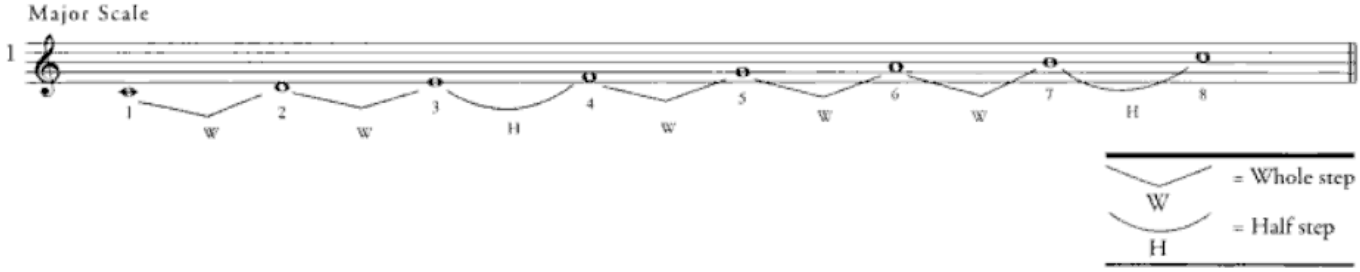
CHAPTER 1 YOUR BASIC TOOLBOX

Scales

The first thing we'll pull out of our toolbox is *scales*. Most scales in Western music are made up of a specific pattern of *half steps* and *whole steps*. A half step is the shortest distance between two notes. Two half steps make a whole step.

Major Scales

The *major scale*, shown here in the key of C, has the following pattern of half and whole steps. Notice the numbers underneath; these are *degrees*, which show each note's position within the scale.



A NOTE ABOUT FINGERING SCALES

Before you actually begin to play the major scales on page 9, it's worth taking a moment to develop some strategies for fingering. Most effective scale fingerings are based on a few basic principles that can be applied to virtually any scale.

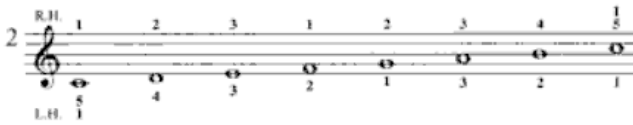
- Most traditional scale fingerings are based on the principle of efficiency—that is, minimizing unnecessary motion such as excessive finger crossing. If you cross over (or under) every two notes, you're probably not using the most effective fingering; if you find yourself running out of fingers, you're probably not crossing often enough.
- Avoid using your thumb on black keys. Finger crossing almost always involves the thumb, and if the thumb avoids black keys, the chances of getting tangled are greatly lessened. Most standard fingerings, especially for scales with many black keys, ensure that the thumb always lands on a white key.
- When playing scales, use your 5th finger only on the first note (left hand) or last note (right hand) of the scale. Crossing to or from the 5th finger will land you in an awkward position.
- Look ahead as you play and watch for signposts that suggest fingering strategies. Take note, for example, of how many notes are left in the passage, or how many black keys come before the next white key. Observations like these will help you determine what you need to do to avoid running out of fingers or crossing too often.
- Similar scales often have similar fingerings. Unless it involves a violation of the previous guidelines, you can often apply the fingering for one scale to a different scale that begins on the same note. If you know the fingering for the C Major scale, for example, you can use it for most other seven-note scales that begin on C.

The main principle to keep in mind when it comes to fingering is that using the correct fingers for the job at hand will give you the best results. At the same time, it's important that you stay alert to the unique fingering demands of certain situations. For instance, when scales are used in an improvisation or in the context of a melody, traditional scale fingerings may have to be adjusted accordingly.

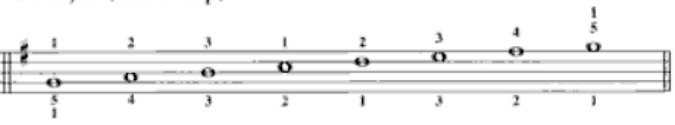
Below are all 12 major scales, including their traditional fingerings. Right-hand fingerings are shown above the staff; left-hand fingerings are shown below the staff. Notice that in some instances, two different finger numbers are shown for the same note. Use the number closer to the staff for endings or beginnings of scales, and the other number for scales that continue beyond one octave.

