

## A Corpus Analysis of Harmony in Country Music

Trevor de Clercq

[NEXT] Hello, my talk today will be divided into four parts: Background, Methods, Results, and Discussion. [NEXT] Let's begin with Chapter One: The Background.

### Background

[NEXT] Over the past few decades, music theorists have begun to closely study harmony in recorded Anglo-American popular music, which differs in many ways from the conventions of common-practice-era Western art music. The vast majority of this research has focused on “rock.” [NEXT] Some authors cast a wider net by looking at “pop/rock.” But overall, the academic study of harmony in popular music has focused primarily on a subset of popular styles.

[NEXT] In defense of this trend, “rock” and “pop” are two of the most popular popular music styles. But other styles enjoy similar levels of popularity yet have not received comparable scholarly attention, at least with regard to harmony. Now I won't address harmony in R&B and hip-hop today, [NEXT] but I will address harmony in country music, which to my knowledge has never been studied in a large-scale, systematic way. In fact, I have trouble finding much academic research on harmony in country music at all, which is somewhat strange given how central harmony is to the style, as we'll see.

One reason for this lack of academic attention may be due to a perception that harmony in country music is relatively simple. [NEXT] For example, Harlan Howard is often quoted as having said that country music is just “three chords and the truth.” Some music theorists have pushed back against this characterization. [NEXT] Jocelyn Neal, for example, has said that it's a misconception that country music relies on three-chord harmonic progressions [NEXT] and that nothing could be further from the truth than the idea that country music uses a primitive harmonic language. Unfortunately, Neal doesn't offer much empirical evidence to back up her claims. So the question lingers: Is country music harmonically simple or not. And more broadly, what is the harmonic syntax of country music? Does it follow common-practice conventions, or is it more like pop and rock?

One tool that I have used in the past to answer questions like these is a computational approach. [NEXT] In particular, David Temperley and I created a 200-song corpus of rock songs, which we call the RS 200—with RS standing for “Rolling Stone” since the corpus is based on Rolling Stone Magazine's list of the Greatest Rock Songs of All-Time—and this RS 200 corpus has provided a number of insights about harmony in rock. In this paper, I thus take similar approach and present today a corpus study of harmony in country music.

### Methods

[NEXT] Now for Chapter Two: the methods of my study. [NEXT] In 2015, Hal Leonard published my *Nashville Number System Fakebook*, which includes harmonic transcriptions of 200 country songs. This book seemed ripe for a corpus study, not just because I had already done the work of harmonic transcription, but also because I compiled the songs using a statistical approach [NEXT] Specifically, I aggregated fourteen lists of notable country songs—which ranged from *Billboard* sales figures to “Song of the Year” awards to music critics' lists of “All-Time Greatest Country Songs”—so as to objectively assemble a “meta-list” of famed country songs. [NEXT] I'll refer to this set of 200 songs as the NN 200 corpus (NN for Nashville number) or the “country

corpus.” The corpus includes songs from 1933 to 2014, with styles ranging from Bluegrass to Outlaw Country to Bro Country, and yes, even one song by Taylor Swift.

The transcriptions in my fakebook are in the Nashville number format, which I won’t fully explain today. But a crash course might be useful. [NEXT] Here is a Nashville number chart for the song “80’s Ladies.” These types of charts have been used in Nashville recording sessions since the late 1950s and are now commonplace. Basically, a Nashville number chart shows the chords of the song using a functional notation similar to Roman numerals, but instead of Roman numerals to indicate chord roots, it uses Arabic numerals. It seems appropriate, therefore, to talk about harmony in country music, since professional country musicians obviously think about songs in terms of their harmonic structure, perhaps even more so than do rock musicians. [NEXT] Let’s zoom in on the verse and chorus of this song to illustrate how this works. Each new number is a new bar. So at the red arrow in this song, which is in C major, the first bar is a C major chord, the second bar is a D minor seventh chord, the third bar is a C major chord in first inversion, that’s a “1” over “3,” and the last bar is an F major chord with an added “2” or ninth. I’ll play this example from the red arrow and I think it should be mostly self-explanatory. [NEXT] The standard disclaimer applies here that the aural analysis of harmony is inherently subjective.

[NEXT] In order to conduct a statistical analysis of this corpus, I encoded each of the 200 songs as a single text file, such this excerpt of “80’s Ladies.” It was these encoded text files that I used to generate the statistics I report today.

## Results

[NEXT] Now for Chapter Three: The Results. [NEXT] Since Harlan Howard famously said that country music is just “three chords and the truth,” let’s look at how many songs use just three chords. A few songs actually use only two chords. (Perhaps they compensate with more truth.) By the way, I’m defining a “chord” here as change in the basic triad, so either a change in the chord root or chord quality. [NEXT] It turns out there are 53 songs total in the country corpus that use three chords or fewer, which is just over 25% of the 200 songs. Now is this a lot of songs, relatively speaking, or not a lot of songs, as compared to other musical styles. [NEXT] Well let’s compare that to the RS 200 rock corpus. [NEXT] In the rock corpus, a few songs have only a single chord, and about 5% have two or fewer chords. [NEXT] The percentage of songs with three or fewer chords is 28.5%. So country music does not seem very different from rock in terms of the number of songs with limited harmonic palettes. [NEXT] This trend continues when we look at songs with only four or fewer chords, which accounts for about half of the songs in both the country and the rock corpus. [NEXT] That said, as we continue this process, we find that few country songs have more than seven different chords, whereas a good number rock songs include large and varied harmonic palettes. Country music, therefore, seems to more quickly hit a ceiling of harmonic complexity as compared to rock.

