

Music Theory

Advanced Level

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Defining modes	4
Theory.....	4
Most Important Modes	5
Summary	7
Using Modes for Improvisation	9
Theory.....	10
A. Recap	10
B Choosing appropriate modes	11
Using Modes for Composition.....	16
Usage	18
The Dorian Mode.....	19
The Phrygian Mode.....	22
The Lydian and Mixolydian Modes	24
Lydian Mode	24
Mixolydian mode	25
The Locrian Mode.....	27
Usage	27
Modulation.....	29
Modulating into the parent key.....	29
Modulating into an adjacent key.....	30
Modulating into remote keys	31
Inter-tonal Exchanges.....	32

Introduction

This document is part of a compilation of a series of threads that deal with music theory and that were originally published by Eowyn on www.mysongbook.com. The compilation has been reorganized into three separate documents:

- Basic Music Theory
- Intermediate Music Theory
- Advanced Music Theory – this document

This has been done for two reasons:

1. The size of one single file was too large for download
2. The material covered by the different topics is of varying levels of complexity and targets different audiences.

The text of the original threads has been modified and/or extended in several places where it was deemed appropriate for increased readability. The rather crude layout of the original text (due to the limitation of the forum) has also been improved. Finally, the text has been proof-read by Arnold and Blackiel.

This is by no means an exhaustive treatise about music theory and harmony. Much more modestly, the purpose of this series of topics is to give those willing to better understand what they are doing with their guitar, the ability to get this knowledge into a quick and concise form. The underlying objective is lead work and improvisation in a rock music context (broadly speaking), but most topics are of a more general nature and they can also easily be adapted to other musical genres.

There are numerous books and web sites about general music theory and more specialised topics. Interested readers will find a short reference list at the end of the *Basic Level* document.

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Defining modes

Modes... A very controversial topic that seems to confuse the hell out of many people... Opinions vary from "Modes are completely useless - the major and minor scales are all you need" all the way to "The next best thing since sliced bread!"

In fact, many people fail to make the distinction between a number of fundamentally different concepts such as "modes", "scales", "modal music versus tonal music" and others. I'll try my best to be as concise and accurate as possible, and yet remain simple!

In this topic, we will simply **define** modes (even *that* is often controversial!), leaving their practical usage for later topics.

Theory

We define a mode as follows: *a musical mode is an ordered series of intervals with respect to a starting note (whose absolute pitch is not specified).*

In other words, a mode simply defines a series of relative pitches; for example:

1 2 b3 4 5 6 b7 8

What this example mode definition says, is the following: given the (unspecified) starting note (1), the second note is a major second away from it (2), the third note is a minor third away from it (b3), the fourth note is a perfect fourth away from it (4), etc.

An equivalent way of defining a mode consists in enumerating the sequence of intervals *between* the various relative pitches (as opposed to their definition with respect to a starting note); for the example mode above that would be:

W H W W W H W

The example above happens to be a seven note mode, and it just so happens that Western music deals primarily with those, but of course you can define an infinite number of modes using an arbitrary number of constituent notes. Many traditional Indian and Chinese modes use 5 notes, for example.

A mode is different from a scale! The mode is completely abstract, since it does not impose a starting pitch. If you specify the starting note by its absolute pitch, and apply the definition of the mode, you obtain a scale. The scale can be thought of as the *melody* of the mode once you indicate the starting note.

For example, starting with the note C, the mode above becomes:

C D Eb F G A Bb (C)

If you start with A, you get:

A B C D E F# G (A)

The mode is the same, but the scales are clearly different.

Modes have been dominant in Western music until the late Middle-Ages. Pope Gregorius is known for his complete and sophisticated theorisation of the musical systems to be used by the church, and still known today as Gregorian Chant or Plain Chant. In that system, the definition of the various modes consisted as much in the specification of the relative pitches (as we did) as in the rigorous definition of the melodic organization and prescribed cadences (that we don't need to worry about for now). The Gregorian modal system is heavily based on the Pythagorean system, and the names of the various modes come from the ancient Greek names (although Gregorius had them all mixed up!). We still use these names today (see below), but our names are again different from what they used to be in the Middle-Ages.

Most Important Modes

In order to be able to theorize about modes, it is convenient to be able to name them. Below is a list of the most important modes and their definitions.

Remember: in these definitions, the symbols represent *intervals with respect to the starting note, which is always notated "1"*.

Group I

Ionian	1	2	3	4	5	6	7
Dorian	1	2	b3	4	5	6	b7
Phrygian	1	b2	b3	4	5	b6	b7
Lydian	1	2	3	#4	5	6	7
Mixolydian	1	2	3	4	5	6	b7
Aeolian	1	2	b3	4	5	b6	b7
Locrian	1	b2	b3	4	b5	b6	b7

Group II

Harmonic Minor	1	2	b3	4	5	b6	7
Altered Locrian	1	b2	b3	4	b5	6	b7
Altered Ionian	1	2	3	4	#5	6	7
Altered Dorian	1	2	b3	#4	5	6	b7
Altered Phrygian	1	b2	3	4	5	b6	b7

(Major Dominant Phrygian)							
Altered Lydian	1	#2	3	#4	5	6	7
Altered Myxolydian	1	b2	b3	b4	b5	b6	bb7

Group III

Bartok	1	2	3	#4	5	6	B7
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These tables may seem like an overwhelming amount to memorise. In fact, it is rather easy.

The modes of Group I are the so-called "modes of the major scale". By now you should realise that there is no such thing as *the mode of a scale*, but we nevertheless use this expression as a convenient shortcut to remember the definitions of the modes. The Ionian mode is nothing else but the major scale.

You obtain the Dorian mode by "starting a major scale from its second degree". For example:

D E F G A B C D

is D Dorian and is a C major scale started from D (second degree of the C major scale)

Similarly, the scale:

A B C D E F# G A

is A Dorian, and is a G major scale "started from the A".

The double quotes are there to show that this is just short hand convention. We will omit them from now on.

