

“Bridge to the Other Side”- Musical Signifiers of Life and Death in Ayreon’s  
*The Human Equation*

by  
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*The Human Equation*

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## ABSTRACT

Arjen Lucassen created the rock opera album *The Human Equation*, a part of the Ayreon Universe (a series of connected concept albums), to tell the story of a man's descent into a coma and his ascent back to life. Lucassen uses text, melody, and harmony to create a vision of this journey. This thesis focuses on "Day 2: Isolation" and "Day 20: Confrontation" due to their location as bookends of the album and their distinct tonal markers. This thesis will track the tonal markers, melodic motives, and key relationships, noting their patterns of ascent and descent and their connection to the narrative.

## ACKNOWLEDGEMENTS

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## Chapter 1. Introduction

Ayreon is a progressive rock/metal collaborative project formed in 1997 by Dutch composer Arjen Lucassen. The group is not considered a band in a traditional sense, where membership is mostly consistent from album to album. Ayreon draws its vocalists from established bands such as Dream Theater, Nightwish, and Iron Maiden. With only two exceptions, the plots of Ayreon's concept albums are all intertwined and take place within the same universe. Ayreon albums employ traditional rock instruments, such as guitar, bass, drums, synthesizer, and a Hammond organ, with the addition of the flute and alto flute, cello, violins, panpipes, and various other non-traditional instruments.

*The Human Equation*, released in 2004, is Ayreon's sixth album. It tells the story of a man, identified only as "Me,"<sup>1</sup> who enters a coma as the result of a serious car accident. His Wife and his Best Friend remain at his side through his 20 days in the hospital, and speak to him in hopes it will help him return to consciousness. While in his coma, Me encounters seven different emotions which guide him through his memories and help him decide to come back to his life. There are twenty songs on the album, each representing a day of the coma. In this study, I focus on "Day 2: Isolation" and "Day 20: Confrontation." These are the first and final songs in which Me appears. "Day 1: Vigil", the first song on the album, serves as a prelude.

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<sup>1</sup> Arjen Lucassen chose to leave the main character nameless, referring to him only as "Me," which creates an editorial challenge when writing about the album. While quotation marks are used in the first mention of this character's name, subsequent usage will not include them.

The first live performance of *The Human Equation* took place on September 18, 2015 in the Netherlands, and is entitled *The Theater Equation*. It augmented the original album's instrumentation with a choir and a few extra minor characters. The choir and instrumentalists were placed upstage, with the vocalists playing roles in costume on a downstage set. Additional music was composed for this performance, and these small pieces connect a number of songs and round out the storyline.<sup>2</sup> The songs in *The Theater Equation* will guide my analysis by creating a visual context for the lyrics. This analysis could also be done from the opposite standpoint where the musical analysis precedes the lyrical observation. This may lead to differing conclusions regarding Me's journey through his mind.

In order to discuss the extrageneric meaning of this album in relation to the music itself, we must first refer to the congeneric meaning by means of analysis. Cone (1982) defines congeneric meaning purely in terms of musical relationships and extrageneric meaning as the reference of a musical work to a non-musical object. He discusses the role of extrageneric meaning this way:

The locus of expression in a musical composition is to be sought neither in its wider surfaces nor in its more detailed motivic contours, but in its comprehensive design, which includes all the sonic elements and relates them to one another in a significant temporal structure. In other words, extrageneric meaning can be explained only in terms of congeneric.<sup>3</sup>

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<sup>2</sup> Ayreon, *The Theater Equation*. Inside Out Music, 2016, CD.

<sup>3</sup> Edward T. Cone, "Schubert's Promissory Note: An Exercise in Musical Hermeneutics," *19th-Century Music* 5, no. 3 (1982): 234.

In the case of common-practice music, extrageneric meaning is often not explicit. It must be deduced through means of congeneric analysis. In *The Human Equation*, extrageneric meaning is shown through the text. This thesis will discuss the congeneric meaning of the work through the development of specific musical motives. As the emotion-characters distort and transform each motive, an extrageneric meaning becomes clearer—one that represents Me’s internal journey and emotional trauma. Arjen Lucassen embeds patterns of ascent and descent within the songs on *The Human Equation*, reflecting Me’s internal descent into the coma and his ascent back to life. In this study, I will focus on Me’s opening key of F# major. This opening passage marks his descent from reality into his subconscious, both musically and lyrically. The descent continues, never fully reaching low the low tonic F#2 (which is instead sung by the emotion-character Fear.) *The Human Equation* demonstrates Me’s internal rise and fall: Some emotions are pulling Me upward, while others pull him downward, toward death. These shifts are evident in the harmony, melody, and lyrics.

Example 1-1



While ascending and descending melodic lines may reflect Me’s mental state, there are implications for the continuation of these lines. When these implications are not realized, the listener may take notice. Eugene Narmour



discusses the implications made by melodic lines, for example “A+A implies A, while A+B implies C.”<sup>4</sup> In his book, Narmour states:

The music listeners expect not only “what” in terms of pitch, intervallic motion, and registral direction but also “where” in terms of durational length and metric location determines, as we shall see, whether, and the extent to which, a subsequent event fulfills the numerous implied conditions of realization.<sup>5</sup>

In *The Human Equation*, melodic lines are often interrupted, either by a new section, a different character, or a new thought all together. This thesis will explore these melodic implications, with special attention paid to unrealized, stepwise lines.<sup>6</sup>

In her article, *Tonal Markers, Melodic Patterns, and Musicianship Training Part 1: Rhythmic Reduction*, Laurdella Foulkes-Levy discusses the importance of rhythmic reduction when analyzing implied tonality. Throughout *The Human Equation*, there are several melodies that lack functional harmonic context, and Foulkes-Levy’s method of rhythmic reduction will help identify tonal structures and important notes throughout the album. Her method consists of identifying strong beats, and then reducing the melody to a single note on each beat, before fully reducing the rhythm to a single whole note per measure.<sup>7</sup> I will use this method most frequently in my analysis of “Day 20: Confrontation,” where the chord progressions do not always conform to traditional tonal models.

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<sup>4</sup> Eugene Narmour, *The Analysis and Cognition of Melodic Complexity: The Implication-Realization Model* (Chicago: University of Chicago Press, 1992), 1

<sup>5</sup> Narmour, *Melodic Complexity*, 3.

<sup>6</sup> Narmour, *Melodic Complexity*, 1-41.

<sup>7</sup> Laurdella Foulkes-Levy, “Tonal Markers, Melodic Patterns, and Musicianship Training Part 1: Rhythmic Reduction.” *Journal of Music Theory Pedagogy* 11 (1997).

