

Re-casting Metal: Rhythm and Meter in the Music of Meshuggah

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The music of the Swedish metal band, Meshuggah, reveals a distinct rhythmic and metric structure based on large-scale odd time signatures, mixed meter, and metric superimposition. Their 2004 EP “I,” however, pushes the boundaries of surface-level meter through the absence of small-scale recurring units of pitch and rhythm. This article uses models for rhythmic analysis developed by Harald Krebs, Fred Lerdahl and Ray Jackendoff, William Rothstein, and Maury Yeston in pursuing an architectonic examination of hierarchical layers in this music. Additionally, I introduce the important relationship that exists between fans and structural analysis based on a socio-cultural profile of the subgenre.

Keywords: Popular Music Analysis, Architectonic Rhythm, Hypermeter, Socio-Cultural Analysis, Metal Music

I. MESHUGGAH (1987–2002)

The following article examines rhythm and meter in music written by the Swedish metal band, Meshuggah.¹ Formed in 1987 in Umeå, Sweden, Meshuggah (Yiddish for “crazy” or “insane”) had its musical beginnings in the style associated with bands like Metallica (early, 1983–91), Anthrax, Slayer, and Sepultura.² Their first two albums, a self-titled EP (1989) and *Contradictions Collapse* (1991), demonstrate the influence of the Metallica/Anthrax style; in fact,

the roots of the band extend back to 1985 when guitarist Fredrik Thordendal started the band Metallien. The group has experienced a number of member changes since 1987, but is presently comprised of singer Jens Kidman, lead guitarist Thordendal, rhythm guitarist Mårten Hagström, and drummer Tomas Haake. Meshuggah’s music developed a distinctive style beginning in the latter half of the 1990s with the release of three full-length albums, *Destroy Erase Improve* (1995), *Chaosphere* (1998), and *Nothing* (2002), and a number of shorter-length EPs, *None* (1994), *Self-Caged* (1995), and *The True Human Design* (1997).³ Of primary importance to the development of this style is the rhythmic and

- 1 Readers unfamiliar with Meshuggah’s music can access the corresponding audio to the examples analyzed in this essay at: www.jon.pieslak.com/meshuggah. My thanks to Loana Valencia at Nuclear Blast Records; and to Guy Capuzzo and Shaun O’Donnell for their support of my work.
- 2 The band, allegedly, chose the name because it “sounds cool” and there is no religious, social, or political meaning behind it (www.meshuggah.net).

- 3 Beginning with *None*, guitarists Thordendal and Hagström used seven-string guitars, detuned to B♭ and with *Nothing*, they used eight-string guitars (the lowest string being F, detuned to E or E♭) to extend the possible range of the guitar parts. The power chord (root and fifth, usually associated with distorted amplification) remained the basic unit of pitch until *Nothing*, when the tuning of the eight-string guitar limited

metric organization of their songs.⁴ In the first section of this essay, I examine rhythm and meter in Meshuggah's music from 1987–2002, which is based on three specific techniques: large-scale odd time signatures, mixed meter, and metric superimposition. Scholars like Mark Butler, Walter Everett, and David Headlam employ models for the rhythmic analysis of pop-rock music based on ideas of meter, hypermeter, and metric dissonance developed by Harald Krebs and William Rothstein. These methods provide a useful framework for my discussion of Meshuggah's music during this period.

The opening passage, extending from 0:00 to 0:29 of "Rational Gaze," (from *Nothing*), given in Example 1, demonstrates how the band tends to combine these three specific devices.⁵ The guitars and bass can be grouped into four repetitions of measures in 25/16, followed by a measure in 28/16. The entire passage is then repeated. While this is going on, the cymbals create a metric superimposition: as the pedal bass (kick) drum doubles the guitar and bass rhythms,

their use of distorted power chords on particular songs to single pitches. In this lower register of the eight-string guitar, the fifth of the power chord tends to obscure rather than reinforce the fundamental or root in more active passages, so they will frequently use single tones instead of power chords.

