MUSIC THEORY
for
MUSICIANS
and
NORMAL PEOPLE

REAL COLLEGE-LEVEL MUSIC THEORY, FROM FUNDAMENTAL CONCEPTS TO ADVANCED CONCEPTS PRESENTED IN A CONVENIENT, FUN, ENGAGING AND THOROUGH ONE-TOPIC-PER-PAGE FORMAT

by Toby W. Rush

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What is Music Theory?

Chances are there's a piece of music that moves you in a profound way...

A way that is frustratingly difficult to describe to someone else!

Like other forms of art, music often has the capability to create emotional reactions in the listener that transcend other forms of communication.

Though a single piece of music may elicit different reactions from different listeners, any lover of music will tell you that those feelings are real!

One of the most valuable parts of music theory is giving names to musical structures and processes, which makes them easier to talk about!

And if they're real, they're worthy of study!

Coming up with terminology doesn't just help us talk to others about music, though... it actually helps us learn!

But while it's an important step, and a great place to start, music theory is much more than just coming up with names for things!

When composers write music - whether it's a classical-era symphony or a bit of Japanese post-shibuya-kei glitch techno - they are not following a particular set of rules. If anything they are often trying to break them!

So while a lot of people think music theory is about learning the rules for how to write music, that's not quite right. Music theorists don't create rules for writing music; they look for patterns in music that is already written.

Which leads to the most important question... the one that, as you study music theory, you should be constantly asking yourself:

Why?

Because somewhere in there is the reason why that piece of music moves you.

Maybe it's in the notes. Maybe it's in the silence. Maybe it's somewhere in between.

The reason it makes you cry, gives you chills, reminds you of home.

It may take a long time, or even create more questions than answers.

But music theorists are going to find it, because...

Why dissect music? What's the point of figuring out rules that composers themselves weren't even worried about?

Music theory is figuring out what makes music work.

And you just joined the team. Grab your stuff... let's go!
Music notation is the art of recording music in written form. Modern music notation is a product of centuries of transformation... and it is neither efficient nor intuitive!

**Pitch is the highness or lowness of a sound.**

For example, a flute has a high pitch, while a tuba has a low pitch.

A note is a written representation of a particular pitch.

Notation is based on the piano keyboard: lines and spaces on the staff represent the white notes on the keyboard.

To display notes outside the staff, we use shortened staff lines called ledger lines.

The clef determines what notes each staff line corresponds to. The four modern clefs are shown here; the note displayed on each staff corresponds to middle C.

The white notes on the keyboard are labeled with letters from A to G.

To notate the black notes on the piano keyboard, we use accidentals, which alter the note by one or two half steps.

A half step is the distance between two adjacent keys on the piano keyboard, regardless of what color the keys are.

The double sharp raises the note by two half steps.

The sharp raises the note by one half step.

The natural cancels out any previous accidental.

The flat lowers the note by one half step.

The double flat lowers the note by two half steps.

These symbols are placed to the left of the note that they affect, and they apply to all the notes on that line or space for the rest of the measure.

Two notes which have the same pitch (for example, F sharp and G flat) are called enharmonics.
### Notation: Rhythm

**While pitch is pretty clearly notated on a vertical axis, note length is indicated using a somewhat arcane system involving noteheads, stems and flags.**

<table>
<thead>
<tr>
<th>Whole Note</th>
<th>Quarter Note</th>
<th>Eighth Note</th>
<th>Sixteenth Note</th>
<th>Thirty-Second Note</th>
<th>Sixty-Fourth Note</th>
<th>One-Hundred Twenty-Eighth Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Whole Note" /></td>
<td><img src="image" alt="Quarter Note" /></td>
<td><img src="image" alt="Eighth Note" /></td>
<td><img src="image" alt="Sixteenth Note" /></td>
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<td><img src="image" alt="Sixty-Fourth Note" /></td>
<td><img src="image" alt="One-Hundred Twenty-Eighth Note" /></td>
</tr>
</tbody>
</table>

In this chart, each successive type of note is **half as long** as the note to its left. None of these notes has a **standard length**; a half note in one piece may be the same length as an eighth note in a different piece.

A **rest** is a period of silence the length of which corresponds to a particular note.

Usually rests are placed on the staff at a particular vertical position as shown here.

The **augmentation dot** is a dot placed to the right of a notehead. Though small, this dot wields some serious power: it adds half of the original note’s length!

Multiple dots can also be added, each one adding half of the previously added value.

A **tuplet** is any non-standard division of a note. These are usually written as a group of notes delineated with a bracket and a number showing the division being made.

Most tuplets are simple divisions, like the triplets to the left. But anything is possible! Chopin, for example, would often go to town with these things.

For example, these aren’t exactly quarter notes; they are each a third as long as a half note.
Notation: Meter

A fundamental feature of most pieces of music is a consistent rhythmic pulse. This pulse is called the beat, and a single pulse is called a beat unit.

There are two types of beat units: those containing two divisions, called simple beat units...

...and those containing three divisions, called compound beat units.

In music, beats are organized into patterns of accented and unaccented beat units. In fact, if you listen to a sequence of repeated notes, your brain will probably start to perceive the notes as groups of two, three, or four, even if no accents are present!

These groups are called measures, and they are delineated with barlines.

The organization of beat units and measures in a piece is called meter. Meter is described by two numbers placed at the beginning of the piece: the time signature.

Simple time signatures are easy.

The top number indicates the number of beats in a measure.

The bottom number indicates the type of note which serves as the beat unit.

In fact, wouldn't this be an easier way to notate compound meters?

Sorry... the man says you have to do it the other way.

Compound time signatures are kind of lying to you.

The top number indicates the number of divisions in a measure. To get the number of beats, divide it by three.

The bottom number indicates the type of note which serves as the division. To get the beat unit, use the note that is equal to three of these notes.

In a compound meter, the beat unit is always a dotted note!

By looking at the top number of the time signature, you can tell two things about the meter: whether it's simple or compound, and how many beats are in a measure.

Notes that have flags can be grouped together by using beams in place of flags.

However, beaming is only used to group notes within beats. For the most part, you shouldn't beam notes between beats, nor should you tie notes within beats.
Dear Sparky:

I understand that we’re supposed to beam rhythms to show the organization of beats in the measure, but is there an easy way to beam complex rhythms?

--A.Y., Owatonna, MN

*TRANSLATION: NOTES SHOULD BE BEAMED IN GROUPS THAT ILLUSTRATE THE METER. FOR SIMPLE RHYTHMS, THIS IS PRETTY EASY TO DO; SIMPLY GROUP ANY NOTES THAT CAN BE BEAMED (EIGHTH NOTES AND SMALLER) INTO GROUPS THAT ARE EQUAL TO THE BEAT UNIT OF THE CURRENT METER.

FOR COMPLEX RHYTHMS, HOWEVER, THINGS CAN GET COMPLICATED... WHEN A RHYTHM INCLUDES THINGS LIKE SYNCOPATIONS OR OTHER OFF-BEAT FIGURES, ILLUSTRATING THE METER MAY INVOLVE DIVIDING NOTES ACROSS BEAT UNITS WITH TIES. FORTUNATELY, THERE IS A STEP-BY-STEP SYSTEM FOR CORRECTLY BEAMING THESE COMPLICATED RHYTHMS!

FOR EXAMPLE, LET’S TAKE THIS RHYTHM, WHICH IS WRITTEN WITHOUT BEAMING.

**STEP 1:** FIND THE SMALLEST NOTE VALUE USED, AND FILL A COMPLETE MEASURE WITH THIS TYPE OF NOTE, BEAMED IN GROUPS THAT ARE EQUAL TO A BEAT UNIT IN THE CURRENT METER.

**STEP 2:** ADD TIES BETWEEN INDIVIDUAL NOTES TO RECREATE THE ORIGINAL RHYTHM. MAKE SURE THAT EACH TIED GROUP CORRESPONDS TO A NOTE IN THE RHYTHM YOU STARTED WITH!

YES, I KNOW IT LOOKS WEIRD... BUT WE’RE NOT DONE YET!

**STEP 3:** FIND EVERY GROUP OF TWO OR MORE NOTES THAT ARE BOTH TIED TOGETHER AND BEAMED TOGETHER, AND REPLACE THEM WITH A SINGLE NOTE OF EQUIVALENT VALUE.

A CORRECTLY BEAMED RHYTHM MAY INCLUDE TIES, BUT IT WILL VERY CLEARLY SHOW THE BEATS IN THE MEASURE... WHICH, IN TURN, MAKES IT EASIER FOR THE PERFORMER TO READ!
**The Major Scale**

One of the reasons that a particular piece of music sounds the way it does has to do with the group of notes the composer decided to use.

Take this melody, for example...

Let’s first remove all the duplicate notes, regardless of which octave they’re in.

Next, let’s put the notes in alphabetical order, starting on the note that the melody sounded like it was centering on.

What we end up with is the “palette” for this particular piece...

Like the board on which a painter holds the bits of paint being used in the painting being created.

In music, this “palette” is called a scale. Though we usually write scales from low to high, the order is actually unimportant; it’s the notes contained in the scale that help make a piece sound the way it does.

This particular arrangement, where half steps occur between steps three and four and between steps seven and eight (or between seven and one, since eight and one are the same note), is called the major scale.

Knowing this formula, you can create a major scale on any note!

A half step is the distance between two adjacent keys on the piano keyboard, regardless of color.

A whole step is the equivalent of two half steps.

The G major scale, for example, is called a major scale, because it starts on G.

But remember... with great power comes great responsibility!
If you start writing major scales and pay attention to the accidentals that occur, you are going to start noticing a pattern...

For example look at the flat keys, starting with the key that has one flat, all the way through the key with seven flats: the flats accrue in a specific order. Same with the sharp keys!

So if you look for a key that has only a D flat, you won’t find it: if a key has a D flat, it must also have a B flat, an E flat and an A flat!

Since writing an entire piece in C sharp major would have been a sure-fire way to get carpal tunnel syndrome with all the sharps involved, composers pretty quickly came up with a way to simplify things: key signatures.

A key signature is a group of accidentals placed at the beginning of every line of music, just to the right of the clef, that instructs the performer to apply those accidentals to every corresponding note in the piece unless specified otherwise.

Oh, and another thing: the accidentals have to be placed in the correct order, and they need to follow a particular pattern of placement that varies slightly depending on the clef being used! If you deviate from this, you, as a composer, will be mocked!

Tenor clef sharps! What’s your problem? You need to conform!

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**Key Signatures**

<table>
<thead>
<tr>
<th>Key</th>
<th>Signature</th>
<th>Accidentals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ab</td>
<td>BEAD</td>
<td>b</td>
</tr>
<tr>
<td>A</td>
<td>FCG</td>
<td>#</td>
</tr>
<tr>
<td>Bb</td>
<td>BE</td>
<td>b</td>
</tr>
<tr>
<td>B</td>
<td>FCGDA</td>
<td>#</td>
</tr>
<tr>
<td>Cb</td>
<td>BEADGCF</td>
<td>b</td>
</tr>
<tr>
<td>C</td>
<td>B</td>
<td>b</td>
</tr>
<tr>
<td>C#</td>
<td>FCGDAEB</td>
<td>#</td>
</tr>
<tr>
<td>Db</td>
<td>BEADG</td>
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<tr>
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<td>BEADGC</td>
<td>b</td>
</tr>
<tr>
<td>G</td>
<td>F</td>
<td>#</td>
</tr>
</tbody>
</table>
The Circle of Fifths

Theorists find it convenient to organize all the possible key signatures into a chart that shows their relationship to one another.

