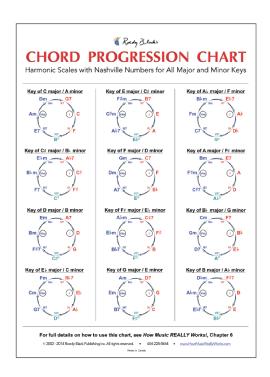
Roedy Black's

CHORD PROGRESSION CHART

User Guide



This User Guide is a 36-page excerpt from Chapter 6 of the book *How Music REALLY Works!*, 2nd Edition. The full Chapter 6 on chords and chord progressions is available at www.howmusicreallyworks.com.



© 2006 - 2018 Roedy Black Publishing Inc. www.roedyblack.com

ALSO FROM ROEDY BLACK MUSIC

How Music REALLY Works!

The Gold Standard Song List

Roedy Black's Complete Guitar Chord Poster (various chart and book editions)

Roedy Black's Complete Keyboard Chord Poster (various chart and book editions)

Roedy Black's Guitar & Keyboard Scales Poster (various chart and book editions)

Roedy Black's Musical Instruments Poster

6.5.8

SUMMARY AND EXAMPLES OF THE FOUR TYPES OF **CHORD PROGRESSIONS**

Table 42 summarizes the only four harmonic interval (chord progression) types:

- Seconds (up or down),
- Thirds (up or down),
- Fifths (up or down),
- Chromatic (exiting or returning).

Keep in mind that the intervals in the "Examples" column are *chord movements*, not single note movements.

TABLE 42 The Four Types of Harmonic Intervals (Chord Progressions)

Root Movement		Progression Name			
SECOND PROG	RESSIONS				
- - V - - V	C – Dm Dm – C C – B°	Second progression, up Second progression, down Second progression, up Second progression, down			
THIRD PROGRESSIONS					
- - V - - V	C – Em Em – C Am – C C – Am	Third progression, up Third progression, down Third progression, up Third progression, down			
FIFTH PROGRESSIONS					
I – V V – I IV – I I – IV	C – G G – C F – C C – F	Fifth progression, up Fifth progression, down Fifth progression, up Fifth progression, down			

CHROMATIC PROGRESSIONS			
I – ÞII	C − D♭	Chromatic progression, exiting	
βII – I	D♭ – C	Chromatic progression, returning	
I – ÞIII	C − E _þ	Chromatic progression, exiting	
ЫП – І	E♭ – C	Chromatic progression, returning	
I – #IV	C – F#	Chromatic progression, exiting	
#I∨ – I	F# – C	Chromatic progression, returning	
I − ♭VI	C – A♭	Chromatic progression, exiting	
♭VI – I	A♭ – C	Chromatic progression, returning	
I − ♭VII	C − B _{>}	Chromatic progression, exiting	
♭VII – I	B♭ – C	Chromatic progression, returning	

IMPORTANT: In Table 42, the chord progressions in the "Examples" column represent only a smattering of the possibilities in the key of C / Am. What's missing? Well, for example, the chord change Dm – G is a fifth progression down. So is Am - Dm. And the chord change F - B_b in the key of C / Am is a chromatic progression, exiting. So is $Dm - E_b$.

EVEN MORE IMPORTANT: You don't have to remember or memorize all that stuff in Table 42. Why? Because, in a while, you'll learn a visual way of making sense of chord progressions. A way to sketch a "map" of a song's chord progressions.

All of this will begin to make much more sense shortly. Next up: the harmonic equivalent of the melodic scales you studied so conscientiously in Chapter 4. You're ready to learn all about harmonic scales.

6.6 Scales of *Chords*? Yes!

6.6.1

THE KEY TO BOLDLY GOING WAY BEYOND THE "THREE-CHORD WONDER"

Usually, you think of a scale as an ordered sequence of single notes. Chapter 4 was all about identifying melodic intervals, scale degrees, and the organization of melodic scales.

Does the same apply to harmony? That is, having identified the various harmonic degrees (chords) and harmonic intervals (chord changes, also called chord progressions), can they be organized into harmonic scales—harmonic equivalents of melodic scales?

And if so, does that mean there's a guaranteed way to write a chord progression that holds together? Sounds like it "knows where it's going"?

The answer is yes.

Few songwriters know about it, though.

The harmonic equivalent of a melodic scale is called a harmonic scale, or scale of harmonic degrees. It's a powerful musical phenomenon. You're about to learn to make creative use of it.

There are 12 such harmonic scales, one for each pair of relative keys—major and relative minor (or vice versa).

In the following sections, you'll learn how easy it is to create chord progressions that sound "different" from your run-of-the-mill "three-chord wonders." And yet natural and attractive to the ear.

True, many great songs have only three basic chords. But the same three basic chords also show up in zillions more awful songs.

Tune and lyrics notwithstanding, most songwriters simply don't know how to create beautiful chord progressions because they have zero knowledge of harmonic scales and how to use them. Once you understand how easy it is to use harmonic scales, you won't ever have to worry about writing lame chord progressions again.

6.6.2

UNREST AND DIRECTION: THE MAGIC OF V – I

Recall from Chapter 4 that, in melodic scales, two scale degrees (notes of the scale) "point" strongly towards scale degree 1, namely, its two neighbours, scale degree 2 (from above) and scale degree 7 (from below). Scale degrees 2 and 7 have both unrest and direction.

For example, in this scale:

$$C - D - E - F - G - A - B - C$$

the note D strongly seeks resolution (unrest) down (direction) to C, and B strongly seeks resolution (unrest) up (direction) to C.

Unrest and direction.

In harmony a parallel situation obtains. But in harmony, only one harmonic degree, or chord, "points" strongly towards harmonic degree I, not two chords.

The only chord in harmony that has both unrest and direction is harmonic degree V ("the five chord").

1. As Table 43 below shows, the notes comprising harmonic degree V include scale degree 7 and scale degree 2. Both of these notes point strongly to the tonic note of the key, scale degree 1.

TABLE 43 Notes Comprising Harmonic Degree V ("The Five Chord," As They Say In Nashville)

5th Note Up From Root (Interval of a third)	5	6	7	1	2	3	4
3rd Note Up From Root (Interval of a third)	3	4	5	6	7	1	2
Root of Triad (Scale Degree)	1	2	3	4	5	6	7

- 2. Recall from Chapter 5 that the more scale notes two keys have in common, the more closely they're related. And keys having tonic notes a fifth apart have six out of seven scale notes in common. (For example, the key of C major and the key of G major have 6 of 7 scale notes in common.)
- 3. The simplest frequency ratio after the octave (1:2) is the ratio that corresponds to the fifth (2:3).