The modes of Group I are obtained as follows:

- The Ionian mode is the same as the major scale itself
- The Dorian mode is a major scale started from the second degree
- The Phrygian mode is a major scale started from the third degree
- The Lydian mode is a major scale started from the fourth degree
- The Mixolydian mode is a major scale started from the fifth degree
- The Aeolian mode is a major scale started from the sixth degree
- Finally, the Locrian mode is a major scale started from the seventh degree

Looking at the modes defined in Group I, you will notice that three of them are major (Ionian, Lydian, Mixolydian) since their third is major, and four of them are minor (Dorian, Phrygian, Aeolian, Locrian) since their third is minor.

The modes of Group II can all be related to the harmonic minor mode, in a way similar to what we did for the modes of Group I. The first mode of Group II is the harmonic minor mode; the Altered Locrian mode is derived from the harmonic minor mode by starting from the second degree. The Altered Ionian mode is a harmonic minor mode started from the third degree, etc.

The modes of Group II are obtained as follows:

- The Altered Locrian mode is a harmonic minor scale started from the second degree
- The Altered Ionian mode is a harmonic minor scale started from the third degree
- The Altered Dorian mode is a harmonic minor scale started from the fourth degree
- The Altered Phrygian mode (also known as Major Dominant Phrygian) is a harmonic minor scale started from the fifth degree
- The Altered Lydian mode is a harmonic minor scale started from the sixth degree
- The Altered Mixolydian mode is a harmonic minor scale started from the seventh degree

Finally, Group III contains the modes derived from the melodic minor scale; however, there is only one mode that is really worth mentioning: the Bartok mode, which is the fourth mode of the melodic minor scale. This mode is named after the Hungarian composer Belà Bartok, and is one of the most popular modes in the East-European music.

Summary

Modes have been used in music long before the Western world started to favour harmony, and settled for the major and minor scales. Most other popular musical systems in the world are still mostly modal.

Modes can be defined at will, and don't have to be based on seven notes; this just happens to be the most useful set in Western music.

Although the modes are in fact defined completely independently from each other, it is convenient to related them to the major and minor scales:

The Ionian mode is the first mode of the major scale.

The Dorian mode is the second mode of the major scale.

The Phrygian mode is the third mode of the major scale.

The Lydian mode is the fourth mode of the major scale.

The Mixolydian mode is the fifth mode of the major scale.

The Aeolian mode is the sixth mode of the major scale (and equal to the natural minor mode).

The Locrian mode is the seventh mode of the major scale.

The Altered Locrian mode is the second mode of the harmonic minor scale.

The Altered Ionian mode is the third mode of the harmonic minor scale.

The Altered Dorian mode is the fourth mode of the harmonic minor scale.

The Altered Phrygian mode is the fifth mode of the harmonic minor scale.

The Altered Lydian mode is the sixth mode of the harmonic minor scale.

The Altered Mixolydian mode is the seventh mode of the harmonic minor scale.

The Bartok mode is the fourth mode of the melodic minor scale.

Using Modes for Improvisation

In the previous section, we defined all sorts of modes; we will now discuss how they can be used in practice: improvisation (in this topic) and composition (in future topics).

Using modes for improvisation requires that you clearly understand the relationship between modes, scales and tonality.

One of the dominant features of modal (church) music in the Middle-Ages is the fact that it was purely monodic (a single melody line sung at unison). In the late Middle-Ages, with the birth of *counterpoint* (several melodic lines sung simultaneously but independently), and at the Renaissance when music became downright polyphonic (several melodic lines simultaneously at rest to form chords), the modes were gradually abandoned and replaced by the *tonal system*. However, two modes were kept: the Ionian mode (major) and the Aeolian mode (minor). The Aeolian mode itself further evolved (for tonal reasons) to give birth to the harmonic minor scale and later the melodic minor scale.

In contrast, most traditional musical systems in the world have kept the modal characteristics, and are still modal, even today. This is notably the case of the East-European music, African music, Indian music, Chinese music, and so forth.

As said, the original modal music was monodic: each song consisted of a single melody played or sung at unison. There were no chords. The melody was more or less free to move, but severe rules would impose specific cadences (depending on the mode being used). One of them was that any song should always terminate on the tonal centre, or *finalis*.

Later, music gradually became polyphonic, and that changed the picture completely. By definition, a chord consists of several notes played simultaneously. However, notes have a variable affinity with each other; when played together, some combinations of notes seem to produce a feeling of rest and fulfillment, while others seem to flee each other and require an urgent resolution onto a more relaxing combination. Careful observations of this phenomenon, along with fashion effects and cultural habits have progressively resulted in the theory of harmony, rooted in the so-called tonal system (see Intermediate Theory). In this system **the tone center is imposed by the chords and their progressions.**

The more rich and complex the chords, the more strictly defined the mode will be.

This has two dramatically important (and often overlooked) consequences:

- When playing lead on top of a harmonic background, the actual fingering pattern (scale pattern) used by the lead guitarist has typically little or no effect on the mode of the song (since the latter is imposed by the chord progression). Put differently: the mode is decided upon at composition time, not at improvisation time. If the song is in C major, the fact that you start the C major scale on a D does not mean the song now all of a sudden becomes D Dorian

- When playing harmonised modal music, the rules governing chord progressions will have to be different in order to escape from tonal habits

Over any chord or chord progression you can always use any scale pattern (fingering pattern) that is compatible with it; depending on this chord progression, you may in fact have more or less flexibility in choosing the appropriate scale pattern(s).

- with diatonic four notes chords (and more), you will usually have no choice other than that imposed by the chords
- with triads, you may have more flexibility
- with power chords, you will typically be able to pick several compatible scale patterns; in that case the notes you decide to play will have a large impact on the harmonic color of the music

We will now explore these different possibilities in detail.

Theory

A. Recap

In the previous topic, we have listed several modes and for convenience we have related them to the major and minor scales.

