HARMONIC RESOURCES IN 1980S HARD ROCK
AND HEAVY METAL MUSIC

A thesis submitted to the College of the Arts
of Kent State University in partial fulfillment of the
requirements for the degree of
Master of Arts in Music Theory

by

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CHAPTER I

INTRODUCTION

As an electric guitarist who has worked mostly in the styles of twentieth- and twenty-first century popular music (jazz, blues, hard rock, metal, pop and musical theater), I developed an interest in music theory due to its practical impact on me as a player. Growing up I was heavily influenced by the hard rock and metal bands of my formative teenage years (the late ‘80s to the early ‘90s), though my understanding of these styles’ defining characteristics was limited due to a lack of traditional musical training. I have recently begun looking back to that music and experiencing it with the mind and ears of an educated musician. I began to wonder what kind of analysis has been done with this music within the academic community. To my surprise, popular music has been given its due in academia by numerous scholars working in a variety of disciplines within music (musicology, ethnomusicology, theory, perception and cognition) and sociology (gender, class, and sub-culture).

Meshuggah in “Re-casting Metal: Rhythm and Meter in the Music of Meshuggah” (2007). The most comprehensive look at heavy metal from a music theory perspective to date is Esa Lilja’s *Theory and Analysis of Classic Heavy Metal Harmony* (2009). Lilja explores both musicological considerations (history and genre) and music theory interests (theories of harmony, the physics of distorted guitars, and melodic/harmonic norms) with depth and breadth.

Pitch, rhythm, harmony, and form in popular music were once regarded as having little artistic and academic value, but are now widely discussed in academic writings and presentations. Since the early 1990s there has been increased interest among music theorists in understanding the components of popular music in much the same way as Western art music. In her essay “Analytic Methodologies in Rock Music” (2000), Lori Burns opens by stating that there is no commonly-accepted approach to analyzing rock and other popular styles. Methods vary from simple Roman numeral analysis to full-blown Schenkerian reductions. Burns shares Walter Everett’s warning against the “bias, false judgement, or ascription of privilege” that can occur when any system originally devised for common-practice music is employed to analyze popular styles (Burns 2000). That is not to say that the styles in question have nothing in common. Allan Moore states that “part of the heritage of rock lies within common-practice tonality. This statement should alert us to the expectation that we will find both parallels and more distant relationships between cadences in the two practices” (Moore 1995).

I will survey the current methods for analyzing popular music and select those most appropriate to the literature I have chosen. My hypothesis is that depending upon the piece, or even the section of the piece with which I am working, a variety of different analytical methods will be required. Certain sections may demonstrate a fairly common-practice approach to
harmony (voice-leading, root movement, functional progression, etc.) while others will bear little resemblance to traditional compositional methods.

GOALS AND METHODS

This thesis aims to achieve three primary goals. The first is to survey the scholarship that has taken place since the early 1990s regarding harmonic analysis within popular music. I will discuss the different perspectives and methods, and explain whether or not they apply to the examples to be studied here.

The second goal is to employ the methods and models found in the survey of the current scholarship to analyze selected musical examples from 1980 to 1989 that fall into the categories of hard rock and heavy metal. I have chosen this period for two reasons: 1. It exerted a significant influence on me at a formative time in my life and musical development and 2. It represents a unique time in music history during which hard rock and heavy metal impacted popular culture and represented a significant portion of commercial album sales.

Walser traces the growing support for metal at the dawn of 1980 with the success of British bands such as Iron Maiden, Saxon, and Def Leppard. Hard rock’s next major breakthrough came in 1983 and 1984 with an explosion of bands from Southern California (Quiet Riot, Dokken, Motley Crue, W.A.S.P). In 1983, domestic hard rock and heavy metal records represented only 8% of total sales in the US, but by 1984, this percentage had increased to 20%. Metal bands from all over the world began breaking through and making their presence known through fan-produced magazines (“fanzines”) and tape-trading. Selling over 12 million copies worldwide, holding the number-one spot on the *Billboard* album charts for eight weeks,
and being named as 1987’s best-selling album, Bon Jovi’s “Slippery When Wet” (1986) cemented hard rock’s place in the commercial market. Though U2 had the number-one album in June of 1987, the next five spots were filled by hard rock bands: Whitesnake, Bon Jovi, Poison, Motley Crue, and Ozzy Osbourne/Randy Rhoads. By this time radio and MTV had realized the popularity of these styles and began placing these bands in heavy rotation. Even the sound of pop music borrowed from the hard rock vernacular, infusing songs with aggressive rock solos (i.e., “Beat It” by Michael Jackson, “Simply Irresistible” by Robert Palmer, “Black Cat” by Janet Jackson) (Walser 1993). I will include examples of songs that employ elements of traditional voice-leading, chord function, and harmonic progression, and modal examples. Due to the nature of hard rock and heavy metal, these different harmonic palettes will be at work within the same piece.

Examples will be selected from three commonly-accepted subgenres:

- Thrash (as represented by the Bay area Big 4—Metallica, Megadeth, Slayer and Anthrax)
- Neo-classical, a guitar-driven genre known today generally as “shred” (as represented by players like Yngwie Malmsteen, Vinnie Moore, and Tony McAlpine).
- Commercial hard rock (as represented by bands like Guns-N-Roses, Bon Jovi, and Def Leppard)

The examples will be analyzed using original studio recordings by the original artists.

Selections will be determined by their significance within the band’s output and impact within the genre. These criteria will be determined by a piece’s longevity within the artist’s catalog and references to it by the artists and media. Selections discussed in Chapter Two will be transcribed by the writer. Existing published guitar transcriptions of the selected pieces will be consulted when available.
The third goal will be to evaluate the harmonic content, formal organization, melodic material, texture, and dynamics for each selection to determine what impact they have on each piece. Each selection will be compared to that of the other two subgenres to determine what similarities and differences there may be among the different pieces.

In much of the research published to date regarding the harmonic language of rock, the use of Roman numerals is done so out of familiarity and aids in easily identifying a set of sonorities. It is not intended to represent an organized hierarchy of classification that denotes harmonic function and motion, but simply to relate a chord’s position from one root to the next and to provide the chord’s quality. It is my intention to use Roman numerals in this manner. Furthermore, Roman numeral analyses that are not attributed to me will be from the author’s work being reviewed. All analyses found in Chapters II, III, IV, and V are my own.

I would also like to clarify my use of the word “modal.” When I use the terms “mode” or “modal”, I am referring to a seven-note diatonic pitch collection comprised of five whole steps and two half steps. These modes are often understood as being derived from the major scale and are referred to as Ionian (major), Dorian, Phrygian, Mixolydian, Aeolian (natural minor), and Locrian. These scales can be used for melodic material or their root notes can be used to generate dyads and triads for accompanimental support. This is my understanding of this material as it relates to the analyses found in Chapters II through V.

REVIEW OF RELATED LITERATURE

Root movement, chord quality, chord movement, voice-leading, traditional notions of major/minor tonal systems, the blues and modal models have all been considered when
attempting to understand and organize harmonic structures in rock. These methods generally fall into one of two categories: methods that deal with *micro* concepts—chord motion on localized levels that is based on voice-leading and root movement, and those that deal with *macro* concepts—general harmonic associations from which artists draw their harmonic content. The analyses found in Chapters II, III, and IV will be based on those methods that favor macro concepts.

In *What to Listen for in Rock* (2002), Ken Stephenson presents three systems that address what he considers to be the most common harmonic scenarios found in popular music.

**Figure 1. Ken Stephenson, The Natural Minor System**

Stephenson allows for only major and minor triads or seventh chords built from any of the triads, provided the seventh is taken from the natural form of the minor scale. Using this system it would be possible to have a $\text{VII}^{\text{dom7}}$ but not a $\text{VII}^{\text{maj7}}$ as the dominant seventh quality uses the lowered sixth scale degree (Aeolian) and the major seventh quality uses the raised sixth scale degree (from the melodic form of the minor scale). Stephenson does allow for a $\text{VI}^{\text{dom7}}$ that would include the lowered fifth scale degree as the chord’s seventh. This system does not allow for a chord built from the second scale degree since doing so would require the inclusion of a pitch outside of the natural form of the minor scale. It also does not allow for the naturally-occurring triad built on the second scale degree (diminished), as this system allows only major and minor triads. In this first system the Neapolitan chord does show up
infrequently. Stephenson suggests that though this is the simplest of the harmonic systems used in rock it is also the least common.

Stephenson cites “Losing My Religion” by R.E.M. as an example of his Natural-Minor System.

Figure 2. R.E.M., "Losing My Religion," verse

Figure 3. R.E.M., “Losing My Religion,” chorus

Figure 4. Ken Stephenson, The Chromatic Minor System

The chromatic minor system favors major triads exclusively (with the exception of the variable tonic chord) and can be used for both major and minor modes. The fundamental
principle dismisses the purity of the scale in favor of the uniformity of the chord quality (major). It also allows for variants on scale degrees three, four, six, and seven. Usage of the $\text{VI}^{\text{dom}7}$ chord also allows for two versions of the fifth scale degree. This system also permits occasional use of a major triad built on the flatted second scale degree and seventh chords to be built on each sonority. Stephenson notes that in actual use most of these seventh chords are dominant qualities. While it is not explicit in Stephenson’s description, this system also accounts for pentatonic-based material that would mirror Walter Everett’s triad-doubled pentatonic system found below.

Stephenson uses the verse and chorus of the Beatles’ “Sgt. Pepper’s Lonely Hearts Club Band” as an example of his Chromatic-Minor System.

Figure 5. The Beatles, “Sgt. Pepper’s Lonely Hearts Club Band,” verse

It was twenty years ago today Sgt. Pepper taught the band to play...

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<td>A</td>
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<td>VII</td>
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<td>I</td>
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Stephenson defines this palette as a chromatic system based on variable qualities of chords whose roots are derived from the pitches of the Mixolydian scale. He notes that use of all of the possible chords offered in this system are rare within the same song and that many songs only use the diatonic chords of the major system from I through vi with occasional use of the bVII. He also makes a point to address the sonorities that appear as secondary dominants and states that when encountered in practice they often do not resolve as they would in the common practice era. For example, in the key of D major we would expect a B7 chord to resolve to Em. However, in rock, this is often not the case. What is unique in this system is that it allows for both qualities to be built on the mediant, subdominant, dominant, and submediant.

Stephenson refers to David Bowie’s “Space Oddity” to demonstrate use of the full major palette.
Figure 8. David Bowie, “Space Oddity,” A-section

C  C  E  C  E  Am  Am/G  D/F#  

Ground control to Major Tom,  ground control to Major Tom,  take your protein pills and put your helmet on...  