For all of these reasons, the harmonic interval (chord change or chord progression) V - I plays the same role in harmony as do melodic intervals 7 - 1 and 2-1 in melody.

The V - I chord change is the strongest, most natural chord progression in harmony.

Just as melodic intervals 7 - 1 and 2 - 1 impart both unrest and direction with respect to the tonic note, so the harmonic interval V – I imparts both unrest and direction with respect to the tonic chord—the chord built on scale degree 1.

6.6.3

HARMONIC "SCALE NEIGHBOURS"

Just as scale degrees 7 and 2 are scale neighbours of the tonic note in melody, so in harmony the V chord is the scale neighbour of the tonic chord.

And that means the chord change V – I is the *smallest scale move* you can make in harmony. The V chord and the I chord are, therefore, harmonic scale neighbours.

This is *precisely the opposite* of the situation in melody.

For example, in the key of C major:

- Melodically, the notes B and C are close together. They're melodic scale neighbours. The notes C and G are as far apart as you can get—definitely not melodic scale neighbours.
- Harmonically, the chords C major and G major are close together. They're harmonic scale neighbours. But the chords C major and B major are far apart—definitely not harmonic scale neighbours.

WANTED: MUSICAL MARRIAGE COUNSELLOR

Think of harmony and melody as opposite sexes.

In melody, the fifth is the furthest note from the tonic. But in harmony, the fifth is the *closest* chord to the tonic.

Opposites in a fundamental way.

When they're together, harmony and melody usually get along. Sometimes they fight. Paradoxically, such fighting often sounds delightful.

When they divorce, melody functions fairly well on its own. But harmony does not. By itself, poor harmony flounders, and must find a way to reconcile with melody.

6.6.4

THE HARMONIC SCALE: WILL THE CIRCLE BE **UNBROKEN?**

To construct a harmonic scale (scale of chords), here are the chords to start with, the basic chords for any given key (in Nashville Number notation):

> T IIm IIIm IV V VIm VIIº

The next step is to arrange these chords with each chord the smallest distance apart harmonically (just as, in a melodic scale, the notes are the smallest distance apart as you go up or down the scale stepwise, from note to note). That means the root of each chord would be a fifth apart, since, in harmony, a fifth progression is the smallest harmonic distance.

A major difference between a melodic scale and a harmonic scale would be this:

- A melodic scale begins with scale degree 1 and ends with scale degree 1 (8)—two different notes. That's because, in melody, the octave matters.
- In harmony, the octave does not matter. Therefore, a harmonic scale would need to begin with harmonic degree I and also end with harmonic degree I—the same chord. As pointed out above, a chord is a chord is a chord. No distinction is made between a chord played in one octave and the same chord played in a different octave.

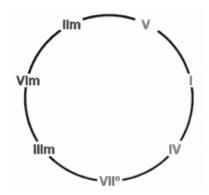
Since the first and last chords in the harmonic scale are the same chord (the tonic chord, I), what shape, then, must a harmonic scale take?

If a harmonic scale must begin and end with the same chord ...

The harmonic scale must necessarily take the shape of a circle.

That's the only way the harmonic scale could begin and end with the same chord. Figure 47 shows how the chords of a harmonic scale are arranged in fifth progressions, and in the shape of a circle.

FIGURE 47 The Harmonic Scale: Basic Structure



6.6.5 FAMILIES WITHIN THE CIRCLE

The first thing you notice about the chords in Figure 47 above is that they clump together. The major chords form a little family of three on the right side of the harmonic scale. The minor chords form another little family of three on the left side. (Isn't that sweet?)

The diminished chord (VII°)—no doubt trained as an expert in family group dynamics and conflict resolution—appears to bridge the two families.

The next thing you might notice is that all but one of the intervals between the roots of the chords is five semitones apart (a fifth progression down, going clockwise; a fifth progression up, going counterclockwise). The exception is the interval between the root of the IV chord and the root of the VII° chord (six semitones).

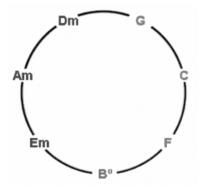
Later in this chapter, you'll see how this little anomaly helps explain why composers have a hard time working with the Church modes (Dorian, Phrygian, Lydian, Mixolydian, Locrian) when it comes to constructing palatable-sounding chord progressions.

6.6.6 WHICH DIRECTION HOME?

How does it feel How does it feel To be on your own With no direction home -BOB DYLAN ("Like A Rolling Stone")

Next, try an example. Replace the Nashville Numbers with the chords of a representative key—actually a pair of relative keys—and try out the harmonic scale. Use the keys of C major and A minor (Figure 48):

FIGURE 48 Harmonic Scale, Key of C Major / A Minor



So far, so good. But this harmonic scale needs some tweaking.

If you play the harmonic scale clockwise, starting from C major and ending with C major, your brain senses natural, directed harmonic motion. The progression is definitely "going somewhere."

It pulls out of Dodge City (the C major chord) and moves smoothly to Fowler (the F major chord). It feels like you're on your way to somewhere. The sense of motion continues as the harmonic train moves from town to town on a grand circle tour. Tyrone, Richfield, Johnson City, Garden City, Cimarron. Finally, it pulls into Dodge City once more. With that last harmonic interval (G - C), there's no mistaking the feeling of arriving back home.

Now, try going the other way around, from the chord C major to G major to D minor, and so on. You'll soon find that something's amiss. When you try to take the grand circle tour counterclockwise, your train gets lost and ends up somewhere

between Moose Jaw, Saskatchewan, and Dildo, Newfoundland (yes, such towns exist).

Even though you eventually arrive back home, your brain does not sense that your train has arrived home. It's Dodge, seemingly. But nobody's around that you'd recognize. Where's Marshall McDillon? How come Doc Yada-Yadams is sober and hardly ever performs brain surgery? Since when did Ms Puma start playing the flute? How come Sadie and Ellie Sue's store is full of mules instead of horses?