This chart, called THE CIRCLE OF FIFTHS, displays each key as a spoke on the circle, beginning with C major at the top and adding accidentals, one at a time, to the key signatures around the perimeter.

We'll return to this chart as we continue learning about how composers use keys.

As you move clockwise around the circle, you add sharps to the key signature.

As you move counterclockwise around, you add flats to the key signature.

Notice how that BEADGCF pattern pops up all over the circle of fifths?

Weird!

To determine the key signature for a key, look to see which "spoke" of the circle it's on to determine how many flats or sharps it has, and add accidentals to the key signature appropriately.

For example, E flat major has three flats, so it should look like this:

When adding flats to a key signature, add them in THIS ORDER:

**BEADGCF**

When adding sharps, use the reverse of the order above.

The keys down here line up enharmonically... for example, the key of D flat major will sound just like the key of C sharp major.

So could you continue the enharmonic deal and have the key of F flat major? Yes, if you want a double flat in your key signature:

Nooooo!
AN INTERVAL IS THE DISTANCE IN PITCH BETWEEN TWO NOTES.

SPECIFICALLY, WE COUNT SCALE DEGREES, BUT THE EASIEST WAY TO DO IT IS TO COUNT LINES AND SPACES ON THE STAFF.

WHEN COUNTING THE LINES AND SPACES, WE CAN SAFELY IGNORE ANY ACCIDENTALS.

THIS INTERVAL IS ALSO A SEVENTH... WE’LL DISCUSS HOW IT’S DIFFERENT VERY SOON!

THE DISTANCE FROM A NOTE TO THE NEXT CLOSEST NOTE WITH THE SAME LETTER NAME IS CALLED AN OCTAVE.

AND WHEN YOU SWAP THE TWO NOTES (MOVE THE LOWER NOTE UP BY AN OCTAVE SO IT BECOMES THE HIGHER NOTE), THAT IS CALLED INVERTING THE INTERVAL.

IT’S HELPFUL TO REMEMBER THAT SECONDS ALWAYS INVERT TO SEVENTHS, THIRDS TO SIXTHS, AND SO FORTH...

THE FACT THAT EACH OF THESE PAIRS ADD UP TO NINE IS KNOWN TO THEORISTS AS “THE RULE OF NINES.”

THE RULE

2ND ←→ 7TH
3RD ←→ 6TH
4TH ←→ 5TH
5TH ←→ 4TH
6TH ←→ 3RD
7TH ←→ 2ND

OF NINES

SMALLER INTERVALS

LARGER INTERVALS

When counting, begin with the bottom note as one and count until you reach the top note.

This interval is a seventh!

Two notes on the same line or space is called a unison.

That’s Latin for “one sound”!

And that’s Latin for “eight”!

When we are talking about intervals we sometimes discuss harmonic intervals and melodic intervals.

A harmonic interval is simply two notes played simultaneously; a melodic interval is one note played after the other.

Diatonic Intervals

THE MOST BASIC WAY WHICH WE IDENTIFY DIFFERENT INTERVALS IS BY COUNTING THE STEPS BETWEEN THE TWO NOTES.

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Perfect Intervals

The distance of an interval is one part of its name, but there's more: every interval has another quality to it, which we'll call inflection.

Inflection is a bit harder to understand, partly because it depends on the type of interval. So let's start by looking at unisons, fourths, fifths, and octaves.

Some theorists use the term quality for this... that's cool too.

Unisons and octaves are the easiest to label: if the two notes are the same (for example, B flat and B flat), then the inflection is perfect: such an interval is called a perfect unison or a perfect octave.

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If you look at all the fourths and fifths you can create using only the white notes on the piano keyboard (in other words, using only notes without accidentals):

Well, if you were to count the half-steps that make up each interval, you'd notice that all the other ones are equal in size, but the B to F intervals are not: F to B is a half-step larger than a perfect fourth, and B to F is a half-step smaller than a perfect fifth.

Which raises the question: if the interval is not perfect, then what is it?

You can go further: to doubly augmented and doubly diminished intervals, but... do you really want to?

An interval that is a half-step larger than perfect is called an augmented interval.

Perfect

Augmented

And there's no such thing as a diminished unison...

Just like two things can't be negative two feet away from each other!

An interval that is a half-step smaller than perfect is called a diminished interval.
We’ve talked about unisons, fourths, fifths and octaves, but what about the rest? Are these other intervals somehow imperfect?

Well, yes, but not because they are somehow inferior to perfect intervals... seconds, thirds, sixths and sevenths just work a little differently!

For one thing, the inflection for these intervals is never perfect; it will be either major or minor. Minor intervals are a half-step smaller than major intervals. Like perfect intervals, though, they can also be augmented or diminished; augmented intervals are a half-step larger than major, and diminished intervals are a half-step smaller than minor.

How do we know if an interval is major or minor? We can actually use the major scale to find out. Notice that, in the major scale, intervals from the tonic up to another scale degree are major.

Likewise, intervals from the tonic down to another scale degree are minor.

Knowing this, when you are confronted with a second, third, sixth or seventh, you can find its inflection by thinking about the key signature of the top and/or bottom note.

We know this is a major sixth because D, the top note, is in the key of F major (the bottom note).

And this is a minor seventh because B, bottom note, is in the key of A major (the top note).

If the top note is in the major key of the bottom note, the interval is major.

If the bottom note is in the major key of the top note, the interval is minor.

When the notes of the interval have accidentals, the associated key signatures can be more complicated... so it’s easiest to temporarily ignore the accidentals, determine the interval, and then add the accidentals back one at a time and track how the interval changes!

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The following chart shows an approach for identifying any interval. A similar approach can be used when you need to write a particular interval above or below a given note: first, add a note above or below the given note at the correct distance; then follow steps 2 through 4 of this chart to identify it. Then, if necessary, alter the note you added with an accidental to create the interval called for.

**STEP 1:**
Determine the distance of the interval by counting lines and spaces.

**STEP 2:**
Cover up all accidentals.

**STEP 3:**
Determine the inflection of the interval in front of you (the one without accidentals!) as follows:

- **If it is a unison or octave:**
  - The interval shown is a perfect unison or perfect octave.
  - Really. It just is.

- **If it is a fourth or fifth:**
  - If the interval uses the notes F and B, it is either an augmented fourth or a diminished fifth.
  - Otherwise, the interval is perfect.

- **If it is a second, third, sixth or seventh:**
  - If the top note is in the major key of the bottom note, the interval is major.
  - If the bottom note is in the major key of the top note, the interval is minor.

**STEP 4:**
Add the original accidentals back, one at a time, and track how the interval changes inflection.

**Translation:**

**Q:**
Since we are supposed to use different approaches for identifying perfect and imperfect intervals, can you summarize them all into one system?

**A:**
Woof!*

---

Dear Sparky:  

Since we are supposed to use different approaches for identifying perfect and imperfect intervals, can you summarize them all into one system?

--I.M., Staten Island, NY
There are actually two things that define a key: the key signature is the most obvious one, but another important part of a key is the tonic—the note around which the key centers.

But what if we change the tonic? What if we use the same notes for the key signature, but change the note that the key is centered around?

If we center the key around the sixth scale degree of the major scale, we get a new scale: the minor scale.

The thing is, common practice period composers weren't all that crazy about this scale, because it lacks something the major scale has: a half-step from seven to one.

So here's what they did: they raised the leading-tone by a half-step with an accidental. This gave them the tension they were looking for!

This scale is great for building chords, so we refer to it as the harmonic minor scale. However, composers didn't use it for writing melodies, because it had a problem: an augmented second between the sixth and seventh scale degrees.

So, for melodies, they made another change: they added another accidental to raise the sixth scale degree by a half-step.

Now we only have whole steps and half-steps!

Now, remember... the reason we raised the leading tone in the first place was to create tension from the seventh scale degree to tonic. But in a melody, if the seventh scale degree is followed by the sixth scale degree, we don't need that tension, so we don't need to raise the leading-tone at all.

The way we illustrate this is by differentiating between ascending melodic minor and descending melodic minor! For descending melodic minor, we don't raise anything!
Since D minor has the same key signature as F major, we say that D minor is the relative minor of F major.

So F minor is the parallel minor of F major!

It's convenient to add minor keys to the circle of fifths; they're usually placed on the inside of the circle in lower case.

Because relative keys share the same key signature, they also share the same position on the circle of fifths.

Parallel keys, on the other hand, are keys that have the same tonic note, but different key signatures.

So F minor is the parallel minor of F major!
Dynamics and Articulations

**Dynamics** are symbols that show how loud to play or sing.

<table>
<thead>
<tr>
<th>fff</th>
<th>ff</th>
<th>f</th>
<th>mf</th>
<th>mp</th>
<th>p</th>
<th>pp</th>
<th>ppp</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORTISSISSIMO</td>
<td>FORTISSIMO</td>
<td>FORTE</td>
<td>MEZZO FORTE</td>
<td>MEZZO PIANO</td>
<td>PIANO</td>
<td>PIANISSISSIMO</td>
<td>PIANISSIMO</td>
<td>NIENTE</td>
</tr>
</tbody>
</table>

**Notated music** uses **Italian terms** to show relative volume.

- **Specific interpretation** is left to the performer!

**Gradual dynamic changes** are indicated with **hairpin symbols** or the **Italian terms** crescendo (increase volume) or diminuendo (decrease volume).

**Dynamics** are usually placed below the staff on instrumental parts, and above the staff for vocal parts... to stay out of the way of the lyrics!

**Articulations** are symbols that show how to treat specific notes.

- **Accent** > with additional emphasis
- **Staccato** • short and detached
- **Tenuto** – emphasized and held for full value
- **Marcato** ^ short and accented
- **Staccatissimo** ‾ very short and forceful
- **Sforzando** sfz suddenly loud and accented
- **Fermata** ✪ hold longer than indicated
- **Tremolo** 1 rapidly alternate between two notes
- **Up Bow** \>
- **Down Bow** \<
- **Trill** tr rapidly alternate two adjacent notes
- **Arpeggio** ‾"roll" chord; notes added separately

**Other symbols** affect groups of notes...

- **All’ ottava**: play the notes an octave higher or lower, depending on where the symbol is. (Two octaves is 1\textsuperscript{5/12}, and three octaves is 2\textsuperscript{1/12}.)
- **Pedaling**: on the piano, this symbol indicates when the damper pedal should be held down, allowing the piano strings to ring freely. Older scores use \textsuperscript{CD} for down and \textsuperscript{CU} for up.

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Complex Meter

Simple meters and compound meters are both used quite a bit in the common practice period, but they were rarely found together... most pieces exclusively used one or the other!

On the rare occasion that they were combined, it was generally as mixed meter, when the meter changes from one measure to the next.

Consistent alternations like this are often written with two time signatures at the beginning, like this: \( \text{6} \frac{3}{4} \)

But twentieth-century composers - especially those who were working in a style called primitivism, which featured primal, unpredictable rhythms - would take the combination of simple and compound rhythms to the next level!

Simple Meter
- Beat unit divisible by two
- Beat shown by undotted note

Complex Meter
- Includes simple and compound beats
- Simple beat! Compound beat!

Compound Meter
- Beat unit divisible by three
- Beat shown by dotted note

In these meters, the beats will be uneven! The note that serves as the division of the beat remains constant throughout the measure.