I  iii  I  iii  vi  V/V

Figure 9. David Bowie, “Space Oddity,” B-section

C  E7  F  Fm  C  F  Fm  C  F  

This is ground control to Major Tom, you've really made the grade...  

I  V/vi  IV  iv  I  IV  iv  I  IV

F maj7  Em7  F maj7  Em7  Bb  Am  G  G  

IV  iii  IV  iii  VII  vi  V

C  F  G  A  C  F  G  A  

I  IV  V  V/ii  I  IV  V  V/ii

F maj7  Em7  A  C  D  E  

IV  iii  V/ii  I  V/V  V/vi

C  E  F  Fm  C  F  

I  V/vi  IV  iv  I  IV
Stephenson uses the Byrds’ “Turn! Turn! Turn! (To Everything There Is A Season)” to demonstrate his diatonic subset of the major system. The diatonic subset includes the following harmonies; I-ii-iii-IV-V-vi. A song may employ all of these chords or only some of these chords.

Figure 10. The Byrds, “Turn, Turn, Turn,” verse

![Figure 10](image)

To everything turn, turn, turn...

I  IV  iii  V

Figure 11. The Byrds, “Turn, Turn, Turn,” chorus

![Figure 11](image)

A time to build up, a time to break down... 3X

V  I  IV  iii  ii  V  I

Stephenson maintains that “the harmonies of rock composition tend to settle into one of the three systems,” (Stephenson, 96, 2002) but concludes by examining songs that include mixed systems. He points out that the mixture of different systems can be found between formal sections (i.e.; a verse may use one system, the chorus may employ another). He cites the following pieces as examples that employ mixed systems: “Dust in the Wind” Kansas (natural-minor on verse, chromatic-minor on chorus), “Proud Mary” Creedence Clearwater Revival (chromatic-minor on introduction, major on verse), and “Lynyrd Skynyrd” Freebird (major on first section, chromatic-minor on second part).
Stephenson’s systems cover common rock harmonies based on tertian structures. Though he does not say so specifically, making the stretch to include power chords in these systems seems reasonable due to the style under consideration. A power chord is a two- to three-note sonority that contains a root, a perfect fifth above the root, and, sometimes, the octave.

**Figure 12. Power chord**

Allan Moore’s “Patterns of Harmony” (1992) is an exhaustive compendium of harmonic formulas found in pop, rock, and soul that are limited to specific portions of songs. He categorizes these formulas into fifteen classes that demonstrate specific traits—static harmony, stepwise descending harmony, stepwise ascending harmony, submediant sequences, mediant sequences, etc. Biamonte summarizes Moore’s work as a “modal taxonomy of harmonic patterns requiring an elaborate system of categories and the assignment of a single governing mode to each pattern.” (Biamonte 2010, 96) While thorough, Moore’s system is complex and the pieces analyzed in the chapters that follow are explained more clearly by Walter Everett’s and Ken Stephenson’s methods.

In “Making Sense of Rock’s Tonal Systems” (2004), Walter Everett offers “six different harmonic systems common in rock” in hopes of giving researchers a “global perspective” with which to understand the most common types of harmonic relationships found in rock. He states
at the onset that a “full history” or a single, codified system to explain rock’s harmonic language is beyond the scope of the essay (and likely not possible). The systems are organized in an order that begins with attributes akin to common-practice methods and progressively moves away from those norms.

This system is identified as being “strongly influenced by Schenkerian theory” in Trevor De Clercq and David Temperley’s *A Corpus Analysis of Rock Harmony* (De Clerq 2011, 49). Everett “explains surface harmonies in contrapuntal terms... as neighboring or passing events or as part of long-range linear patterns” and “posing a I-V-I progression at the deepest level.” (Ibid., 49) Everett is clear that this interpretation does not mean that these structures are “literally present” and that this approach is “useful precisely as a way of showing how rock songs deviate from common-practice norms.” (Ibid., 49) Nicole Biamonte insightfully points out that “Schenkerian paradigms of linear motion are potentially powerful explicators of melody, but presume a concern for voice-leading and counterpoint often absent in the harmonic layer, especially when iterated by rhythm guitar.” (Biamonte, 2010, 96)

Everett explains these systems as a natural evolution of the music itself;

At the core of this study is the proposition that while rock music grew from the common-practice-bound norms of the popular music of the 1950's and '60s, it has subsequently ventured into many different styles, some with highly experimental approaches to tonal issues, and that some of these new directions have led even further over time from the normally interrelated roles of voice leading and harmony exhibited in the common practice of rock’s roots, eventually landing in very strange tonal terrain indeed. (Everett, 2004, ¶ 2)

He elaborates by commenting that these different systems, once perhaps considered to belong to a specific style or genre, have had their boundaries blurred. He states that “differing tonal approaches may have evolved initially as an aspect of new stylistic differentiations, in
subsequent years they would be appropriated from one style to another, so that today’s rock music evinces a multitude of tonal values that are no longer consistently tied to particular styles; many different tonal systems are now practiced by the same artist, on the same album.” (Ibid., ¶ 2)

Below is the table of systems that Everett uses as the basis of his work. Though the musical examples offered are, at times, minimal, each system will be discussed with examples given by Everett and others added by myself.

**Figure 13. Walter Everett, Classifications of Rock’s Pre-eminent Tonal Systems**

1a  Major-mode systems with common-practice harmonic and voice-leading behaviors. May be inflected by minor-mode or chromatic mixture.

1b  Minor-mode systems with common-practice harmonic and voice-leading behaviors. May be inflected by major-mode or chromatic mixture.

2  Diatonic modal systems with common-practice voice-leading but sometimes not with common-practice harmonic behaviors.

3a  Major-mode systems, or modal systems, with mixture from modal scale degrees. Common-practice harmonic and voice-leading behaviors would be common but not necessary.

3b  Major-mode systems with progressive structures. Common-practice harmonic and voice-leading behaviors would be typical at lower, but not higher, levels.

4  Blues-based rock: minor-pentatonic-inflected major-mode systems. Common-practice harmonic and voice-leading behaviors not always emphasized at the surface, but may be articulated at deeper levels and/or in accompaniment.

5  Triad-doubled or power-chord minor-pentatonic systems unique to rock styles: I - bIII - IV - V - bVII. Common-practice harmonic and even voice-leading behaviors often irrelevant on the surface.

6a  Chromatically-inflected triad-doubled or power-chord doubled
pentatonic systems of early metal. Common-practice harmonic and voice-leading behaviors often irrelevant on the surface.

6b Chromatically-related scale degrees with little dependence upon pentatonic basis. Common-practice harmonic and voice-leading behaviors often irrelevant at deeper levels as well as surface.

The first system, 1a, is a major-mode system that demonstrates common-practice harmonic and voice-leading tendencies. While no specific musical examples are given by Everett to support this system, he states that the “greatest number of all songs succeeding on the pop charts falls into the first group.” (Ibid., ¶ 7) He also gives no explanation for his intent of “chromatic mixture,” but I am interpreting it as a reference to chromatic harmonies such as secondary dominants and borrowed harmonies.

Everett spends some time advocating for the Schenkerian perspective. He asserts that “one must appreciate just how much can be learned from the gentle comparison of the example to the convention.” He offers several musical examples to help support his Schenkerian position, but does not directly connect these examples to his first harmonic system (Ibid., ¶ 8, 9).

The second system, 1b, is a minor-mode system that demonstrates common-practice and voice-leading tendencies. He states that “examples in pure minor are far less common than major-mode songs” and offers Ozzy Osbourne’s “Revelation (Mother Earth)” as an example (Ibid., ¶ 7). To say that the entire piece demonstrates common-practice conventions throughout would be misleading. Certainly sections of the piece borrow from harmonic and voice-leading conventions typically associated with common-practice styles.
Below is a harmonic analysis of the sections of “Revelation (Mother Earth)” that fit into Everett’s 1b category. The composite harmony is represented by the chord symbol. The chord symbols account for the overall sonority determined by the bass (inversions will be reflected in the chord symbols), guitar, keyboard, and strings.

**Figure 14. Ozzy Osbourne, “Revelation, Mother Earth,” verse (Vaughn)**

<table>
<thead>
<tr>
<th>Em</th>
<th>B7</th>
<th>Em</th>
<th>B7</th>
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<tr>
<td>i</td>
<td>V</td>
<td>i</td>
<td>V</td>
</tr>
<tr>
<td>Em</td>
<td>G</td>
<td>D</td>
<td>B7/D#</td>
</tr>
<tr>
<td>i</td>
<td>III</td>
<td>V/III</td>
<td>V</td>
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</table>

E minor is clearly established through the consistent resolution of the dominant to tonic chord throughout the eight-measure phrase.

**Figure 15. Ozzy Osbourne, “Revelation, Mother Earth,” piano solo (Vaughn)**

<table>
<thead>
<tr>
<th>Em</th>
<th>B7</th>
<th>D/F#</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>V</td>
<td>V/III</td>
<td>III</td>
</tr>
<tr>
<td>A/C#</td>
<td>Am/C</td>
<td>B7</td>
<td>D#</td>
</tr>
<tr>
<td>IV</td>
<td>iv</td>
<td>V7</td>
<td>vii</td>
</tr>
</tbody>
</table>

This section is more consistent with common-practice norms using consistent dominant to tonic resolutions and richer harmonic palette.
Category 2 features pieces that have modal character and demonstrate common-practice voice leading but not typical harmonic motion. He describes songs in this category as having “well-directed melodic lines, often exemplifying classical descents that are supported contrapuntally, but—especially when the leading tone is absent—there is no harmonic pull to the tonic.” (Everett 2004, ¶ 10) Everett points to Simon and Garfunkel’s “Sounds of Silence” as an Aeolian example having clear descending voice-leading that is supported by counterpoint, but lacking in function due to the absent leading tone. Everett’s reduction is shown below:

![Figure 16. Walter Everett, “Sounds of Silence,” reduction](image)

There is a clear descent from scale degree 5 to scale degree 3 in Art Garfunkel’s line, typical intervallic relationships between Simon and Garfunkel’s parts (unisons, thirds, fifths, sixths), and root motion that, when combined with the vocal parts, affirms the i- bVII-i “Aeolian” cadence. Everett describes this piece as being “an Aeolian example with no harmonic function at all.” (Ibid., ¶ 10) He supports this by saying that when there is no leading tone there is no “pull to the tonic.”
The presence of the bVII sound is a staple in the rock vernacular and is troublesome to some academics. Christopher Doll offers one possible description of this sonority as the “rogue dominant”. This harmony has been called a “modal dominant,” “rock dominant,” and “linear/modal agent” (O'Donnell 2005 and Koozin 2000, 248). Doll offers that these triads involving the subtonic are labeled as are “roguish” as they “deny the clarity of predicted resolution provided by tonal dominants.” (Doll 2007, 21) Moore states that “the bVII-I cadence... qualifies the certainty of the V-I with ‘nevertheless’.” (Moore 1995, 193) Songwriters of various popular styles must also feel that there is a satisfying cadential quality to this progression due to its frequency.

