

The Nashville Number System: A Framework for Teaching Harmony in Popular Music

TREVOR DE CLERCQ

The Nashville number system is a notational practice used by commercial musicians to represent the functional harmony of a complete song on a single sheet of paper. As a result, it can be considered an alternative format to the standard system of Roman numerals and figured bass commonly used in North American music theory classrooms. This article explains the mechanics of the Nashville number system, highlighting its differences with Roman numerals while also discussing some pedagogical applications. For the analysis of popular music especially, the Nashville number system arguably offers a more faithful, efficient, and flexible approach to representing functional harmonic syntax than is possible using traditional Roman numerals.



Introduction

While Roman numerals are currently the standard format used by music scholars to notate functional harmony—particularly for Western common-practice-era art music, hereafter “classical” music—many musicians working in popular music styles use an alternative format known as the Nashville number system. The Nashville number system was first developed in Nashville recording studios during the 1950s, but the system has become standard across North America and beyond among various cohorts of commercial musicians, including professional session players, backing musicians for live tours, and contemporary worship band members.¹ Yet despite the popularity of Nashville numbers within the music industry, the system is not well known within the music theory community.² The central objective of this essay is thus to highlight the differences between Nashville numbers and the traditional system of Roman numerals and figured bass, especially as these differences pertain to teaching harmony in the music theory classroom. As I hope to show, Nashville numbers are often better suited for analyzing harmony in popular music. In some cases (to be discussed below), the analytical presumptions that underlie Roman numerals arguably skew our analyses of harmonic syntax in popular music, which Nashville numbers more faithfully represent.

1 For a more complete history of the Nashville number system, see Matthews (1984).

2 This claim is based primarily on my perception. As some evidence, though, few if any existing journal articles in music theory mention or employ the Nashville number system.

Before delving further, consider a simple illustration of the Nashville number system. Example 1 shows a complete Nashville number chart for the song “Rockin’ Robin,” as recorded by Bobby Day in 1958.³ From this bare-bones representation, a commercial musician would be expected to improvise a stylistically-appropriate arrangement on their instrument at sight. For readers familiar with Roman numerals, the main aspects of the Nashville number system should be easy to understand. In essence, a Nashville number indicates the chord root via an Arabic number (rather than a Roman numeral), with each number equivalent to one measure unless otherwise indicated (more on that below). Reading down the first column of this chart, for example, the eight-bar verse (Vr) and eight-bar chorus (Ch) together constitute a prototypical sixteen-bar blues, whereas the solo section (So) constitutes a standard twelve-bar blues. The “X” notation indicates a measure in which there is no clear harmonic content;⁴ superscripts (e.g., 5⁷) indicate chord tones beyond (or altered from) the triad; other details, such as indications of key and meter, should be obvious. A complete accounting of the system’s syntax, such as the caret symbol (^) and other rhythmic notation (such as how to notate chord lengths other than a bar), will be provided in the sections that follow.

In contrast with other typical representations of a popular song, such as a lead sheet or letter-based chord chart, a Nashville number chart has some distinct advantages. By avoiding a five-line staff, for example, it is much easier to fit the harmonic content of an entire song onto a single page. This has the benefit of avoiding page turns, but more importantly for a theory instructor, allows the entire form, phrase structure, and harmonic content of the song to be seen at a glance. Also unlike typical lead sheets or chord charts, the use of a key-agnostic harmonic notation (rather than literal chord symbols such as C7 or Gm) not only allows for easy transposition to different keys based on the requirements of a particular singer, but more importantly for a theory instructor, clearly shows the functional relationships of each chord to the prevailing key.

Admittedly, the chart in Example 1 could have been written using Roman numerals, thereby offering these same advantages. But as chord changes become even slightly more dense, Roman numerals can quickly become visually confusing. Consider in this

3 I created this chart by ear, a task not without its challenges. For instance, I struggled with whether the sixth chord of the chorus was a dominant or subdominant chord. See Winkler (1997) for a detailed discussion of transcription issues in popular music.

4 One can often infer the harmonic function of measures with an X. The last bar of the bridge (Br), for example, sounds like a dominant (V) chord, even though the bar contains only melodic content.

KEY OF G

$\frac{4}{4}$ ♩ = 172
SWING 8THS

ROCKIN' ROBIN
(BOBBY DAY)

VOX & DRUMS ONLY										
IN)	X	X	X	X		VR)	1	1	1	1
	X	X	X	X			1	1	1	1
GTR IN										
VR)	1	1	1	1	CH)	4	4	1	1	
	1	1	1	1		5 ⁷	5 ⁷	1	1	
CH)	4	4	1	1	BR)	4	4	1	1	
	5 ⁷	5 ⁷	1	1		4	4	5 [^]	X	
VR)	1	1	1	1	VR)	1	1	1	1	
	1	1	1	1		1	1	1	1	
CH)	4	4	1	1	CH)	4	4	1	1	
	5 ⁷	5 ⁷	1	1		5 ⁷	5 ⁷	1	1	
SO)	1	1	1	1 ⁷	VOX & DRUMS ONLY					
	4	4	1	1	OUT)	X	X	X	X	
	5	4	1	1		X	X	X	X	
BR)	4	4	1	1						
	4	4	5 [^]	X						

Example 1
Nashville number chart of “Rockin’ Robin” (Bobby Day, 1958).

regard the chart in Example 2, excerpted from Neal (2007), which shows a Nashville-number-style chart with Roman numerals instead of Arabic numbers.⁵ The fourth and twelfth bars contain multiple chords, as indicated by the bracket: IV then I then V. But the small margin of error in spacing could easily cause a reader to misinterpret the chord progression as I then V then I then V, or I then V then IV, especially were this

⁵ Neal (2007) provides the full chart of the song as Example 10.

chord chart written by hand as is common among gigging commercial musicians. This is one of many ways that Nashville number charts prioritize efficiency and clarity in representing the functional harmonic structure of a musical work, and as such, can be an especially useful format in the music theory classroom.

Verse 1 [D Major] (0:24)			
I	I	I	<u>IV I V</u>
V	V	V	I
I	I	I	<u>IV I V</u>
V	V	V	I

Example 2

Transcription of opening verse (0:24–0:46) from “Long Time Gone,” (Dixie Chicks, 2002).