Specifying the intervals with respect to the starting note we had:

Ionian	1	2	3	4	5	6	7
Dorian	1	2	b3	4	5	6	b7
Phrygian	1	b2	b3	4	5	b6	b7
Lydian	1	2	3	#4	5	6	7
Mixolydian	1	2	3	4	5	6	b7
Aeolian	1	2	b3	4	5	b6	b7
Locrian	1	b2	b3	4	b5	b6	b7

The table above defines each degree of the modes as an interval with respect to the starting note. Comparing each mode with the Ionian mode, you can easily determine what you need to do to obtain any other mode. In order to transform the Ionian mode into the Dorian mode (for example), you need to lower the 3rd and the 7th of the Ionian scale. Raising the 4th would transform it into a Lydian scale. And so on and so forth.

For example, let's find the A Mixolydian scale:

- We start from A major: A B C# D E F# G# (A)
- We apply the Mixolydian pattern, meaning we lower the 7th; the result is A B C# D E F# G (A)

Of course, you can also work out the Mixolydian mode by remembering that it is a major scale started from the fifth degree; the major scale whose fifth degree is A is D major, i.e. A B C# D E F# G; starting that scale from A gives us A B C# D E F# G as above.

It is a good idea to memorise this information or keep the chart handy, as we will need it further on.

B Choosing appropriate modes

If there is no chord progression (i.e. there is only one chord over a long series of bars) the mode is implied (we will come to that later).

If there is a chord progression, there will usually be a tonal centre towards which the progression moves (although this is not always the case). The first and most important thing to do is to identify that *tonal centre*. This will give you the resolution chord (I chord). Identifying the tonal centre can be difficult, so here are a few strategies to help you along:

- the last chord is usually the resolution chord;
- the first chord is often (but not always) the resolution chord;
- identify recognisable cadences (such as ii-V-I or I-IV-I);
- watch the movements of the roots of the chords - they often imply typical cadences;
- use your ears!!

1. Four Notes Chords

Take the following simple progression:

Cmaj7 - - - / F - - - / C - - -

This looks (and sounds) like a I - IV - I progression in C major (i.e. the tonal centre here is clearly C). Let's write down the constituent notes of these chords as we find them:

Cmaj7: C-E-G-B

F: F-A-C

Sorting these notes in ascending pitch order gives us:

C ? E F G A B (C)

or written in intervals

1 ? 3 4 5 6 7 (8)

We still have an "unknown" second degree, which is not directly imposed by the harmony; but looking at the reference chart above, we find that the only mode that accommodates our case is the Ionian mode:

C D E F G A B (C)

1 2 3 4 5 6 7 (8)

You can play *any* of these notes in *any* order over *any* of the chords of the progression: that will have no impact on the mode of the song. (But please remember that the best melodic result will usually be obtained with characteristic notes on the downbeats – see Intermediate Theory tutorial).

2. Triads

The chord progression above contained a maj7 chord; what if it didn't? Say the progression was:

C - - - / F - - - / C - - -

Writing down the notes as they are imposed to us by the chords being used, we find:

C: C-E-G

F: F-A-C

This results in the following scale:

C	?	E	F	G	A	?	(C)
1	?	3	4	5	6	?	(8)

Now we have two "unknowns" (two notes that are not imposed by the harmony) and from the reference chart we see that we can choose to play a B note or a Bb note. Depending on that choice we will end up playing the Ionian mode or the Mixolydian mode. The tonal centre is still strictly defined (C), but the mode is less strictly defined than in the previous case. Since the chords don't impose the mode, you as the lead are free to pick the one you want.

(In fact, you may want to be careful if you play C Mixolydian, because a Bb in a C chord makes it C7, which is the V7 of F, so you could very easily cause a transposition into the F key!)

In general, very rich harmonies define modes much more strongly than "lighter" harmonies. In the first example above, we had a Cmaj7 implying a B note; in the second example, we had a plain C; that left some more room.

3. Power Chords

If the harmonic background consists of power chords (R + 5th + R), no thirds are played. Consequently, the harmonic content of the song is much less strongly defined, and you, the lead player, have a big responsibility in determining that content and the resulting color.

Power chords also usually imply a tonal centre, but it is often suggested more than it is imposed. Let's take a simple example to start with. Suppose we have the following progression:

E5 - - - / C5 - - - / D5 - - - / B5 - - - / E5

The question is: which mode(s) are you going to use to improvise?

In this case, the progression "sounds" like it resolves into E5. This assumption is supported primarily by the final bass movement B - E which strongly establishes E as the tonal centre (since it suggests a V - I cadence). Therefore, some sort of E scale will do for our solo. But which one exactly?

Let's write down the E major scale:

E	F#	G#	A	B	C#	D#	(E)
1	2	3	4	5	6	7	(8)

Now let's write down the notes implied by each power chord in the actual progression, and place them at their proper location in the E scale:

E5:	E	?	?	?	B	?	?	E
C5:	E	?	G	?	B	C	?	E
D5:	E	?	G	A	B	C	D	E
B5:	E	F#	G	A	B	C	D	E

Compared with the major scale (Ionian mode), we actually have:

1 2 b3 4 5 b6 b7 8

This is the signature of the Aeolian mode. E Aeolian is therefore the theoretically correct scale for this progression.

For contrast, here is another example:

E5 - - - / A5 - - - / B5 - - - / E5 - - -

For the same reason as above, the tonal centre is E. Let's work out the scale as above.

E5: E ? ? ? B ? ? E

A5: E ? ? A B ? ? E

B5: E F# ? A B ? ? E

The signature is

1 2 ? 4 5 ? ?

with three undefined intervals. Therefore all the following modes of E major will fit this progression:

- E Ionian: 1 2 3 4 5 6 7
- E Dorian: 1 2 b3 4 5 6 b7 (equivalent to D major)
- E Mixolydian: 1 2 3 4 5 6 b7 (equivalent to A major)
- E Aeolian: 1 2 b3 4 5 b6 b7 (equivalent to G major)

So you can use any one of them (or all of them), depending on

- how you "hear" the progression (rather minor or rather major)
- what the rest of the band is currently playing
- the overall context of the song

All the examples above assume that there is only one tonal centre. Of course this isn't always the case. Suppose we have the following triad progression:

E - - - / C - - - / D - - - / B7 - - - / E

Working out the notes as above reveals some conflicts:

- G# in the E chord conflicts with G in the C chord
- D# in the B7 chord conflicts with D (root of the D chord)

So, what do we do?