As is the case with much rock music, Lucassen's chord progressions often lack a clear tonal center. Spicer (2017) presents several methods for finding the tonic chord in songs (or sections of songs) where it may be obscured or entirely absent in rock and pop music. When a tonic is absent initially, other indicators such as melodic content and rhythmic emphasis of a note can hint at a key center. In many of Ayreon's songs, this method may be effective in revealing a tonic chord. For example, in "Day 2: Isolation," the melody helps to establish a tonal center, but the tonic chord is not present until the end of the first phrase. Spicer also discusses how absent, fragile, and emergent tonics can aid the interpretation of the story.<sup>8</sup>

In *The Human Equation*, there are several chord progressions in which Roman numerals aren't particularly useful. Neo-Riemannian analysis can help identify patterns in the chord progressions that normally are not recognized by Roman numerals. Richard Cohn defines a maximally smooth cycle as: an ordered set whose first and final chords are identical, show "set-class constancy," and demonstrate maximally smooth transitions.<sup>9</sup> Though the music of *The Human Equation* does not necessarily meet all the requirements for a maximally smooth cycle, certain passages meet most of the requirements. Cohn also describes hexatonic as a "nickname for set-class 6-20, whose prime form is [014589]."<sup>10</sup> There are only four unique hexatonic systems, one of which will be explored in

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<sup>8</sup> Mark Spicer, "Fragile, Emergent, and Absent Tonics in Pop and Rock Songs." *Music Theory Online* 23, no. 2 (2017).

<sup>9</sup> Richard Cohn, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late Romantic Triadic Progressions," *Music Analysis* 15, no. 1 (1996): 9-44.

<sup>10</sup> Cohn, "Maximally Smooth Cycles," 18.

chapter three. Forrest (2017) demonstrates the use of PL and LP transformations to signify:

...(1) directly questioning reality; (2) visions, such as dreams, memories, and hallucinations; (3) psychological conditions, such as depression, disorientation, and drug addiction; (4) supernatural phenomena; (5) the process of transcending mental barriers; and (6) descriptions of dystopia.”<sup>11</sup>

*The Human Equation* deals with many of these issues and although the PL transformation does not occur frequently, it does represent transcendence of the mental barrier of Me’s coma, specifically in “Day 20.”

In rock music, it is common to have two or more sections of music with completely unrelated keys. Lucassen uses direct modulation to move from one key to another within each section of his songs. In his article, “Sectional Tonality and Sectional Centricity in Rock Music,” Guy Capuzzo (2009) discusses how sections of a song may have unrelated key centers but may still be considered tonal. He defines sectional tonality as a tonality where each section of a song presents itself in a different key. When looking at the sections and their key centers, patterns may appear, creating a connection between sections of a song, and between the songs themselves. Some of these tonal centers revolve around characters, others around the narrative.<sup>12</sup> Hanenberg (2016) notes the role modulation can play the narrative of rock music. *The Human Equation* employs a variety of modulation techniques, particularly direct and pivot chord modulation. One can deduce that each modulation may serve a specific purpose. In my

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<sup>11</sup> David L. Forrest, “PL Voice Leading and the Uncanny in Pop Music.” *Music Theory Online* 23 no. 4 (2017): 3.

<sup>12</sup> Guy Capuzzo, “Sectional Tonality and Sectional Centricity in Rock Music.” *Music Theory Spectrum* 31, no. 1 (2009).

analysis, I will map patterns of tonal centers, concluding that these centers contribute of the narrative of *The Human Equation*.<sup>13</sup>

Arjen Lucassen uses various “chromatic” chords in his songs, though they may serve a different purpose. Nicole Biamonte’s method of analyzing harmonic function serves to functionalize these “chromatic” chords. An example of this is in the verse of “Day 2.” Biamonte associates the bII chord with lament and pain, which mirrors in the lyrical content of this verse.<sup>14</sup> Biamonte adapts Eytan Agmon’s prototype theory to include traditional rock harmonies. In Agmon’s article, he names two hallmarks of functionalism: The characterization of individual chords, and the primary triad’s ability to embody their respective functional categories.<sup>15</sup>

Me’s ascent throughout *The Human Equation* reaches its inevitable climax in “Day 20: Confrontation, as noted by Arjen Lucassen.”<sup>16</sup> This climax, occurring during Me’s rise from the coma, expresses itself in vocal range, instrumentation, and urgency. Spicer (2004) discusses the role of cumulative form in rock and pop music and defines cumulative form as “...thematic fragments are gradually introduced and developed, only to crystalize into a full-fledged presentation of the main theme in a climatic pay-off at the end of the piece.”<sup>17</sup> Lucassen takes this

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<sup>13</sup> Scott J. Hanenberg, “Rock Modulation and Narrative.” *Music Theory Online* 22, no. 2 (2016)

<sup>14</sup> Nicole Biamonte, “Modal Function In Rock and Heavy Metal Music,” *L’analyse Musicale Aujourd’hui*. (2012): 8

<sup>15</sup> Eytan Agmon, “Functional Harmony Revisited: A Prototype-Theoretic Approach,” *Music Theory Spectrum* 17, no. 2 (1995): 196-214.

<sup>16</sup> Arjen Lucassen, Facebook message to author, September 27<sup>th</sup>, 2018.

<sup>17</sup> Mark Spicer, “(Ac)cumulative Form in Pop-Rock Music.” *Twentieth-Century Music* 1, no 1 (2004): 29.

format a step further by reintroducing themes and lyrics from throughout the entire album in the outro to “Day 20.”

Osborn (2013) discusses the use of climactic material in the narrative of pop and rock songs. Though Lucassen does not employ the use of terminally climactic form, which Osborn describes as a thematically independent section, the ending of “Day 20” is certainly the highpoint of the piece, marking rhythmic, textural, and dynamic changes. These changes are consistent with the narrative, marking the climax as Me’s ascent from the coma.<sup>18</sup>

Throughout my analysis, I will map patterns of tonal ascent and descent, both in the vocals and instruments. Connections between tonal centers and the patterns of descent follow Me’s journey into his own mind and, later, his emergence from the coma. These musical signifiers occur throughout “Day 2: Isolation” and “Day 20: Confrontation.”

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<sup>18</sup> Brad Osborn, “Subverting the Verse–Chorus Paradigm: Terminally Climactic Forms in Recent Rock Music.” *Music Theory Spectrum* 35, no 1 (2013).

## Chapter 2. Day 2: Isolation

“Day 2: Isolation” is the second song on *The Human Equation*, and the first to feature the lead character Me. Table 2-1 shows the form and harmonic structure of the music.