4 For the most part, the pitch structure of their music has remained consistent. Based on a single tonal center and framed by the Locrian mode, Meshuggah's music demonstrates a preference for chromaticism or motion by half step with respect to the interval of a minor third above the tonal center. Almost every song from *Chaosphere* and *Nothing* reveals a chromatic filling-in of the first three scale degrees. If the guitars, for example, are tuned such that F is the note of the lowest open string, the song will almost invariably move through the pitch space of F, G♭, G♯, A♭ (A♯, possibly) and F's tritone, C♭. My present focus, however, is on rhythm and meter. The terminology used in the theoretical literature devoted to rhythm and meter varies widely from author to author, such that a term like "meter" is defined in different ways. I will make my understanding of such terms explicit, and following Krebs, I interpret meter as a "series of regularly-recurring pulses" (Krebs 1999, 23).

5 All transcriptions by the author.

the cymbals maintain a consistent quarter-note pulse, complemented by snare drum hits on what would be beat three in 4/4 time. Example 2 illustrates how the cymbals and snare can be interpreted in 4/4 time and, in fact, reveal a larger, prototypical phrase rhythm implying four hypermeasures.⁶

This type of metric superimposition, or overlay, characterizes many Meshuggah songs and is articulated typically through the instrumental texture, where the guitars, bass, and pedal bass drum are based on a large-scale odd time signature and mixed meter while the cymbals (or some other instrument of the drum set, usually a hi-hat) maintain a steady quarter-note pulse that expresses a symmetrical hypermetric structure. Like the opening excerpt of "Rational Gaze," the section in "Stengah" extending from 0:16 to 0:48, given in Example 3, repeat in the guitar, bass, and pedal bass drum part, constituting measures of an unusual time signature, in this case five repetitions of 11/8 followed by a measure of 9/8, which provides a mixed meter organization that allows a larger, hierarchical arrangement of four hypermeasures.

While the band uses this rhythmic device prominently in *Nothing*, it also appears in albums before 2002. As early as 1994, the group was experimenting with this type of metric superimposition. The opening song in "None," "Humiliative," presents guitars and bass parts in 5/16, while the ride cymbal, crash cymbal, and snare drum superimpose a common-time quarter-note pattern. The music is given in Example 4(a). Similar passages exist throughout *Destroy Erase Improve* and *Chaosphere*, like "New Millenium Cyanide Christ," provided in Example 4(b), and further demonstrate the use of this device throughout Meshuggah's music since the mid 1990s.

The rhythmic organization of Meshuggah's music during this period can generally be explained through an analytic method that addresses odd time signatures, mixed meter, and superimposition. These features are based on two simultane-

6 My use of the terms hypermeter and phrase rhythm is consistent with Rothstein's definitions (Rothstein 1989, 8–15).

♩ = ca. 134

* Crash or Chinese Cymbal

EXAMPLE I. “Rational Gaze,” *Nothing* (2002), (0:00–0:29).

ous, but independent, rhythmic layers and thus could be interpreted as polyrhythmic or “metrically dissonant” (after Krebs) with two “interpretative layers whose cardinalities are different and are not multiples/factors of each other” (Krebs 1999, 31). However, such principles tend to have symmetrical or repeated patterns within both rhythmic layers that come together or align on a mutual downbeat within the context of a single meter, or a beat within a rhythmic grouping. The most immediate examples of this are two against three or three against four (in Krebs’s terms, G3/2 and G4/3), where, in the case of 3:2, there are two rhythmic layers: one is an evenly-spaced grouping of three and the other is an evenly-spaced grouping of two.