Like compound meters, the time signature for complex meters is based on the division of the beat. But, in fact, these meters still have two, three or four beats per measure!

\[ \begin{align*}
\text{5/8} & \quad \text{can be written as} \quad 2 \frac{3}{2} \\
\text{7/8} & \quad \text{can be written as} \quad 2 \frac{2}{3} \text{ or } 3 \frac{1}{2} \\
\text{8/8} & \quad \text{can be written as} \quad 2 \frac{2}{3} \text{ or } 3 \frac{1}{2} \\
\text{9/8} & \quad \text{can be written as} \quad 3 \frac{2}{3} \text{ or } 4 \frac{1}{3} \\
\text{10/8} & \quad \text{can be written as} \quad 3 \frac{2}{3} \text{ or } 4 \frac{1}{3} \\
\text{11/8} & \quad \text{can be written as} \quad 3 \frac{2}{3} \text{ or } 4 \frac{1}{3}
\end{align*} \]

Of course, while using 8 for the bottom number is most common in modern scores, any note can be used as the division!
Although a chord is technically any combination of notes played simultaneously, in music theory we usually define chords as the combination of three or more notes.

<table>
<thead>
<tr>
<th>Secundal Harmony</th>
<th>Tertial Harmony</th>
<th>Quartal Harmony</th>
<th>Quintal Harmony</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chords built from seconds form tone clusters, which are not harmonic so much as timbral.</td>
<td>Chords built from thirds (more specifically, from major thirds and minor thirds) form the basis of most harmony in the common practice period.</td>
<td>Chords built from perfect fourths create a different sound, used in compositions from the early 1900s and onward.</td>
<td>Chords built from perfect fifths can be respelled as quartal chords, and as such they do not create a separate system of harmony.</td>
</tr>
</tbody>
</table>

**Triads**

Is the chord still tertial if it is built from diminished thirds or augmented thirds? **No.**

Let's get started on tertial harmony with the smallest chord possible: the triad.

When we stack the chord in thirds within one octave, we get what is called the simple form of the chord.

A triad is defined as a three-note chord, but in practice it is almost always used to refer to tertial three-note chords.

Incidentally, four-note chords are technically called tetrads, but we usually call them seventh chords, since they add a seventh.

There are four ways to create a triad using major and minor thirds:

**The Diminished Triad**

Two minor thirds stacked together

- Diminished triad

**The Minor Triad**

A major third on top

- Minor triad

**The Major Triad**

A minor third on top

- Major triad

**The Augmented Triad**

Two major thirds stacked together

- Augmented triad

We label triads using their root ("a C minor triad"). The abbreviations shown above, which use upper case, lower case, and symbols to show chord type, are called macro analysis.

Music Theory for Musicians and Normal People

by Toby W. Rush

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Ladies and gentlemen, it’s Franz Joseph Haydn!

Ooh! Let’s see ‘em!

Thank you for having me. In this piece I use quite a few triads.

Here’s one: it has the notes C, E and G. It’s a C major triad! Very nice.

Thank you. See how the notes are spread out, and not just stacked in thirds? It’s still a triad, though.

This one is G, B, and D... a G major triad! But it sounds different, somehow.

That’s because the third of the chord is in the bass... when that happens, we say the chord is in first inversion.

First inversion? What is it called when the root is in the bass; like the first chord we looked at?

That’s called root position.

So this one with D, F, and A is a D minor triad... in second inversion!

Exactly! Because the fifth is in the bass.

So the thing that makes a triad root position, first inversion or second inversion is simply which note is in the bass?

It’s hard to believe that the sound of the chord can change so much just because of the bass note.

That’s right! And each one has its own character.

I know, right? It’s awesome.
Figured Bass

Figure 1. The Basso Continuo

The numbers and symbols printed below the basso continuo part are called the figured bass. So how do you turn figured bass into chords?

First of all, it's important to know that the note given on the bass clef part is always the bass note of the chord, and remember: the bass is not necessarily the root!

Second, the numbers represent intervals above the bass, even though some numbers are usually left out. Note that the intervals are always diatonic. Don't worry about inflection... just use the notes from the key signature!

If there are no numbers, add a third and a fifth above the bass... you get a root position triad!

A six by itself indicates a sixth and a third above the bass, which creates a first inversion triad!

A six and a four indicate a sixth and a fourth above the bass, giving you a second inversion triad!

Lastly, accidentals are applied to the interval they appear with. If you have an accidental by itself, it applies to the third above the bass. Don't overthink these: if the composer wants a note raised by a half-step and it's flatted in the key signature, the figured bass will have a natural, not a sharp.

Realizing figured bass (writing chords given a figured bass line) makes for an excellent exercise for students to learn how to write in the common practice period style!

By the time the classical period got going, composers stopped including a basso continuo part, and so figured bass fell out of use... with only one exception: music theory classes!

Musical works written in the Baroque era would often include a part called the Basso Continuo which would consist of a single bass clef melodic line with various numbers and accidentals printed beneath the notes.

No, no, no... there wasn't an actual instrument called a Basso Continuo! The part was played by two instruments: a bass clef instrument like cello or bassoon, and a keyboard instrument like a harpsichord.

In performances, the bass clef instrument would simply play the given notes, but the keyboard player would improvise a part based on the notes and the symbols below the part!

So this...

Could be played as this!

So this...

Here, the sharp applies to the sixth above the bass, so we add a sharp to the G.

Here, there is no number next to the sharp, so we apply it to the third above the bass note.

Note that there is a natural, not a flat, next to the six... if it were a flat, we would write a C flat.

Here, the natural applies to the sixth above the bass.

By the time the classical period got going, composers stopped including a basso continuo part, and so figured bass fell out of use... with only one exception: music theory classes!

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Woo!
now that we're familiar with how triads work, it's time to put them into the context of a key.

since writing music in a particular key means using the notes in that key signature, it stands to reason that most of the chords will be built from those same notes!

chords which use notes from a particular key signature are said to be diatonic to that key. diatonic means “from the key...” that means no accidentals!

we can quickly show all the diatonic triads in a particular key by writing a scale in that key and building triads on each note, using only the notes in that key.

we refer to these chords with roman numerals as shown here.

notice how chord type is shown by capitals or lower case?

these chords are also sometimes referred to by their official names!

why is the sixth chord called the submediant?
well, just as the mediant chord is halfway between the tonic and dominant chords, the submediant chord is halfway between the tonic... and the subdominant a fifth below!

because the dominant and leading-tone triads both have a strong tendency to resolve to tonic, we say they have a “dominant function.” the subdominant and supertonic chords both tend to resolve to the dominant, so we say they both have a “subdominant function.”

the diatonic triads in minor work the same way... since we're dealing with chords, we use the harmonic minor scale. however, it's important to note that common practice period composers raised the leading tone only over dominant function harmony: the dominant and leading-tone triads!

same names and roman numerals... different capitalization!
Introduction to Part-Writing

As we look ahead, we’re confronted with an ugly truth:

There is a lot of music in the history of the world that is worth studying...

Much more than we can hope to cover in the span of a few semesters.

Since we can’t cover it all, we have to choose a specific musical language to study in depth.

Let’s start by narrowing things down to the common practice period.

The common practice period is the music of the Baroque, Classical and Romantic eras in Europe and America. The name comes from the fact that most composers used a common musical language during this time.

But there is a ton of common practice period music... more than we can hope to cover. Is there a representative style we can sink our academic teeth into?

Four-voice chorale writing is a good style to study for several reasons:

- Chorales have a fast harmonic rhythm, allowing for a larger number of chords per exercise.
- A large percentage of common practice period music can be easily reduced to four-voice counterpoint.
- The cantatas of J.S. Bach provide us with a tremendous amount of consistently-written four-voice chorales.

One of the changes to the Catholic Church proposed by Martin Luther was to allow members of the congregation to participate in the singing of the liturgy.

Of course, Luther was branded a heretic for his proposals, and began his own church in which to implement his ideas.

More than two hundred years later, J.S. Bach was appointed musical director at the St. Thomas Church in Leipzig, Germany and, in the spirit of Luther, wrote five years’ worth of liturgical music.

Each of these works, called cantatas, were built around a hymn melody harmonized in four parts for congregational singing.

By analyzing Bach’s cantatas, we can construct a set of “rules” for writing in four-voice common practice period musical style, allowing us to study it in depth.
Part-Writing: The Vertical Rules

To best understand how common practice period composers wrote music, we are going to learn how to write music using their musical style.

So the patterns we see in their music, the things they consistently did or didn’t do, are going to become “rules” for us in our writing.

It’s wrong to think these were “rules” for the composers… they were just writing what sounded good to them.

Nor should we treat these as rules for writing music in general… each style of writing has its own set of patterns, and thus its own “rulebook.” As a composer, you get to write your own rules for your own style!

We’re going to start with the vertical rules… that is, the rules that pertain to building a single chord in four-voice harmony.

First, the distance between soprano and alto and between alto and tenor must be an octave or less.

The tenor and bass can be as far apart as you want!

Second, the voices must be kept in their proper order; for example, the tenor shouldn’t be higher than the alto. (Bach did this now and then, but it was only when he wanted to incorporate some special melodic shapes.)

Third, since we have four voices and only three notes in a triad, one of the notes should be doubled. For triads in root position, we typically double the root of the chord unless forced (by other rules) to do otherwise.

Lastly, each voice should stay in its range. These are conservative ranges for modern singers, but remember that Bach’s chorales were really written for amateurs: the common people who attended church in Leipzig!

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Part-Writing: The Horizontal Rules

**The Supreme Goal of part-writing is good voice leading...**
Making each individual voice part easy to sing by avoiding awkward intervals or large leaps!

Before we get to the specific dos and don’ts, let’s take a look at some important characteristics of four-voice part-writing:

- **Note how each voice moves as little as possible**, going to the nearest chord tone in each subsequent chord!
- **In some cases, the voice can simply stay on the same note**. This is called keeping the common tone, and it’s always cool!

<table>
<thead>
<tr>
<th>Four-voice harmony is a form of counterpoint, which is the combination of more than one melody played simultaneously. In counterpoint, each voice is equally important; no voice is given a role of accompaniment to another voice.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In counterpoint, it is important for each voice to be independent; that is, no two voices should be doing the exact same thing. If two (or more) voices were moving in parallel, the richness of the texture would be reduced.</td>
</tr>
<tr>
<td>As a result, common practice composers were very consistent in avoiding two or more voices that moved in parallel perfect octaves, parallel perfect fifths, or parallel perfect unisons!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>There are also a few other rules that apply to this style:</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you have the leading tone in an outer voice (soprano or bass), it must resolve to the tonic in the next chord.</td>
</tr>
<tr>
<td>You may not move any voice by an interval of an augmented second or an augmented fourth.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The good news: You can avoid all three of these by doing the following whenever possible:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Keep the common tone!</td>
</tr>
<tr>
<td>2. Move to the nearest chord tone!</td>
</tr>
<tr>
<td>3. Use contrary motion!</td>
</tr>
</tbody>
</table>
Part-Writing: Using Inversions

When common practice composers used inverted chords in four-voice writing, they followed some general patterns regarding which note of the chord should be doubled.

### Root Position

- **In root position triads**, composers usually doubled the root, which is in the **bass** of the chord.

### First Inversion

- **The doubling of first inversion triads depends on the type of the chord being written.**
  - In major first inversion triads, composers doubled the **bass**.
  - In minor first inversion triads, composers doubled the **soprano**.
  - In diminished first inversion triads, they doubled the **bass**.

### Second Inversion

- **In second inversion triads**, composers usually doubled the fifth, which is in the **soprano** of the chord.

Here's another way to think of it: The only time you can't double the **bass** is in first inversion major triads, where you should double the **soprano** instead.

### Cadential Chord

- The cadential Ⅵ° chord is a tonic triad in second inversion followed by a root-position dominant chord at a cadence.

### Passing Chord

- The passing Ⅵ° chord is a chord placed in second inversion where the bass is treated like a passing tone: the middle note of a stepwise line moving up or down.

