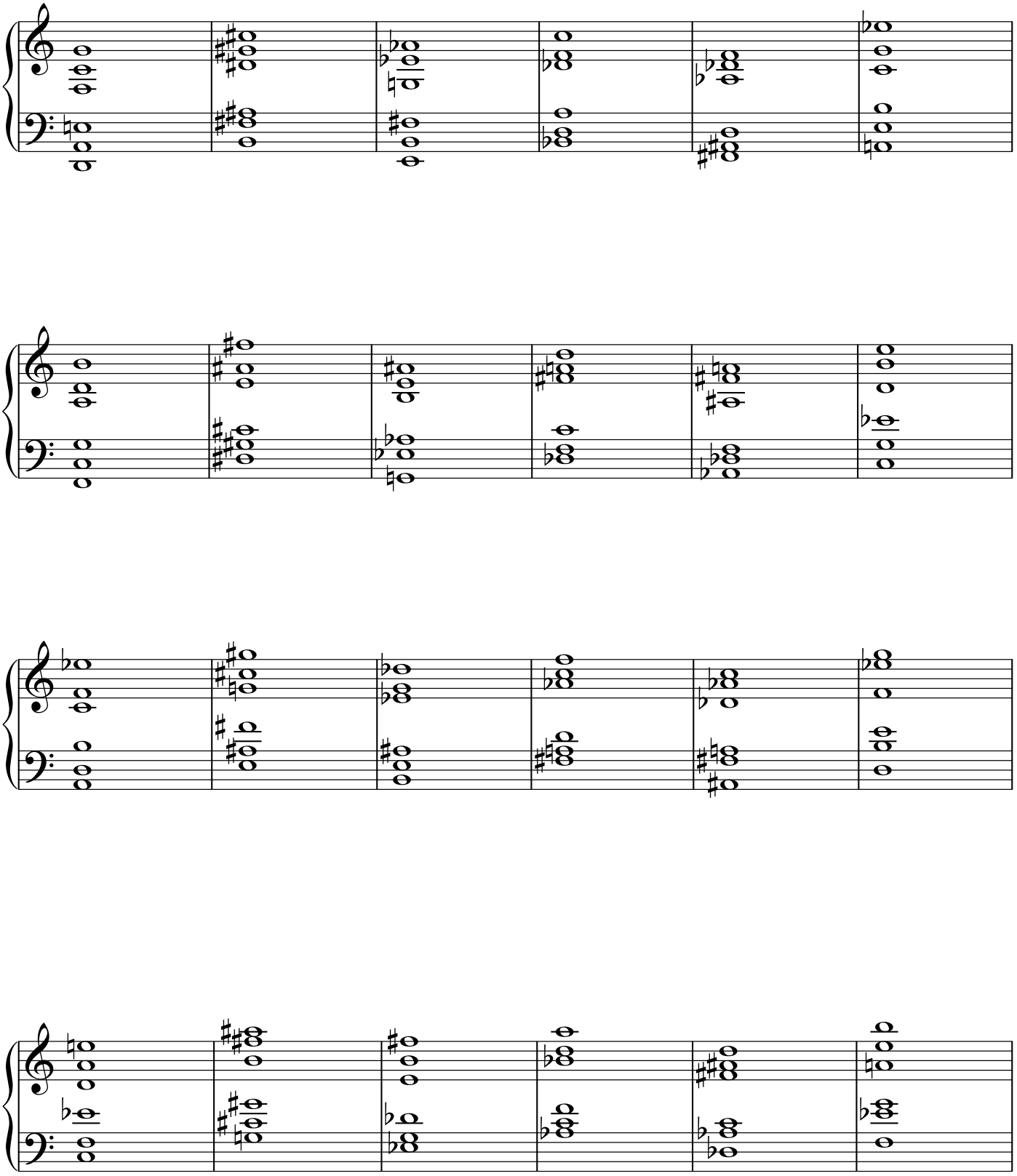
Check out these pretty sounds. Do they also comply to the 12 tone rule?
Since the colors are quite dense also try to play the chords one octave higher to keep the colors from drowning in "the swomp" of the lower register.



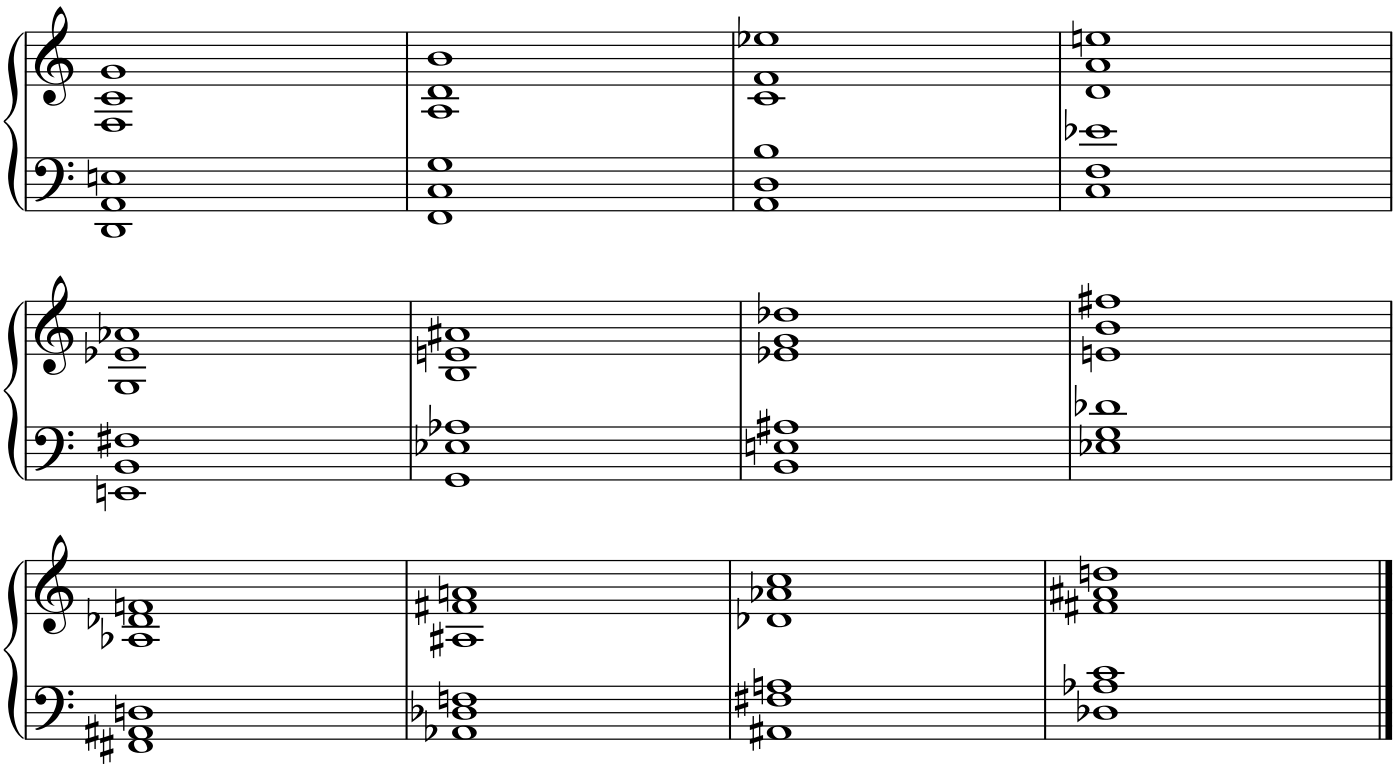
13. Lets see what we get when applying the same thing to the "right hand etude"



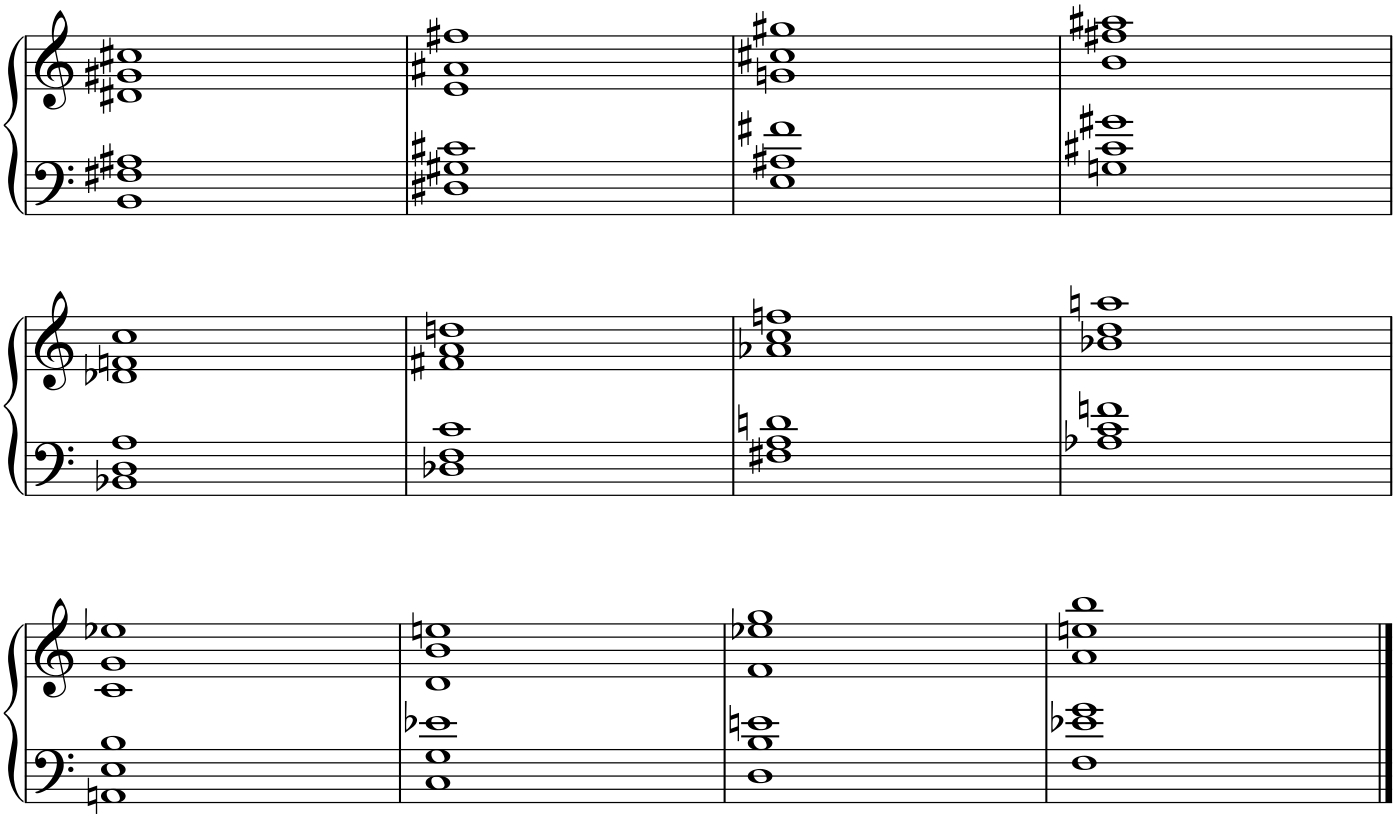
14. Let's ask the 12 tone question: "Do the pitches repeat only before all 11 others have been played?" the answer is no. But we can change this easyly. Looking at the original sequence (nr 4.) we know that two hands always form a group of 6 notes summing up always the same 6 notes. Group 1. has d, e, f#, a, b and group 2 has db, eb, f, g, ab, c. Since we know that the right hand always has the complementary chord to the left(in the original sequence) we can just take turns in playing one chord from the left hand row (nr. 12) and one chord from the right hand row(nr.13). Like this:



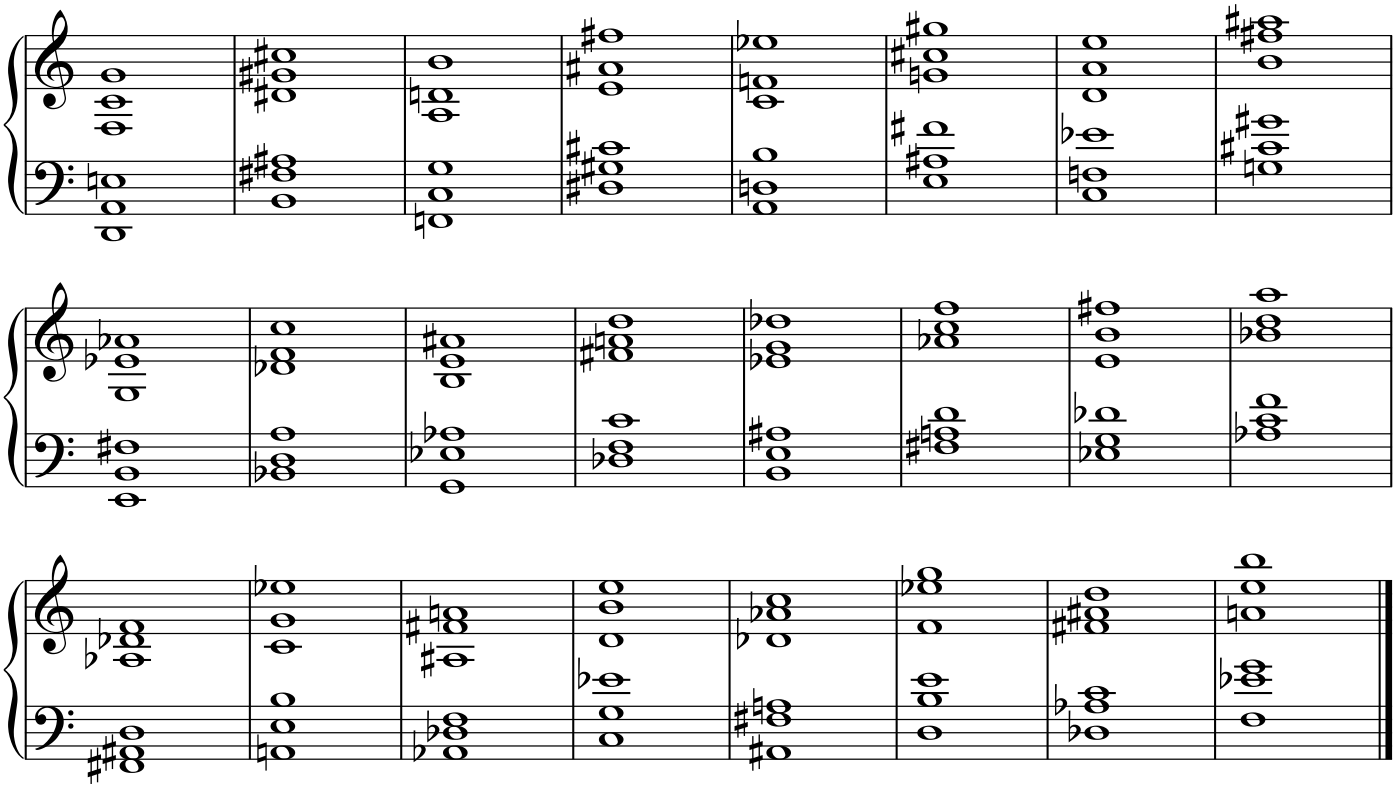
15. Another sequence that is close by is to organize the pairs by ascending inversions. This means that the two first notes in both the left and the right hand will follow the inversions of D-7 + one note of the E-maj7 in the first four Chords, then the same happens with E-maj7 + one note of F#add2, and then F#add2 + one note of D-7. This is not the way I have previously thought about it but it makes things way easyier and it also explaines why the chords sounded more tonal to me. In fact it is always a drop2-drop1 voicing of the original four blocks (D-7, E-maj7, F#add2) plus two notes of the next one. We will soon take this method further but let's look at this one first.



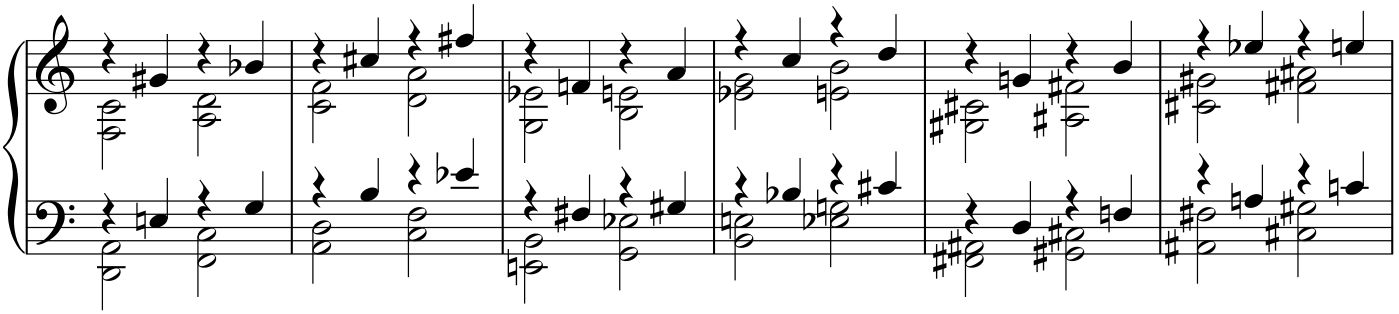
16. Now let's do the same thing with the right hand material. It is the opposite of in the left hand.
We start of with one note from E-maj7 and then two notes of F#add2, then one from F#add2 and two from D-7 and the one from D-7 and two from E-maj7. Let's remember that right and left in combination



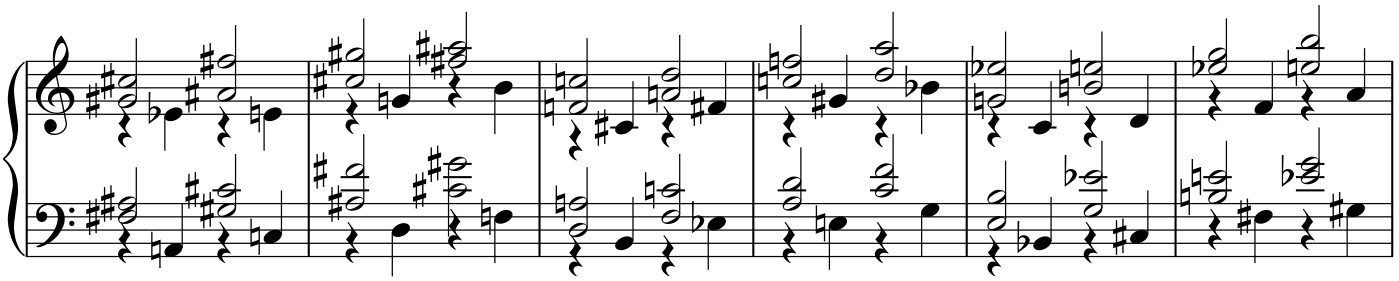
17. Let's remember that right and left in combination
will make a 12 tone certified sequence. ;)



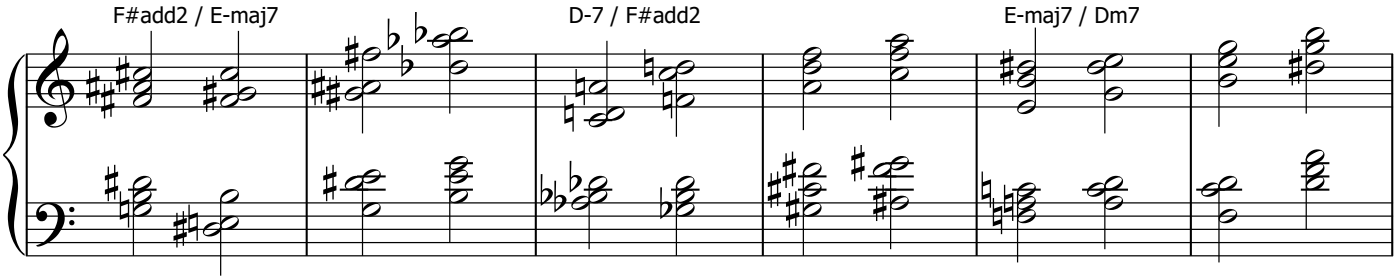
18. Now let's spin on the thread from nr. 15. and say: "Good lets take a drop 1- drop 2 voicing of the first chord (D-7) and then add one note from the second chord(E-maj7) in the left hand and one note from the third chord(F#add2) in the right hand, that way we have a bit of all the chords in one voicing.
I have seperated the two borrowed tones from the open position voicing. I like the shady feel that the harsh dissonances create especially in the later two variations.



