Side Quest: Counterpoint

In other music programs with a longer theory sequence you might spend a few weeks studying counterpoint, which is the art of weaving lines together so that they create a compelling and pleasant combination. Here we really only have time for one day and then we'll move on to a related topic (i.e. writing chord progressions that also obey the rules of counterpoint.)

However, if you are interested in a side project which will make you a stronger composer, here it is, a whole packet of old materials that you could use to learn counterpoint. If you want to make some first- and second- species counterpoints for me I would definitely check them out.

Since this is a compilation of old handouts it is unfortunately not as well-organized as our theory text - it doesn't have continuous page numbers and such. I start with some "quick guides" for you to get oriented and then you can continue from there.

Version 0.9 created 11/4/24 by Dave Smey

Quick Counterpoint Rules

(for Renaissance-style "first-species" counterpoint)

Four Motion Types

First we need to define these terms.

contrary motion

lines move in opposite directions

oblique motion

one line moves, the other one doesn't

parallel motion

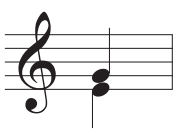
the lines move the same distance in the same direction.

similar motion

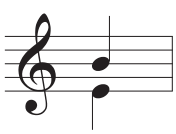
moving in the same direction, but not the same distance

Rule One: Good Consonances

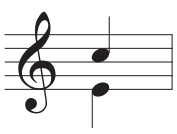
When we make our line we want to make **3rds, perfect 5ths, 6ths and 8ves** against the pre-existing line. We are not allowed to make 2nds, 4ths, diminished 5ths or 7ths.



third



(perfect) fifth



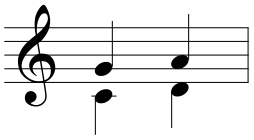
sixth

octave

Rule 2: No parallel 5ths, no parallel 8ves

When you are making a fifth you may not move on to another fifth.
When you are making an octave you may not move on to another octave.

BAD



parallel fifths

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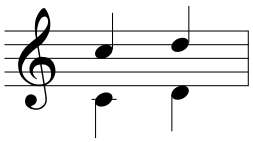

parallel octaves

Rule 2b: No consecutive 5ths or 8ves by contrary motion either

You also aren't allowed to shoot out in opposite directions to go fifth-fifth or octave-octave.

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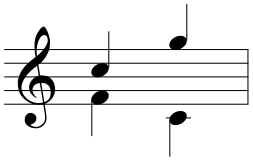

fifths by contrary

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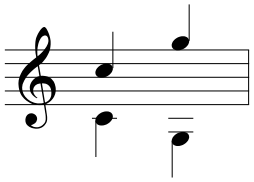

octaves by contrary

Rule 3: "Direct" 5th and 8ve

You are only allowed to approach a 5th or 8ve by contrary or oblique motion.
If you do it by similar motion that's a "direct" fifth or octave (and we already know parallel 5's and 8's are bad.)

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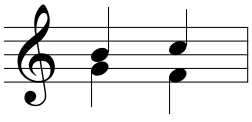
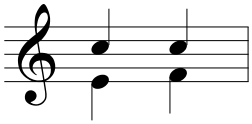


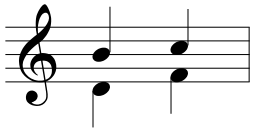
approaching by contrary

GOOD



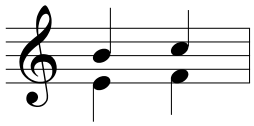
approaching by oblique

BAD



approaching by similar = direct 5th

BAD

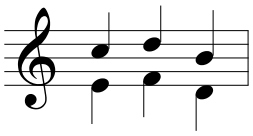


parallel fifths

Rule 4: Limit on 3rds and 6ths

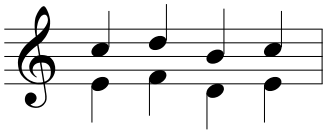
Parallel 3rds and 6ths are good. However, three 3rds or three 6ths in a row is considered the maximum.

GOOD



three sixths in a row

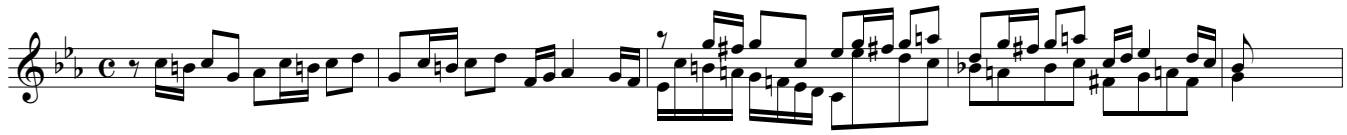
TOO MANY OMG



First-Species Counterpoint: Lesson One

Counterpoint is the art of combining musical lines so that they sound good together and yet retain a certain independence. It is an extremely valuable skill for a musician to study – historical evidence shows that Haydn, Mozart, and Beethoven all worked on counterpoint from the same theoretical text, Fux's *Gradus ad parnassum*, (even, in Beethoven's case, when he was already a very successful composer.)

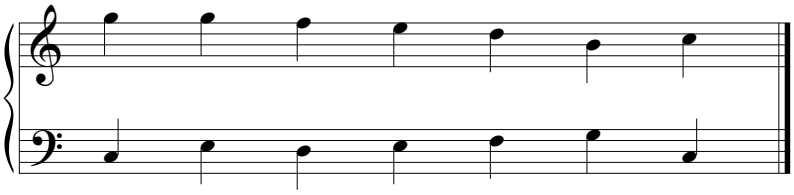
Counterpoint is typically approached in very strictly controlled exercises called *species*. In each species there is a particular rhythmic relationship between parts. So, even though a great contrapuntal composer like Bach writes lines that are rhythmically independent, like so –



J. S. Bach, Fugue in C minor from *The Well-Tempered Clavier* Book I

– our *first species* counterpoint will simply match a quarter-notes against quarter-notes in a "one-to-one" rhythmic ratio.

Example of first species counterpoint



First species may thus seem very crude and abstract, but it is, in fact, essential! It is the foundation of all musical composition in the Classical style, and it taps into fundamental principles of musical perception.

The basic set-up

In order to practice counterpoint one starts with a fixed melody or *cantus firmus*. It is your job to compose a melody that goes with the CF.

I'll list off a dozen melodies that can be used as cantus firmi on the next two pages.

Cantus Firmi

Here are some short melodies for you to write against. These cantus firmi were written by George Fisher, as part of his counterpoint materials for the NYU Music Department.

Bass Clef

It's probably easier to start with some bass lines at the bottom of the texture, writing a new line on top.

