



Scale Theory

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My introduction to scale theory was using a method referring to 7 scales, numbered 1 through 7. It was an elementary introduction to *modal* theory. After studying the fret board, modes and the myriad tone colors available, I've tried to come up with yet another way to simplify what it's all about and make it fit on a couple of pages rather than in a book.

Instead of looking at a scale as a *boxed set of notes (with that deer in the headlights look)*, I want to have you thinking of scales in three geometric planes: horizontally, vertically and diagonally which can be played across the entire neck of the guitar. *Cool huh?*

Recommended reference materials include 2 books: a scale book (listing scales with intervals/patterns) and a chord book (listing chord structures for all chords).

Here, let's walk through an example together...

Example #1:

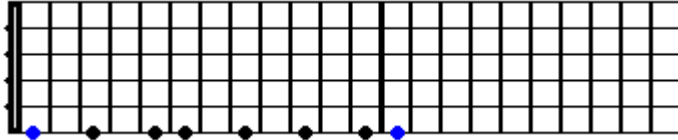
Determining the Details

We'll pick a **scale**, then determine it's **interval** (*or pattern*), pick a **key**, map out all of the **notes** on the fretboard, determine the **chords** that make up the scale and finally work out the **scale patterns** for each position (*or chord*).

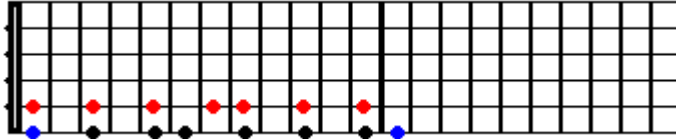
OK, lets pick a Major scale to start with. Why? Why not. A major scale has 7 notes that repeat in a set pattern, or *interval*. The interval, or *pattern* for a major scale is whole step, whole step, half step, whole step, whole step, whole step, half step (*referred to as: WWHWWWH*). *How do I know this? I looked it up in "my" [scale book](#) ("The Ultimate Guitar Scale Bible" by Mark Dziuba).*

Next, let's pick a key: F Major. Why? Why not?

Starting at F (1st fret) and walking through the interval pattern for the major key (*using just one string for simplicity sake*) we get our 7 notes, which are F, G, A, B^b, C, D and E. This came about by starting at F, then you have a whole step to G, another whole step to A, a 1/2 step to B^b, a whole step to C, a whole step to D, another whole step to E and finally a half step back to F, an octave higher: (image1)



Next, expand this exact same pattern (*WWHWWWH*) to the next string (*A string*) up to the 12th fret,



(image2):

Now, continue this pattern (*WWHWWWH*) across all the remaining strings up to the 12th fret (image3):

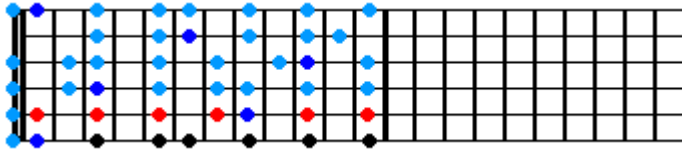


Image 3 (*the last one above*) shows every *"legal"* note that can be played in the first 12 frets for the F Major scale. Cool huh? For the notes above the 12th fret, just duplicate this exactly starting at the 12th fret (*"life repeats at the 12th fret, just an octave higher"*).

Determining the Chords of the Key

We know that a major scale is created up using an interval of *WWHWWWH*, but what chords make up the F major key? This is determined by finding the 1st, 3rd and 5th notes of each position, which then make up the elementary chord for that position. Did I lose you? Lets walk through the examples together...

Start with position #1 (the root, or F). This is the "1". 2 is G, but we want "3" so we skip to the A, which is the 3rd note in the scale. Next we want the "5", so we skip Bb and go to C, which is the 5th note in the scale. This gives us F (1), A (3) and C (5). F, A & C make a F Major.

Now, go the position #2 of the scale which is G. This is the "1". 2 is A, but we want "3" so we skip to Bb, which is the 3rd note in the scale. Next we want the "5", so we skip C and go to D, which is the 5th note in the scale. This gives us G (1), Bb (3) and D (5). G, Bb & D make a G minor.

Again, go the position #3 of the scale which is A. This is the "1". 2 is Bb, but we want "3" so we skip to C, which is the 3rd note in the scale. Next we want the "5", so we skip D and go to E, which is the 5th note in the scale. This gives us A (1), C (3) and E (5). A, C & E make an A minor.