- One possibility is to adapt to the changing tonal centers, and develop a chord oriented solo. For example, you could play a C and D arpeggio on the corresponding chords
- Another possibility could be to treat the first three chords (E, C and D) as an A melodic minor sequence, modulating into E major (more on modulation later on)
- Or you could use pentatonic scales; for example, it is possible in this case to play E pentatonic minor throughout (please verify this!)

4. Vamps

A final interesting case is when the band keeps on repeating the same chord for a long period of time (this is called a "vamp"). Depending on the type of that chord, you may have a lot of freedom or no freedom at all in choosing the mode.

Power Chord

Since all the modes of the major scale accommodate a given power chord (except the Locrian mode which has a b5 and would conflict with the 5 of the power chord), the lead can vary modes and colors at will. This is in fact what Joe Satriani calls his "pitch axis" theory.

Triad or Seven-Note Chord

If the chord is a triad or a seven note chord (or more complex chord), the mode is implied. The lead has little or no freedom at all.

To understand why the lead has no options in the second case above, we need to revisit the relationship between chords and scales. Let's take a C major chord: its constituent notes are (C E G). A Cmaj7 chord would contain (C E G B); a Cmaj7(9) contains (C E G B D), etc. Starting with the latter chord, we can continue to enrich it by adding more thirds; the most complex C chord we can make this way is (C E G B D F A). Map back all these notes within the boundaries of an octave, sort them by ascending pitch order, and you end up with:

C D E F G A B

In other words, the C major chord is a shortcut of the C major scale, or Ionian mode; the richer the chord becomes, the better it approximates the corresponding scale/mode.

Similarly, starting with a Dm chord and stacking up thirds you obtain (D F A C E G B), or

D E F G A B C D

This is a D Dorian scale.

If you do this for all the degrees of the major scale, you will find out that:

- The Ionian mode corresponds to the I chord
- The Dorian mode corresponds to the ii chord
- The Phrygian mode corresponds to the iii chord
- The Lydian mode corresponds to the IV chord
- The Mixolydian mode corresponds to the V chord
- The Aeolian mode corresponds to the vi chord
- The Locrian mode corresponds to the vii chord

In other words, whenever a vamp is played with a triad or more complex chord, the mode is implied by the chord. Once again, if the chord is part of a tonal sequence, the mode is implied by

the chord progression, not by the fingering pattern you happen to use to play the notes of that tonality. If you remember this, you will avoid most of the confusion around modes and patterns.

Using Modes for Composition

As discussed in the previous topic, the choice of a scale pattern has typically very little impact (if any at all) on the mode of the song. If the song is in G major, it will remain in G major no matter in what order you happen to play the G major scale. The only exception worth mentioning is when the harmony consists of power chords, as we have seen.

In other words, the mode of a song is normally determined when you compose the song. So, how do we use modes for composition then?

Theory

One of the distinct features of the key-based functional musical system is its so-called "faithfulness to the tonic". The degrees of the scale and the chords build on them are organized to form a hierarchical functional system, collaborating to revolve around and resolve into the tonal centre.

Faithfulness to the tonic is a concept that also applies to modal systems that have eventually led to the tonal system. However, since the various modes are characterized by different interval sequences with respect to the tonic, they will feature distinct and unique cadences. In the original modal system of the early Western music, the principal note of the mode was called *finalis* because any piece based on that mode would always terminate on that note. The intervals of all the other notes with respect to the finalis fully defined the mode; the main cadences available to fall back from these notes onto the finalis would further define the way the mode should be used. This musical system survives today in a large number of ethnic genres.

Another distinct feature of modal melodies is that they are usually diatonic to the mode. In other words, they only use intervals from that mode (unlike melodies in the major or minor keys, where chromatic fills and passing notes are frequent).

Here are again the modes of the major scale as we defined them earlier:

Ionian	1	2	3	4	5	6	7
Dorian	1	2	b3	4	5	6	b7
Phrygian	1	b2	b3	4	5	b6	b7
Lydian	1	2	3	#4	5	6	7
Mixolydian	1	2	3	4	5	6	b7
Aeolian	1	2	b3	4	5	b6	B7
Locrian	1	b2	b3	4	b5	b6	B7

As you can see, they form two groups:

- The Ionian, Lydian and Mixolydian modes all have a major third and form the major modes
- The Aeolian, Dorian, Phrygian and Locrian modes all have a minor third and form the minor modes.

The third is therefore the first differentiator between modes. But in order to further differentiate

the modes within each group, we need a second note called *characteristic modal note*. The characteristic modal note is extremely important in modal compositions, because *it is the note that establishes the unique feel of the mode*. Modal melodies and harmonies therefore use it extensively as a way to clearly underline the mode being used.

We will take the Ionian mode as reference mode for the major group, and the Aeolian mode (natural minor scale) as the reference for the minor group (this is of course completely arbitrary, but very common). We will then determine the characteristic modal note by comparing each mode with the reference mode of its group.

A. Major modes

Lydian mode:

As you can see, the **#4** is what differentiates the Lydian mode from the Ionian mode; the #4 is therefore the characteristic modal note of the Lydian mode.

Mixolydian mode:

The **b7** is what differentiates the Mixolydian mode from the Ionian mode; the b7 is therefore the characteristic modal note of the Mixolydian mode.

B. Minor Modes

Dorian mode:

The **major 6th** is what differentiates the Dorian mode from the Aeolian mode; the 6 is therefore the characteristic modal note of the Dorian mode.