In a minute, you'll find out what went wrong in the counter-clockwise trip. But first, a brief revisit to the interval dynamics of the melodic scale.

6.6.7

THE MELODIC SCALE: TWO DIRECTIONS HOME

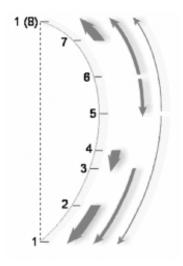
In melody, as you move up the scale, from scale degree 1 to 2 to 3, and so on, your brain senses a feeling of "going away"—paddling against the current— until you reach scale degree 5.

Then, as you continue in the same direction (away from scale degree 1), you sense that the current reverses itself. And you find yourself somehow paddling with the current, even though you haven't turned around.

It's the current that reverses, not you. The current even carries you home. But it's not the same home you left. Instead of "home" being scale degree 1, it's scale degree 1 (8). Yet your brain still perceives 1 (8) as "home." That's the important thing (Figure 49 below).

Your brain has evolved to expect complex frequency ratios to resolve to simpler frequency ratios. And what's the simplest? The tonic note of the octave: scale degree 1, or scale degree 1 (8).





This also happens when you move down the melodic scale, from scale degree 1 (8) to 7 to 6. Again, your brain senses that you're padding against the current. Until you reach scale degree 5. Then you sense reversal of the current and paddle downstream until you get home to scale degree 1.

So, in melody, you can get home by either ascending or descending the melodic scale. The most powerful forces for resolution are the melodic intervals 7 - 1 (8) and 2-I.

In melody, there are two directions home.

In harmony ... maybe not.

6.6.8

How Does It Feel to Move Clockwise Round THE HARMONIC SCALE?

Have another look at Figure 48 above, (key of C major/A minor). Suppose you start at the C major chord. To stay within the circle, you have two choices:

- 1. You can progress clockwise to F major; or
- 2. You can progress counterclockwise to G major.

Suppose you start by playing four bars of the C major chord on your guitar or piano to establish tonality. Then progress clockwise to the F major chord and play a few bars. How does it feel?

Your brain senses a purposeful, natural harmonic move. A feeling of moving ahead, of going somewhere.

It doesn't matter if you start by playing the C major chord in a high octave, then move to the F major chord in a lower octave, or vice-versa. Either way, you sense a purposeful, natural, comfortable harmonic progression.

How come?

When you progress from C major to F major, you move from these notes

$$C - E - G$$

to these notes:

$$F - A - C$$

When you leave the C major chord and move to the F major chord, your brain wonders, "What's going on? The chord has changed. Looks like the new chord is assuming the role of the tonic chord—at least for the moment."

Therefore ...

1. The scale relationship of the note E in the C major chord (the chord being left behind) with respect to the root note F (the foundation note) in the new chord, F major, is 7 - 1 (8).

Your brain feels a strong sense of satisfaction when the note E in the C major chord resolves to the root note F in the new chord, F major.

2. Similarly, the scale relationship of the note G in the C major chord (the chord being left behind) with respect to the root note F in the new chord, F major, is 2 - 1.

Your brain feels a strong sense of satisfaction when the note G in the C major chord resolves to the root note F in the new chord, F major.

These two simultaneous moves—E moving up to F(7-1) and G moving down to F(2-1) combine to provide your brain with a feeling of assured, inevitable harmonic motion.

Resolution from complex to simple frequency ratios has taken place.

6.6.9

How Does it Feel to Move COUNTERCLOCKWISE? (HINT: THE CAT WANTS BACK IN)

What happens when you go the other way around the circle?

Again, start by playing four bars of the C major chord to establish tonality. Then progress counterclockwise to the G major chord and play a few bars. How does it feel?

Your brain senses a desire to get right back to C major. It's like opening the door to let Tritone the cat outside. A minute later, the cat wants back in.

What's going on?

When you progress from C major to G major, you move from these notes (the notes that comprise the C major chord):

C-E-G

to these notes:

$$G - B - D$$

When you leave the chord C major and move to the chord G major, your brain at first tries to accept the G major chord as assuming the role of the tonic chord.

But it doesn't work out. Your brain feels no sense of purposeful, forward motion.

When you leave the C major chord and move to the G major chord, your brain senses that:

1. The scale relationship of the note E in the C major chord (the chord being left behind) with respect to the root note G in the new chord, G major, is 6 - 1.

This does not in any way reinforce G as a potential new tonal centre.

2. Similarly, the scale relationship of the note C in the C major chord (the chord being left behind) with respect to the root note G in the new chord, G major, is 4 - 1.

With this interval move, your brain senses no reinforcement of G as a potential new tonal centre.

If the new chord, G major, is supposed to be the new tonic, how did the old chord, C major, yield its power as tonal centre?

The answer is, C major did not yield its power.

The notes C and E in the C major chord do not provide any significant propulsion to resolve to the root note G in the new chord, G major.

In fact, when you progress from C major to G major, your brain senses exactly the opposite of "harmonic resolution." It correctly senses that the chord change from C major to G major has created harmonic tension—not resolved it.

How does it feel? It feels unstable, restless. Your brain expects resolution back to the C major chord. (The cat wants back in.)

If you then do exactly that, progress from the G major chord back to the C major chord, the same interval dynamics apply as if you were progressing from C major to F major. When you move from G major to C major ...

- 1. The scale relationship of the note B in the G major chord (the chord being left behind) with respect to the root note C (the foundation note) in the new chord, C major, is 7 - 1 (8).
 - So, your brain feels a strong sense of satisfaction when the note B in the G major chord resolves to the root note C in the new chord, C major.
- 2. Similarly, the scale relationship of the note D in the G major chord (the chord being left behind) with respect to the root note C in the new chord, C major, is 2 - 1.

Your brain feels a strong sense of satisfaction when the note D in the G major chord resolves to the root note C in the new chord, C major.

These two simultaneous moves—B moving up to C(7-1) and D moving down to C(2-1) combine to provide your brain with a feeling of assured, inevitable harmonic motion. Just like moving from the C major chord to the F major chord. Again, resolution from complex to simple frequency ratios has taken place.

6610

THE HARMONIC SCALE: ONE DIRECTION HOME

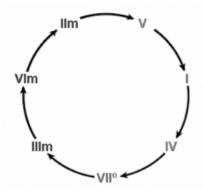
In melody, you have two directions home—by ascending through 7 to 1 (8), or by descending through 2 to 1.