The difference between metric dissonance and the overlay used by Meshuggah lies in the structure of repetitions within each rhythmic layer. Whereas the rhythmic layers of metric dissonance involve recurring, uninterrupted patterns, Meshuggah uses asymmetric repetitions in the guitars and bass part resulting from mixed or changing meter. Krebs points out that even metric dissonance “invariably involves some alignment of attacks, the alignment occurring after a number of pulses generally determined by the product of the cardinalities of the interpretative layers” (Krebs 1999, 31). If the opening passage of “Rational Gaze,” which we studied in Examples 1 and 2, were to be truly metrically dissonant with respect to the quarter-note cymbal pattern, the measure of

Hypermeasure: 1
Hyperbeat: 1
Beat: 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4

♩ = ca. 134

Crash Cymbal
Snare
Cymbal 2*
Pedal Bass Drum

Guitars and Bass

* Crash or Chinese Cymbal

Hypermeasure: 3
Hyperbeat: 1
Beat: 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4

Crash Cymbal
Snare
Cymbal 2*
Pedal Bass Drum

Guitars and Bass

EXAMPLE 2. "Rational Gaze," *Nothing* (2002), (0:00–0:29), *phrase rhythm*.

25/16 would have to be repeated sixteen times in order for the downbeats to ultimately fall in the same place, not four repetitions of 25/16 followed by a bar of 28/16.⁷ There are many times when Meshuggah's music suggests metric dissonance, but it seldom occurs in full, or in the same way as many pieces within the Western Classical tradition due to

the variable meter within the interpretative layer of the guitars and bass. In Example 4(a), for instance, the repetitions of the guitars and bass part in 5/16 create a true metrically-dissonant structure with the common-time cymbals as their downbeats coincide on the downbeat of measure six of the excerpt, but this metrically-dissonant structure does not govern the large-scale phrase rhythm that ultimately continues to the eighth hypermeasure. In this way, the decisions of mixed meter are made with the intention of maintaining a symmetrical, four-bar hypermetric structure, not using met-

7 Sixteen would be the "common factor z" in Kerbs' equation of alignment where Gx/y have a common factor z in the equation $(xy)/z$ (Krebs 1999, 31).

Hypermeasure: 1
Hyperbeat: 1
Beat: 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4

♩ = ca. 120

Cr. Cym.
Ride Cym.
Snare
Ped. B.D.

Guitars and Bass

(a) "Humiliative," *None* (1994), (3:50–4:04), phrase rhythm.

Hypermeasure: 1 and 3 (on the repeat)
Hyperbeat: 1
Beat: 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4

♩ = ca. 144

Hi-Hat
Snare
Pedal Bass Drum

Guitars and Bass

(b) "New Millenium Cyanide Christ," *Chaosphere* (1999), (0:00–0:25), phrase rhythm.

The following analysis of *I* draws upon rhythmic concepts developed by Fred Lerdahl and Ray Jackendoff, Joel Lester, Maury Yeston, and others, to examine hierarchical layers or strata in the music. While these scholars have varied notions, and sometimes differing opinions, on suitable methods for rhythmic analysis, the idea of an architectonic approach to rhythm is a unifying thread among them. This perspective has been widely used, to varying degrees, in the contemporary theoretical literature and underlies a variety of approaches, extending back almost a generation of music theorists. From Grosvenor Cooper and Leonard Meyer's study, *The Rhythmic Structure of Music* (1960), to Christopher Hasty's *Meter as Rhythm* (1997), the idea of analyzing rhythm as interactive, layered structures has been useful to theorists even when they employ an architectonic approach to reach very different conclusions. Specifically, I engage Lerdahl and Jackendoff's concept of "grouping structure," Lester's idea of "textural accent," and Roeder's "pulse stream" relationships to explain the different ways hypermeter and large-scale rhythm is stratified, while Yeston's concept of "attack point interval" analysis is useful in observing foreground rhythmic details. Underlying each approach is an epistemological foundation in what Justin London describes as "the hierarchical aspects of rhythm and form," and these different ideas intersect one another as methods of architectonic analysis (2002, 695). Each approach to rhythm utilized in my analysis is based on the principle that rhythm operates at various interactive levels. *I* does not articulate surface-level meter, metric dissonance, or other characteristics associated with conventional rhythmic analysis, and combining these approaches allows us to observe many of the distinctive features of hierarchical rhythmic organization in the music.¹⁰