In what follows, I describe the principal mechanics of the Nashville number system, including how to notate rhythmic features, mixture, inversions, extensions, and applied chords. That said, purely descriptive overviews of the system already exist in publications meant for a non-specialist audience,⁶ so my focus here will be on how various aspects can be leveraged to teach students about harmony in general and harmony in popular music in particular. In doing so, the discussion will raise issues related to the typical music theory curriculum as it stands today, and so I will engage with more philosophical considerations as well. These insights derive from my own teaching of harmony to undergraduate students using Nashville numbers over the past few years.⁷

Two final preliminary points are worth mentioning. First, the Nashville number system is not strictly standardized; like Roman numerals, slightly different customs exist among its users. These differences are mostly cosmetic, however. I will describe

6 See Riley (2010), Williams (2012), or de Clercq (2015) for comprehensive explanations of the Nashville number system. Snodgrass (2016a) also contains an introduction to Nashville numbers aimed at undergraduate music students.

7 Note that I teach in the Department of Recording Industry at Middle Tennessee State University, which is a separate academic unit from the School of Music. Technically speaking, therefore, I teach primarily non-music majors. That said, Recording Industry students at MTSU choose one of three concentrations—Songwriting, Music Business, or Audio Production—which are degree programs typically housed within the music department of other schools. I thus believe that the issues I discuss in this article apply to music theory programs at other schools, especially for those with degrees that are more oriented around commercial and popular music.

one prevalent version here, with the understanding that small variations may be found in practice. Second, although one benefit of the Nashville number system is that it can show the harmonic structure of an entire song on a single page, Example 1 will be the only complete chart provided in this article. Although a chord progression cannot be copyrighted, some copyright holders believe that the publication of a complete Nashville number chart infringes on copyright protection.⁸ For this reason, I will use only short excerpts in the rest of the examples. This limitation should not affect the reader's understanding of the system, as long as the reader keeps the full chart format of Example 1 in mind.

Drummer's Charts and Rhythmic Notation

Because a Nashville number chart captures not only harmonic information but also information on phrase structure and form, the system can be a practical tool to attune students to musical aspects that are arguably “pre-harmonic,” i.e., musical features that will prepare them for hearing chord progressions in context. Traditionally, the topic of form in full-length music works is reserved until near the end of the undergraduate curriculum, after a student has mastered many if not most tonal harmonic concepts.⁹ Yet understanding the contexts, both large and small, in which harmony operates is arguably a critical reference point for students, especially beginners. Moreover, form is one of the few musical elements that can be intuitively understood without much music theory background.¹⁰ Once a student has internalized the basic concepts of the beat and the measure (which even most non-musicians master quickly), the student is sufficiently prepared to start tackling their own form charts.

Example 3 shows an excerpt from the type of form chart I ask students to create in their first homework assignment of a first-semester music theory class. This type of

8 This position is held by Hal Leonard, for example, which I have gleaned through discussions with company representatives. Note that “Rockin’ Robin,” written by Leon René, requires no usage permission since its copyright was not renewed, as discussed in Nichols (2010) and Halloran (2017, 97). In contrast, the 1972 Michael Jackson cover of this song falls under different copyright protections.

9 Kostka, Payne, and Almén (2018), for instance, introduce binary, ternary, and other work-length forms only in Chapter 20 (out of 25 on tonal music). Similarly, form is the last of 79 chapters in Karpinski’s 2017 aural skills textbook.

10 For example, Covach and Flory (2018) offer numerous form charts of songs without any reference to harmonic content.

chart is sometimes referred to as a “drummer’s chart” among commercial musicians,¹¹ since the specific harmonic content (which is less relevant to the drummer in the band) is not included. Instead of numbers, blank underlines indicate the number of measures in each section. Obviously, students must have some knowledge of section labels and their meaning to create a chart like this.¹² Rather than giving a lengthy list of definitions to students, though, I have found it more worthwhile to have students infer the labels and the meaning of these labels through the process of making charts for homework and comparing them to my versions. This approach encourages class discussions in the first weeks of a course, hopefully setting a tone for open dialog throughout the semester. Why, for example, did I choose two verses in Example 3 rather than one long cohesive verse section?

VR)	—	—	—	—
	—	—	—	
	—	—		
<hr/>				
VR)	—	—	—	—
	—	—	—	
	—	—	—	—
<hr/>				
CH)	—	—	—	—
	—	—	—	—
<hr/>				
LN)	—	—	—	—

Example 3

Drummer’s chart for opening sections (0:18–1:05) of “If You Wanna” (The Vaccines, 2011).

The drummer’s chart in Example 3 shows not only the order and length of sections, but also the particular phrase structure of each section. The second verse, for example, has a four-bar phrase, followed by a three-bar phrase, followed by a four-bar phrase. There are many factors that contribute to our perception of phrase

11 This is the term used by Riley (2010), who himself is a drummer.

12 For an overview of teaching form in popular music to undergraduate students, see Covach (2005).

segmentation, including instrumentation and melodic content, all topics worthy of in-class discussion. Harmony is also a central factor, and thus a drummer’s chart naturally leads into the topic of chords and chord progressions. In a traditional classroom, the concept of harmonic rhythm is often not addressed until after a student has mastered the details of chord spelling, chord inversion, and voice-leading.¹³ Yet because listening for chord changes is one of the more ineffable and difficult-to-explain topics in music theory (at least in my experience), it may be preferable to begin at an early academic stage the iterative work of having students listen for harmonic changes and compare their perceptions to that of their instructor. Accordingly, I introduce the basic concept of a triad as early in the first semester as possible, before students are necessarily even proficient with all key signatures and intervals.