But in harmony, as you've just seen, you have only one direction home—by descending the circular harmonic scale (moving clockwise).

In harmony, your brain senses the descending fifth progression of V - I as "coming home." Just as, in melody, it senses scale movements of 7 - I (8) and 2 - I as "coming home."

So, it's necessary to tweak the harmonic scale by adding arrows to show clockwise (descending fifth) natural direction of motion (Figure 50 below).

FIGURE 50 Harmonic Scale: One Direction Home



In harmony, when you paddle clockwise, you paddle with the current. When you paddle counterclockwise, you paddle against the current (with one small exception—third progressions—coming up in a while).

Or, you could say that, clockwise, you sail with the wind; counterclockwise, you sail against the wind. You have to mind your sheets, too. In sailing, sheets are lines attached to sail corners that control sail positions relative to the wind. So if three of them are blowin' in the wind, your boat will not be terribly manoeuvrable. That's what you get when you knock back too many margaritas ... you sail three sheets to the wind.

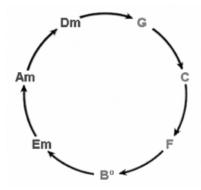
6.6.11 FIXING ANOTHER "MINOR" PROBLEM

So, the natural direction of motion as you progress from chord to chord through the harmonic scale has been nailed down. It's clockwise.

Still, the harmonic scale needs more work. Some of the harmonic intervals have less directional strength than others.

As always, an example reveals the problem. Once again, swap the Nashville Numbers of Figure 50 above for the chords of a pair of relative keys—C major and A minor, this time with the directional arrows added (Figure 51 below):

FIGURE 51 Harmonic Scale: Key of C Major / A Minor



You've probably noticed that the progression Em – Am does not quite measure up to the confident, resolved sound of, say, G - C.

When you progress from E minor to A minor, you move from these notes:

$$E - G - B$$

to these notes:

$$A - C - E$$

As usual, your brain checks out the new chord against the one left behind for signs that the new chord is assuming the role of the new tonic chord—at least for the moment. And here's what it finds:

1. The scale relationship of the note G in the E minor chord (the chord being left behind) with respect to the root note A (the foundation note) in the new chord, A minor, is $\ 7 - 1 \ (8)$, not $7 - 1 \ (8)$.

Your brain senses only a moderate sense of satisfaction when the note G in the E minor chord resolves to the root note A in the new chord, A minor.

2. The scale relationship of the note B in the E minor chord (the chord being left behind) with respect to the root note A in the new chord, A minor, is 2-1.

Your brain feels a strong sense of satisfaction when the note B in the E minor chord resolves down to the root note A in the new chord, A minor.

Together, these two simultaneous moves—G moving up to A (57 - 1) and B moving down to A (2-1) combine to provide your brain with only a moderate feeling of harmonic motion.

Why isn't it a strong feeling of harmonic motion? Because the G – A move is \$7 -I (8), not 7-1 (8).

Recall from Chapter 5 that a semitone interval has considerably more inherent tension than a whole tone interval, because a semitone is derived from a more complex frequency ratio (16:15), compared with a whole tone (9:8).

In the major diatonic scale, a semitone between 7 and 1 (8) points strongly at 1 (8). That's why the note occupying scale degree 7 is called the *leading tone*, but only if it's a semitone from 1 (8).

So, it's necessary to provide that Em chord with a leading tone, to make it strongly directional with respect to the Am chord. The way to do this is to sharpen the G in the Em chord, converting it into an E major chord.

When you do that, and progress from E major to A minor, you move from these notes:

$$E - G \sharp - B$$

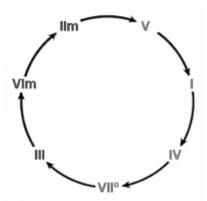
to these notes:

$$A - C - E$$

Now the relationship of the note G# in the E major chord (the chord being left behind) with respect to the root note A (the foundation note) in the new chord, A minor, is 7 - 1 (8), a semitone.

The chord progression in the harmonic scale therefore becomes III – VIm (instead of IIIm – VIm). Now the chord change has a strong directional quality (Figure 52).





In the key of C major / A minor, when you play the chord changes, you can easily sense that the chord progression E – Am has much stronger directed quality than Em – Am.

To generalize, any descending fifth progression of two chords must have a major triad as its first chord in order to impart strong directed motion that terminates in a feeling of resolution. The second chord may be either a major or minor triad.

For instance, if you want to convey a feeling of strong directed motion to the chord progression IIm - V (e.g., Dm - G), you have to change the IIm to II, converting the progression to II - V (e.g., D - G).

VOICE LEADING, COUNTERPOINT, AND ALL THAT

Voice leading refers to continuity in the way one note moves successively to the next—such as the notes of one chord moving ("leading") to the notes of the next chord. It's also called part writing because a "voice" is also called a "part," such as the "guitar part" or the "bass part" or the "lead vocal part."

You usually associate voice leading with counterpoint —the musical technique of writing or playing two or more "voices" as melodies that move simultaneously. J. S. Bach's fugues, for instance. Or rounds, such as "Row Row Row Your Boat Gently Down the Stream" or "Three Blind Mice" or "Frere Jacques (Are You Sleeping?)." That's counterpoint. Voice leading refers to how those various melodic lines behave with respect to each other. For example, if three different melodic lines are moving

together, each contributes one note to a continuously changing three-note chord.

Composers tend to heed certain maxims of counterpoint, such

- Voices that move in parallel third or sixth intervals sound fine—go ahead and use 'em.
- · Voices that move in parallel fifths or octaves sound bad-avoid 'em.
- A major seventh (leading tone) should ascend to the octave.
- A flat seventh should descend to the sixth.

And so on.

Bands or groups that perform harmony vocals tend to observe these rules when they work out the harmony parts—even though the singers may not realize it.

You can't really separate counterpoint from harmony. Even if you've never heard of voice leading as it applies in counterpoint, you've almost certainly used it in your own music.

For example, when a backup singer sings harmony "by ear" to the lead vocal line, he or she uses contrapuntal motion.

- It's *parallel motion* when the lead and harmony voices move together, separated by the same type of interval, such as major and minor thirds, or major and minor sixths.
- It's **similar motion** when the lead and harmony voices move together, but are separated by varying types of intervals.
- It's *oblique motion* when one voice or part remains at the same pitch while the other moves upwards or downwards.
- It's *contrary motion* when one voice moves down the scale while the other moves up.