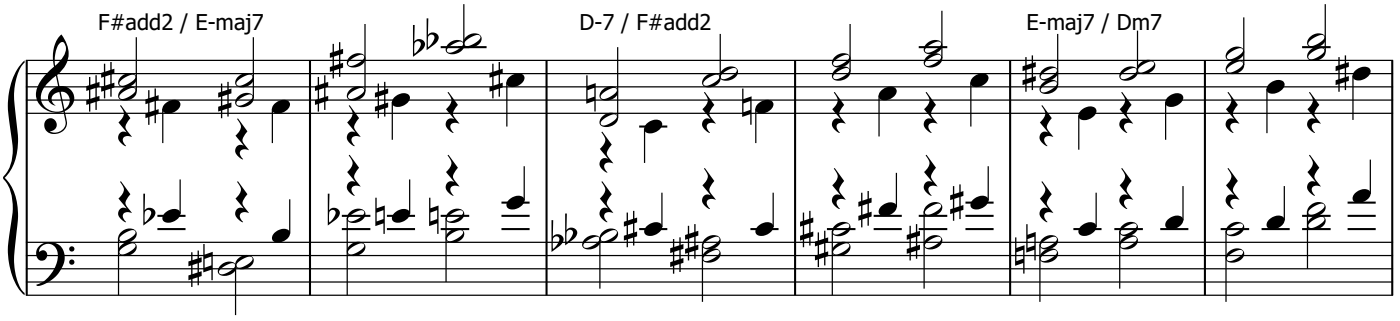
19. Here is the method, applied to the right hand pattern. The right hand is kind of a mirrored version of the left hand. Also here the versions with D-7 and E-7 as base sound very sharp.
This time it will not complete the left hand sequence to make it a 12 tone sequence. This is because we always have a complete Block and at the same time two representants of the other two Blocks. This will always ensure tone repetitions.
We will follow up on that in the next example.



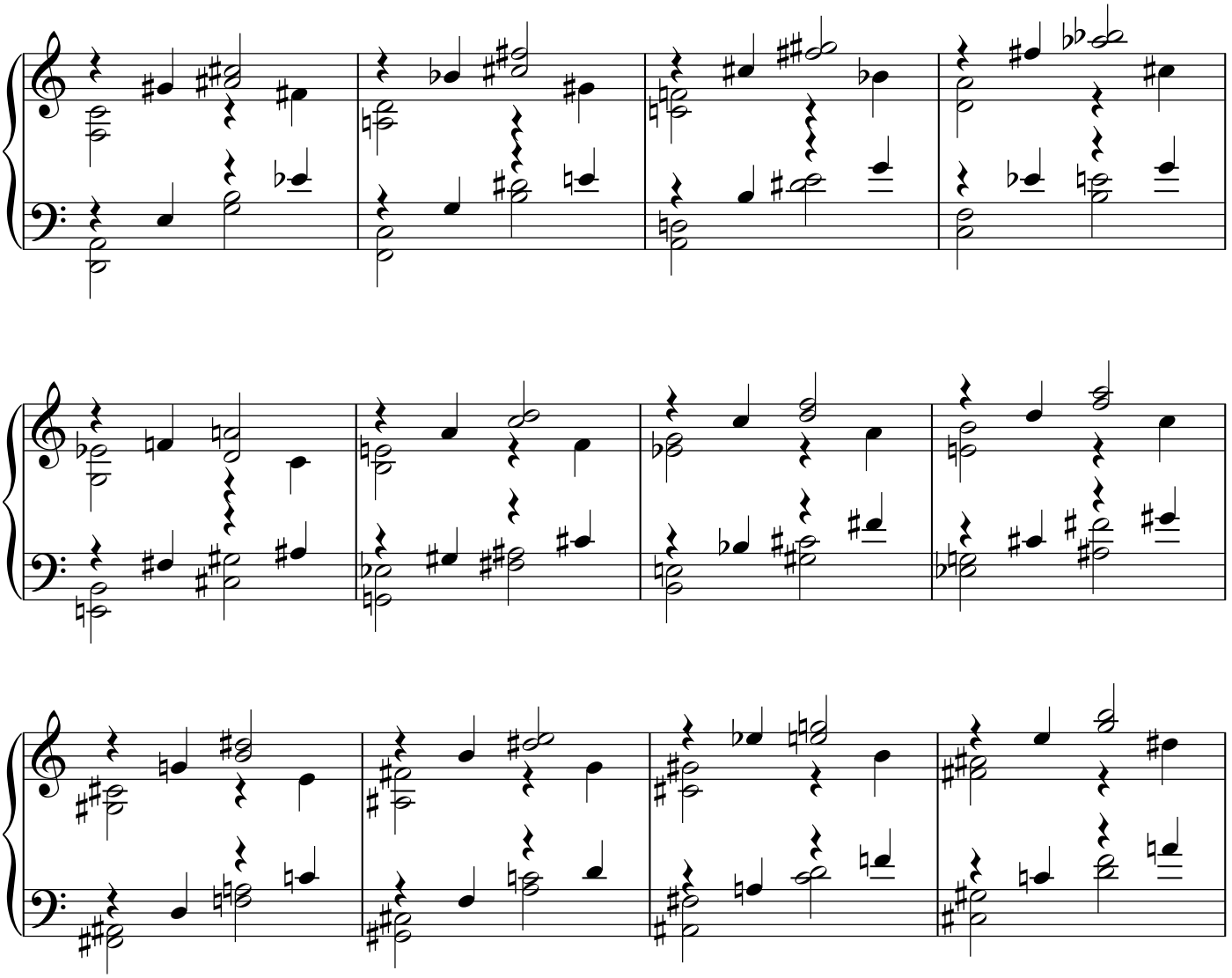
20. Let's look for complementary 12 tone chords for the sequence of nr. 18. the way to achieve that is too look at what notes are missing. The notes that are missing are from the two "other blocks" and there are always three of them. So if we take the first chord of sequence nr 18. D-7 + E- + F# the complementary chord would be E- minus the note E + F#Add2 minus the note ab.
Before deciding on how to organize the voicings, lets look at our material.



21. Let's add movement by splitting up the voicings into an intervall and a single note. Ricght and left hand mirror each other in the direction of movement.

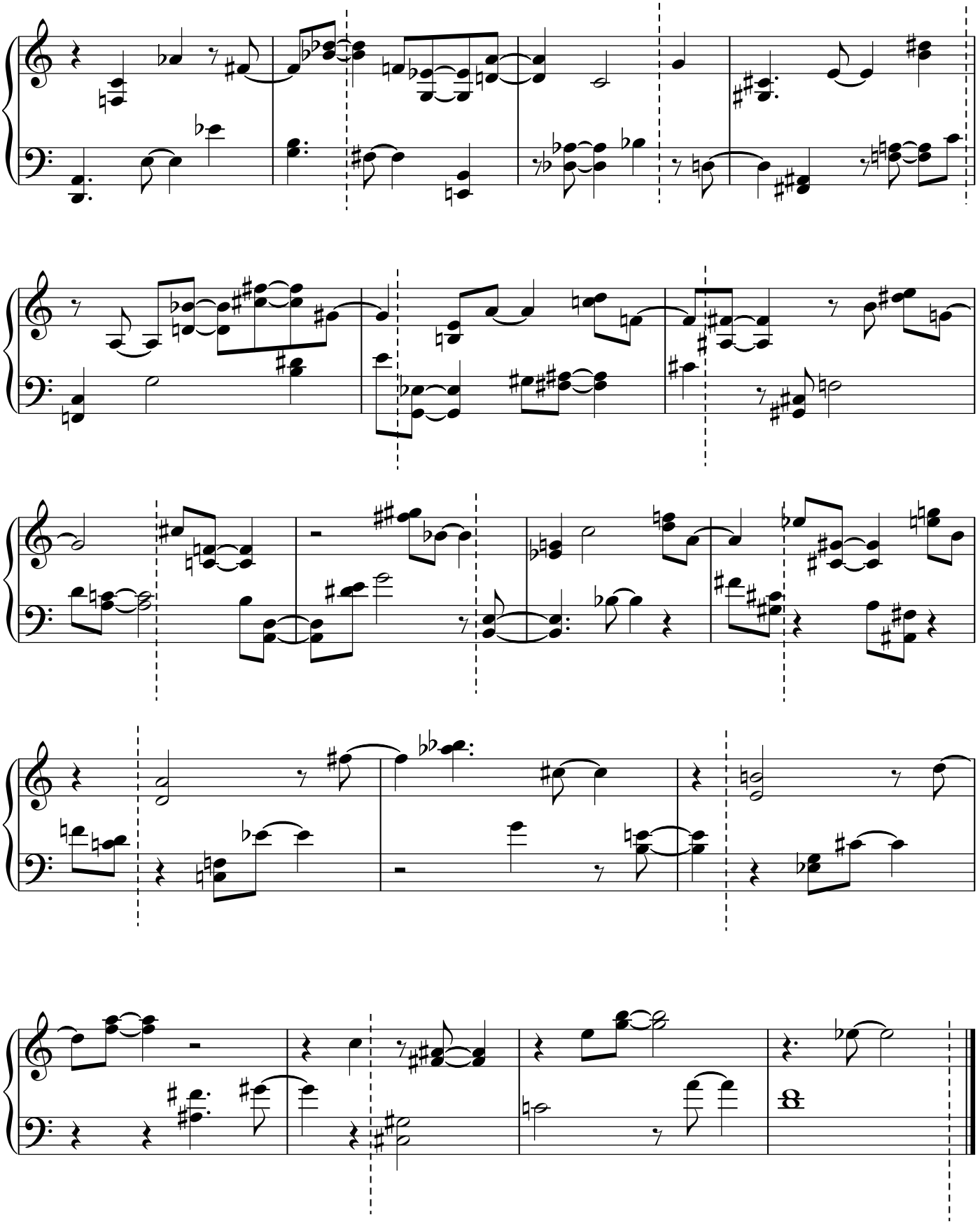


22. Let's pair them up. I changed the inversions of the later sequence so that it would have an ascending movement in the top voices. This is to match the movement of the sequence 18.



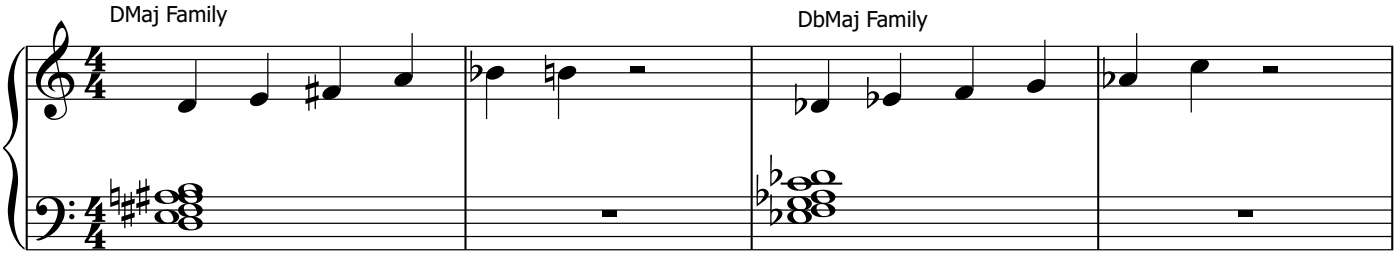
23. This is quite a sweet sequence. To dive into the beauty of these dense sounds, it is advisable to play them slow and with a nice and gentle touch. Imagine it is a fragile and precious diamond sculpture. Think about how many layers it took us to get here.
Note that every bar contains 12 notes and is in itself a valid 12 tone sequence. Note that each line contains a specific color.
Line 1 has Dm7 as a base + always one note from E-maj7 and one from F#add2, followed by its complementary chord. Line 2. and 3. proceed in the same way, applying this method to the other collors (E-maj7 and F#add2)
Now we will combine them by playing the first bars of line 1., 2., and 3. in a row , then the second etc...
On top of that we will get playfull and add some rhythm plus some variations, using some random "drumming tecniques" for the right and left hand. Play arround with holding notes or intervalls longer than written so that notes overlap create a sense of harmony.
Try keeping together the blocks as marked with lines. I made a sketch of a tune out of it.

Ambiguity

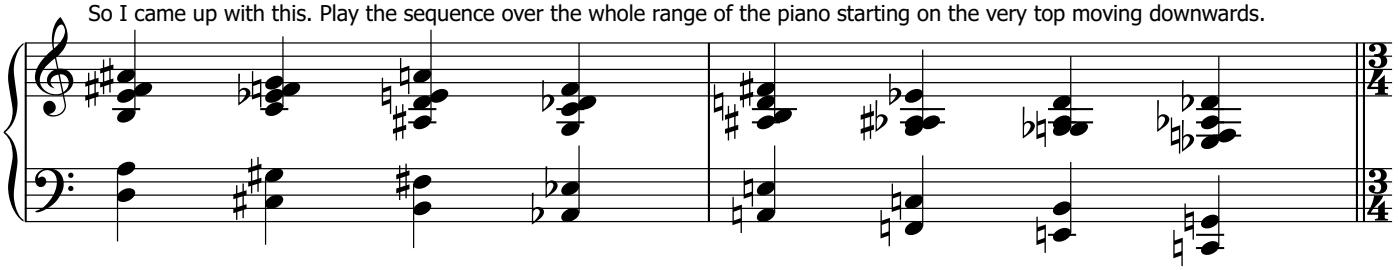


12 Tone Structures
Harmonic movement 3.
More Chords

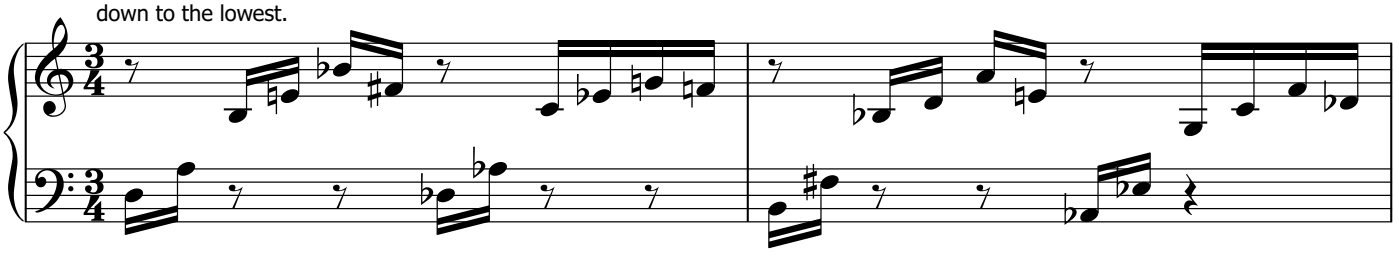
1. Departing from the two hexatonics we have found, we can also choose to organize the notes by different rules.



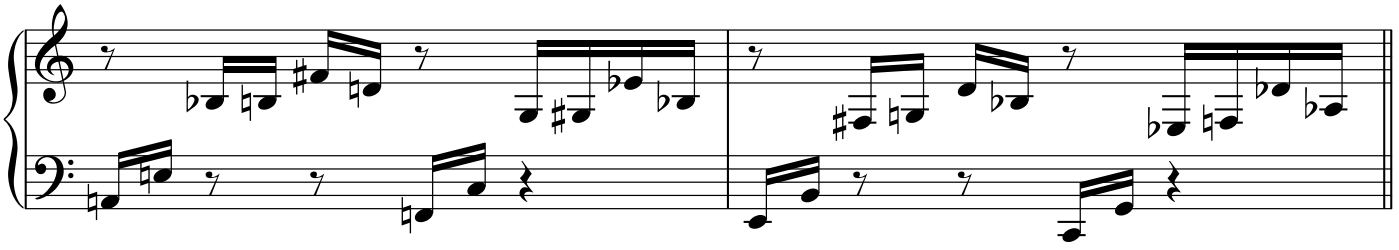
2. My set of rules were: Let's always put a fifth in the left hand and see what tones are missing to complete the "Family".
Let's organize these notess in the right hand and alternate between the two Families. Let's create a downward motion.
So I came up with this. Play the sequence over the whole range of the piano starting on the very top moving downwards.



3. Let's play with this sequence a bit.
Here is a nice excersise with this sequence. Start on the highest possible point of the Keyboard and take it all the way down to the lowest.

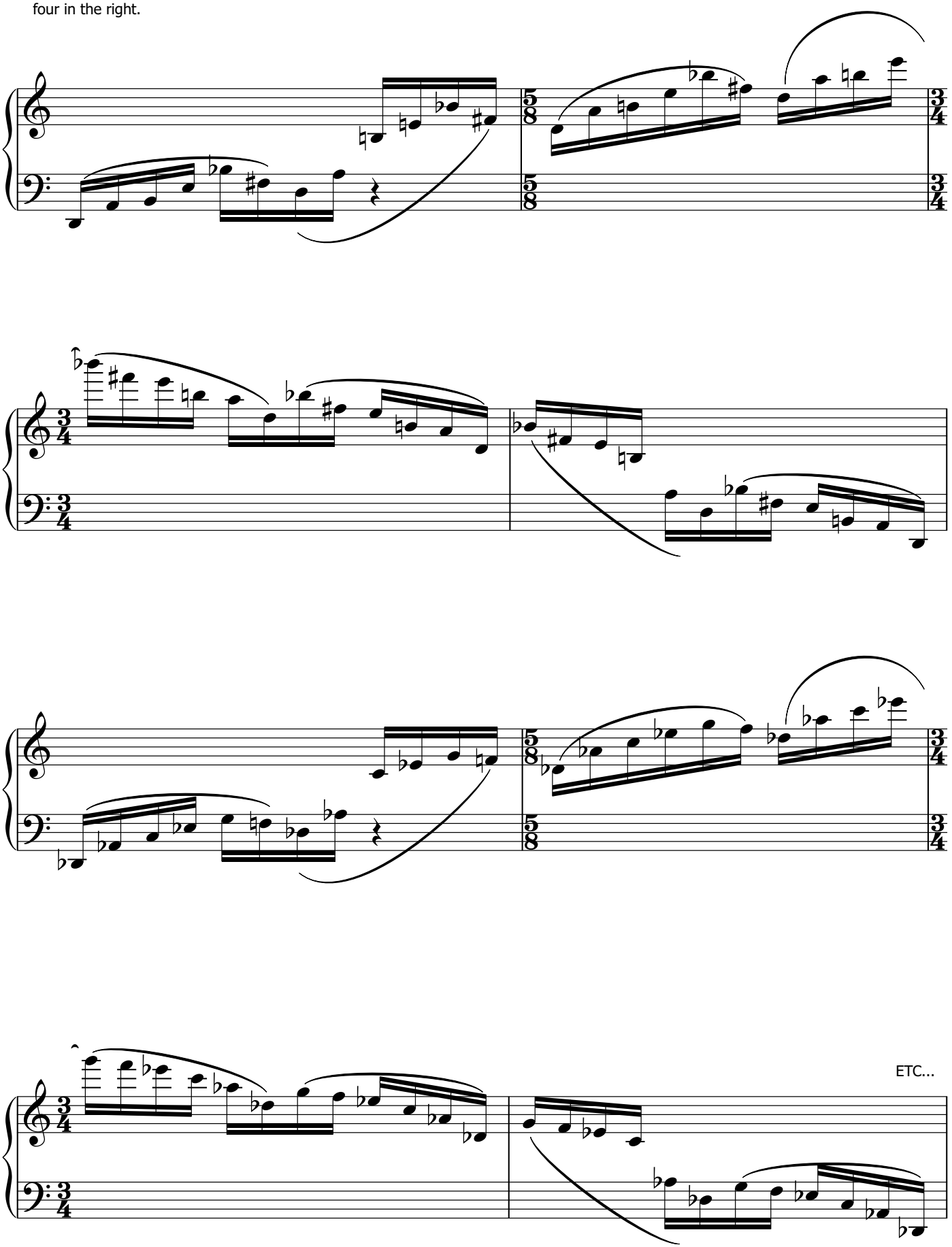


ETC...