The Beatles’ “Tomorrow Never Knows” demonstrates an approach that is less conventional both in its voice-leading and its harmonic character, featuring a distinct Mixolydian quality with the upper voice providing the I-bVII-I over a tonic pedal. Below is Everett’s reduction:

**Figure 17. Walter Everett, “Tomorrow Never Knows,” reduction**

![Figure 17](image)

What sets this piece apart from many is that it is a repeating eight-bar phrase whose harmonic content (actual or implied) remains unchanged, excepting textural considerations, for
its two minutes and fifty-seven second run time. Pieces or sections of pieces that have strong modal qualities require less harmonic activity. Chords that progress lead us to make suppositions about where they will be heading next, thus breaking the vamp-like nature that modal music requires.

Like the first system, the third system has two sections, 3a and 3b. Category 3a is represented by major-mode or modal systems that include mixture from other modal scale degrees. Everett references the Beatles’ “P.S. I Love You” as an example. The verse sits firmly in D major featuring the tonic, subdominant, and dominant chords, but the cadence at the end of the chorus includes the bVI and bVII, which Everett suggests as a nod to the Aeolian mode.

Figure 18. Walter Everett, “P.S. I Love You,” reduction

He also cites the instrumental break in “Brown Sugar” by the Rolling Stones as a further expansion of harmonic mode mixture by including the bIII in addition to bVI and bVII in a song with a clear foundation of tonic, subdominant, and dominant (in C major).
Everett broadens category 3a to include pieces that assert a tonal center through sheer repetition but color the tonality by using different scales based on the same root. He cites Beck’s “Get Real Paid” as an example. In the chorus, the tonic is affirmed by syncopated single-note lines in the bass and guitar that have a distinctly minor pentatonic quality. This is juxtaposed against the major pentatonic scale being sung in the melody.

**Figure 19. Beck, “Get Real Paid,” verse**

Radiohead’s “Everything in Its Right Place” features a modified approach to this category in that the scale on F combines the major lower tetrachord and the Aeolian upper tetrachord. The vocal melody is comprised mainly of the pitches C, Db, Eb, and F, suggesting the Aeolian mode. However, the harmonic movement of the A section, F major-C major-Dbmaj7-Cminor/Eb, confirms a major quality tonic chord.

Category 3b features major-mode systems with “progressive structures.” Everett explains these as modulations that do not demand a return to the home key. He cites rock’s oft-used “truck-driver’s modulation” which features an upward modulation by either minor-second or major-second to give a song’s final chorus a lift. He refers to the catalog of Barry Manilow for
a litany of examples (Everett 2004, ¶ 14). One example of this would be the modulation in the final chorus of Manilow’s recording of the Bruce Johnston-penned “I Write the Songs.” The first chorus appears in F major but the bridge modulates to A major for the return of the final choruses using the following progression:

![Figure 20. Barry Manilow, “I Write the Songs,” chorus (Vaughn)](image)

The song gets its final “lift” as the last chorus modulates an additional major second to B major.

Everett’s fourth category encompasses blues-based structures. Everett states that the harmonic layer in this style is expressed in the accompaniment; the bass line, piano voicings, guitar voicings; not in the melodic material (i.e.; vocal melody, fills, etc.) [Everett 2004, ¶ 16]

Before going forward with this system, a word needs to be said about a common phenomenon in rock, particularly in the blues. This phenomenon is the focus of David Temperley’s work in “The melodic-harmonic ‘divorce’ in rock” (2007). Temperley credits Allan Moore along with other theorists in recognizing “that rock sometimes manifests an apparent independence or divergence between the melody and the harmonic structure.” (Temperley 2007, 323) This “divorce” refers specifically to the number of non-chord tones that can be
found in a melody with a clear harmonic structure. These non-chord tones are not treated in a way that is consistent with the common-practice tradition, meaning that they may not resolve or resolve in unusual ways.

Temperley refers to the verse of “Rock’n Me” by the Steve Miller Band.

**Figure 21. The Steve Miller Band, “Rock’n Me,” verse**

Based on the key signature and exclusive use of the B major pentatonic scale, the chord movement suggests a I to bVII progression in B major. In the fourth measure there are six non-chord tones in a row over an A5 sonority (the non-chord tones are bracketed). They do resolve by step on beat 4, but the line continues and terminates on B, another non-chord tone against the unchanging A5. Temperley states that “the feel of this phrase is that the vocal is freely traversing the (B major) pentatonic scale without much regard for the underlying chord changes.” (Temperley, 2007, 331) Both the melody and harmony have goals, but those goals are not related in the same way that they were in the common-practice tonal structures.

Temperley points to this lack of harmonic and melodic agreement as an influence of the blues. He refers to the melodic convention in the blues where the melodic material sung (or played) over the tonic chord in the opening phrase is repeated against the subdominant chord in the following phrase though there is a clear change in harmony. He uses Muddy Waters’ “Rollin’ and Tumblin’” (1950) as support.
Here the context is different than in the Steve Miller piece. Waters is clearly drawing on different compositional resources; the primary triads of A major and the A blues scale.

Temperley points out one concern with the melodic/harmonic agreement above—the change of harmony that takes place between the tonic chord and subdominant chord and the impact that has on the melodic material repeated from the first phrase to the next phrase. Against the D-major chord the pitches C, E, Eb and G are problematic. For that matter, the C, Eb, and G are problematic against the tonic chord, as well. These “problems” only exist if we continue to ignore the fact that chord tones and non-chord tones are not treated the same in the blues and rock as they are in common-practice music. One hallmark of the sound of the blues is the juxtaposition of chords with major thirds against melodic material that emphasizes the minor third. This easily explains the C natural against the A major triad. Another hallmark is the use of melodic flatted sevenths against major triads, which implies a dominant quality tonic chord in this instance. Dominant quality chords (often regardless of the chord’s relation to the home
key) tend to be the sonority of choice amongst blues practitioners. This explains the inclusion of the G against the A major triad. The Eb is used consistently as a chromatic passing tone from scale degree five to scale degree four. When the harmony shifts to the IV chord each pitch becomes a different implied chord tone. The C would be the flatted seventh, the E would be the ninth, and the Eb is still acting as a chromatic passing tone. The idea of a modified approach is supported by Nicole Biamonte, who states that “in many instances, however, the melody and harmony can be analytically reconciled, either through rhythmic regularization or through an expanded conception of chord tone that encompasses added notes and extensions.” (Biamonte 2015, 2) It is necessary to have an expanded conception of chord tones when dealing with popular music analysis. Seconds, fourths, sixths, and sevenths once considered dissonances that required preparation and resolution have been accepted by contemporary writers as added tones into traditional tertian structures. Much of the music being made in the commercial market is being made by writers who have not had an education in common-practice harmony. Their ears are their guide and if all they have ever listened to is music by other self-taught writers, we can expect to see deviations from what is understood as normative melodic/harmonic agreement.

Everett concludes that, based on most examples, blues-based rock is a “minor-pentatonic-inflected major-mode system.” He qualifies this conclusion by stating that the harmonic structure in the blues is provided by the accompaniment (not the melodic material) and that these harmonies (I, IV, and V), regardless of the presence of an embellishing minor seventh, are generated by the major mode. He continues by stating that “there may be a such thing as a blues scale (with or without a lowered fifth scale degree…, but this has nothing to do
with rock music, which borrows only from the blues that colors a structural major mode with minor-pentatonic melodic borrowings.” Everett grants exception to what is typically referred to as a minor blues in jazz and cites Roy Hawkins and Rick Darnell’s “The Thrill Is Gone” as an example of this harmonic progression (Everett 2004, ¶ 16).

Figure 23. B.B. King, “The Thrill Is Gone” (Vaughn)

To state that rock music has nothing to do with the blues scale (or minor pentatonic scale) demonstrates an incomplete view of the genre. In its infancy, rock and roll was based on major or dominant-seventh sonorities with embellishing minor-thirds, minor-sevenths, and major sixths. Many of the forms of early rock and roll songs were simple twelve-bar blues patterns or modified versions of them. This is clear in the music of Elvis Presley, Jerry Lee Lewis, Little Richard, Chuck Berry, and other early rock pioneers. The strongest presence of the pentatonic scale in this era is found in the improvised solos. Whether it is the saxophone solo in Little Richard’s “Long Tall Sally,” Chuck Berry’s guitar solo on “Roll Over Beethoven,” or the
saxophone solo on “The Twist” by Chubby Checker, the presence of the minor pentatonic scale as a foundational resource is irrefutable.

As rock and roll evolved and moved into the psychedelic era of the late 60s, the blues scale became a major compositional resource. Songs such as “In the Sunshine of Your Love” (Cream), “Purple Haze” (Jimi Hendrix), “Sweet Leaf” (Black Sabbath), and “Heartbreaker” (Led Zeppelin) are but four examples of pieces that rely heavily on the blues scale for not just melodic material, but as the backbone of the accompanimental figures and improvised solos, as well. Later, other hard rock and metal artists used the scale in much the same way as evidenced in songs such as “The Four Horsemen” (Metallica), “In The Still Of The Night” (Whitesnake), and “Addicted To That Rush” (Mr. Big). As metal and all of its subgenres have progressed, the influence of the blues is difficult to find, but the use of the blues scale as a traceable entity through its history and development is without question.

The fifth category includes “triad-doubled or power-chord minor-pentatonic systems unique to rock styles.” Everett describes this category as a system of chords in which each note of the minor pentatonic scale acts as the root of a major triad or a power chord. He notes that these five major chords are “not functionally related” and “do not normally lead to one another in progressions... any more than melodic events in the minor-pentatonic scale are expected to resolve in a certain way.” Everett’s assertion here is that even though chords are being employed, the patterns that are chosen are “thoroughly melodic.” (Everett 2004, ¶ 19) The term “triad-doubled” describes the quality of the scale itself being doubled at the fifth, the octave, and the tenth (respectively, on the guitar) to produce a major triad. This means that if
the scale under scrutiny were E minor pentatonic, a collection of major triads, E, G, A, B, and D would be built from the root of each scale degree.

The opening measures of “Iron Man” by Black Sabbath would be one example of Everett’s fifth system demonstrating power chords.

**Figure 24. Black Sabbath “Iron Man,” introduction**

![Melodic line diagram]

The figure is a melodic line based on the B minor-pentatonic scale doubled at the fifth. Due to the pentatonic source material and use of the power chords, there are no chord qualities and the chords simply ascend through the scale. The second half of the figure does introduce the sixth scale degree (Aeolian), but the minor-pentatonic scale as a primary melodic and harmonic resource throughout this piece is constant.