6.6.12

HARMONIC MOTION AND "MUSICAL PUNCTUATION" (CADENCE)

That dang harmonic scale still isn't quite finished. Before completing it, now's the time to introduce an important component of musical structure. (Much more on structure in Chapter 8.)

As you no doubt know, small groups of notes and chords form musical units (usually two to eight bars) called phrases. These units combine into larger structures such as periods, verses, bridges, choruses, sections, movements, and so on.

Musical structure parallels the organization of verbal discourse, with its phrases, sentences, stanzas, and paragraphs. That's not surprising, considering the intimate linkage in the brain between music and language.

The resolution at the end of a musical phrase is called a cadence. A cadence has melodic, rhythmic, and harmonic properties. It normally signals a return to the prevailing tonal centre.

By a wide margin, the descending fifth progression, V - I, is the most common, most important, and strongest harmonic cadence in music. When a musical phrase ends with a V – I progression, it sounds like "the end"—the end of that phrase, verse, chorus, or whatever the prevailing structure may be.

The V – I cadence has quite a few names:

- Full close
- Full cadence
- · Perfect cadence
- · Perfect close
- Authentic cadence
- Dominant cadence
- Final cadence

(They couldn't make up their minds.) Other cadences include:

- Deceptive cadences such as V VIm and V IV. They're called "deceptive" because your brain expects to hear V – I, but gets "deceived," and hears V – VIm or V – IV instead. This prolongs and heightens the expectation of eventually getting to the tonic chord.
- Imperfect (incomplete) cadences such as I V and II V. When a phrase ends with a progression like this, your brain knows it ain't the end yet, and fully expects the music to continue to a more "final-sounding" resolution..

Plagal cadence, IV – I, so called because this is the "amen" sung at the conclusion of a hymn.

But V – I is the only cadence in music in which directed tension gets completely resolved.

The V chord is known as the dominant chord. (The female V chord is known as the dominatrix chord.) That's because it's through the V chord that the I chord derives its power as the tonal chord.

The V chord dominates harmonic action through its exclusive directional relationship with the tonic chord. If you were playing musical chess, the V chord would be the queen (the most powerful player on the board) and the I chord would be the king.

The V – I cadential progression maintains tonality in the midst of a maelstrom of rapidly changing melodic intervals and shifting harmonic tensions.

In melody, all scale degrees have both tension and direction with respect to the tonic note (except the tonic note itself, of course). But in harmony ...

- Only one harmonic degree, the V chord, has both tension and direction with respect to the tonic.
- Only one harmonic degree, the tonic chord in root position, has no tension and no direction.
- All other chords have tension but no direction with respect to the prevailing tonality.

The restful, balanced tonic chord makes possible the necessary contrast that gives all the other chords their edgy, restless, tense, and exciting qualities.

For example, in the key of C major, the F major chord, even though it's a simple triad, has tension, simply because it's not the tonic chord.

The constituent notes of the F major chord belong comfortably in the key of C major. But playing the F major chord does not point your brain back to the tonic chord, C major.

Same goes for the other chords in Figure 51 above—except G major. As the V chord, it's the only chord that points directly at the C chord.

The chord movement V – I serves pretty much the same punctuation function in music as the period does in written language. In music, a cadence marks the end of a phrase. It's a definite break, usually followed by a period of several seconds before the next phrase starts.

Spoken language does not have an equivalent to music's cadence. When you talk, you use phrases and sentences, of course, but you don't pause for several seconds at the end of every phrase and sentence. You just keep on talking until you're finished.

IMPORTANT:

- In a spoken conversation, you don't need to remember and keep track of every word because mentalese records the gist. Each word has symbolic (referential) meaning that relates to your already-memorized vocabulary of words.
- But in music, you do need to structure the music so that the listener can keep track of the phrases as they unfold in time because music does not carry referential meaning. You need to repeat phrases often, and you need to pause between phrases, usually via cadences. Without cadences in music, your brain has a hard time taking it all in.

That's one function of the cadence. The other main one is to reinforce tonality. In a full cadence, the melody usually comes to rest on the tonic note, a longerthan-usual note in an emphatic metrical position. These emphatic characteristics remind the brain which note is the tonal centre.

An imperfect cadence (also called a half cadence or partial cadence) creates a sense of expectation. You've only stopped at a roadhouse for a burger and fries, but home is coming up, a little farther up the road. Often at the end of the next phrase. When a full cadence does not appear at the end of the next phrase, the brain really begins to wonder where things are going.

You can easily hear cadences performing their functions in any well-structured popular song, such as "Happy Birthday" (Figure 53), which has the following cadences:

> I - VV — I I - IV

FIGURE 53 Cadences in a Popular Song: "Happy Birthday"

	Нарру		
1	V (imperfect cadence)		
birthday to	you.	Нарру	
v	I (full cadence)		
birthday to	you.	Нарру	
ı	IV (imperfect cadence)		
birthday dear	El - vis.	Нарру	
1 V	I (full cadence)		
birthday to	you.		

It's not that V - I is always used as a period or full stop. In music, the V - Icadence also shows up in many subtle, often transient ways, depending on the musical context.

Deceptive and imperfect cadences serve roughly similar functions in music as commas and semicolons serve in written language. But, again, no equivalent exists in spoken language.

In the minor mode, the chord progression III – VIm serves as the "V – I" (the "perfect cadence") equivalent, because scale degree 6 of the major mode is the tonic note of the minor mode.

Enough about cadences, already. It's almost time to move on to the final tweak of the harmonic scale. After which it's on to the fun stuff (finally): how to use harmonic scales to create beautiful, powerful chord progressions. With lots of examples in the form of some of the world's greatest songs.

6.7

Inside the Circular Harmonic Scale

6.7.1

THE PROBLEM OF HARMONIC AMBIGUITY

When you play two major chords a fifth progression apart, an ambiguity arises. Here's a little experiment to try. Play this progression of major chords:

$$C-G-C$$
 - pause - $G-C-G$ - pause - $G-C-G$

You're playing exactly the same two chords. But which key are you in, C major or G major?

The progression appears to start out in the key of C major, then seems to change to G major. Or does it? You can't really be sure.