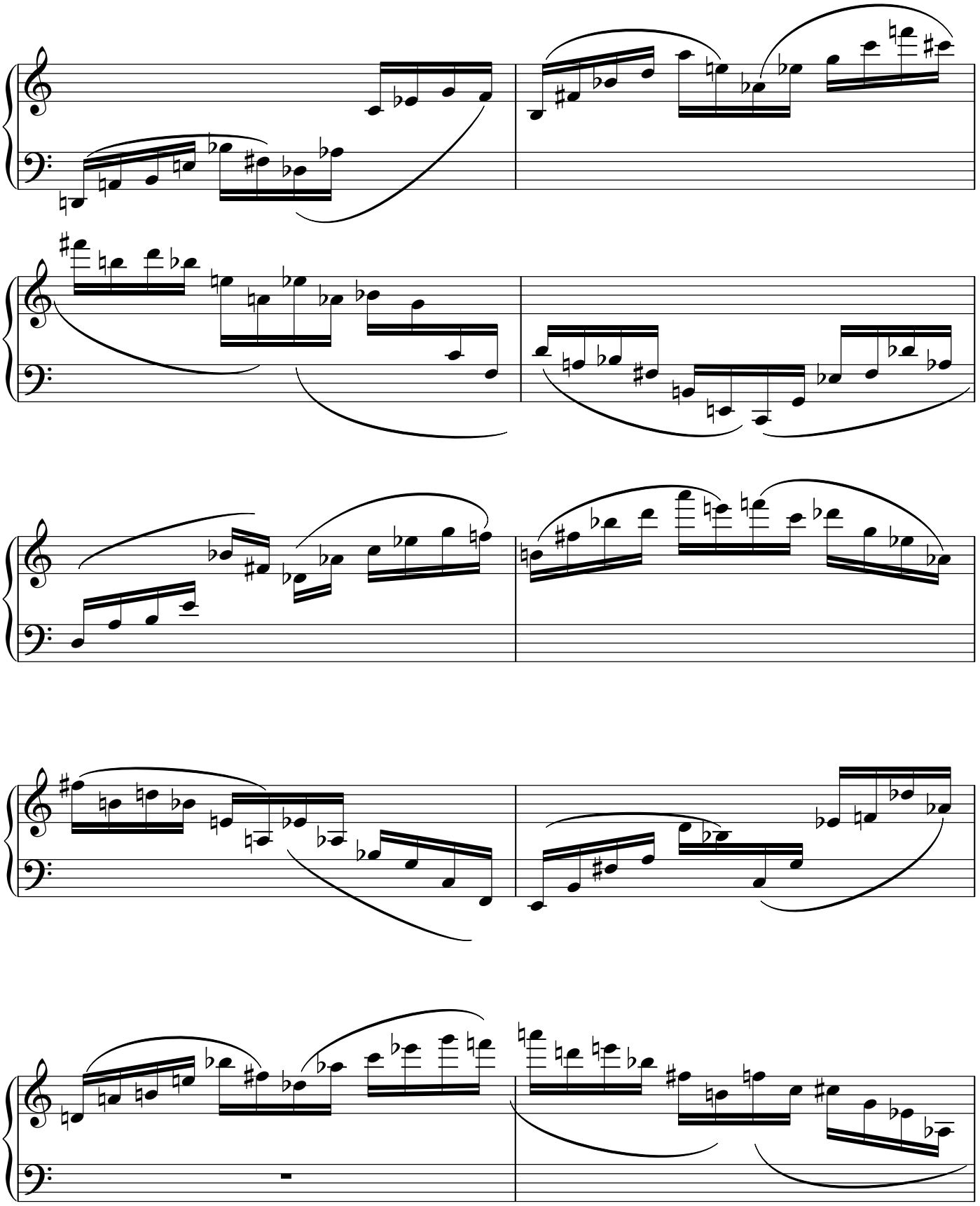
waterfall etude

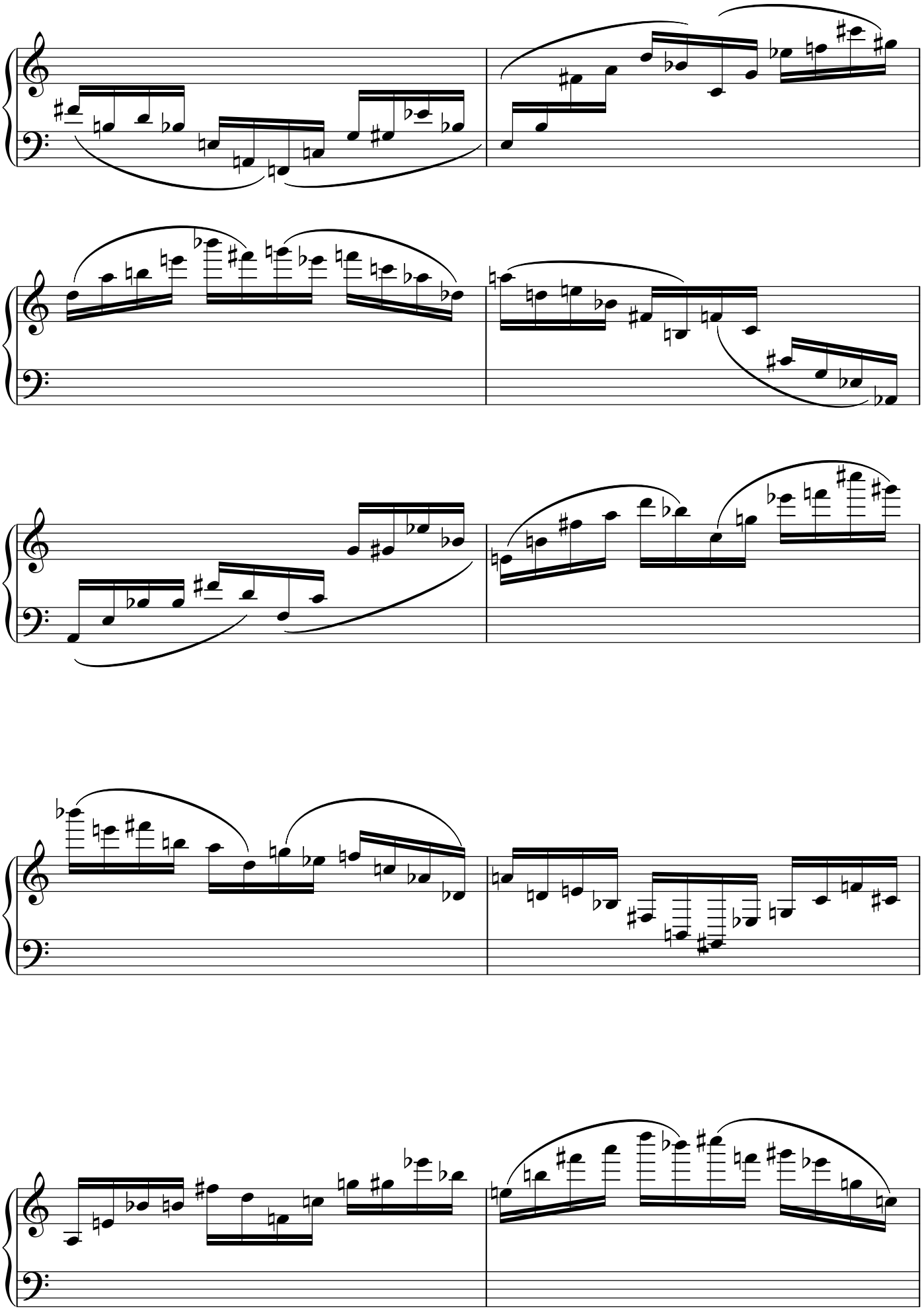
4. Here is a waterfall etude. We take one voicing through 4 octaves and back down before changing to the next.
It is important to keep the right and left hand distribution of the notes the same: The bottom two notes in the left, and the other four in the right.

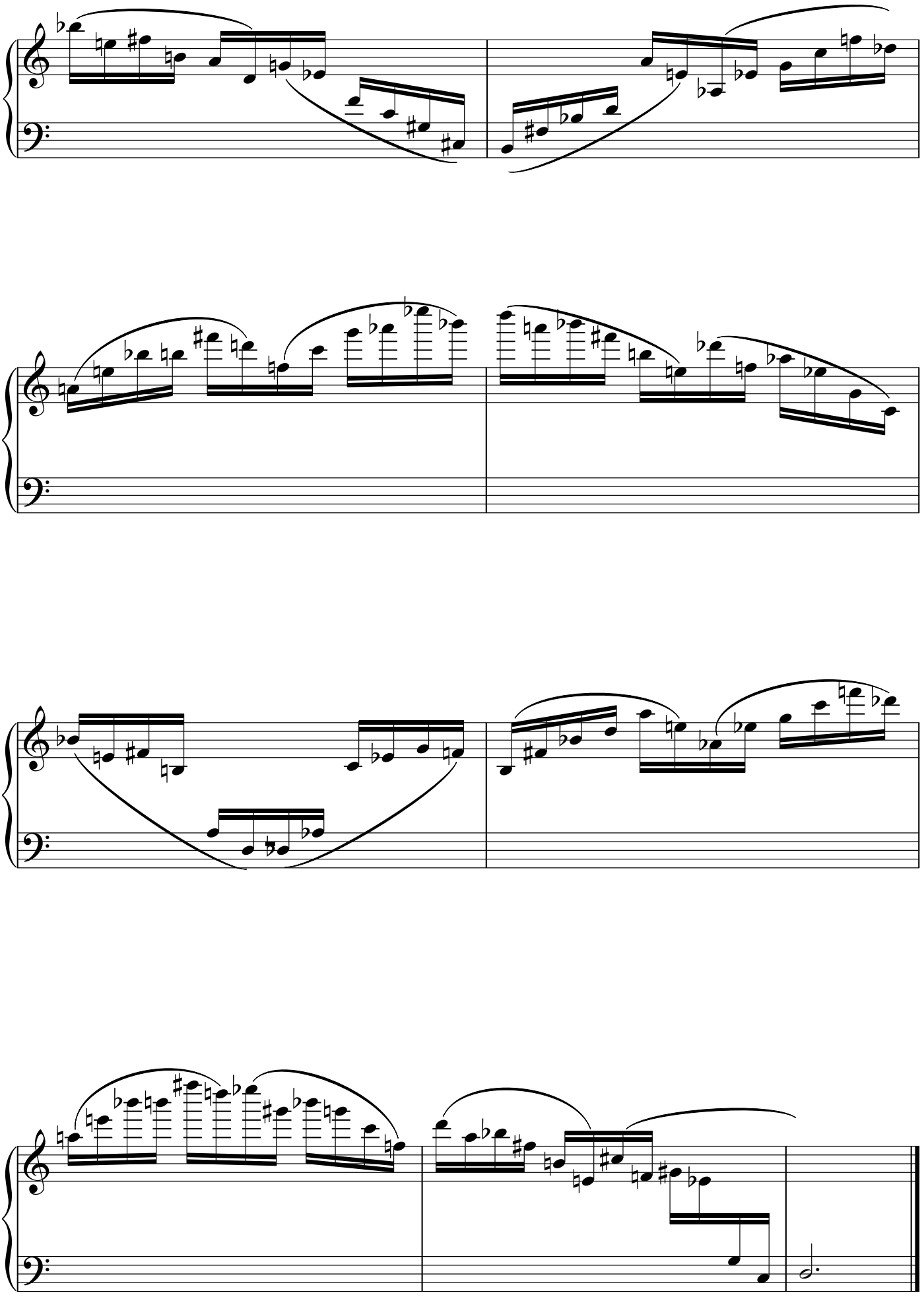


modified waterfall etude

4. Here is a modified waterfall etude. We change the voicing everytime, going up this way for 4 octaves and coming back down just 3 octaves. This way the sequence shifts upwards.

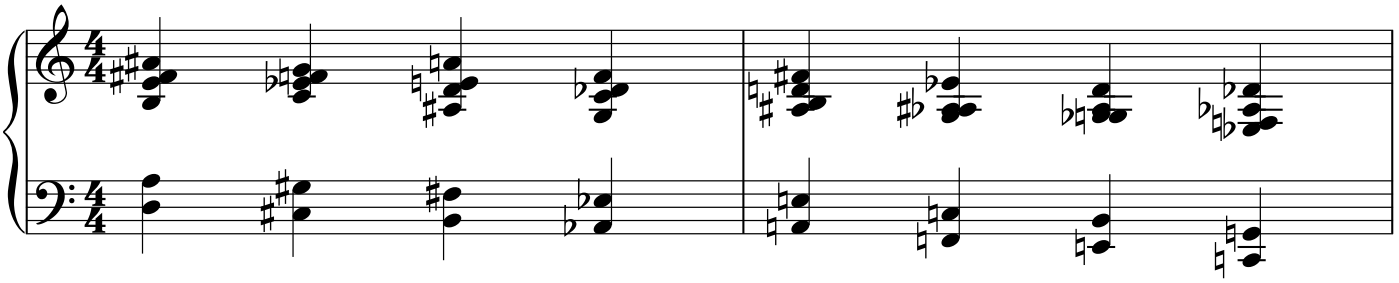




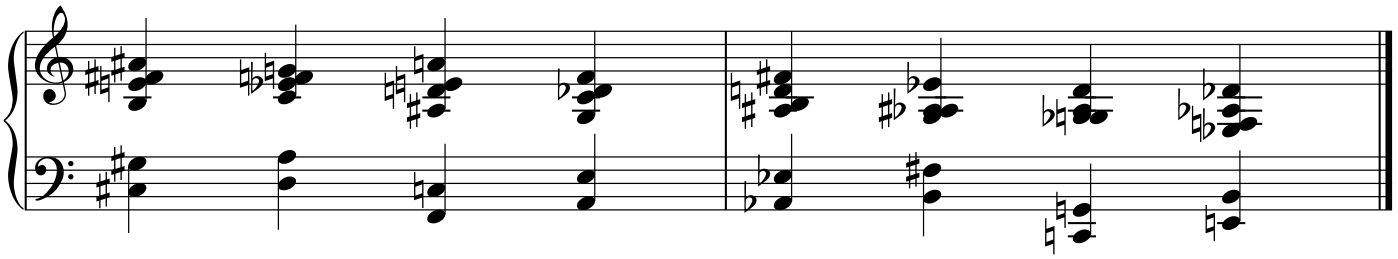


Flipping around the bass

6. When playing around with the sequence of 2. I came across a cool variation that comes from combining the right hand with a set of fifth that belongs to the opposite family. It took a while to find the smoothest sounds. Sometimes the order of the left hand is just flipped, sometimes I had to borrow them from afar. This is the original sequence:



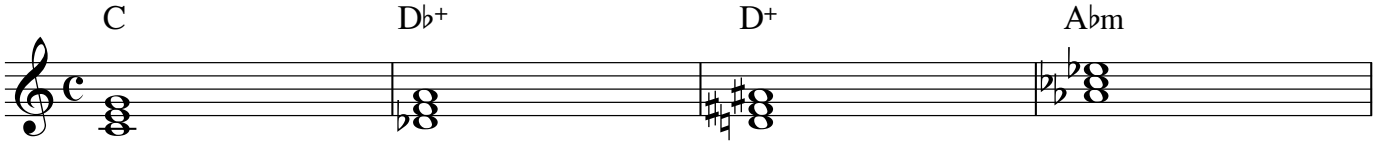
7. And this is the variation:



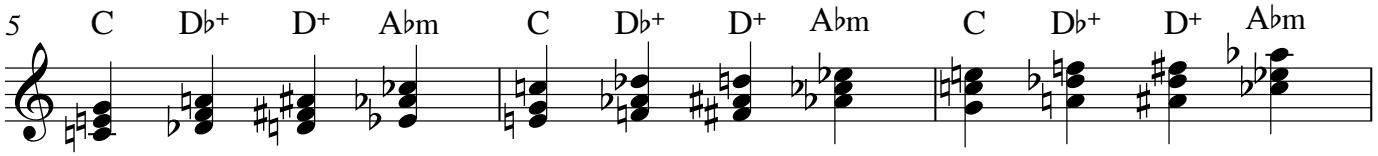
The sounds now remind me of Jazz chords with some cryptical information. This is what the chord symbols could look like: C#-7(11,13), Dsusb9, C7(9,13)/F, A7alt (with a wrong fifth), Ab-7b5,9 (with a wrong fifth), BMaj7#5(with a natural fifth too) C7#11, EMaj7(13) with a flat nine. Almost every chord has a slightly wrongish dissonance in it that makes it drop out of the standard Jazz-hamony zone.

12 Tone Structures
Harmonic Movement 4
4 Triades

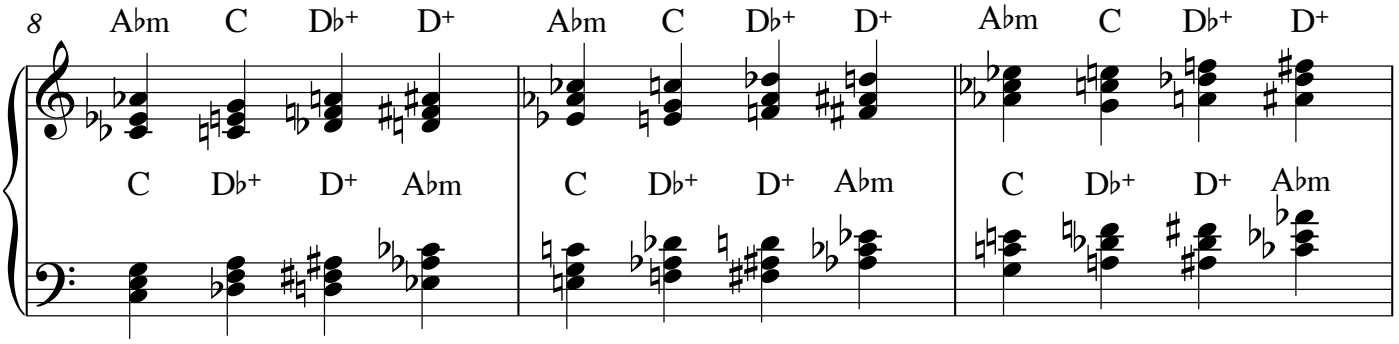
1.We came from creating a 12 tone row by finding 3 blocks of four notes to cover up all 12 notes, now let's find four blocks of four notes each that cover all 12 tones.



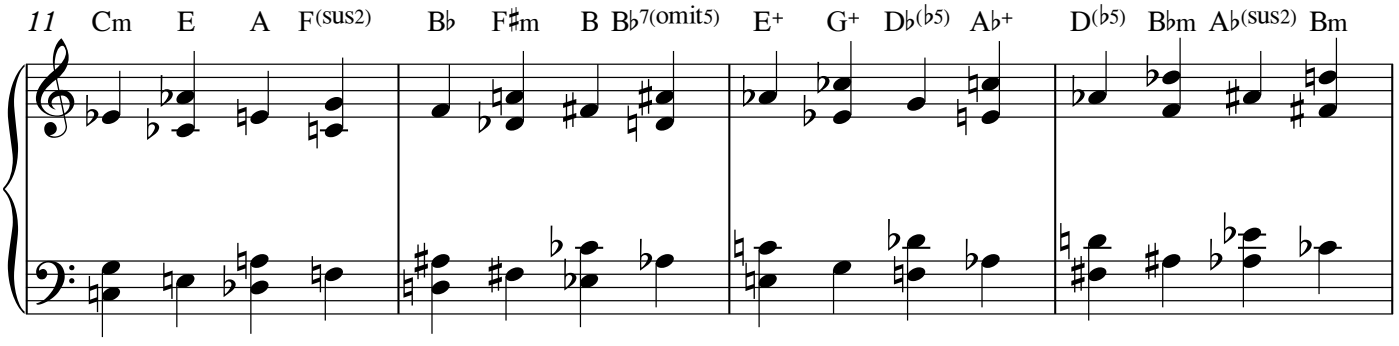
2. Lets create an ascending row by inverting the chords

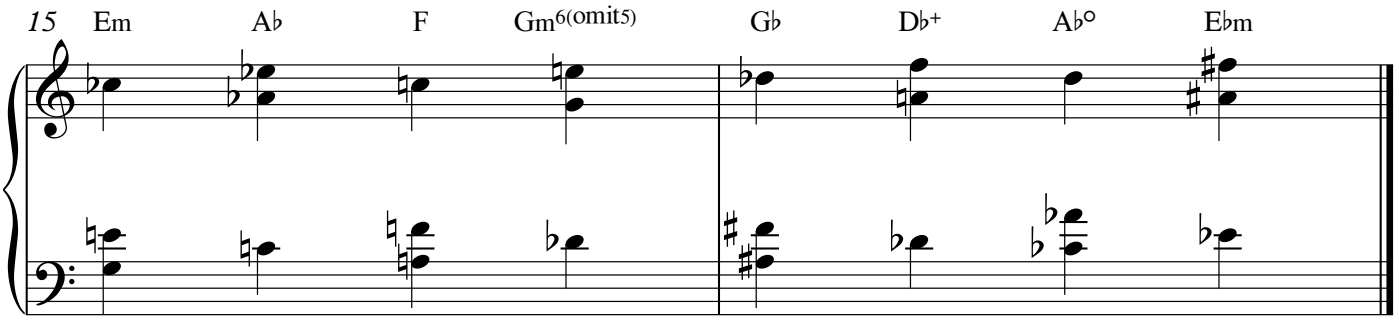


3. Let's pair the chords up by starting the right hand one beat later and one octave higher



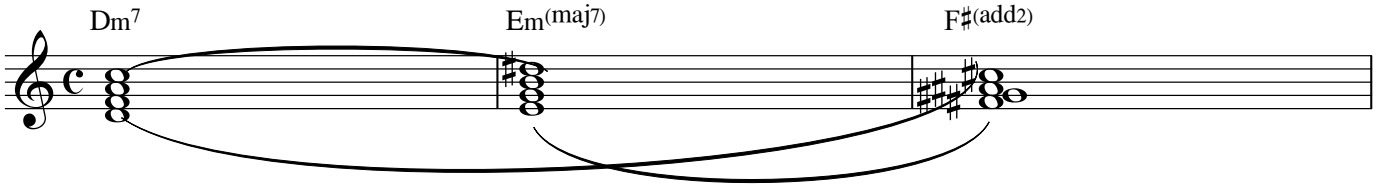
4. Let's split up the six note chords into groups of three notes by always skipping one tone.
We end up with some open position triades. Note that this technique can be used to mix two random triades with two hands. This is done by pairing the outer notes of a triad with the middle note of the other triad. It is quite a natural movement on the piano.