One of the first aspects of rhythmic structure that distinguishes *I* from many previous Meshuggah songs is that the guitars and bass part can no longer be grouped into small-scale, repeated patterns. The music does not demonstrate patterns of repetition that would allow the interpretation of large-scale odd time signatures like those used in "Rational Gaze" (25/16) or "New Millenium Cyanide Christ" (23/16). Instead, patterns of pitch and rhythm repeat over much longer spans of time. These longer repetitions are largely governed by the same symmetrical phrase rhythm that characterizes songs from *Nothing*. The passage from 3:35–3:55 offers a clear example of this technique and is a good starting point for analysis.

Example 5 provides a transcription and phrase rhythm analysis of this passage. The guitars and bass repeat a pattern lasting thirty-two quarter notes. The repetition aligns with a quarter-note pulse, shown above the staff, which articulates a four-bar hypermeter. The large-scale hypermeter no longer governs multiple repetitions of small rhythm and pitch units that could be interpreted as meter, but only one repetition of a pattern that is significant enough to strain an attempt to describe it as meter, or to place it in a traditional time signature. A more informative approach may be to conceptualize this music in terms of Lerdahl and Jackendoff's "grouping structure," or Yeston's "pattern recurrence." (Lerdahl and Jackendoff 1983, 17; Yeston 1976, 50–54). Both concepts are useful to our analysis because they notice the contiguous elements of the group, its recursive nature, and the hierarchical structure, but do not interpret the repeated pattern as surface-level meter. Thus, we could express this passage in a simpler, hierarchic way shown in Example 6, where the grouping structure has been divided into two identical parts, labeled (c).

The excerpt also differs from the rhythmic organization of previous Meshuggah songs in another important way. The drums no longer clearly play repeated quarter-notes in the hi-hat or cymbals with the snare providing accents that outline a superimposed common-time meter. In Example 1,

10 Other scholars, like Butler, have found it useful to combine aspects of architectonic approaches in their rhythmic analysis of popular music. He employs methods developed by Hasty, Jay Rahn, and Krebs in his analysis of electronic dance music (Butler 2001).

Hypermeasure: 1 and 3 (on the repeat)
Hyperbeat: 1
Beat: 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4

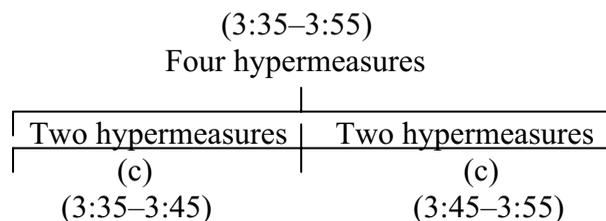
Crash Cymbal
Hi-Hat
Snare
Pedal Bass Drum

Guitars and Bass

EXAMPLE 5. *I*, (3:35–3:55), transcription and phrase rhythm.

“Rational Gaze,” the crash cymbal provides a steady quarter-note pulse and the snare accentuates what would be beat three in 4/4, but the passage from 3:35–3:45 no longer demonstrates this type of clear, two-part multi-layered rhythm; in fact, the quarter-note hi-hat part coordinates with the guitars and bass, and the snare complements the majority of registral leaps to $A\flat_4$. The superimposed 4/4 meter that helped articulate the four-bar hypermeter is not aurally distinguishable in the form of a separate rhythmic layer, but is still important as a means of structuring large-scale form. How, then, might it possible to perceive this phrase rhythm?