### Pedal Chord

- The pedal Ⅵ° chord is a second inversion chord where the bass is treated like a pedal tone: a note preceded and followed by the same note.

If you write a **second inversion triad** and it's not one of these three situations, then you are not writing in the common practice period style! The composers of the style just didn’t use these chords willy-nilly.
SO ANYWAY, AFTER WE GOT HIM TRANSPOSED BACK TO TONIC, HE BEGAN TO MODULATE AGAIN, AND...

WHAT SEEMS TO BE THE PROBLEM, SIR?

WELL, I THOUGHT I'D TRANSPOSE TO MINOR, YOU KNOW, TO SURPRISE THE FAMILY... SO I DID, AND THEN I RAISED ALL MY LEADING TONES, BECAUSE I'M A COMMON PRACTICE PERIOD PROGRESSION, RIGHT?

OKAY, SURE. SO WHAT'S WRONG?

I'VE GOT AUGMENTED SECONDS!

GASP!

ATTENTION! ATTENTION! WE NEED ASSISTANCE WITH A NEW PATIENT IN EMERGENCY TREATMENT ROOM 3B... STAT!

OK, SURE.

DOCTOR, WHAT CAN WE DO?

FOR THIS CASE OF ASCENDING AUGMENTED SECONDS, I PRESCRIBE A RAISED SIXTH SCALE DEGREE!

OOF... IT MAKES A MAJOR IV CHORD!

AND FOR THESE DESCENDING AUGMENTED SECONDS, WE'RE GOING TO USE AN UNRAISED SEVENTH!

AND THAT MAKES A MINOR V CHORD!

ALL IN A DAY'S WORK, MY GOOD MAN.

NOW LET’S TURN TO THE UNPLEASANT MATTER OF THE BILL.

CURE YOUR AUGMENTED SECONDS WITH MELODIC MINOR TODAY!
The Harmonic Cadences

A CADENCE IS GENERALLY CONSIDERED TO BE THE LAST TWO CHORDS OF A PHRASE, SECTION OR PIECE. THERE ARE FOUR TYPES OF CADENCES, EACH WITH THEIR OWN SPECIFIC REQUIREMENTS AND VARIATIONS.

AN AUTHENTIC CADENCE CONSISTS OF A DOMINANT FUNCTION CHORD (V OR VII) MOVING TO TONIC.

To be considered a perfect authentic cadence, a cadence must meet all of the following criteria:

- It must use a V chord (not a VII)
- Both chords must be in root position
- The soprano must end on the tonic
- The soprano must move by step

If the cadence doesn't meet all of those criteria, it's considered to be an imperfect authentic cadence!

An authentic cadence consists of a dominant function chord (V or VII) moving to tonic.

A PLAGAL CADENCE CONSISTS OF A SUBDOMINANT FUNCTION CHORD (IV OR II) MOVING TO TONIC.

To be considered a perfect plagal cadence, a cadence must meet all of the following criteria:

- It must use a IV chord (not a II)
- Both chords must be in root position
- The soprano must end on the tonic
- The soprano must keep the common tone

If the cadence doesn't meet all of those criteria, it's considered to be an imperfect plagal cadence!

A half cadence is any cadence that ends on the dominant chord (V).

A specific type of half cadence is the phrygian cadence, which must meet the following criteria:

- It occurs only in minor
- It uses a IV chord moving to V
- The soprano and bass move by step in contrary motion
- The soprano and bass both end on the fifth scale degree

A DECEPTIVE CADENCE IS A CADENCE WHERE THE DOMINANT CHORD (V) RESOLVES TO SOMETHING OTHER THAN TONIC... ALMOST ALWAYS THE SUBMEDIANT CHORD (VI).

Really, it's the psych-out cadence, in that you expect it to resolve to tonic, but it DOESN'T.

And, in fact, it's more common to see this in the MIDDLE OF THE PHRASE RATHER THAN THE END... WHERE YOU MIGHT CALL IT A "CADENCE-LIKE STRUCTURE"!

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As a matter of fact, there are certain chord progressions that appear more frequently, and there are others that are avoided pretty consistently. While the choices were always based on what sounded good to the composer, theorists can find a pattern in their choices that we can use to easily remember which chord progressions work and which ones don’t.

One way to understand this pattern is to think in terms of root movements. A root movement is the basic interval between the root of one chord and the root of the next chord. You don’t have to worry about the interval’s inflection, just its distance and direction.

For example, to determine the root movement here, we look at the root (not bass) of each chord and figure the interval between them. A to B is down a seventh, but since octaves don’t matter, we invert it to up a second.

That’s not say that they never used other root movements, but it didn’t happen very often.

Sequences of chords that don’t follow this pattern are called retrogressions, and they are considered unstylistic.

“Unstylistic” is a polite way of saying “the composers didn’t do it so you shouldn’t do it either”!

So here’s the pattern: common practice period composers generally used root movements of up a second, down a third, and down a fifth!

Remember... since inflection doesn’t matter, we can ignore accidentals when we figure the root movements.

So, for example, a G chord to an E chord is down a third, but so is G to E flat, and G sharp to E flat!

There are also four simple exceptions to this pattern:

- Any chord can move to tonic.
- Tonic can move to any chord.
- Any chord can move to dominant.
- And the leading-tone triad must move to tonic.

Let’s try it... say you have a supertonic chord and you are trying to decide what chord to use to follow it.

You can move up a second to a mediant chord...

You can move down a leading-tone chord...

You can move down a fifth to a dominant chord...

Or you can use the first exception and go to a tonic chord!

Harmonic Progression

How did composers of the common practice period decide which order to put chords in? Did they just throw them down on paper haphazardly?

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Diatonic Common Chord Modulation

Modulation is the process of changing to a different key within a piece of music.

There are several different ways to modulate; perhaps the simplest is the Unprepared Modulation, where the music pauses and suddenly changes key, often up a half-step.

Common practice period composers, however, preferred a particular type of modulation that required a little more planning: the Diatonic Common Chord Modulation. As the name suggests, this uses a chord which is diatonic in both the outgoing key and the new key.

Let’s say we’re starting off in C Major... here is a list of all the keys which have chords in common with C Major (the specific chords are highlighted):

For instance, the I chord in G Major is G-B-D...

...which is the V chord in C Major!

Keys which have chords in common like this are called related keys.

Notice how these keys are all close to one another on the circle of fifths.

To use this type of modulation, a composer would pivot the harmony around the chord that fit into both keys. As theorists, we show this pivot chord by analyzing the chord in both keys.

Note that the pivot chord is always the last chord that can be analyzed in the old key... the first accidentals will always occur in the chord immediately following the pivot chord.
### Non-Harmonic Tones

A non-harmonic tone is a note that doesn’t fit into a chord. We classify non-harmonic tones by how they are approached and resolved.

<table>
<thead>
<tr>
<th>Name</th>
<th>Abbreviation</th>
<th>Approach</th>
<th>Resolution</th>
<th>Notes</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Passing Tone</strong></td>
<td>PT</td>
<td>Step</td>
<td>Step</td>
<td>Resolves by continuing in the same direction as the approach.</td>
<td><img src="image1" alt="Example" /></td>
</tr>
<tr>
<td><strong>Neighboring Tone</strong></td>
<td>NT</td>
<td>Step</td>
<td>Step</td>
<td>Resolves by returning to the note preceding the non-harmonic tone.</td>
<td><img src="image2" alt="Example" /></td>
</tr>
<tr>
<td><strong>Appoggiatura</strong></td>
<td>APP</td>
<td>Leap</td>
<td>Step</td>
<td>Resolves in opposite direction from approach.</td>
<td><img src="image3" alt="Example" /></td>
</tr>
<tr>
<td><strong>Escape Tone</strong></td>
<td>ET</td>
<td>Step</td>
<td>Leap</td>
<td>Resolves in opposite direction from approach.</td>
<td><img src="image4" alt="Example" /></td>
</tr>
<tr>
<td><strong>Changing Tones</strong></td>
<td>CT</td>
<td>Any</td>
<td>Step</td>
<td>Two non-harmonic tones on either side of the note of resolution.</td>
<td><img src="image5" alt="Example" /></td>
</tr>
<tr>
<td><strong>Anticipation</strong></td>
<td>ANT</td>
<td>Any</td>
<td>Common Tone</td>
<td>A chord tone played before the rest of the chord arrives.</td>
<td><img src="image6" alt="Example" /></td>
</tr>
<tr>
<td><strong>Suspension</strong></td>
<td>SUS</td>
<td>Common Tone</td>
<td>Step</td>
<td>A note held over from a previous chord and resolved down.</td>
<td><img src="image7" alt="Example" /></td>
</tr>
<tr>
<td><strong>Retardation</strong></td>
<td>RET</td>
<td>Common Tone</td>
<td>Step</td>
<td>A note held over from a previous chord and resolved up.</td>
<td><img src="image8" alt="Example" /></td>
</tr>
<tr>
<td><strong>Pedal Tone</strong></td>
<td>PED</td>
<td>Common Tone</td>
<td>Common Tone</td>
<td>A chord tone which temporarily becomes a non-harmonic tone.</td>
<td><img src="image9" alt="Example" /></td>
</tr>
</tbody>
</table>

Suspensions are typically further identified by number. The first number represents the interval between the note of suspension and the bass. The second number represents the interval between the note of resolution and the bass.

The exception to this rule is the 2-3 or bass suspension, where the numbers represent the intervals between the bass (where the suspension occurs) and whichever voice has the note which is a second (not counting octaves) above the bass.
Dear Sparky:
Can you elaborate on why suspensions are identified by numbers? Also, what should one watch out for when writing suspensions in four-part harmony?

--S.S., Detroit, MI

Q: Can you elaborate on why suspensions are identified by numbers? Also, what should one watch out for when writing suspensions in four-part harmony?

A: Woof!*

TRANSLATION: When analyzing suspensions, it is important to identify both the note of suspension (the non-harmonic tone itself) and the note of resolution (the note that comes right after the non-harmonic tone in the same voice).

In almost every case, the suspension is then labeled using two intervals: the interval between the note of suspension and the bass, and the interval between the note of resolution and the bass.

The only exception to this is the 2-3 suspension, where the suspension occurs in the bass. For this one, we look at the interval between the notes of suspension and resolution and the nearest chord tone, whichever voice it may be in.

When writing an example which includes a suspension, it is very often useful to begin by writing the chord that is going to contain the suspension, then adding the suspension, and finishing by writing the chord of approach.

The real trick, though, is to plan ahead... if you are planning to write a particular type of suspension, you need to think about the interval that needs to be present in the chord that includes your suspension.

For the 9-8 suspension, the suspension resolves to an octave above the bass... that’s easy, since any chord can include an octave.

For the 7-6 suspension, the suspension resolves to a sixth above the bass. That means you can’t use a chord in root position, because they have a fifth and a third above the bass. You need a first or second inversion triad!

For the 4-3 suspension and 2-3 suspension, you need a chord with a third above the bass... which means you can use anything except a second inversion triad.

DOING STUFF THE SPARKY WAY IS ALWAYS FUN!
**Diatonic Seventh Chords**

**What are they?**

**Diatonic Seventh Chords** are the seventh chords you can create using only the notes in a particular key.

**Remember:**

- Diatonic means "from the key."
- So a diatonic chord is one that only uses notes in the key signature. No accidentals!

Diatonic seventh chords are the seventh chords you can create using only the notes in a particular key.