The next logical question, given that about the half songs in the corpus use only three or four chords, is what are these three or four chords? Well, I’m sure you can make a pretty good guess. The three most common chords in the country corpus, based on instances are (drum roll, please) [NEXT] 1, 5, and 4, in that order. (Probably not too surprising.) By the way, I define a new instance of a chord as a change of chord root or chord quality, so eight bars of tonic followed by four bars of dominant is one instance of tonic and then one instance of dominant. [NEXT] We could also measure frequency by number of bars, and we get the same ranking of chords. There are almost eight thousand bars of tonic in the corpus, which is about 44% of bars total. [NEXT] Overall, therefore, about 82% of the chord instances in the country corpus are just 1, 4, and 5, and about

86% of the time in the corpus, as measured in bars, is spent on these three chords. It does appear, therefore, that harmony in country music is driven primarily by just three chords. [NEXT] In fact, the next most common chord, which is the six minor chord, does not come close to the frequency of any of these three basic triads. But before we write off harmony in country music as being overly simplistic, let's compare it to some other styles.

Before doing so, I should mention that one complicating factor here is that almost all of the songs in the country corpus—specifically, 98% of the songs—employ major tonic chords exclusively. That is to say, almost every single country song is in a major key. That is very different than the rock corpus, where only about 78% of the songs use a major tonic exclusively. So in order to compare apples to apples, I limited the rock corpus to just those songs that are arguably in a major key [NEXT] and found that about 79% of chord instances are 1, 4, and 5, and about 85% of the time, as measured in bars, is spent on these three chords. Although the difference between country and rock is statistically significant because we are dealing with large sample sizes, it does not seem like a very big difference. In fact, classical music shows a similar disproportion in its use of 1, 4, and 5. [NEXT] For example, using statistics from Helen Budge's dissertation, I estimate that in music of the early common-practice era—roughly 1700 to 1830—the incidence of tonic, subdominant, and dominant chords is about 79%. This figure drops to about 62% when looking at art music from the mid to late 19th-century, but the hegemony of 1, 4, and 5 remains nonetheless. So while country music relies heavily on just three chords, the distribution is not wildly out of proportion with other styles. [NEXT] For the sake completeness, here are the statistics for the most common chords in the country corpus. I don't want to get bogged down in these results, but I will say two things: Number One) This ranking is very similar to that found in the rock corpus, if we limit the rock corpus to just those songs in a major key. One difference worth noting is that in the rock corpus, the 4 chord is more common than the 5 chord, whereas in the country corpus, 5 is more common than 4. By this measure, country music is more like classical music, where dominant chords are much more common than subdominant chords overall. The second thing I'll say is that country music obviously avoids diminished chords, most notably the diminished leading-tone chord, which is a characteristic sonority in classical music, of course. In this regard, country music is more like rock, which also shows a much greater use of bVII than the diminished leading-tone chord.

There is also further evidence that harmony in country music lies somewhere between the languages of classical music and rock. [NEXT] For example, one of the notable features of harmony in classical music is the asymmetry between ascending and descending versions of the same root interval. In classical music, for example, root motion by ascending fourth is much more prevalent than root motion by descending fourth. Similarly, ascending seconds—like 4 going to 5, or 5 going to 6—are more prevalent than descending seconds, and descending thirds are more prevalent than ascending thirds. Theorists have dubbed this asymmetry as the difference between “progressive” root motion—ascending fourths, descending thirds, and ascending seconds—as opposed to “retrogressive” root motion—descending fourths, ascending thirds, and descending seconds. [NEXT] As Temperley and I showed in our 2011 paper, this asymmetry between progressive and retrogressive root motion is essentially absent in the rock corpus. Ascending and descending versions of a root interval are, for the most part, balanced. [NEXT] Looking at the distribution of root intervals in country music, we find a similar asymmetry as in classical music; progressive root motion generally prevails over retrogressive. But the difference is much less stark, especially for root motion by fourths. Here again, harmony in country music seems to be situated somewhere between the conventions of classical music and rock.