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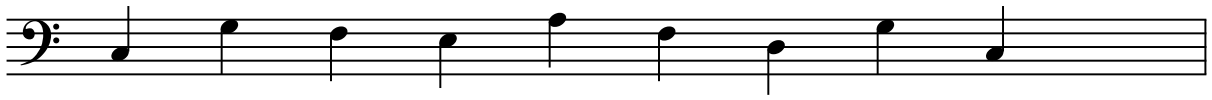

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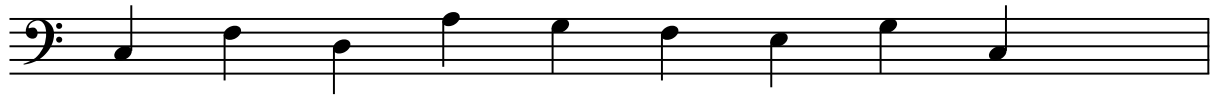

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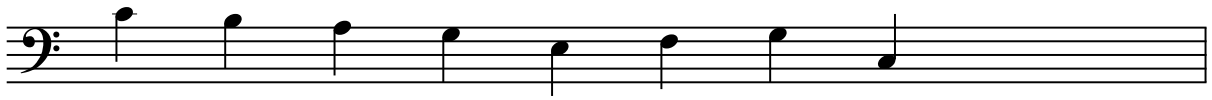

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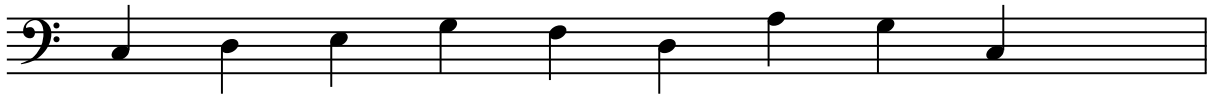

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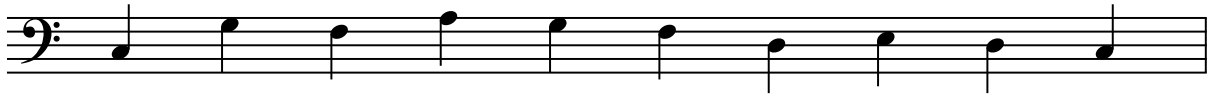

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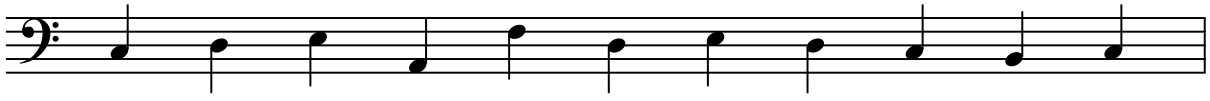

Treble Clef Cantus Firmi

You could use these as a fixed top line, composing a new bass part underneath.

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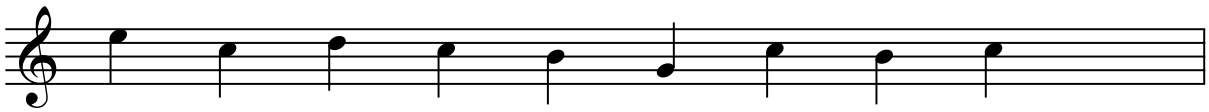

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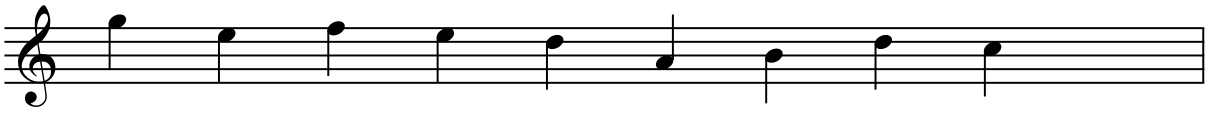

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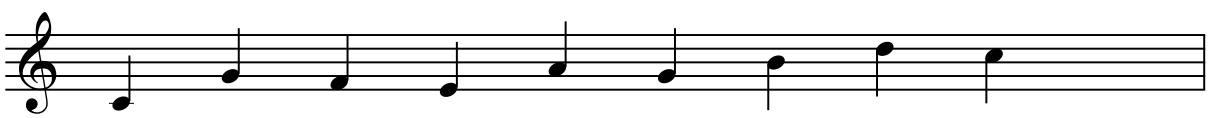

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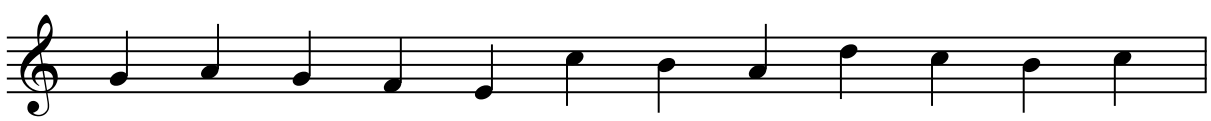

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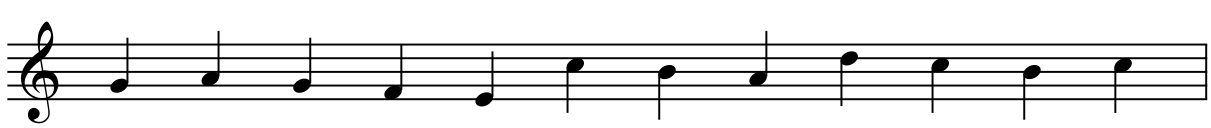

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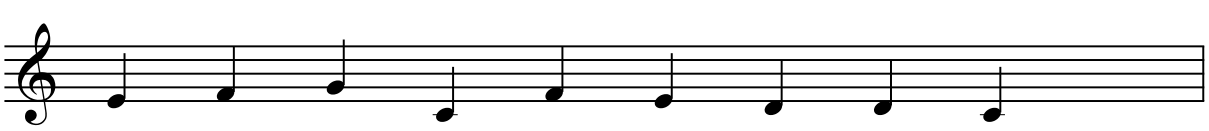
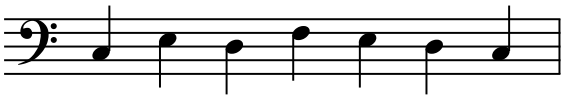
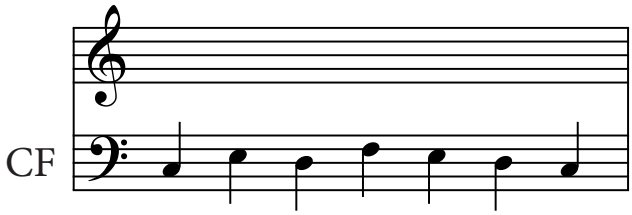


So, let's imagine that we choose this short cantus firmus to start with. Maybe we got it from a source like this packet, or maybe we composed it out ourselves.



It's written as a bass line, so I'll copy it over and add a blank staff on top:



I could easily move this line up an octave and write a bass line beneath it, though. It is usually a good idea to mark the CF like I have above - this reminds you that the bottom line is fixed (you can't change it), and it makes it easier for your instructor to correct.

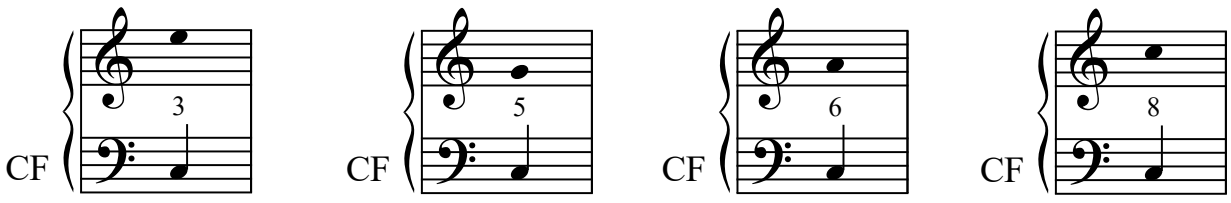
The Big 4 Rules

There are many rules to remember in order to write proper counterpoint. For our first lesson, however, we will only learn four.

