Some Basics of Harmony for Jazz Improvisation

Bob Keller

Harvey Mudd College
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Chromatic Scale

- C
- C# (= Db)
- D
- D# (= Eb)
- E
- F

- F# (= Gb)
- G
- G# (= Ab)
- A
- A# (= Bb)
- B

Most all musical concepts cycle, i.e. C follows B.
The chromatic scale can be started anywhere within.
Required Skills

- When I indicate “Required Skill”, I don’t mean that your life has to stop until you acquire that skill, but rather that you should actively work on acquiring it to become a more complete player.

Required Skill #1

- Be able to strike any chromatic pitch on the piano (even if you are not a keyboard player) given the name of the pitch. (For example, strike an F#).

- Be able to name the pitch associated with any key of the piano you are shown (this is visual, not aural). (For example, what is the middle key of the three black keys?)
Scale Degrees

- “Scale degree” refers to the relative pitches in a scale. These pitches are given names based on their ordinal position in the scale, e.g.
  1st (also called “tonic”), 2nd, 3rd, 4th, 5th, 6th, 7th, octave, 9th, 10th, 11th, 13th

- Examples:
  - **Key of C Major**: tonic = C, 2nd = D, 3rd = E, 4th = F, 5th = G, 6th = A, 7th = B, 9th = D
  - **Key of Eb Major**: tonic = Eb, 2nd = F, 3rd = G, 4th = Ab, 5th = Bb, 6th = C, 7th = Db, 9th = F
# Table of Scale Degrees

**Key:** Tonic 2nd 3rd 4th 5th 6th 7th Octave 9th 10th #11th 13th

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<thead>
<tr>
<th>C</th>
<th>D</th>
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## Rule of 7

- **Pitches** repeat an octave higher with 7 added to the scale degree.
- **Example:** 9th is the same as 2nd, 11th is the same as 4th, 13th is the same as 6th.
- **A tone** is *somewhat* interchangeable with 7+ the tone, although there are some cases where one or the other is preferred.
- Some tones above the octave aren't mentioned very often, e.g. 12th, 14th
OGA (On-Going Activity) #1
(to be learned over a period of time)

- Become able to name, quickly, the pitch for a specified scale degree in any key.
- Examples:
  - 5th of F? C
  - 6th of Bb G
  - 4th of Ab Db
  - 7th of C# C (B# actually, but see next)
- You will need these to help “think on your feet” in jazz soloing.

Enharmonic Issues

- Rather than being strictly formal about the names of pitches, you may think about them as you would think about them on your horn (= instrument), e.g.
  - C-flat = B
  - B-double-flat = A
  - Gb = F#
  - etc.
- Use whatever works the most easily for you!
OGA #1 footnote

- Approximate order of importance of knowing scale degrees:
  - 4th (= 5th below)
  - 5th
  - 3rd
  - b3rd (flatted or minor 3rd)
  - 7th
  - b7th
  - 9th (= 2nd)
  - b9th
  - #9th = b3rd
  - #4th (augmented 4th)
  - 6th = 13th
  - b13th = #5

OGA #2

- Become able to name the ordinal position for a specified tone in any key.
- This is the “inverse” of OGA #1.
- Examples:
  - G in F?  2nd
  - A in C?  6th
  - F in B?  #4th
- Suggestion: Make some flashcards and go over OGA #1 and #2 with a friend.
Numeric Terminology

- Musical terminology is “overloaded”: the same term can sometimes mean more than one thing.

- Example: “third” can mean either:
  - the scale degree we just discussed (3rd tone of a major scale), or
  - the interval of a third, to be discussed next. These are related, but actually have different meanings.

Intervals

(This discussion is based on an equal-temperament scale.)

- 1 half-step = 1 semi-tone = 1 chromatic interval, e.g. the interval between C and C#

- 1 octave = 12 half-steps

- Intervals of different numbers of half-steps have standard names
  - 2 half-steps = "major 2nd" (e.g. between C and D)
  - 1 half-step = "minor 2nd" (e.g. between E and F)
Intervallic Pattern

- Use this to be able to construct the tones of a scale in any key, even if you don’t remember the key signature.
- W = whole step, H = half-step
- The major scale is:
  - W W H W W W H
  - Example: Gb major = Gb, Ab, Bb, Cb, Db, Eb, F, Gb

Intervallic Pattern

- The major scale is:
  - W W H W W W H
- Notice that almost every step is W except for two that are H.
- By remembering the position of the H’s, we can remember the scale pattern.
- In the major scale, H occurs between 3 and 4, and between 7 and 8.
**Major Scales**

