

## Music Theory: Diatonic harmony

This mini-section is designed to get you acquainted with the basics of one of the most fundamental aspects of music theory underpinning a significant proportion of Western Music: diatonic harmony.

### *Why study music theory?*

As an improviser it is generally better not to get too bogged down with the theory behind the music you play. It is very often better to be focused firstly on the sound you are creating and secondly on the visual and tactile shapes you create with your hands on the piano and not worry too much about *how* the music is working. Too much learning from a theoretical standpoint can distract you from more musical concerns and can actually stall your progress as an improviser.

### *However...*

Music theory does have some use! Playing by ear and improvising is at first a bit of a hit and miss affair. Your playing will become gradually more 'hit' and less 'miss' partly as you develop visual and tactile memory of successes and errors. However, a basic intellectual understanding of the music you are playing will also have a very great impact on your 'hit' rate.

It will also help you communicate with other musicians. These concepts and the associated terminology are often discussed when forming arrangements, rehearsing or the 10-seconds you have on a gig to learn the form and changes to a tune that you've never played before from the other musicians!

And how about learning just out of pure curiosity? Music theory is the back side of the world's most intricate, beautifully crafted pocket watch and it can be really fascinating to see how something sonically pleasing can be described intellectually. Learning a steady trickle of relevant music theory to support your playing will be no bad thing. With that in mind, here is the first instalment...

### *What is diatonic harmony?*

Throughout music history, many systems have been developed to organise pitch in such a way that provides a resource for creating music. Perhaps the most enduring and commonly used of these systems is that of *diatonic harmony*. The early stages of development of diatonic harmony grew out of the *diatonic genus* - one of the three *genera* of the Ancient Greeks and was finalised with the arrival of *equal temperament* in the Enlightenment of the 17<sup>th</sup> and 18<sup>th</sup> century.

Here's the heavy explanation...

Modern instruments in the Western World divide the octave into 12 steps (rather confusingly these are actually referred to as *half steps*)– or semi-tones. Under diatonic harmony, a series of these pitches are selected and defined as *diatonic notes*, all others are *chromatic notes*. The selection of these pitches is defined by establishing a *root* or *fundamental* note and selecting notes in a series of whole steps and half steps which remains constant, no matter what fundamental note has been chosen. This series is as follows: W – W – H – W – W – W – H. (W = Whole step; H = Half step)

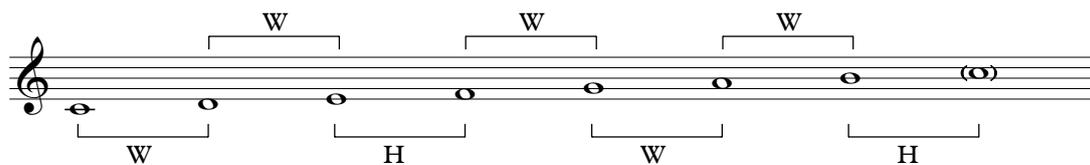
All very technical. But there's an easier way to see this. Diatonic harmony **is the reason that your piano is arranged as it is**, with its particular series of white and black notes. When C is chosen as the fundamental, the white keys on the piano represent the diatonic notes, and the black notes represent the chromatic notes.



You may well recognise this as the C major scale. This is the basis for the entire diatonic harmony system. It has produced more music than any other single system for organising pitch.

Any note can be chosen as the fundamental, meaning that the white notes are not always diatonic, but choosing C as the fundamental keeps things clear to get started.

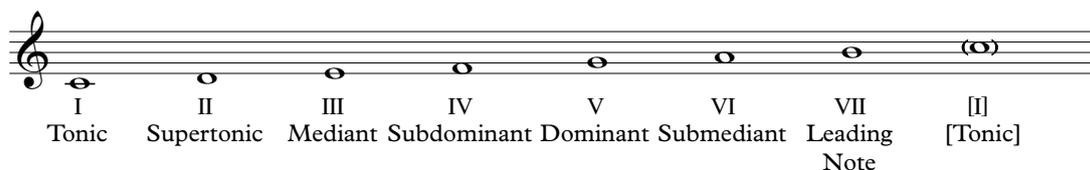
Let's look at the size of each step. Since much of Jazz is dominated by American terminology, the American 'Whole/Half step' (W/H) denomination is used rather than the English 'Tone/Semitone'



Play this through and listen to the subtle dissonances that the half-steps create.