Rule One: Make "Good" Intervals - third, fifth, sixth, and octave

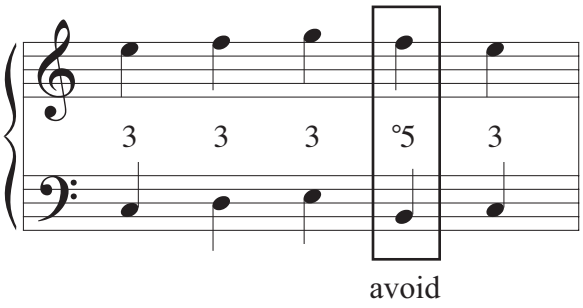
In order for your lines to sound good together, they need to be based on *consonant* (or relatively pleasant-sounding) vertical intervals. Every note you put in your new line must be either a third, a perfect fifth, a sixth, or an octave away from the note in the CF. It doesn't matter whether the thirds or sixths are major or minor - either is fine.

So, given a note C in the bass, we can add four different notes on top.



We keep track of the intervals we make by writing the number in between the staves. Notice that we consider "compound" intervals (say, a third plus an octave) to be the same as close intervals - the extra octave does not matter.

Be careful to avoid making the diminished fifth (aka the "tritone.") In the key of C this interval lies between B and F. In first-species counterpoint it is considered an undesirable dissonance.



While we are here, I'll add a minor "extra" rule: Stick to the scale (usually C major.) Don't add flats or sharps in order to make the good intervals, use the intervals that are naturally occuring in the scale.

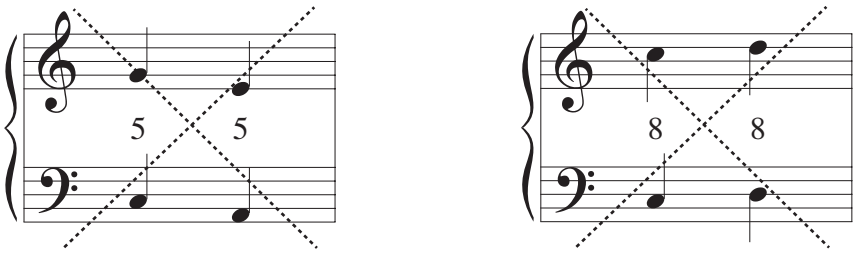
Rules Two and Three - The Motion Rules

The fifth and the octave have special acoustical properties that require restrictions on how they can be used. (I'll explain why in Chapter 2.) When using a fifth or octave you have to be careful to avoid certain kinds of "motion." In general, there are four categories of motion that can occur from one beat to the next:

Parallel Motion	**Similar Motion**	**Contrary Motion**	**Oblique Motion**
same direction, same interval	same direction, different intervals	opposite directions	one voice moves, one is stationary

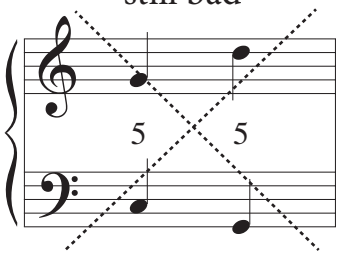
Rule Two: No parallel fifths or octaves

If you employ a fifth you are not allowed to continue on to another fifth in parallel motion. Going from an octave to another octave is also bad.



You actually aren't allowed to go to another fifth or octave by contrary motion, either.

still bad

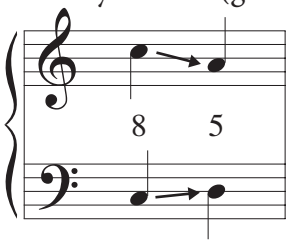


Thus, a really simple version of this rule would be "no two fifths in a row, and no two octaves in a row." Check your work by putting the interval numbers in the middle of the staff. If you've got "5 5" or "8 8," you've messed up.

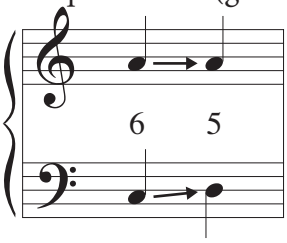
Rule Three: No "direct" fifths or octaves.

There are also restrictions on how you may "approach" a fifth or octave (or, in other words, what happens before the interval.) You are only allowed to approach a fifth or octave from contrary or oblique motion.

approaching fifth with contrary motion (good)

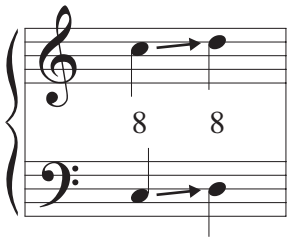


approaching fifth with oblique motion (good)

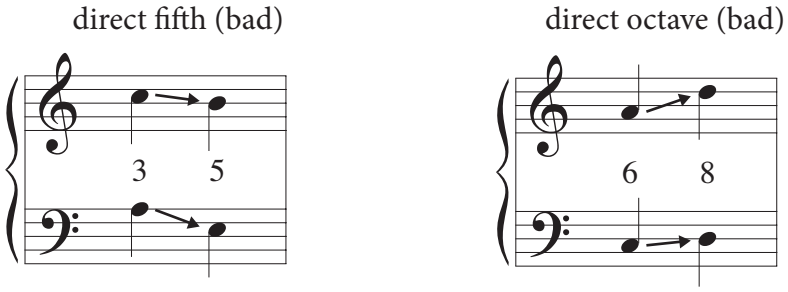


If you are approaching it by parallel motion, you are creating parallel fifths or octaves. We already know this is bad!

octave by parallel motion (bad according to rule two)



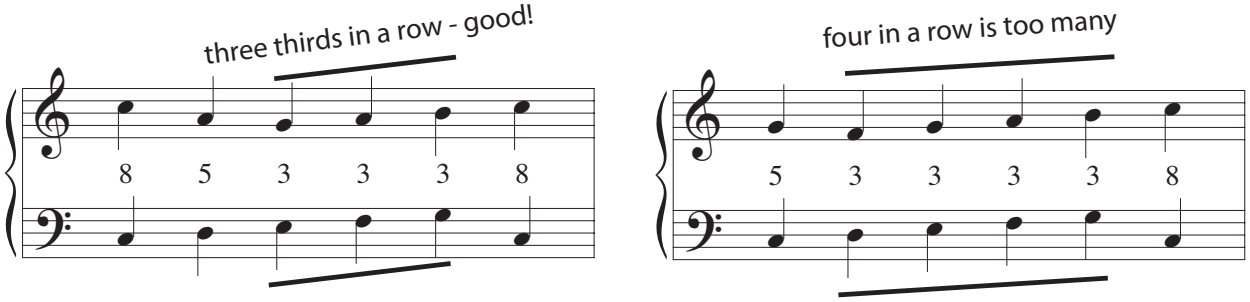
You are also not allowed to approach a fifth or an octave by similar motion. This is the "direct" fifth or octave - if both parts move up or both parts move down it is considered unacceptable.



The best way to avoid this error is simply to put your fifth or octave down on paper and then look at it. Ask yourself, "Am I approaching it in similar motion?"

Rule Four: Limits on thirds and sixths

Obviously, fifths and octaves are a lot of trouble. Aside from all of these motion rules they involve, they sometimes sound disappointingly "spare" or "empty" as well. Thirds and sixths, on the other hand, are easy to work with. The only thing you need to worry about with them is that you cannot use four thirds or four sixths in a row. It's just too boring.