How are you doing so far? Is this making sense? By going through the remaining positions we come up with the following notes:

	<u>Position-1</u>	<u>Position-2</u>	<u>Position-3</u>	<u>Position-4</u>	<u>Position-5</u>	<u>Position-6</u>	<u>Position-7</u>
	C	D	E	F	G	A	Bb
	A	Bb	C	D	E	F	G
	F	G	A	b	C	D	E
Chord:	F Major	G minor	A minor	Bb Major	C Major	D minor	E Dim

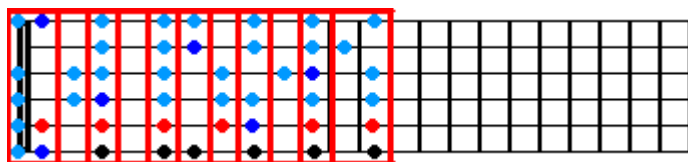
Please visit [Chord Theory 1](#) if you would like a little more information on building chords.

Knowing the chords that make up a key is important when you're playing with others. By just knowing what chords they're playing, you can determine the key (*and trust me on this, when everyone plays in the same key things sound much better*). Thus by hearing someone playing a Gm, Am and a C Major rhythm with an Edim turnaround, you could guess they are playing in the key of F major. Cool huh? OK, but we're not done just yet...

The next part comes down to breaking this myriad of notes down to playable patterns that can be imposed over any of the "legal" chords being played (*e.g. F, Gm, Am, B^b, C, Dm and Edim*). Instead of playing the notes/scales horizontally (*up the neck on a single string as I use in the examples above*), we'll cut the patterns up vertically (*going across the strings*).

This is where things start to get funky.

Technically, you could use a cookie cutter approach at this point, and just evenly divide up the neck into 7 equal chunks, and you would have boxed "scales". This method could provide some doubled-up notes, skipped notes and other strange problems, but you would have "scales" nonetheless:

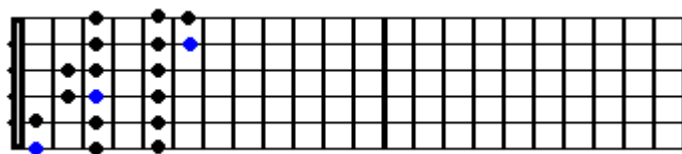


This was a bad thing, many guitarists were flogged with wet noodles, thus long ago someone sat down and made pretty, playable and otherwise pre-packaged boxed scales for the generations to come (*i.e. you and I*). An example of each scale for each of the 7 positions follows:

Here are the "legal" patterns and their "modal" (*or mode*) names for the F Major key:

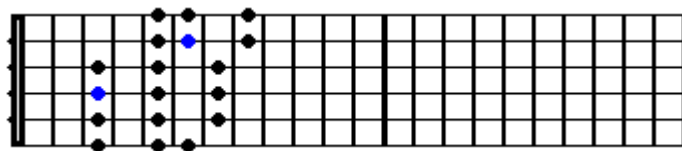
#1 Position

F Major Ionian (1 2 3^b4 5 6 7) - plays OK over a F, Gm B^b or C



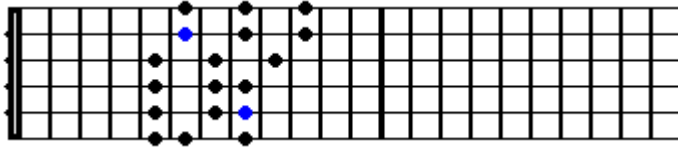
#2 Position

G Minor Dorian (1 2^b3 4 5 6^b7) - plays OK over a Gm, Am, C or Dm



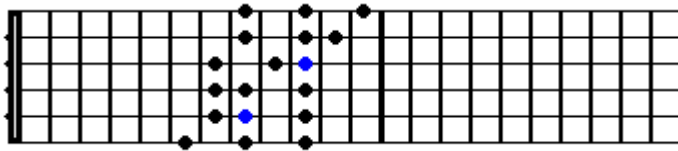
#3 Position

A Minor Phrygian (1^b2^b3 4 5^b6^b7) - plays OK over an Am, B^b, Dm or Edim



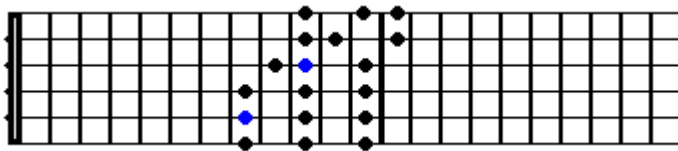
#4 Position

B^b Major Lydian (1 2 3 #4 5 6 7) - plays OK over a B^b, C, Edim or F



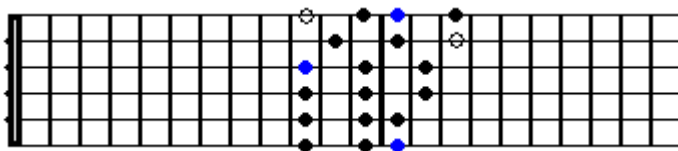
#5 Position

C Major Mixolydian (1 2 3 4 5 6 ^b7) - plays OK over a C, Dm, F or Gm



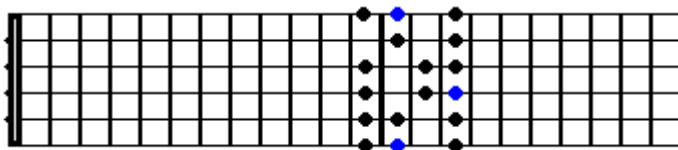
#6 Position

D Minor Aeolian (1 2 ^b3 4 5 ^b6 ^b7) - plays OK over a Dm, Edim, Gm or Am



#7 Position

E Diminished Locrian (1 ^b2 ^b3 4 ^b5 ^b6 ^b7) - plays OK over an Edim, F, Am or B^b

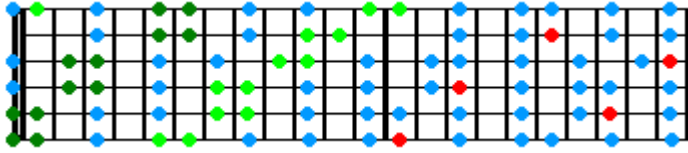


I mention for each pattern what chord it plays over, meaning position for lead work based on which chord the melody is playing. This is purely a personal thing, but I wanted to point you in "a" direction.

** Note: I mention "legal" notes, scales, modes, patterns and such. These imply the "rules", which being more like guidelines, can and should be broken once learned.*

*** Homework? Try this on your own for EACH of the other major keys (E, G, A, B, C & D), or at a minimum do this exercise for your favorite key. **Trick: These are "movable" scales. Example, for the key of G Major - just shift *everything up* a whole step. For E Major - shift *everything down* a half step etc.***

Remember when I mentioned I wanted you to think horizontally, vertically and diagonally? This is where it finally all comes together. Like Paint-by-Numbers or Connect-the-Dots, you layout all of the available notes and visualize patterns; any pattern! Pick 'em hard, pick 'em easy - it's not your call! Remember, as you're soloing in a pattern or over a particular chord, you have the entire fretboard at your disposal as with the F Major scale (I highlighted two sample patterns as examples: 1 rooted in E/F, the other Am):



Go nuts! Don't sell yourself short with just one little boxy pre-packaged scale to stay within.

Did this help at all? Let's work through another example from scratch. Something I like to do is pull some strange, weird and otherwise bizarre and or unpronounceable scale out of a book and map it out as I did for the basic F Major scale above. Let's try another example:

In the first example, we walked through building scales based on the F Major key, and laid out all of the "legal" notes for the entire fret board (at least the first 12 frets worth). Let's walk through this again but let's pick something slightly more esoteric to play with!

Example #2:

Determining the Details

Again, we'll pick a **scale**, determine its **interval** (or *pattern*), pick a **key**, map out all of the **notes** on the fretboard, determine the **chords** that make up the scale and finally work out the **scale patterns** for each position (or *chord*).

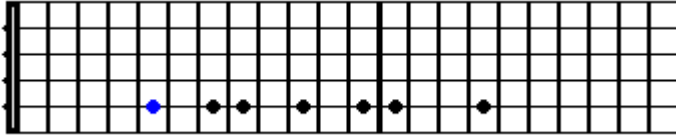
For grins, let's pick a scale: harmonic minor. Why? Why not? *Actually, it sounds kind of cool in a neoclassical Bach-like kind of way I suppose.*

The next step is to find the interval or pattern to use. The harmonic minor uses the interval (or pattern) of whole step, half step, whole step, whole step, half step, whole step, half step (*WHWWHWH*). *Again, how do I know this? I looked it up in "[my](#)" [scale book](#) ("The Ultimate Guitar Scale Bible" by Mark Dziuba).*

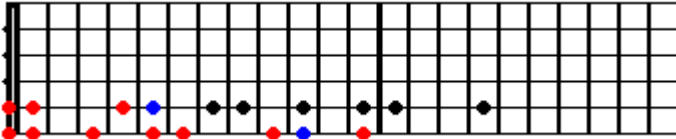
OK, we have the scale and we have the interval, so let's pick a key: D harmonic minor. Why? Why not?

