

4. THE INTERVALLIC SERIES

How does one convey musical information to others? The most basic method is ostensive: you hum the melody to the other and say "Learn this!" Or you play it on an instrument. The other person picks it up by ear, or by actually playing it.

Normally, however, musicians hand each other notated music to read. The information conveyed there would be "absolute" in the sense that note pitch, duration etc. will be unquestioned. An "E above middle C played for two beats" is nothing more or less than that particular musical event.

There is another method, though, which while not incorporating any rhythmic elements, nonetheless serves to convey pitch information, and this is the **intervallic** method. Here, instead of describing music as e.g. "E, F, Ab," one would say "E, then up a half step, up a minor third." In other words, music as a vertical (chordal) or horizontal (melodic) distribution of notes is described in terms of intervals **relative to a certain specified note**. We will name that particular note the "1."

The intervallic method is central for the jazz vocabulary.

A) INTERVAL NUMBERS AND NAMES FOR CHROMATIC 12-TONE SERIES

- 1 (root)
- b2 (flat second)
- 2 (second)
- b3 (flat third)
- 3 (third)
- 4 (fourth)
- b5 (flatted fifth, tritone)
- 5 (fifth)
- #5, b6 (augmented fifth)
- 6 (sixth)
- b7 (flat seventh)
- maj7, Δ7 (major seven)
- "8"(octave above root; rarely used)

IMPORTANT: For purposes of symbolizing, "7" will always refer to a "b7," and major seven will be written as "maj7" or "Δ7."

Intervallic functions are **absolute** with regard to tonal distinctions between the major and minor. If C is "1," then an Eb is the b3 regardless of whether the tonality within which that note is horizontally embedded is C major or C minor.

B) NUMBERS AND NAMES CONTINUED BEYOND THE CHROMATIC OCTAVE

Referred to as “upper partials,” “upper tensions,” or “upper extensions,” these are:

- b9
- 9
- #9 (sometimes **notated** as b10)
- 11
- #11
- b13
- 13

Examples in the key of Eb:



These intervals are all of the upper partials you will encounter in the standard jazz vocabulary.

Notice that all upper partials have corresponding notes an octave lower, yet the upper partials are considered to be distinct entities, having their own meaning and use. To find the absolute note value of an upper partial, subtract 7 from the upper number, and rename the result in accordance with the 12-tone chromatic series:

- $b9 - 7 = b2$
- $9 - 7 = 2$
- $\#9 - 7 = \#2 = b3$
- $\#11 - 7 = \#4 = b5$
- $b13 - 7 = b6 = \#5$
- $13 - 7 = 6$

Note that “12” and “14” (or “b14” and “maj14”) are **never** used. “10” on the other hand is occasionally used to illustrate a voicing method (such as a “tenth chord”) but **never** used to denote a chordal pitch value.

Once an upper tension, ALWAYS an upper tension through all higher octave dispositions.

D) APPLICATION

Clearly, any series of notes can be described using intervals. Some examples would be:

- Horizontal:

Major scale : 1-2-3-4-5-6-maj7-(8)

Melodic minor scale: 1-2-b3-4-5-6-maj7-(8)-b7-b6-5-4-b3-2-1

- Vertical:

Basic triads:

Major 5
3
1

Minor 5
b3
1

Aug. #5
3
1

Dim. b5
b3
1

If the intervallic series (vertical or horizontal) is known, the entire series can be described in absolute terms as long as one note of the series is specified.

In other words, if you have the series:

5 6 2 b7 b2 3

and you know that e.g. 2 is a "C," then you can deduce that the above series is:

F G C Ab B D

5. CHORD SYMBOLS

A) FOUR-NOTE BASIC CHORDS

Our starting point is the triad, the three-note combination that is central to Western music:

- major triad
- minor triad
- augmented triad
- diminished triad

However:

The basic chord in jazz has four notes, and not just three.

In other words i.e. the basic chord of C major will now be a combination of 1(C), 3(E), 5(G) and **one more note**.