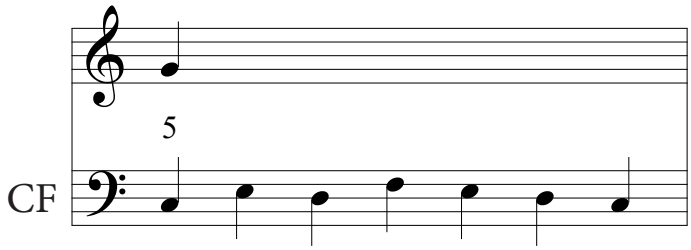
So that's easy, right? The first four rules we are going to learn are:

- Make "good" intervals - third, fifth, sixth, and octave.
- Avoid parallel fifths and octaves (no two 5's or 8's in a row.)
- Avoid direct fifths and octaves (approach them with contrary or oblique motion.)
- No more than three 3rds or three 6ths in a row.

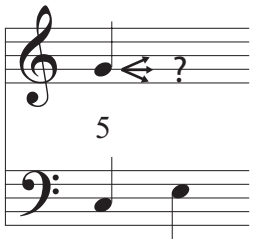
Now, how do we proceed?

Basic Workflow (for Beginners)

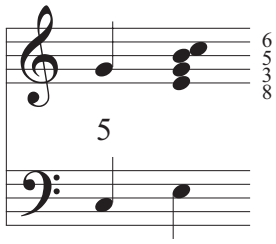
Copy over your cantus firmus and give yourself a blank staff to work with. Since good counterpoint usually involves a lot of trial and error, it is absolutely necessary to use a pencil. Pick an arbitrary interval for the first note. (We'll choose 5.)



Now you've basically got two possible strategies to find the next note. You can look for notes close to the G that make the "good" consonances...



...or you can list all four "good" notes and select from those.



Once you've selected your note, check and make sure you are obeying rules 2-4. Not every note from these four possibilities would be valid. (Which one is illegal?) Of course, while you are obeying these rules you also want to try and make a nice melody. Make sure you listen to your counterpoint by playing it on an instrument.

As you become more advanced, you will plan different parts of your melody at different times, rather than working strictly from left to right. Perhaps you'll fill in the end first or start with some tricky part in the middle that you want to be a certain way.

Now you are ready to take your first stab at counterpoint! I recommend that you try a few exercises with only these four basic rules, and then consult Chapter 3 for some more refined guidelines.

Counterpoint: Lesson One Appendix

WHY?

In learning counterpoint and other compositional skills, you are faced with a lot of rules which simply tell you "do this" or "don't do that." It's often unclear why these rules exist. At home, you may find that you can break them and nothing particularly bad happens - it doesn't make your music doesn't sound particularly horrible, and you may even find a new way of writing that sounds quite cool.

So why are we learning this? I can give you a lot of reasons!

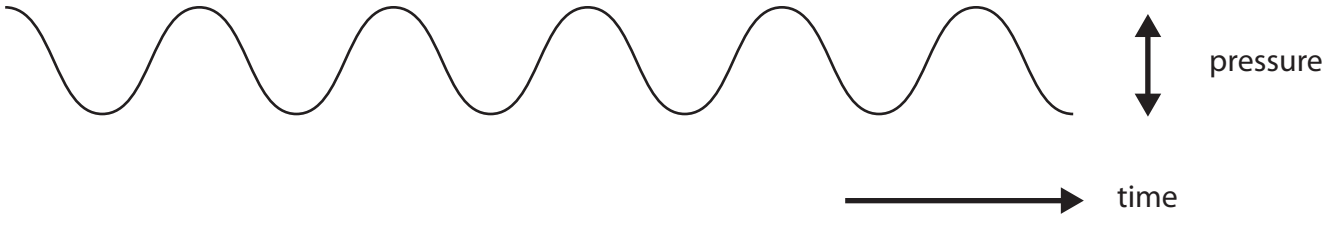
The simplest one is that this is a *historical tradition* that had a profound impact on how music developed in the Western world. From about 1550 all the way to the late 1800s composers worked hard to write good counterpoint. It was considered the "correct" way to compose, a sort of craftsmanship that every creator of music was supposed to be able to attain. Even today, it is a *style* of writing that you might want to master, because there are certain situations where it it comes in handy. In general, writing with "good" counterpoint can make your music sound more polished, elegant, even more forceful.

In the next few pages I'll try to explain the *perceptual reasons* why the parallel fifths and octaves rules exist, and how they serve this style to make it sound different from other ways of writing.

Musical overtones

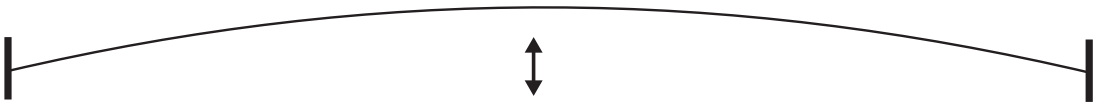
There are acoustical reasons that fifths and octaves are treated differently than other intervals, and it has to do with the most basic properties of sound. In order to understand these properties, we have to back up and talk about overtones.

Perhaps you know that sounds are made of vibrations that travel like waves. I'll draw a representation of a pressure wave below:



The rate of the wave, or the number of times it passes each second, is called the frequency, and we measure it in units called hertz. You have maybe heard musicians refer to the standard tuning note "A 440" - this is a pitch that vibrates 440 times a second, or 440 Hz.

Now, let's look at an imaginary string that is vibrating up and down. I've drawn the string in a bent shape, and you can imagine that every time it moves up and down it sends out a wave of pressure. It is vibrating at a certain rate and produces a pitch of a certain frequency. Let's say the rate is 110 hz, which produces a very low A.

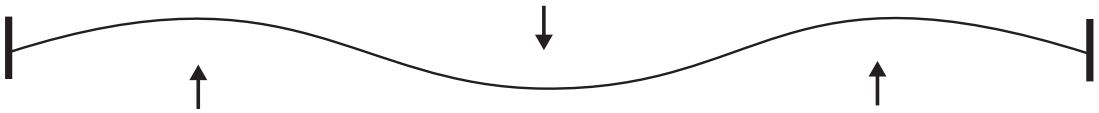


fundamental frequency [110hz?]

It turns out that this is not the only way the string will vibrate. It will also make vibrations that divide the string into halves, like so:

twice as fast [220hz]

...and these halves will vibrate twice as fast. The string also divides into thirds, fourths, fifths, and so on, and vibrates at a rate that is also three, four, five times faster. These faster vibrations are progressively weaker than the fundamental vibration of the whole string, and all of them combine together to make a very complicated motion.



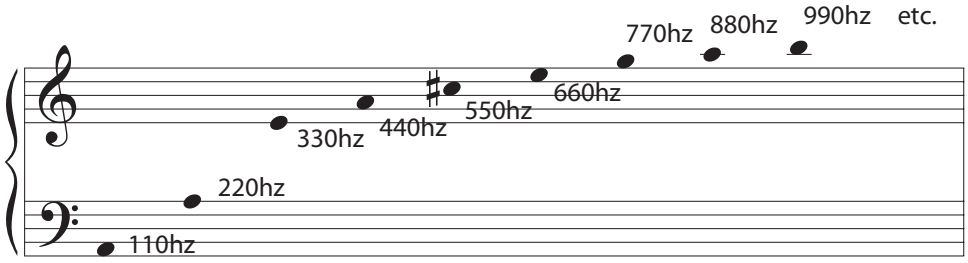
three times as fast [330hz]

four times as fast [440hz]

and so on!