Table 2-1

Section	Character(s)	Time Stamp	Key Center
A (Introduction)	Me and Fear	:00-1:02	F# Major
B (Refrain)	Instrumental only	1:02-1:47	B Minor/ E Minor
C (Verse 1)	Me and Reason	1:47-2:11	A Minor
B' (Refrain)	Passion and Pride	2:11-2:45	B Minor/ E Minor
C' (Verse 2)	Me and Reason	2:45-3:17	A Minor
B' (Refrain)	Passion and Pride	3:17-4:00	B Minor/ E Minor
A' (Introduction Reprise)	Love	4:00-5:27	F# Major
D (Bridge)	Instrumental only	5:27-7:58	F Minor
B'(Refrain)	Passion and Pride	7:58-8:25	B Minor/ E Minor

This song marks the beginning of Me’s journey into his own mind. Me sings the opening gesture, a descending scale fragment in F# major, as he comes to the realization that something is not right. As the song goes on, five different voices sing to him, each representing a different emotion: Fear, Reason, Passion, Pride, and Love. In this chapter, I will track the descent of each voice through each section of the movement, and show how it is reinforced through melody,

harmony and tonality, and developed and distorted by each of the characters. The introduction features Me, with an answer by Fear, demonstrating Me's first interaction with an emotion. The reprise of the introduction features Love, who attempts so comfort Me. The choruses feature two successive sections: the first is sung by Passion, and the second by Pride. Both characters speak directly to Me, with no response. The verses show the first dialogue between Me and another character (Reason). The bridge does not directly feature any character, but rather serves to demonstrate Me's inner turmoil.

### **Introduction and Reprise (A)**

The introduction begins with Me accompanied by a guitar as he sings. The opening second-inversion B major triad deflects the F# major tonality and reflects Me's growing sense of imbalance and dread. Each note in the guitar descends at its own pace. The first is the bass note, which falls diatonically: F#–E#–D#–C#–B. E# interrupts the line in m. 3 to make way for the first cadence. This descent will be labeled the "Me Motive." Me's melody line follows this pattern but stops before the B. The middle voice only descends once, B–A#. This two-note figure will be labeled the "Passion Motive." The top voice in the accompaniment is the last to descend; it sustains D# through the third measure (where the other voices reset) and falls to C# at the cadence, marking the first arrival of the tonic chord. Example 2-1b shows a metric reduction of the first four measures, showing each moment of descent.

## Example 2-1a

Passion Motive: B ----- A#

Me: I can't move can't feel my bo-dy I don't re-mem-ber an-y - thing

## Example 2-1b

Following the cadence, all voices reset to begin the parallel second phrase. Me's part of the introduction concludes unresolved: his line proceeds to G#2, but never reaches the low tonic, F#2. This symbolizes the beginning of Me's journey. The listener expects the melody to resolve down, but this is never realized by Me. This expectation is made by the succession of stepwise, descending motion in Me's line. As Narmour discusses, melodic lines usually have implications linked to their contour. The diatonic descending scale never reaches the bottom as expected, and is instead interrupted with a synthesizer melody, which leads to the first emotion.<sup>19</sup>

## Example 2-2

B/F# B/E# D#m D#m/C# B B/E#

Me: What place is this? How did I get here? I don't un-der-stand what's hap-pen-

<sup>19</sup> Narmour, *Melodic Complexity*, 1-41.



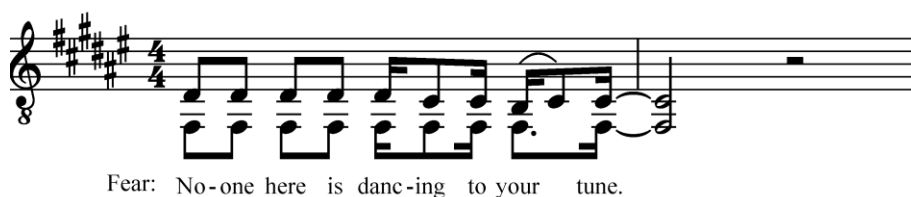


The character Fear continues the introduction with a similar melody and different lyrics:

You've been deserted, everyone has left you.  
 You know it's always been that way.  
 Those frantic years, the people you've neglected.  
 Now the time has come to pay, you're alone.

With the addition of a second presence, the texture thickens: a second, slightly distorted<sup>20</sup> guitar and a synthesizer enter, reflecting Me's clouded thoughts. The section concludes with a plagal cadence, punctuated by Fear's words, "No one here is dancing to your tune." This is the first time any character sings in harmony, with a deep male voice resonating below Fear, on the pitch F#2. (See example 2-3). This pitch represents the low point of the song, resolving the low tonic that Me never reaches, thus realizing the listeners expectations.

#### Example 2-3



The introduction returns before the bridge. The first half of this section is a lyrical instrumental, featuring an alto flute with a new melody. The second half is the first entrance of Love. She sings with a light, lyrical sound, contrasting the

<sup>20</sup> The technique used is a chorus pedal with the rate dial turned up, resulting in a "vibrato" effect.



Passion motive (see Example 2-1), continues the line down a half step. It will recur as Passion's line in the chorus.

#### Example 2-5



Passion enters the second refrain with a forceful belt. She sings first in two-part, then, three-part harmony.<sup>22</sup> Her line is B-A#-A, echoing the previous refrain's compound melody. In m. 2, an escape tone interrupts the melody and harmony. The upper voice follows this pattern in the next two measures, where it reaches the high F# before returning to D. The structural notes of this line revolve around the tonic chord, only changing with neighbor tones. The consecutive pitches C#-D-E-F# occur near the end of the phrase, referencing Me's opening motive, only reversed and distorted. Toward the end of the phrase, the line rises to F#5,<sup>23</sup> only to be derailed by a descent back to D (see example 2-6). Passion is showing Me a glimpse of reality, only to pull him back down. This interpretation is consistent with *The Theater Equation*, where Passion is pushing Me around the stage, teasing him.

<sup>22</sup> Though Passion sings in harmony, I interpret her as a single being. In the original album, it is one overdubbed vocalist.

<sup>23</sup> As we see in Day 20, F#5 is Me's "escape" pitch, representing his emergence from the coma.

## Example 2-6

Ascent:

D ---- C#---- D      D ---- E--C#      D ---- [C#---- D      E ---- F#]D  
 B ---- A#---- A      B ---- C#-A#      B ---- A#---- A      B



Passion: Can't you feel it burn,      deep down in-side?      Won't you ev-er learn,      Don't try to hide.