Everett’s sixth and final system is defined as follows; 6a--chromatically inflected triad-doubled or power-chord doubled pentatonic systems of early metal, and 6b--chromatically related scale degrees with little dependence on a pentatonic basis.

Everett cites Black Sabbath’s “Electric Funeral” as an example from his 6a system. The verse is based on single notes doubled at the octave by guitar and bass:
The 6b system weakens the tonic through half-step passing tones (chords) and neighbor tones to the point that “it often becomes difficult to determine what are authentic scale degrees and what are not.” (Ibid., ¶ 23) Everett adds that “tonal centers are given little or no syntactical support.” (Ibid., ¶ 25)

He uses the verse section of Alice In Chains “Them Bones” as an example.

Everett elaborates saying that “half steps take over the chord relationships in the initial (chromatic) filling-in of a minor third, C#-to-E.” (Ibid.) The chorus section is also defined by the use of half-steps:
He notes that both systems 6a and 6b are closely related and only distinguished by “attempting to separate those structures whose integrity is questioned by the half-step embellishment from those structures whose integrity is so destroyed.” (emphasis added) [Ibid., ¶ 23]

Everett’s systems reasonably sum up the types of harmonic activity that are common in hard rock and heavy metal (particularly in systems 5, 6a, and 6b) and will be considered at length in the analyses below.

The research of Trevor De Clerq and David Temperley employs Rolling Stone’s “500 Greatest Songs of All Time” to analyze the harmonic motion in rock songs from 1950 through 1990 by selecting twenty songs from each decade. In A Corpus Analysis of Rock Harmony, they employ statistical corpus analysis to provide data regarding the occurrence of specific harmonic information. They argue that other current methods of analysis and Everett are “extremely loose” and demonstrate an “unrestrictive nature” that is ultimately either too inclusive or too exclusive, meaning that anything can happen (De Clerq 2011, 49). Their primary goal was to provide a body of work that speaks to the “norms and regularities” of harmonic rock practice (Ibid.). They warn that evaluating popular music in terms of the common-practice tradition “may cause us to overlook other kinds of logic operative in rock that are best understood neither as expressions or rejections of common-practice norms, but simply on their own terms.” (Ibid.) Unlike the common-practice categorizations of pre-dominant, dominant and tonic function, De Clerq and Temperley favor the designations of pre-tonic (chords approaching I), tonic, and post-tonic (chords approached from I). These terms are used as their research supports the position that rock music does not follow the general guidelines of common-practice norms with regard
to root movement and chord progression, thus nullifying the need for the pre-dominant and dominant labels.

De Clerq and Temperley’s work asserts the following:

- IV and V are the most common non-tonic sounds
- The most common pre-tonic and post-tonic chords are (in descending order) IV, V and bVII
- IV is the most common non-tonic harmony demonstrating both frequent pre- and post-tonic usages
- V shows a preference for pre-tonic usage, particularly in IV-V-I patterns
- bVII favors post-tonic usage
- VI is generally avoided in the pre-tonic position but is common in the pre-pre-tonic position
- Non-standard common-practice root motion—descending 4ths, ascending 3rds and descending 2nds are just as likely to occur as ascending 4ths, descending 3rds, ascending 2nds (standard common-practice root motion)
- Use of diminished and augmented chords is extremely rare
- The co-occurrence of chords bVII, bIII and bVI and II, VI and III gives certain pieces a modal grounding

DeClerq and Temperley’s work will be less helpful in the analyses that follow as their work is more concerned with the description of localized harmonic norms versus an attempt to establish any kind of large-scale harmonic methodologies in rock music.

In “Listening To Rock Harmony,” Christopher Doll is concerned with developing a prescribed methodology focusing on familiar concepts such as the primary triads and voice leading. Doll’s “hierarchy” of harmonic motion is based on the “predictive” nature of a chain of harmonies. He determines a chord’s predictive strength based upon the voice leading tendencies. He supports the use of traditional terminology such as tonic, subdominant, and dominant, but maintains that the primary determinant in establishing function is voice leading and not the presence or absence of specific scale degrees themselves. For instance, he states that chords can possess subdominant and dominant function without possessing scale degree
four or scale degree five, respectively (though a chord with tonic function must include scale degree one). Chords within a succession can also be given a pre- or pre-pre designation in describing its location within the chain. Additionally, these predictive functions can be further described as being “authentic,” “plagal,” or “mediant” based upon the root motion between the chords. Doll goes on further to describe several “non-predictive” functions. The remainder of his work goes on to consider both the ambiguity and transformational nature of these functional chains. Throughout, he references many musical examples that incorporate different time periods and popular styles. Doll’s approach will be less helpful below as I deal with examples that demonstrate a reliance on modal and pentatonic source materials (“Master of Puppets” and “Welcome to the Jungle” and an example that can be described in common-practice and modal terms (“Far Beyond the Sun”).

The analytical technique to be discussed below owes a debt to the work of Hugo Riemann and the Neo-Riemannian theorists of the late twentieth-century and early twenty-first century: David Lewin, Brian Hyer, John Clough, Richard Cohn, and Henry Klumpenhouwer. Riemann’s concept of harmony is based upon a systematic interconnected relationship of major and minor triads. This relationship rests upon common-tones and specific whole- and half-step shifts (transformations) that allow for these connections. This system is known as the Tonnetz, or tone-network.

Later developments by the neo-Riemannian school have expanded this system to include dissonant, non-tertian sonorities and have left behind the “dualist” ideology of Riemann’s original work. This approach has been helpful in the analysis of tonal music that employs a high degree of chromaticism or tonal music that utilizes non-traditional voice—
leading principles. It has also been most effective in explaining “post-1990 alternative genres which are rich in chromatic thirds and other cross-relations” (Biamonte 2015, 3).

Guy Capuzzo uses Neo-Riemannian Operations (NROs) or transformations in “Neo-Riemannian Theory and the Analysis of Pop-Rock Music” to analyze progressions characterized by modal mixture and root movement by third. His work analyzes pieces that involve sequences, chromatic lines with scale degree eight to scale degree five descents, and seventh chords. He notes that these operations aid in understanding progressions that “lack structural dominant harmonies” and “leading tones that might carry dominant function.” Below is the list of NROs used in Capuzzo’s article:

**Figure 28. Neo-Riemannian transformations**

1. Operation that preserves three common tones

<table>
<thead>
<tr>
<th>Name</th>
<th>Abbreviation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identity</td>
<td>I</td>
<td>C major to C major</td>
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</tbody>
</table>

2. Operations that preserve two common tones

<table>
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<tr>
<th>Name</th>
<th>Abbreviation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leading–tone exchange</td>
<td>L</td>
<td>C major to E minor</td>
</tr>
<tr>
<td>Parallel</td>
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<td>C major to C minor</td>
</tr>
<tr>
<td>Relative</td>
<td>R</td>
<td>C major to A minor</td>
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3. Operations that preserve one common tone

<table>
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<tr>
<th>Name</th>
<th>Abbreviation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>L prime</td>
<td>L’</td>
<td>C major to F minor</td>
</tr>
<tr>
<td>P prime</td>
<td>P’</td>
<td>C major to C# minor</td>
</tr>
<tr>
<td>R prime</td>
<td>R’</td>
<td>C major to G minor</td>
</tr>
</tbody>
</table>

4. Compound operations

   These include examples that involve multiple operations. Capuzzo gives the following example: PP’ maps C major onto B major, because P maps C major onto C minor, and P’ maps C minor onto B major.

   Capuzzo refers to “Flying High Again” by Ozzy Osbourne as an example of using NROs to explain sequential motion. Capuzzo analyzes this piece in A major, however the original studio
recording is actually in Ab major due to the common practice of bands tuning their instruments down a half-step.

This example comes from the closing eight measures of the guitar solo. The sequence progresses through the following major triads:

**Figure 29. Ozzy Osbourne, “Flying High Again,” guitar solo**

```
A   F   D   B♭
```
```
E   C   A   F
```

The chords in the first four measures map onto one another using the following transformations:

**Figure 30. “Flying High Again” transformations**

```
A   Am   F   F   Dm   D   D   Dm   B♭
```
```
P   L   R   P   P   L
```

Capuzzo relates the first four measures to the last four measures as a transposition down by fourth. His analysis calls this a I-V-I progression in A major (the tonic of the piece) with “the intervening chords resulting from a succession of NROs.” He states that a measure-by-measure Roman numeral analysis of I – bVI – IV – bII – V – bIII – I – bVI “fails to capture the
sequential drive of the progression.” Another possible analysis of this passage would be to see
the progression as a simple I-IV-V-I progression in A major and F major with each measure
shifting from one tonality to the next.

Capuzzo uses Radiohead’s “Creep” to demonstrate the use of NROs involving
progressions with a chromatic line involving the fifth scale degree. The progression,
G – B – C – Cm, features the following chromatic line:

Figure 31. Radiohead, “Creep,” verse

\[
\begin{align*}
\text{G} & \quad \text{B} & \quad \text{C} & \quad \text{Cm} \\
\end{align*}
\]

The above chords map onto one another as seen below:

Figure 32. “Creep”, transformations

While it is clear that the above examples could certainly be explained by using NROs, it
seems unlikely that these operations were in mind as the bands were conceiving of these
sections. Additionally, when comparing Capuzzo’s method with the methods of Stephenson and
Everett, it seems overly-complex. The other methods listed above, at least, have some
connection with the functional harmonic language and relationships that musicians of even a
modest background in harmony have likely been acquainted. It is for this reason that Everett’s
and Stephenson’s systems will be the primary reference points for the analyses in the following chapters.
It could be said that *Master of Puppets* was the realization of all the promise Metallica, and thrash metal music in general, had previously hinted at, but who knew either was capable of so much? Metallica, for starters. *Puppets* features requisite barnstormers like “Battery” and “Damage, Inc.,” but elsewhere, particularly on the tremendous title track, the band plays metal as modern-day classical music, offering up harmonically and structurally complex arrangements that convey a stunning range of ideas and emotions. It’s a masterfully executed statement of purpose, and it is still thrash metal’s finest moment (Fifty Greatest Guitar Albums of All Time 2009)

Despite virtually no airplay and no music videos, the album sold more than 500,000 copies in its first year of release. It peaked at 29 on the Billboard charts, and remained on the Billboard 200 for 71 weeks. As of 2003, the album had been certified six times multiplatinum by the Recording Industry Association of America (Sheehan n.d.).