The series in full: W – W – H – W – W – W – H. This series can be used to produce major scales from any other fundamental. If you are not familiar with this, try working out a few other major scales by choosing other notes as the fundamental. G or F are good places to start.

The notes within this newly created 'musical universe' are then attributed particular 'functions' within that universe. It is good to think of these as virtual geographic locations which music can visit during a piece. From any given location, the music can travel easily to some other locations, and with more difficulty to others. These 'locations', or *scale degrees* are given technical names, shown here underneath.



In practice you will only hear a few of these regularly talked about, you will not initially need to remember all of them. Two of these are discussed so often amongst musicians, however, that they are worth knowing about now.

## Tonic

- The tonic is a relatively simple concept to understand. It is the first degree and name of the key in which the music is set at that point. In C major, the tonic is C; in Gb minor, the tonic is Gb etc.
- In diatonic music, the tonic is where the music feels most settled – at ‘home’. Away from the tonic, there is always a sense of tension, however subtle, which is then released by moving back to the tonic. For this reason, much music starts and finishes with the tonic.

Try playing the following simple melodic example and hear the effect of arriving ‘home’ given by the inclusion of tonic.



### Dominant

- The next most important scale degree is the dominant. It is degree 5 of the major scale. In C major, the dominant is G.
- The dominant is an incredibly important musical concept in itself. The dominant creates a tension, which is only fully resolved by returning to the tonic. It has an enormous number of uses, which you will continue to discover for as long as you continue learning and playing music.

Try this melodic example that starts on the tonic, pauses on the dominant before continuing and finishing by jumping from the dominant to the tonic. Notice the effect produced by pausing on the dominant – the musical equivalent of a comma. Note too the effect of the melody moving directly from dominant to tonic – a very decisive musical full stop to bring the music to its end.



Try improvising your own simple melodies, creating a musical comma by pausing on the dominant, continuing for a bar or two and finishing with a dominant-tonic full stop.

These two terms are not just used when talking about melody, however. In fact, they are most commonly employed when talking about the bass part in music. The bass is the most important part in defining the direction that music is travelling in at any given moment.

Listen to the effect of sustaining the dominant in the left hand while the right hand plays a swung melody.



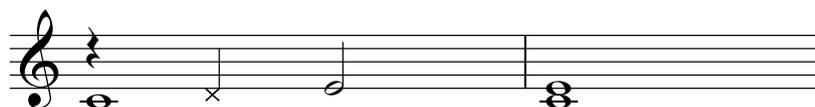
The effect is of steadily increasing tension. Incidentally, this would make a good piano introduction for a tune that begins with CΔ!

### Converting a scale into chords

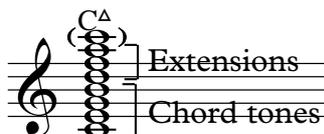
A scale and a chord might seem like two totally different things. In reality the two are just two forms of exactly the same thing. This section shows you how to convert a scale in one or many chords.

Part of the concept of diatonic harmony is that chords are formed in **thirds**. You can achieve this in a simple way using the appropriate scale.

We're going to form a chord of CΔ - C major. Play the root C with your left hand. This is note 1 of the scale of C major. Pass your hand over D without playing it – this is note 2 of the scale. Move to E – this is the third note of the scale and therefore the next note of the chord (a **third** from the first note C).



Continue in this way, each time missing one note of the scale and playing the next one. You should end up with the following stack of notes.



You'll notice you arrive back at the note (C) that you started with. This is the full extension of the chord of C major. Pretty intense. It would be rare that you would play **all** of these notes in response to a CΔ chord symbol. It is more usual to use this as a set of possible notes and choose from amongst them, depending on the music you are playing.

The first four notes are the most commonly used and are referred to as 'chord tones' (marked above). The next three notes are usually used as colours and are referred to as 'extensions'.

Take the first four notes (chord tones) with your left hand and the next three (extensions) with your right hand. Ignore the repeated C at the top of the chord. Move the notes in your right hand down one octave so they rest in between the notes in your left hand.



You'll notice you now are playing all the notes of the C major scale at the same time. This shows how the scale and the chord are connected. Think of scales as the **horizontal** version and chords as the **vertical** version of the same thing.

## Modes

A C major chord is not the end of the possibilities within the universe of C major. Each of the scale degrees of C major produces a new scale, starting and ending on that note. These new scales are referred to as *modes* of C major.

Here are the seven modes of C major with their names.