R.H. = Right Hand
L.H. = Left Hand

C Major (no accidentals)

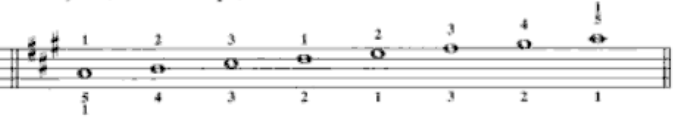


G Major (one sharp)

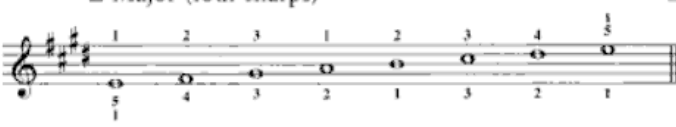


D Major (two sharps)

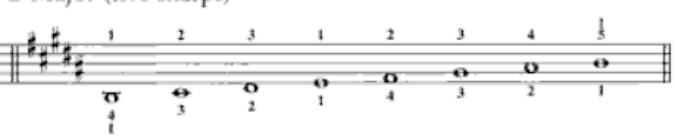
A Major (three sharps)



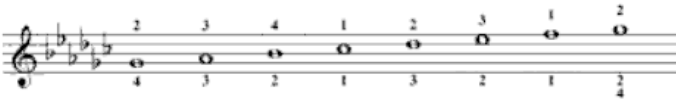
E Major (four sharps)



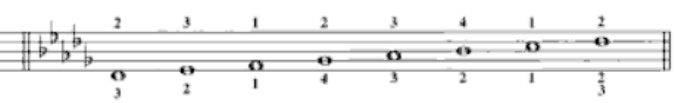
B Major (five sharps)



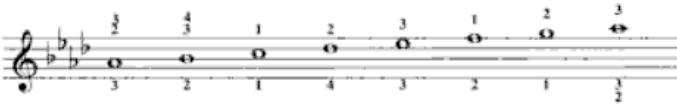
G♭ Major (six flats)



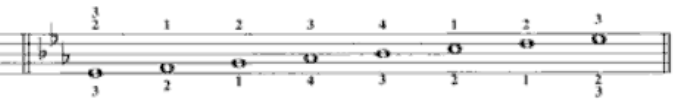
D♭ Major (five flats)



A♭ Major (four flats)

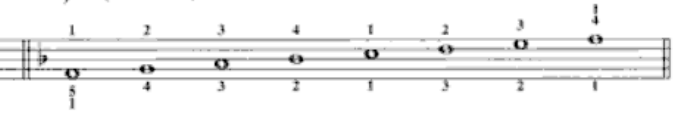


E♭ Major (three flats)



B♭ Major (two flats)

F Major (one flat)



Other scales and keys can be used when *enharmonic equivalents* are employed. An enharmonic equivalent is a note that has a different name but sounds the same. For example, the enharmonic equivalent of G♭ is F♯. So, there can be a key of F♯ which has six sharps (F♯, C♯, G♯, D♯, A♯, E♯). Also, the key of B could be enharmonically respelled as C♭ (seven flats: B♭, E♭, A♭, D♭, G♭, C♭, F♭).

Minor Scales

Minor scale is actually a general reference to several different scale forms. The most basic form of the minor scale is the *natural minor,* which you can think of as a major scale with a lowered 3rd (♭3), lowered 6th (♭6) and lowered 7th (♭7).