*Master Of Puppets* was Metallica’s third full-length studio release and their first major label effort for Elektra Records. As thrash’s first platinum album, its impact was immediate and immense (Walser 1993, 14) The title track has remained a mainstay in their live show since the *Master Of Puppets* tour.

The piece begins with a three-bar unison figure that foreshadows material from the following sixteen measures, introduces the central structural pitch, E, and exposes an important pitch relationship, the minor-second.
The next sixteen bars (Figure 34) are a repeated four-measure phrase. From the beginning, E’s structural significance is apparent. This figure is a descending chromatic line that features the low E string as the beginning of the line, the line’s ultimate goal, and a constant pedal tone. This sixteen-bar section is comprised of all eighth notes phrased mainly in three-note groups. It is composed of mainly single notes, though the D5, Db5, and C5 power chords from the opening four measures break up the single-note texture. The idea in Figure 2 is clearly based on a descending chromatic scale based on E. This portion of the introduction easily fits into Everett’s 6b category. The descending line has no dependence on a pentatonic basis and there is no evidence of common-practice behaviors anywhere.

The final twenty-four-bar phrase (Figure 35) of the introduction is based on a repeated minor-second theme from E to F. An additional minor-second line moves along the A string including B, C, and C#. E is, again, the starting point. Here we get one of two pitch relationships suggesting relationships that could be construed as tonal: the B to E resolution on beat four of measure two. This descending fifth suggests E as the tonic. The descending G5 to F#5 gesture, also including an E pedal, prepares the pattern’s repetition. This is the other location in which a hint of tonality could be interpreted. The descending G5-F#5-E5 pattern could be heard as the
first three pitches of an E minor scale. Due to the brevity of the idea and the song’s tempo, I am not sure that the ears have much of a chance to establish this relationship. A possible analysis would be to understand this pattern as a fragment of the E Phrygian scale with the C# acting as a chromatic neighbor tone. Guitarists often view the instrument in visual terms and an idea like this could have easily been born from something as simple as a warm-up exercise. It is a pattern, it is very good for finger independence for the left hand, and it is a good exercise for alternate picking for the right hand. Regardless of the source material, what relates this passage to the surrounding sections is its reliance on E and the continued use of minor seconds and tritones.

Figure 35. “Master of Puppets,” :21-:49

A two-bar transition prior to the verse material features E again and employs another tritone.

Figure 36. “Master of Puppets,” :50-:52

These opening first forty-six measures are based on a combination of primarily single note lines accented with occasional power chords. Though there is almost nothing here in the way of functional tonal norms, E is clearly the pitch center. All of the melodic figures begin with the open low E, and all of the phrases are written to logically conclude on E. When there are
other pitches involved, they are in alternation with an open E pedal. Through metric placement and repetition, E is established as the central pitch.

**Figure 37. “Master of Puppets,” :52-1:17**

The verse (Figure 37) begins with a twenty-four-measure phrase that is composed of a repeating four-bar figure. Again, E is affirmed in this section as the tonic through its metric placement, duration, and frequency. Here we get the first look at pitch material that could be interpreted with a clear scalar basis, excepting the use of the chromatic scale found in the introduction. The power chords come from the first four notes of the ascending E minor-pentatonic scale, E-G-A-Bb. Some would call this the blues scale, a variant of the minor-pentatonic scale that includes the flatted fifth scale degree in addition to the root, flatted third, fourth, natural fifth, and flatted seventh. Compositionally, this figure recalls the tritone between E and Bb found in Figure 4. The vocal melody also supports E minor as it is comprised of the pitches E, F#, G, and A.

In Figure 38, the eight-measure verse material modulates up a major second moving the tonal center to F# minor. The vocal melody here uses only the tonic, F#, and the minor third, A. After this passage, there is one measure of B5 preparing for a return to E minor in the chorus.
Figure 38. “Master of Puppets,” 1:18-1:26

The chorus is divided into two sections. The first section shifts to a half-time feel and is based on power chords that suggest different forms of the E minor scale (Figure 39). The first three measures support E natural minor while the fourth measure suggests the harmonic minor due to the inclusion of the leading tone. The A# that appears is nothing more than a chromatic byproduct of the consistent use of the parallel fifths. By simply raising the A# up a minor-second, the integrity of the V chord would have been preserved, but at this point in Metallica’s writing, power chords were far more pervasive than other dyads that would indicate any kind of inversion, such as a minor sixth. The fourth ending suggests the harmonic minor form of the scale. This first section concludes with an ominous half-step between E and F punctuating the lyric “master.”
Figure 39. “Master of Puppets,” 1:27-1:47

Below is the second half of the chorus section:

Figure 40. “Master of Puppets,” 1:48-2:09
In this section, the half-time effect has returned to the original interpretation of the pulse. With the exception of the final minor-second that concludes this section, this twenty-three-measure phrase is generated by power chords based solely on the natural form of the E minor scale. This section introduces a new intervallic relationship found in the root motion between each power chord, the third (specifically, the minor third). The longest durations of each four-bar phrase (Figure 40, mm.1-11) encompass the distance of a minor third. Measures 12-15 deviate as a major third is formed between the root of the E5 and the root of the C5. At two minutes and ten seconds, the piece repeats to the material in Figure 35 and plays through the verse and chorus just as it is presented above, with the only change found in the lyrics of the second verse.

From the opening measures to the three-and-a-half minute mark, “Master of Puppets” is characterized by a very fast tempo (approximately 206 beats-per-minute), a consistently fortissimo dynamic level, and a full texture. The next major section begins at three minutes and thirty-three seconds and provides a marked contrast. Here, there is a drastic change in tempo, dynamic level, and texture. The following chord progression forms the core of the first portion of this section:

**Figure 41. “Master of Puppets,” 3:33-5:05**
This section is significant for several reasons: It is the first extended instrumental section within the body of the song and the first time the guitar has been heard without distortion. This helps lessen the guitar’s intensity and gives it an acoustic quality. It is also the first time that complete chords (triads and sevenths) are used in the accompaniment. Though they exist in only two of the four measures, it gives us evidence of this section being centered around an E tonic, specifically, E minor. This section provides the clearest example of traditional harmonic practice in this piece and it is achieved through the use of full triads and the dominant to tonic cadence that is found in the last measure of the phrase and its repetition.

This section is treated to greater development than those found earlier. Within this section an A-B-C-B-A’ construction is achieved using the following methods:

A: The introduction of the new harmonic material by the clean electric guitar with minimal support from the drums, bass, and second guitar upon the repetition of the four-measure phrase.

B: Thematic electric guitar part based on arpeggios and is harmonized in thirds.

C: The first of two guitar solos within this formal section and features singer/rhythm guitarist, James Hetfield.

B': The repetition of the thematic guitar material from before.

A': The bass changes the inversions of the D major and Cadd2 chords by playing the following line:
The A’ section also returns to a louder dynamic level with more intensity; the arpeggiated guitar figure is now played with distortion, the second guitar supports each arpeggiated chord with distorted, sustained power chords, the drums are playing strong eighth notes on the low toms, and the bass echoes the eighths in the drums, moves to a lower register, and begins articulating more aggressively (YouTube, Metallica-Master of Puppets-Bass only-by Cliff Burton 2009). This portion of the section concludes with two measures of a unison low-E power chord played as eighth notes.

This passage is followed by a sixteen-measure phrase that recalls both the F# tonal level of the second half of the verse and the extensive use of the minor-seCONDS and tritones from earlier.

This area concludes with a four-measure phrase that anticipates the return to the verse material through descending motion of a G5 power chord and an F#5 power chord. These four measures also return to the initial tempo of the song.

At five minutes and forty-two seconds, the second guitar solo begins and is supported by the verse material (Figures 37 and 38). This solo features guitarist Kirk Hammett and is a
marked contrast from Hetfield’s solo due to the faster tempo, a riff-based accompanimental figure (versus chord-based), and a tonal shift of a major second.

After the solo, there are two more sections of instrumental ensemble playing. The first is a unison power chord riff that is a reimagining of the material found in Figure 43:

**Figure 44. “Master of Puppets,” 6:09-6:18**

![Figure 44](image)

This figure is played for eight measures, continues to a B5 power chord for an additional measure, and then moves into the final portion of this section, a repeating unison passage based on the pitches of E natural minor.

**Figure 45. “Master of Puppets,” 6:19-6:36**

![Figure 45](image)

Though there is no harmonic support, it implies the tonic, E minor, and the VI chord, C major. This section concludes with a five-measure tag that treats the last two measures of the phrase to a modified repetition through an added harmony guitar part and a static E5 power chord in the second measure.

After this extended period of contrast, development, and instrumental features, the final two minutes of the song are a repetition of the material preceding the verse (Figure 35),
the verse, the chorus, and an outro that is taken from the verse material (6:38-8:18). These final minutes signal a return to the same dynamic level and texture as was found earlier in the piece.

The specifics of the melodic, formal, and textural attributes of this piece will be covered more thoroughly in the Chapter V, but, the conclusions regarding this selection and its harmonic resources are clear. As stated above, this piece is in E minor. This is achieved almost entirely through methods other than those found in common-practice music. Yes, there is a section where there is clear support of E minor through an authentic cadence, full triadic support, and traditional voice-leading resolution of the leading tone, but throughout the majority of the piece, the tonal center is supported primarily through E’s metric placement and repetition. The only digression from E moves the listener to F#. All of the other harmonic support is provided by power chords based on the E Aeolian and E minor pentatonic scales.
CHAPTER III

ANALYSIS OF “FAR BEYOND THE SUN”

Yngwie Malmsteen (1984)
Style: Neo-classical metal (“shred”)

The late 1970s and early 1980s saw a dramatic increase in technical ability and musicality in rock guitarists. With a lineage that stemmed from players such as Eric Clapton, Jimi Hendrix, and Ritchie Blackmore, new ground-breaking players demonstrated physical skills more advanced and influences more diverse than their predecessors. Eddie Van Halen (of Van Halen) set new standards in technique with his blues-based precision and introduction of two-handed finger-tapping. Tapping is a technique in which a finger of the right hand, usually the index or middle finger, is used to play wide intervals between the right and left hand and is prominently featured at the conclusion of Van Halen’s showcase solo piece from Van Halen I, “Eruption.” Randy Rhoads (of Ozzy Osbourne’s post-Black Sabbath solo career) introduced a generation of guitarists to a harmonic language beyond rock’s blues-based tradition by incorporating harmonic minor sonorities into songs like “Mr. Crowley” and “Revelation (Mother Earth).”

