Music Theory for Musicians and Normal People

The Twentieth Century
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.

Keeping the same key signature, we use this note as our new tonic!

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

The modes here all share the same key signature... they are related, like C major and A minor!

Modern modes' names came from the various "keys" used in medieval church music.

Which were, in turn, named in honor of the lute ranges used in later ancient Greek music.

And those used the same names as scale tunings discussed by Plato in 380 BC!

So, what are they?

- C ionian
- C mixolydian
- C lydian
- A dorian
- A phrygian

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.

As for standard western repertoire, they are first prominently featured in the post-romantic music of the early twentieth century British Isles.

Major + lowered 7th

Minor + raised 6th

Major + raised 4th

Minor + lowered 2nd

Major + lowered 7th

Natural minor scale came from the 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.

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Because it has a diminished tonic, locrian is a theoretical mode... it's not used in actual practice.

The modes here all share the same key signature... they are related, like C major and A minor!
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:

- **The Whole-Tone Scale:** This scale, made up entirely of whole steps, was embraced by the impressionists for its lack of dissonance.

- **Augmented Triads:** Unlike diminished triads, which listeners associated with traditional chord functions, augmented triads provided a less tonal sound without all the tension!

- **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.

- **The Pentatonic Scale:** Specifically, the anhemitonic pentatonic scale... a five note scale with no half-steps in it!

- **Uneven Harmonic Rhythm:** Changing chords in a less predictable fashion differentiated impressionism from traditional tonal music.

- **Extended Harmonies:** Adding sevenths, ninths and thirteenths 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!
Neoclassicism

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 RESTRAINT 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.

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Atonality and Serialism

**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 D

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.

We call this row P-1: "P" stands for "prime"!

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:

- combine adjacent notes into chords
- pass rows between voices overlap rows

Things you can't do:
- 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 Can’t Keep Up!**

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**.

To categorize any set of **NOTES**, we can do the **this with MATH** by taking all **NON-ZERO NUMBERS** and subtracting them from **12**.

**Prime Form**

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**.

**Globe Theatre**

London, England

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

**Roman Numerals Analysis is Great for Tonal Music, But it Doesn’t Help Much with Stuff Like Atonal Serialism.**

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**!

**PITCH CLASS SET**

In **SET THEORY**, **INVERTING A SET MEANS FLIPPING IT UPSIDE-DOWN**.

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**.

**Prime Form**

Let’s tally up all the **INTERVALS** in our original set, (and invert any intervals larger than a **TRITONE** and simplify any **ENHARMONICS**)!

**Roman Numerals Work for Chords Built from Thirds**, but what if we want to categorize every possible **COMBINATION OF NOTES**?

**Inversion**

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.

**Normal Form**

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

The original set [1,2,8]

When inverted, becomes [4,10,11]

We can do this with **MATH** by taking all non-zero numbers and subtracting them from **12**.

In this chord, **G SHARP and A FLAT are considered the same**. **ENHARMONICS and OCTAVES DON’T MATTER**!

**Normal Form of Inversion**

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!

Lastly, we transpose it so it starts on zero: 0 1 2 3 4 5 6

So the prime form of [1,2,8] is [0,1,6]!
Aleatoric Music

Also known as Chance Music or Indeterminacy, aleatoric music is music that has some element of unpredictability to it.

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!

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.

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!

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!

John Cage, 1991

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

Aleatoric composition

A composer might 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!

Heads again... Trombones, you're up!

Aleatoric performance