Phrygian mode:

The **b2** is what differentiates the Phrygian mode from the Aeolian mode; the b2 is therefore the characteristic modal note of the Phrygian mode.

Locrian mode:

The **b5** is what differentiates the Locrian mode from the Aeolian mode; the b5 is therefore the characteristic modal note of the Locrian mode.

Here is a summary of the fundamental rules governing modal composition:

1. The I chord (which of course contains the third) is the tonal centre, and is therefore the most important chord (faithfulness to the tonic). It will usually open the song (first chord used), and will **always** end it (last chord used). In true modal composition this is a strict rule.
2. The characteristic modal note will be used extensively, in the melody AND in the harmony, to help establish the distinctive mood of the mode. This means that the chords

containing the characteristic modal note will be favored.

3. Modal melodies are usually diatonic to the mode.

4. All the chord sequences and cadences typical of the corresponding major scale (Ionian mode) *must be avoided* at all costs, because they convey the feeling of the major scale, and will destroy the modal feel.

Usage

A typical modal trick is the *drone*. A drone (or *pedal*, or *ostinato*) is a note that gets repeated over and over during the song. In modal music, this drone is usually the mode tonic. Think of Celtic music (Scottish bagpipes, for example), or the so-called African desert blues. In modal rock tunes, the drone is usually played by the bass.

A special case drone is when a particular *chord* gets repeated over and over again (vamp). We have seen that this chord implies a particular mode, as follows:

Chord	Mode
I	Ionian
ii	Dorian
iii	Phrygian
IV	Lydian
V	Mixolydian
vi	Aeolian
vii	Locrian

We will further explore the various modes from a composition perspective in the next topics.

The Dorian Mode

The Dorian mode has been around for a while. We know that the Ancient Greek already used it, and it was one of the most frequent church modes in the early Middle-Ages.

The Dorian mode is also extremely frequent in Celtic and African music; it is therefore often used in folk tunes, and of course in rock music, which was strongly influenced by all these genres.

Dorian melodies are often played against a drone (which is always the tonic).

Usage

A. Harmonisation

Compared to the major scale (W W H W W W H), the pattern of the Dorian mode is:

W H W W W H W

or, in terms of intervals with respect to the tonic:

1 2 b3 4 5 6 b7 8

Its characteristic modal note is the 6 (in the Aeolian mode we have a b6).

If you remember the major scale, we harmonized it by stacking up thirds, and we came up with the following series of four note chords:

I_{maj7} ii7 iii7 IV_{maj7} V7 vi7 vii7(b5)

Let's harmonise the Dorian mode; this gives the following chord system:

i7 ii7 bIII_{maj7} IV7 v7 vi7(b5) bVII_{maj7}

Please note: this notation is in reference to the major scale. For example, bIII means that the chord build on the third degree of the Dorian mode has its root a halftone lower than in the major scale, and is major.

We will use this convention consistently during our discussions of the various modes, so it is important to get used to it.

Let's take D Dorian; as you, this is the second mode of C major, so D Dorian will have the exact same chord system as C major, but shifted:

C major:	C _{maj7}	D _{m7}	E _{m7}	F _{maj7}	G7	A _{m7}	B _{m7} (b5)
D Dorian:	D _{m7}	E _{m7}	F _{maj7}	G7	A _{m7}	B _{m7} (b5)	C _{maj7}

Let us now write the chord system for D major:

D_{maj7} E_{m7} F#_{m7} G_{maj7} A7 B_{m7} C#_{m7}(b5)

Comparing D Dorian with D major, degree by degree, we have:

i7 ii7 bIIIImaj7 IV7 v7 vi7(b5) bVIIImaj7

This gives us a way to immediately obtain the harmonisation of the Dorian mode knowing that of the Ionian mode.

Example:

<i>A major</i>	Amaj7	Bm7	C#m7	Dmaj7	E7	F#m7	G#m7(b5)
<i>A Dorian</i>	Am7	Bm7	Cmaj7	D7	Em7	F#m7(b5)	Gmaj7

Finding the harmonisation of the mode is in fact very easy, since the chords are the same as those for the parent major scale - but "shifted". In the example above, the chords for A Dorian are the same as those for G major (since A Dorian is a G major scale started from the second degree).

The harmonisation given here is in four notes chords, but you can easily find the corresponding triad harmonisation.

The tonic chord is of course i.

The *characteristic chords* are by definition those containing the characteristic modal note; they are the chords build on the 2nd, 4th and 6th degrees (ii, IV and vi(b5)). These chords will be used extensively, except the chord build on the 6th degree, which is a vi7(b5) chord. This semi-diminished chord is extremely unstable because it contains the tritone. For that reason, it is usually avoided in modal songs. (This will be true in every mode except Locrian).

B. Typical cadences

The cadences most often found in Dorian are:

i - - - / ii7 - - -	(e.g. Cm - - - / Dm7 - - -)
i - - - / IV7 - - -	(e.g. Cm - - - / F7 - - -)
i - - - / bVIIImaj7 - - -	(e.g. Cm - - - / Bbmaj7 - - -)
i - - - / ii7 - bVIIImaj7 -	(e.g. Cm - - - / Dm7 - Bbmaj7 -)

A cadence that should be avoided (because it sounds "major"):

IV / bVII (e.g. F7 / Bbmaj7)

That sounds like a V / I in Bb major.

Homework

1. Drop-tune the low E string of your guitar to D.

Now play the D Dorian scale linearly and slowly against a repeating low D note, until you begin to "feel" that Dorian sound. That may take a while...

Finally start improvising melodic fragments; play slowly at first, and make sure you keep that constant D bass on all the beats. Hit the 6 and tonic frequently and **always** terminate on the tonic

(but I bet you'll do that quite naturally).

2. Listen to the song "Scarborough Fair" from Simon and Garfunkel. It is a typical example of the Dorian sound. In fact, lots of old English folksong ballads are in Dorian.

3. Listen to Malian desert blues. A typical example is the music of Ali Farka Toure, who recorded "Talking Timbuctu" with Ry Cooder.