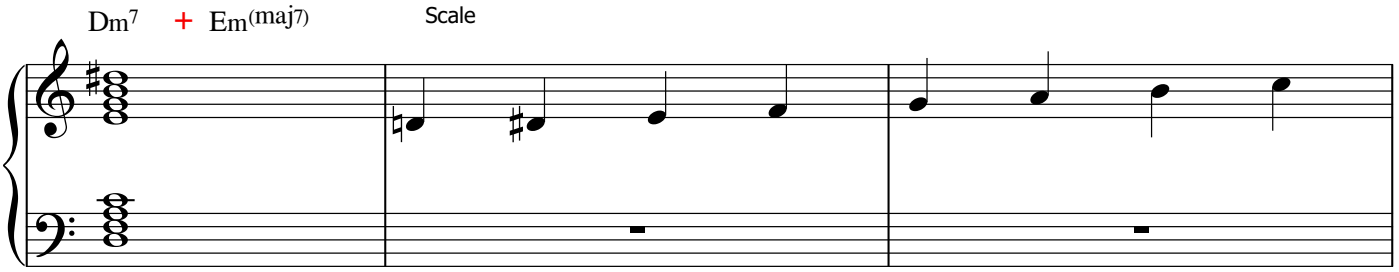


12 Tone Structures
Harmonic movement 5
creating scales

1. Let's now mix always two of the original 3 chords with each other and see what colors we get.
We wil get three scales of eight notes. All of the scales will contain more than one halfstep.
It makes sense to look at the scales in non modal way, but more like a vessel that contains different sounds.
Also, I will stack the chords in the most harmonic possible way (choosing intervalls of a major 7th
rather than its inverted dissonant counterpart, the minor 9th).

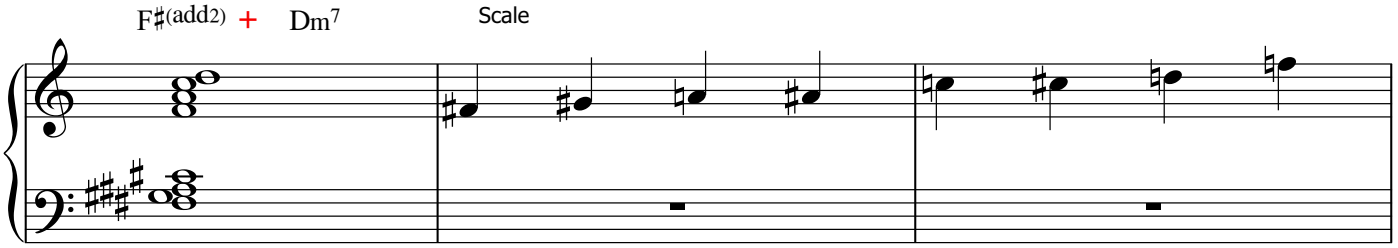


Mode 1.



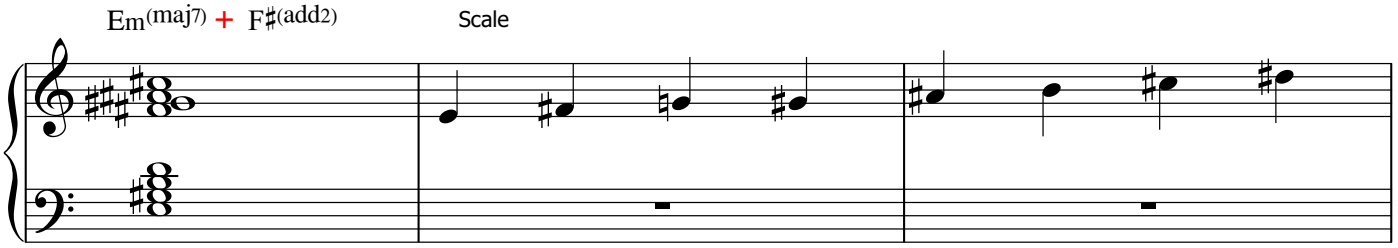
This scale looks like a dorian scale with a chromatic tone between the first and second degree.
If you want to treat the note more like a color I would most likely attribute this scale to an A minor sound
with an optional sharp 4 or flat 5. It would also work on a G7 Chord with an optional b13 sound
or an F Major Lydian with a "wrongish" optional flat seven.

Mode 2.



This scale looks quite odd. It does not fit into the concept of using a known scale with an extra note.
It rather reminds me of Messians Mode 3(three blocks of the first three notes of a minor scale, a major third appart
or halfsep-halfstep-wholestep x3) only with a missing note(in this case E).
As a sound I would prefer to play it over some kind of super altered F#Major7 with a #9,#11,b13 as optional sounds
to the natural 9 and 5. It also works as an Ab7 Mixolydian scale with a b5 and an added b9. Also here, the scale contains
different sounds that normally do not coexist in the same scale but are often played on the same chord as guiding tones
by acconpanists.

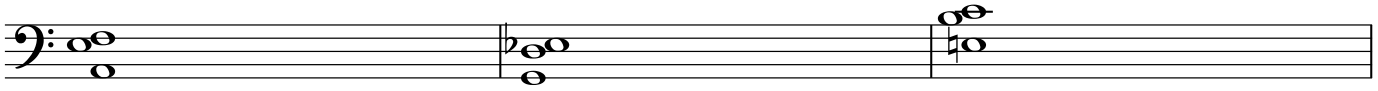
Mode 3.



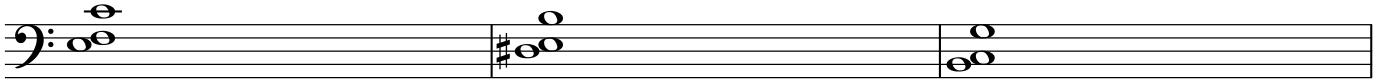
This scale can be seen as E Lydian plus the note G, or as the 5th mode of the harmonic minor scale with an added F# in this case.
Either way it works onan E major7 #11 chord with an optional #9 or on an F#7 with an optional b9 sound.
Generally, if you play both the flat and the natural 9 at the same time, for me the dissonance dominates how we percieve the chord.
So I would percieve the chord as a F#7susb9 rather than a F#9 sound.

Let's look for intervallic structures we can play in our left hand for comping while soloing over the modes.
I am looking for a three-tone structure composed of a fifth and a semi tone. Since some of the modes are very rich in semitones I assume we can find many of these structures. The structure gives a richness of sound and at the same time leaves space for coloration. Try improvising over the chords with the correlating mode.

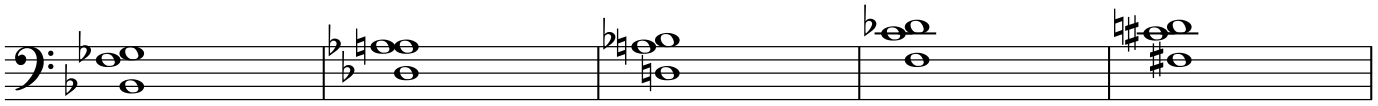
Mode 1.



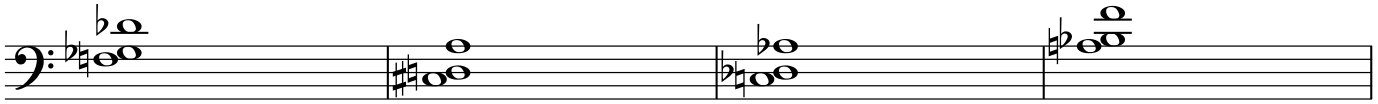
Lets lets reverse the order of the intervalls now



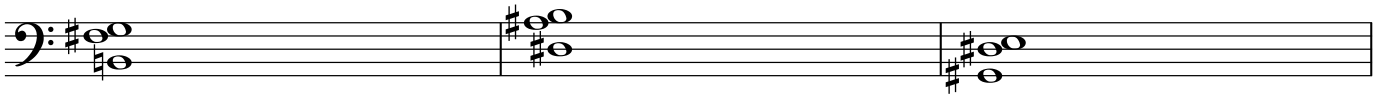
Mode 2.



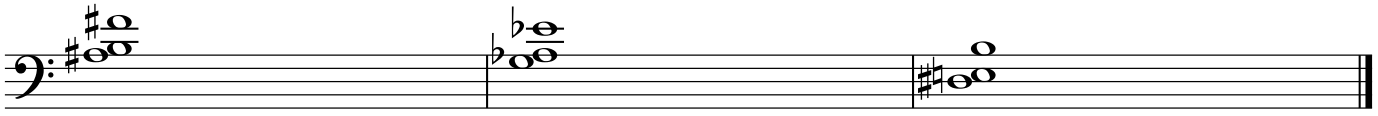
and reverse...



Mode 3.



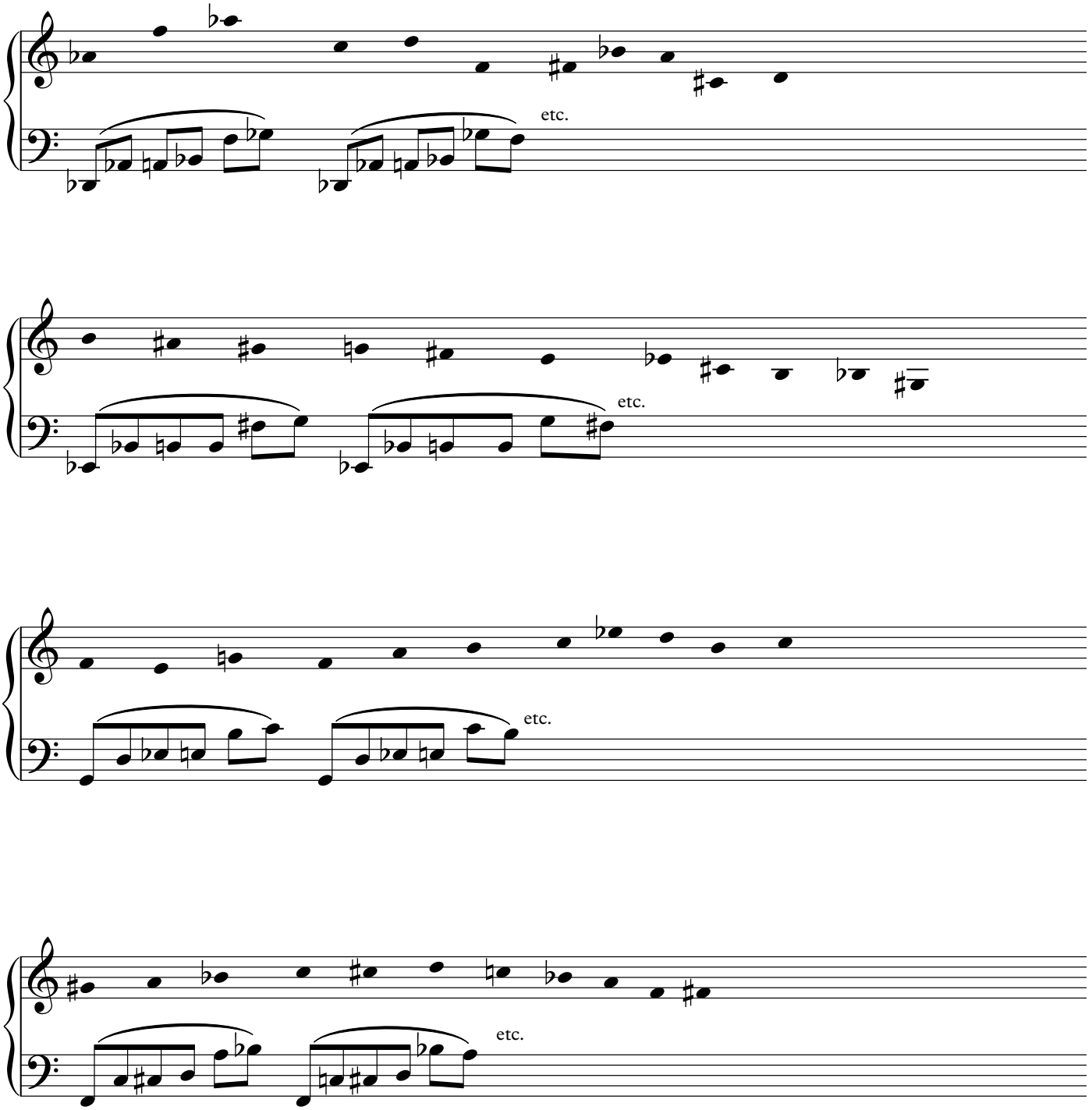
and reverse...

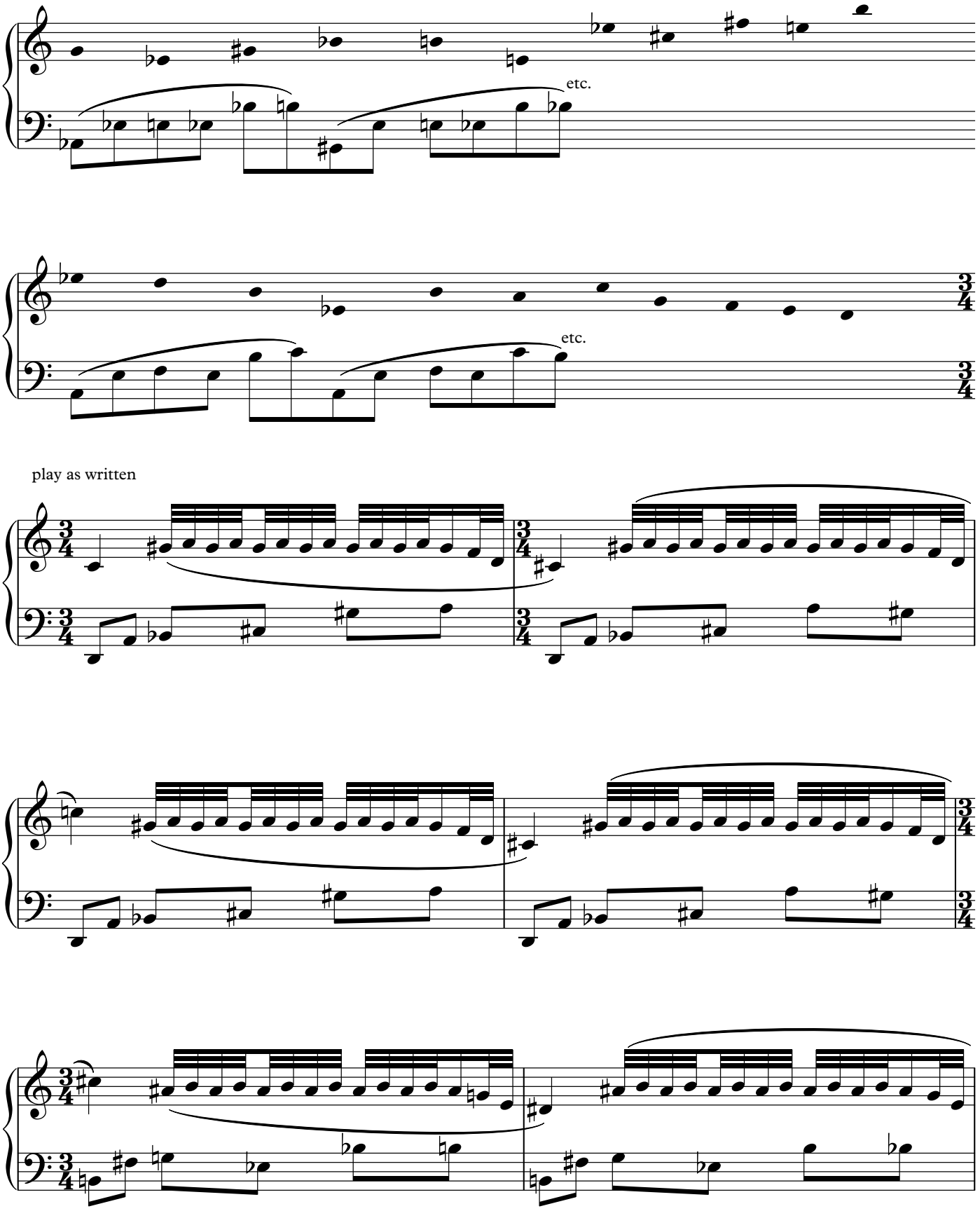


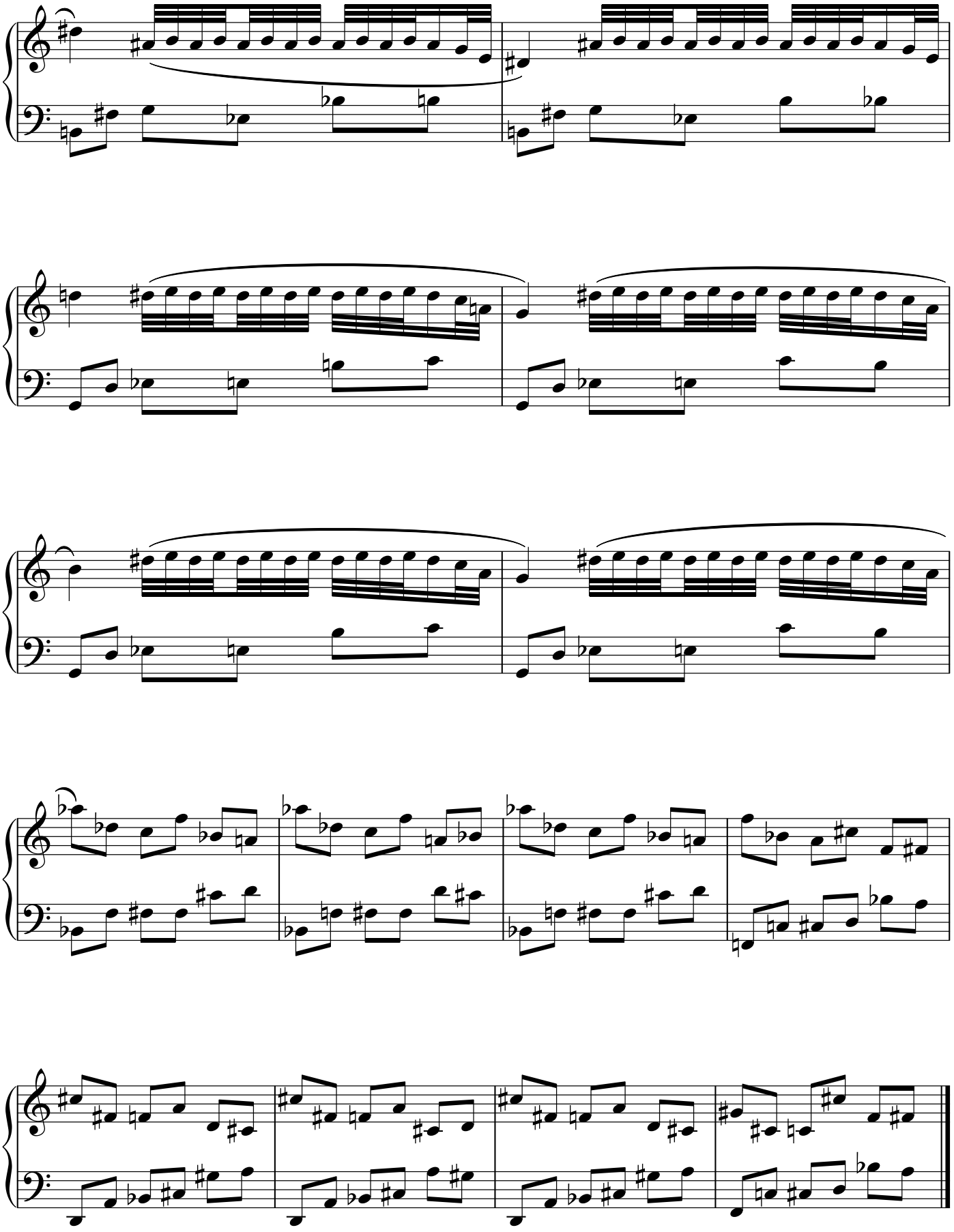
PNEUMO-LAKE

1. This is a piece I wrote using the modes that we have generated. The melody of the first part is played rubato over the ostinato bass pattern. note lengths can be varied as you please.
Compositionally this piece reminds me of Ligeti's "Musica Ricercata". The bass pattern is created by combining the shapes we have previously collected.
For the melody I created two rules: 1. All eight tones of the Mode have to be played. 2. There must be always eleven tones per mode.
3. The order of modes is always 2.3.1