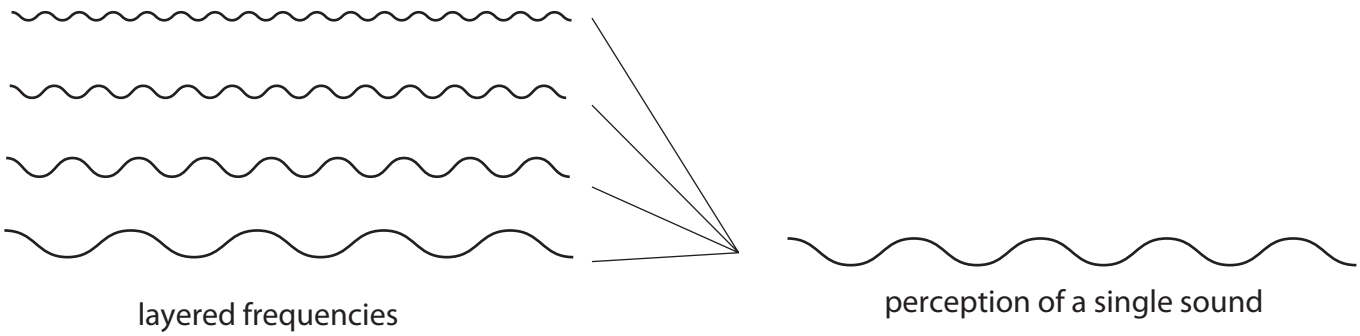
These extra vibrations are **overtones**. Every naturally vibrating surface produces them, including the tubes in a wind instrument and even your own vocal chords. Thus, instead of a single vibration, the typical musical sound is a complex combination of waves. (These combine together into one very complex wave - I'm drawing them in layers as though they are separated out.)

These overtone frequencies make a certain pattern of pitches - the doubled frequency is an octave higher the the fundamental, the 3x frequency is an octave and a fifth higher, 4x is a double octave, and so on. As we get higher and higher in the overtone series the pitches seem closer and closer together, because our sense of pitch is on a logarithmic scale.



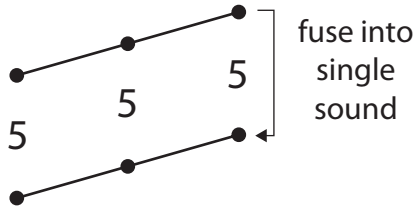
Normally, of course, we don't hear all of these individual frequencies - instead, they blend together into a single overall sound. A sound with a lot of strong, high overtones will sound more "bright" and maybe even have a cutting "buzzy" timbre, whereas a sound with only a few overtones sounds more dull and basic.

The important part for our current purposes is that **the ear is constantly consolidating and fusing together overtones** so that we can perceive them as a single sound. If there is more than one sound happening at the same time it has to sort through the mixture of frequencies and figure out what's going on.

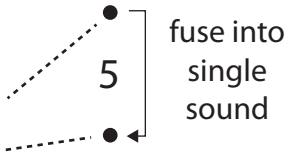


Thus, octaves and fifths present a certain dilemma for our auditory system. The octave and fifth are very low in the pattern of overtones and a strong component of most sounds, so when we hear two pitches at this distance the brain has to ask "are these two different sounds, or part of the same sound?" These two intervals in particular tend to *fuse*, so that they sound more like a single sound than a combination of two notes.

That's particularly true when the frequencies are moving in the same direction, in parallel. Then they really sound like one sound source, not two.

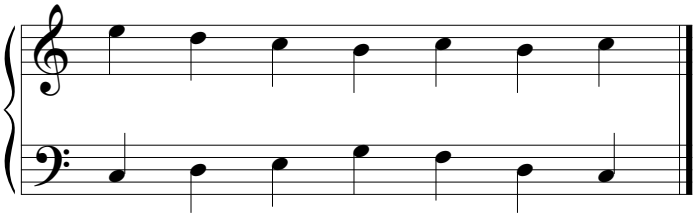


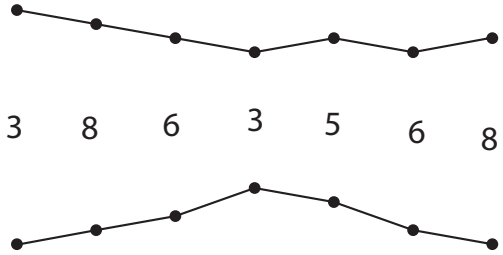
Even entering into the fifth or octave from the same direction tends to trigger this fusion (this is the "direct" fifth or octave.)



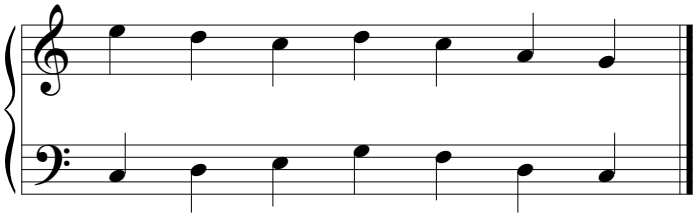
Thus, by carefully controlling our fifths and octaves we can ensure that our counterpoint maintains its beautiful, complex structure. The point of writing line-against-line is to create simultaneous motion from independent parts that still sound good together. If we write parallel fifths or octaves our counterpoint "collapses" and sounds less interesting.

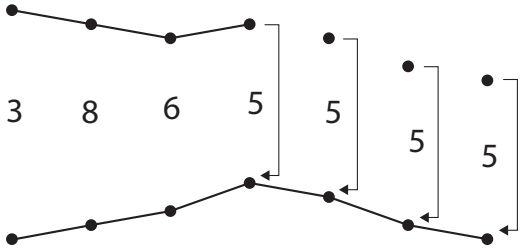
Here is a sample two-voice counterpoint. On the right I've drawn a representation of our two lines.





If we substitute parallel fifths at the end the effect is relatively disappointing.





If you play both of these and compare, you'll see that the second one isn't *horrible*, but it's definitely not meeting the ideal sound of this style.

Bibliographical note: David Huron's "Tone and Voice: A Derivation of the Rules of Voice-Leading from Perceptual Principles." *Music Perception* 19/1 (2001), 1-64 is the perhaps the best discussion of this subject in the professional literature. The general question of how the auditory system understands the world is tackled in Albert S. Bregman's *Auditory Scene Analysis* (Cambridge, MA: MIT Press, 1990).

Renaissance Counterpoint

I should also mention that the rules in these lessons are meant to imitate Renaissance counterpoint, the kind of music that would have been written by composers such as Josquin, Palestrina, and Tallis. Before the Renaissance there were composers like Pérotin who wrote in a somewhat strange and mysterious style that often sounds quite cool to modern ears, and later in the Baroque people like J. S. Bach wrote counterpoint that is more wild, complex, and perhaps more expressive. The Renaissance is the "sweet spot" in which musicians found a style that is consistently pretty and easy to learn.

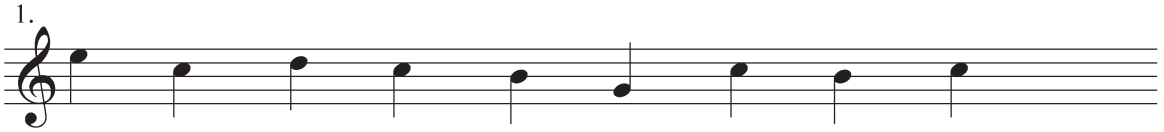
Counterpoint Lesson Two: Reference

This lesson will simply list off all the rules for first-species counterpoint in an organized format.

First, here are some *cantus firmi* for you to use in your exercises.

Treble Clef

1.