There are eight possible types of seventh chords in tertial harmony, but the composers of the common practice period only used five:

- **Major Seventh**
  - Above root
- **Major Triad**
- **Minor Seventh**
  - Above root
- **Minor Triad**
- **Half-Diminished Seventh**
  - Above root
- **Fully Diminished Seventh**
  - Above root
  - Diminished Triad
  - Diminished Triad

**In Harmonic Progressions,** diatonic sevenths can be used anywhere you can use a diatonic triad with the same root.

With the diatonic seventh chords, we add a fourth root movement: **The Common Root.** However, this root movement can only be used to increase tension, so going from a seventh chord to a triad is avoided.

Respect the Seventh!

The seventh of the chord is always resolved down by step. Always!

No, I'm serious. Don't ever resolve the seventh of a seventh chord any other way.

Doing so will cause you certain death!

When using these chords in four-part writing — in fact, when you use any seventh chord in four-part writing, you must always, always remember to...

The seventh of the chord is most often approached by the common tone.

However, it is okay to approach the seventh from below by a step or a leap, or from above by a step.

You must never approach the seventh by a leap from above!
The Dominant Seventh

**The Dominant Seventh is the Diatonic Seventh Chord** built on the Fifth Scale Degree. We already discussed diatonic seventh chords... why give this one all this special attention?

For one thing, the dominant seventh is, by far, the **most common seventh chord** used by the composers of the common practice period.

But another reason for spending a little extra time with it is the fact that there are a few things that apply to it that don't apply to the other diatonic seventh chords.

The reason these are often confused is that in popular and jazz theory, the term "dominant" is used to label the chord type instead of the chord's role.

First, a note on terminology:

The terms "major-minor seventh" and "dominant seventh" are not interchangeable! "Major-minor seventh" is the chord's type, and "dominant seventh" is the role the chord plays in the context of a particular key.

It's just a major-minor seventh... until it's placed in a particular key!

The other important thing to know about the dominant seventh chord is that common practice period composers would sometimes use some non-standard ways of resolving the seventh!

The other important thing to know about the dominant seventh chord is that common practice period composers would sometimes use some non-standard ways of resolving the seventh!

**The Ornamental Resolution**

In this resolution, the seventh is still resolved down by step, but it takes an ornamental "detour" before getting there.

The ornament can be any shape or length, but it must resolve to the note down a step from the seventh of the seventh chord.

**The Transferred Resolution**

This is the "hot potato" resolution: instead of being resolved down by step in the same voice, the seventh is passed to another voice in another dominant seventh chord.

If the bass voice gets it, he resolves it immediately, ending the fun for everyone.

**The Delayed Resolution**

Here, the resolution of the seventh is delayed by moving to some other chord (usually the subdominant) and having the seventh of the chord hold out until the dominant seventh returns.

After the V7 returns, the voice that has the seventh should still resolve it appropriately!

**The Bass Resolution**

In this resolution, the seventh of the chord is still resolved down by step, but the note it resolves to appears in the bass voice.

The voice that had the seventh resolves up, usually by step.
Extended Harmonies

So far, we’ve talked about two types of tertial chords: triads and seventh chords. Remember, tertial chords are chords constructed by stacking major and minor thirds.

Now, there are four types of triads and eight types of seventh chords. Even though common practice period composers only used five of them.

Suddenly the possibilities increase from twelve...

...to 124!

The good news: common practice period composers only used these “extended harmonies” as diatonic chords on the dominant.

Seriously: these are the only extended harmonies used by common practice period composers. In fact, the V^11 and V^13 weren’t used much before the Romantic era.

Now, when we put these chords into four-part harmony, we’ve got a problem: they all have more than four notes. So we have to make the tough call: which ones do we cut from the team?

We need to keep the root because it defines the chord. Similarly, the third is what makes the chord tertial.

The seventh acts as a bridge to the extended harmony, preventing the chord from coming across as two separate harmonies played at the same time.

Finally, the ninth, eleventh or thirteenth of the chord is what defines it as a ninth, eleventh or thirteenth chord.

So how do you put these in four-part harmony? Omit the fifth and use only the ninth, eleventh or thirteenth as necessary.

Oh, and if you’re worried about inversions: stop. In the common practice period, extended harmonies are almost always found in root position.
Motivic Development

**We're going to take a little break from the usual stuff and... hey, it's Ludwig van Beethoven!**

**What's going on, maestro?**

**I'll tell you what's going on: I'm grumpy! I bet Archduke Rudolph 20 gulden that I could write 500 measures of music this week and so far I've only come up with four stinkin' notes!**

**Hey, it's cool, Mr. B... we can use these notes as a motive, and create a ton more music based on them. Watch!**

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<tr>
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**Repetition**

The simplest form of motivic development, repeating a phrase immediately gives you twice as much music!

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**Sequence**

Repeating a motive at a higher or lower level pitch. As with all of these, the intervals don't have to match exactly.

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**Inversion**

Flipping the motive upside-down: if the original motive leaps downward, an inversion will leap upward.

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**Interval Contraction**

Making the intervals within the motive smaller (contraction) or larger (expansion).

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**Interval Expansion**

Changing the speed of the motive so it is played faster (diminution) or slower (augmentation).

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**Diminution**

Augmentation of original motive

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**Augmentation**

Any change of the motive's rhythm (other than just changing the tempo, as described above)

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**Rhythmic Metamorphosis**

An "echo" effect between different voices (between instruments in an ensemble, for example, or between registers on the piano)

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**Imitation**

An "echo" effect between different voices (between instruments in an ensemble, for example, or between registers on the piano)

**So, heh heh... that gets us to 253 measures...**

**Wait... we are in 4/4 time, right?**

**Uh, yeah...**

**So let's use 2/4 time instead!**

**You sly fox... 506 measures!**

**Aw, dang! Let's go double or nothing!**

**Woooot! Read it and weep, Rudy!**
When we talk about the form of a piece, we are referring to the large-scale layout of the piece... specifically, the arrangement of sections of music, how and when they are repeated, and what keys are being used.

One of the simplest forms is binary form, which consists of two contrasting sections. We refer to these two sections as A and B.

The sections might be contrasting in mood, tempo, key, or even in a combination of these characteristics.

Binary form is used in baroque dance suites in a very specific way. In these pieces, both sections are repeated. The A section begins in the primary key and modulates to the key of the dominant, and the B section begins in that key and modulates back to the original key. Performers of the time would typically improvise ornamentation when repeating each section.

Baroque dance suites were written for varying instrumentation; many were written for keyboard (usually harpsichord or clavichord), others were written for chamber groups, and some were even written for full orchestra.

Each movement of these suites would be written in the style of a particular baroque dance: allemande, gavotte, bouree, courante, sarabande, loure, gigue, and others, each of which had a specific character.

Because baroque dance form is so common in baroque instrumental music, when theorists and musicologists are talking about baroque music and say "binary form," they are actually referring to baroque dance form.

Another somewhat rare variation of binary form is rounded binary form, where the A section returns after the end of the B section. This reprise of the A section, however, is shortened, so we refer to it as "A prime."
Ternary Form is a three-part form. Rather than using three completely different sections, most pieces in ternary form consist of two sections, the first of which is reprised.

In ternary form, the A section appears both at the beginning and at the end. Like binary form, the B section is contrasting in character.

The reprised A section may be an exact repeat of the first A, or it may be slightly different, but the length of the A sections should be similar.

This is different from rounded binary, where the reprised A section (which we called a prime) is significantly shorter than the first A section.

The minuet and trio is a variation on ternary form used for instrumental music. Instead of writing out the reprised A section, the score will place the instruction “da capo al fine” after the B section, which means to return to the beginning, play through the A section, and end the piece.

This same form is commonly used in baroque and classical opera, where it is called a da capo aria. In both minuet & trio and da capo aria, any repeats are ignored when playing through the reprised A section.

It’s worth mentioning that there is a common form that is descended from minuet and trio form: the military march form favored by John Philip Sousa and other American march composers.

In the military march form, the A section is split into two subsections, called the first strain and second strain. The trio adds a flat (or removes a sharp) from the key signature, modulating to the key of the subdominant. Most marches begin with a short fanfare, and repeat the trio, placing a short, intensely dramatic passage between repetitions called the dogfight or breakstrain.
Sonata Allegro Form is a specific form first used by early classical composers in opening movements of multi-movement works for solo, chamber or large groups. It was eventually adopted by other composers of the classical and early romantic eras.

The form itself is based from ternary form, in that the first large section is reprised at the end of the form. One of the most important features of Sonata Allegro Form is the two primary themes that make up the exposition. These two themes will be contrasting in character and, at least in the exposition, will be in different keys. In a major work, the second theme will be in the key of the dominant; in a minor piece, the second theme will be in the relative major. In the recapitulation, however, both themes are played in the tonic!

The diagram above shows the required elements of Sonata Form; in the diagram below, several other elements, which are optionally included, are also shown.

Bear in mind that composers did what they wanted to... Some of the greatest pieces written in Sonata Allegro Form feature places where the composer artfully broke these "rules"!
**Altered Chords**

Up to this point, all the chords we've been talking about have been built using only the notes in the current key. Essentially, this means no accidentals, with the exception of the raised sixth and seventh scale degrees in minor, which we consider to be part of the key.

Now that we've covered all the possible diatonic chords in tertial harmony, it's time to open the door to notes outside the key... These "altered chords" add a certain richness to the harmony by using one or more notes that are not in the key signature and thus require accidentals.

We'll be covering several categories of altered chords, each of which have their own unique rules for use. However, there are a few things that they all have in common!

First, every altered chord has to have at least one accidental... if it doesn't have any accidentals, then by definition it's a diatonic chord!

Second, altered chords can be easily used in place of their diatonic counterparts. In other words, you can add some pizazz to a composition by replacing a diatonic chord with an altered chord that has the same root.

In general, avoid cross relations. A cross relation occurs when a note appears with two different accidentals in two consecutive chords, in two different voices.

Lastly, when you use these chords in part-writing, you should, whenever possible, resolve the altered tones in the direction of their alteration.

So if a note has a flat, try to resolve it down by step or by leap.

And we generally avoid doubling altered notes, since doing so would tend to cause parallel octaves.

With few exceptions, altered chords can use the same basic root movements that we've been using. Like the diatonic sevenths, however, the common root should only increase tension... don't move from an altered chord to its diatonic counterpart.

Borrowed Chords

Neapolitan

Secondary Dominants

Augmented Sixths

Secondary Subdominants

Diatonic

Altered (Chromatic)
Altered chords use notes outside the scale as a means of adding a different "color" to the chord.

FOR EXAMPLE, THE FOLLOWING CHORDS ARE DIATONIC CHORDS IN C MINOR:

\[\begin{align*}
&c: \ ii^6 \ ii^7 \ III \ iv \ VI \ vii^7 \\
\end{align*}\]

But if we use them in a major key, they require accidentals and are therefore altered chords. We call these borrowed chords because they are borrowed from the parallel minor.

Some theorists refer to the use of these chords as mode mixture.

And, in fact, these six chords are the six most commonly used borrowed chords in the common practice period. (One of them, the major triad on the lowered mediant, or "flat three," was not used much by composers before the romantic era.)

All the usual part-writing rules apply to these chords. For example:

\- The borrowed supertonic is a diminished triad, and is therefore always used in first inversion.

\- The borrowed seventh chords can be used in any inversion, but the seventh must be approached and resolved properly.

\- It's usually best to resolve altered notes in the direction of their alteration, but doing so in the two altered root chords won't work.

\- The leading-tone fully diminished seventh is the king of dominant function. Don't even think of resolving it to anything but tonic!

Wait... why? Since we double the root, moving both roots the same direction can often result in parallel octaves.

It's more important to avoid parallelism than to resolve the notes a certain way. So this use of contrary motion is better.

The picardy third is a major tonic chord at the end of a minor piece, so many theorists consider it a borrowed chord. Really, though, it's not adding chromatic variety... it's a last-minute modulation!