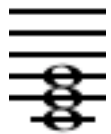

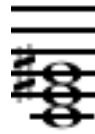
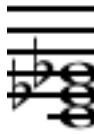
That additional note is traditionally a 6, b7, or major 7.

These additional notes are called **tension notes** because they inherently have a resolving function, thus they create a “tense” or unsettled feeling. Furthermore, in addition to the above three intervals of 6, b7, and major 7, the upper partials are also tension notes.

B) JAZZ CHORDS AND THEIR SYMBOLS

Jazz chords are described symbolically, subject to conventions that have evolved over the years.

1) Triads

| Basic Chord Type | Major | Minor | Augmented | Diminished |
|----------------------|---|---|---|--|
| Written Example in C |  |  |  |  |
| Symbol in C | C | C- | Caug, C+ | Cdim, Co |

2) Major triads plus sixth/major seventh and alteration to the fifth

| Basic Chord Type | Major sixth | Major seventh | Major seventh flat five | Major seventh sharp five (major seventh augmented) |
|----------------------|-------------|---------------|-------------------------|--|
| Written Example in C | | | | |
| Symbol in C | C6 | Cmaj7, CΔ7 | Cmaj7b5, CΔ7b5 | Cmaj7#5, CΔ7#5 |

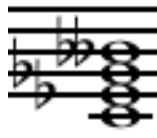


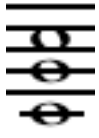
3) Major triads plus flat seventh and alteration to the fifth/third

| Basic Chord Type | Dominant seventh | Dominant seventh flat five | Dominant seventh sharp five (dominant seventh augmented) | Dominant seventh suspended fourth |
|----------------------|------------------|----------------------------|--|-----------------------------------|
| Written Example in C | | | | |
| Symbol in C | C7 | C7b5 | C7#5, Caug7, C+7 | C7sus4 |

4) Minor triads plus sixth/flat seventh/major seventh and alteration to the fifth

| Basic Chord Type | Minor sixth | Minor seventh | Minor seventh flat five (half-diminished) | Minor major seventh |
|----------------------|-------------|---------------|---|---------------------|
| Written Example in C | | | | |
| Symbol in C | C-6 | C-7 | C-7b5, Cø7 | C-maj7, C-Δ7 |

5) Other basic chords and triads

| Basic Chord Type | Diminished | Minor seventh sharp five | Two-no third | Power |
|----------------------|---|---|--|---|
| Written Example in C |  |  |  |  |
| Symbol in C | Cdim7, Co7 | C-7+5 | C2(no3) | C power |

6) Notating complex chords

If a chord has more than four different notes or pitch classes, they are described as the basic jazz chord plus the upper partials:



D7(#9)

Often, there will be multiple upper partials. Writing these out symbolically, keep the following in mind as a rule:

Always describe the basic chord first, and then add the tension notes either on top, or in brackets:



C7(9,#11,13) F7sus4(b9, #9, 13)

C) CLOSED AND OPEN VOICINGS

Voicings with roots as the lowest notes are called **closed** voicings. When the lowest note is not the root, it is called an **open** voicing.

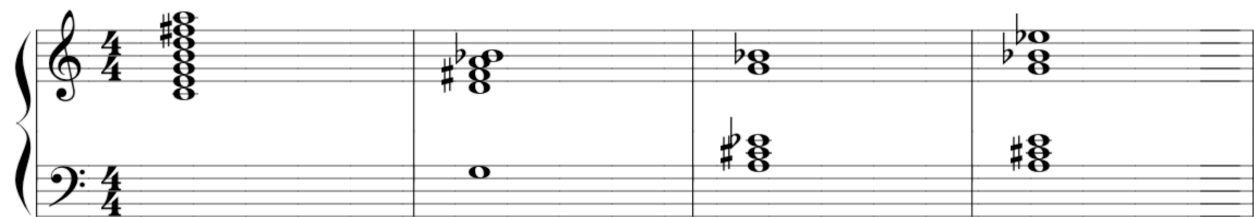
For the time being, we will deal only with closed voicings. The correct deciphering of open voicings will await other elements yet to be introduced.