(observer intervallic patterns WWHWWWH)

<table>
<thead>
<tr>
<th>C</th>
<th>Ab</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Db</td>
<td>A</td>
</tr>
<tr>
<td>Bb</td>
<td>F#</td>
<td>D</td>
</tr>
<tr>
<td>Eb</td>
<td>B</td>
<td>G</td>
</tr>
</tbody>
</table>

**Contrasting Scale Patterns**

- The "Lydian" scale (or "mode"), often used in jazz, is:
  - W W W H W W H
- Lydian has a *sound* that is closed to major, but said to be "brighter".
- H occurs between 4 and 5, and between 7 and 8.
- Another mnemonic is that Lydian is *like major*, except that the 4th is *raised* one half step.
- Yet another mnemonic is that the Lydian is like a major scale started on the 4th ordinal tone of that scale (rotating the pattern for the major scale, W W H W W H becomes W W W H W W H).
Lydian vs. Major

C major scale

C lydian scale

= G major scale

started on the fourth

Common Scale Patterns

- Major: WWHWWWH
- Lydian: WWWHWWH
- Dominant*: WWHWWHW
- Dominant is also called “Mixolydian”
- Dorian Minor: WHWWWHW
- Melodic Minor: WHWWWWH

When one scale is another scale started on a different pitch, it is called a "mode" of the former. Lydian, Dominant, and Dorian are modes of Major, but Melodic Minor is not.
**Major Second Interval**

Interval of **two** half-steps:

e.g. C-D

**W**

---

**Minor Second Interval**

Interval of **one** half-step:

e.g. C-Db

**H**
Major Third Interval

Interval of four half-steps:

\[ \text{e.g. C-F + F-E} \]

\[ W + W \]

Minor Third Interval

Interval of three half-steps:

\[ \text{e.g. C-D + D-Eb} \]

\[ W + H \]
Perfect Fourth Interval

Interval of five half-steps:
C-D, D-E, E-F
i.e. W+W+H

Perfect Fifth Interval

Interval of seven half-steps:
C-D, D-E, E-F, F-G
i.e. W+W+H+W
Tritone Interval

Interval of six half-steps, or three whole steps:

C-D, D-E, E-F#

i.e. W+W+W

Also called “augmented fourth” and “diminished fifth”.

Augmented Fifth Interval

Interval of eight half-steps:

C-D, D-E, E-F#, F#-G#

i.e. W+W+W+W

Also called “minor sixth”.

Major Sixth Interval

Interval of nine half-steps:
C-D, D-E, E-F, F-G, G-A
i.e. W+W+H+W+W

Minor Seventh Interval

Interval of ten half-steps:
C-D, D-E, E-F, F-G, G-A, A-Bb
i.e. W+W+H+W+W+H
= Octave - W
Major Seventh Interval

Interval of eleven half-steps:
C-D, D-E, E-F, F-G, G-A, A-B
i.e. W+W+H+W+W+W = Octave - H

Major Ninth Interval

Interval of fourteen half-steps:
C-D, D-E, E-F, F-G, G-A, A-B, B-C, C-D
i.e.
W+W+H+W+W+W+H+W = Octave +W
Minor Ninth Interval

Interval of thirteen half-steps:
C-D, D-E, E-F, F-G, G-A, A-B, B-C, C-Db
i.e.
W+W+H+W+W+W+H+H
= Octave +H

Eleventh Interval

Octave + Perfect Fourth
Raised Eleventh Interval

Octave + Augmented Fourth

Thirteenth Interval

Octave + Major Sixth
OGA #3

- Get acquainted with the sound of as many different intervals as possible.
- Be able to recognize them when played sequentially and when played simultaneously.
- Learn to recognize intervals you hear in familiar songs and associate them with their name.