D major would be D, E, F#, G, A, B, C#. But we're going to use D harmonic minor, which actually flattens the 3rd and 6th notes. OK, so that gives us D, E, F, G, A, B^b, C#.

Starting at D at the 5th fret on the A string, work the pattern up the neck. Whole step to E, half step to F, whole step to G, whole step to A, half step to B^b, a whole step to C# and finally a half step back to D (image 1):



Next, since we started on the 5th string, for grins, let's *backfill* this pattern (*WHWWHWH*) to the 6th string. Starting on the open E, start going up to the 12 fret and over to the 5th string (A string) and ending where we started (image 2):



OK, let's fill in the rest of the notes on all strings up to the 12th fret. Keep the same pattern and mark each note of the interval (*pattern*) D, E, F, G, A, B^b, C# (image 3):

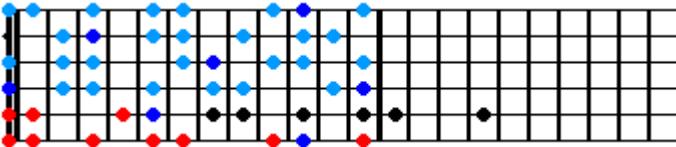


Image 3 *above* shows every *"legal"* note that can be played in the first 12 frets for the D Harmonic Minor scale. Again, for the notes above the 12th fret, just duplicate this exactly starting at the 12th fret (*remember that "life repeats at the 12th fret, just an octave higher"*).

Extra-Credit Note: A bonus side-effect that this exercise may provide you is a memorization of the notes on the fretboard, which is a very good thing.

Determining the Chords of the Key

We know that a harmonic minor scale is created up using an interval of WHWWHWH, but what chords make up the D harmonic minor key? Again, this is determined by finding the 1st, 3rd and 5th notes of each position, which then make up the elementary chord for that position. Lets take another walk down example lane...

Start with position #1 (the root, or D). This is the "1". 2 is E, but we want "3" so we skip to the F, which is the 3rd note in the scale. Next we want the "5", so we skip G and go to A, which is the 5th note in the scale. This gives us D (1), F (3) and A (5). D, F & A make a D minor.

Now, go the position #2 of the scale which is E. This is the "1". 2 is F, but we want "3" so we skip to G, which is the 3rd note in the scale. Next we want the "5", so we skip A and go to B^b, which is the 5th note in the scale. This gives us E (1), G (3) and B^b (5). E, G & B^b make an E diminished (*or Emin7th-flat5, but we'll go with Edim*).

Again, go the position #3 of the scale which is F. This is the "1". 2 is G, but we want "3" so we skip to A, which is the 3rd note in the scale. Next we want the "5", so we skip B^b and go to C#, which is the 5th note in the scale. This gives us F (1), A (3) and C# (5). F, A & C# make an F augmented.

By going through the remaining positions we come up with the following notes:

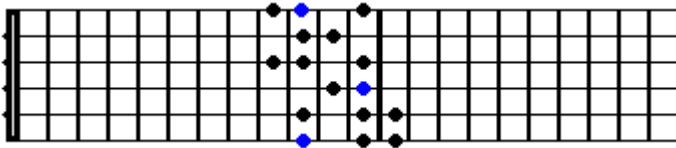
Position-1	Position-2	Position-3	Position-4	Position-5	Position-6	Position-7
A	B \flat	C \sharp	D	E	F	G
F	G	A	B \flat	C \sharp	D	E
D	E	F	G	A	B \flat	C \sharp
Chord: D minor E dim F aug G minor A Major B \flat Major C \sharp dim						

Please visit [Chord Theory 1](#) if you would like a little more information on building chords.