Natural Minor Scale

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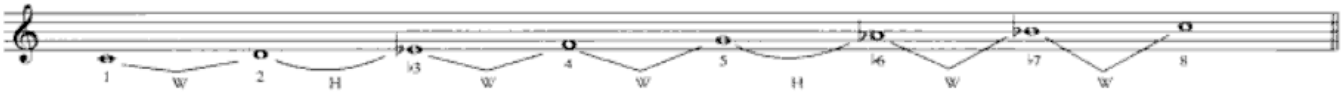

You can think of the *harmonic minor* scale as a major scale with ♭3 and ♭6. As the name implies, harmonic minor has traditionally been the form of the minor scale from which harmonies are most often derived, though it's also used in melodic contexts.

Harmonic Minor Scale

4

The *melodic minor* scale uses one form when ascending and another when descending. In its ascending form, you can think of melodic minor as a major scale with a ♭3. In its descending form, melodic minor is the same as natural minor (♭3, ♭6 and ♭7). When only the ascending form is used, the scale is often called the *jazz minor* scale.

Melodic Minor Scale

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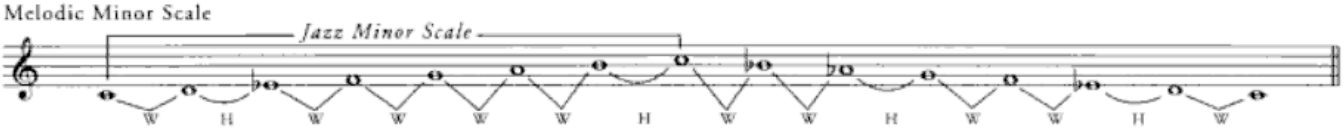
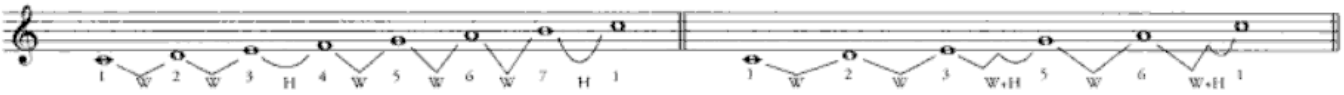


Pentatonic Scales

A *pentatonic scale* is any scale made up of five different notes. Two forms of pentatonic are especially common in jazz. In relation to the major, the *major pentatonic scale* is made up of scale degrees 1, 2, 3, 5 and 6. You can also think of this scale as a major scale with scale degrees 4 and 7 omitted.

C Major C Major Pentatonic

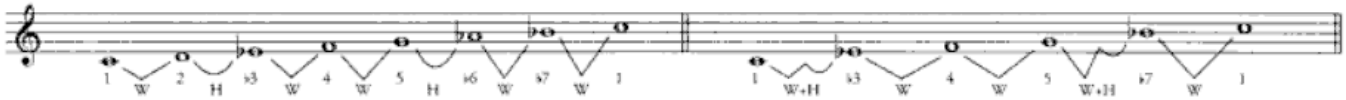
6



The *minor pentatonic scale* is made up of scale degrees 1, ♭3, 4, 5 and ♭7. It can also be thought of as a natural minor scale with scale degrees 2 and 6 omitted.

C Natural Minor C Minor Pentatonic

7

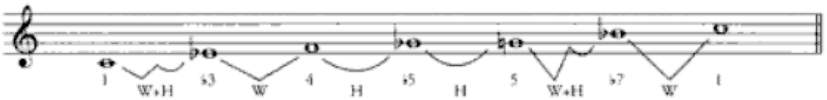


Blues Scale

In relation to the major scale, the blues scale is made up of scale degrees 1, ♭3, 4, ♭5, 5 and ♭7. You can also think of the blues scale as a minor pentatonic scale with the addition of ♭5.

C Blues

8



Scale Variations

A number of scales have "alternate" versions that can add color and interest to your improvisations. Example 9 shows two common scale variations.