Technical expectations were elevated to new levels in the rock idiom with the arrival of Swedish guitarist Yngwie Malmsteen in 1983. Though Malmsteen released prior albums with bands Steeler and Alcatrazz, it was his first solo effort in 1984, Rising Force, which made him one of the most respected (and often reviled) guitarists of the decade. While other players would borrow elements from Baroque and Classical styles (Blackmore and Rhoads), Walser summarizes Yngwie’s style as the “wholesale importation of classical music into heavy metal.”
(Walser, 1993, 98) Malmsteen’s playing featured unparalleled virtuosity, chord/scale relationships taken directly from common-practice music, and expansive instrumental forms.

“Far Beyond the Sun” is the second track from Rising Force and is one of his most enduring compositions. Malmsteen stated regarding the piece, “I will probably play ‘Far Beyond The Sun’... until the day I die.” (Lalaina 2008) It epitomizes Malmsteen’s trademark virtuosity and penchant for Baroque harmonic tendencies. The original studio recording features two electric guitars (both played by Malmsteen), electric bass (also performed by Malmsteen), keyboard, and drums.

The piece begins with a ten-measure introduction that establishes the meter, 4/4, and tonal center of the piece (written in F# minor, but sounding down a minor second due to Malmsteen’s tuning down a half-step). From the beginning, this piece displays a harmonic palette far removed from rock convention. One feature that sets this section apart from the work of his contemporaries is the use of complete triads, with the addition of the fully-diminished seventh chord separating it even further. In these opening measures, the harmony is realized in the keyboard part and harmonized guitars, with the bass doubling guitar two at the octave. The section begins in F# minor, modulates to A major, and returns to F# minor, utilizing several significant common-practice harmonic devices: an implied Phrygian cadence (pickup measure into the first bar), secondary function (F#7 to Bm), circle of fifths motion, and authentic cadences at the end of the section. Another feature worth noting is the motivic use of the triplet/dotted half and triplet/quarter note figures.
Figure 46. “Far Beyond the Sun,” :00–:11
The next eight measures are a stop-time section featuring a shift between 4/4 and 3/4 with guitar one playing a descending line based on F# harmonic minor. The harmony is provided by the guitar playing power chords that imply the dominant, tonic and, without consideration for the melody, what appears to be the submediant. Further analysis would indicate that the D5 power chord is being used as part of the vii\(^7\) chord based on the string of diminished arpeggios that begins on beat two of the second system, though the chord’s fifth, A-natural, would be a non-chord tone. Contrary to the introduction, much of the remainder of the piece is based on power chords and single-note lines played by guitar two and the bass.

Figure 47. “Far Beyond the Sun,” :14::23
The next sixteen-measure phrase returns to common time and is based on the following descending pattern: tonic, subtonic, submediant, and dominant. The melodic material and galloping accompanimental figure are both based on triplets, with the melody being an extended outline of the tonic triad incorporating chromatic lower neighbors. This is the first time in which Malmsteen’s music demonstrates Temperley’s ‘melodic-harmonic divorce’ as the primary notes of the melody are in clear disagreement with the subtonic chord in the third and fourth measures of the excerpt below. It is also the first time that the subtonic is favored over the leading tone, except for the dominant chord in the last two measures. The section concludes with a two-measure run based on the fifth mode of the harmonic minor scale, sometimes called the Spanish Phrygian or Phrygian Dominant scale. This scale can be thought of as F# harmonic minor scale starting on the dominant, or as a Phrygian scale that includes a major third instead of a minor third. With a root of C#, the scale would be spelled:

C#, D, E#, F#, G#, A, B, C#. In metal, it is a common scale choice over the dominant chord in a minor key, which is how Malmsteen uses it in the final measures of the section below.
The next sixteen-measure phrase features new melodic material and a new harmonic pattern. This is the first place where the subdominant chord is used outside of the circle of fifths progression in the introduction and it provides a very brief respite from the tonic as both the first and second ending do return to F# minor via an authentic cadence. Again, the melodic material is a conjunct figure based on triplets that, like the opening theme, favors the chord’s third.
The final nineteen measures of this section draw primarily from the natural form of the F# minor scale. Two new thematic ideas are introduced, one in the first eleven measures and another in the final eight measures. In each section, the harmony is implied only by the melody.
and single-note accompaniment provided by guitar two and the bass. Below is the first of the two thematic areas:

**Figure 50. “Far Beyond the Sun,” :46-1:08**

The second ending simply concludes with a different fill and moves into the second thematic area. The term “fill” is used here to describe a brief musical ad lib that is used between sections of thematic material.
The final measures include a brief tonicization of A major accompanied by an increase in the harmonic rhythm that leads to a return of the piece’s opening material. The first seven measures of the introductory material are used along with a four-measure tonic to dominant cadential extension that leads to an eight-measure bridge before arriving at the next important thematic area (1:37-2:05). The music that follows the restatement of the opening material includes the last four measures from the example above before moving to the next thematic area:
This four-measure motive is expanded into a sixteen-measure phrase through repetition. The only changes to the melodic material are the fills in the fourth measure of each phrase. There is a four-measure transition following the above example that leads into the second large formal section of the piece.

This second section (2:32-5:02) is comprised mainly of improvised solos by the guitar and keyboard. The first fifty-one measures of this section are based on Phrygian dominant vamps at different tonal levels. The first sixteen measures remain at the same tonal level as Malmsteen improvises over the implied dominant harmony in F# minor:

The keyboard solo takes the next sixteen measures as a phrase modulation moves the piece up to a D# Phrygian vamp:
In the nineteen measures that follow the keyboard solo, the guitar and keyboard alternate four-measure phrases with the keyboard finishing on an odd seven-measure phrase. Another phrase modulation moves the piece to its final tonal level, C# minor, though the accompaniment is, again, focused on the dominant chord:

The solo section continues with another sixteen-measure phrase featuring a set of chord changes similar to those found earlier in the piece that focus on the submediant, dominant, and subdominant (:23:-:46).

This passage marks a brief return to the natural minor tonality before an eight-measure thematic section returns (4:08-4:18). Both the melodic material and harmonic support are the same as before, with the section ending on a half-cadence in preparation for the final thirty-measure stop-time guitar feature (4:19-5:02). The harmonic support in this final section again
features the tonic, subtonic, submediant, and the dominant, though the dominant is preceded with its own implied diminished-seventh.

The final fifty seconds of the piece reprise an earlier section (Figure 52) at the new tonal level.

**Figure 57. “Far Beyond the Sun,” 5:02-5:47**

This four-bar phrase is treated to repetition and a seven-measure cadential extension before the final cadence in E major (submediant, dominant, tonic).

As with the Metallica example, further discussion of melody, form, and texture within this selection will be considered in Chapter V. Harmonically, this is the clearest of the three examples that bears some influence from common-practice music. The piece abounds with authentic cadences, a more traditional treatment of the leading tone, and harmonic motion indicative of an earlier era. In addition to the common-practice influence, there are sections that demonstrate a clear modal basis, as well. While it is not pronounced within the first half of the piece, it is certainly the most harmonically mobile of the three examples across its entire form. It begins in F# minor, offers brief nods to A major, uses two phrase modulations in the B section (C# Phrygian Dominant to D# Phrygian Dominant, and D# Phrygian Dominant to G#.
Phrygian Dominant) to arrive at the piece’s final tonal area, C# minor, and offers its final cadence in the relative major.
CHAPTER IV

ANALYSIS OF “WELCOME TO THE JUNGLE”

Guns-N-Roses (1987)
Style: Commercial hard rock

*Appetite For Destruction* was Guns-N-Roses’ major label debut for Geffen Records in July of 1987. One of the most commercially successful releases of the decade, it spent 147 weeks on the Billboard 200 chart and was certified eighteen times platinum in 2008 (RIAA citation). Of the three bands chosen for this paper, Guns-N-Roses are the artists with the strongest blues influence. This influence is most apparent in the scale choices for both the vocal melody and guitar solos. “Welcome to the Jungle” was the album’s opening track and summarized frontman’s Axl Rose’s impressions of Los Angeles in the early 1980s. This song also sounds down a half-step due to the guitars being detuned.

The song opens with a descending B minor pentatonic figure supported by power chords:

*Figure 58. “Welcome to the Jungle,” :09:-36*
From the beginning this song offers a unique ambiguity—a clear melodic statement of a B minor pentatonic scale with a set of power chords that could be analyzed using root notes taken from the B natural minor or E minor pentatonic scales. Due to the metric placement of B5 and the clarity of the scale choice, calling B minor the tonic at the intro seems most appropriate. The extended B5 in the final two measures acts as a tonic extension when the beginning of the verse moves down a major second to A major.

The verse is an eight-measure phrase based on a repeated figure that uses power chords from the Mixolydian scale—tonic, subtonic, submediant (major sixth), and dominant. The vocal melody is clear in its use of the minor third, suggesting the minor pentatonic scale. This section is similar to the Radiohead example above (“Everything in Its Right Place”, p. 28) in which the melody and the harmony suggest different pitch resources. This disparity also hints at the blues influence by embellishing a Mixolydian-based accompaniment with the minor pentatonic scale. Below is the initial verse figure in A followed by the next phrase in E:
Figure 59. “Welcome to the Jungle,” :37:52

The second four measures play a modified version of the figure in E using power chords:

Figure 60. “Welcome to the Jungle,” :52:1:00

The melody in the verse is based on the flatted seventh, tonic, and flatted third of the minor pentatonic scale. The example below is based on the first four measures of the verse that suggests an A tonic:
I have chosen to analyze the second half of the verse as just that and not as a pre-chorus as it is a direct transposition of the material in A major (melody and accompaniment) and the lyrics are not repeated in future hearings.

The chorus remains in E and makes further use of the submediant, subtonic, and tonic, whose arrival is played as a descending blues scale that omits the natural fifth in favor of the flatted fifth:
The verse and chorus are repeated and followed by an eight-measure guitar solo over a static E vamp. In the solo, the lead guitarist, Slash, is using the minor pentatonic scale primarily, but does include the major third suggesting Mixolydian sounds, as well. Another verse and chorus are played before the arrival of the eleven-measure bridge.

The harmonic subtleties in the bridge are best heard in rhythm guitarist’s Izzy Stradlin’s isolated rhythm guitar part:
This section could be analyzed two different ways. First, the accompaniment could be analyzed as power chords derived from the ascending D minor pentatonic scale. This analysis could be supported by the voicings on the guitar, ascending and descending in a linear manner, with the ear interpreting them as I5-III5-IV5. If this were the favored analysis, this would be another example of the melodic-harmonic divorce as F naturals persist in the accompaniment while Rose sings F sharps through the structurally significant melodic material. The second analysis would: 1. omit the F5 as a passing chord considering it an embellishment of the G major chord, or, 2. describe it as a chromatic mediant, and analyze the section in D major. The A major chord is asserted before an extended guitar solo section returns to E major (2:44-3:23). Again, the tonic, submediant, and dominant power chords are the harmonic focus in the guitar solo.
The section that follows the guitar solo (Bridge II) is prepared by a two-measure repetition of the dominant (B5). It features chromatic motion and diminished triads, sonorities less common in commercial hard rock. The section is introduced with an ascending chromatic figure in the bass that moves to the primary descending line. Both affirm E as the tonic:

Figure 64. “Welcome to the Jungle,” 3:27-3:49

The guitar joins the bass a tenth higher and at the climax of the section plays the following series of diminished triads planing in half-steps:

Figure 65. “Welcome to the Jungle,” 3:43-3:46—Izzy Stradlin isolated track

The section concludes with a power chord figure based on E minor that places structural chords on beats one, three, and four with embellishing chromatic chords on beat two:
The song returns to the final chorus and ends with a unison power chord figure that terminates on an E7#9 chord.