In the subsequent phrase, a third voice thickens the vocal texture. This lower line remains on F# throughout the phrase, except for the upper neighbor G in the last measure. The F# is an echo of Me's opening key, reminding us that he is intertwined with every emotion. The accompaniment becomes more complex, adding the original pulsing rhythm from the first refrain (see example 2-5). The second-inversion B minor chord represents a distorted echo of the second-inversion B major chord that began the song. These two phrases mark the first distortion of one of the opening motives (see example 2-7). The chord progression created with this third voice constructs a PL transformation from F# to D. This reflects Me's further descent into the coma, crossing the mental barrier as described in the definition of the "uncanny."<sup>24</sup>

## Example 2-7



Can't you feel that fire      Scorch-ing your soul?      A wound-ed man's des-ire      Out of con-trol

In each refrain, Passion is echoed by Pride with a direct modulation to E minor. He sings the same music as Passion, but with different lyrics:

I can't believe you're giving up  
 That's not your way  
 I can't believe you'd pass the chance to make them pay

<sup>24</sup> Forrest, "PL Voice Leading," 1-25.

You've always had complete control  
 Never thinking twice  
 You always called the shots, a heart as cold as ice

### Verse (C)

Two verses, in A minor, occur between refrains. They present a call-and-response between Reason and Me, the first direct interaction between two characters (see example 2-8). Traditional rock-style instruments accompany the singers, with a violin added in the second verse. The chords are mostly diatonic, with the exception of a B $\flat$  major chord, which resolves in linear motion to the tonic. Though this chord might seem out of place, it bridges the gap between the introduction and the refrain with an echo of the descent: A $\sharp$  (respelled as B $\flat$ ) and E $\sharp$  (Respelled as F). Nicole Biamonte states that a bII chord can imply a sense of lament or pain.<sup>25</sup> This reflects Me's growing sense of dread, as he is unsure whether he is dreaming, or if this is his new reality.

### Example 2-8

Am G C Dm B $\flat$  Etc.

Me: Is this a dream or is it real? But I don't know what to

Reason: Some-times the dream be-comes re - al - i - ty

feel.

I will guide you through this haze.

<sup>25</sup> Biamonte, "Modal Function," 8

## Bridge (D)

The final section of Day 2 is the F-minor bridge: the only section to have no direct association with any emotion. There are no vocals, with only the instruments carrying the melody. It begins with a bass note and keyboard suggesting F as the tonic. The chord progression Fm–Ab–Gm–Bbm repeats throughout the section. A synthesizer sounds using a sample-and-hold effect, creating a feeling of chaos and instability. A dialogue between the guitar and synthesizer follows. These two instruments recall the dialogue between Me and Reason. The key is established through the constant assertion of the pitch class F, and the harmony is pulled forward through a plagal cadence.

This section reflects Me's desire to rise out of the coma. The chord progression follows the pattern  $\uparrow m3$  and  $\downarrow m2$ . Every time it rises, the chord progression takes one step back before returning to the tonic chord (see example 2-9). The melody also reflects Me's desire to escape his mind. The melody in the synthesizer is constantly rising and falling, creating a bridge that never fully reaches the other side. Its high point reaches to F before falling back down, never quite reaching Me's F# (see example 2-10).

Example 2-9

The image shows a musical staff in F minor (one flat) with a treble clef. Above the staff, four chords are labeled: Fm, Ab, Gm, and Bbm. Each chord is represented by a block of notes on the staff. Fm consists of F, Ab, and C. Ab consists of Ab, C, and Eb. Gm consists of Gb, Bb, and D. Bbm consists of Bb, D, and F.

## Example 2-10



The song ends with a final refrain, first in B minor, then E minor. The three-part vocal harmony in Pride's section begins in root position rather than second inversion (see example 2-11). The refrain ends with a half cadence, which does not fully resolve until the next song (Day 3: Pain, which begins with a pedal tone on E2). This key will return as the home key of Day 20: Confrontation, which Me must attempt to overcome in order to return to reality. The key of E minor and the pitches ranging from E2–B3 represent coma.

## Example 2-11

Pride: You've al-ways called the shots, a heart as cold as ice.

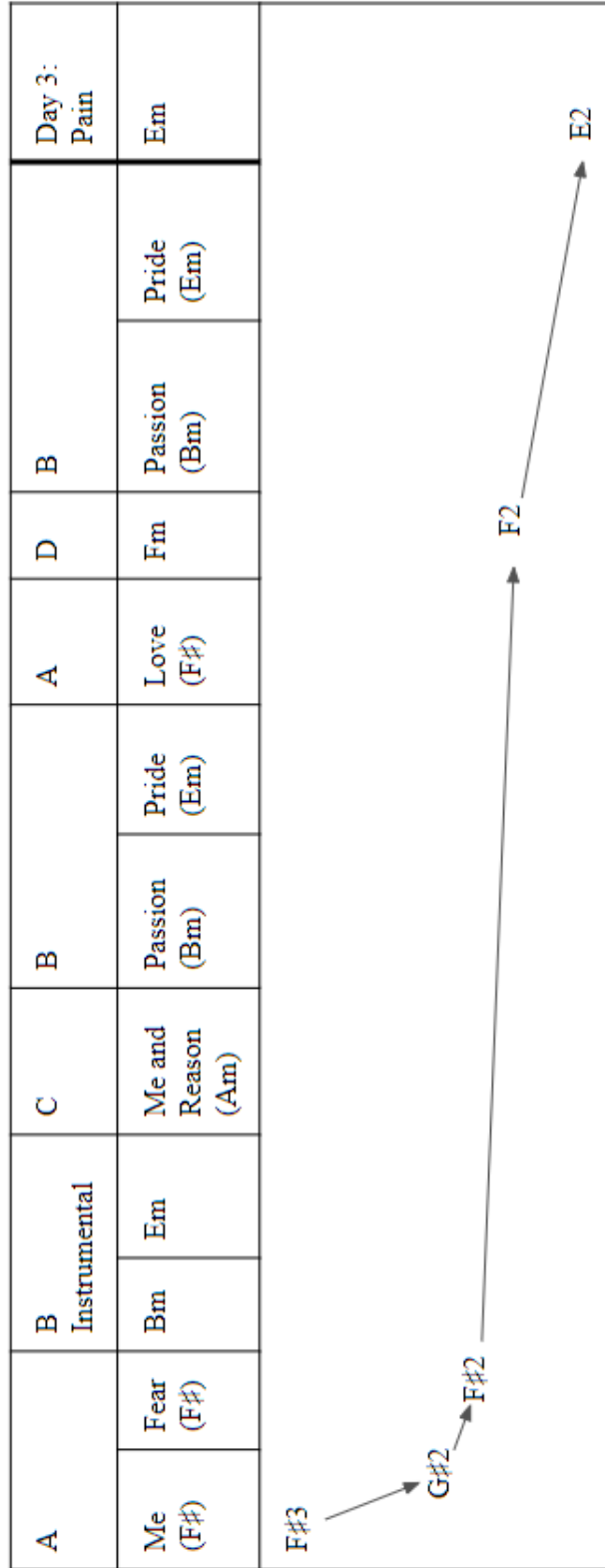
Figure 2-1 shows Me's harmonic descent through the entire song. Me begins in the key of F# major, before descending into a repeating sequence of keys (E minor-B minor-A minor). This pattern is broken with Love's return to F# major. Though each key is shown under the section labels, those keys which lie between the two F# major sections are short-lived. Special consideration is given to those sections lasting longer than one minute. The choruses are each 34 seconds long, and the verses are 24 seconds long. The next key signature encompassing a significant period of time (2 minutes and 31 seconds) is the