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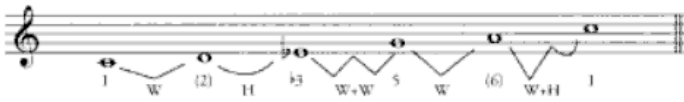
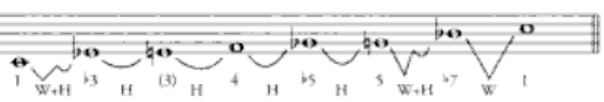
C Minor Pentatonic (Alternate Version)



C Blues (Alternate Version)



INTERVALS

An *interval* is the measure of distance between two notes. The most basic building blocks for intervals are half steps and whole steps. The intervals we use also have more specific names.

The *class* of an interval is first defined by its size, using a numerical name. For example, to determine the interval class of D up to G, count all the different note names between those two notes (ignoring for now whether they are natural, sharp or flat). In this case, you have D, E, F and G. That's four, so you have some kind of 4th.

The interval's name is then refined by giving it a *quality:* major, minor, perfect, augmented or diminished. The chart below shows the most basic intervals. In addition, any perfect or major interval can be made augmented by making it a half step larger. Any perfect or minor interval can be made diminished by making it a half step smaller. The numerical name can be altered with an accidental to indicate the quality. For example, in C, the second note of the major scale is D, (a major 2nd), which can also be called "2". D♭, a minor second above C, can be called ♭2 ("flat two"); D♯, an augmented 2nd above C, can be called ♯2 ("sharp two").

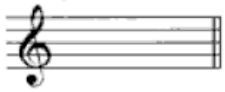
For each of the intervals below, you're given five pieces of information: the numerical name, the "formal" name, the abbreviation of that name, the size in half steps and an example beginning on the note C.

Numerical Name	Interval Name	Abbreviated Name	Number of Half Steps	Intervals Above Middle C
1	Perfect Unison	PerU	0	
♭2	minor 2nd	min2	1	
2	Major 2nd	Maj2	2	
♭3	minor 3rd	min3	3	
3	Major 3rd	Maj3	4	
4	Perfect 4th	Per4	5	
♯4/♭5 (tritone)	Augmented 4th diminished 5th	Aug4/dim5	6	
5	Perfect 5th	Per5	7	
♯5/♭6	Augmented 5th minor 6th	Aug5/min6	8	
6	Major 6th	Maj6	9	
♭7	minor 7th	min7	10	
7	Major 7th	Maj7	11	
8	Perfect Octave	Per8	12	

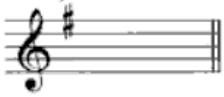
Key Signatures

As you know, the major scale always has the same pattern of whole steps and half steps: W–W–H–W–W–W–H. That's why the major scale always has a certain sound no matter what key it's in. Key signatures tell us which notes in a key have to be raised (with sharps) or lowered (with flats) to retain that sound. These sharps and flats are applied in every octave as long as the key signature is there (and no other accidental, such as a natural sign ♮, has been applied). Sometimes a scale or piece will be minor, not major. If we use the minor key with the same key signature as a major key, we call that the *relative minor*. The relative minor can be found by playing a scale beginning from the 6th degree of its *relative major* scale. For example, if we play a C Major scale starting and ending on A, the 6th degree, we will have A Minor.