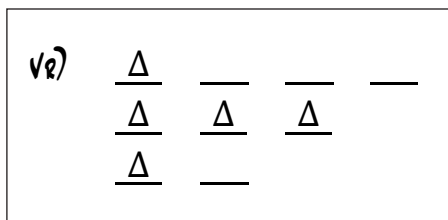
To facilitate the transition from a drummer’s chart to a chart with harmonic content, it can be helpful to have students use a “proto-notation” for harmonic rhythm, as shown in Example 4.¹⁴ In this proto-notation, the triangles (or “delta” symbols) indicate a change of chord.¹⁵ The chart in Example 4 thus shows that the first four bars of the verse are all the same chord, after which each new bar introduces a new chord until the last two bars, which both have the same chord. Theoretically, it would be possible to create a more elaborate proto-notation system, in which a student would identify chords that are the same. In Example 4, for instance, the first and last chord of the second phrase are the same. But at that level of aural awareness, it is often not much more challenging for a student to identify the actual Nashville number of each chord (presuming the song is simple enough). A student with a decent sense of tonic, for instance, will hopefully recognize that the first and last phrases of Example 4 are all tonic. And assuming the instructor tells the student that the chord palette of the song is limited to tonic, subdominant, and dominant, a student will hopefully hear the rising and falling motion of the harmony in the second phrase to guess that the chords are IV then V then IV (or, in Nashville numbers, 4 then 5 then 4).¹⁶

13 For example, Kostka, Payne, and Almén (2018) do not introduce the concept of harmonic rhythm until Chapter 10, only after a student has completed extensive diatonic part-writing exercises in essentially mono-rhythmic settings. Similarly, Karpinski (2017) waits until Chapter 35 (out of 79) to introduce harmonic rhythm.

14 By “proto-notation,” I mean some notation scheme that precedes or prepares for the more standard notation scheme. The term is often associated with a specific method introduced by Karpinski (2017, 1), which differs from the particular proto-notation described here.

15 Any symbol could be used to represent a new chord. The delta is simply my symbol of choice.

16 Unfortunately, “Do-Ti” tests are often problematic tools to assess harmonic function in popular

**Example 4**

Proto-notation for opening verse (0:18–0:31) of “If You Wanna” (The Vaccines, 2011).

The pacing of harmony in a real song, of course, is not always constrained to one chord per bar. To maintain readable and efficient charts, the Nashville number system includes some unconventional but nonetheless fairly straightforward rhythmic notation. The most common symbols are included in Example 5, which presents a hypothetical passage for the sake of demonstration. Chords that are grouped together by an underline indicate that they belong to the same bar, such as the two bars of dominant then tonic in the first phrase of Example 5. Underlined chords are presumed to split the bar evenly, with dots (or tick marks) above the chord numbers to indicate any non-even division of the bar.¹⁷ In the second bar, therefore, the dominant and tonic chords each last two beats (presuming a 4/4 meter), whereas in the third bar, the dominant chord lasts three beats and the tonic chord lasts one beat. Brief time signature changes can be indicated by parentheses around the chord, with the number of beats in the odd bar shown via dots.¹⁸ The second bar of the second phrase is thus a momentary bar of 3/4. The angle bracket (<) above a chord, often called a “push” by commercial musicians, indicates an eighth-note syncopation forward in time. The dominant chord in the second bar of the third phrase should thus begin on the “and” of the fourth beat in the measure prior; similarly, the subdominant chord in the third measure of the third phrase should begin on the “and” of the second beat. In more complex rhythmic situations, traditional rhythmic notation can be used, such as in the last bar of Example 5. Other traditional symbols—such as repeat signs, first and second endings, and *Dal segno* markings—are also used on Nashville number charts when appropriate, as long as the readability of the chart is not significantly compromised.

music due to the melodic-harmonic divorce, where a prominent scale-degree 1 in the melody may sit atop an otherwise clear dominant chord, such as in the chorus of “Out of the Woods” by Taylor Swift (2014); see Snodgrass (2016a, 168) and Temperley (2007).

17 Some versions of Nashville numbers use a box around chords that belong in the same measure.

18 More complicated time signature changes can be indicated by a traditional time signature.

Finally, two special symbols are often used to specify further details of chord duration. These symbols are the diamond (as in the fourth bar of Example 5), which indicates that the chord should be struck and then held; and the caret (as in the eighth bar), which indicates that the chord should be struck and then cut off. The first two bars of the last phrase thus indicate a tonic chord that is held (or tied) for two full bars.

Example 5


Instances of special rhythmic notation (in a 4/4 meter).

For those new to the Nashville number system, this rhythmic shorthand may seem rather quirky, perhaps even cumbersome as compared to traditional rhythmic notation. But this system usually becomes intuitive very quickly, even for untrained musicians. Its power lies not only in its ability to succinctly represent the rhythmic details of a song's harmonic structure, but also in its ability to do so without necessarily relying on traditional rhythmic notation. For students that enter a first-year class with weak or non-existent rhythm reading skills, therefore, the Nashville number system offers the opportunity to interact with harmony in a rhythmic context while at the same time (hopefully) developing traditional rhythm notation skills.

Triad Notation and Minor Keys

Because the Nashville number system uses Arabic numbers to represent the chord root, major and minor chords are not differentiated through upper- and lower-case numbers, as is frequently done with Roman numerals. Instead, Nashville numbers presume the chord to be major unless otherwise indicated. To indicate a minor chord,

a dash (-) is normally used after the Arabic number, e.g., 6- would indicate an A minor chord in the key of C.¹⁹ In short, Nashville numbers take the lead-sheet notation for a chord and convert the letter-based content into scale degrees. Thus in the key of D, an F#⁺ chord (i.e., an F-sharp augmented chord) would be 3+ in Nashville numbers. Example 6 shows an illustration of this methodology for the song “Peace of Mind” by Boston (1976), which is in E major; the $\flat 7$ here refers to a D major chord, the 6- to a C#m chord, and so on. This basic protocol for turning jazz/pop chord symbols into functional harmonic notation holds true for chord extensions, additions, and inversions, but these subjects raise issues that warrant their own treatment in dedicated sections (addressed below).

Vr)	1	$\bar{1}$	$\flat 7$ 4	$\bar{1}$
	1	$\bar{1}$	$\flat 7$ 4	$\bar{5}$ 5
Ch)	$\underline{6-}$ $\bar{4}$	$\underline{1}$ $\bar{5}$	$\underline{6-}$ $\bar{4}$	$\underline{1}$ $\bar{5}$
	$\underline{6-}$ $\bar{4}$	$\underline{1}$ $\bar{5}$	$\underline{6-}$ $\bar{4}$	$\underline{1}$ $\bar{5}$
				

Example 6

Verse and chorus (0:30–1:06) from “Peace of Mind” (Boston, 1976).