The image displays seven musical staves, each representing a mode of the C major scale. The first staff is labeled 'Parent scale: C major' and shows the notes C, D, E, F, G, A, B, C. The subsequent staves are labeled with Roman numerals and mode names: I C Ionian, II D Dorian, III E Phrygian, IV F Lydian, V G Mixolydian, VI A Aeolian, and VII B Locrian. Each mode is shown as a sequence of notes on a five-line staff, starting from the mode's tonic and ending on the tonic an octave higher.

Each of them contains the same notes as the C major scale, but evoke quite different moods, due to the changing position of the dissonant interval. Eventually you will become familiar with all seven of them but for now let's just focus on three.

### 1. C Ionian

The C Ionian mode is the modal name for the C major scale. The two are identical.

A single musical staff labeled 'I C Ionian' showing the notes C, D, E, F, G, A, B, C on a five-line staff.

Here are the chord tones of C Ionian as discussed before.

A musical staff showing the chord tones of C Ionian: C, E, G. The notes are placed on the lines of a five-line staff.

Between the lowest two notes of this chord there is a **major 3<sup>rd</sup>**.  
Between the lowest note (the *root*) and the third note there is a **perfect 5<sup>th</sup>**.



The image shows a musical staff with a D7 chord. The notes are D, F#, A, C, E, G. The notes F#, A, C, and E are marked with a circled 'e' above them, indicating extensions. Below the staff, there are two smaller staves. The left one is labeled 'Extensions' and 'Chord tones' and shows the notes F#, A, C, and E. The right one is labeled 'Chord tones only' and shows the notes D, F#, and A.

From within the chord tones:

Between the lowest two notes there is a **major 3<sup>rd</sup>**.

Between the root and the third lowest note there is a **perfect 5<sup>th</sup>**.

Between the root and the highest note there is a **minor 7<sup>th</sup>**.

The chord symbol that corresponds to this set of intervals is D7 – *D dominant seventh*, or just *D seventh*.

As you can see, the 5<sup>th</sup> of the chord has always been a perfect 5<sup>th</sup>. Unlike in Classical music, the 5<sup>th</sup> is usually not thought of as being part of the scaffolding of the harmony in Jazz, it is used more to add a little extra thickness to the texture. The root, the 3<sup>rd</sup> and the 7<sup>th</sup> therefore are the most important in guiding the narrative of the harmony – they act as harmonic scaffolding.

As revision, here are the chord types we've come across so far.

	Major 7 <sup>th</sup>	Minor 7 <sup>th</sup>
Major 3 <sup>rd</sup>	$\Delta 7, \text{maj}7, M7$ (major 7 <sup>th</sup> )	7 (dominant 7 <sup>th</sup> /7 <sup>th</sup> )
Minor 3 <sup>rd</sup>	$[m\Delta 7$ (minor, major 7 <sup>th</sup> )	m7, min7, -7 (minor seventh)

The chord with a minor 3<sup>rd</sup> and a major 7<sup>th</sup> has not been covered, as it does not come from the major scale. Learn about this later!

Here is an activity to begin to explore the effect of the different modes.

Here are the first 8 bars of the well-known song 'Somewhere Over the Rainbow'

Somewhere Over the Rainbow

Harold Arlen

The image shows the first 8 bars of the melody for 'Somewhere Over the Rainbow' in C major. The melody is written on a single staff in treble clef with a common time signature. The notes are: C4 (quarter), E4 (quarter), G4 (quarter), F#4 (quarter), E4 (quarter), D4 (quarter), C4 (half), C4 (half). The melody is repeated on a second staff with a dashed line below it.

This melody uses the C Ionian mode. Here is the C Ionian mode again with each note given its scale degree. The repeated tonic has been given the number 8 for the sake of this activity.



Go through Somewhere Over the Rainbow and put in the scale degree for each of the notes of the melody. Dotted lines have been provided.

Now, using the numbers you have just written in, play Somewhere Over the Rainbow again but using the notes corresponding to the numbers shown underneath for the D Dorian mode.



Sounds pretty different!

Try the same thing for the G Mixolydian mode as shown underneath.



Try experimenting more freely with the modes. Sustain a D low in the bass of the piano with your left hand and play with the D Dorian mode with your right hand. Notice the effect of particular notes from the mode (e.g. the 6<sup>th</sup> note – B has a bright sound, the 2<sup>nd</sup> note – E a rather poignant sound. Sustain a G in your left hand and do the same with the G Mixolydian mode.