Named for 24th-century explorer Jean-Luc Picardi*.

*Nope.
The Neapolitan Six

*The Neapolitan Six chord, since it is built on a form of the supertonic, has some characteristics of a subdominant function chord in that it often resolves toward a dominant function. In fact, it is very common to see the Neapolitan chord resolve to a dominant seventh in third inversion, or to a cadential six-four chord. (Even though the Neapolitan chord has a lot in common with other subdominant function chords, it is most often referred to as part of a larger group of chords called predominants, and the label of "subdominant function" is generally limited to the subdominant and supertonic chords and their variants.)*
Secondary Dominants

There is a duality at the heart of common practice period harmonic progression. Like the ancient conflict of Jedi and Sith, it consists of forces that, at one level, work against each other... but at another, higher level, work together, creating energy that drives all else. That duality, of course, is the relationship of dominant function and tonic. Dominant harmony typifies tension in the common practice period, and the tonic represents release. Its simplest form, the authentic cadence, has been ubiquitous in western music for centuries.

But that's crazy talk, though, isn't it? I mean, how could we control that magic and make it obey our compositional whim?

The answer, of course, is with secondary dominants.

The progression of dominant moving to tonic is so strong, it would be nice to be able to use it to provide motion to chords other than tonic.

Let's say we wanted to approach this V chord.

We could use one of the usual diatonic chords, the tonic, the subdominant, the mediant... but what if we're looking for a bit more tension and release?

What if we wanted to use that dominant-tonic magic?

If we pretend for a moment that the chord we're resolving to is a tonic chord, what would the corresponding dominant chord be? Altered, yes, but we're not afraid of those anymore:

While we might have once called this a short modulation, it is really more like borrowing another key's dominant chord. If we think of the V chord in the key as the primary dominant, V chords of related keys are secondary dominants.

Now, we're not just limited to the V chord. There are five chords with a dominant function!

These chords often resolve to the chord "under the slash," but they can actually be approached and resolved using the basic root movements!

In major keys, the "x" above can be any diatonic chord other than tonic (obviously) or the leading-tone triad. Why? Because a diminished triad has a hard time acting like a temporary tonic chord.

In minor keys, the composers generally only used secondary dominants of iv and of V.

That gives us a huge list of possibilities!
Augmented Sixth Chords

Like that moment of incredible tension just before the hero finally kisses the leading lady, the half-step is the go-to interval for creating tension in music of the common practice period. It drives the entire style!

If one half-step can create such strong tension, how about two half-steps sounding simultaneously? Let's get creative here for a minute to find a cool new way to approach a diatonic chord. In this case, we'll use them to approach the dominant triad.

First, we'll start with the doubled root of a V chord...

...and approach that octave with a half step below the top note,

...and a half step above the bottom note...

The result is a new chord, one we call the augmented sixth chord, after the interval created by the top and bottom notes.

Augmented sixth chords are predominant chords, meaning they are used to approach dominant chords. They are usually used to approach dominant triads, not dominant sevenths, because of the doubled roots present in dominant triads.

However, they also often approach tonic chords in second inversion, which also contain a doubled fifth scale degree.

Rarely, augmented sixth chords are found transposed down a perfect fifth, analyzed as "on flat two," and used to approach a tonic chord in root position.

And, finally, when resolving the German augmented sixth chord to a dominant triad, you might find yourself writing parallel fifths... but it's perfectly okay! Mozart did it all the time!
Altered and Enharmonic Modulation

Altered common chord modulation is easy: remember diatonic common chord modulation, where we used a chord that was diatonic in both the old and new keys.

Now, in both diatonic modulation and altered modulation, we have one chord that plays two different roles; one for each key. But the chord type doesn’t change... if it was a major chord in the old key, it’s still a major chord in the new key.

...but what if the chord type did change?

In enharmonic modulation, we respell a chord enharmonically so the chord type itself is different in the old and new keys.

This technique is so - well, odd - that there are only two specific ways to do it.

Fully diminished seventh chords are cool for a lot of reasons, and one of them is that they are equidistant chords; inverting a fully diminished seventh yields another root-position fully diminished seventh chord.

Meaning that a fully diminished leading tone seventh chord can be a pivot chord into three other possible keys:

Note that the pivot chord above is approached like a dominant seventh, but resolved like an augmented sixth chord!
After learning about secondary dominants, you might wonder if it's possible to extend the concept to other chords.

For example, if we can use a dominant function chord from a related key, what about a subdominant function chord from a related key, like IV of V?

Well, the answer is yes, and the chords that result are called secondary subdominants. But before we talk about them, you need to understand a few things.

First of all, the very existence of these chords is debatable.

What one theorist might call a secondary subdominant:

```
C: ii7 V2 V6 I
```

Another might call a short modulation:

```
G: ii7 V2 I6
C: V6 I
```

Second, the only place we find chords that we can call secondary subdominants is in the music of the Romantic era.

Lastly, since these chords are already pushing the limits of tonality, composers would only use secondary subdominants from closely related keys. In other words, secondary subdominants should only be "of IV" and "of V."

Keeping these things in mind, let's look at the possibilities:

What are all the subdominant function chords we've encountered?

First, there are the diatonic triads:

```
iI IV
```

Next, the diatonic seventh chords:

```
ii7 IV7
```

And, lastly, a few borrowed chords:

```
ii° ii7 iv
```

So a secondary subdominant can have any subdominant function chord above the slash, and a IV or V below the slash.

However, the most commonly found secondary subdominants are those that use the half-diminished supertonic seventh.

To approach these chords, use any of the basic root movements, which are awesome.