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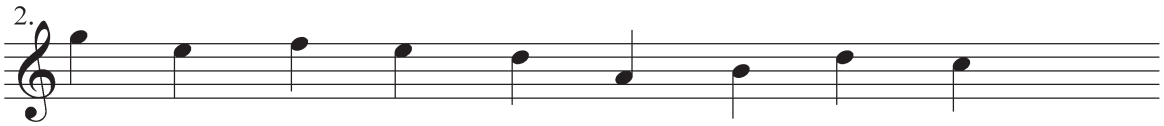

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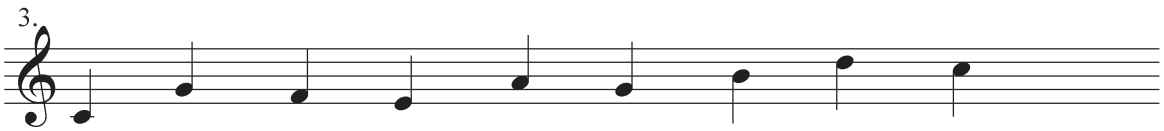

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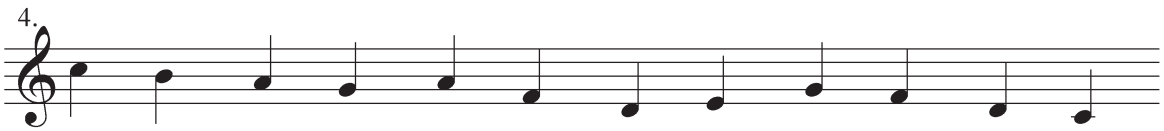

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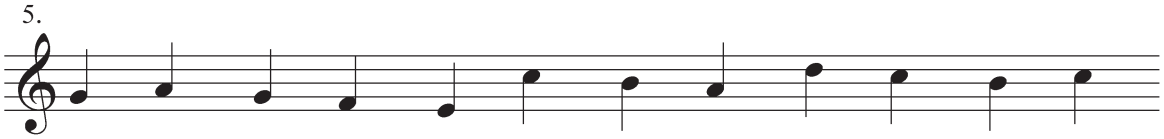

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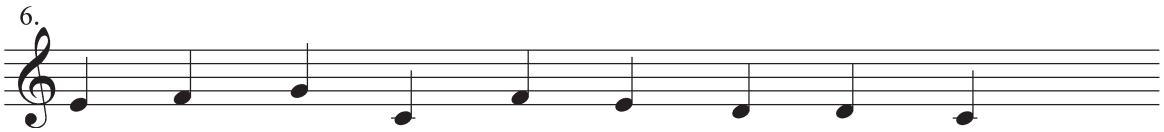
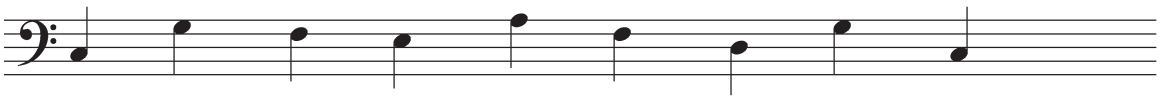


Bass Clef *Cantus firmi*

1.



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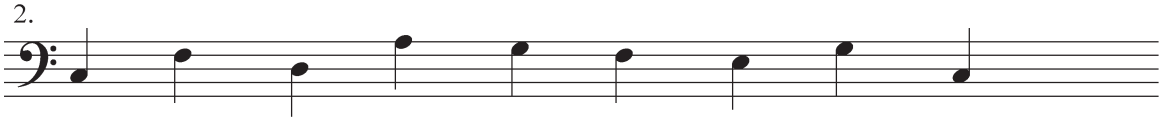

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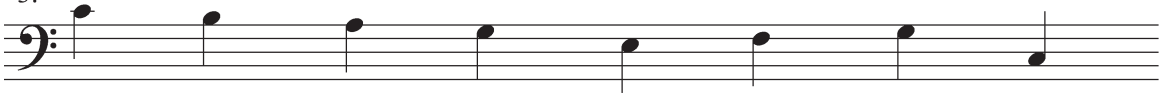

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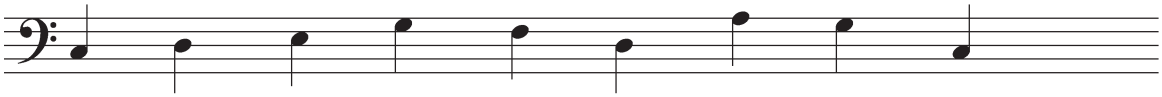

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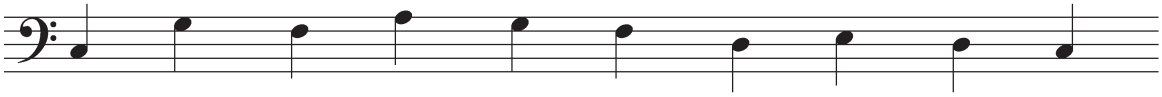

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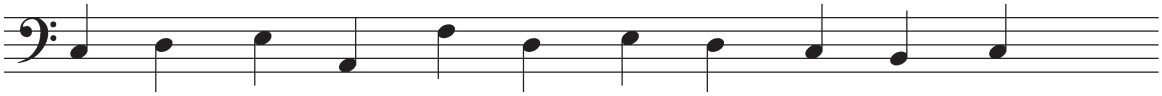
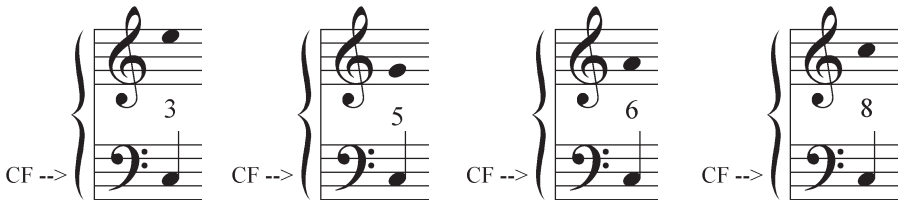


Harmonic Rules

Create vertical thirds, fifths, sixths, and octaves. Avoid the diminished fifth.



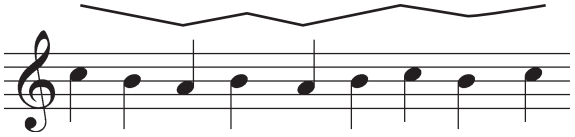
(Also, stick to your key signature. Don't add accidentals to get the interval you want.)

Melody Rules

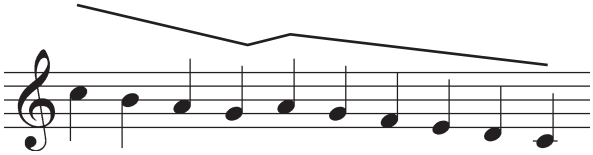
1. Stepwise connections are most important.

   In fact, I'll say that the more stepwise connections there are in a melody, the better it is. Think of any kind of leap as a break in your melodic line. Also, straight lines are stronger than bendy lines -- the longer your line goes in a single direction, the more contrapuntal skill it shows. (This idea is actually a departure from the way other people typically teach counterpoint. I am particularly interested in straight lines.)

a meandering, bendy line



a strong, directed line



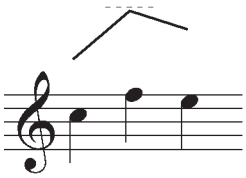
2. No big leaps.

   No leaps bigger than a sixth. Also, no tritone leaps.