In a traditional theory curriculum, students often learn about chord inversions and tones beyond the triad (such as sevenths) before they gain fluency with the syntax of root-position diatonic triads.²⁰ This ordering of topics derives, presumably, from the preponderance in classical music of tonic, dominant, and dominant seventh chords and their inversions. Indeed, these are common chords in popular music as

¹⁹ As in pop chord symbols, it is also valid in Nashville numbers to indicate a minor chord with a small “m” after the Arabic number. For example, 6m would indicate an Am chord in the key of C.

²⁰ This is the approach, for example, in Kostka, Payne, Almén (2018), where sevenths chords and inversions are introduced immediately after the triad in Chapter 3, while the discussion of diatonic chords is reserved until Chapter 7. A similar approach is used in Laitz (2016), where inversions and extensions to tonic and dominant triads are introduced prior to pre-dominant chords.

well, although perhaps not to the extent found in classical music. By some measures, for example, subdominant chords are more common in popular music than dominant chords, with fewer inverted chords in total than either submediant or subtonic chords.²¹ Using Nashville number charts early in undergraduate-level coursework thus offers the opportunity to have students internalize (both conceptually and aurally) rudimentary aspects of harmonic function prior to the complicating factors of chord extensions, additions, and inversions.²²

A variety of classroom and homework exercises can be brought to bear using Nashville number charts once students have a fundamental understanding of triads in a key. For example, I now assign after every class (in addition to other things) a partial chart to transcribe for homework, typically about one minute of a song (such as the verse and chorus sections). As keyboard exercises, students can be asked to prepare an arrangement from an assigned chart, or they can be asked to “comp” a chart at sight.²³ Nashville number charts were originally designed to guide the backup singers for Elvis Presley,²⁴ so it seems historically appropriate to employ charts in sight-singing activities. Students can be asked individually to improvise a vocal harmony line through the chord progression (with or without the original recording), or the entire class can be asked to improvise an on-the-spot *a cappella* rendition of the song’s harmony (with or without someone singing lead vocal). Admittedly, it is certainly possible to do these activities using Roman numerals, but the combination of rhythmic information with chord functions makes these tasks easier to notate.

One of the biggest differences between Nashville numbers and traditional Roman numerals involves the way in which minor keys are conventionally represented. As illustration, Example 7 shows an excerpt from a Nashville number chart created by Matt Lund, director of the commercial music ensembles at MTSU, for the song “It’s a Man’s Man’s Man’s World” by James Brown (1966).²⁵ Although Example 7 shows only

21 de Clercq and Temperley (2011).

22 Admittedly, this approach is somewhat in opposition to the view that counterpoint drives harmony more than chord function, although this stance is debatable for popular music.

23 “Comping” is the standard term used by popular and jazz musicians to refer to playing a harmonic accompaniment for a song. It is usually improvised and typically follows the performance practice norms for the instrument within the style.

24 Matthews (1984, 6-9).

25 The original version of this chart sets the song in 12/8, but it is set here in 6/8 to afford comparison with Example 8. For more examples of songs with a strong minor tonic charted in this way, see Williams (2017) (e.g., “Rolling in the Deep” by Adele).

a portion of the song, the rest of the song does not include any new harmonic events. Specifically, the full chart contains no instance of a 1 chord, which as charted would be G-flat major. But while recent research in popular music has argued that many songs can be viewed as having an “absent tonic,”²⁶ most listeners (whether from a classical or popular music background) would probably say that the tonic of this song is E-flat minor, if simply because its phrases consistently begin and end on an E-flat minor chord. Accordingly, a musician more familiar with traditional Roman numeral

CH)	6-	3-	6-	3-
	2-	2-	3 ⁷	3 ⁷
	6-	3-	6-	3-
<hr/>				
VR)	6-	3-	6-	3-
	6-	3-	6-	3-

Example 7

Excerpt (0:12–0:56) from “It’s a Man’s Man’s Man’s World”
(James Brown, 1966), as charted in the key of G-flat.

CH)	1-	5-	1-	5-
	4-	4-	5 ⁷	5 ⁷
	1-	5-	1-	5-
<hr/>				
VR)	1-	5-	1-	5-
	1-	5-	1-	5-

Example 8

Excerpt (0:12–0:56) from “It’s a Man’s Man’s Man’s World”
(James Brown, 1966), as charted in the key of E-flat.

26 Spicer (2017).

analysis would probably chart the song using Nashville numbers as in Example 8, with the E-flat chord as the 1- chord.²⁷

To be clear, Examples 7 and 8 are both valid Nashville number charts with regard to the purely mechanical aspects of the system's syntax. The differences are instead more philosophical. Example 8 takes a parallel-key (or "Do-based") approach to the minor tonic, whereas the convention in Nashville numbers (as shown in Example 7) is to take a relative-key (or "La-based") approach to the minor tonic. There is, of course, nothing inherent about Roman numerals that precludes them from being used in a La-based-minor way. But the traditions of the two systems are important to acknowledge, for they reflect important differences in the way harmony is conceptualized by musicians working within different repertoires.

To attempt to better understand why this difference exists, consider the chart shown in Example 9. In the chorus of this song, the tonic is clearly E major. But prior to this chorus, which first occurs only after a minute into the song, the sole chords are A major and C# minor, such that C# minor arguably sounds like tonic. It would not be unreasonable, therefore, to imagine charting the verse of the song in C# minor, i.e., with the C# minor chord being 1-, and then positing a modulation to E major in the chorus. This strategy of moving from a minor tonic in the verse to a major tonic in the

Vr)	4	4	6-	6-
	4	4	6-	6-
	4	4	6-	6-
	4	4		
<hr/>				
Ch)	1	1	3-	3-
	1	1	3-	3-
	4	4	4	

Example 9

Verse and chorus (0:36–1:32) from "Need You Now" (Lady Antebellum, 2009).

²⁷ Indeed, this is the way both David Temperley and I charted the song in our corpus of rock music (2013).

chorus is very common in popular music.²⁸ But while some theorists²⁹ may think of this relative-key move as a modulation, commercial musicians typically avoid labeling this relationship as a change of key.