bridge in F minor. Following the descent to F minor is one final presentation of the chorus, ultimately ending the piece in E minor, where we remain for Day 3:

Pain.



Figure 2-1



## Chapter 3. Day 20: Confrontation

“Day 20: Confrontation,” the final song on *The Human Equation*, marks Me’s decision to come back and live his life. Only two characters are absent from this song: Me’s Father and Rage, who were last seen in “Day 16: Loser.” Table 3-1 shows the harmonic structure and form of the music, with time stamps marking the start of each section. This chapter will chronologically track Me’s ascent from the coma by following melodic and harmonic patterns of ascent and descent. In the first section (A), Me interacts with an outside character (his Best Friend) for the first time in the album. His Wife and Love sing in tandem to help guide him back where he belongs. The B section begins as an instrumental. Me then hears from Agony, Passion, Reason, and Pride, who discuss the pros and cons of his return.

The return of the A section begins with a dialogue between Me and Fear, as they discuss Me’s eventual return to reality. Me then hears from each character, as they all encourage him, before he finally arises from the coma.

Table 3-1

Section	Character(s)	Time Stamp	Key Center
A		:00-:23	E minor
A1	Me and Best Friend	:23-:48	E minor
A2	Me and Best Friend	1:10-1:35	E minor
A3	Wife and Love	1:35-1:59	E minor
B		1:59-2:24	Gb major
B1	Agony	2:24-2:41	Gb major
C	Passion	2:41-3:05	C major

B2		3:05-3:30	Gb major
B3	Reason	3:30-3:48	Gb major
C1	Pride	3:48-4:11	C major
A	All	4:11-4:35	E minor
A4	Fear and Me	4:35-5:00	E minor
A5	All	5:00-6:35	E minor
D	Forever of the Stars <sup>26</sup>	6:35-7:03	

Throughout the introduction, the bass continuously rises from E to B and back down while the guitar supports the harmony with an arpeggiated line above (see example 3-1). The rising and falling of the line is reminiscent of Me’s journey throughout the album, as he reaches towards life. Notably, the descent forms a lament bass line B–A–G–F#.

#### Example 3-1



A dialogue begins between Me and his Best Friend—Me’s first interaction with a character who is not an emotion throughout the entire album. Through *The Theater Equation*, we recognize that the Best Friend is speaking to Me on another plane. Though they are interacting, Me is still unconscious, inside his own mind. As the two men sing, their lines intertwine around the pitches F#–G–A–B, never reaching the lower tonic pitch E. The Best Friend’s melody spans the inner pitches G–A–B, while Me encases this melody by including the boundary tritone,

<sup>26</sup> Forever of the Stars is an alien character introduced in the album *Into the Electric Castle*. The alien race, named “Forever,” has lost its ability to feel emotions, so Forever of the Stars sets out to regain his emotions.

C–F# (see example 3-2). This alludes to Me’s first phrase in Day 2: Isolation, where he descends to the supertonic, never resolving (see Example 2-2) It is also a reverse of Me’s original melody, where C# is distorted to C natural, creating the tritone. This boundary is Me’s first step outside of the coma.

### Example 3-2

Me: My good

BF: See his mouth he tries to speak. He can - not move his voice is weak.

friend can you hear me now? I'll try to tell you how I feel

I feel the pain in - side of you.

Lis - ten well to what I have to say. Spoken: I have to tell you of my betrayal

Tell me please what I can do.

Me next hears from Love and his Wife who sing simultaneously. His wife begins the same melody Me sings. Initially, the melody descends only as far as the supertonic, reflecting Me’s melody in the preceding section. The next two bars resolve the F# (though in the wrong octave) by ascending to E momentarily before landing on B. Though the first three distinct sections of this song are in E minor, E carries little melodic significance. B is repeatedly emphasized through rhythmic emphasis throughout all four voices, though the dominant chord is never present. The musical bridge leads us to the arrival of the first F# major chord and the first direct reference to Me’s home key. Though his Wife and Love are musically and lyrically directing him back where he belongs (F# major), the

upper harmony in the penultimate measure ascends B–D–E, then thwarts melodic expectations by skipping down to C#, rather than continuing upward to F# (see example 3-3). The two female characters are leading Me to F#, but drop below before they can reach it, as if Me can only return to life if he reaches F#5 by his own will.

### Example 3-3

Wife and Love:      Cross the bridge to the oth - er side,      fol - low your heart you can't go wrong.

Come with me      I will be your guide,      and lead you back where you be - long.

The F# major chord which concludes the prior section elides to the beginning of the B section, and becomes the new tonic. (For enharmonic convenience, this section is notated in Gb major). Here, the chord progression is not well-suited to traditional functional harmonic tools (Gb–Bbm–Ab–Cm), although it is related in contour to “Day 2,” section D. In that movement (in F minor), chord roots move in a pattern of ascending minor thirds linked by a descending minor second: Fm–Ab–Gm–Bbm (↑m3 ↓m2 ↑m3). Day 20 distorts this sequence into major seconds and thirds: ↑M3 and ↓M2 (see example 3-4). The roots span the tritone F#–C, outlining a whole tone scale, suggesting that something still isn’t right. This tritone spans the same pitch inventory as section A. Both sections begin as an instrumental with no discernable melody. Section D in “Day 2” is used to show Me’s slow descent into his own mind, where this

similar section in “Day 20” is used to show his slow ascent out of his mind and back to reality.