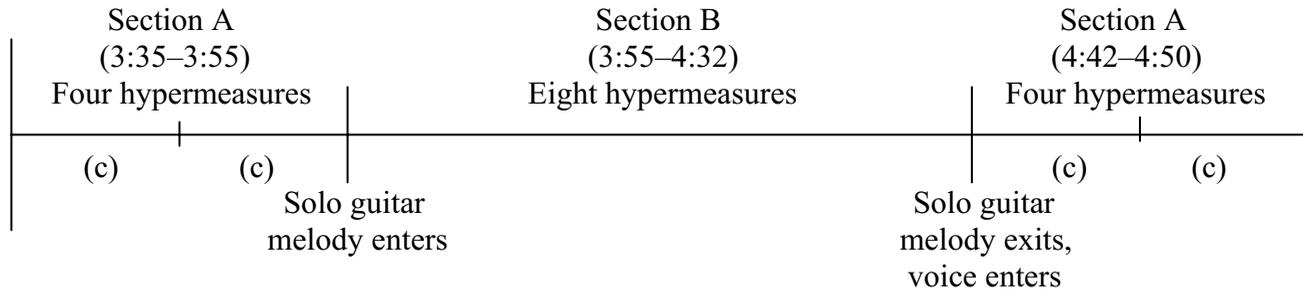
In many instances throughout the twenty-one minute song, the hypermetric form of different sections is expressed through what Lester calls “textural accents” (Lester 1986,



EXAMPLE 6.

30–31).¹¹ Lester describes textural accentuation as a change in musical texture marked by the addition or subtraction of

ii Wallace Berry calls this determination of groupings based on “extramusical factors” (1976, 321).



EXAMPLE 7. *I*, (3:35–4:50), phrase rhythm as articulated by textural accent.

distinct features, like the entrance of a new voice (30–31). This very appropriately describes the manner in which large-scale phrase rhythm is articulated in *I*. As shown in Example 7, the entrance/exit of the voice or a solo guitar melody in the upper register almost always marks regions of four-bar or eight-bar hypermeter. The textural outline of the entire passage from 3:35–4:50 reveals how, in the absence of a consistent quarter-note hi-hat or cymbal, the larger-scale phrase rhythm is expressed through textural accent. While the guitar melody signals the symmetrical phrase rhythm at 3:55 through textural accent, another important feature to notice is that the grouping structure from 3:35–3:45, repeated from 3:45–3:55 and labeled section A in Example 7, changes for the passage of 3:55–4:32, or section B, in a number of significant ways. First, this music spans eight hypermeasures until the voice operates as a textural accent that initiates a repetition of the grouping structure, (c). More importantly, Section B does not exist in a grouping structure that is exactly recursive. The passage presents two groups, which are slightly asymmetrical.¹² To understand this better,

the analysis must move towards a more detailed approach to rhythm, examining the music on an immediate, surface level.

Within the context of large-scale repeated patterns, Yeston's concept of "attack point" analysis provides a useful method for investigating the relationships of foreground rhythmic structure in *I*. According to Yeston, attack point is "the criterion that can be used to describe minimally any rhythmic configuration and . . . measures the rhythm of their recurrence" (1976, 39–41).¹³ In other words, the rhythms of a section or piece can be reduced to a common subdivision and measured as multiples of that denominator, resulting in a collection of "attack-point intervals" (1976, 39).¹⁴ Example 8 presents an attack-point interval analysis for section A, the passage from 3:35–3:55. If the eighth note is considered to be the minimal duration, each Arabic numeral corresponds to the duration of the number of eighth notes before the next attack, such that 1 = eighth note, 2 = quarter note, 3 = dotted-eighth note, and so on. In the example, the attack-point intervals are included beneath the music for the first

¹² These asymmetrical or almost-recursive groups violate certain propositions within Lerdahl and Jackendoff's Grouping Well-Formedness Rules (GWFRs), but this does not pose a serious problem if we follow Jonathan Kramer, who eliminates the requirement of isochronously-spaced groups (Kramer 1988).