There are a few reasons why commercial musicians might prefer to think in this way. From a purely practical perspective, it is arguably easier to improvise an arrangement by considering a song in a single key whenever possible rather than mentally juggling key changes. Moreover, songs in major keys are more common, especially in certain commercial styles, than songs in minor keys,³⁰ and so an improvising musician may be more comfortable thinking in a major key because it is more familiar. From a more perceptual perspective, the major tonic in the chorus also potentially biases our hearing of the verse, whether we hear the second verse immediately after the chorus or rehear the first verse in a replay of the song. That is to say, it is difficult to “unhear” the tonal pull of the E major tonic, especially when it is given such a prominent place in the structure of the song.

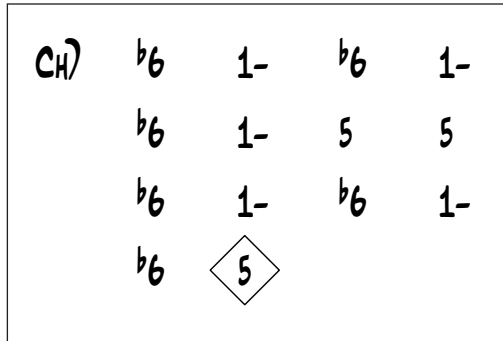
Admittedly, there are some songs in popular music for which it is convenient and arguably more appropriate to conceptualize the minor tonic in a Do-based way. This is especially the case when central sections of a song toggle between parallel keys, such as in “Wolf at the Door” (Radiohead, 2003). Unlike the common-practice style of Roman numerals, though, Nashville numbers are not contextual to the modality of the “one” chord. Using Roman numerals as typically taught in the music theory classroom, for example, a B-flat major triad in C minor is VII but in C major is \flat VII. In contrast, chord labels in Nashville numbers always presume the 1 chord to be major, even if the 1 chord is minor. In Example 10, for instance, the 1- chord is F# minor, and thus the D major chord that opens the chorus is \flat 6, as if the song were in F# major. This modality-agnostic approach to chord labeling has, in fact, become standard practice in the style of Roman numerals used by scholars of popular music,³¹ in part due to the extensive use of mixture in songs and the concomitant difficulty in determining a single modality.

28 Spicer (2017).

29 e.g., Doll (2011).

30 Temperley and de Clercq (2011).

31 e.g., Biamonte (2010).

**Example 10**

Chorus (0:40–1:03) from “Before He Cheats” (Carrie Underwood, 2005).

Beyond the Root-Position Triad

Perhaps an even greater difference between Nashville numbers and Roman numerals involves the method for indicating chord inversions, extensions, alterations, and additions. With Roman numerals, these aspects are all conveyed through figured bass notation, which creates some notational limitations when dealing with harmony in popular music. In contrast, Nashville numbers explicitly distinguish between the inversion of a chord and extensions, alterations, or additions to that chord. Example 11, which is in the key of G, illustrates this point.³² As discussed previously, Nashville numbers convert the letter-based portions of a lead-sheet chord symbol into scale degrees. Thus in Example 11, the 5/7 chord would be a D/F# chord, the 6-7 an Em7 chord, the 1/3 a G/B chord, etc. Different flavors of lead-sheet chord symbols exist, of course, which is responsible for some of the variation in Nashville number styles. A major-seventh chord can be represented on a lead sheet, for example, by a triangle, a triangle followed by a seven, or the “maj7” suffix. Without question, fluency in Nashville numbers presupposes fluency in lead-sheet chord symbols, which is beyond the scope of this article.³³ As a personal preference, I use shorter versions of these symbols whenever possible since horizontal space on a Nashville chart is at a premium.

³² The label “PCH” in this chart refers to the “prechorus” section, which is the term most commonly used by music theorists for the transitional section between the verse and chorus of a song, e.g., Summach (2011). In the country music community, however, this same section is often referred to as the “channel,” abbreviated as “CHNL” or “CHA”; see Riley (2010) or Williams (2012).

³³ For one introduction to a system of lead-sheet chord symbols, see Wyatt and Schroeder (1998).

In the penultimate bar of Example 11, for instance, I chose to indicate the suspended fourth on the dominant chord through simply the superscript of “4” so as to minimize visual clutter, even though a “sus4” or “sus” label is more standard among commercial musicians.³⁴

V _R)	1	$\frac{5}{7}$	6^{-7}	6^{-7}
	4	4	5	5
PCH)	1	$\frac{5}{7}$	6^{-7}	6^{-7}
	4	4	5	5
<hr/>				
PCH)	2^{-7}	2^{-7}	$\frac{1}{3}$	$\frac{1}{3}$
	4	4	5^4	$\overset{\wedge}{5}$

Example 11

Opening verse and prechorus (0:17–0:58) of “When You’re Gone”
(Avril Lavigne, 2007), key of G, 2/4 meter (or 4/4 with a half-time feel).

Separating the notation of a chord’s inversion from non-triadic chord tones offers a number of advantages. In an undergraduate classroom, for example, the distinction between a cadential $\frac{6}{4}$ chord and a dominant chord in second inversion can be confusing, since both are represented in Roman numerals as $V\frac{6}{4}$. In Nashville numbers, however, the second-inversion dominant chord would be notated as $5/2$ whereas the cadential $\frac{6}{4}$ could be notated as a 5 chord with $\frac{6}{4}$ as a superscript, as shown in the last bar of Example 12.³⁵ Nashville numbers also readily accommodate inversions of extended or altered chords, such as the first-inversion dominant ninth chord (C9/E) heard at the end of every second bar in “Escape” by Rupert Holmes (1979). Representing a

34 In my charts, I similarly prefer to use a horizontal slash rather than a forward slash (/), so as to more clearly indicate a harmonic sonority over a note in the bass.

35 Admittedly, notating a 5 chord with $\frac{6}{4}$ as a superscript implies that a chordal fifth still exists in the sonority, since neither the 4 nor the 6 necessarily displaces the fifth. In practice, therefore, this particular notation should be taken to imply a double suspension rather than a suspension with an “add 6.” While still not perfect, I find this solution offers more clarity than the standard Roman numeral approach.

sonority like this with Roman numerals would be at minimum confusing (e.g., V_6^7) if not disallowed. Overall, I have found Nashville numbers to be easier for students (or at least my students) to learn than Roman numerals. Roman numerals seem to require a bit more decoding and pattern recognition due to the uncomfortable marriage between one aspect that presumes the existence of a chord root (the Roman numeral) with another aspect that does not (the figured bass).