Example 3-4

The musical notation for Example 3-4 shows a chord progression in F minor. The chords are: Fm, Ab, Gm, Bbm, Gb, Bbm, Ab, and Cm. The notation is written on a single staff with a treble clef and a key signature of two flats. Each chord is represented by a vertical line with dots indicating the notes. A double bar line separates the first four chords from the last four.

Agony enters with a melody over the same chord progression. He sings with an additional vocal line harmonizing beneath him. With each chordal shift, he sings a sequence of his first two measures, lowering by either a semitone or a whole tone with each repetition. A melodic reduction reveals a hidden iteration of the Me motive. Additionally, the lower harmony descends to the supertonic (Ab), but never reaches the lower tonic. (See Passion follows this section, interrupting the final phrase in C minor, and correcting it to C major, thus affirming her words, “Rise up and show the world you can be a better man.” This section articulates a functional progression in C major. This progression reflects the preceding progression’s pattern of  $\uparrow 3$  and  $\downarrow 2$ , but this time it is tonicized in C major (see example 3-5). As Me moves toward life, reaching the end of his bridge, the progression becomes normalized, finally presenting itself diatonically. This progression demonstrates a PL transformation: Cm–Em with a C major chord in the middle. David Forrest mentions the transcendence of metal barriers as an aspect of the uncanny. PL voice leading is often used to signify the uncanny in musical works. Here, it is used to show Me’s gradual rise from his subconscious mind back to reality.

## Example 3-5)

Passion follows this section, interrupting the final phrase in C minor, and correcting it to C major, thus affirming her words, “Rise up and show the world you can be a better man.” This section articulates a functional progression in C major. This progression reflects the preceding progression’s pattern of  $\uparrow 3$  and  $\downarrow 2$ , but this time it is tonicized in C major (see example 3-5). As Me moves toward life, reaching the end of his bridge, the progression becomes normalized, finally presenting itself diatonically. This progression demonstrates a PL transformation: Cm–Em with a C major chord in the middle. David Forrest mentions the transcendence of metal barriers as an aspect of the uncanny. PL voice leading is often used to signify the uncanny in musical works. Here, it is used to show Me’s gradual rise from his subconscious mind back to reality.<sup>27</sup>

## Example 3-5

Agony: Wel-come to re - al - i - ty be read - y for the pain. Wel-come to re - al - i - ty,

will it be in vain? Wel-come to re-al - i - ty, no-thing much has changed since you were gone.

<sup>27</sup> Forrest, “PL Voice Leading,” 1-25.

Passion: Rise up and show the world you can be a bet - ter man.

Rise up and show the world you care, yes you can. Rise up and show the world you're

Agony: (Wel-come back!)  
tak - ing your chance. Rise up and show the world. [ -> Gb Major]

This section also exhibits a shortened hexatonic system. Richard Cohn lists four distinct hexatonic systems, each with its own unique pitch-class, labeled northern, eastern, southern, and western. This section features a portion of the northern cycle: Ab-Cm-C-Em. Though it does not complete the cycle before moving on, it does show every pitch-class within the set.<sup>28</sup>

Immediately following this section is an altered repeat of the first instrumental interlude (section C). This time, the synthesizer is replaced with a Hammond organ. The harmony is the same, but the underlying rhythm is a distinct slow march. This reflects Me's determination to rise from the coma, though the tempo suggests reluctance in his mind. The next two sections are sung by Reason and Pride, an exact repeat of Agony's and Passion's sections with only a lyrical deviation. Reason is much more positive than Agony, telling Me to "wake up and rejoice." Pride encourages him to show the world he has won, and his new life has begun. On this second iteration, the B chord resolves to the home key of E minor (see example 3-7). Table 3-2 depicts the lyrical changes between

<sup>28</sup> Cohn, "Maximally Smooth Cycles," 9-44.



each section. The F#–C tritone is structurally represented in the key centers of the song, which span C major to Gb major. The opening key of E minor is encased between iterations of the tritone, reflecting the Best Friend’s initial melody, which is encased by Me’s (see example 2-2).

### Example 3-6

Table 3-2

Agony (B1) 2:24	Reason (B3) 3:29
Welcome to reality Be ready for the pain Welcome to reality Will it be in vain? Welcome to reality Nothing much has changed since you were gone.	Welcome to reality Wake up and rejoice Welcome to reality You’ve made the right choice Welcome to reality And let them hear your voice, shout it out!

Passion (C) 2:42	Pride (C1) 3:48
Rise up and show the world You can be a better man Rise up and show the world you care Yes you can Rise up and show the world You’re taking your chance Rise up and show the world	Rise up and show the world Your battle is won Rise up and show the world The old you is gone Rise up and show the world Your new life has begun Rise up and show the world.

The song returns to the final key center of E minor, suggesting Me is reaching up to finish his journey to return to life, but is being pulled back down to E minor by Fear. The return of the A section reveals a dialogue between Me and

Fear, who reflects Me's insecurities about returning to his life. The notes and rhythms are mostly the same, but the last words, "look at me, I'm alive," are spoken, with the accompaniment disappearing beneath to give emphasis to these words.

The final section of this song is the longest, lasting 1:36. The music begins with the same oscillating accompaniment figure as the beginning. Love and Passion sing the same melody, but are interrupted by the Best Friend. During this section, all seven emotions, plus his Best Friend and Wife, sing to Me, encouraging him to rise. These melodies center primarily around the dominant pitch, B. This section follows Spicer's cumulative form, showing each character represented as he or she is seen throughout the album.<sup>29</sup> Passion's line, "Can't you feel that fire, can't you feel it burn," is reminiscent of her first appearance in "Day 2." Though the tonic pitch appears at regular intervals, the emphasis of the dominant pitch distracts the listener from hearing the lower tonic. Fear is the only emotion pulling away from their overall presence in the album. Rather than singing a lyrical line, Fear screams, suggesting Fear and Rage have become one.<sup>30</sup> The accompaniment speeds up in the final section, switching to constant sixteenth notes, revealing a sense of urgency.

Though the voices around him are mostly singing encouraging words, the key remains in E minor, suggesting Me's struggle to return to consciousness. Me does not sing in the final section until the very end. His last words affirm his

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<sup>29</sup> Spicer, "(Ac)cumulative Form," 29-64

<sup>30</sup> The character of Rage, first introduced in "Day 3: Pain," is normally associated with Me's father, and is seen last in "Day 16: Loser." Rage is the only character who utilizes guttural vocal sounds, or "screaming," in metal parlance. This character does not sing in a traditional sense.

decision to return to life, “I’m alive, I won’t look back.” His line also centers around the dominant until the very last note, which he sings on the syllable, “Ah.” His vocal line rises to the supertonic (F#), but never cadences (see example 3-8). The track completely cuts off, leaving both the lament bass and vocal line again on the supertonic, never resolving to E minor.