D) DECIPHERING CHORDS PROPERLY

Notes comprising a chord may be dispersed in a way so that the basic chord is not always immediately apparent. There's no problem when the notes are stacked as thirds from the root up. However, sometimes the basic chord itself may be spread out over more than an octave, so that some basic-chord notes may be voiced higher than some upper partials. Furthermore, inversions of the basic chords can complicate the issue. Nevertheless:

Always isolate the basic chord first.

If you can find a dispersion of notes that fit a basic-chord interval pattern, then it's a fair bet that you've found the basic chord. Some examples of note dispersal in jazz chords:



You are encouraged to find the correct ways of symbolizing these chords.

E) CHORDS AND UPPER TENSIONS

When is a note a #9 and not a b3? This can be a confusing issue. To anticipate later discussion, upper partials are predominantly a **polytonal concept** where more than one tonality can be simultaneously discerned. In its linear application, it will often lead to a two-octave scale.

Within a chord, however, the situation is a little easier. Try **counting up from the root of the chord**. Otherwise, in general, the following maxims hold true:

- **b2 or 2 are rarely used; they are usually b9 or 9.**
- **A note is a #9 if there is a 3 somewhere in the chord within which the #9 is embedded.**
- **A note is an 11 only if there is a b3 somewhere in the chord and no 3.**

- A note is a #11 if there is a 5 somewhere in the chord.
- A note is a 13 if there is a maj7 or b7 somewhere in chord.
- A note is a b13 if there is a b7 somewhere in the chord.
- A note is a #5 if there is a maj7 somewhere in the chord.
- Different tension numbers signifying the same note are never used together in the same chord. For example, a Cmaj7 with an F# in the chord is either a Cmaj7b5 or Cmaj7#11, but not Cmaj7b5#11.

6. A SIMPLE MATTER OF TONALITY

The simplest form of improvisation is to create melodies from a single **scale**, such as a major scale. The **scale notes** become the building blocks. What is important to realize here is that as long as you stick to these building blocks, whatever melody you create will have a specific **tonality**. In most cases, however, it is common to perceive of tonality as emanating from not just the melody, but also from the **harmony**, which is to say **chords**.

The notion of tonality is complex, yet it occupies an irreducible place within our conceptual scheme. There is nothing more basically wrong than an improviser who does not play in the correct “key,” or a performer who is not “in tune.” These are facets of the same accusation, namely, that the performances in question do not measure up to our standards of tonality.

At its most basic level, tonality is the convergence of the harmonic with the melodic. This can also be expressed as the agreement between the vertical (“analytic”) and the horizontal (“synthetic”). There is tonality when chords and scales come together.

The issue of which comes first - chords or scales - is a chicken-or-egg situation. From the “analytic” viewpoint, chords take precedence. As such, scales are “frozen arpeggios” with the non-chordal gaps filled appropriately. From the “synthetic” viewpoint, scales are prior to chords; chords are groupings of notes from a given scale. Needless to say, music is a symbiosis of the two.

An overwhelmingly large portion of the jazz repertoire consists of the “lead sheet” model. The material that is presented to the improviser consists of single-note melodies combined with chord symbols that constitute a chord progression. From these two sets of information, the improviser must extrude the tonalities for improvisation. More often than not, it will be the chord progressions that will provide this tonal delineation. Playing the wrong tonality over a set of chords is the most elementary of improvisational mistakes. The jazz improviser must have the ability to discern the proper tonality of a set of chords “on the fly”, and often without the benefit of the tonic. In effect, the improviser must see harmonic connections instantly between various chords.

With this in mind, we now turn to the simplest of chord progressions, where all the chords are derived from a single tonality.

A) DIATONIC SCALE CHORDS

We choose as our starting point the four diatonic scales: major, natural minor, harmonic minor, and melodic minor ascending.

Suppose we take a diatonic scale and build four-note chords off of each note of the scale by stacking thirds, using only the notes in that the scale. The resulting chords are called

diatonic scale chords.