The harmonic material in this piece is best summarized as being derived from modal resources. The power chords are derived exclusively from the Mixolydian and Aeolian scales. What is interesting is the relationship of the sections themselves: introduction--B, verse--A and E, chorus--E, bridge I--D, bridge II--E. Though it is doubtful that it was composed this way deliberately, the entire piece draws its tonal centers from the tonic, subdominant, dominant, and subtonic in E. The chorus and the solo sections both confirm an E tonic as does the final chord, albeit of an altered dominant quality. Further discussion regarding the melodic material, form, and texture are found in Chapter V.
CHAPTER V

COMPARISON OF ANALYZED REPERTOIRES

Harmonic resources

“Master...” is centric in E minor for almost the entire song with the exception of several brief digressions where it moves up a major second to F# minor. This is offset by keeping the piece moving forward with numerous subsections within each formal section. However, in the midst of this diversity, there is always a sense of connectivity from section to section and riff to riff that provides the overall composition with unity. “Master...” finds its harmonic underpinnings best described in Everett’s second (modal), fifth (power-chord minor-pentatonic-based), and sixth (chromatically-related scale degrees) systems.

“Far Beyond...” is the only example that demonstrates a connection to the harmonic norms of common-practice music. As noted above, authentic cadences abound and circle of fifths motion is present. This selection would be best described as a blending of Everett’s one-b and second systems (minor mode and modal systems, respectively) due to the clear common-practice influence (introduction) and the modal sections (all of the B section and any use of the tonic, subtonic, submediant chords).

One common thread that “Master of Puppets” and “Far Beyond the Sun” share is that they both have extended periods of harmonic stasis. Each selection incorporates ample motion in the accompaniment, but in most sections, all of the harmonic activity begins, ends, or does both on the tonic. Even with Malmsteen’s common-practice leanings, there is not much in the way modulation or tonicization within each section.
“Welcome to the Jungle” uses a combination of power chords, triads (in the Bridge I material), and single-note lines to support its different sections. The harmonic material is best described as being modal in nature throughout the majority of the sections with a focus on the tonic, subtonic, submediant (with the lowered sixth and raised sixth suggesting both the Aeolian and Mixolydian modes), and dominant chords. All of the deviations from the modal material are found in Bridge II and include the fully-chromatic single-note lines, diminished triads (which are only perceptible in the isolated guitar-Izzy Stradlin source), and chromatic power chords that conclude the section. Excepting this material would place this selection into Everett’s second system.

Melodic Elements

Due to it being an instrumental feature, the Malmsteen piece exhibits the most abundant melodic features. Most of the themes are triplet-based (as are the accompanimental lines) and can be described as being generally conjunct unless incorporating arpeggiation as a significant feature. Malmsteen’s melodic material (both thematic and improvised) relies heavily on the harmonic minor scale and Phrygian Dominant scale with brief digressions to the natural minor scale.

“Master...” juxtaposes simple melodic material (both rhythmically and with regard to range) against complex ensemble accompaniment. The vocal material is based on the natural form of the minor scale and minor pentatonic scale. The accompaniment incorporates the chromatic, minor pentatonic, natural minor, and harmonic minor scales at various points within the arrangement.
The vocal melody of “Welcome…” uses the minor pentatonic scale mainly as its source material and incorporates the major pentatonic scale briefly in Bridge I. Within the solo sections, the guitarists use the minor pentatonic, major pentatonic, and Mixolydian scales. Collectively, these three pieces do a thorough job representing the scales found most often in their respective subgenres.

Form

“Master of Puppets” and “Far Beyond the Sun” have more in common structurally with one another than with “Welcome to the Jungle.” Both pieces demonstrate large-scale AABA formal structures. Covach would define these pieces as “compound AABA form” (Covach 2005, 74). “Master…” is the clearest in its use of the form. There is distinct verse/chorus material for each of its three appearances, the last of which constitutes the final return of the A section. This material is repeated faithfully from its first appearance with the only change being the lyrics. These are the primary vocal sections of the piece and though it is a lyric-driven piece, it is important to note the prolonged periods of instrumental ensemble playing. The listener waits almost a full minute before the vocals are introduced. The majority of the B section is mostly instrumental, as well. At times, it feels as though the relatively simple melodic material is subordinate to the more complex accompanimental figures. Each large section is comprised of distinct and contrasting internal subsections. “Far Beyond…” is also composed of two large sections and numerous subsections, though the contrast here is not as pronounced as in the Metallica example. The contrast (or lack of contrast) is created by several elements to be considered below. From a formal perspective, “Far Beyond…” is best described as separate
eight- and sixteen-measure thematic areas connected by tonality and motivic threads. The A section is comprised of all of the motivic material while the B section is a fully-improvised solo section featuring modal accompanimental figures. Another feature worth noting is the weak return of the A material (in both locations) as the opening seven measures moves immediately to new thematic material and the final A returns to only one of the prior themes for a mere twenty seconds before concluding the piece.

The form of “Welcome to the Jungle” is best described as verse/chorus pairs that are interspersed with guitar solo interludes and bridge material. These pairs make up the majority of the song (typical of the commercial hard rock genre) with the solos and bridges providing contrast. They are repeated uniformly with the only changes taking place in the lyrics and subtle textural differences. This example demonstrates what would have been programmed on local FM radio stations in this era. It has a shorter run time, fewer instrumental sections (as compared to the Metallica example), and is driven by the memorable verse/chorus material.

*Texture and Dynamics*

The instrumentation for each example is generally the same—each band could be described as a quartet instrumental group (two guitars, bass, and drums) featuring a vocalist (excepting Malmsteen, of course). Though Malmsteen does create his parts (two electric guitars and bass) using multi-track recording, the texture among all three recorded examples is mostly three-voiced in the accompanimental layer with significant doubling taking place between electric guitars in the Metallica example and octave doubling from the bass within all of the examples. In hard rock and heavy metal, the bass often doubles the guitar at the octave with
little or no embellishment. The same is common among two guitar textures, though the Guns-N-Roses example demonstrates more independence between all of the strings. This common texture is due to a general lack of counterpoint in these styles and the perceived “heaviness” of doubling in these instruments. The Malmsteen example does include keyboard, as well, but it is only audible at the beginning of the track, during the solo sections, and at the song’s final cadence. The majority of the accompanimental work throughout is being done by the second guitar and bass. Conversely, Guns-N-Roses’ Izzy Stradlin and Slash trade between rhythm guitar and lead guitar duties throughout the selection. The isolated guitar tracks are the best place to hear the interplay between the two guitarists. Most interesting are the slight variations that are taking place in the iteration of the verse material. While bands may have a primary soloist in one of their guitarists, it is still common for guitarists to switch between rhythm and lead guitar responsibilities depending upon the needs and requirements of the arrangement and the guitarists’ willingness to cooperate.

The change in texture is one of the primary devices used by each band to create significant changes in the dynamic level. Most notable are the dynamic changes between the A and B sections in “Master...” and the dynamic changes found in the Introduction and Bridge I and II material of “Welcome...”. “Far Beyond...” demonstrates the least change in dynamic level with the exception of stop-time rhythmic devices in two locations. Having said that, the styles under consideration are hard rock and metal, so one would expect the overall dynamic level for each selection to be, generally, forte or even louder. Metallica also successfully employs a half-time feel in several locations to create variety within the arrangement.
The threads of consistency found within these three examples are evident. The first is the reliance on modal material. All of these examples have sections that demonstrate Aeolian tendencies. This is common as much of the hard rock and metal of the early 80s relied on the natural form of the minor scale. What is significant is that it is expressed in both the melodic and accompanimental material, depending upon each example. The second type of consistency is clearly delineated form, with two of the examples demonstrating an adherence to the well-known AABA structure. While the formal approach is different in “Welcome...,” all are successful in incorporating multiple parts-per-section to minimize redundancy and maximize variety. Finally, the significance of the minor pentatonic scale should be noted. With the exception of the Malmsteen example, the scale is used for significant linear material (Guns-N-Roses—intro and descending line in the chorus), the vocal melody (Guns-N-Roses and Metallica), or as accompanimental material (Metallica, verse riff). Additionally, the scale is significant in the solos for both “Master...” and “Welcome... .”
CHAPTER VI

CONCLUSION

As discussed above, it seems improbable that the harmonic landscape of popular music in all of its genres will be successfully narrowed down to just one codified system. All of the analytical methods discussed above have merit and explanatory power in describing specific harmonic practices found in pop and rock music. The three examples above draw from common-practice models, the blues, modal material, and beyond— influences far too diverse to be wholly supported or refuted. The contemporary music scholar needs to temper the legacy of common-practice music with flexibility. Just as we would not analyze J.S. Bach and Philip Glass using the same methods, so we should not attempt to analyze B.B. King and Nirvana using the same methods. We must realize that much of the music turned out in the commercial market is being created by those that have not had a traditional music education, or by those seeking to replicate the idiomatic language of those who have not had such training. Fundamentals such as voice-leading, harmonic progression, and phrase structure may not enter the process of your favorite artist, at least not in the same way that they did for Mozart, but that does not mean that they are not present or that there is not a process. Every musician has a warehouse of ideas from which they are working. These ideas can be associated with form, harmony, melody, or any other aspect of composition. This warehouse has been assembled, in part, by the music that has come in through the listening experience. For those that are self-taught, this warehouse has been assembled almost exclusively through listening. The materials that each has to create with is dependent upon what they keep in their warehouse. Yngwie Malmsteen
clearly had Bach and Vivaldi in his warehouse. Metallica had late 1970s UK hard rock in theirs (Saxon and Diamondhead), while Guns-N-Roses had Aerosmith and other blues-based hard rock influences. The characteristics of modern music are audible, observable, and they are no different than they have been in the past: chords, scales, timbre, meter, texture, and form are still the measures that scholars employ to evaluate contemporary music. They have been reshaped, put together in ways that may be new, or even modified with the advent of technology, but these raw materials have been heard elsewhere. It is only an understanding and synthesis of all of the analytical methods discussed in the pages above that allows us to explain and understand the full gamut of sounds that have been produced for the commercial market since the early 1950s.
APPENDIX