Example 3-7

The musical score for Example 3-7 is presented in two systems. The first system shows the vocal line in the treble clef and the bass line in the bass clef. The vocal line begins with a whole rest, followed by a quarter note G4, a quarter note A4, a quarter note B4, and a quarter note C5. The lyrics "Me: I'm al - ive, I" are written below the notes. The bass line consists of a continuous eighth-note accompaniment. The second system shows the vocal line continuing with a quarter note D5, a quarter note E5, a quarter note F#5, and a quarter note G5. The lyrics "won't look back Ah!" are written below the notes. The bass line continues with the same eighth-note accompaniment.

Though this song does not resolve, this line concludes Me’s opening line in Day 2: Isolation. Rather than descending to F#2, Me rises up out of the coma, resolving his opening line up three octaves to F#5. This remains consistent with *The Theater Equation* where, on this note, Me comes out of the coma before the light turns to black. Though the key of F# major does not reoccur after section B3, the ending shows Me has overcome the dark depths of the coma and risen above the voices to continue his life.

A computer sounds as the music ends abruptly, with a computerized voice saying, “Human Equation program aborted. Have a nice day. Dream Sequencer

offline.” Forever of the Stars says, “Emotions. I remember.” This final section references Arjen Lucassen’s albums *The Universal Migrator*<sup>31</sup> and *Into The Electric Castle*. The Dream Sequencer is a machine which allows its user to experience past events, suggesting *The Human Equation*<sup>32</sup> is not being experienced by Me, but by Forever of the Stars.

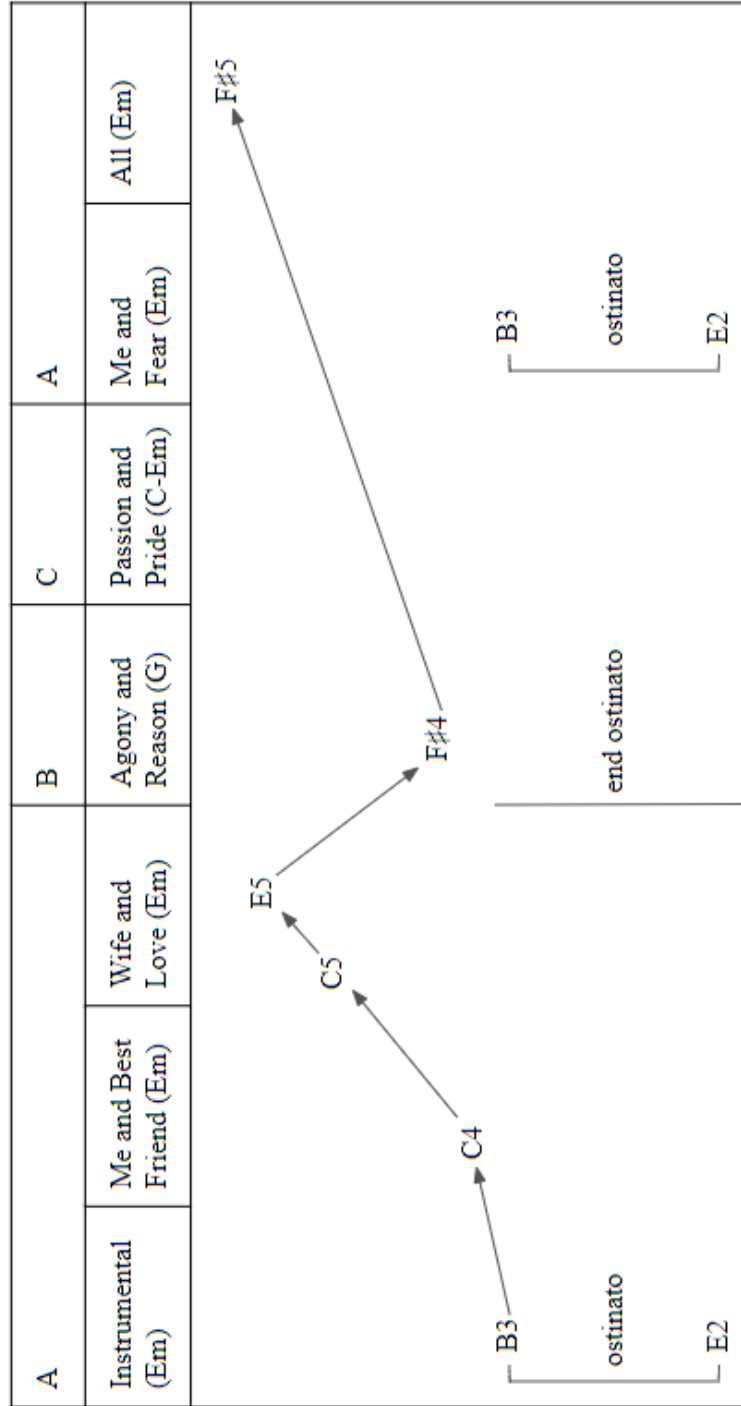
Figure 3-1 shows the melodic ascent that occurs throughout the song. Each section is labeled with its corresponding character and tonal center. The ostinato encompassing the perfect fifth from E to B serves as a bookend to the song. Me steps outside of this range with his C4, before his wife and love rise up even farther. The rising line returns down to F#4 for the entrance of Reason. Following this is a slow but consistent rise. The return of the A section reprises the perfect fifth ostinato, ending with Me’s eventual rise out of the coma, signified by the arrival of F#5.

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<sup>31</sup> Ayreon, *The Universal Migrator*. Inside Out Music, 2000, CD.

<sup>32</sup> Ayreon, *Into the Electric Castle*. Transmission Records, 1998, CD.