Tune up the low E to G (light gauge strings preferred!), and start jamming in A Dorian as if you'd be playing blues.

The Phrygian Mode

The Phrygian mode is a very colorful mode, with a touch of "Arabic" or Spanish-like flavor. The Phrygian mode is very frequently used as a melodic improvisation device - and has been used as such by many rock guitarists. But it does sound rather exotic, so you're not likely to hear it often in Western European melodies, except in Raï music and of course Spanish flamenco, where it is either used as such, or in the form of the "altered Phrygian" - in which the third degree is raised a half-tone (see topic on mode definitions).

Unlike other modes, the Phrygian mode is less often played against a drone. This is because the b2, which is a characteristic modal note of this mode, creates an unpleasant friction when played against the tonic.

Usage

A. Harmonisation

Compared to the major scale (W W H W W W H), the pattern of the Phrygian mode is:

H W W W H W W

or, in terms of intervals with respect to the tonic

1 b2 b3 4 5 b6 b7 8

Its characteristic modal note is the b2 (in the natural minor mode we have a regular 2).

Harmonising this mode gives the following chord system (please see the section on the Dorian mode for an explanation of the notation):

i7 bIIImaj7 bIII7 iv7 v7(b5) bVIImaj7 bvii7

C Major	Cmaj7	Dm7	Em7	Fmaj7	G7	Am7	Bm7(b5)
C Phrygian	Cm7	Dbmaj7	Eb7	Fm7	Gm7(b5)	Abmaj7	Bbm7

The chords for C Phrygian are in fact the same as those for Ab major, but shifted.

The tonic chord is of course i.

The characteristic chords are by definition those containing the characteristic modal note; they are the chords build on the 2nd, 5th and 7th degrees. These chords will be used extensively in Phrygian compositions, except the chord build on the 5th degree, which is the unstable semi-diminished v7(b5) chord.

B. Typical cadences

The cadences most often found in Phrygian are:

i - - - / i - - - / bIIImaj7 - - - / bIIImaj7 - - - /
i - - - / i - - - / iv - - - / bIIImaj7 - - -
i7 - - - / bvii7 - - - / i7 - - - / bvii7 - bIIImaj7 - /

As always, you should avoid the cadences that sound major:

bIIImaj7 -> bVImaj7	sounds like IVmaj7 -> Imaj7 in major
bvii7 -> bIII7	sounds like ii7 -> V7 in major

In fact, in Phrygian, the bIII7 chord should generally be avoided, because it has a very strong tendency to go towards the major tonic chord, or one of its substitutes. Consider this:

bIII7 -> i	sounds a lot like V7 -> iii in major
bIII7 -> iv7	sounds a lot like V7 -> vi7 in major
bIII7 -> bVImaj7	sounds like V7 -> Imaj7 in major

What you can do, is replace the bIII7 chord by a bIII7(sus4). Since the latter is a subdominant chord, it is much more stable.

The Lydian and Mixolydian Modes

In this section we'll look at the two other major modes besides Ionian: the Lydian mode and the Mixolydian mode.

Lydian Mode

The Lydian mode has been used extensively in classical music of the 20th century, and also in jazz and fusion. Some musicians have heavily advocated the Lydian mode. Ornette Coleman, for example, considers that #4 to be a much better choice than the 4 as a subdominant, because unlike the perfect 4, it splits the major scale into two exact halves. This reduces its tendency to compete with the tonic as the tonal centre.

However, this #4 is a rather dissonant tone, making the Lydian mode relatively difficult to use. As far as I know, it is of limited usage in rock (at least as a composition mode).

Usage

A. Harmonisation

Compared to the major scale (W W H W W W H), the pattern of the Lydian mode is:

W W W H W W H

or, in terms of intervals wrt the tonic

1 2 3 #4 5 6 7 8

Its characteristic modal note is of course the #4.

The harmonization of this mode produces the following chord system:

I maj7 II7 iii7 #iv7(b5) V maj7 vi7 vii7

Example:

C Major	Cmaj7	Dm7	Em7	Fmaj7	G7	Am7	Bm7(b5)
C Lydian	Cmaj7	D7	Em7	F#m7(b5)	Gmaj7	Am7	Bm7

The chords for C Lydian are in fact the same as those for G major, but shifted.

The tonic chord is of course I.

The characteristic chords are by definition those containing the characteristic modal note; they are the chords build on the 2nd, 4th and 7th degrees. These chords will be used extensively, except the chord build on the 4th degree, which is the unstable semi-diminished v7(b5) chord.

B. Typical cadences

The cadences most often found in Lydian are:

Imaj7 - - - / - - - - / vii7 - - - / - - - -
Imaj7 - - - / - - - - / iii7 - - - / vii7 - - -
Imaj7 - - - / iii7 - vi7 - / Imaj7 - - - / vii7 - - -
I - - - / II - - - / I - - -

Avoid:

Vmaj7 -> Imaj7	sounds like a Imaj7 -> IVmaj7 in major
II7 -> Vmaj7	sounds like a V7 -> I in major

In the latter case, use the triad II instead of the II7 - the triad is more stable than the four-note chord because it doesn't contain any tritone.

Mixolydian mode

Unlike the Lydian mode, the Mixolydian mode is used extensively in pop, rock and folk music, but also in Celtic and African music. In fact, it is **THE** alternative to the Ionian mode. It is essentially a plain old major scale, but the b7 gives it a bluesy feel.

Usage

A. Harmonisation

Compared to the major scale (W W H W W W H), the pattern of the Mixolydian mode is:

W W H W W H W

or, in terms of intervals with respect to the tonic

1 2 3 4 5 6 b7 8

Its characteristic modal note is of course the b7.

The harmonisation of this mode produces the following chord system:

I7 ii7 iii7(b5) IVmaj7 v7 vi7 bVIIImaj7

Example:

C Major	Cmaj7	Dm7	Em7	Fmaj7	G7	Am7	Bm7(b5)
C Mixolydian	C7	Dm7	Em7(b5)	Fmaj7	Gm7	Am7	Bbmaj7

The chords for C Mixolydian are in fact the same as those for F major, but shifted.