The problem is that all major triads are consonances. So your poor brain has trouble identifying which of the two chords is the tonic chord.

Music depends for its vitality on establishing tonality, then disturbing it, then recovering it. Just like drama. If it's done right, music is drama. You start out in some sort of "normal" situation. Then someone or something comes along to upset things—which makes the situation dramatically interesting.

As every dramatist knows, you cannot wreak delicious havoc upon an established order unless you first establish the order upon which you can wreak the delicious havoc.

In music, you first have to establish order—tonality—unambiguously before you can disturb it. If you don't establish tonality, your brain has no context in which to process subsequent sonic information.

If you just play random chords, the music sounds just as unpalatable as a tune sounds if it's based on a random scale. (Recall the imaginary chalk marks on the cello fingerboard.)

Chords and scales only sound coherent if they're organized in accordance with the simple frequency ratios that your brain has evolved to comprehend.

In the above example, C - G - C – pause – etc., tonality is not established. The C major chord could be the I chord if the key is C. Or it could be the IV chord if the key is G. And the G major chord could be the I chord if the key is G. Or it could be the V chord if the key is C.

Ambiguity prevails.

6.7.2

DISSONANCE TO THE RESCUE!

Good music works like good story-telling. There's conflict, suspense, intrigue. That's the function of dissonant harmony. As long as there's dissonance, you don't feel a sense of finality or resolution. So the brain expects more musical story-telling and an eventual release from suspense.

Resolution only comes with a return to scale degree 1, the tonic note (the centre of gravity) and the simple non-dissonant major triad. This usually happens periodically throughout the song, not only once at the end.

But if it happens too much and too often, the chord progression gets boring. Like leaving home but never venturing more than a few hundred metres before returning home.

The other extreme is going away for too long a time, getting lost and never finding your way back home.

So, in good songwriting, you have to know how much consonant harmony to balance with dissonant harmony. You want to make things interesting, but not so "interesting" that following the music gets so difficult and confusing that the listener

Getting back to the problem of ambiguity inherent in the progression ...

$$C-G-C$$
 - pause - $G-C-G$ - pause - $G-C-G$

... fortunately, there's an easy fix. Just turn the V chord into a dissonant chord.

In the above example, if the G major chord were converted into a dissonant chord, your brain would know for sure that the key could not possibly be G major. That's because the I chord is always a consonant triad.

Recall that there are only two basic types of chords, namely, triads and sevenths. All triads (except diminished and augmented) are consonant. All seventh chords are dissonant because they all contain at least one interval that arises from a complex frequency ratio.

So, to convert that consonant V chord to a dissonant chord, the simplest thing to do is to add another note, converting it into a dissonant V7 chord ("five-seventh," in Nashville Number parlance).

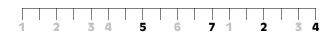
6.7.3

THE DOMINATOR: WHY THE V7 CHORD **CONTROLS HARMONY**

Figure 54 below shows the four notes that comprise the V7 chord. This chord has three internal intervals:

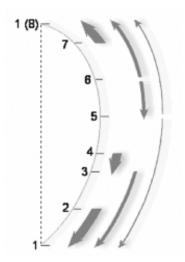
- 1. Major third (5-7, four semitones)
- 2. Minor third (7 2, three semitones)
- 3. Minor third (2-4, three semitones)

FIGURE 54 Notes of the V7 Chord: Scale Degrees 5, 7, 2, and 4



The V7 chord has some remarkable properties. Compare Figure 54 above with Figure 55 below:

FIGURE 55 Interval Dynamics



- The V7 chord contains the first note of all three of the most highly unbalanced intervals—scale degrees 2, 4, and 7; and
- The I chord contains the second note of all three of these intervals—scale degrees 1, 3, and 1 (8).

That's why the V7 chord desperately seeks to resolve to the I chord. It's down on its knees in the dirt, its horse having bolted, weeping and pleading, "Resolve me, resolve me."

(The V7 chord also seeks to resolve to the Im chord, but not quite as strongly. The Im chord has that \(\beta \) note, so the distance from the 4 note to the \(\beta \) is a whole tone instead of a semitone.)

When you progress from G7 to C major, you move from these notes:

$$G-B-D-F$$

to these notes:

$$C-E-G$$

1. The scale relationship of the note B in the G7 chord (the chord being left behind) with respect to the root note C (the foundation note) in the new chord, C major, is 7 - 1 (8).

Your brain feels a strong sense of satisfaction when the note B in the G7 chord resolves to the root note C in the new chord, C major.

2. Similarly, the scale relationship of the note D in the G7 chord (the chord being left behind) with respect to the root note C in the new chord, C major, is 2 - 1.

Your brain feels a strong sense of satisfaction when the note D in the G7 chord resolves to the root note C in the new chord, C major.

3. Finally, the scale relationship of the note F in the G7 chord (the chord being left behind) with respect to the middle note E in the new triad, C major, is 4 -3.

Your brain feels a strong sense of satisfaction when the note F in the G7 chord resolves to the middle note E in the new triad, C major.

No wonder, then, that these three simultaneous moves:

- B moving up to C(7-1),
- D moving down to C(2-1), and
- F moving down to E (4-3),

combine to provide your brain with a feeling of "perfect" cadence.

The V7 chord also contains that most unstable of all intervals, the pitchfork-toting tritone. It's the interval formed by the fourth and seventh notes of the scale.

As if that weren't enough, the V7 chord subsumes the entire unstable diminished triad (VII°)—scale degrees 7, 2, and 4.

All of this makes the V7 chord ...

- Highly unbalanced and dissonant, and at the same time
- Strongly focussed, directed at the tonic centre, the I chord.

The V7 chord is the only chord in harmony capable of establishing tonality all by itself. It doesn't even need the I chord to do it!

The moment your brain hears a single V7 chord, without any other musical reference, without any reference whatsoever to the tonic chord or even the tonic note—the instant that V7 chord sounds, your brain knows where the dynamic centre is. It knows what the key is.

When the seventh is added to the V chord, the chord's name changes from the dominant chord to the dominant seventh chord.

Try that little experiment with the C and G chords again, but this time, substitute G7 for G, like this:

$$C - G7 - C - pause - G7 - C - G7 - pause - G7 - C - G7$$

Adding that seventh makes all the difference in the world. There's no ambiguity whatsoever. The key can only be C major.