add rhythm to melody as you whish

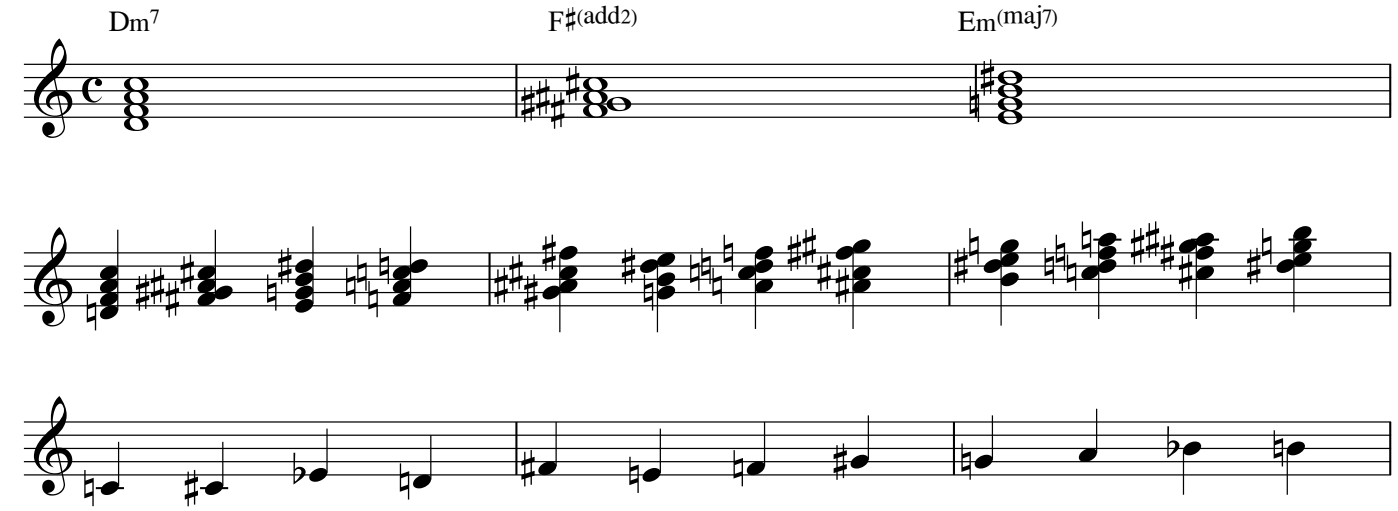



etc.
etc.
play as written

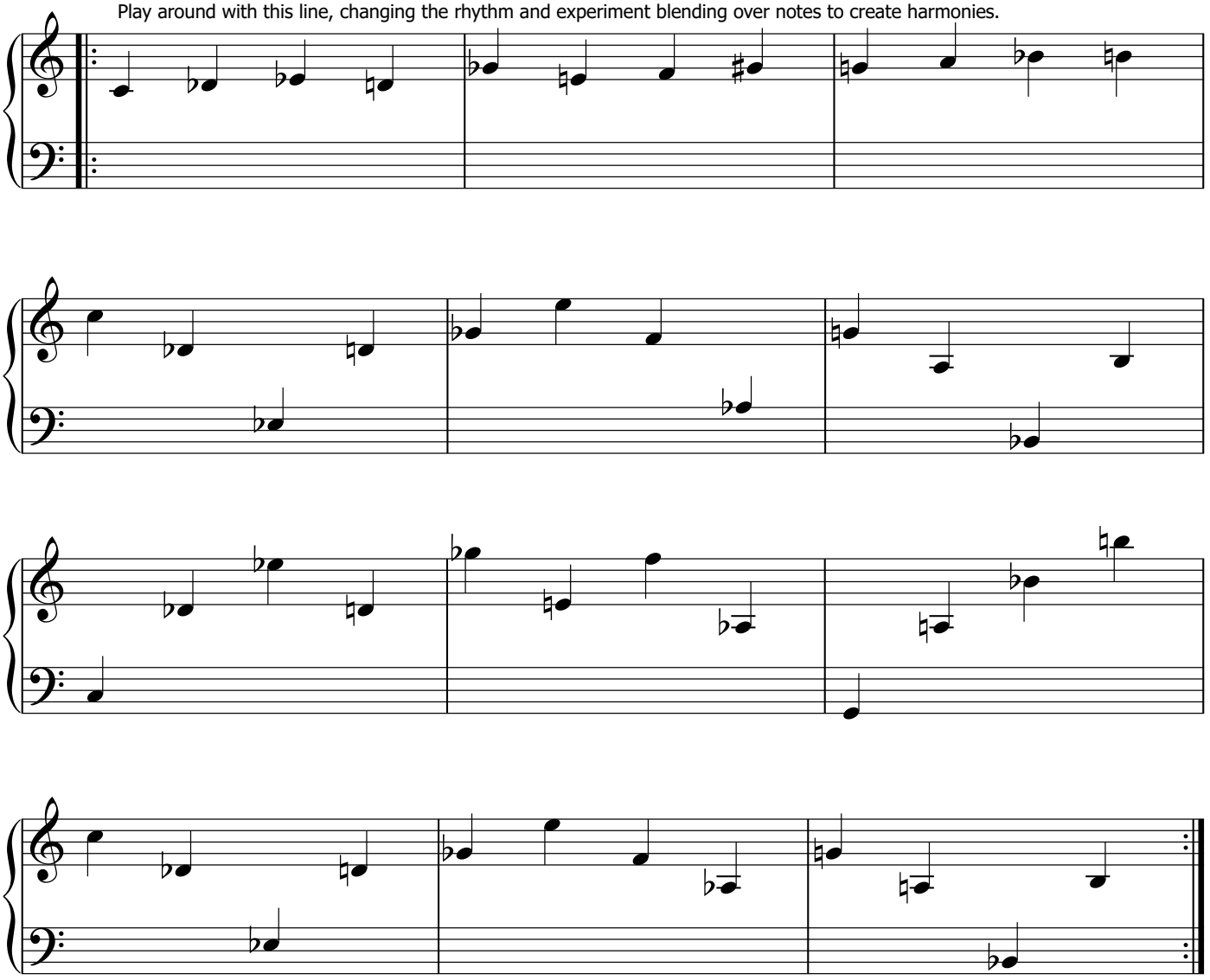


Modifying a Line

1. I wanted to create a loop of a line that expands in range and then shrinks, thus creating the impression of a pulse. So I took the top voices of this sequence of chords...

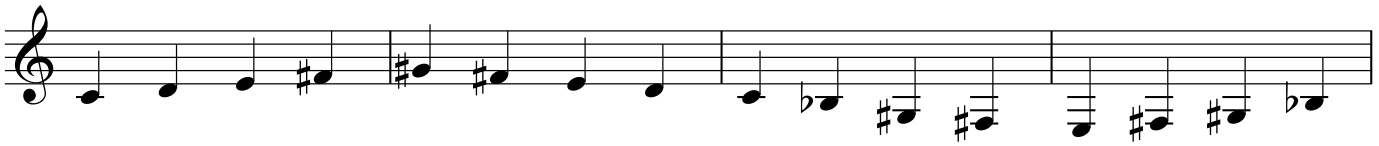


2. ...and changed the octaves of the row, increasing and then decreasing again the intervalls each round. This is a fun line! Play around with this line, changing the rhythm and experiment blending over notes to create harmonies.

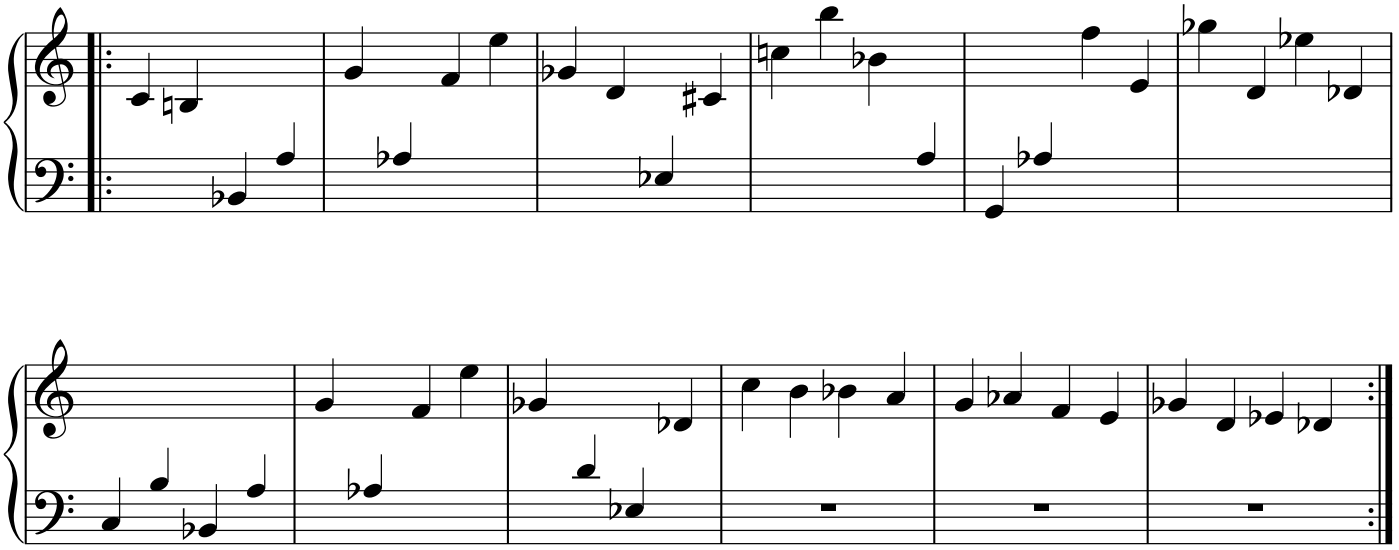


Circlic Motion

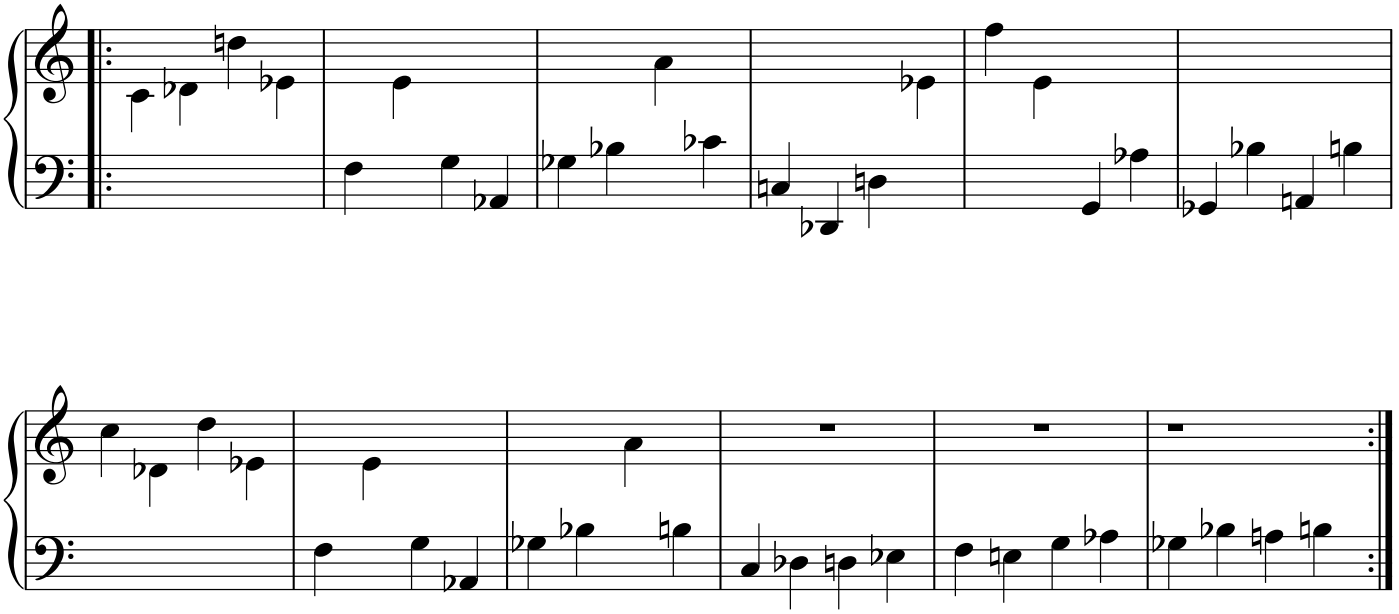
3. I asked myself, how can I create the impression of a circle with this line? To create the illusion of a circle let's look at a circle and analyse it. You can draw it on a paper to better understand what parameters we can use to translate it's geometry into music. Since in music we are subordinated to time, we can not have a static circle standing in the air, (although if we could see soundwaves, one tone in space might look exactly like an expanding circle) so we have to describe a circle like a piont that travels arround a circle. This will look like a wave indeed. Let's look at our drawing of a circle and draw two axes through its center so that it is devided into 4 equal parts. Let's say our horizontal axis represents time and our vertical axis represents pitch. Now we could say that in our first quarter our line will go up in pitches and in the next quarter the line is going down like it came up. So we reverse it. The third quarter is going down in pitch but going backwards in time. Geometrically seen it is a reversed and mirrored version of the second quarter. Mirroring means that we play the same intervals but in the opposite direction. Reversing means playing the same line backwards. The fourth is a reversed version of the third. Here is an example with an easier line. Notice that we can simplify and say that 3 and 4 are just 1 and two mirrored.



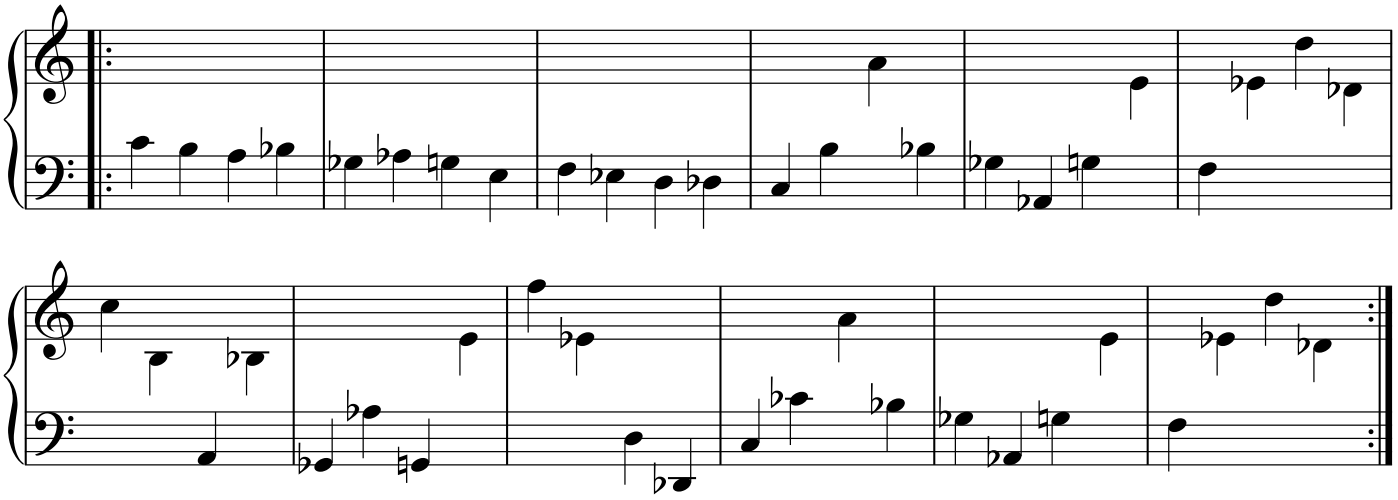
4. Now we apply this to our 12tone line from 2. This is the reversed line:



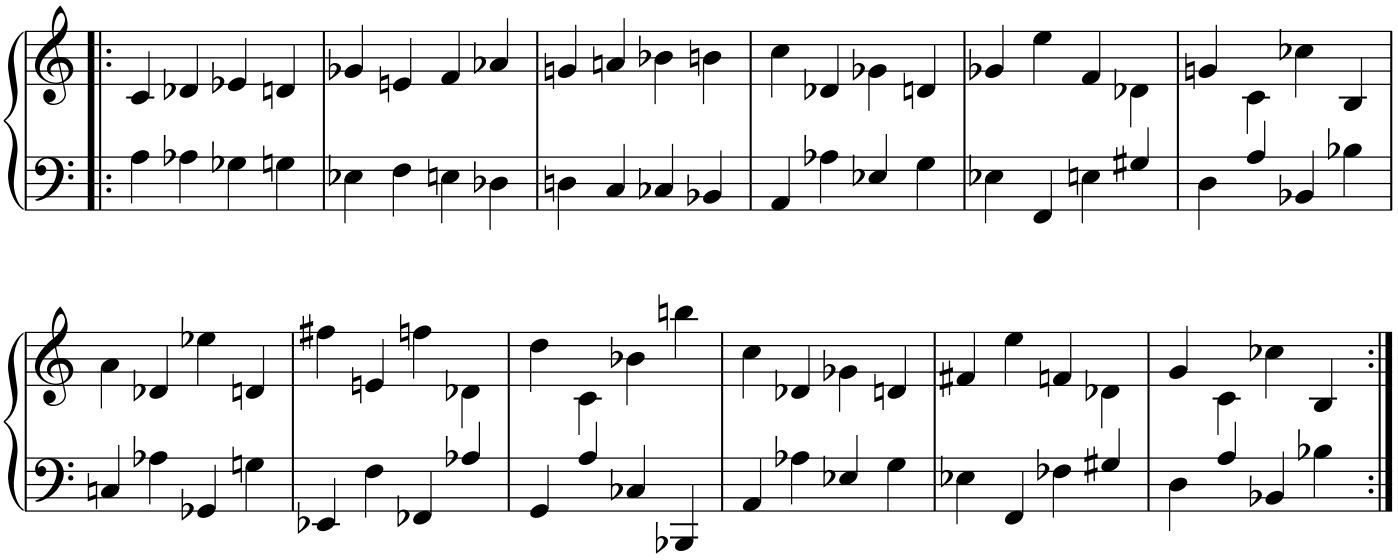
5. This is the reversed and mirrored line.



6. And This is the mirrored line. Play all four lines is a row. Play arround with rhythm and the overlapping notes to create harmonic impressions.

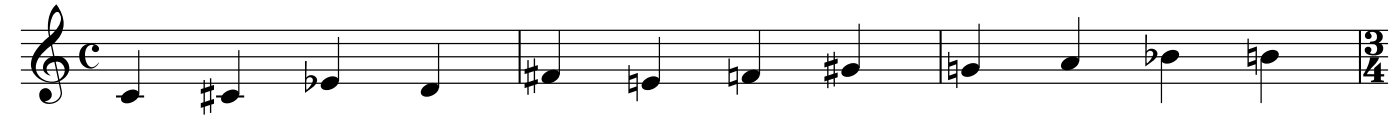


6. Just for fun I was curious how the line would sound with polyphony.
Here I mirrored the line and transposed it a minor third down to play it along the original line. Notice that due to the big jumps the right hand plays parts of the below line and vice versa, creating different melodies and tone repettitions. It's definately weird.