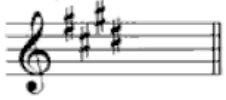
C Major/A Minor



G Major/E Minor

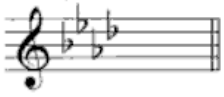


E Major/C♯ Minor

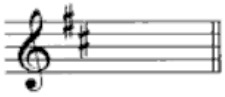


F Major/D Minor

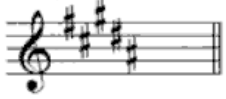
A♭ Major/F Minor



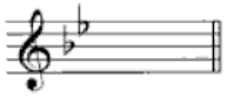
D Major/B Minor



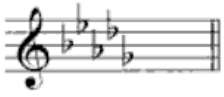
B Major/G♯ Minor



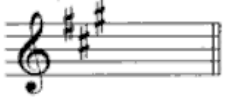
B♭ Major/G Minor



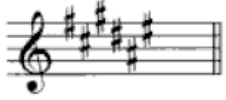
D♭ Major/B♭ Minor



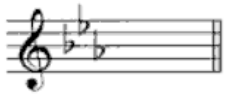
A Major/F♯ Minor



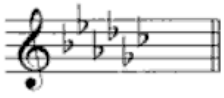
F♯ Major/D♯ Minor



E♭ Major/C Minor

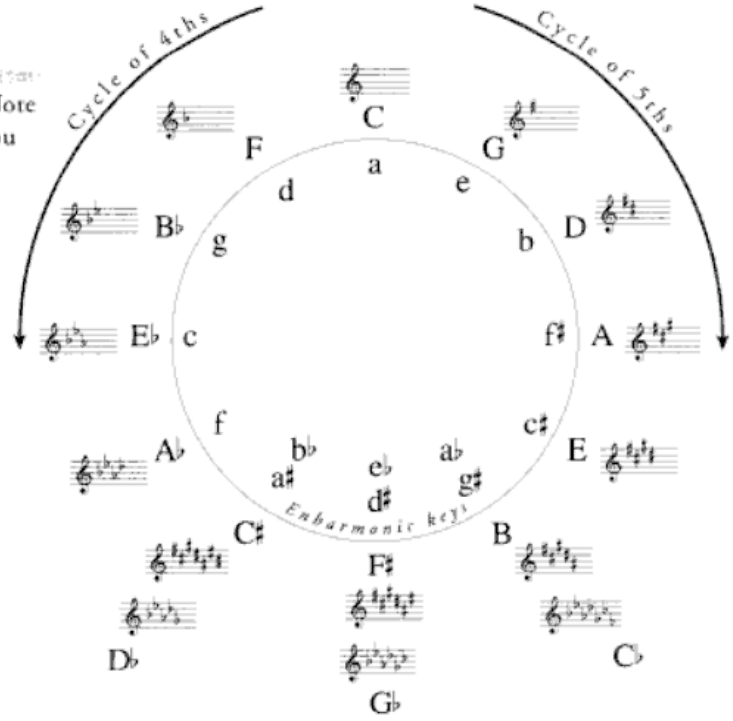


G♭ Major/E♭ Minor



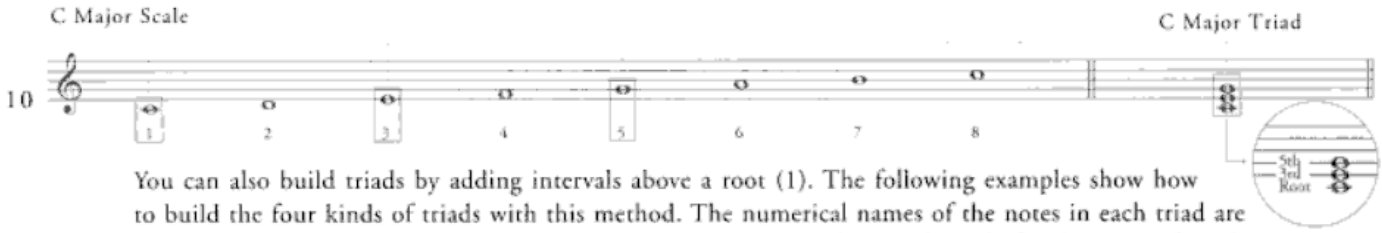
Cycle of 5ths

Take a look at the key signatures above. Note that with the sharp keys, every time you move up a 5th, you add a sharp. With the flat keys, every time you move up a 5th, you subtract a flat. This brings us to the *cycle of 5ths*, (the cycle of 4ths if you're moving counterclockwise) or, for the visually inclined, the *circle of 5ths* (or 4ths). This cycle organizes key signatures (or tones) in 5ths. Each key is similar to the key next to it on the circle, with a difference of only one sharp or flat. Major keys are on the outside, minor keys are on the inside.



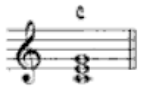
Triads

Triads are three-note chords. There are four kinds of triads: *major*, *minor*, *augmented* and *diminished*. A triad can be built by using every other note of the first five notes of the major scale. For example, starting on C and selecting every other note of the C Major scale will yield C, E and G—a *C Major triad*. Starting from the lowest note (C) and going up, these notes are called the *root*, *3rd* and *5th* of the chord.