IN^7	1	6-	$\frac{1}{5}$	4	
<hr/>					
V_6^7	1	6-	4	1	1
	1	6-	4	<u>5_4^6</u>	$\tilde{5}$

Example 12

Intro and opening verse (0:00–0:48) of “Faithfully” (Journey, 1983).

To be fair, a figured bass line has the power to accurately represent any sonority. But when paired with a Roman numeral, these figures are missing a critical component: the bass itself. This often creates awkward labels even in the analysis of classical music, such as a bass suspension (e.g., $V_2^5-V_3^6$) or a suspension over an inversion (e.g., V_7-6). For popular music analysis, the inability of Roman numerals to flexibly account for the bass as a separate entity from what is occurring above the bass is especially problematic. Consider in this regard the chart excerpt from “She’s Gone” by Hall & Oates (1974) shown Example 13, which is in the key of E major. The $4/5$ chords—here an A major triad over a B in the bass, i.e., A/B—are a common sonority in popular music.³⁶ It is unclear what an appropriate Roman numeral representation would be for this simultaneity. Some authors refer to it as a V_{11} chord, although this label implies a chordal third that is instead absent.³⁷ Others refer to it as a V_9sus_4 chord, although this label implies a chordal fifth that is instead absent.³⁸ Both of these labels presume that the sonority has a dominant function, despite the complete subdominant triad in

³⁶ For example, see Spicer’s discussion of harmony in “She’s Gone,” his Example 1 (2017).

³⁷ Stephenson (2002, 87).

³⁸ Buckingham and Pascal (1997, 64).

the upper voices and lack of a leading tone. Other authors view the sonority as a blend of subdominant and dominant functions, an analytical stance that Roman numerals are not very well positioned to handle.³⁹

<i>V(2)</i>	$\frac{4}{5}$	5	$\frac{4}{5}$	5
	$\frac{4}{5}$	5	<u>$3-7$</u> $\overset{\wedge}{6-7}$	$\frac{4}{5}$

Example 13

Opening verse (0:32–0:57) to “She’s Gone” (Hall & Oates, 1974).

The “IV over 5” sonority is not the only instance of what might be called “functional blends” in popular music; they are simply the most common. The most accepted label for such sonorities is “hybrid chord,” which speaks to the composite nature of such harmonic events.⁴⁰ Hybrid chords can arise from chordal motion over a bass pedal, such as in the keyboard introduction to “Jump” by Van Halen (1984) or “Can’t Fight This Feeling” by REO Speedwagon (1984). They can also appear at important structural points in a song, such as the held D^b/E^b chord (V over scale-degree 6 in the key of G^b) found just prior to the chorus (around 0:58) in “I Wanna Dance With Somebody” by Whitney Houston (1987). Hybrid chords may also be seen as the product of voice-leading factors, where upper voices and bass appear to split into two different streams, such as the G/C (IV over scale-degree $b7$ in the key of D) and D/G (I over scale-degree 4 in the key of D) chords in the second and third bars of the chorus to “Across the River” by Bruce Hornsby and the Range (1990).⁴¹

In some cases, Roman numerals can be shoehorned into representing hybrid chords but will arguably misrepresent harmonic function. Consider in this regard the chords for the first verse of “Beautiful” by Christina Aguilera (2002), as shown in Example 14. The descending bass line evokes the lament pattern, although (perhaps not surprisingly) the harmonization here is not what we would expect of an 18th-

39 Doll (2017, 64).

40 For more on hybrid chords, see Felts (2002, 146), Schenkus (2011), or Stephenson (2002, 178). Also, de Clercq (2019) discusses hybrid chords in the larger context of the harmonic-bass divorce in rock music.

41 These are the lead-sheet symbols found in Hornsby (1994, 110).

century setting; specifically, we find a root-position submediant rather than a first-inversion subdominant as the harmonization for scale-degree 6 in the bass. But while the label V_2^4 of IV could adequately capture the scale-degree content of the second chord (and is the only way to do so using Roman numerals), the following chord (the root-position submediant) calls into question whether the chord prior to it is in fact a secondary dominant. Certainly, one could view the harmony in this passage as involving a deceptively deceptive resolution of a secondary dominant to IV. If we were using Roman numerals, though, we would be forced into that analysis, since there is no other way of representing the harmony of the second bar, since the bass note must be a part of the chord. In contrast, the Nashville number system provides a functional label while still reserving our analysis of the chord's role in the overall harmonic progression. This last point brings up the topic of applied and secondary chords more broadly, which will be the focus of the next and final section.

V_2^4	1	$\frac{1}{b7}$	6-	$b6^{b5}$
	1	$\frac{1}{b7}$	6-	$b6^{b5}$

Example 14

Opening verse (0:26–0:51) for “Beautiful” (Christina Aguilera, 2002).

Secondary and Applied Chords

Because Nashville numbers use the slash to indicate the inversion of chord, there is no corresponding method as in Roman numerals to indicate applied or secondary functions, e.g., V/ii . This inability to reflect applied functions could be seen as a significant limitation to Nashville numbers. Indeed, it was the aspect I found most problematic when first learning the system. After using Nashville numbers for awhile, though, I began to view this lack of specialized notation for applied chords more as a positive feature than a flaw, particularly due to the nature of harmony in popular music.

To illustrate the general practice of how an applied chord would be notated in Nashville numbers, consider the excerpt from “Desperado” by the Eagles (1973)

shown Example 15, which is in G major. In the seventh bar of this example, we find a clear V/V chord, which resolves to the dominant in the following bar. The lead-sheet symbol would be A7, given the key, so it is notated here as 2⁷. There are other secondary dominant chords in this passage as well, such as the first-inversion V/vi in the first bar of the last phrase (a B7/D# chord). Perhaps less obvious to those readers more familiar with Roman numerals, the second bar of the first phrase is a V/IV, since the Nashville number refers to a G7 (dominant seventh) sonority, which then leads to C (IV) in the next bar. These opening bars highlight a difference between the two systems that was implied in the previous section but should be stressed here. While the common-practice variety of Roman numerals typically assumes the figured bass portion to be in the key, e.g., I7 implies a major-seventh chord given a major key, in Nashville numbers there is no assumption that the sevenths, extensions, or added chord tones are in the key. This practice follows directly from the lead-sheet symbols, which themselves are key-agnostic.

v2)	1	1 ⁷	4	4- ⁶
	1	6- ⁷	2 ⁷	5 ⁷
	1	1 ⁴ ₂	4	4- ⁶
	<u>$\frac{1}{5}$</u>	<u>$\frac{3^7}{\#5}$</u>	6- ⁷	<u>2⁷ 5⁷</u> 1

Example 15

Opening verse (0:20–0:55) from “Desperado” (Eagles, 1973).