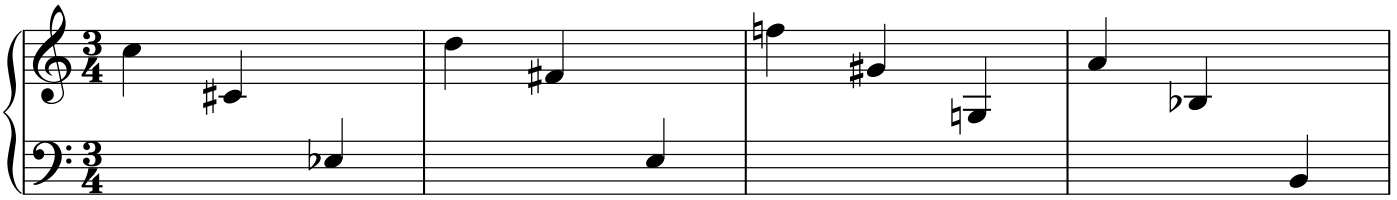


Working on a 12 Tone Line

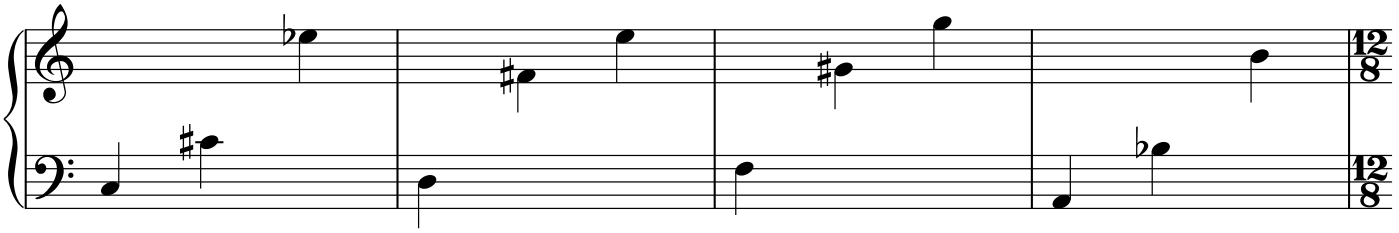
1. How can we create intervallic variation with a 12 tone line? Let's take the line from the chapter before to demonstrate some ideas.



2. We can invert the intervals: This means changing the octaves. We can make smaller units of the line by dividing it into groups. In this example I picked groups of three notes. We can choose a direction- I choose a downwards motion.

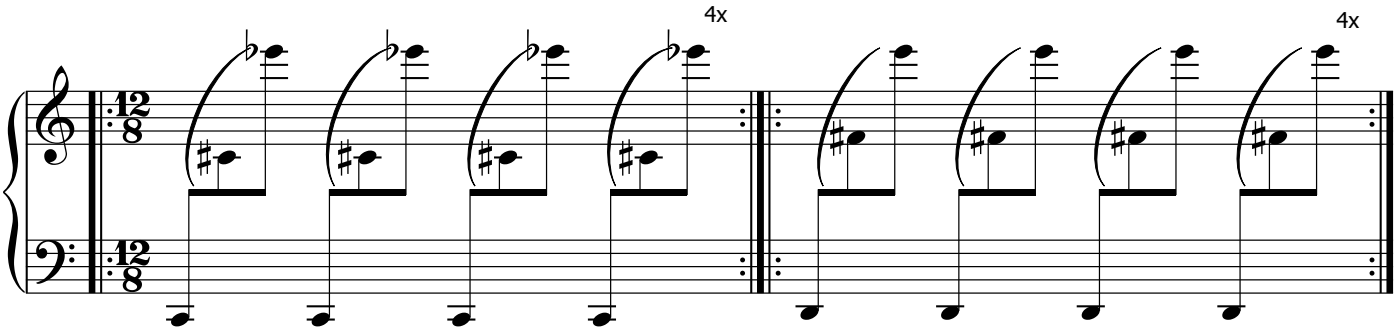


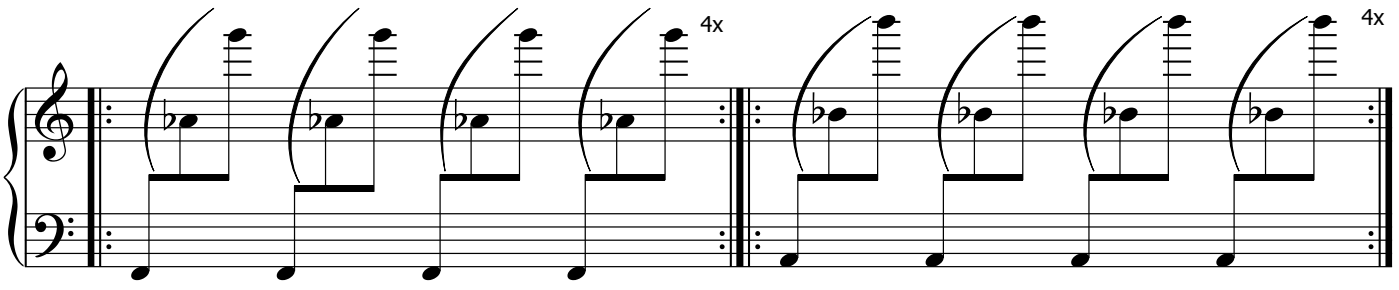
3. This is an upwards motion.



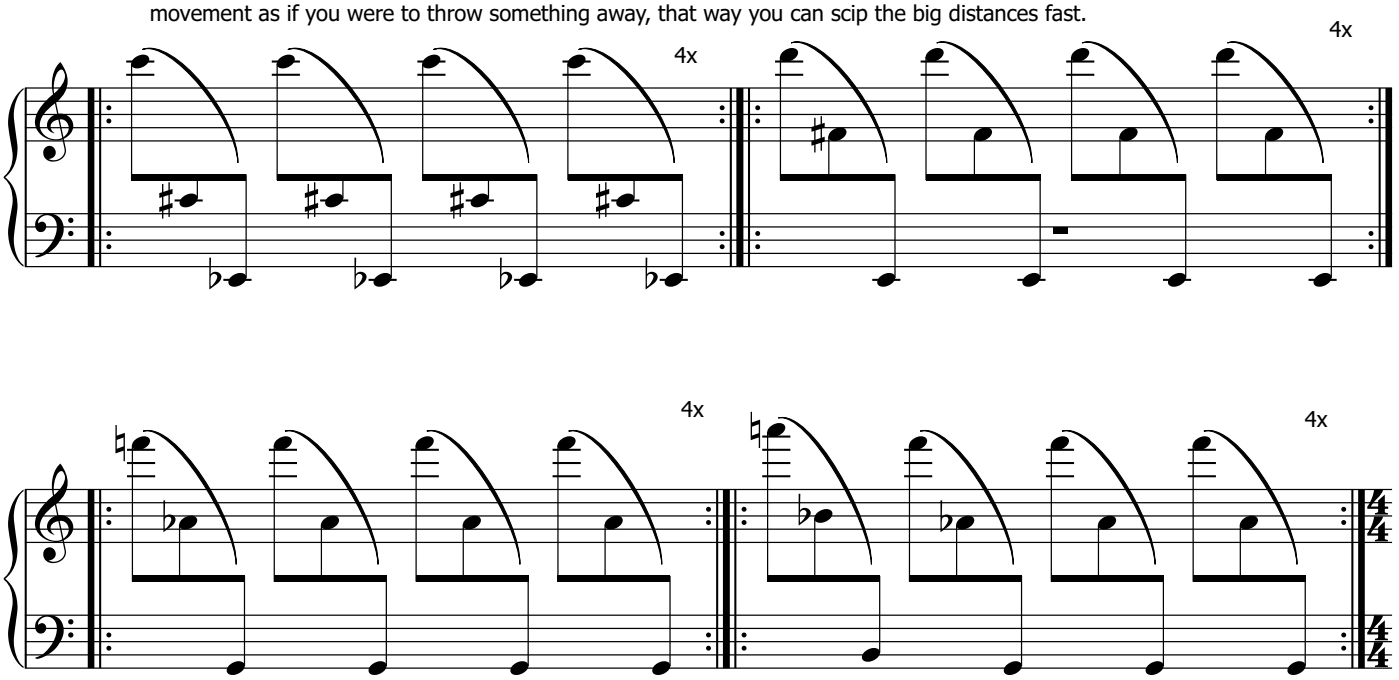
Exercises

4. Let's make the distances even bigger. This is an upwards motion with one octave added. Play the last two notes with the right hand and try to catch the last note out of a snapping movement. It's a great exercise and also a good accompaniment for a melody that's played on top of it. Play with articulation, use the pedal or play staccato, use it as a meditation. Repeat each bar 4 times.



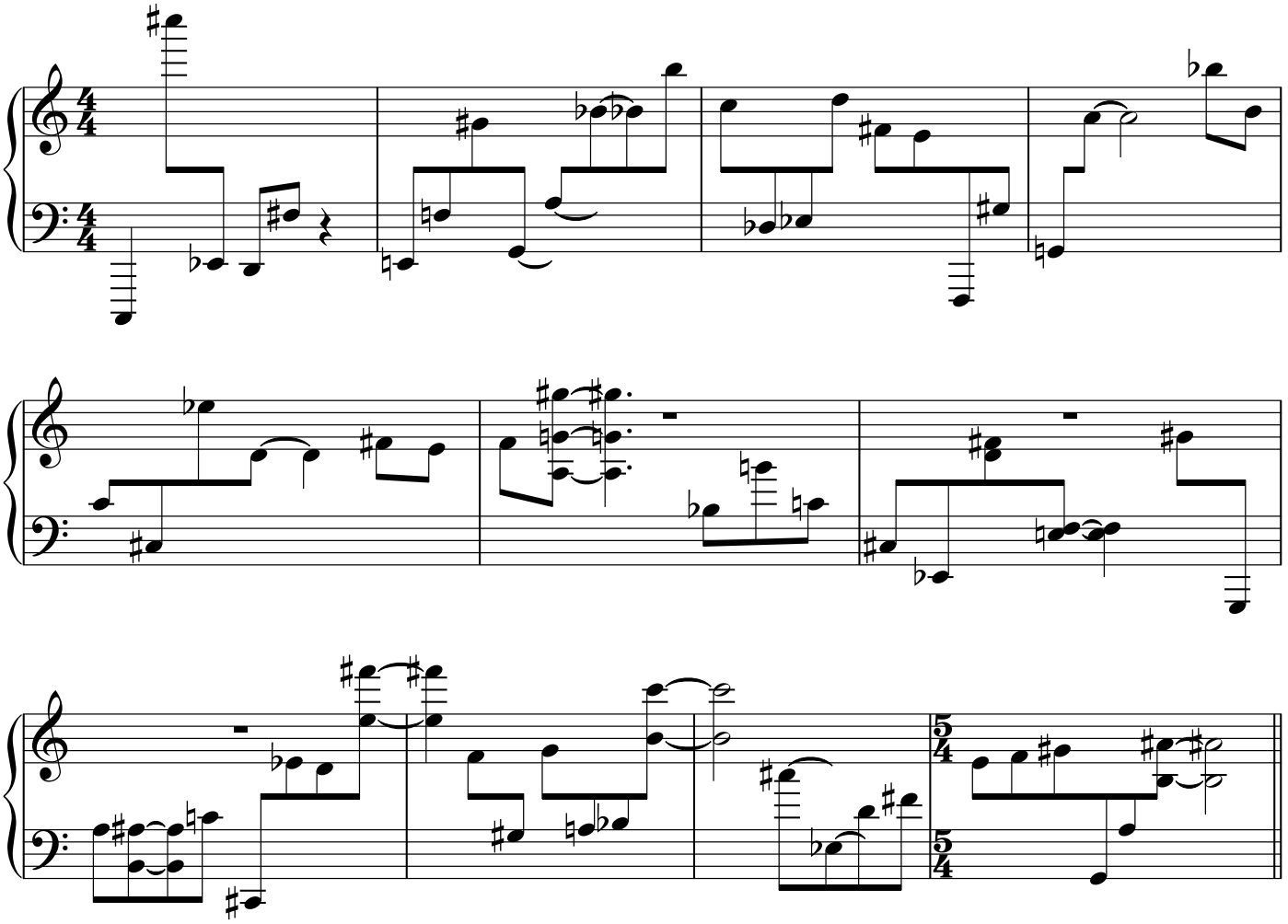


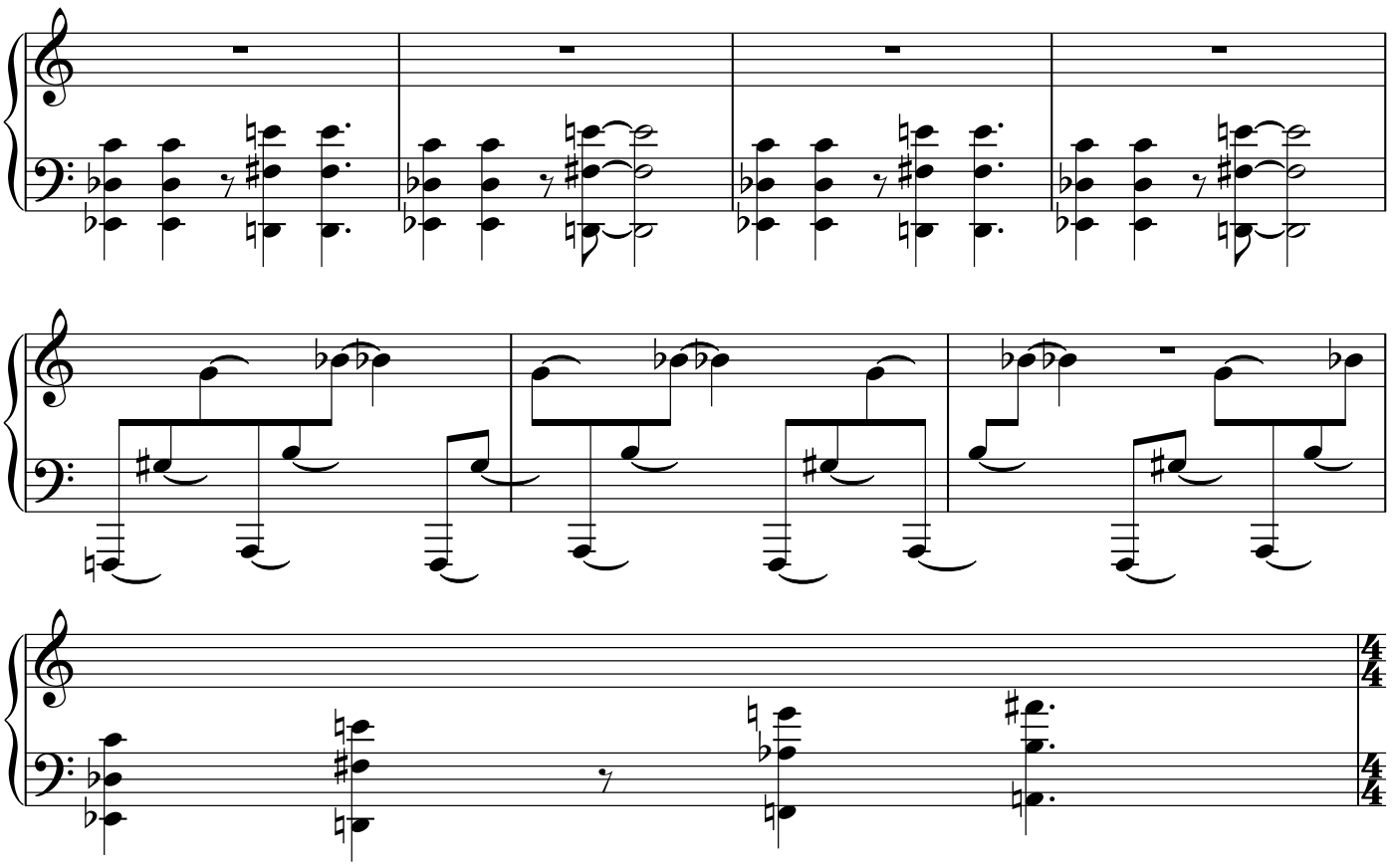
5. Play it downwards too. This time play the two last notes with the left hand and snap the last note out of a wrist movement as if you were to throw something away, that way you can scip the big distances fast.



6. Drill: Memorize the row so well, that you can assign random octaves and rhythm to each note. Here is a piece I wrote with this approach. Notice that I added a vamp in 5/4 after the theme to create some variation. The chords of the vamp are derived from the line in the same way as in example nr.2

KUMARE'S DRILL

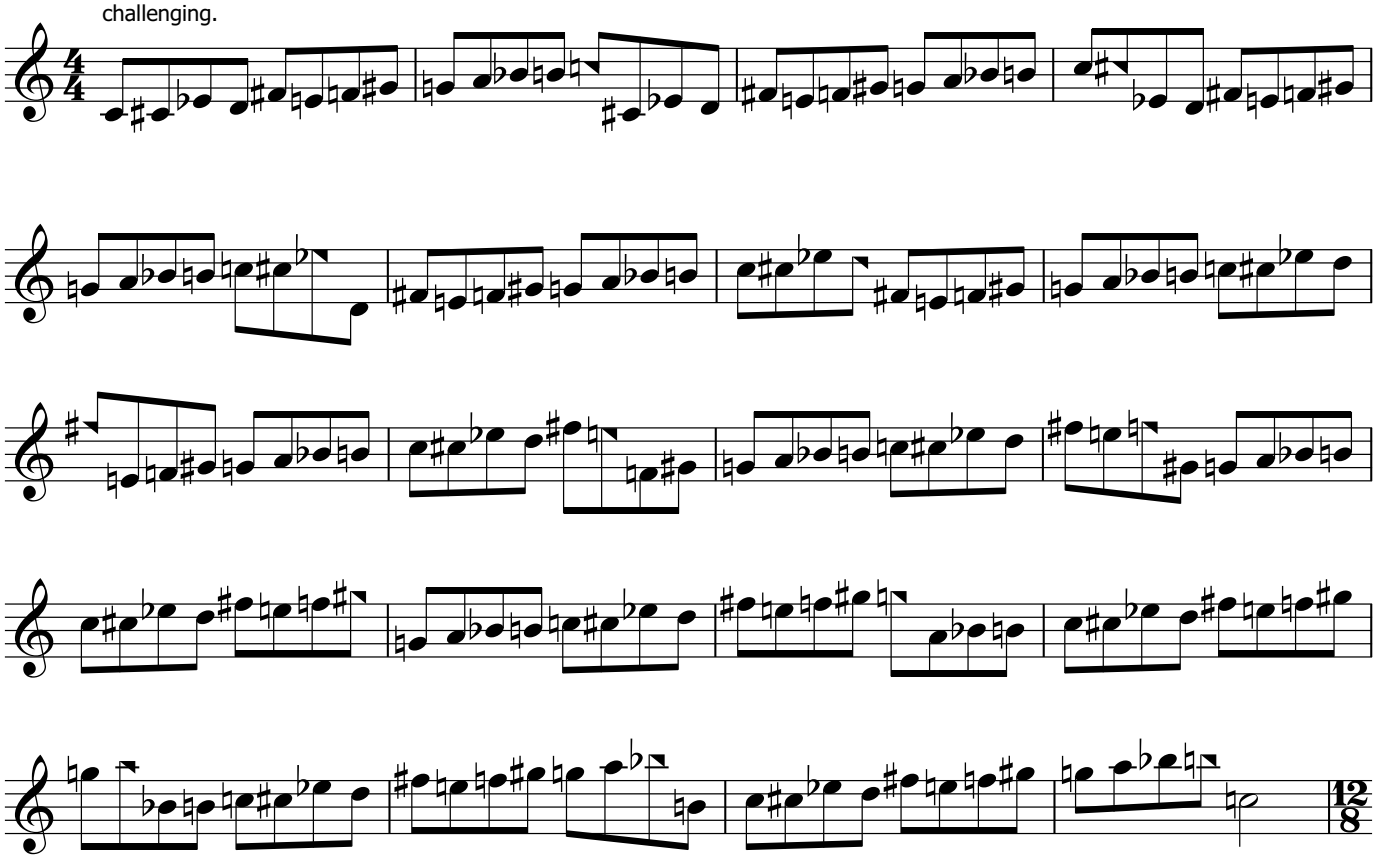




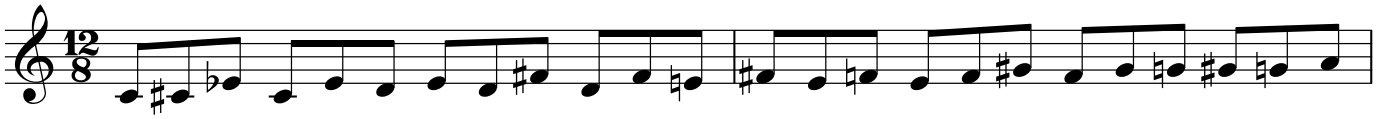
A "Scaleish" Approach

7. We have explored ripping appart the intervals of our 12 tone row, now let's take a more "scaleish approach" and treat the whole row as a scale.