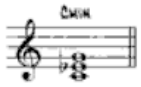


You can also build triads by adding intervals above a root (1). The following examples show how to build the four kinds of triads with this method. The numerical names of the notes in each triad are shown to the right of the music. The numbers can be thought of as the formula for that type of triad.

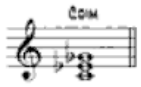
To build any major triad, we use the note a major 3rd above the root (3) and the note a perfect 5th above the root (5).



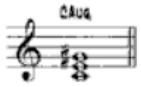
To build a *minor triad*, we lower the 3rd of a major triad (with a flat or a natural sign), leaving the root and 5th the same. This results in a minor 3rd ($\flat$3) and a perfect 5th (5).



To build a *diminished triad*, we lower the 5th of a minor triad, resulting in a minor 3rd ($\flat$3) and a diminished 5th ($\flat$5).



To build an *augmented triad*, we raise the 5th of a major triad (using a sharp or a natural sign), resulting in a major 3rd and an augmented 5th ($5^{\sharp}$).



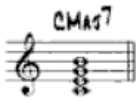
This chart shows the abbreviated symbols you may encounter to notate each type of chord. The first symbol listed for each chord is the one that will be used in this book.

Triad	Possible Symbols in C	Formula
Major	C, CMAJ, CM, CΔ	1,3,5
Minor	CMIN, CMI, CM, C-	1,$\flat$3,5
Diminished	CDIM, C°	1,$\flat$3,$\flat$5
Augmented	CAUG, C+	1,3,$\sharp$5

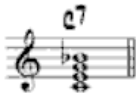
Four-note chords: 7th and 6th chords

While triads are the building blocks of most harmony in the Western world, jazz musicians usually add notes to them, such as 7ths and 6ths, to create other chords. All of the four-note chords below are made by adding a note on top of an existing triad. From the bottom up, the four notes in these chords are called the root, 3rd, 5th and 7th (or 6th, as the case may be).

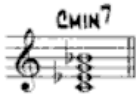
The *major 7th* chord is made by adding a major 7th above the root of a major triad. It can also be thought of as adding a major 3rd above the 5th of a major triad. The formula is 1, 3, 5, 7.



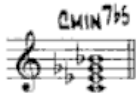
The *dominant 7th* chord is made by adding a minor 7th above the root of a major triad. It can also be thought of as adding a minor 3rd above the 5th of a major triad. The formula is 1, 3, 5, ♭7.



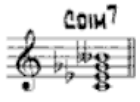
The *minor 7th* chord is made by adding a minor 7th above the root of a minor triad. It can also be thought of as adding a minor 3rd above the 5th of a minor triad. The formula is 1, ♭3, 5, ♭7.



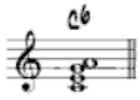
The *minor 7 flat 5* (or *"half-diminished"*) chord is made by adding a minor 7th above the root of a diminished triad. It can also be thought of as adding a major 3rd above the ♭5 of a diminished triad. The name "half-diminished" means that the 5th is diminished, but not the 7th (as opposed to the "fully diminished" chord below). The formula is 1, ♭3, ♭5, ♭7.



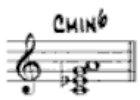
The *diminished 7th* chord is made by adding a diminished 7th above the root of a diminished triad. It can also be thought of as adding a minor 3rd above the ♭5 of a diminished triad. The diminished 7th on top is enharmonically equivalent to a major 6th. The formula is 1, ♭3, ♭5, 𝄫7.



The *major 6th* chord is made by adding a major 6th above the root of a major triad. It can also be thought of as adding a major 2nd above the 5th of a major triad. The formula is 1, 3, 5, 6.



The *minor 6th* chord is made by adding a major 6th above the root of a minor triad. It can also be thought of as adding a major 2nd above the 5th of a minor triad. The formula is 1, ♭3, 5, 6.