From a pedagogical perspective, the benefit of not having an explicit notation for applied chords is that the analysis of chord function within a phrase can be separated from the key-specific function label. Recent work by Nobile (2016) draws attention to the importance of making this distinction in popular music harmony. In particular, one of Nobile’s central arguments is that chords do not necessarily have the same syntactic function as we might presume by their function label. A IV chord, for example, can act in the syntactical role of a dominant, such as at the cadential moment in a parallel period. Nobile’s theory reflects an important feature of harmonic syntax in popular music, in that we cannot presume a one-to-one mapping between

the scale-degree-based chord label and its role in a particular chord progression. Consider in this regard the chorus of “Who Loves the Sun” by the Velvet Underground (1970), shown in Example 16. In the first three phrases, we seem to have a V/V chord moving to a dominant. But what about the last phrase? Is it a V/V that gets evaded by moving to the IV chord? Or is it its own thing? After all, a dominant-seventh chord on scale-degree 2 moving directly to a subdominant is a common harmonic trope in popular music, e.g., “Forget You” by CeeLo Green (2010). Nashville numbers allow for a nuanced analysis (“both/and”) since there is no higher-level analysis inherent in the key-specific label itself.

CH)	2⁷	5⁷	1	1
	2⁷	5⁷	1	1
	2⁷	5⁷	1	1
	2⁷	4	1	1

Example 16

Chorus (0:32–1:01) from “Who Loves the Sun” (The Velvet Underground, 1970).

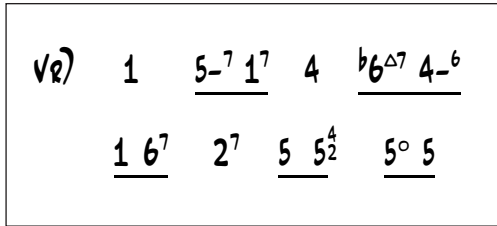
From a more practical perspective, the lack of any explicit applied chord notation makes chord progressions more straightforward to read at sight. With Roman numerals, a reader would see V7/ii, presumably have to think about what scale-degree 2 is in the key first, and then have to think about what a fifth above that scale degree would be before being able to spell the dominant seventh chord. In contrast, Nashville numbers tell the reader directly on which scale degree to build the dominant seventh chord. When explaining secondary dominants using Nashville numbers in class, I usually provide students with the table shown in Example 17. On the bottom row are the diatonic targets (abbreviated “Tar”), with the top row showing the secondary dominants of those target chords. Students can easily recreate this table, since the numbers in each row increase sequentially within the diatonic space. Despite my advanced training in music theory, I must admit that it was not until I created this table for the first time that I realized that all the roots for the secondary dominants of the diatonic chords in a major key are themselves members of the diatonic scale. In

other words, the use of applied chord notation with Roman numerals was hiding from me the manifestation of those chords within the home key.

V OF)	5 ⁷	6 ⁷	7 ⁷	1 ⁷	2 ⁷	3 ⁷
TAR)	1	2-	3-	4	5	6-

Example 17
Secondary dominant chord relationships.

To be clear, I do believe that students should be analyzing chord progressions at a higher level than merely the key-based scale-degree labels. These are simply different stages in a harmonic analysis. Once a chord progression has been converted into Nashville numbers, students can be asked to create an additional analytical layer. The arrows sometimes used in Roman numeral analysis to indicate secondary dominants can be employed for this purpose, for example. I also ask my students to circle borrowed chords, put triangles around tritone substitutions, and put a box around any portion of a song that represents a tonicization. In Example 18, for instance, the second and third bars arguably comprise a local move to the subdominant, with the minor seventh chord on scale-degree 5 acting as ii/IV, which is then followed by V/IV. Note that for a true change of key, i.e., something more permanent than a two- or three-bar tonicization, the typical practice in Nashville numbers is to simply write something like “Modulate up a half step” or “Modulate to the dominant” at that moment in the chart. For music that is constantly changing keys (such as bebop-influenced pop) or music that is not clearly tonal (such as some math rock), it is probably easier to stick with the letter-based chord symbols and avoid function labels altogether (akin to avoiding scale-degrees or moveable-Do solfège syllables in the singing of atonal melodies).

**Example 18**

Opening verse (0:16–0:47) to “Misery” (P!nk featuring Steven Tyler, 2001).

Conclusion

Admittedly, the Nashville number system may not be appropriate for every music theory curriculum. In a conservatory setting, where perhaps the entirety of the repertoire studied in the undergraduate core is classical music, traditional Roman numerals are undoubtedly a more suitable choice. Knowledge of the two systems is not mutually exclusive, though, and it is not unreasonable to expect that some classically-trained musicians may go on to work in more commercial settings. Similarly, I do not necessarily advise jettisoning Roman numerals in a music program focused exclusively on popular music, if only because the use of Roman numerals is so widespread within academia (and thus among its graduates). But if a music program intends to train students for a career in the commercial music industry, then teaching these students about the Nashville number system is certainly relevant to their future careers.

Most college-level music curriculums fall somewhere between these two extremes, of course. That said, survey results show that the vast majority of programs today are strongly weighted towards music of the common-practice era.⁴² Some authors,⁴³ as a result, have recently called for more inclusion of popular music in the undergraduate music core, and contemporary theory textbooks have begun to include more examples of popular music than they did years ago. If programs do begin to shift more in this direction, though, we must be careful to ensure that the concepts we teach (and the way we teach those concepts) do not unintentionally reinforce ways of thinking that implicitly preference certain styles of music over others.

⁴² Snodgrass (2016b).

⁴³ e.g., Campbell et al. (2014) and Covach (2015).