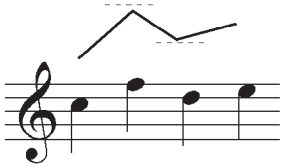
3. Leaps demand "compensation" in the opposite direction.

   Any leap is considered a big deal, so the line is supposed to rebound from the leap by going in the opposite direction (preferably by step.)

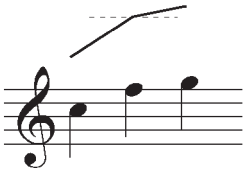
good compensation



a double rebound



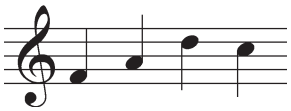
no compensation - bad



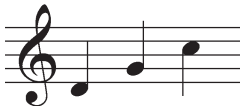
4. Arpeggiating triads.

   You are allowed to make two leaps in the same direction only if they spell out a triad shape.

triad shape with "rebound" - good

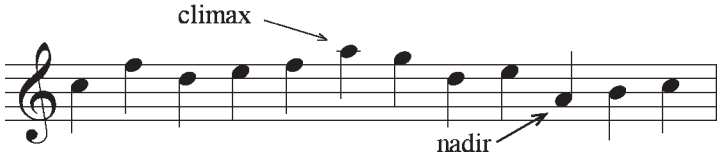


not a triad



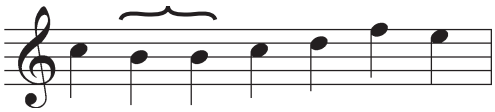
5. Climax (and nadir).

Traditionally, it is considered good composition if your melody has a single highpoint (or climax.) It is supposed to be located somewhere in the middle of your melody, not at the beginning or end. If you really want to have an interesting contour, you can also feature a single lowpoint (or nadir.) Since I am so interested in making straight lines, I tend to ignore this rule.



6. Repetition

In first species you may occasionally repeat a note, though it is considered somewhat weak to do so. Don't do it more than twice in the same exercise.



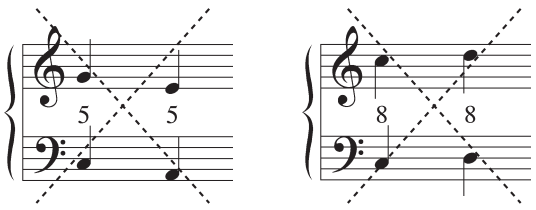
7. Voice-crossing

Don't let your new line cross under (or above) your cantus firmus.

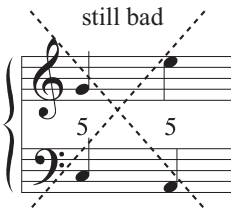
Obviously, these rules apply when you are writing a counterpoint, but you can also use them to create new cantus firmi as well.

Motion Rules

1. No parallel octaves, or fifths.

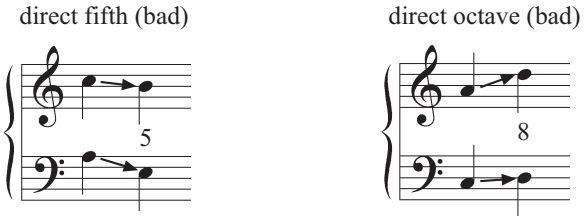


2. Successive fifths or octaves by contrary motion are also bad.



3. Direct fifths or octaves.

If you make a vertical fifth or octave, you may not approach it in similar motion (with both parts going in the same direction.) The only acceptable way to enter into a fifth or octave is by contrary motion or oblique motion.

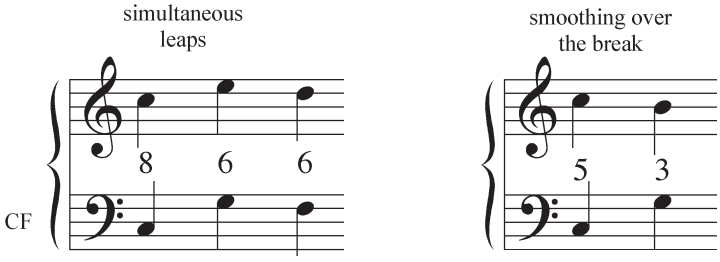


4. Not too many 3rds or 6ths in a row.

You can only have three thirds or three sixths in a row. Four is considered too many.

5. Simultaneous leaps

It is very weak counterpoint if both lines break at the same time (especially if they leap in the same direction). Try to smooth over leaps in the CF with a step in your counterpoint.

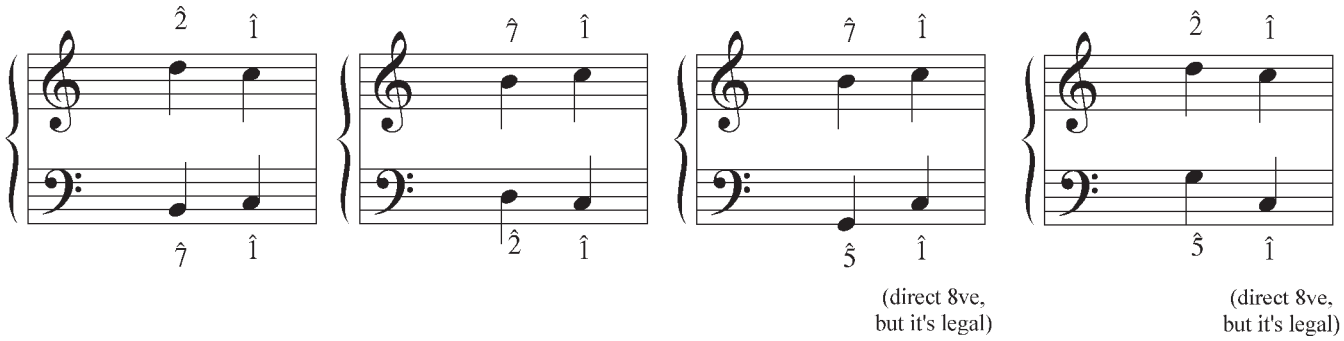


Beginning and Ending

Bass lines should always start on the first scale-degree of the key (1̂).

Upper lines can start on any note from the tonic triad (1̂, 3̂, or 5̂).

You need to end your counterpoint with a proper *cadence*. The last note must land on 1̂. The preceding note may be 2̂ or 7̂, or, if your counterpoint is on the bottom of the texture, it may go 5̂-1̂. There are therefore just a few cadential combinations that you can create:



(The harmonically astute might notice that all of these could be part of some kind of V-I progression.)

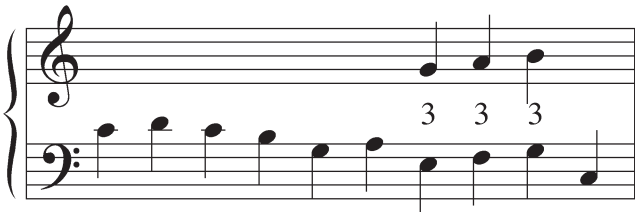
Note also that the direct 8ves rule is suspended when you are landing on the final note.

Counterpoint Lesson Three: Advanced Strategies

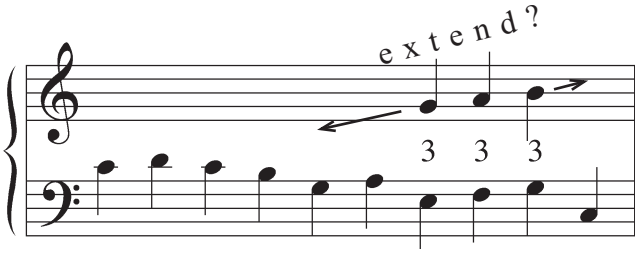
In general, you don't want to write your counterpoint strictly from beginning to end. You want to look at the cantus firmus and plot out a strategy for a strong line with lots of straight, stepwise passages.