Next, let's break out each of the 7 scales that D harmonic minor produces:

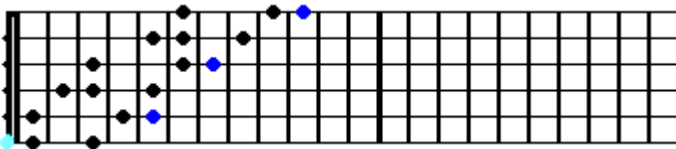
#1 Position

D Harmonic Minor (Aeolian \wedge 7) (1 2 \flat 3 4 5 \flat 6 7) - plays OK over Dm or Gm



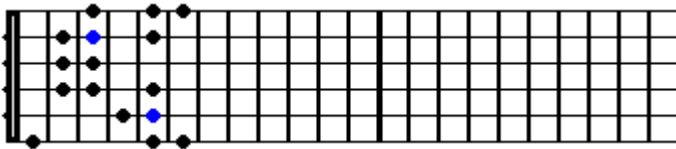
#2 Position

E Diminished (Locrian \wedge 6) (1 \flat 2 \flat 3 4 \flat 5 6 \flat 7) - plays OK over Edim or A



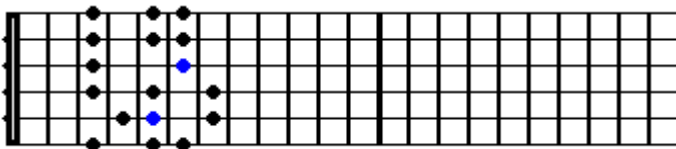
#3 Position

F Augmented (Ionian augmented) (1 2 3 4 \sharp 5 6 7) - plays OK F \sharp aug, Gm, B \flat or C \sharp dim



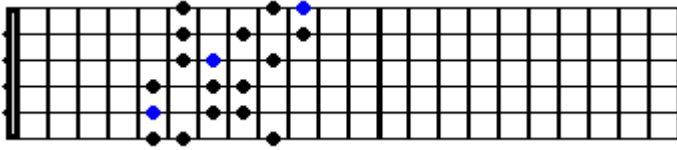
#4 Position

G minor (Dorian \wedge 4) (1 2 \flat 3 \sharp 4 5 6 \flat 7) - plays OK over a Gm or C \sharp dim



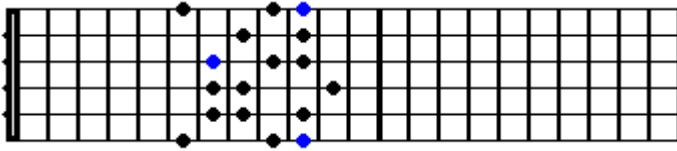
#5 Position

A Major (Phrygian Major) (1 \flat 2 \flat 3 \flat 4 5 \flat 6 \flat 7) - plays OK over a A or Dm



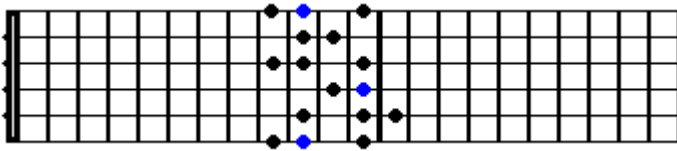
#6 Position

B^b Major (Lydian #9) (1 #2 3 #4 5 6 7) - plays OK over a B^b, Dm or Edim



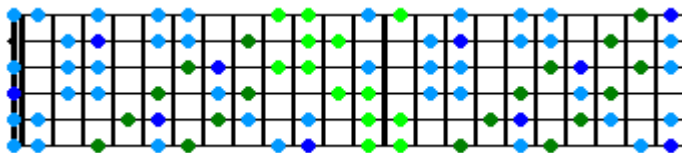
#7 Position

C[#] Diminished (altered dominant ^{bb}7) (1 ^b2 ^b3 ^b4 ^b5 ^b6 ^{bb}7) - plays OK over C[#]dim or Faug



**** Homework? Try this on your own for EACH of the other harmonic minor keys (E, F, G, A, B, & C), or at a minimum do this exercise for your next favorite key. Trick: These are "movable" scales. Example, for the key of E harmonic minor - just shift *everything up* a whole step. For D^b harmonic minor - shift *everything down* a half step etc.**

This is where it finally all comes together again. Like Connect-the-Dots, you layout all of the available notes and visualize patterns! Remember, as you're soloing in a pattern or over a particular chord, you have the entire fretboard at your disposal as with the D harmonic minor scale (two sample patterns are highlighted as examples: 1 rooted in G (diminished), the other Dm itself):



Don't sell yourself short with just one little boxy pre-packaged scale to stay within.

You can do this exercise for any scale in any key! Try it on a Major Pentatonic, or minor Pentatonic Blues, Lydian or Phrygian scale. As you experiment, you will find your own magical sweet spots, keys, chords, tones, patterns and ultimately the perfect and unique riff that will set you apart from all others!