¹³ Berry adopts a similar approach in his "accent-to-accent grouping" analysis of Corelli's Concerto Grosso, Op. 6, No. 3, third movement (1976, 346–48).

¹⁴ Like Yeston, I will consider, when applicable, pitch to be an indispensable part of "attack-point interval" structure.

Attack interval: 2 2 4 2 1 2 2 2 3 2 2 2 1 2 3

Attack-point intervals: 1 = ♩ , 2 = ♩ , 3 = ♩ , and so forth.

Italics represent sixteenth-note tremolos for the duration indicated.

Section A
(3:35–3:55)
Four hypermeasures

Attack-point interval: 2 2 4 2 1 2 2 2 3 2 2 2 1 2 3
Pitch: G \flat F F A F A \flat F F F F A A \flat F A F

Attack-point interval: 2 2 2 1 2 2 2 3 2 2 2 6 2 2
Pitch: F A A \flat F A A \flat A F F A A \flat F A F

(c), (3:35–3:45)

–Repetition–

Attack-point interval: 2 2 4 2 1 2 2 2 3 2 2 2 1 2 3
Pitch: G \flat F F A F A \flat F F F F A A \flat F A F

(c), (3:45–3:55)

Attack-point interval: 2 2 2 1 2 2 2 3 2 2 2 6 2 2
Pitch: F A A \flat F A A \flat A F F A A \flat F A F

EXAMPLE 8. *I*, (3:35–3:55), pitch and attack-point interval analysis.

sixteen beats to clarify this process. Below this, a complete attack-point interval analysis of section A is provided. When attack-point intervals are coupled with pitch, one can immediately notice the grouping structure of 3:35–3:45, labeled (c), repeated from 3:45–3:55. Continuing, then, this form of analysis to section B, from 3:55–4:32, it becomes apparent

how this music is structured in two almost-recursive groups. Example 9 shows a pitch and attack-point interval analysis of section B. The section can be divided into two large groups of pitch and attack-point intervals, labeled (d) and (d') on the right side of the example. The second group (d') is practically identical to the first until the very end, where

Attack-point intervals: 1 = ♪ , 2 = ♩ , 3 = ♩ , and so forth. $A\flat$, one octave higher.
 Italics represent sixteenth-note tremolos for the duration indicated.

Attack-point interval:	$\underline{2\ 2\ 2\ 1\ 2\ 2\ 3\ 2\ 2\ 2\ 6}$	
Pitch:	F A $A\flat$ F A $A\flat$ A F F A $A\flat$ F	
Attack-point interval:	$\underline{2\ 1\ 2\ 2\ 2\ 3\ 2\ 1\ 2\ 2\ 2\ 2\ 3\ 2\ 2\ 2\ 2\ 1\ 2\ 2\ 2\ 3}$	
Pitch:	F A $A\flat$ F A F A F $A\flat$ A $A\flat$ $A\flat$ F A F $A\flat$ $A\flat$ F $A\flat$ $A\flat$ $A\flat$ F	
Attack-point interval:	$\underline{2\ 1\ 2\ 3\ 2\ 2\ 2\ 2\ 2\ 2}$	(d)
Pitch:	A F $A\flat$ F A F $A\flat$ F A F	
Attack-point interval:	$\underline{2\ 2\ 4\ 2\ 1\ 2\ 2\ 2\ 3\ 2\ 2\ 2\ 1\ 2\ 3}$	
Pitch:	$G\flat$ F F A F $A\flat$ F F F F A $A\flat$ F A F	
—Repetition, slight alterations are indicated in bold parentheses—		
Attack-point interval:	$\underline{2\ 2\ 2\ 1\ 2\ 2\ 2\ 3\ 2\ 2\ 2\ 6}$	
Pitch:	F A $A\flat$ F A $A\flat$ A F F A $A\flat$ F	
Attack-point interval:	$\underline{2\ 1\ 2\ 2\ 2\ 3\ 2\ 1\ 2\ 2\ 2\ 2\ 3\ 2\ 2\ 2\ 2\ 1\ 2\ 2\ 2\ 3}$	
Pitch:	F A $A\flat$ F A F A F $A\flat$ A $A\flat$ $A\flat$ F A F $A\flat$ $A\flat$ F $A\flat$ $A\flat$ $A\flat$ F	
Attack-point interval:	$\underline{2\ 1\ 2\ 3\ 2\ 2\ 2\ 2\ 2\ 2}$	(d')
Pitch:	A F $A\flat$ F A F $A\flat$ F A F	
Attack-point interval:	$\underline{2\ 2\ 4\ 2\ 1\ 2\ 2\ 2\ 3\ 2\ 2\ 2\ 1\ 2\ (\mathbf{2\ 2})\ 3\ (\mathbf{2\ 2})}$	
Pitch:	$G\flat$ F F A F $A\flat$ F F F F A $A\flat$ F A ($A\flat$ A)F (F A)	

