Method 2 — Further Insights

By James Hober

When I discovered the chord tone gaps in Ted's V-System in the 1980s, I created the Chord Tone Gap Table. Soon after, I noticed some interesting patterns in it.

The Chord Tone Gap Table

	B – T	T – A	A – S
V-1	0	0	0
V-2	1	0	1
V-3	0	1	2
V-4	2	1	0
V-5	1	2	1
V-6	4	0	0
V-7	5	0	1
V-8	2	2	2
V-9	1	0	5
V-10	1	4	1
V-11	2	1	4
V-12	4	1	2
V-13	0	4	0
V-14	0	0	4

Mirror, Mirror, on the Wall

The first thing I noticed was what I called "gap mirrors." If you reverse the gap sizes for V-3 (0 1 2), you get those for V-4 (2 1 0). V-3 and V-4 are gap mirrors. Their gap sizes are mirror images of each other. This means that the way V-3 bunches together the lower voices and separates off the soprano a bit is exactly the opposite of the way that V-4 bunches together the upper voices and separates off the bass.

The following voicing groups are gap mirrors:

- V-3 and V-4
- V-6 and V-14
- V-7 and V-9
- V-11 and V-12

All the other voicing groups are symmetrical in their gap sizes. That is, they are their own gap mirrors: V-1, V-2, V-5, V-8, V-10, and V-13 exhibit the balanced spacing of symmetrical chord tone gaps.

The Forbidden Fruit

Another thing I noticed is that there is no gap of size 3 in the table. That's because it would result in doubling. If I'm spacing a Cmaj7 and have C in the bass, a gap size of three between the bass and tenor would hold the notes E, G, and B and result in another C, an octave higher, in the tenor. Similarly, a gap size of 7 would result in a doubling two octaves higher. Because doubling is not allowed in the V-System, gap sizes of 3 and 7 are "forbidden." Similarly, two neighboring gap sizes in the Chord Tone Gap Table may not sum to 2 or 6. And the total sum of all three gap sizes may not sum to 1, 5, or 9. These "forbidden" sums also prevent doubling.

Octave Equivalents

Observe that adding four to a gap size increases the gap by an octave. That's because the extra octave could hold one instance each of the four chord tones. If you expand a gap size of zero by an octave, you get a gap size of four (0 + 4 = 4). If you expand a gap size of one by an octave, you get a gap size of five (1 + 4 = 5).

We saw in *Method 1 — How to Recognize* that V-6 is the same as V-1 but with the bass an octave lower. That same relationship is clear in Method 2's Chord Tone Gap Table. V-1 (0 0 0) and V-6 (4 0 0) are the same except for the four additional chord tones that can fit between the bass and tenor in V-6. We can easily find which lower numbered voicing group (V-1, V-2, V-3, or V-4) a higher numbered voicing group is based on by stripping out its extra octave. To do that, we squish any gap size of 4 down to 0 and any gap size of 5 down to 1:

- V-6 (4 0 0) is V-1 (0 0 0) with an extra octave between the bass and tenor.
- V-7 (5 0 1) is V-2 (1 0 1) with an extra octave between the bass and tenor.
- V-9 (1 0 5) is V-2 (1 0 1) with an extra octave between the alto and soprano.
- V-10 (1 4 1) is V-2 (1 0 1) with an extra octave between the tenor and alto.
- V-11 (2 1 4) is V-4 (2 1 0) with an extra octave between the alto and soprano.
- V-12 (4 1 2) is V-3 (0 1 2) with an extra octave between the bass and tenor.
- V-13 (0 4 0) is V-1 (0 0 0) with an extra octave between the tenor and alto.
- V-14 (0 0 4) is V-1 (0 0 0) with an extra octave between the alto and soprano.

This demonstrates an important way that Method 1 and Method 2 are interrelated. Both the Master Formula Table of Method 1 and the Chord Tone Gap Table of Method 2 show the octave relationships between the above pairs of voicing groups. They also both indicate, for the higher numbered voicing groups, where the extra octave is located.

Take It to the Limit

Notice there are no gap sizes of 6 or greater in the Chord Tone Gap Table. This is because Ted designed the V-System for reachable guitar chords, in standard or down-tuned standard tuning, with normal guitar technique (no right hand on the fingerboard), and generally with no open strings. Gaps of 6 or higher will produce unreachable guitar chords.

Clearly, the V-System could be expanded to include larger gap sizes. Chords with these larger gaps, although unreachable on the guitar, could be played on other instruments such as the keyboard. Or they could be orchestrated for a chord played by multiple instruments. Such widely spaced chords could easily be described by their chord tone gaps. Also, if we allow "forbidden" gap sizes of 3, 7, 11, etc., we could even describe four note chords with doublings. So one very nice thing about *Method 2 – The Chord Tone Gap Method* is that it is readily expandable.

Here are the chord tone gaps for a few extra voicing groups, beyond Ted's fourteen. They are essentially unreachable on the guitar and that's why Ted didn't include them in his V-System. (Chords with the gap sizes indicated below will still contain four distinct notes with no doubling):

B – T	T – A	A – S
0	4	4
0	5	2
1	2	5
1	4	5
1	6	1
2	2	6
2	6	2
4	0	4
4	4	0
5	2	1
5	4	1

and so on…

—James