The dominant seventh chord (V7) assumes its "dominant seventh" powers only if it's a major V chord with the seventh note added. If you add the seventh note to a minor V chord (such as Gm, changing it to Gm7), the minor seventh chord does not become a dominant seventh, thanks to the \(\beta \) note in the Gm7 chord. That \(\beta \) does a couple of things to sabotage the dominant seventh quality:

- It changes 7-1 (8) to 5-1 (8) with respect to the tonic note, C. The leading tone disappears, removing directionality.
- It removes the tritone, making the chord much more stable-sounding.

That's why the dominant seventh chord of a minor key is a major V chord with the seventh note added. Just like the dominant seventh chord of a major key.

If you were to hear only the single dominant seventh chord G7, without reference to any other chord (unlike the above "C-G7-C" example), the key could be either C major or C minor, because G7 is the dominant seventh of both keys. These are called parallel keys. (More on this later in the chapter, in the discussion of various types of modulation.)

6.7.4

LAST TWEAKS OF THE HARMONIC SCALE

In light of all this, it's now possible to make three more adjustments to the harmonic scale, finalizing it.

- 1. The V chord must be changed to V7, the dominant seventh, so that it points unambiguously to I, the tonic chord of the major key.
- 2. Similarly, the III chord must be changed to III7, the dominant seventh, so that it points unambiguously to VIm, the tonic chord of the relative minor key.
- 3. And finally, since the harmonic scale subsumes the basic chords of *two* keys, a major key and its relative minor, it would help to identify the two tonic chords.

As for the VII^o chord, it's always acutely dissonant, unbalanced. It can either be left it as it is or changed to a diminished seventh chord (VII°7). It doesn't really matter. Either way, the chord remains eminently unstable.

One interesting thing about the VII° chord. Because the four-note dominant seventh (V7) contains all three notes of the VIIo chord (and three out of four notes of the VII°7 chord), you can often substitute the VII° or VII°7 chord in place of the V7 chord to create a striking harmonic effect.

By the way, the IV chord is called the *subdominant chord* of the major key because, even though it only contains notes from the major scale and forms the only other major triad (besides the I and V triads), the IV chord does not have "dominant" power to focus harmonic traffic towards the tonic, the way the V7 chord does.

As a major triad containing two notes not found in the other major triads, the IV chord belongs with I and V7 as one of the three basic chords of the major key. But, since it doesn't have dominant power, it's necessarily "subdominant," like Deputy Fester.

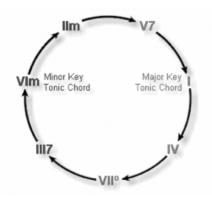
The IIm chord serves as the subdominant of the relative minor key and belongs with VIm and III7 as one of the three basic chords of the minor key.

6.7.5

THE HARMONIC SCALE: FINAL ("DEFAULT") **VERSION**

At last, with the final revisions in place, it's show time for the harmonic scale (Figure 56).

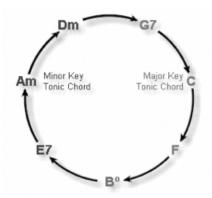
FIGURE 56 Harmonic Scale ("Default" Version)



In a little while, you'll learn how to creatively mess with the "default" version of the harmonic scale—customize it to create compelling chord progressions.

To try out the default version of the harmonic scale, once again swap the Nashville Numbers for the chords of the keys of C major and A minor (Figure 57):

FIGURE 57 Harmonic Scale ("Default" Version): Key of C Major / A Minor



In the sections ahead, you will learn how to use harmonic scales the way you use melodic scales (major or minor).

When you write a tune, do you simply go up and down the scale without skipping any notes? Without repeating notes? Without doubling back? Without reaching outside the scale to grab chromatic notes? Of course not! You'd never dream of limiting your melodic creativity that way.

Similarly, when you use a harmonic scale, you will not simply go round the circle clockwise, without skipping any chords, without doubling back, without grabbing chords from outside the harmonic scale.

A harmonic scale is not some formula that you have to adhere to rigidly, any more than a major scale is a rigid formula. A harmonic scale is just a scale, like a melodic scale. If you use harmonic scales intelligently, your music will just get better and better.

Both melodic and harmonic scales provide coherent frameworks that enable you to write music of infinite variety without sacrificing unity. Ultimately, that's why songwriters and composers use scales of any description, melodic or harmonic.

Your brain—and the collective brain of your audience—has evolved to reject tonal confusion and accept the tonal order (founded on simple frequency ratios) inherent in the octave, diatonic scales, the triad, and the harmonic scales.

6.7.6

TWO DIFFERENT ANIMALS: COMPARING THE CIRCLE OF FIFTHS WITH THE HARMONIC SCALE

You might have noticed a vague resemblance between the Circle of Fifths and the circular harmonic scale. Except for their shape, the two are totally different. Different in structure, different in function. Table 44 summarizes the differences.

TABLE 44 Summary of Differences Between the Circle of Fifths and the Harmonic Scale

	Circle of Fifths	Harmonic Scale		
Shape	Circular arrangement of Key signatures.	Circular arrangement of chords.		
Other Names for the Same Thing	Heinichen's Circle of Fifths Modulatory Circle of Fifths Real Circle of Fifths	Key-specific Circle of Fifths Virtual Circle of Fifths NOTE: Do not use these names. They do not reflect reality, and will only confuse you.		
Constituent Elements	Key signatures and letter names of keys.	Chords.		
Number of Constituent Elements	12 key signatures representing 2 keys each.	7 chords.		
Number of Keys Represented	24 keys—12 major keys and 12 relative minor keys.	2 keys—1 major and 1 relative minor key. (There are 12 different circular harmonic scales, one for each <i>pair</i> of keys—major and relative minor.)		
Natural Direction of Motion	Clockwise or counterclockwise.	Clockwise is the "natural" direction.		
Visual Representation of Major and Minor Keys	Represented in parallel. Major and minor keys form concentric circles.	Represented in <i>series</i> . Chords of one major key and one minor key form part of the same circle.		