1) Major scale - example in C

Cmaj7 D-7 E-7 Fmaj7 G7 A-7 B-7b5

Cmaj7 is the first chord of the series. Let us assign the Roman numeral "I" to this and symbolize it as "Imaj7." Then, the diatonic scale chords for a major scale can be generalized as the following set of **chord functions**:

Imaj7 II-7 III-7 IVmaj7 V7 VI-7 VII-7b5

We now have a set of functions that can be used to generate all 12 major scales. For example, in the key of G major, this function set is:

Gmaj7 A-7 B-7 Cmaj7 D7 E-7 F#-7b5

IMPORTANT: Whereas "7" refers to a b7, "VII" as a CHORD FUNCTION REFERS TO A NATURAL VII, and "bVII" refers to a function built off of the b7 as the root. Confusing, but there it is.

2) Natural minor scale - example in C

C-7 D-7b5 Ebmaj7 F-7 G-7 Abmaj7 Bb7
I-7 II-7b5 bIIImaj7 IV-7 V-7 bVIImaj7 bVII7

Notice that the V chord is a V-7, not a V7. In a strict sense, a minor 7 chord cannot fulfill a V function because it lacks the necessary leading tone that leads to a I function. However, V-7's have been common since the early 1960's in jazz and popular music. (It is also a characteristic chord of "modal" music.)

3) Harmonic minor scale - example in C



| | | | | | | |
|--------|--------|-------------|------|----|----------|-------|
| C-maj7 | D-7b5 | Ebmaj7#5 | F-7 | G7 | Abmaj7 | Bo7 |
| I-maj7 | II-7b5 | bIII maj7#5 | IV-7 | V7 | bVI maj7 | VIIo7 |

4) Melodic minor ascending - example in C

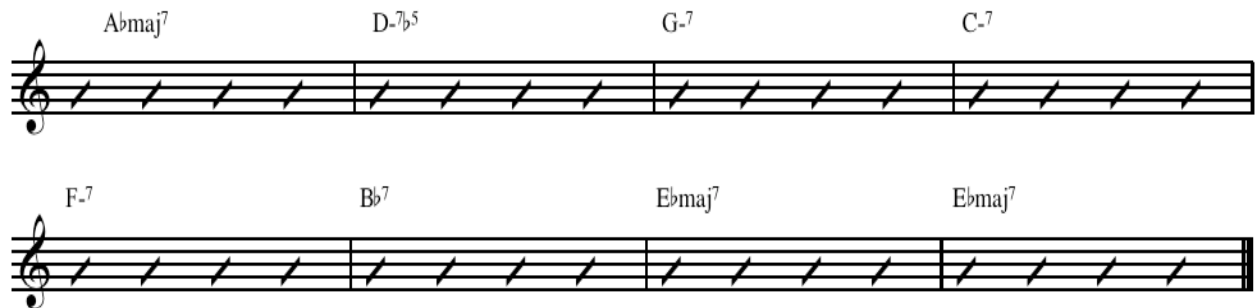


| | | | | | | |
|--------|------|-------------|-----|----|-------|---------|
| C-maj7 | D-7 | Ebmaj7#5 | F7 | G7 | A-7b5 | B-7b5 |
| I-maj7 | II-7 | bIII maj7#5 | IV7 | V7 | A-7b5 | VII-7b5 |

B) DIATONIC IMPROVISATION

We are now at a point of being able to construct rudimentary improvised solos.

Diatonic chords derived from a given scale **share the same notes with regard to their linear possibilities**. In other words, as long as we stick to these chords (in any order), we can create melodies using notes from the original scale. For example, take the following progression:



Is there a common scale that can be played over all of the chords? A careful examination of these "changes" reveals that the following functional analysis is the **simplest**:





All of these functions are to be found in the diatonic scale chord set for the Eb major scale. Hence, an improviser can create melodies from that scale while these chords are being played.

