



# Harmonised Scales

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The objective of this article is to show:

- how chords are related to scales
- how an understanding of chord progressions helps identify key centres
- how one chord can be substituted for another

## Basic Harmony - Thirds

The sort of tunes used in jazz, blues and popular music use chords derived simply by harmonising the major scale in 3rds. What this means is treating each scale tone as a root, and then stacking every third note on top of this to build a chord.

For example, using the C major scale :-

B	C	D	E	F	G	A	B
G	A	B	C	D	E	F	G
E	F	G	A	B	C	D	E
C	D	E	F	G	A	B	C
Cmaj7	Dm7	Em7	Fmaj7	G7	Am7	Bm7b5	Cmaj7
I	II	III	IV	V	VI	VII	I

Or using the Bb major scale :-

A	Bb	C	D	Eb	F	G	A
F	G	A	Bb	C	D	Eb	F
D	Eb	F	G	A	Bb	C	D
Bb	C	D	Eb	F	G	A	Bb
Bbmaj7	Cm7	Dm7	Ebmaj7	F7	Gm7	Am7b5	Bbmaj7
I	II	III	IV	V	VI	VII	I

The chords are named by looking at the intervals in them relative to the root.

If the first note up from the root is a major 3rd (4 frets), then it is either a major chord or a dominant 7th type chord. If it is a minor 3rd (3 frets), it is a minor type chord.

The next note up the stack is in every case an interval of a 5th (7 frets) from the root, except in the last chord in the sequence, where it is a semitone lower than the 5th would be. This is called a flattened-5th interval, and this is reflected in the chord name, how it sounds and where it is used.

When the last note in the stack is a semitone down from the root note, then this major 7th interval defines the chord as a major 7th chord. Otherwise, when it is two semitones down from the root, it defines the chord as either a m7, or a dominant 7 chord. We will see later that maj7, m7 and dominant 7 chords function differently when using them as a basis for improvisation.

Chords are named (or 'spelled') based on the intervals they contain i.e. a major 7th chord has a major 3rd and a major 7th interval in it. A minor 7th, has a minor 3rd and a flattened 7th. The m7b5 chord is like a minor 7th, but with the 5th flattened.

The 5th in a chord is only indicated specifically if it is flattened or sharpened. When in its natural state (referred to as 'perfect'), the 5th can be left out without altering the chord's sound much. If the 5th is altered (i.e. flattened or sharpened) this makes a big difference to the sound and function of the chord, so it should always be played.

Note that the sequence of chord types in the harmonised major scale - maj7, m7, m7, maj7, dominant 7th, m7, m7b5 - remains the same regardless of what the key scale is. This is why the Roman numeral indication of each chord in the sequence, as shown in the above examples, is often referred to. It provides a useful key-independent shorthand for chord sequences. You may have heard of II/V/I progressions. In the above examples, this means Dm7, G7, Cmaj7 and Cm7, F7, Bbmaj7, respectively. Play these sequences. They will sound very familiar.

Many popular songs use only chords from the harmonised scale derived from the key the song is written in, and there are several often used sequences besides II/V/I e.g.

I/VI/IV/V or Cmaj7, Am7, Fmaj7, G7 - 'Blue Moon'

I/VI/II/V/1 or Bbmaj7/Gm7/Cm7/F7 - 'I Got Rhythm'

I/IV/1/V/1 or C, F, C, G7 - 'Basic Blues'

However, other tunes change, or modulate, into other keys. Tunes like 'All The Things You Are' and 'Stella By Starlight' move between many different keys. As they do this, they use chords derived from the harmonised scales for each of these keys.

Spotting the key changes is easy when you know all your II/V sequences, since this is usually the big give-away that the key is changed. When improvising, it is essential to know the key centre, so work out and memorise all the scale tone chords in all keys, especially the II/V/I sequences.

Example - 'All The Things You Are'

Ab					C		
Fm7 VI	Bbm7 II	Eb7 V	AbM7 I	DbM7 IV	Dm7G7 II V	CM7 I	CM6 I

Eb					G		
Cm7 VI	Fm7 II	Bb7 V	EbM7 I	AbM7 IV	Am7D7 II V	GM7 I	GM6 I

G				E			
Am11 II	D7 V	GM7 I	GM6 I	F#m11 II	B7 V	EM7 I	C7+ Leads To Fm (Ab)

Ab							
Fm7 VI	Bbm7 II	Eb7 V	AbM7 I	DbM7 IV	Dbm7 IVm	Cm7 III	F7 VIM

Ab			
Bbm7	Eb7	AbM7	AbM6

## Why Do These Changes Sound Good

Consider the following table, which shows the number of steps an interval movement must go through to get back to the starting point.

Interval	No. Of Steps
b5	2
maj3	3
m6	3
m3	4
maj6	4
tone	6
b7	6
maj7	12
4th	12
5th	12
semitone	12

It so happens that the ear hears the strength of a change of chord root in direct correspondence with this table. It seems that the change appears 'stronger' when the step takes you furthest away from 'home' i.e. when there are the most number of the same steps to be repeated before arriving back there.

So changing in 4ths, 5ths and semitones will give a strong sounding chord sequence or bass line.

Look at 'All The Things You Are' - it uses root progressions in 4ths and semitones exclusively, except for the Em7 to C7 at the end of the middle 8. Even this C7 chord can be thought of as a 'stepping stone' chord between the Em7 and the Fm7, which is a semitone change again.

Jazz musicians are always trying to introduce root movement in 4ths, 5ths, and semitones by using substitutions and passing chords. This adds harmonic interest by strengthening the chord progression and bass line. Look at the chord charts for some well known tunes played in jazz and try to spot these.

Occasionally, a weaker movement is called for - to change the feeling of the harmony slightly without really moving it. This effect can be achieved by using the weaker intervals in the above table e.g. Cm7 to Ebm7 (m3rd), or Cm7 to Cm7/Bb (b7), or C to Em (maj3rd).

Weakest of all is the b5 change e.g. C7 to F#7b5. In fact it is so weak, it is hardly heard of as a change at all, and is therefore is used mostly as a substitution.

## Clever Stuff - Harmonised Scale In Fourths

Are there any other ways to harmonise a scale other than in thirds ? Practically, the only real alternative is in fourths, and the use of chords built in this way has been developed a lot in post bebop jazz, especially by pianists McCoy Tyner and Chick Corea.

The process for harmonising the scale is the same, but stack the notes in fourths e.g.

E	F	G	A	B	C	D	E
B	C	D	E	F	G	A	B
F	G	A	B	C	D	E	F
C	D	E	F	G	A	B	C
Cmaj7 sus4	Dm7 sus4	Em7 sus4	Fmaj7 b5(or #11)	G7sus4	Am7 sus4	Bm7 sus4	Cmaj7 sus4
I	II	III	IV	V	VI	VII	I

The I chord can also be thought of as G13/C or as Fmaj7b5/C. These chords are not difficult to play on the guitar, voiced as written. They have an 'open' contemporary sound that you will love or hate ! They work well in tunes like Miles Davis' 'So What' and 'Milestones'. The former uses III down to II. For the latter use VI, VII and I for the A section, but based on a scale of F not C. Then use V, VI, I, VII for the bridge based on a scale of C.

Just like in the basic harmony, where you can replace two bars of C with Cmaj7, Dm7, Em7, Fmaj7 to add interest and movement, you can do the same thing, here. Try both I, II, III, IV where you would have C, and also IV, V, VI, VII, where you would have Fmaj7#11.

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