### Common Intervals that Start Tunes

<table>
<thead>
<tr>
<th>Interval</th>
<th>Ascending</th>
<th>Descending</th>
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</thead>
<tbody>
<tr>
<td>Minor 2nd</td>
<td>What's New?</td>
<td>Stella by Starlight</td>
</tr>
<tr>
<td>Major 2nd</td>
<td>Body and Soul</td>
<td>Alfie</td>
</tr>
<tr>
<td>Minor 3rd</td>
<td>Alone Together</td>
<td>Misty</td>
</tr>
<tr>
<td>Major 3rd</td>
<td>I Can't Get Started</td>
<td>Summertime</td>
</tr>
<tr>
<td>Perfect 4th</td>
<td>All the Things You Are</td>
<td>Softly, As in a Morning Sunrise</td>
</tr>
<tr>
<td>Tritone</td>
<td>Maria (West Side Story)</td>
<td>Blue Seven</td>
</tr>
<tr>
<td>Perfect 5th</td>
<td>Whisper Not</td>
<td>Have You Met Miss Jones?</td>
</tr>
<tr>
<td>Minor 6th</td>
<td>Black Orpheus theme</td>
<td>Theme from Love Story</td>
</tr>
<tr>
<td>Major 6th</td>
<td>The Days of Wine and Roses</td>
<td>Moonlight Becomes You</td>
</tr>
<tr>
<td>Minor 7th</td>
<td>Somewhere (West Side Story)</td>
<td>Watermelon Man</td>
</tr>
<tr>
<td>Major 7th</td>
<td>Cast Your Fate to the Wind</td>
<td>I Love You</td>
</tr>
<tr>
<td>Octave</td>
<td>Somewhere Over the Rainbow</td>
<td>Willow Weep for Me</td>
</tr>
</tbody>
</table>
Inversions

- The inversion of an interval is the interval with the upper note dropped an octave.
- Since an octave is 12 half-steps:
  - half-steps in inversion = 12 minus half-steps in interval
- Knowing inversions can be helpful in remembering important things about intervals.

### Inversion Facts

<table>
<thead>
<tr>
<th>Interval</th>
<th>Inversion</th>
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<tbody>
<tr>
<td>Perfect Fifth</td>
<td>Perfect Fourth</td>
</tr>
<tr>
<td>Major Third</td>
<td>Minor Sixth</td>
</tr>
<tr>
<td>Minor Third</td>
<td>Major Sixth</td>
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<tr>
<td>Minor Second</td>
<td>Major Seventh</td>
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<tr>
<td>Major Second</td>
<td>Minor Seventh</td>
</tr>
<tr>
<td>Tritone</td>
<td>Tritone</td>
</tr>
</tbody>
</table>

If A is the inversion of B, then B is the inversion of A.
Circle of Fifth
(aka Circle of Fourths, “the cycle”)

- By repeatedly descending by a fifth, or ascending by a fourth:
  - One arrives back at the starting point.
  - All tones in the chromatic scale are covered.
- B E A D G C F Bb Eb Ab Db F#
  (C# Gb)
- This has to be memorized eventually.

OGA #4

- Memorize the cycle.
Chords

- Chords are sets of tones.

- Chords provide a guide for the improvised melody line.

- Chords are named based on the intervals found within them, or on their position with respect to certain scales.

Triads

- Three-note chords are called “triads”.

- Triads aren’t used much all alone in modern jazz, but are important because they may be remembered as parts of or bases for more complex chords.
Major Triad

{ Major third }  { Perfect Fifth }

Major Triad, coincidental view

{ Minor third }
{ Major third }
**Minor Triad**

\[
\text{Minor third} \quad \text{Perfect Fifth}
\]

**Minor Triad, coincidental view**

\[
\text{Major third} \quad \text{Minor third}
\]
A Major Triad is named by the name of the root, usually capitalized.

F

Name

Root

A minor triad is designated by the name of the root, followed by lower-case “m”, “Mi”, or “-”.

Em EMi or E-
Diminished Triad

Edim, or $E^o$

\[\text{Minor third}\]

\[\text{Minor third}\]

OGA #5

- Learn to play all 12 major and minor triads on your instrument and on the piano.
- Use various root patterns:
  - Circle of fifths
  - Chromatic
  - Whole-step
- Learn to distinguish between major and minor triads by ear.
(Dominant) Seventh Chords

Dominant, Important Aspect
Instead of FM7, we also commonly see Fmaj7, and FΔ.

Note that this chord “contains” both a major and a minor triad.
Major Seventh Chord Family

- An **upper-case note name by itself** is a chord of major character, but **usually** is interpreted as a **major seventh chord**, or one of its variants:
  - major ninth
  - major six-nine

- The word **major** is very important here. Simply **seventh chord** means something else (namely, a dominant seventh chord).

The Sound of a Major Seventh Chord

- This chord has a very stable and "cool" sound.