The ending two bars clearly state the I chord (the tonic function), and this seems like an important clue. However, the same functional analysis is valid even when there is no tonic indicated. Consider:



The same Eb major scale can be used to solo over this recurring set of changes although no Ebmaj7 is present. The thought process is the same: We look for the simplest explanation that uses diatonic scale chord sets to the largest extent possible. In fact, in most cases, chordal improvisation depends on one's ability to:

- (a) discern a single scale applicable to a set of chord progressions, and**
- (b) the ability to assign chordal functions “on the fly” to each chord within a progression**

It can readily be seen that (a) and (b) amount to the same thing i.e. the elucidation of tonalities and the application of the correct diatonic scale for improvisational purposes. In fact:

Specifying a tonality = assigning chord functions

It cannot be stressed enough in jazz that the performer who can spot tonalities within a chord progression has a tremendous advantage over those who can't. It is the difference between being able to create melodies over a set of chords and having to improvise over each chord separately.

Sometimes the very nature of a progression will show you the tonality. For example, consider the following progression:

Gmaj7#5 A7 F#-7 B7

Only one scale – E melodic minor ascending - has all four as diatonic scale chords. Hence:

bIIIImaj7#5 IV7 II-7 V7

In this way, as long as we can assign functions from some single diatonic scale chord series to a progression, we can discern the tonality, and the scale we can use to create melodies.

C) MULTIPLE DIATONIC SCALES

Many chord progressions will incorporate multiple diatonic scale chord sets i.e. will have different tonalities. For example:

| | | | |
|----------|------|-----|--------|
| Bbmaj7#5 | Cb-7 | Db7 | Ab-7b5 |
| | | | |
| A#-7b5 | D#-7 | F#7 | B-maj7 |
| | | | |

A possible analysis would be that the first four bars are in Gb harmonic minor:

bIIIImaj7#5 IV-7 V7 II-7b5

The next four bars are in B melodic minor:

VII-7b5 II-7 V7 I-maj7

The fourth chord – Ab-7b5 – is a pivot. It does double duty as a II-7b5 in Gb, and in its enharmonic state as G#-7b5, also is aVI-7b5 in B.

A change of diatonic scales is a change of key, hence, it is a **modulation**. There are many instances of modulation in the jazz repertoire which do not use pivot chords i.e. these are **direct modulations**.

D) SYNTHETIC APPLICATION: LIMITATIONS OF THE DIATONIC APPROACH

It is possible for a chord progression to be given different functional assignments. Sometimes there is not enough information to definitively decide. For example:

C-7b5 Gbmaj7

This progression exists in Bb natural and harmonic minors, and in Db major. While the Bb natural minor and Db major scales share the same notes, Bb harmonic minor does not. This sort of ambiguity is compounded when you're given a single chord with no particular function assignment. For example, a Bb-7 could be:

I in Bb minor (natural), II-7 in Ab major, III-7 in Gb major, VI-7 in Db major

Recall that the “synthetic” method of improvisation calls for creating melodies using notes from a scale. But when there are chord changes, **what scale you end up with depends on what functions you assign to the chord**. Without this, chords become useless devices that just sit there. Even if only a single chord were to be specified as a solo structure, you must treat that chord **as if** it were part of a progression that delineates functions within a tonality. For example, an Abmaj7 construed as a Imaj7 of Ab major and a bVIIImaj7 of C natural minor will lead you to play different scales.

Even more problematic, though, is that going up and down a scale (“elevator playing”), or choosing notes from a scale without paying attention to the underlying chords, will **not** imply harmonic structures or establish chord progressions. Supposedly, you're “playing the changes”, but for the most part, all you've done is to establish **some** tonality that can be corelated with a I chord.

Improvisation that establishes chordal characteristics calls for more than playing **just** the basic tonality. What is needed is a way to correlate **specific scales** (and its linear possibilities) with **specific chord functions**. Furthermore, because chord functions are often associated with **basic chord types**, such a correlation will enable more automatic generation of usable notes, or **allowable scales**.

Luckily, we already have a device that addresses some of these issues. We turn to modes.

7. AN INTRODUCTION TO MODES

The word “mode” is something you’ll encounter frequently in jazz, often imprecisely. Most of the time, it is used synonymously with “scales”. More often than not, when a composition is described as “modal”, that simply means that there aren’t many chord changes, and that a lot of time (bars) are allocated for each chord. A limiting case of this is the “open vamp.” Strictly speaking, modal theory is a separate topic, and we will not pursue it in depth. But the word “mode” is used in jazz to describe certain linear possibilities for improvising.