The most common way to resolve secondary subdominants is to the corresponding secondary dominant.

```
The music of the Baroque, Classical, and Romantic eras share a consistent use of harmony and counterpoint, enough to cause theorists and historians to group them together as the "Common Practice Period."

However, the music of the Romantic era employed some interesting techniques that set it apart from the Baroque and Classical eras...

...and foreshadow some of the big changes coming in the Twentieth Century!

Another technique that is unique to the Romantic era is the resolution of an augmented sixth chord to a dominant seventh chord rather than a dominant triad, causing the interval of the augmented sixth to resolve obliquely instead of moving outward to the octave.

Finally, Romantic era composers would sometimes use a particular type of chord progression that had the effect of suspending tonality for a portion of the piece. By temporarily removing the feeling of being in a certain key, the composer could easily modulate to a distant key!

This technique is called third relations because it involves moving by root movements of a major or minor third without respect to key signature.

For example...

Here, we're in F major...

...which obscures any sense of key we had...

...and then turning the gravity back on... but in a different direction!
In 1725, an Austrian composer and theorist named Johann Joseph Fux wrote a theory textbook called Gradus ad Parnassum, in which he outlined his method of teaching how to write good counterpoint.

**Counterpoint** is the combination of two or more melodies, each one as important and interesting as the other.

Gradus ad Parnassum means "Steps to Parnassus." Parnassus referred to the highest peak in Greece, and was used as a metaphor for perfection.

Gradus ad Parnassum was a big hit, used (or at least praised) by composers like Mozart, Beethoven, and Haydn. The system that Fux used is referred to as *species counterpoint*, because it involves going through increasing levels of rhythmic complexity which are labeled as *species I*, *species II*, and so forth.

Interestingly enough, the language Fux was advocating was not the counterpoint of the common practice period to which he belonged, but the more strict rules of counterpoint used by composers of the *Renaissance* more than a century earlier.

Specifically, Fux was a starry-eyed admirer of the Italian Renaissance composer Giovanni Pierluigi da Palestrina, who he considered to represent the peak of compositional artistry... something he felt was being lost or even squandered by his Baroque and Classical contemporaries.

Of course, it's worth pointing out that Fux didn't actually have access to much of my music!

Right, so the language Fux is teaching is really an interesting ideal: based partly on his perceptions of Palestrina's musical language as delivered to him through Italian theorists, and partly on his own ideas of what he thought the language should be.

Anyway, let's get started! Going through Fux's steps for learning counterpoint gives us a glimpse of how the Masters learned their craft and a feel for the environment in which they developed their own musical languages.

Hurray! Let's go, Giovanni, and bring the beautiful light of perfect composition to these eager students!

Yeah, Joe, about that... you do realize that your idea of perfect composition is just a blissfully awesome thing?

Yes, that's just what I was thinking!

No, I mean that it's super fun! YAYYYY!!!!!
Species Counterpoint: Melody

Before we start combining melodies, we need to understand what constitutes a good melody in the system of species counterpoint.

In general, melodies should be primarily stepwise, with a single, definite high point or low point. Effective melodies tend to progress slowly toward the high or low point and then move back toward the starting pitch.

High point

Oh, and don’t repeat notes like this. Contrapuntal melodies need to be interesting, not boring.

But yeah, yeah, Palestrina, we know you repeated notes all the time. But Fux was pursuing an ideal. Maybe he felt you could do... better?

Why, I shhhh... let’s just move on.

First, leaps should be no larger than a perfect fifth, with two exceptions: leaping by a perfect octave, and leaping upward by a minor sixth. Don’t do these very often, though!

Second, for heaven’s sake, avoid the tritone! This interval (an augmented fourth or diminished fifth) was actively avoided so consistently that Fux and his pals called it the diabolus in musica... the “devil in music!”

Leaping by a tritone is bad, but it’s also important to avoid the tritone in other ways. For example, this pattern, where a tritone is outlined in the melodic line, would be considered inappropriate.

Tritone

Third, leaps of a perfect fourth need to be preceded or followed by stepwise motion in the opposite direction, to counterbalance the leap. And if a leap is larger than a perfect fourth, it needs to be counterbalanced both before and after!

Lastly, don’t write three or more leaps in a row. You can write two leaps in a row, but they need to outline a major or minor triad. No diminished triads... they have tritones in them!
"First species" counterpoint is the most rhythmically simple type of counterpoint: both voices have the exact same rhythm. As a result, it’s all about the intervals!

And that takes us to the first rule: only use consonant intervals.

Next rule: voices can’t cross or overlap.

The next rules have to do with perfect intervals (P1, P5, and P8... remember, P4 is dissonant!), which play important roles and require some special treatment.

Because they are such a strong sonority which can stop the counterpoint in its tracks, unisons can only be used on the first or last notes of an exercise.

All perfect intervals must be approached with care in order to preserve voice independence. First of all, never repeat a perfect interval!

In fact, approaching perfect intervals with both voices moving in the same direction is bad, even if it’s from an imperfect interval. Plus, it’s also not okay to approach a perfect interval with leaps in both voices! So it’s easiest to remember what you can do: approach perfect intervals using contrary motion, with at least one voice moving by step.

First note: no problem
In the middle: no way
Wait... why is that last bit important?

For these exercises, you’ll be writing a melody above or below an already-written melody, called a cantus firmus.

The cantus firmus will always start and end on the tonic note... so if you are writing counterpoint below the cantus firmus, you can’t start with a perfect fifth. Because your lower voice won’t be the tonic, you’ll have to start with a unison or octave instead!
Species Counterpoint: Species II

Second Species Counterpoint adds a touch more complexity: there are two notes against every one in the Cantus Firmus.

Fortunately, that doesn't make it twice as difficult: in fact, most of the previous rules still apply without any changes.

There are only a few exceptions:

- **Species I Rule:** Leaps are still fine, but don't leap to a new high point on a downbeat.

- **Species II Rule:** The A in the third measure is a new high point for the line, so leaping to it on the downbeat puts a lot of weight on that one note, making it stick out of the texture.

  "Excepting, of course, ascending minor sixths and perfect octaves, but you already knew that."

- **Species I Rule:** Unisons can only be used on the first and last notes.

- **Species II Rule:** Unisons can be used on unaccented notes... just be careful about crossing or overlapping voices!

- **Species I Rule:** Only use consonant intervals.

- **Species II Rule:** This rule still applies: if you use a perfect interval on a downbeat, you need to use contrary motion from the immediately preceding notes, and at least one voice must move by step.

  "However, you must also be careful not to have the same perfect interval on two successive downbeats. This is called parallel perfect intervals and it's going to be a no-no for a good long time."

  "(In fact, it's also not okay to have parallel perfect intervals from the unaccented beat to the downbeat, but if you are approaching with contrary motion, that wouldn't happen anyway.)"

- **Species I Rule:** Approach perfect intervals using contrary motion with at least one voice moving by step.

- **Species II Rule:** Still true... for downbeats. For the unaccented beats, dissonant intervals are fine, as long as they happen as passing tones: notes that fill in a third created by surrounding notes.

  "Oh, and notice how dissonant intervals have their numbers circled? Nice, huh. You should do it too."

- **Species I Rule:** No leaps larger than a perfect fifth.*

And finally... third species!
Species Counterpoint: Species III

Third Species, as you might have guessed, involves four notes against one.

And, compared to the other species, it’s easy peasy! In fact, the differences can be summed up into four rules.

First: Don’t leap more than once in the same direction.

Second: All intervals larger than a third, including perfect fourths, must be counterbalanced by steps on both sides.

Third: As usual, the first note in each measure must be consonant. The third note in the measure is also usually consonant, but it can be dissonant... as long as it’s the only dissonant note in the measure.

As for the second and fourth notes, they can be dissonant, as long as they are passing tones or neighbor tones.

A neighbor tone is a note approached by step, which resolves back to the note it came from.

Fourth: There are two special figures which act as exceptions to the rules above.

Hey, that makes five rules! No fair!

Well, they’re kind of similar...

The double neighbor tone involves an upper neighbor and a lower neighbor played one after another, then returning to the note that approached it.

The nota cambiata (or changing tone) follows the pattern of a step down, a third down, then two steps up. The middle note of this five-note figure must be consonant.

Can be dissonant!

Can be dissonant!

This figure can be inverted, so the upper and lower neighbors switch places.

MUST BE CONSONANT!
Species Counterpoint: Species IV

With the fourth species, we stop using smaller note values and back up a bit to species I. But instead of having the notes move at the same time, species IV involves the voices being offset from one another.

Dissonances in species IV must be in the form of suspensions. A suspension is a dissonant note that is approached by being held over - suspended - from the previous note.

In this case, the suspension is the F on the downbeat of the second measure. It's prepared by the F in the previous measure, and resolves down to the E.

Suspending notes is great, by the way, but don't use the same one more than three times in a row, or fux will release the hounds.

Similarly, in this example, the suspended note is the D, which forms a fourth with the A. It moves to a C, a third above the bass, making it a 4-3 suspension.

The only suspension fux allows when writing counterpoint below the cantus firmus is the 2-3 suspension, in which the suspended note forms a second with the cantus firmus, then resolves down to a third. (When this suspension is written an octave lower, it is sometimes called a 9-10 suspension.)

See how we resolve to a larger interval, unlike the 7-6 or 4-3? When writing counterpoint above the cantus firmus, so we move away from it, because suspensions always resolve down!

In species IV, you're dealing with a lot of limitations with melody and counterpoint, so you will sometimes get trapped in a situation where nothing will work. When this happens, you are allowed to "break species": forget the tie and slip into species II for a couple of notes.

For example, here we break species so we can avoid writing a fux-enraging four 4-3 suspensions in a row!

Don't go crazy with this. Though... species IV counterpoint should embrace suspensions, not avoid them. It's best to break species only rarely. Unfortunately, sometimes that means backing way up and choosing a different starting pitch for your counterpoint!
Species Counterpoint: Species V

**Fifth Species Counterpoint** is the culmination of all the other species, and it's the closest Fux gets to Palestrina's style of florid counterpoint that Fux thought was so amazingly awesome.

There aren't a lot of new rules for this species, and they mainly deal with combining the other species.

First, aim for a good mix of different species. Don't stay too long with any particular note value before switching to something else, so your counterpoint remains rhythmically interesting.

When you're using a particular note value, follow the rules of the corresponding species. So when you are using half notes, make sure you're obeying the rules of Species II. If you tie two half notes together, keep the laws of Fourth Species.

Leave the whole notes out, though, until you get to the end of your exercise. If you go all Species I in the middle, things get real boring real fast.

Next, Species III and IV can be combined by using dotted half notes, which always have to start on a strong beat.

Lastly, you can include eighth notes to add more rhythmic interest, as long as you follow a few restrictions:

- They have to occur in pairs on weak beats.
- Both notes must be approached and resolved by step.
- Only one pair should be used in any given measure.

Any dissonances involved with this kind of figure have to follow the rules of Fourth Species counterpoint: that is, they need to be suspensions prepared and executed by the dotted half note and resolved immediately afterward.

Species V Casserole

Combine all ingredients in a grand staff and mix well. Heat through to prevent unjustified dissonances from forming. Let cool and serve on period instruments.

- 2 cups second species
- ½ cup first species
- 2 cups third species
- 3 tsp ties (fresh or frozen)
- dash eighth notes (optional)
- 1-½ cups fourth species

Oh yeah!
Species Counterpoint: Three Voices

Let's head back to Species I again, but add a third voice!

Uh... do we have to?

Relax... it actually helps us see how this all relates to the four-voice chorale style of our man Bach...

In general, the rules for melodies and counterpoint are the same for Species I in two voices.

We still need to use only consonant intervals between each upper voice and the bass...

But the interval between the upper two voices can be dissonant... it can even be a tritone!

The chords created should be triads. You can form incomplete triads occasionally by having a doubled root and a third, but avoid having open fifths except on the first or last chord.

Technically, the triads must be major and minor in root position and first inversion, and diminished triads in first inversion only.

But if you follow the rules above about consonant and dissonant intervals, it prevents you from using the wrong inversion!

As with two-voice counterpoint, parallel perfect intervals are forbidden between any voices!

And perfect intervals still need to be approached with care: you still can't go wrong with contrary, stepwise motion!

However, in three voices, perfect intervals can also be approached with both voices moving in the same direction if the top voice moves by step, and if the third voice moves in contrary motion with the others.

Avoiding parallel perfect intervals and second inversion triads? Keeping diminished triads in first inversion? These are all fantastic ideas!

Use them, Bach! Use them like the wind!
The Modern Modes

**Modern? Wait, isn’t this stuff, like, 100 years old?**

Yes, but we only call them "modern" because we need to differentiate between a bunch of unrelated things across music history that, ever so inconveniently, use the same names!

And, to make matters worse, each of these things use the names to represent different concepts! Fortunately, right now, we're only worried about the modern modes.

These modes are used a lot... especially in folk music. As for standard western repertoire, they are first prominently featured in the post-romantic music of the early twentieth century British Isles.

One of the primary characteristics of these English modalists is that they tended to avoid the strong tensions of the common practice period... for example, they avoided chords that used a tritone... and avoided raising the leading tone in minor keys!

So what are they?

Well, remember when we created the natural minor scale by starting with a major scale, but using the sixth note of the scale as the tonic? It gave us a new pattern of whole steps and half steps... a new scale.

In fact, these are two of the seven modern modes: major is the IONIAN mode, and natural minor is the AEOLIAN mode.