- It usually occurs at the beginning or end of a phrase, and often signals that the corresponding major **key** is established.
Songs with lots of Major Seventh Chords

- “Forest Flower” by Charles Lloyd opens with 4 major seventh chords in a row: A, G, C, Bb
- “All the Things You Are”, a standard, has 6 major seventh chords: Ab, Db, C, Eb, G, E, (that’s half the 12 that are possible).
- “Summer in Central Park” by Horace Silver also has 6 major seventh chords: F, Db, Gb, D, A, Ab

Sixth and Ninth

- The sixth and ninth “go along for the ride”.
- They can be somewhat freely added to or removed from a major seventh chord in most cases.
- Usually the seventh and ninth are sounded (major ninth chord), but the sixth and ninth are often used without the seventh (major six-nine chord)
Major Seventh Family

 FM7  FM9  F69
\[\text{\includegraphics{chart.png}}\]

OGA #6

- For each additional chord type that is introduced, learn to play the chord on the piano, in as many keys as possible.

OGA #7

- For each chord type that is introduced, learn to recognize a chord of that quality when it is played or implied in the music to which you are listening or playing.
Extensions

- Tones added to chords beyond the basic 1-3-5-7 are sometimes called “extensions”.
- Common extensions are:
  - 9th (used over major, minor, dominant)
  - 13th (= 6th) (used over major, minor, dominant)
  - b9 (used over dominant)
  - #9 (= b3) (used over dominant)
  - #11 (= #4 = b5) (used over major, dominant)
  - 11 (used over minor)
  - b13 (used over dominant)
- Each extension yields additional sound color

Chords, Melody, and Scales

- The chord indicates notes that can be emphasized in the melody.

Moreover, a chord often implies a scale that indicates additional notes that can be used in the melody. (Sometimes there is a choice of several scales.)

- Because chords and scales are linked in this way, we call the combination a chord/scale.
Scale for the Major Seventh Chord and "avoid" tone

- A common scale choice for the major seventh is the corresponding major scale, e.g. F major scale for F major seventh chord.
- The fourth degree of the scale in the case of the major scale is called an "avoid tone", meaning that it should not end a phrase as if it were a stable tone.
- It is ok to use avoid-tones in passing.

The raised 4th

- The raised 4th can often be used where the fourth is an avoid tone.
- In other words, this would actually be suggesting the Lydian scale, which can be a better scale choice for a major seventh chord in some cases.
- The composer can indicate this intent by designating the chord as a Maj7#4 or Maj7#11, but this might not appear in older music.
More on Tone Avoidance

- The root of the major scale should also be avoided by the soloist as a long held tone, as it will likely conflict with the major seventh being played by the comping instrument.
- The root can also be fairly boring in the melody.
- Certain chromatic tones should be similarly avoided, as they imply different chords and even different keys.

Goal Tones (Shelton Berg)

- The tones to be emphasized when playing over a major chord/scale are, in order of preference (use your judgement):
  - 3rd and major seventh
  - fifth and root
  - sixth and ninth
  - The raised fourth can be used with discretion (Lydian sound).
  - The raised fifth can be used in passing ("major bebop scale").
Guide Tones

- These are the essential tones to a chord of any type.
- Usually they are the 3rd and the 7th.
- Moving from one guide tone to the nearest guide tone in the next chord usually forms an aurally-pleasing line.
- Often one of the two guide tones does not move.
- Try “playing off” of one of the two lines.

Tone Imagery for Major Scale (Use what works for you)

- Root and fifth have a "basic" sound.
- Third, major seventh, raised fourth, and raised fifth have a “cool” sound.
- Sixth and ninth have a “pastel” sound.
- Fourth and flatted ninth are avoided, except in passing.
- (Flatted seventh, third, and ninth have a “bluesy” sound, but if you emphasize them, you aren’t really playing a major chord).
Chord Voicing

- On a comping instrument, the tones are not always played in order, e.g. 1-3-5-7-9.
- Repeatedly doing this can give an un-cool or un-refined sound.
- For example, a major seventh chord will often be played 1-7-3-5, where the 3 and 5 are an octave up.
- Such choices are called chord voicing.

Voice Leading

- When several different chords are played in a sequence, the voicings of the chords is often chosen so that there is little movement in the upper (non-bass) positions.
- This is called “voice leading”.
- Voice leading allows the listener to enjoy certain expected chord resolutions.
- More on this topic later.
Muddy vs. Thin Voicings

- If tones, other than the bass, are voiced too low on the piano, a “muddy” sound results.
- If tones are voice too high, a “thin” sound results.
- A good rule is that the lowest note in the voicing, aside from the bass, should be in the octave below middle C and the highest note should be in the octave above.