Formal Outline

I. “Master of Puppets”

A. Section A (Introduction, Verse, Chorus) :00-3:30
   1. Introduction
      a) Part I—:00:-:21
         (1) Descending chromatic scale on E, power chords on D, Db, and C, constant E pedal
      b) Part II—:22:-:50
         (1) Single note riff based on minor seconds and tritones
      c) Transition—:50:-:52
         (1) Tritone from E to Bb
         (2) Marked by fast tempo (206 bpm), forte dynamic level, and full texture

   2. Verse
      a) Part I—:52-1:17
         (1) Power chords based on the first four notes of the E blues scale
      b) Part II—:1:18-1:25
         (1) Same as material in Part I transposed up a major-second
         (2) B5 at 1:26 anticipates the chorus
         (3) *Same tempo, dynamics, and texture as the introduction

   3. Chorus
      a) Part I—:1:28-1:47
         (1) Power chords based on different forms of E minor
         (2) Half-time feel
         (3) *Same tempo, dynamics, and texture as the verse
      b) Part II—:1:48-2:09
         (1) Power chords based on the E natural minor scale
         (2) Original time feel
         (3) *Same tempo, dynamics, and texture as the verse

B. Section A (Verse, Chorus repetition) 2:20-3:30
   1. Verse
      a) Part I—2:20-2:37
         (1) Power chords based on the first four notes of the E blues scale
      b) Part II—2:37-2:47
         (1) Same as material in Part I transposed up a major-second
(2) B5 at 1:26 anticipates the chorus
(3) *Same tempo, dynamics, and texture as the introduction

2. Chorus
   a) Part I—2:47-3:07
      (1) Power chords based on different forms of E minor
      (2) Half-time feel
      (3) *Same tempo, dynamics, and texture as the verse
   b) Part II—3:07-3:30
      (1) Power chords based on the E natural minor scale
      (2) Original time feel
      (3) *Same tempo, dynamics, and texture as the verse

C. Section B (Interlude, Bridge, Solo, Closing) 3:31-6:18
   1. Interlude—3:31-5:10
      a) A—3:31-3:51
         (1) Introduces primary chord progression by clean guitar
         (2) Minimal support by bass, drums, guitar 2
         (3) Significant change in tempo (approximately 106 bpm),
             dynamic level, and intensity
      b) B—3:52-4:09
         (1) Chord accompaniment continues, harmonized arpeggio
             figures in guitars (distorted)
         (2) Drums play rhythmic pattern, bass accompanies
      c) C—4:10-4:29
         (1) Guitar solo I (James Hetfield)
         (2) Same harmonic and accompanimental details as section B
      d) B—4:29-4:47
         (1) An exact repetition of 3:52-4:09
      e) A—4:47-5:10
         (1) Distortion is added to the arpeggiated guitar part
         (2) 2nd guitar supports the harmony with distorted power
             chords
         (3) Drums and bass play supporting 8th notes
         (4) Bass changes chord inversions
         (5) Dynamic level and intensity increases
   2. Bridge—5:10-5:42
      (1) Guitars and bass play a unison figure based on minor-
          seconds and tritone
      (2) Drums continue in eighth notes, lower toms
      (3) Vocals are reintroduced with new lyrics and new melody
      (4) Dynamic level and intensity similar to the first three
          minutes and thirty seconds of the piece
   3. Guitar solo 2 (Kirk Hammett)—5:42-6:09
      (1) Played over the verse material with the same tempo,
          texture, and dynamic level
4. Closing
   a) Part I—6:10-6:18
      (1) *Unison power chords between the guitars*
      (2) *Bass doubles guitar figure at the octave*
      (3) *The material is derived from the bridge (5:10-5:42)*
      (4) *The drums are playing a half-time feel*
      (5) *No vocals*
   b) Part II—6:19-6:38
      (1) *Guitars and bass play unison eighth-note figure based on E natural minor*
      (2) *The original time feel returns*

D. Section A’ (Verse, Chorus, Outro)—6:49-8:27
   1. Verse
      a) Part I—6:49-7:05
         (1) *Power chords based on the first four notes of the E blues scale*
      b) Part II—7:06-7:15
         (1) *Same as material in Part I transposed up a major-second*
         (2) *B5 at 7:14 anticipates the chorus*
         (3) *Same tempo, dynamics, and texture as before*
   2. Chorus
      a) Part I—7:15-7:35
         (1) *Power chords based on different forms of E minor*
         (2) *Half-time feel*
         (3) *Same dynamics and texture as the verse*
      b) Part II—7:35-7:57
         (1) *Power chords based on the E natural minor scale*
         (2) *Original time feel*
         (3) *Same dynamics, and texture as before*
      c) Outro—7:59-8:27
         (1) *Verse material in E minor with atmospheric guitar fills*
         (2) *Half-time feel*
         (3) *Same tempo, dynamics, and texture as before*

II. “Far Beyond the Sun”

A. Section A (Introduction, Thematic areas 1-5) :00-2:32, 94mm.
   1. Introduction (:00-.14) 8mm.
      a) *Full texture (2 guitars, keyboard, bass, drums)*
      b) *Meter (4/4) and tonal center established (F#m)*
c) **Tonal center established through the use of full triads and circle of fifths motion**

d) **Ends on an authentic cadence**

2. Opening gesture (:14-.:23) 8 mm.
   a) **Stop-time section, dominant to tonic power chords**
   b) **Moves between 4/4 and 3/4**
   c) **Not as long or as developed as the other sections**

3. Theme I (:23-.:46) 16mm.
   a) **Triplets outlining the tonic triad**
   b) **Tonic, subtonic, submediant, dominant progression**
   c) **Phrygian dominant run to close**
   d) **Keyboard not audible in texture**

4. Theme II (:46-1:08) 16mm.
   a) **Features the subdominant chord**
   b) **Conjunct line favoring the chord’s third**
   c) **Based on triplets**
   d) **Accompaniment based on a single-note line**

5. Theme III (1:09-1:26) 11mm.
   a) **Melody based on longer note values**
   b) **Accompaniment supporting the natural minor scale**

6. Theme IV (1:26-1:37) 8mm.
   a) **Based on quarter note triplets**
   b) **Brought back before Theme V**
   c) **Brief tonicization of A major through use of secondary dominants**

7. Introduction (1:37-2:05) 7mm., 4mm. cadential extension, and 4mm. transition
   a) **Same material from :00-.:14 with four additional measures**
   b) **The last 4mm. of Theme IV are used to connect to Theme V**

8. Theme V (2:05-2:25) 16mm.
   a) **Figure based on embellished tonic triad (added G#)**
   b) **4mm. phrase (3mm. of thematic material + 1m. of fill)**
   c) **Followed by 4mm. transition into the B section**

B. **Section B (Solo section) 2:32-5:02, 105mm.**

1. Solo I (2:32-2:54) 16mm.
   a) **Guitar**
   b) **Based on C# Phrygian Dominant**

2. Solo II (2:55-3:17) 16mm.
   a) **Keyboard**
   b) **Based on D# Phrygian Dominant**

   a) **Guitar (4mm.)**
   b) **Keyboard (4mm.)**
   c) **Guitar (4mm.)**
   d) **Keyboard (7mm.)**
Based on G# Phrygian Dominant

4. Solo IV (3:45-4:07) 16mm.
   a) Guitar only
   b) Based primarily on C# natural minor
   c) Dominant to tonic cadence

5. Theme IV returns (4:08-4:18) 8mm.
   a) Returns in the new key (C# minor)
   b) Used to set up the stop-time guitar finale
   c) Stop-time Guitar Feature (4:19-5:02) 30mm.
   d) "Accompanied cadenza"
   e) Based on the tonic, subtonic, submediant, and dominant

C. Section A (5:02-5:47)
   1. Theme V (5:02-5:22)
      a) New tonal level (C# minor)
   2. Closing (5:23-end)
      a) Cadential extension (7mm.)
      b) Final cadence in E major (submediant, dominant, tonic)

III. “Welcome to the Jungle”

A. Introduction (:00-:31) 10mm.
   1. Begins with minimal texture and dynamics
   2. Minor pentatonic scale material
   3. Power chord accompaniment based on the Aeolian mode
   4. Key of B minor
   5. Texture and dynamics increase (full band is in at this point)

B. Verse I (:31-:55) 8mm.
   1. Begins with instrumental statement of accompanimental material
   2. Chords based on the Mixolydian mode (tonic, subtonic, submediant, dominant)
   3. Melody based on the minor pentatonic scale
   4. 8mm. phrase (1st time in A, 2nd time in E)

C. Chorus I (:55-1:06) 6mm.
   1. In E minor
   2. Based on submediant, subtonic, and tonic
   3. Resolution of tonic is a single-note figure based on the E blues scale

D. Verse II (1:07-1:22) 8mm.
   1. Same texture, key, melody, and accompaniment as before
   2. Different lyrics and more activity from the lead guitar

E. Chorus II (1:23-1:34) 6mm.
   1. Same texture, key, melody, and accompaniment as before
2. The final chord and final lyric both change to set up the arrival of the first guitar solo

F. Guitar solo I (1:35-1:49) 8mm.
   1. E tonic chord (ambiguous treatment of the 3rd)
   2. Slash combines the Mixolydian and minor pentatonic scales

G. Verse III (1:50-2:05) 8mm.
   1. Same texture, key, melody, and accompaniment as before
   2. Different lyrics

H. Chorus III (2:06-2:17) 6mm.
   1. Same texture, key, melody, and accompaniment as before
   2. Bridge I (2:18-2:38) 11mm.
   3. In D major (tonic and subdominant)
   4. Initial decrease in dynamic level and texture until the build into the 2nd guitar solo

I. Guitar solo II (2:39-3:18) 20mm.
   1. Full texture and dynamic level returns
   2. Chords suggest E minor
   3. Slash combines the Mixolydian, minor pentatonic, and natural minor scales
   4. Solo ends with a two measure transition on B5

J. Bridge II (3:21-3:48) 14mm.
   1. Initial decrease in dynamic level and texture until the build into the final chorus
   2. Chromatic lines in the bass and guitar
   3. Power chord transition based on E minor with chromatic passing chords

K. Chorus IV (3:49-4:25) 14mm. + 2 mm. ending
   1. Same texture, key, melody, and accompaniment as before
   2. Ending chords based on pentatonic-derived power chords
   3. Ends on an E7#9
REFERENCES


https://www.youtube.com/watch?v=hY8zdTO0pvg (accessed September/October 2015).