By starting on the other notes of the major scale, we get the other five modes.

A more effective method of keeping the modes straight involves memorizing each mode’s color tone: the scale degree that makes it unique from the major or minor scale with the same tonic.

Major + lowered 7th: the scale degree that makes it unique from the major or minor scale with the same tonic.

Major + lowered 2nd: minor + raised 6th

Major + raised 4th: minor + raised 6th

Major + lowered 7th: minor + raised 6th

Major + lowered 2nd: minor + raised 6th

A Theory of Music for Musicians and Normal People by Toby W. Rush

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Impressionism

Although its composers were usually pretty grouchy about the comparison, impressionism in music has a pretty clear heritage. It shares a philosophy with a type of visual art: specifically, the works of the 19th-century French painter Claude Monet!

Rather than replicating fine details, impressionist painters such as Monet focused on light and movement, using broad strokes of unblended color. They loved natural scenes, often painting outdoors, away from home, and producing a finished work in a few hours!

Composers who used impressionism included fellow Frenchmen Ravel and Satie; as well as others like Griffes, Respighi, Sibelius and Hanson... but if Monet had a counterpart in music, it was Claude Debussy!

Through Debussy's music we can see the compositional techniques that typify impressionism:

- **Planing:** Parallel fifths and octaves? No problem! Debussy would paint melodies with entire chords moving in parallel motion.
- **Augmented Triads:** Unlike diminished triads, which listeners associated with traditional chord functions, augmented triads provided a less tonal sound without all the tension!
- **The Whole-Tone Scale:** This scale, made up entirely of whole steps, was embraced by the impressionists for its lack of dissonance.
- **Non-Functional Harmony:** Chords would often be juxtaposed in more chromatic ways... defying traditional Roman numeral analysis!
- **Chords with Added Notes:** Adding seconds, fourths and sixths to triads help add color without introducing harsh dissonance.
- **Line/Sen Harmonic Rhythm:** Changing chords in a less predictable fashion differentiated impressionism from traditional tonal music.
- **Extended Harmonies:** Adding sevenths, ninths and thirteenth... introduced a rich texture to any chord, regardless of scale degree!

Interestingly, a lot of these same techniques were adopted into jazz, a style of music which became hugely successful in America... and France!
LIKE IMPRESSIONISM, NEOCLASSICISM IS A MOVEMENT THAT OCCURRED IN A LOT OF DIFFERENT DISCIPLINES.

IN ARCHITECTURE, FOR EXAMPLE, NEOCLASSICISM INVOLVED A RETURN TO THE FORMS AND IDEALS OF CLASSICAL GREECE.

IN THE EARLY TWENTIETH CENTURY, COMPOSERS WERE ALSO HEARKENING TO THE PAST. AFTER THE INTENSITY AND EMOTION OF THE ROMANTIC PERIOD, THEY WERE LOOKING TO THE ORDER AND RESTRRAINT OF ANCIENT GREECE, OR MORE RECENTLY, THE CLASSICAL ERA.

NEOClassicism in music took on a lot of different forms, varying from country to country and even from composer to composer. However, there are a few compositional techniques that were pretty unique to music of the time!

As it happens, the techniques below can be grouped to show the favored styles of the two most well-known neoclassicists: Paul Hindemith and Igor Stravinsky!

**PANTRIADICISM**

The use of major and minor triads, juxtaposed to deliberately avoid any sense of traditional harmonic function.

**POLYTONALITY**

Combining chords which are dissonant to one another... or playing in multiple keys simultaneously!

**QUARTAL HARMONY**

Chords built using perfect fourths or perfect fifths. (As opposed to tertial harmony, where chords are built using major and minor thirds.)

**RHYTHMIC PRIMITIVISM**

Use of intense, unpredictable accents, evocative of unbridled primal energy. It can include complex meters and even polymeters: conflicting meters played simultaneously!

**TWENTIETH-CENTURY COUNTERPOINT**

Unlike the counterpoint of the sixteenth and eighteenth centuries, neoclassicists used dissonance freely, focusing more on melodic lines and rhythmic independence.

**PANDIATONICISM**

Combining diatonic major melodies in multiple lines with no consideration of harmony.
Atonality and Serialism

AFTER THE STEADY INCREASE OF CHROMATICISM THROUGH THE ROMANTIC ERA, COMPOSERS IN THE EARLY TWENTIETH CENTURY WERE READY TO TAKE THINGS TO THEIR NATURAL CONCLUSION!

Since tonality is defined as how a piece centers around a particular note, the inclusion of more and more chromatic notes can be thought of as a progression toward atonality: the absence of tonality!

Enter Arnold Schoenberg, an Austrian composer who came up with a system to create complete atonality... using math!

Schoenberg figured that tonal music emphasize pitches unequally, so the way to write a truly atonal piece was to ensure that every pitch is represented equally!

Schoenberg would begin each composition by coming up a sequence of twelve notes, where each pitch of the chromatic scale was included ONLY ONCE... we call this a twelve-tone row!

C F B Bb D G Gb Eb E A Ab Db

When building a row, avoid bits of tonality like triads or fragments of familiar scales!

Once you have a good row, you've created a pure (albeit short) atonal composition!

As a way to come up with more rows that are related to our original row, Schoenberg used a twelve-tone matrix.

The matrix is a 12 x 12 grid with our original notes placed in the top row.

To fill in the rest of the matrix, start by taking the original row and writing its inversion: a row that starts on the same pitch, but proceeds upside-down: if the original goes up a perfect fourth, the inversion should go down a perfect fourth!

Take the inversion and write it going down the left-hand side of the matrix.

To use the matrix to create an entire twelve-tone row composition:

- Use any row, any time
- Restrike notes before moving to the next one
- Combine adjacent notes into chords
- Pass rows between voices overlap rows
- Use partial rows
- Change order of notes within a row
- Try to bend things toward tonality

Things you can't do:

- Copy a tonal pattern
- Use any row too many times
- Change rows in a musical way
- Use partial rows
- Change order of notes within a row
- Try to bend things toward tonality

Oh, and start your piece with P-1, so someone analyzing your piece can figure out your matrix.

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Set Theory

Roman numerals work for chords built from thirds, but what if we want to categorize every possible combination of notes? Roman numerals can't keep up!

One of the most basic characteristics of any chord is how consonant or dissonant it is... something that depends entirely on which intervals are present in that chord! The good news is that set theory does exactly that! The bad news: Set theory is math!

The first step to analyze a chord using set theory is to think about the pitches it contains. This is math, so instead of using letter names we'll use numbers... where C is always zero.

Take those numbers, remove any duplicates, and list them in brackets like this: [1,2,8].

In set theory, inverting a set means flipping it upside-down.

In this chord, G sharp and A flat are considered the same. Enharmonics and octaves don't matter!

The normal form of a set is the most compact ordering of the set. We define "most compact" as the arrangement with the smallest intervals!

It's easiest to do this by thinking of the pitches in a circle and measuring the distance around!

Just make sure to always measure going clockwise.

To find a set's prime form, find the most compact of a set's normal form and the normal form of its inversion. Then transpose that set so it starts on zero.

These sets span the same distance... so to decide which is most compact, we compare the next largest interval in each set!

Lastly, we transpose it so it starts on zero.

So set theory is telling us that these two sets have something important in common. What is it?

Now let's tally up all the intervals in our original set. (And invert any intervals larger than a tritone and simplify any enharmonics!)

Let's tally up all the intervals in our original set. And invert any intervals larger than a tritone and simplify any enharmonics!

Normal form: [8,1,2]: 8 9 10 11 0 1 2
Normal form of inversion: [10,11,4]: 10 11 0 1 2 3 4

These sets span the same distance... so to decide which is most compact, we compare the next largest interval in each set!

So the prime form of [1,2,8] is [0,1,6].

Prime form is a way to describe any set by its basic intervals!

Let's tally up all the intervals in our original set. (And invert any intervals larger than a tritone and simplify any enharmonics!)

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Dear Sparky:

Q: I understand pitch class sets, normal form and prime form, but are there other ways to describe a chord using set theory?

-G.L., Corona del Mar, CA

A: **WOOF!**

TRANSLATION: Because set theory is primarily interested in the intervals which make up a chord, prime form is usually the best way to categorize chords using set theory... but there are other ways theorists use to describe sets in their prime form!

Howard Hanson, one of the first proponents of set theory, came up with a code which counted each type of basic interval, ordered from consonance to dissonance:

<table>
<thead>
<tr>
<th>Interval</th>
<th>PM</th>
<th>MN</th>
<th>NS</th>
<th>DT</th>
</tr>
</thead>
<tbody>
<tr>
<td>P4</td>
<td>M3</td>
<td>m3</td>
<td>m2</td>
<td>TT</td>
</tr>
<tr>
<td>P5</td>
<td>m6</td>
<td>M6</td>
<td>m7</td>
<td>M7</td>
</tr>
</tbody>
</table>

Hanson analysis: PDT

[0,3,4,7] = PM²N²D
[0,1,2,6] = PMSD²T

Twentieth-century theorist Allen Forte figured that since there was a finite number of possible sets, someone ought to catalog them all!

How do you figure out a set’s Forte number?

Step one: Look it up on the chart.

Of course, that someone was Allen Forte, who came up with the system of **Forte numbers**: a unique number for each and every possible set.

In his chart, Forte labeled sets which had different prime forms but the same interval vector with a "2". Like 42-15 and 42-29, which are both called all-interval tetrachords...

Forte number: 3-5

There is no step two!

Nowadays, most theorists express this concept in a more mathematical way, using what we call an interval vector:

<table>
<thead>
<tr>
<th>Interval</th>
<th>Forte Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>m2</td>
<td>M2</td>
</tr>
<tr>
<td>M7</td>
<td>m7</td>
</tr>
<tr>
<td>m3</td>
<td>M6</td>
</tr>
<tr>
<td>M3</td>
<td>m6</td>
</tr>
<tr>
<td>P4</td>
<td>P5</td>
</tr>
<tr>
<td>TT</td>
<td></td>
</tr>
</tbody>
</table>

( #   #   #   #   #   #   )

[0,3,4,7] = (102210)
[0,1,2,6] = (210111)

Interval vector: (100011)

How do you figure out the Hanson analysis? List the letters in this order, omitting any intervals not present and using superscripted numbers to show duplicates.

You could use a mnemonic to remember the order... like "Please make Nick stop doing that"!

Wait... doing what?

Doing what the Sparky way is always fun!
Aleatoric Music

Also known as CHANCE MUSIC or INDETERMINACY, ALEATORIC MUSIC is music that has some element of UNPREDICTABILITY to it.

The word "ALEATORIC" comes from the Greek root ALEA, which means DICE!

You could argue that almost all LIVE MUSIC has a bit of unpredictability... different performers might interpret the same piece a little bit differently.

But ALEATORIC MUSIC is defined as music which has MORE INTENTIONAL UNPREDICTABILITY than that!

Aleatoric Music can be thought of as being in two different categories... though a piece could use both kinds!

Aleatoric Composition

A composer might use RANDOMNESS to decide how to write a piece... which notes to play, how long they should last, or which INSTRUMENTS to use, for example.

The result is a fixed piece: one that sounds the same each time it is played!

One of the pioneers of stochastic music is Greek composer IANNIS XENAKIS, who would use SCIENTIFIC PHENOMENA to compose music... like using patterns of MOLECULAR MOTION to write his 1975 work N’SHIMA for brass, cello and vocalists.

Aleatoric Performance

A composer might instead decide to design a piece to leave part or all of it to CHANCE... making the piece sound different every time it is performed!

For example, a piece might have sections where performers are instructed to repeat a certain passage an UNSPECIFIED number of times, at their own TEMPO, independent from each other. This is called SENZA MISURA!

Of course, there are endless possibilities: performers directed to play whatever they WANT, specific passages played at UNSPECIFIED times, or performances which depend on unpredictable elements, like COIN FLIPS or AUDIENCE PARTICIPATION!

One of the most famous examples of Aleatoric Music is John Cage’s 1952 piece 4’33”, which involves one or more musicians on stage, doing nothing, for four minutes and thirty-three seconds.

The piece is sometimes ridiculed as an example of NONSENSICAL MODERN ART RUN AMOK, but Cage saw it as an OPPORTUNITY to take advantage of the expectations of CONCERT ETIQUETTE to force the audience to actively LISTEN TOGETHER in a SILENT environment!

Cage pointed out that 4’33” was not intended to be a performance of silence, but a chance to listen to AMBIENT SOUNDS: nearby traffic, rain falling on the roof, or even whispered conversations!

I love sounds just as they are... and I have no need for them to be anything more than what they are! I don’t want them to be psychological, I don’t want a sound to pretend that it’s a bucket, or that it’s president, or that it’s in love with another sound; I just want it to be a sound!

John Cage, 1991

Pieces like 4’33” represent the ultimate aleatoric experience; the performer has no control over the piece, other than creating the framework of a performance.

As a result, it causes us, as LISTENERS and as MUSIC THEORISTS, to consider the very definition of MUSIC itself!
FROM MOTETS TO OPERAS TO POP MUSIC, MUCH OF THE MOST IMPORTANT MUSIC IN ALL OF HISTORY USES THE VOICE.

IT'S USUALLY EASIEST TO COME UP WITH THE WORDS FIRST AND THEN SET THEM TO MUSIC... THAT WAY, THE MELODY AND RHYTHM WILL BE MORE LIKELY TO FIT THE TEXT.

BUT THERE ARE SOME GREAT SONGS WHERE THE MUSIC AND LYRICS CAME ABOUT SIMULTANEOUSLY, OR EVEN WHERE THE MUSIC WAS WRITTEN FIRST... SO IT NEVER HURTS TO EXPERIMENT!

THEN IT'S TIME TO ADD MELODY!

GOOD MELODIES ARE PROMINANTLY STEPWISE, BUT OCCASIONAL LEAPS ARE GOOD... ESPECIALLY LEADING INTO AN ACCENTED SYLLABLE!

AS FOR NOTATION, THERE ARE A FEW THINGS SPECIFIC TO VOCAL MUSIC TO BE AWARE OF:

THE FIRST STEP IN SETTING TEXT IS SCANION: THE PROCESS OF IDENTIFYING ACCENTED AND UNACCENTED SYLLABLES.

THE GILDED PALACE OF FLYING BURritos

EXCELLENT NOUVEAU MEXICAN CUISINE

LOOK FOR WAYS TO BALANCE THE VOICE PART'S RANGE: IF IT GOES HIGH, TRY GOING LOW!

AVOID DOUBLING THE VOICE PART IN THE ACCOMPANIMENT, MOVE IN PARALLEL THIRDS, OR IN SIXTHS, OR IN COUNTERPOINT!

ADD MOTION DURING THE VOICE'S LONG NOTES OR RESTS... AND WHEN THE VOICE IS MOVING, HOLD BACK AND LET IT SHINE!

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Q: What does it mean that certain instruments are “transposing instruments”? Does that affect how I should write music for them?

A: WOOF!*

*Translation: Transposing instruments are instruments which play in a different key than what is on the page.

Woodwind instruments come in different sizes to cover a larger range. Rather than learn new fingerings for each size of instrument, it’s easier to have one set of fingerings that works on all of them!

Why? The reason depends on the type of instrument! Brass instruments, like woodwinds, were built in many different keys... especially since early brass instruments didn’t have valves, and thus could only play the harmonic overtones of a single note!

Even after valves became common, instruments were still available in a variety of keys... and it made sense to write their music so that fingerings were consistent across the board!

Eventually, of course, instruments in certain keys were preferred for their timbre and range, and became much more common!

So what does all this mean if you just want to write some music? First, figure out if your instrument transposes... and if it does, how:

If an instrument sounds a perfect fifth lower, transpose their part a perfect fifth higher!

When you play a written note on:

It will sound:

Then, account for it! Want this? Write this!

The good news: most music notation software can handle all this automatically!

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