The tonic chord is of course I.

The characteristic chords are by definition those containing the characteristic modal note; they are the chords build on the 3rd, 5th and 7th degrees. These chords will be used extensively, except the chord build on the 3rd degree, which is the unstable semi-diminished m7(b5) chord.

B. Typical cadences

The cadences most often found in Mixolydian are:

I - - - / v7 - - - / I - - - / bVIImaj7 - - -
 I - - - / vi7 - v7 - / I - - - / ii7 - bVIImaj7 -
 I7 - - - / bVII - - -

Be careful with I7! It easily slips away into a major tonality!

Homework

As said, you'll find that the Mixolydian mode is used very often. Listen to "Norwegian Wood" for a good example.

The Locrian Mode

The Locrian mode is by far the darkest and strangest mode of all! It is completely absent from the classical repertoire, and playing it in the Middle-Ages would have resulted in your being convicted to death and publicly burned at the stake!

Consider this:

- In the Locrian mode the tritone is placed between the tonic and the dominant!
- The tonic chord is an unstable m7/b5 chord!

No wonder it has always been considered an absolute no-no...

Recently however, a number of extreme metal bands have started to use it extensively (and more or less successfully).

Usage

A. Harmonisation

Compared to the major scale (W W H W W W H), the pattern of the Lydian mode is:

H W W H W W W

or, in terms of intervals wrt the tonic

1 b2 b3 4 b5 b6 b7 8

The characteristic modal note is of course the b5.

The harmonisation of this mode produces the following chord system:

i7(b5) bIIImaj7 biii7 iv7 bVmaj7 bVI7 bvii7

Example:

C Major	Cmaj7	Dm7	Em7	Fmaj7	G7	Am7	Bb7(b5)
C Locrian	Cm7(b5)	Dbmaj7	Ebm7	Fm7	Gbmaj7	Ab7	Bbm7

The chords for C Locrian are in fact the same as those for Db major, but shifted.

The tonic chord is of course i7(b5).

The characteristic chords are by definition those containing the characteristic modal note; they are the chords build on the 1st, 3rd and 5th degrees. All these chords will be used extensively.

B. Typical cadences

The cadences most often found in Locrian are:

im7(b5) - - - / bV5 - - -
im7(b5) - - - / biii7 - - -
i(b5)5 - - - / bii5 - - - / bV5 - - -

Modulation

So far we have always assumed that a given piece of music remains in a given key (tonality). In practice this is rarely the case, except for the simplest songs. In fact most songs change tonality one or more times during execution. This is typically done to change the atmosphere of the song, or to wake up the listener's interest.

As a lead guitarist, you need to be aware of this:

- If the background modulates into another tonality, some notes will be altered and you need to play them as such
- If you modulate during your improvisation, you need to clearly indicate that to the background (especially the bass) for the harmony to keep on doing sensible things

For all these reasons, it is important to study the theory of modulation although, as usually, the rules may seem exaggeratedly dogmatic and will frequently be broken in contemporary music.

One thing to be aware of is that it is not necessarily easy to establish a particular tonal centre, but once established it is equally difficult to leave it. In order to establish a key, you need to use all the harmonic devices that we studied in the *Intermediate* volume, particularly cadences. If you want to leave that key, and establish another tone center, you will have to give your listener ears the time to adjust; therefore you will need at least three or four bars for the modulation to take over.

Another thing to be aware of is that the ear is used to a particular tonal center, and will usually be unpleasantly surprised by an abrupt change. Therefore, many modulations will need to be prepared.

Modulation can be more or less difficult, depending on how far apart the two keys are in the circle of fifths:

- The only difference between C major and G major is that in G major the note F is sharp (F#); therefore, C major and G major share a lot of chords, and switching from one to the other should not be too difficult
- Similarly, the only difference between C major and F major is that in F major the note B is flat (Bb). These two keys are again very close to each other
- The only difference between G major and D major is that in D major the note C is sharp (C#); this makes G major and D major neighbors, but modulating from C major into D major will be slightly more complicated because the two keys are wider apart.

Modulating into the parent key

This type of modulation involves a key and one of its relative minor keys. For example, modulating from C major into A natural minor, or from G major into E harmonic minor.

Modulating into the relative natural minor key is straightforward, since the notes of the two tonalities are exactly the same. Simply make the modulation apparent by insisting on the new tonic; this role is usually devoted to the bass.

Modulating into the relative harmonic or melodic minor key is slightly more difficult, because you need to manage at least one alteration. For example, in A harmonic minor, the G note is sharp and will clash with the natural G note of C major:

C major:	C	D	E	F	G	A	B	(C)
A harm minor:	A	B	C	D	E	F	G#	(A)

From a chord progression perspective, the new tonality is often introduced by its V or V7 chord followed by the new I chord. For example, in order to modulate from C major into A harmonic minor you would play an E7 chord followed by an Am chord (V – I cadence).

From an improvisation perspective, the modulation is often made apparent with an ascending half tone approach resolving into the new tonic. For example, the lead phrase G – G# – A would indicate a modulation from C major into A harmonic (or melodic) minor.

Modulating into the relative melodic minor key is similar to the harmonic minor case, except that there is an additional sharp:

A mel minor:	A	B	C	D	E	F#	F#	(A)
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Always read the score before playing, and try to spot these types of modulations: they will usually be indicated by the presence of “foreign” chords with respect to the original tonality.

Modulating into an adjacent key

This type of modulation concerns two adjacent keys in the circle of fifths; for example C major and G major, or A major and E major, or F major and Bb major, etc.

As indicated above, this type of modulation is relatively easy because the two tonalities have much in common.

Let’s consider the triad harmonization of C major and G major:

C major	:	C	Dm	Em	F	G	Am	Bm(b5)
G major	:	G	Am	Bm	C	D	Em	F#m(b5)

These two keys have the following chords in common: C, Em, G, Am

Each one of these can therefore be used as *pivot* between the two tonalities.