Generally speaking, our technique will be

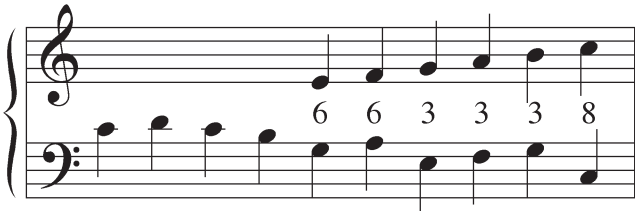
1) Identify a short part of the cantus firmus where we can plot a stepwise line. For example, in the cantus firmus below, we can make a short burst of parallel thirds towards the end.



2) Next, we look and see if we can extend the segment even further.



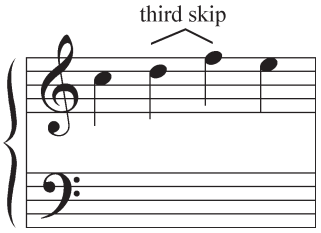
In this case the answer is yes, we can stretch out our line to make a nice six-note run. This might be a very strong way to finish our counterpoint.



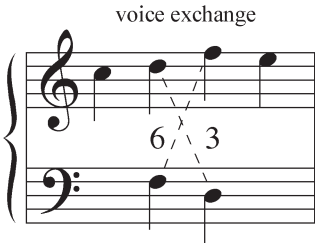
The simplest way to find straight segments is the trick I just showed you - looking for **parallel thirds or sixths**. Remember that you are still not allowed to make more than three thirds or sixths in a row.

Contrary Motion and the "Voice Exchange"

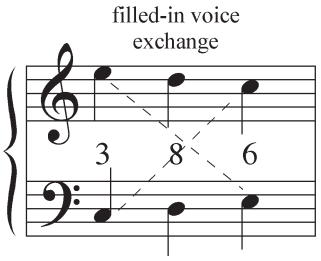
Another strong contrapuntal technique is the use of contrary motion. The easiest way to generate contrary motion is to base it on a "voice exchange." In its simplest form, a voice exchange can occur whenever there is a skip of a third in one of the parts.



You can simply reverse the order of the third in the new part, creating a kind of note-swap.

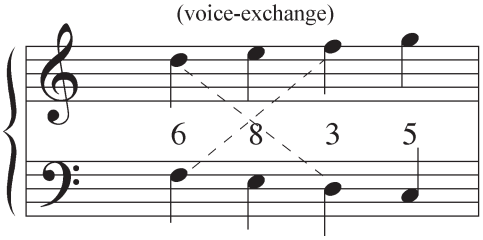


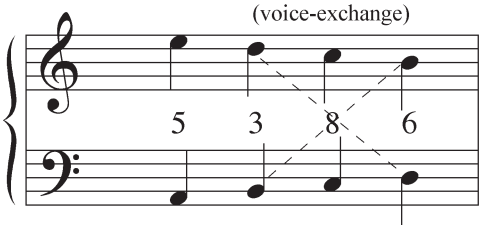
It turns out you can also create a filled-in voice exchange any time you see three steps in a row. Again, just reverse the order of the notes in the new part.



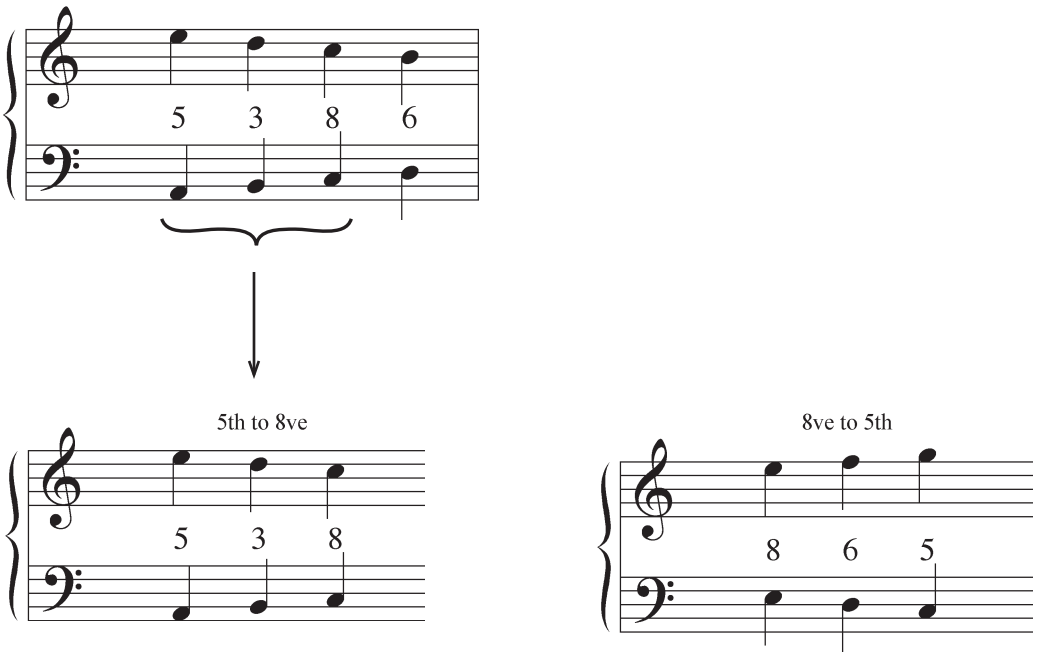
So the voice exchange is an easy way to create quick contrary motion.

We just created a three-note contrary-motion segment. You could actually extend it on one end and get four contrary steps.





Hiding in that four-note segment is one other three-note pattern you could make, which I'll call "fifth-to-octave" or "octave-to-fifth."



Again, you can try any of these segments, extend them, and generate a long, straight line. Not only is it a fun puzzle-solving task, but it is the essence of strong counterpoint.

Acknowledgements and Bibliography

Parts of these lessons are closely derived from George Fisher's counterpoint packet which I used at NYU. (In particular, the cantus firmi are still a direct lift, something that I'll have to revise in the future.) And, as I've mentioned, I've taken some liberties with traditional rules that I personally want to emphasize or de-emphasize (as one should expect with any original text).

There are many other works that one could use to expand his or her knowledge of counterpoint, getting into three-voice counterpoint and additional species. These include:

Fux, Johann Joseph. *The Study of Counterpoint from Gradus ad parnassum*. trans. and ed. by Alfred Mann (New York: Norton, 1965).

Here you can see how theory worked in the 18th century. The most amusing aspect of the book is that it is set as a dialogue between a teacher ("Aloysius") and student ("Josephus"). The student asks questions and makes lot of errors which the teacher corrects, and he says lots of flattering things like "I understand and am full of admiration."

Gauldin, Robert. *Harmonic Practice in Tonal Music.* (New York: Norton, 1997).

Gauldin's Appendix 3 is a crash-course in the rules of counterpoint, much like what was presented here.

Salzer, Felix and Carl Schachter. *Counterpoint in Composition*. (New York: Columbia University Press, 1989).

The first half of this text is a hard-core introduction to the discipline of counterpoint, and the second half shows how you can use the basic framework of species counterpoint to analyze real music.