A) THE SEVEN GREGORIAN MODES

We will limit ourselves to the most basic of modes i.e. the seven Gregorian modes (“church modes”). These are scales with the following intervallic series:

- ionian - 1 2 3 4 5 6 maj7 8
- dorian - 1 2 b3 4 5 6 b7 8
- phrygian - 1 b2 b3 4 5 b6 b7 8
- lydian - 1 2 3 b5 5 6 maj7 8
- mixolydian - 1 2 3 4 5 6 b7 8
- aeolian - 1 2 b3 4 5 b6 b7 8
- locrian - 1 b2 b3 4 b5 b6 b7 8

B) MODES AND DIATONIC SCALE CHORD FUNCTIONS

Viewed as a sequence of intervals, learning (and using) modes can be a cumbersome process.

There is a simpler way to understand this concept, though, that ties it closely to diatonic scale chord functions. In fact, all that is required is the major scale and its diatonic scale chords.

Consider the C major scale. Off of this scale we built a series of four-note chords by stacking thirds. **By arpeggiating each diatonic scale chord and filling in the gaps between chord notes by the adjacent diatonic scale note, we can generate all seven of the Gregorian intervallic series.**

For example, the diatonic scale chord built off the third note in the C major scale is a III-7

function and is a E-7. Arpeggiating it, we get:

E G B D

By filling in the gaps using adjacent notes from the C major scale, we get:

E F G A B C D (E)

Furthermore, taking E as the root, we derive the intervallic series:

1 b2 b3 4 5 b6 b7 (8)

which is the phrygian mode. In other words, the phrygian mode is built off of the III-7 function of the major scale. In this way:

All seven Gregorian modes can be seen as scales built off of diatonic scale chord functions of a major scale.

Hence:

- ionian = Imaj7 function
- dorian = II-7 function
- phrygian = III-7 function
- lydian = IVmaj7 function
- mixolydian = V7 function
- aeolian = VI-7 function
- locrian = VII-7b5 function

In fact, to simplify matters even more, we can drop function considerations entirely and just identify mode types with their starting notes off of a major scale.

Hence e.g.:

E \flat lydian = scale starting on note number 4 (E \flat) of B \flat major scale
G \sharp locrian = scale starting on note number major 7 (G \sharp) of A major scale

“B \flat major scale” “A major scale” and the like are called “parent scales” and are also the ionian modes. Therefore, in order to find the notes for any Gregorian mode:

- (1) What starting number-note (function) is correlated with that mode?
- (2) Given the starting note of the mode, what is the root of the parent scale?
- (3) Play the parent scale from the starting note of the mode.

Example:

Find the notes for Db mixolydian.

- (1) Mixolydian is correlated with the V7 function.
- (2) If Db is V, then I is Gb (i.e. Gb major scale is the parent scale)
- (3) Play the Gb major scale but start from Db up through an octave:

Db Eb F Gb Ab Bb Cb (Db)

C) APPLICATION OF MODES

Gregorian modes are important because the mode-function correlation in most cases is used the other way around:

If a chord is either a maj7, min 7, min7b5, or dom7, then you can deduce what modes can be used to improvise over that chord.

For example, if you have a D7 chord, then you know that D mixolydian can be used, since that is the only mode associated with a dominant 7 chord. Likewise, a F-7b5 will give you an F locrian. In other words, knowing modes automatically gives you access to the **available scales** for the above four chord types.

However, we are still left with a previous problem: just as certain chord types allow for multiple functional assignments, they allow for multiple modes. Minor 7 chords allow for either dorian, phrygian, or aeolian. Maj 7 chords allow for ionian or lydian. We still must assign functions to chords before we can decide which notes to use.

Furthermore, augmented chords, diminished chords, and chords with upper partials call for completely different scales. Among other things, this means that some diatonic scale chords not in the major scale will often call for non-Gregorian solutions. For example, I-maj7 and bIII maj7#5 of a harmonic minor scale are non-Gregorian.