It is thus worth considering to what extent Roman numerals and figured bass are part of the “hidden curriculum”⁴⁴ that shapes the way our students view and understand harmony. In this article, I have not just given an overview of the mechanics of the Nashville number system and some of its possible uses in the classroom; I have also discussed some of the limitations of (and possible analytical distortions created by) Roman numerals when they are applied to popular music. In addition, I have offered a somewhat different ordering of topics as typically presented in traditional theory textbooks. Ultimately, music theory is the study of musical style, and it may be that the pedagogical approaches for one repertoire may not be ideally suited for the other. How to best address the calls for a more inclusive curriculum, stylistically-speaking, undoubtedly promises to be one of the greatest challenges facing music theory pedagogy in the coming years.

44 Palfy and Gilson (2018).

References

- Biamonte, Nicole. 2010. “Triadic Modal and Pentatonic Patterns in Rock Music.” *Music Theory Spectrum* 32 (2): 95–110.
- Buckingham, Bruce, and Eric Pascal. 1997. *Rhythm Guitar: The Complete Guide*. Milwaukee, WI: Hal Leonard.
- Campbell, Patricia, David Myers, and Ed Sarath. 2014. “Transforming Music Study from Its Foundations: A Manifesto for Progressive Change in the Undergraduate Preparation of Music Majors.” Report from the Task Force on the Undergraduate Music Major, College Music Society.
- Covach, John. 2005. “Form in Rock Music: A Primer.” In *Engaging Music: Essays in Music Analysis*, ed. Deborah Stein, 65–76. Oxford: Oxford University Press.
- . 2015. “Rock me, maestro.” *Chronicle of Higher Education* (February 6), B14–15.
<http://chronicle.com/article/Rock-Me-Maestro/151423/>.
- Covach, John and Andrew Flory. 2018. *What’s That Sound: An Introduction to Rock and Its History*, Fifth ed. New York: W. W. Norton.
- de Clercq, Trevor. 2015. *The Nashville Number System Fake Book*. Milwaukee, WI: Hal Leonard Corporation.
- . 2019. “The Harmonic-Bass Divorce in Rock.” *Music Theory Spectrum* 41 (2): 1–14.
- de Clercq, Trevor and David Temperley. 2011. “A Corpus Analysis of Rock Harmony.” *Popular Music* 30 (1): 47–70.
- Doll, Christopher. 2011. “Rockin’ Out: Expressive Modulation in Verse-Chorus Form.” *Music Theory Online* 17 (3).
- . 2017. *Hearing Harmony: Toward a Tonal Theory for the Rock Era*. Ann Arbor: University of Michigan Press.
- Felts, Randy. 2002. *Reharmonization Techniques*. Boston: Berklee Press.
- Halloran, Mark. 2017. *The Musician’s Business and Legal Guide*, Fifth ed. New York: Routledge.
- Hornsby, Bruce. 1994. *Bruce Hornsby Anthology*. Van Nuys, CA: Alfred Publishing.
- Karpinski, Gary. 2017. *Manual for Ear Training and Sight Singing*, Second ed. New York: W. W. Norton.
- Kostka, Stefan, Dorothy Payne, Byron Almén. 2018. *Tonal Harmony with an Introduction to Post-Tonal Music*, Eighth ed. New York: McGraw-Hill.
- Laitz, Steven. 2016. *The Complete Musician: An Integrated Approach to Theory, Analysis, and Listening*, Fourth ed. Oxford: Oxford University Press.
- Matthews, Neal, Jr. 1984. *The Nashville Numbering System: An Aid to Playing by Ear*, Second ed. Milwaukee, WI: Hal Leonard Corporation.
- Neal, Jocelyn. 2007. “Narrative Paradigms, Musical Signifiers, and Form as Function in Country Music.” *Music Theory Spectrum* 29 (1): 41–72.
- Nichols, Tom. 2010. *They Never Renewed: Songs You Never Dreamed Were in the Public Domain*. New York, NY: BZ/Rights Stuff.

- Nobile, Drew. 2016. "Harmonic Function in Rock Music: A Syntactical Approach." *Journal of Music Theory* 60 (2): 149–80.
- Palfy, Cora and Eric Gilson. 2018. "The Hidden Curriculum in the Music Theory Classroom." *Journal of Music Theory Pedagogy* 32: 79–110.
- Riley, Jim. 2010. *Song Charting Made Easy: A Play-along Guide to the Nashville Number System*, Second ed. Milwaukee, WI: Hal Leonard Corporation.
- Schenkus, Patrick. 2011. "Slash Chords: Triads with a 'Wrong' Bass Note?" *Dutch Journal of Music Theory* 16 (1): 47–52.
- Snodgrass, Jennifer. 2016a. *Contemporary Musicianship: Analysis and the Artist*. Oxford, UK: Oxford University Press.
- . 2016b. "Current Status of Music Theory Teaching." *College Music Symposium* 56.
- Spicer, Mark. 2017. "Fragile, Emergent, and Absent Tonics in Pop and Rock Songs." *Music Theory Online* 23 (2).
- Stephenson, Ken. 2002. *What to Listen for in Rock: A Stylistic Analysis*. New Haven, CT: Yale University Press.
- Summach, Jay. 2011. "The Structure, Function, and Genesis of the Prechorus." *Music Theory Online* 17 (3).
- Temperley, David. 2007. "The Melodic-Harmonic 'Divorce' in Rock." *Popular Music* 26 (2): 323–42.
- Temperley, David and Trevor de Clercq. 2013. "Statistical Analysis of Harmony and Melody in Rock Music." *Journal of New Music Research* 42 (3): 187–204.
- Williams, Chas. 2012. *The Nashville Number System*, Seventh ed. Nashville, TN: Chas Williams.
- . 2017. *The Nashville Number System Gigbook*. Nashville, TN: Chas Williams.
- Winkler, Peter. 1997. "Writing Ghost Notes: The Poetics and Politics of Transcription." In *Keeping Score: Music, Disciplinarity, and Culture*. Ed. David Schwarz, Anahid Kassabian, and Lawrence Siegel. 169–203. Charlottesville: University Press of Virginia.
- Wyatt, Keith and Carl Schroeder. 1998. *Harmony and Theory: A Comprehensive Source for All Musicians*. Milwaukee, WI: Hal Leonard.