• To show key • To show the natural direction **Main Purposes** signature formation. of harmonic scale neighbours Proceeding within a single pair of "relative" clockwise, sharps keys. Proceeding clockwise increase by one. resolves harmonic imbalance Proceeding and tension. Proceeding counterclockwise, counterclockwise creates flats increase by one. harmonic imbalance and • To show degree of tension. relatedness of keys • To provide an easy way to to each other. Keys identify third and second adjacent to each progressions. Second other share all the progressions are separated by one position on the circular same scale notes but one, so are musically scale. Third progressions are closely related. Keys separated by two positions. across the circle • To show how dominant and from each other subdominant chords relate to share few of the tonic chords. • To show secondary dominant same scale notes, so are musically remote. chords. • To show how the chords of major and relative minor keys relate to each other. To provide an easy visual means to spot pivot chords for purposes of modulation. Any two harmonic scales, no matter how musically distant their constituent keys, will always have at least two chord roots in common. These chords can be used to pivot smoothly between keys without losing tonal unity.

6.7.7 CIRCLE OF FIFTHS: THE MISTAKE OF TREATING KEYS AS "CHORDS"

For generations, students, songwriters, and even music teachers, unaware of the harmonic scale and how it works, have used the Circle of Fifths as a crude harmony-organizing tool.

Big mistake.

If you treat the key names in the Circle of Fifths as chord names and proceed around the Circle of Fifths counterclockwise, you get descending fifth progressions. (Such progressions even have a name: Circle-of-Fifth progressions.)

This is counter-intuitive, because the "natural" direction of the hands of a clock is obviously "clockwise" (the 12 positions of the Circle of Fifths are arranged to resemble a clock face). But apart from that, the Circle of Fifths has several major disadvantages as a harmonic scale stand-in:

- 1. No key-specific organizing framework. As you progress around the Circle of Fifths, you exit the key after the second chord! And you don't return unless you go all the way round the circle. (More on this in a moment.)
- 2. No connection between the chords of a major key and the chords of its relative minor. Not only is the bridging diminished chord missing, but the 12 minor chords are visually organized in their own separate circle. Again, if you start a chord progression in any given minor key, you exit the key after two chords and don't return until you go all the way round the circle.
- 3. No identification of dominant sevenths or subdominant chords for any given
- 4. No way to identify third and second progressions.
- 5. No way to identify pivot chords for purposes of modulation.

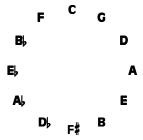
The Circle of Fifths has its uses, but not for showing pathways to meaningful, coherent chord progressions and harmonic movement.

Many musicians mistakenly think that the Circle of Fifths actually has something to do with chord progressions. Even authors of books on songwriting and music theory make this mistake, propagating rubbish and confusing their readers to no end.

To be clear: the Circle of Fifths shows key signatures and key relations—but not chord relations.

Here's an example of what happens when you treat the elements around the clock face of the Circle of Fifths as chords instead of keys. Presumably, you would want to progress around the Circle of Fifths as though it's a big circular chord progression. To simplify matters, consider the outer circle only, the elements that would be the major "chords" if the Circle of Fifths had anything to do with chords (Figure 58):

FIGURE 58 Circle of Fifths: Outer Circle Only



Start at the top of the Circle of Fifths with the first chord, which is C, the tonic chord in the key of C. Then, moving counter-clockwise around the circle, progress to the next "chord," which is F. Now you have a perfectly good two-chord progression in the key of C, namely C progressing to F.

So far, so good.

However (continuing counter-clockwise), the next "chord" you progress to is B_b. Now you've got a problem. The chord B_b is not a chord in the key of C. Therefore, at this point you've actually exited the key of C.

As you progress the rest of the way round the Circle of Fifths, you do not re-enter the key of C until you get to the "chord" G.

Clearly, then, any notion that the elements of the Circle of Fifths having anything to do with chord progressions is wrong. The Circle of Fifths shows relationships among and between keys, not relationships among and between chords within a given key.

To summarize, the Circle of Fifths does not work as a chord progression device. That's the job of the harmonic scale—which also happens to be circular in shape, but has no functional relationship with the Circle of Fifths.

6.7.8 COMPARING MELODIC SCALES WITH HARMONIC **S**CALES

Before discussing how to make practical use of harmonic scales for fun and profit, here's a summary of the differences between melodic scales and harmonic scales (Table 45):

TABLE 45 Summary of Differences Between Melodic Scales and Harmonic Scales

	Melodic Scales	Harmonic Scales
Scale Units	Notes (pitches).	Chords (triads, sevenths, etc.).
Number of Units in Scale	Normally 5 to 7 notes, not including repetition of the octave note.	Always 7 chords. However, each harmonic scale position may be occupied by one of numerous variants of the "default" chord.
Number of Scale Types	Many types, including major and minor diatonic, pentatonic, modal, Indian, Arabic, etc.	Only one type: the harmonic scale.
Number of Scales in Western Tonal System	24 in total: one melodic scale for each major key and one for each minor key. (Note: there are several minor scale variants: natural minor, melodic minor, harmonic minor.)	12 in total: one harmonic scale for each pair of relative keys—major and relative minor.
Scale Degree Numerical Labels	Arabic numbers represent scaledegree notes. For example, the notes of the diatonic scale are represented as 1, 2, 3, 4, 5, 6, 7, 1(8).	Nashville Number System: Roman numerals represent chords named for their scale-degree roots. Alphabetic letters, Arabic numbers and other symbols represent chord functions. For example: I Major triad with root of scale degree 1 Ilm Minor triad with root of scale degree 2 V7 Dominant seventh chord with root of scale degree 5 VII° Diminished chord with "root" of scale degree 7 (in reality, diminished chords are rootless)

Scale Degree Alphabetical Labels	Alphabetic letters represent the notes of a specific melodic scale. Accidentals follow the letter-names of the notes where applicable. For example, the D major scale is: D, E, F‡, G, A, B, C‡, D.	Alphabetic letters represent the chords of a specific harmonic scale. Accidentals follow letter-names of chords where applicable. Alphabetic letters, Arabic numbers and other symbols are then added, representing chord functions. For example, the harmonic scale for the key of D major and its relative minor is: D, G, C‡°, F‡7, Bm, Em, A7, D.		
Normal Interval Movement Between Adjacent Scale Degrees	Melodic interval of a semitone or a tone.	Harmonic interval of a fifth progression.		
Natural Direction of Movement	Ascending or descending are equally natural.	Descending only (clockwise) is natural.		
Visual Representation	Vertical curve:	One-way circle: Vim Minor Key Major Key Tonic Chord VIII7		