But there is a better way...

You may recall from the section on tonality in the *Intermediate* volume, that the fourth and seventh degrees of a tonality play an extremely important role. We have seen that the seventh

degree (called leading tone) and the fourth degree (called sub-dominant) are separated by a *tritone*, and that the presence of this very unstable interval in a chord (the V7 chord) mandates a resolution onto the tonic chord. The idea, then, is to use this V – I cadence to establish the new tonality.

Suppose are in C major; altering the 4th degree (F) makes it a F#, and puts us in the G major tonality, where it becomes the 7th degree.

Similarly, altering the leading tone (B) makes it a Bb and puts us in F major, where it becomes the 4th degree!

a) So, in order to modulate from C major into G major, we only need to transform the F note into a F# note; we can do that by playing D or D7 chord. If we then immediately play a G chord, we have an unambiguous cadence that establishes G major as the new tonality. In order to make the transition smoother, we can prepare the D or D7 chord by preceding it with a Dm chord, as in the following progression:

C - - - / G - - - / C - - - / Dm - D - / G - - -

The first G chord followed by a C chord says: "We are in C major". But the D chord followed by a G chord says we are in G major now.

Modulating back from G major into C major would also rely on the 4th degree: in G major, we will play a F chord, followed by a C chord; ce can then round off the modulation by playing the V – I cadence G – C.

b) Modulating from C major into F major follows the same principles, but here we will alter the B note and make it a Bb. One way we can do this is by playing a G chord followed by a Gm chord, followed in turn by a F chord. But this is a rather soft transition.

A better approach is to use the V – I cadence; therefore, we will play a C chord, followed by a C7 chord, itself followed by a F chord:

C - - - / G - - - / C - C7 - / F - - -

The same principle applies to all modulations between adjacent tonalities, and also to modulations from a key into a relative minor of an adjacent key (for example, from C major into E harmonic minor - relative of G major, or from C major into D harmonic minor - relative of F major). For example, the following progression modulates from C major into E harmonic minor:

C - - - / F - - - / C - - - / B7 - - - / Em - - - / D - - - / B7 - - - / Em - - -

Modulating into remote keys

Modulating into a distant key is usually more complicated before there are fewer common notes and fewer chords that can be used as pivots.

The same general principle discussed above applies in this case: the V or V7 chord of the new tonality can be used to modulate, but this V7 chord might itself need some preparation.

Here is an example of a modulation from C major into E major by means of a V – I cadence:

C - - - / F - - - / C - - - / **B7** - - - / **E** - - - / A - - - / C#m - - - / B - - -

This sequence is very similar to the previous example, and this is normal since E harmonic minor (in the previous example) and E major (in this example) share the same tonic and the same dominant chord.

How do you handle this from a lead perspective?

There are two options:

- You can play a B(7) arpeggio on the B7 chord: in doing so you stick very closely to the harmony, and you make the modulation immediately apparent
- You can also smooth out the modulation by applying some mode theory. On the C major part, you obviously play with the C major scale. But on the last C chord of the C major part we can already prepare the modulation and announce the new tonic (E) by stressing the E note (which is the third of the C chord and is therefore an excellent note to play on that chord). So to speak, you play an E Phrygian fingering pattern – but remember that this doesn't affect the "Ionianity" of the harmony. On the B7 chord, we can again stress the third, which is now D#, in the tonality of E major – in other words, play a D# Locrian fingering pattern. Finally, on the first E chord we finalize the modulation by playing an E Ionian pattern.

Essentially, we have prepared and approached the modulation with a chromatic note sequence E – D# – E; if this chromatic sequence is supported by the bass line, the modulation will be very melodic and musical.

In practice, modulations in Hard Rock, Fusion and Metal are often unprepared harmonically: the chord progression abruptly switches into the new tonality. However, even in that case the modulation is often "prepared" by other tricks such as a percussion roll, a rest, an acceleration, etc.: all these tricks are meant to make the transition more acceptable.

Ultimately, it is up to you to decide what you like best.

Inter-tonal Exchanges

We have seen that a modulation consists in changing tonics; this always implies the usage of new chords not belonging to the old tonality. The reverse is not true: the appearance of non-diatonic chords in a progression does not necessarily imply a modulation. We have already talked about this in the *Intermediate* volume (e.g. extended dominant chords).

This principle can be extended and generalised into what is usually called inter-tonal exchanges, which was first advocated by Belà Bartok.

Let's consider two widely separated tonalities: C major and Gb major. The diatonic triad harmonization of these tonalities consists of the following chords:

	I	ii	iii	IV	V	vi	vii	
C major:	C	Dm	Em	F	G	Am	Bm(b5)	(C)
Gb major:	Gb	Abm	Bbm	Cb	Db	Ebm	Fm(b5)	(Gb)

(Note the profusion of flats in the latter scale, in particular the theoretically correct Cb!)

The principle of inter-tonal exchange states that it is ok to use functionally equivalent chords from any tonality into any other tonality.

For example, the following progression in C major:

C - - - / Dm - - - / F - - - / G - - - / C - - - / Em - - - / Am - - - / Dm - - - / G - - - / C

might be rewritten as follows:

C - - - / Dm - - - / F - - - / G - - - / C - - - / **Bbm** - - - / Am - - - / **Abm** - - - / G - - - / C

because Bbm and Abm are functionally equivalent to Em and Dm (they are chords on the same degrees in both scales).

As you can see, the bass line is potentially deeply impacted by this, and if you remember the discussion on melodic analysis (Intermediate volume), you will agree that this is quite an interesting change.

The only constraint for doing this sort of inter-tonal exchanges is that the new chords may not clash with the melody (in other words, the melody note must remain a characteristic note of the chord, or be a valid extension).

Although such inter-tonal exchanges are more frequent in jazz and fusion than in mainstream rock music, there are often an interesting way to harmonise or re-harmonise a theme.