The chart below shows the common symbols used for the different types of 7th and 6th chords. As with triads, the first symbol listed for each chord is the one that will be used for the rest of this book.

Triad	Possible Symbols in C	Formula
Major 7	CMAJ7, CM7, C∆7	1,3,5,7
Major 6	C6, CMAJ6, CM6, C∆6	1,3,5,6
Dominant 7	C7	1,3,5,♭7
Minor 7	CMIN7, CMI7, CM7, C-7	1,♭3,5,♭7
Minor 6	CMIN6, CMI6, CM6, C-6	1,♭3,5,6
Minor 7♭5	CMIN7♭5, Cø, CMI7♭5, CM7♭5, C-7♭5	1,♭3,♭5,♭7
Diminished 7	CDIM7, C°	1,♭3,♭5,𝄫7

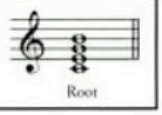
Voicings and Inversions

Voicings

A *voicing* is the specific arrangement of notes in a chord. Any chord can be voiced in multiple ways; for example, we can *double* (repeat), add or omit notes. We can choose the order in which to play the notes, where on the keyboard to play the notes, how to get from one chord to the next and so on. When you hear players say "that pianist has great voicings," or "I'm working on Bill Evans and McCoy Tyner voicings," that is what they are talking about.

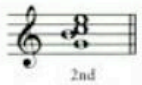
Inversions

The first step on the road to masterful voicings is the mastery of chord *inversions.* As an example, let's look at a C Major 7th (CMaj7) chord. In its "natural state," with the root on the bottom, it is said to be in *root position.*

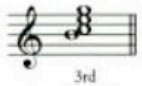


If we play the same chord with the 3rd on the bottom, it is in *1st inversion.*

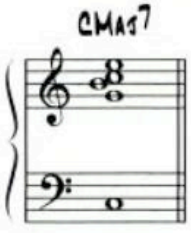
If we play the same chord with the 5th on the bottom, it is in *2nd inversion.*



If we play the same chord with the 7th on the bottom, it is in *3rd inversion.*



Which note you play on the bottom also impacts which note will wind up on top. In a jazz context, we use the top note at least as often as the bottom note in deciding which inversion to use in a given situation. To take it one step further, we can use the concept of inversion as a voicing tool, even with root position chords. If we want to retain the sound of the root on the bottom, but want the flexibility of a different inversion, we can play the inversion of our choice with the right hand and lay down the root underneath with the left hand. In a group setting, we can play the inversion of our choice with either hand and let the bassist play the root.

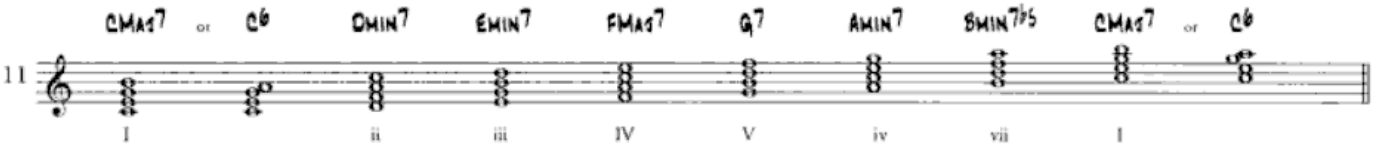


Root position with 2nd inversion in the right hand.

Diatonic Harmony

Diatonic Harmony in Major Keys

Diatonic means "of the scale," so the most basic definition of *diatonic harmony* is the chords built from a particular scale. While diatonic harmony itself isn't an improvisational tool, any jazz improviser must be able to identify the keys to which the chords in a tune relate, and how those chords function in those keys. One way to build these chords is to stack 3rds on each degree of the scale. In the case of 6th chords, you simply add a 6th above the root. (Note that in improvisational situations, 6th chords are often used in place of Maj7 chords.) Below are the diatonic 7th chords in the key of C. Note the use of Roman numerals under the music. They are discussed below.