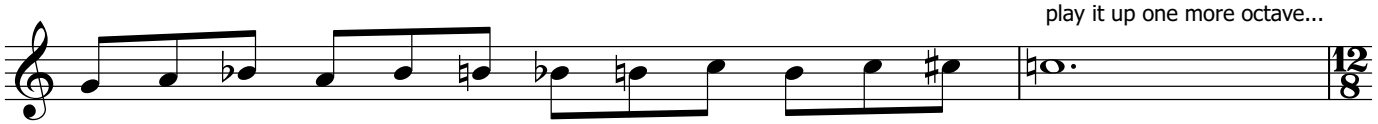
I call this one "The Mode Exercise" because it goes through the line like we do with modes in a diatonic scale. Always starting at the next step of the row. I always marked the notes after which we drop back to the next mode. This exercise is easy to mess up. If you feel confortable with it try playing it with both of the hands and then start the left hand one 8th note later to create a canon. Also try to start playing the left hand two or three, or more eight notes later. This is quite challenging.



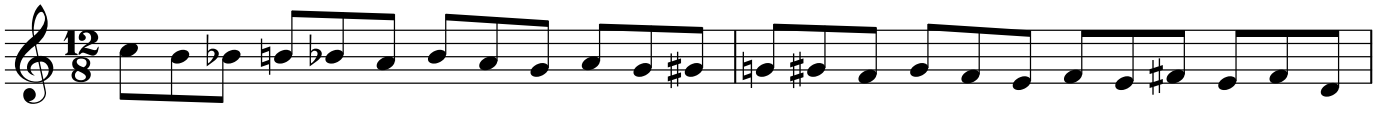
8. Here is an exercise playing always three notes in a row then jumping back to the next step. Actually, any scale exercise you know and are used to play on a major scale works for this one too (playing different intervals in different groupings), only it gets weirder and more interesting with the 12 tone line.
Try to play this one fast. It's a real tongue twister.

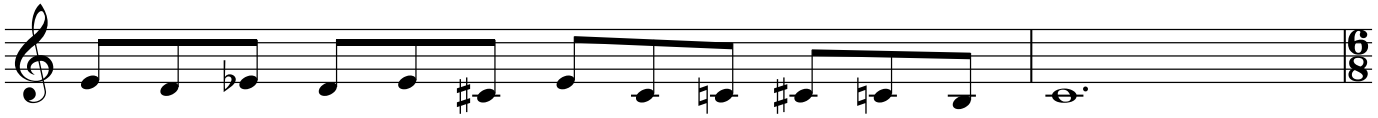


play it up one more octave...

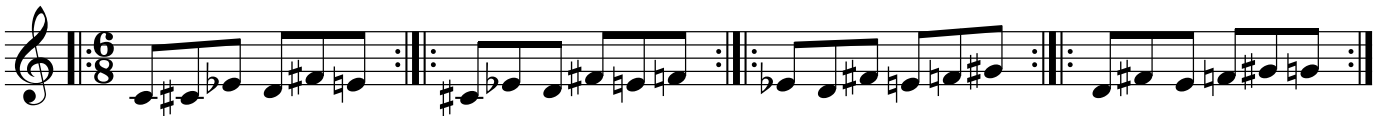


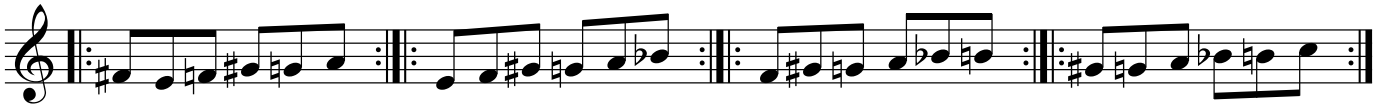
...or descend right away

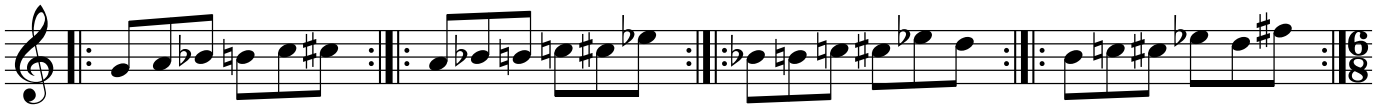




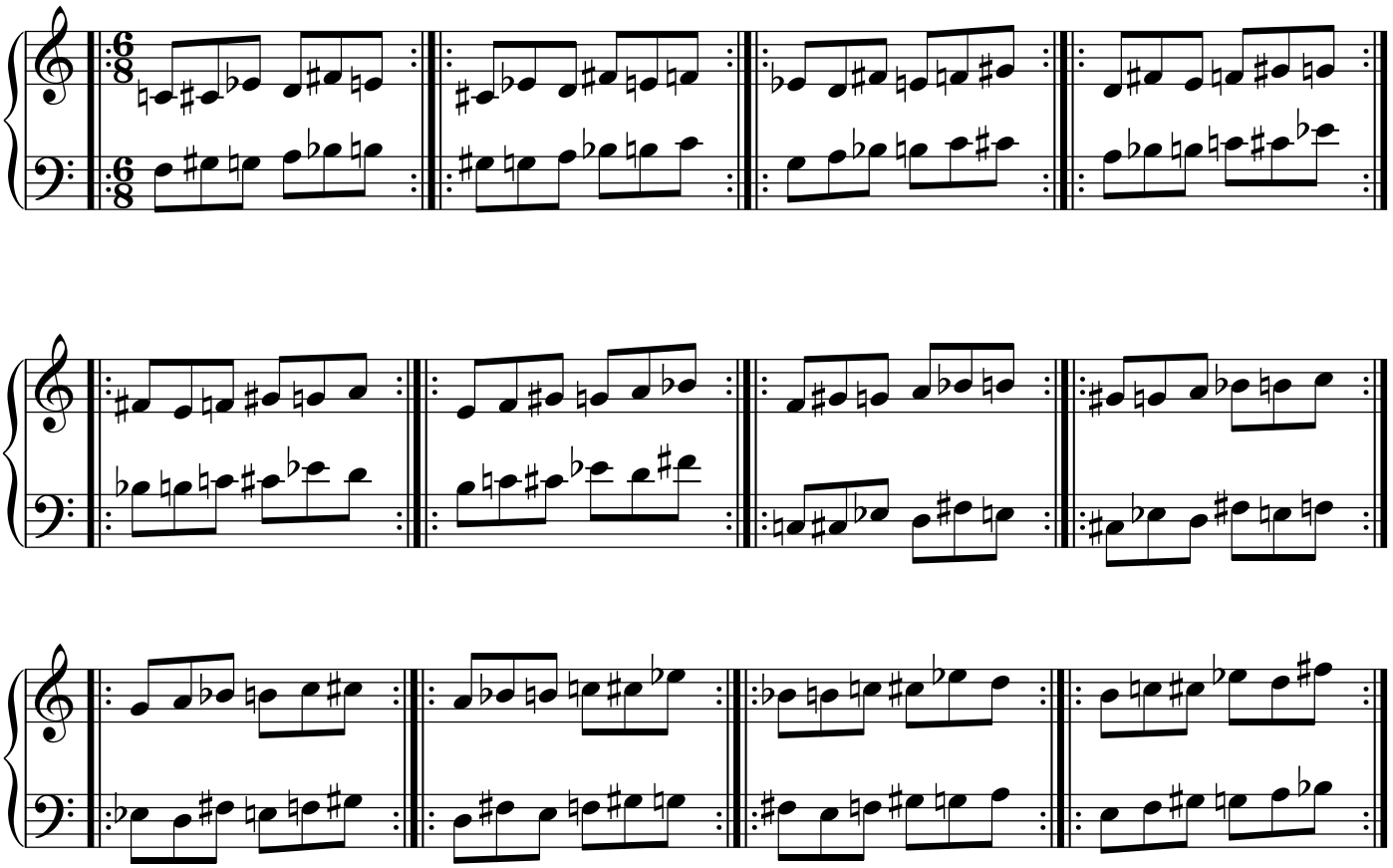
9. For the next exercise we will take a similar approach, but take six notes as a unit and repeat them 4 x or more if you wish. Try to gain some speed here and play it with the left hand as well. We will need this as a preparation for the next exercise. Also try playing it without repeats. You'll find this is quite a intriguing line to play!







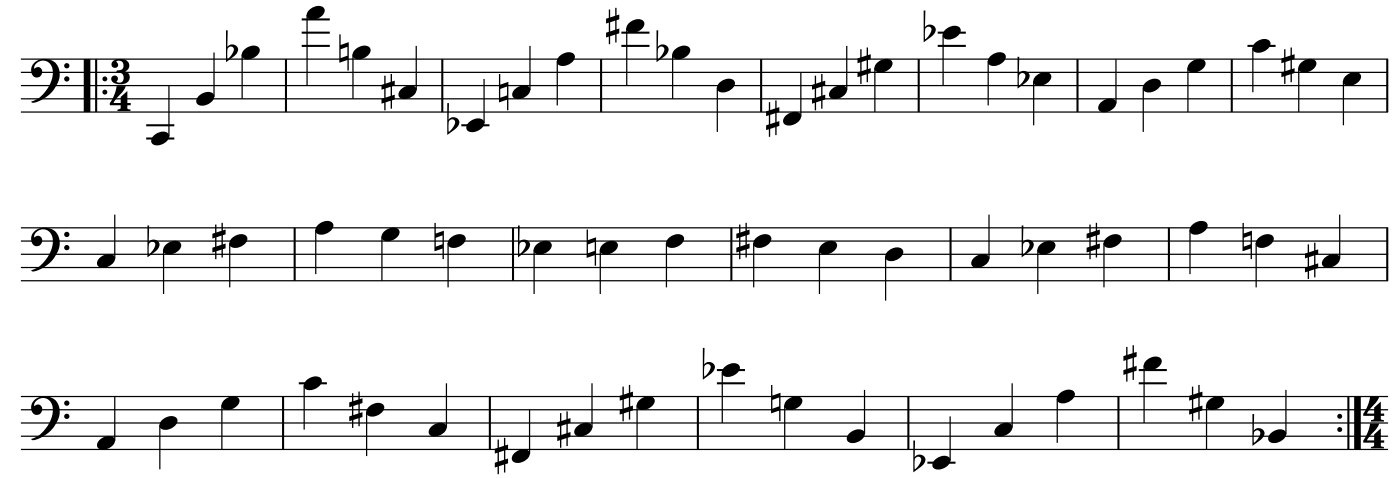
10. Now let's add some polyphony and start the left hand on the note F (six blocks later). Also repeat each bar at first and then go on to play the full line without repeats. This is a canon.



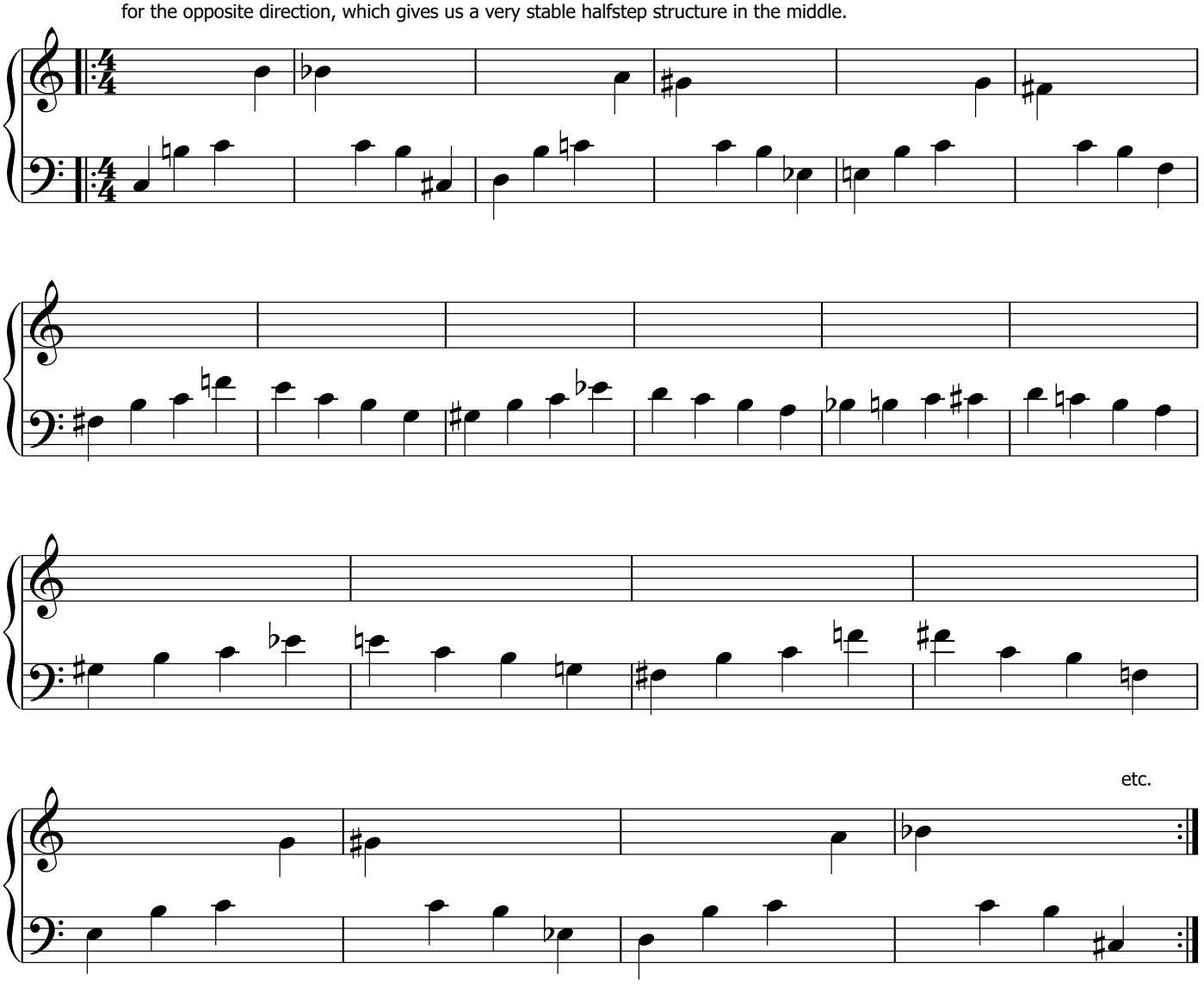
Interval Loops

all-interval-rows

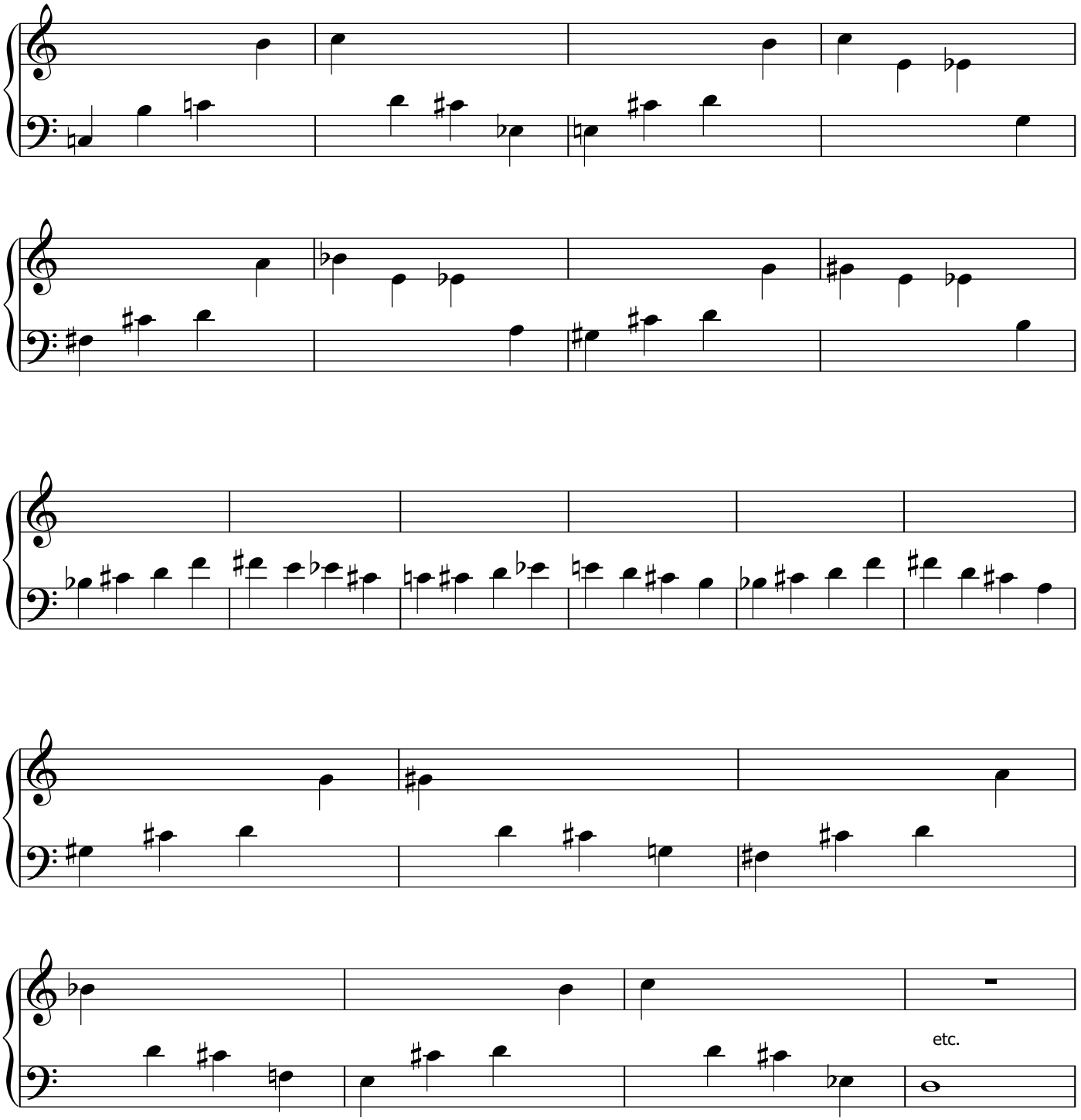
1. My idea was to create an impression of expansion and compression to mimic the movement of a pulse.
So I came up with this ruleset: We move up 3 steps and then down 3 step. Each time we change the direction we decrease the interval by a halfstep. Once our interval cannot be reduced we enlarge it by a halfstep. We start with a major 7th.
Play it with two hands, play always two notes in each hand.



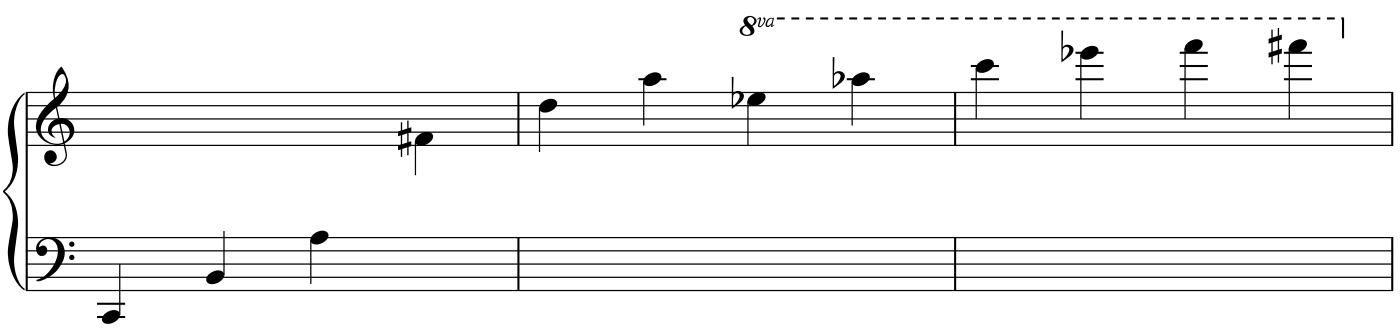
2. You can play arround and create different rows by changing the steps you make up or down.
Another way to add variation is to add a fixed interval in between every step you make. Let's say we take a Halfstep and let's only do two steps up and down. There can be a debate if we should play the halfstep on the bottom end, up or down. And I opted for the opposite direction, which gives us a very stable halfstep structure in the middle.



