**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...

Music theory is figuring out what makes music work.

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

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 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.

middle c is the c that is closest to the middle of the piano keyboard.

the white notes on the keyboard are labeled with letters from a to g.

the system of musical notation we use is essentially a stylized graph of pitch versus time.

the five lines on which notes appear is called a staff.

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the five lines on which notes appear is called a staff.
While pitch is pretty clearly notated on a vertical axis, note length is indicated using a somewhat arcane system involving noteheads, stems and flags.

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.

Note lengths in a piece are indicated by the tempo marking at the beginning of a piece or section.

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.

Ties are curved marks which connect two notes together to create a single, extended sound.

To tie more than two notes together, draw ties between each note; do not use a single, extended tie.

A triplet 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 triplets 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.
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.

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.

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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!

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...

There are actually many different types of scales, each with a different pattern of whole steps and half steps.

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.**

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.

For example, this key signature indicates that every F, C, and G in the piece should be sharped, regardless of octave!

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!
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.

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

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.

When adding flats to a key signature, add them in this order: BEADGCF.

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

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.

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.

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!

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!

For example, E flat major has three flats, so it should look like this:
The most basic way which we identify different intervals is by counting the steps between the two notes.

**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, begin with the bottom note as one and count until you reach the top note. This interval is a seventh!

When we are counting the lines and spaces, we can safely ignore any accidentals.

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!

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

The distance from a note to the next closest note with the same letter name is called an octave.

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.

Harmonic interval

Melodic interval

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

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**

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**Diatonic Intervals**

- **Unison**
- **Second**
- **Third**
- **Fourth**
- **Fifth**
- **Sixth**
- **Seventh**
- **Octave**
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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Fourths and Fifths require a little more explaining.

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.

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?

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

A5  A8

A4  A1

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

Augmented

Perfect

Diminished

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!
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. Count the bottom note as one, and continue until you reach the top note.

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

**STEP 3:**

- **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.

Remember: Accidentals can never affect the distance of an interval... all they can ever do is change the inflection! This method may seem complicated at first, but it becomes easier and faster with practice... and it gives you the correct answer every time!

**Translation:**

*Q:* 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--*

*WOOF!*
The Minor Scales

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!
Dear Sparky:

What does it mean when music theorists talk about “relative minor” and “parallel minor”? In what ways can major and minor keys be connected?

-M.T., Canton, OH

TRANSLATION:

Since D minor has the same key signature as F major, we say that D minor is the relative minor of F major.

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!

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 have different key signatures, but seeing them on the circle of Fifths illustrates their consistent key relationship: minor keys always appear three degrees counterclockwise from their parallel major key.

So to find the key signature for a minor key, start with the major key signature with the same tonic and either add three flats, subtract three sharps, or some combination of both!

Sure, D minor might use a C sharp as a raised leading-tone, but we don’t consider that as part of the key signature.

Q:

What does it mean when music theorists talk about “relative minor” and “parallel minor”? In what ways can major and minor keys be connected?

-A: WOOF!*
**Dynamics and Articulations**

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

<table>
<thead>
<tr>
<th>Dynamics</th>
<th>Italian Term</th>
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<tbody>
<tr>
<td>ffff</td>
<td>Pianissimo</td>
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<td>ff</td>
<td>Pianissimo</td>
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Notated music uses **Italian terms** to show relative volume.

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**
  - Symbols: >
  - Meaning: with additional emphasis

- **Staccato**
  - Symbols: ·
  - Meaning: short and detached

- **Tenuto**
  - Symbols: –
  - Meaning: emphasized and held for full value

- **Marcato**
  - Symbols: ^
  - Meaning: short and accented

- **Staccatissimo**
  - Symbols: ↓
  - Meaning: very short and forceful

- **Sforzando**
  - Symbols: sfz
  - Meaning: suddenly loud and accented

- **Fermata**
  - Symbols: ⊳
  - Meaning: hold longer than indicated

- **Tremolo**
  - Symbols: |
  - Meaning: rapidly alternate between two notes

- **Up Bow**
  - Symbols: \(\)
  - Meaning: (bowed instruments) start at tip of bow

- **Down Bow**
  - Symbols: /\(\)
  - Meaning: (bowed instruments) start at frog of bow

- **Trill**
  - Symbols: tr
  - Meaning: rapidly alternate two adjacent notes

- **Arpeggio**
  - Symbols: °
  - Meaning: “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°F, and three octaves is 2°F.)

- **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 ìë for down and ìë for up.

And then there’s this thing...

A simple shape with a bunch of different uses!

In most music, it’s a slur, grouping notes which should be played smoothly and connected!

For bowed strings like violin, it’s a bow marking, showing notes that should be played without switching the bow’s direction.

In vocal parts, it shows melismas: groups of notes sung on a single syllable!

In any score, it can also be used on larger groups of notes, where it serves as a phrase marking... helping the performer see the overall shape of the music!
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.

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!

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!

Of course, while using 8 for the bottom number is most common in modern scores, any note can be used as the division!

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