We use Roman numerals to signify the scale degree a chord is built on, since they're not specific to a particular key. We use uppercase Roman numerals for chords with a major 3rd (major, augmented, major 6, major 7 and dominant 7), and lowercase for those with a minor 3rd (minor, diminished, minor 7, minor 6, minor 7 flat five and diminished 7). Here's a quick review of the Roman numerals you'll need and their Arabic equivalents:

Roman Numeral	Arabic Equivalant
I ..... or i	1
II ..... or ii	2
III ..... or iii	3
IV ..... or iv	4
V ..... or v	5
VI ..... or vi	6
VII ..... or vii	7

Notation using Roman numerals is useful because the kind of chord built on each degree is the same in every key. Here are the diatonic 7 chords that you'll find in every major key:

Degree	Quality
I	Maj7/6
ii	min7
iii	min7
IV	Maj7
V	Dom7
vi	min7
vii	min7♭5

As a tool for memorizing the diatonic chords in every key, make yourself a chart like this:

Key	I	ii	iii	IV	V	vi	vii
C	CMaj7	Dmin7	Emin7	FMaj7	G7	Amin7	Bmin7♭5
G	GMaj7	Amin7	Bmin7	CMaj7	D7	Emin7	F♯min7♭5
Continue through all the keys in the cycle of 5ths.							

Diatonic Harmony in Minor Keys

The most obvious way to find the diatonic 7th chords in a minor key is to look at the relative major key, borrow the chords and shift the Roman numerals. Here are the diatonic 7th chords for A Minor, the relative minor of C Major:

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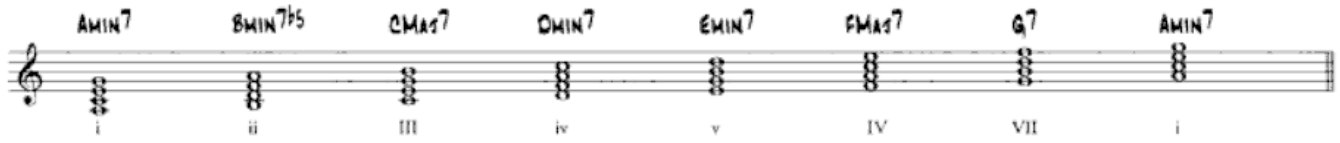

It doesn't end there, however. What you see above is based on the natural minor scale. But as we know, the natural minor is only one of three types of minor scales (see page 10). The primary use of the harmonic minor scale is just as the name implies—it's a scale from which harmonies are derived. This is because it provides a dominant 7 chord on V. Here are diatonic 7 chords of an A Harmonic Minor scale:

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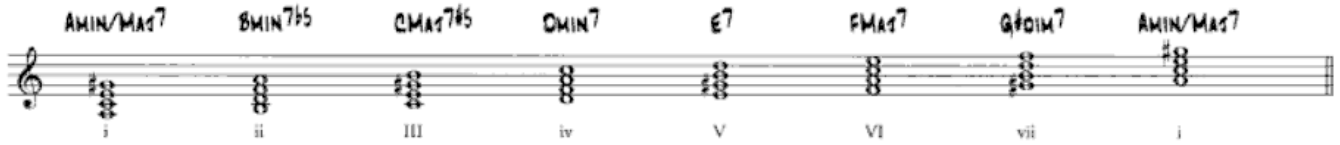

As we can see, the i chord in harmonic minor is a minor chord with a major 7th (min/Maj7 or min$^{\flat}$7) and the III chord is a major 7 chord with a raised 5th (Maj7♯5). These are both unusual chords that sound most appropriate in a very modern setting. We'll examine both of these chords later as we explore modern and non-diatonic harmony.

In real musical situations, chords from both the natural and harmonic minor scales are used side by side—most often, i and III from natural minor, V and vii from harmonic minor, and the ii, iv and VI common to both. Sometimes, a min6 chord is used in place of the min7 i chord.

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