Of course, looking at root motions globally does not address how individual chords move, which is a central part of harmonic syntax. In classical music, for example, the descending second when 5 moves to 4 is rare, but the descending second when 6 moves to 5 is fairly common. So it seems worth investigating how these root motion asymmetries play out on a chord-by-chord basis. [NEXT] In the country corpus, for example, there is a high probability for retrogressive motion when the b7 chord is involved. As the first row shows, b7 moves to four 5.5 times more often than 4 moves to b7. [NEXT] As we look at other common chord pairs in the corpus, though, the strong tendency is for progressive root motion. [NEXT] That said, the chord pairs at the bottom of this table are relatively balanced. So, for example, 1 moves to 4 pretty much as often as 4 moves to 1. [NEXT] It's also interesting that 4 more often moves to 5 and 2 more often moves to 5 than the other way around. Country music thus seems to exhibit a greater preponderance of traditional cadential gestures than the retrogressive 5 to 4 blues gesture endemic to rock. Of course, country music still shows a lot of 5 to 4 motion, just not to the extent found in rock. Here again, it's as if country music, like rock, has moved away from traditional harmonic syntax, but country has been somewhat less radical in that move.

Thus far, I have focused primarily on roots and root motions. In so doing, I have ignored other important aspects of harmonic organization. My time here is limited, but let's look at just one more aspect: chords that are not in root position. [NEXT] As a reference point, previous work has shown that about 60% of chords in common-practice music are in root position. [NEXT] This contrasts greatly with the rock corpus, in which about 94% of chords are in root position. [NEXT] In the country corpus, the frequency of root position chords is essentially identical to that in the rock corpus: about 94%. So in this regard, country and rock seem closely aligned in their harmonic practice.

[NEXT] As a last blast of statistics, here is a table showing the typical behavior of non-root-position chords in the country corpus, rare as they may be. [NEXT] For example, 5 over 7 tends to move to 1 or 6, which is very traditional behavior for a first-inversion dominant chord. 1 over 3 often moves fairly traditionally as well, most often occurring before or after a 4 chord. Somewhat less traditionally, the 2 minor chord often comes before a first-inversion tonic. [NEXT] We saw that in the song "80's Ladies," as you may remember, where the 2 minor seventh chord expanded tonic during the bass ascent from scale-degree 1 to 4. This type of move is fairly typical for country music. Certainly, it is extremely rare to find a first-inversion 7 diminished chord in this tonic expansion role, as we might expect in classical music. [NEXT] So just as we could propose, as theorists have in the past, a "rule of the octave" for classical music, [NEXT] we could also imagine a similar though different rule of the octave for country music. In the country music rule of the octave, inverted chords are generally avoided, except on scale degrees 3 and 7, which are both half steps away from the next higher note. This arguably changes the functional designations for some bass notes, such as scale degree 2 and 6, as compared to a classical rule of the octave. By the way, trying to posit a comparable "rule of the octave" for pop and rock music is much less clear.

### **Discussion (~240 words)**

[NEXT] On to the final chapter: a discussion and conclusion. Generally speaking, the work presented here implies that the harmonic conventions of country music are somewhere in between those of rock and common-practice music. [NEXT] Like rock and unlike classical music, country employs bVII much more frequently than 7 diminished, it shows a much greater use of root-position chords than inversions, and it shows numerous instances of chord transitions that are typically deprecated in traditional music theory except for certain special cases, such as 5 moving

to 4. [NEXT] Yet like classical music and unlike rock, country uses more dominant chords than subdominant, shows an overall preponderance of progressive root motion, and in particular, a greater use of traditional cadential motions like 2–5–1 or 4–5–1.

[NEXT] Some other aspects are worth noting about harmony in country music. The strong avoidance of the minor tonic is one striking feature. In contrast to prevailing legend, country music does not seem to have more songs structured around just three chords than does a style like rock, at least when looking at famous songs. The songs in the country corpus do rely slightly more heavily on 1, 4, and 5 than other styles, although it's only to a small degree. We also found that country songs rarely have a harmonic palette that extends beyond 7 chords.

Taking a step back, we might wonder what factors explain the general harmonic organization of country music. I speculate that one reason may be the typical cultural framework of country music's listener base. Country music, of course, is deeply rooted in the American South. Residents of this region are known to generally hold more conservative views than residents in other parts of the nation. The harmonic conventions in country music may thus reflect this more conservative worldview. While harmony in country music, like rock, often departs from common-practice norms, harmony in country music still adheres more strongly to the harmonic principles of common-practice music than does rock. Admittedly, this hypothesis assumes that common-practice harmonic conventions are in some way "conservative" or "traditional," at least as compared to the harmonic conventions found in rock. I do not think that's too far-fetched, nor I am the first to do so.

This line of reasoning also assumes that country music fans are (at least subconsciously) attuned to basic principles of harmonic organization. Taking this for granted, it's not unreasonable to hypothesize that the listener base participates in shaping the content of the music through its purchasing power and influence. In her history of country music, Jocelyn Neal sketches the constant push and pull in the country music industry, as innovations and expansions to the style are soon counteracted by a backlash and return to more traditional sounds. After the jazz-flavored sonorities of 1940s Western swing, for example, comes the simplified harmonic language of honky-tonk; similarly, the rise of outlaw country in early 1970s, with its stripped-down instrumentation and limited chord palette, arguably arose as a reaction to the heavily produced and more harmonically sophisticated music of the Nashville sound. The tension in country music between the harmonic norms of traditional music and those of rock might, therefore, conceivably reflect some of the underlying back-and-forth tensions between progressive and conservative viewpoints in American culture more broadly. [NEXT]