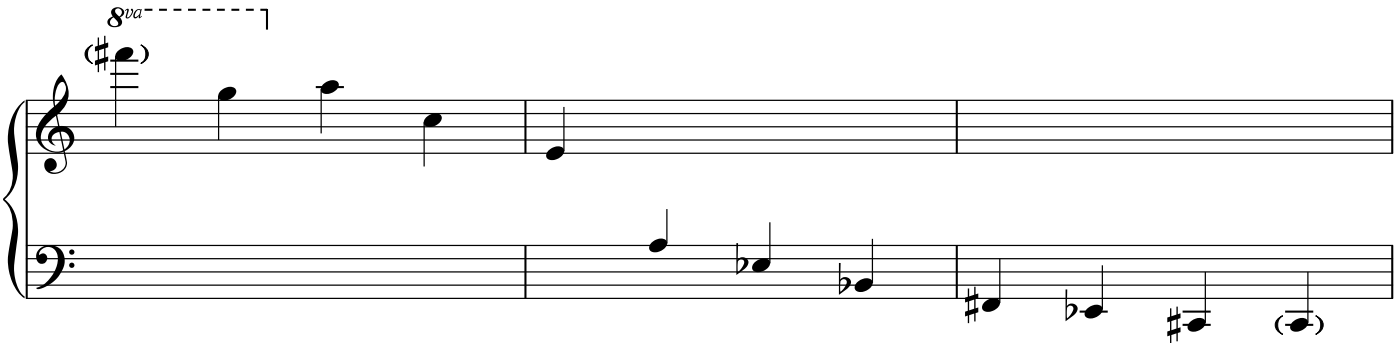
3. Let's now play the halfsteps on the top and bottom in the direction they are coming from.
This creates a more interesting harmonic movement. Notice that this row modulates by wholesteps, which means that it will arrive at the beginning of it's cycle, one wholetone higher than it started.



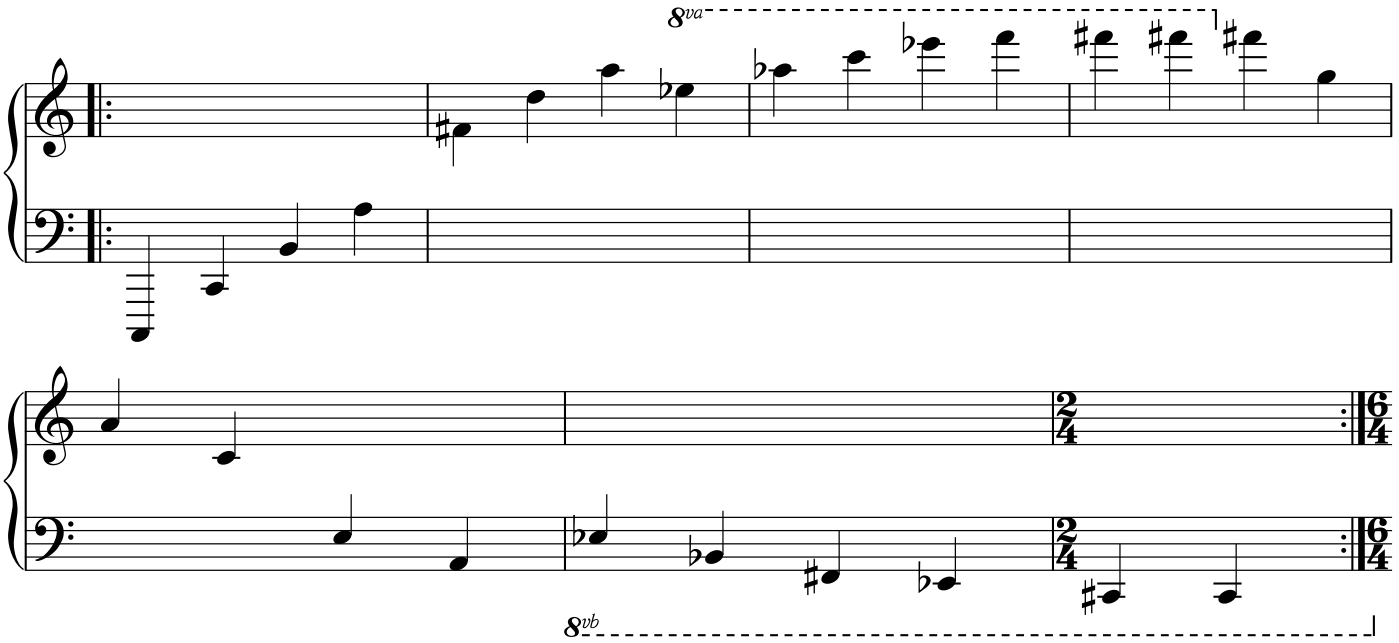
4. Here is an all-interval-arpeggio. It is a line that goes upwards, reducing the interval by a halfstep, each step.
Notice how tonal it sounds in the beginning. If we were to attribute a chord symbol to it, it would be the one of CMaj7#11.
In the later phase we can see it drift into the realm of AbMaj7 which is a mediant(third related) of C.



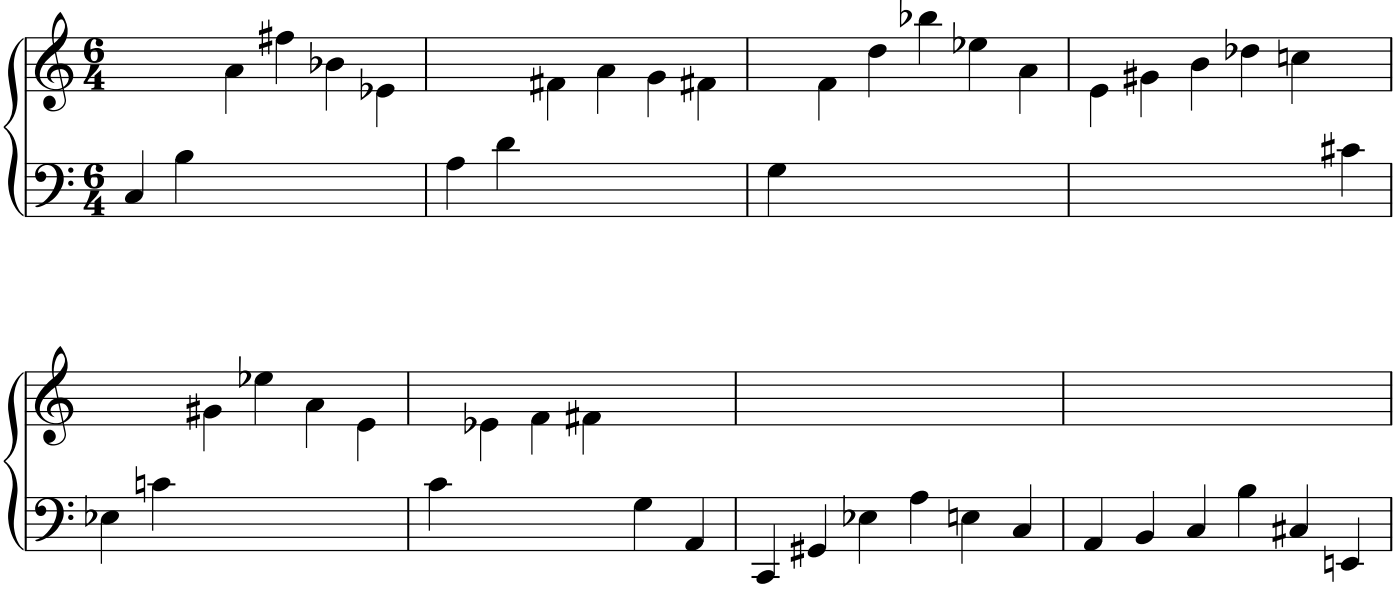
5. Now, let's take it down from here by again starting with the interval of a major seventh. It starts off with a A-7,13 rendering and then transitions into Eb-7 before dropping back to C. It makes a cute little loop when combining it with the ascending arpeggio from example 4. (make sure to leave away the tone repetitions though).

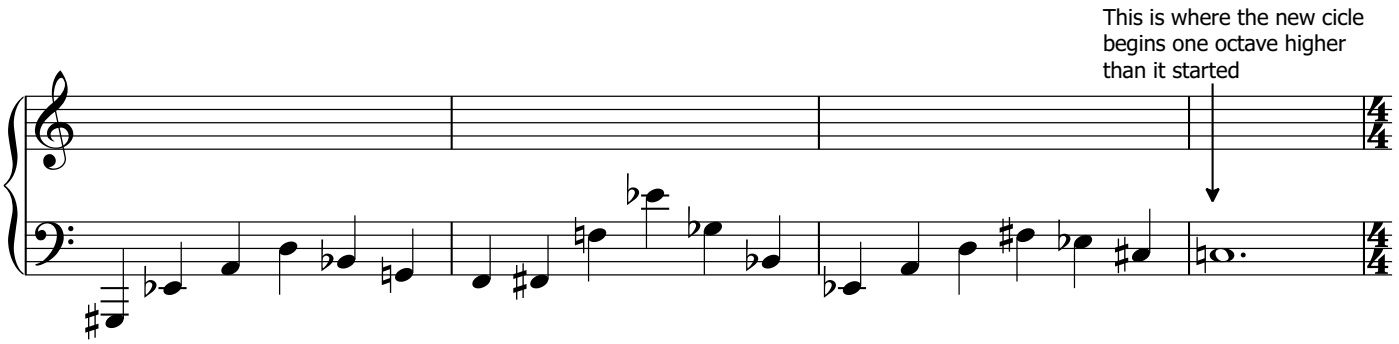


6 . Here is the same line with the only difference, that I now included the intervals of the octave and the prima.
It now covers the full range of the piano and has an almost groovy feel to it that comes from the tone repetitions, which in this case are caused by the prima and the octave.

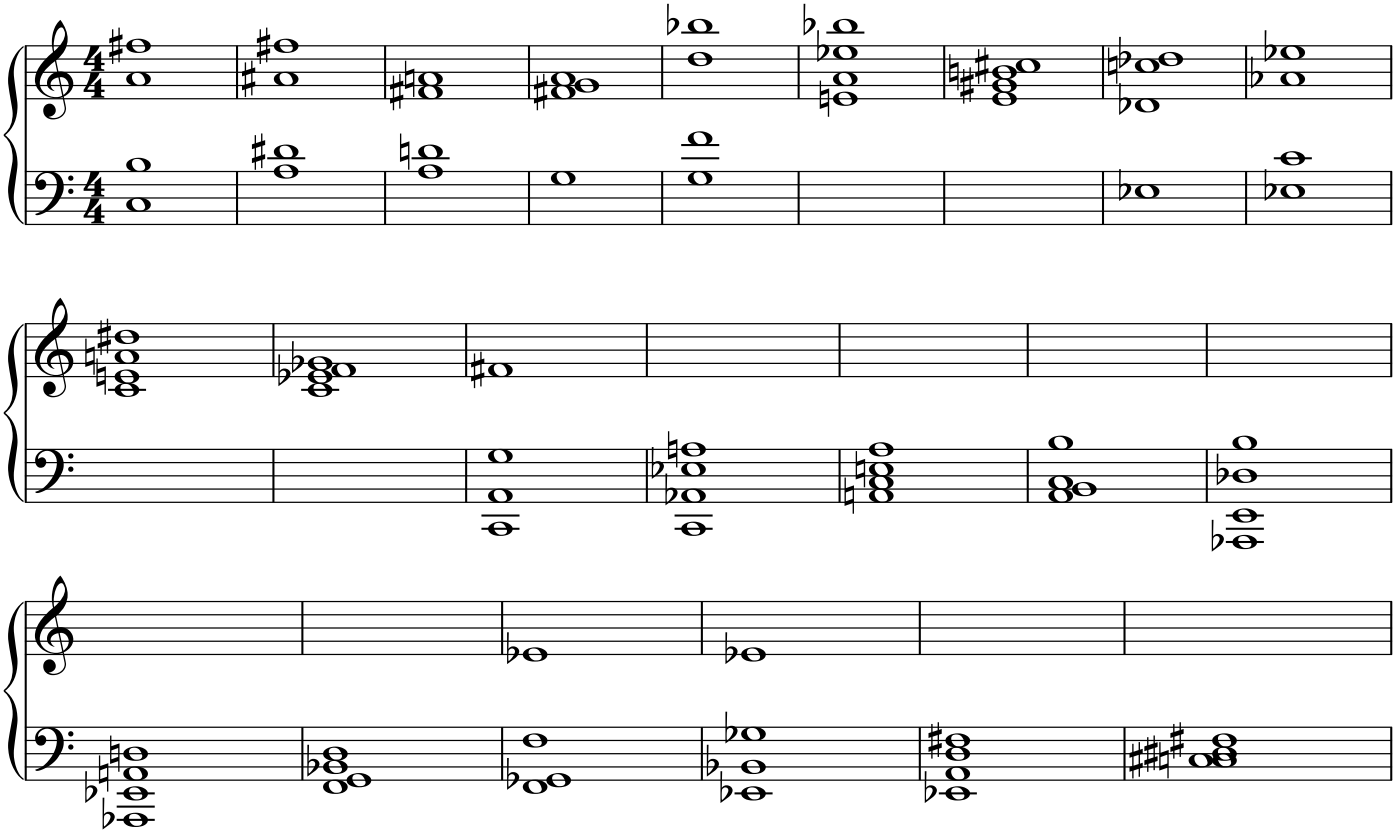


7. Now we can add another element we used before: The change in direction. Let's change the direction after three steps.
We will, for this example, not include the octave and the prima. Notice that since the number of steps(6) don't match the number of intervals(11) in this cicle we will go on a long trip with this one(6x11) until the cicle repeats. Play two notes in each hand always.
It's funny, although the line seems to meander downwards, in the end, the new cicle starts one octave higher than it's origin.

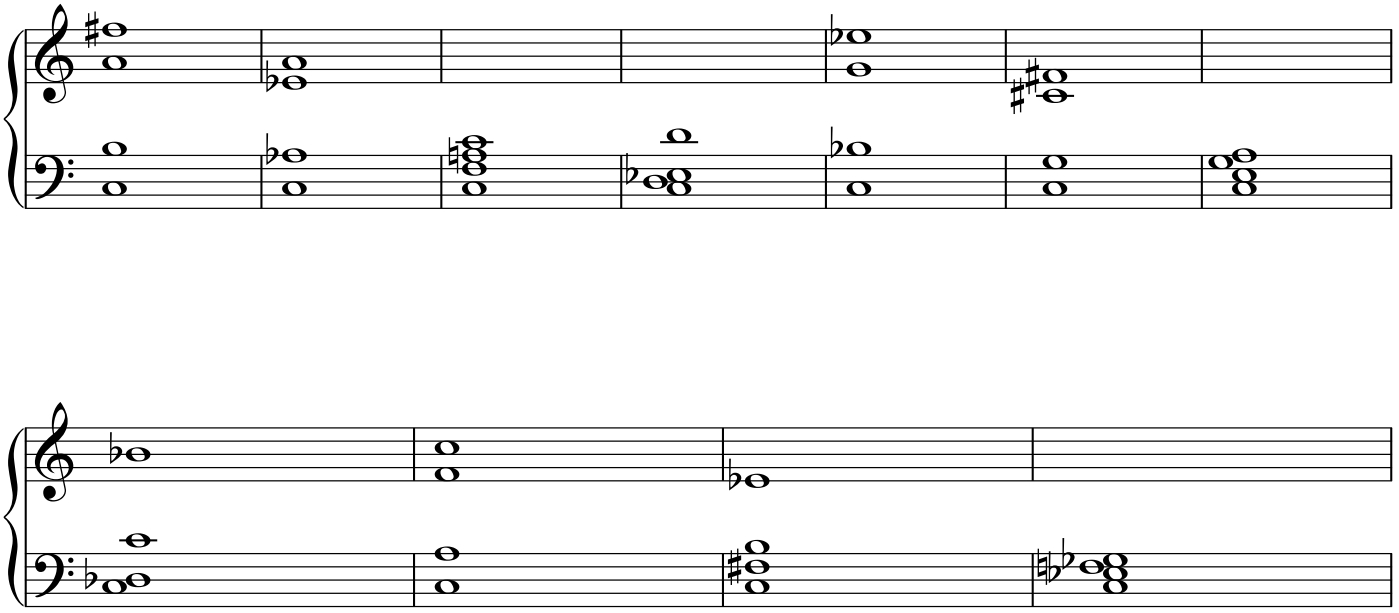




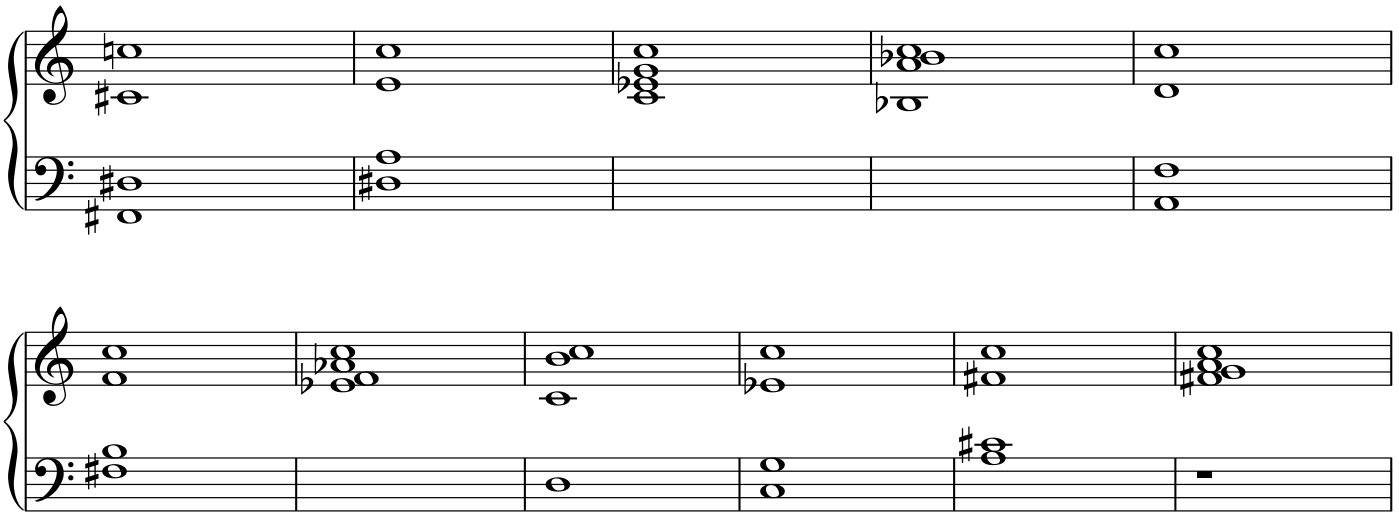
8. Now we can play the groups of four notes that naturally fall in our fingers(when we play two notes per hand), at once and see how they sound as chords and what harmonies they make.



9. Notice that in the previous example, one of the the outer voices always repeats. This lead me to the idea to, rather than jumping from the top to the bottom voice, try playing the intervallic structures always from one fixed starting point, thus creating a tonal reference point. We will at first start with the bottom note as a fixed note and build our all-interval-sequence on top of it.



10. Now we do the same thing but with the top voice as a fixed point, adding the intervals donwards in the same sequence: Decreasing the intervals from a major sevenths to a minor second, and so on. It will give us a mirrored version (negative, as some say) of example 9.



There are so many more possibilities to explore here. Changing the parameters we are working with will give us a tremendous amount of variations. Here are a few I can think of:

-We can change the number of steps.

-We can modify the intervallic sequence by, for example, playing the intervalls in an ascending row(from small to big) or by adding both.

-We can make blocks of four or three or five from the all-interval-arpeggio as in example 4. and play them in the range of three octaves.

-We can apply the techniques of mirroring and reversing a line, that we have talked about in the previous chapter called Circlic Motion.