Figure 3-1



## Conclusion

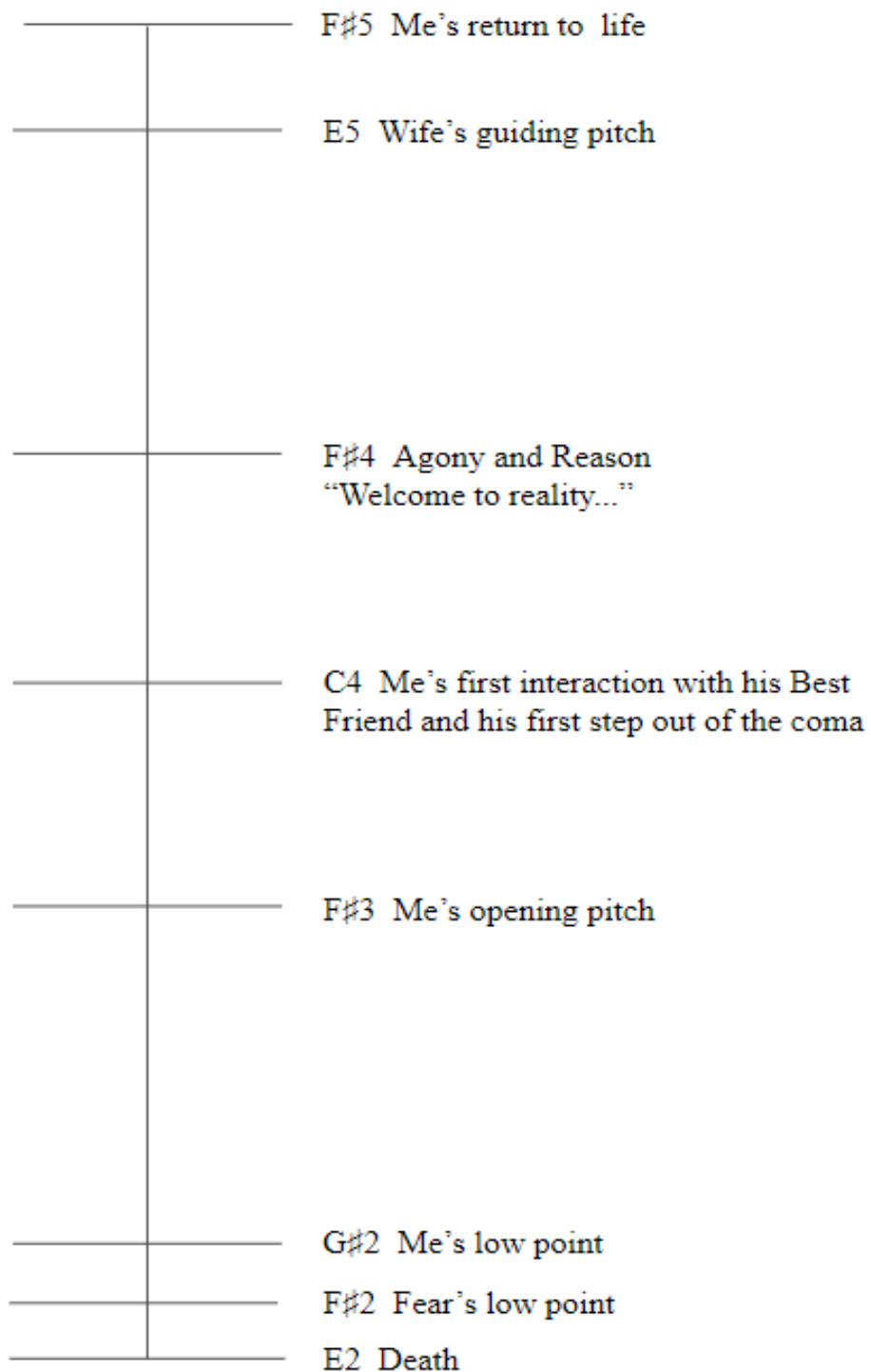
*The Human Equation* addresses a multitude of issues involving emotion and human nature. Arjen Lucassen uses melody and harmony to demonstrate Me's descent into the coma and his ascent back to life. I chose to discuss "Day 2: Isolation" due to Me's direct involvement with the pattern of descent. Me starts in his home key of F#, then travels with his emotions through B and A before finally landing on the coma key of E minor. Many of the following songs remain between the keys of B and E. "Day 20: Confrontation" begins in the coma, but rises through the key centers, eventually reaching Me's home key once more. These songs serve as bookends for Me's journey, best representing the journey through the coma and back to life. Figure 4-1 summarizes the tonal markers of Me's journey.

"Day 2: Isolation" and "Day 20: Confrontation" both demonstrate Me's journey by creating a "bridge" back to life. Lucassen uses tonal markers to represent life, death, and the coma. The tonal marker representing Me is F#, with F#5 representing his decision to come back to life. Me's initial descent of F#–E#–D#–C# is representative of his descent into his own mind. The descent continues to G#2 at the end of the phrase, but never resolves. This is the moment Me 'bottoms out' and encounters his first emotion, Fear. Me never reaches the low tonic (F#). Towards the end of the section, Fear sings with F#2 as the lower harmony, enticing him towards death. "Day 2" ends with a cadence to E minor, where E2 is the lowest note. The chorus in "Day 2" is the first iteration of the two most common tonal markers (B and E).

“Day 20” begins in E minor, where “Day 2” leaves off—with E as the tonal center. Me steps outside of this zone to sing C, which descends to F#, emphasizing the tritone. This is the first time Me interacts with someone from the outside world. “Day 20” begins where this left off, with E2. This is where Me begins to rise from the coma, as this is the moment Me first interacts with characters from the outside. The melody never lands on the low tonic, but rather modulates to Gb major, the first recount of Me’s home key, though it is sung by the emotions, leading him back to life. The song continues to rise as the emotions guide him through the coma, ending with Me rising to F#5.

F# is Me’s opening and ending note, and his tonal marker, representing his life. The two main tonal centers in *The Human Equation* are E and B, which represent the coma. In “Day 2,” both B (Passion) and E (Pride) are represented in the chorus. In “Day 20,” E is the tonal center both in the beginning and the end, though B is emphasized primarily in the melody. The ostinato in “Day 20” (see example 3-1) spans the coma: E2–B3. Me first begins to step outside of this line in the beginning of “Day 20,” where he rises to C4 before descending to F#3, creating a tritone down to his opening note. This is Me’s first step towards life. In the next section, the Wife sing’s Me’s prior melody, but rather than descending to the tritone, she rises to E5 before falling back to C, never reaching F#5. As Me ascends from the coma, he sings the last note, F#5, three octaves above his expected resolution. This F# completes his journey and represents his breakthrough to consciousness and reality.

Figure 3-2



There are few studies of extrageneric meaning in rock music as it relates to the congeneric meaning. As new methods for studying rock music are developed, they may be used in tandem to create a broader view of the congeneric



meaning. This thesis discusses several aspects of congeneric meaning, such as melodic contour and harmonic structure, as they relate to the plot laid out by Arjen Lucassen's lyrical content. In this way, it may serve as a starting point for further analysis of rock music in relation to lyrics. A more extended study may track Me's melodic ascent and descent throughout the full album. Future studies might also consider the melodic patterns of other characters from song to song.

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