Section B
 (3:55–4:32)
 Eight hypermeasures

EXAMPLE 9. *I*, (3:55–4:32), pitch and attack-point interval analysis.

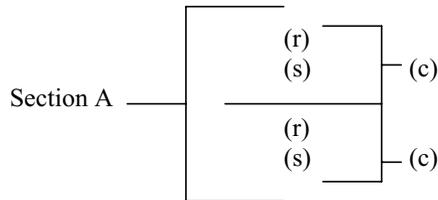
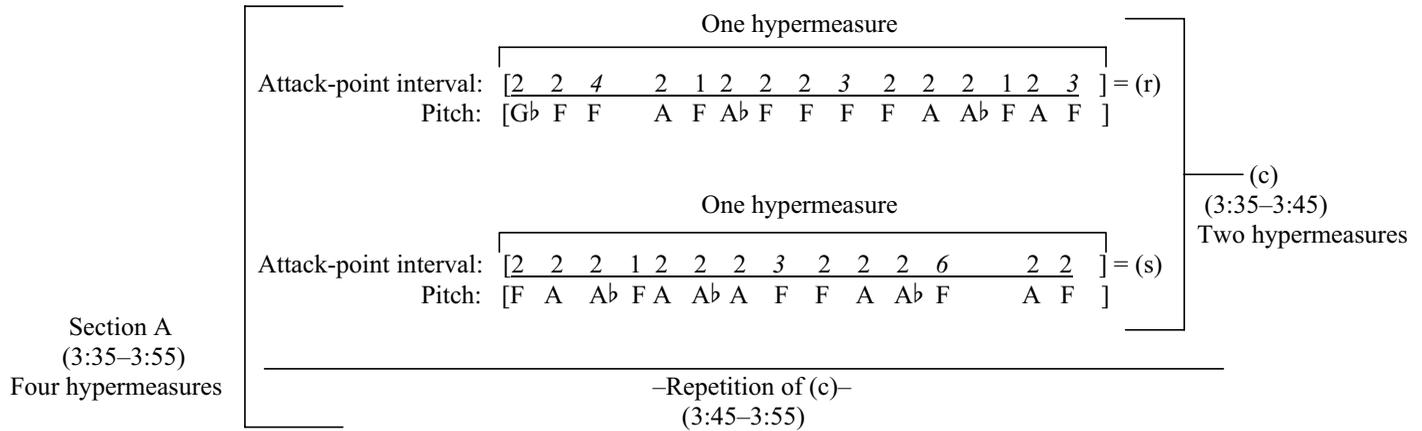
two small sets of quarter notes are inserted and alter the progress of the exact repetition; these are indicated in bold parentheses at the lower right of the example (the bold parentheses within the second group indicate the inserted attack-point intervals which, if omitted, would result in an exact repetition of the first group). The additional pitch and attack-point intervals, however, are not without purpose. The section (d') must contain these additions in order to align with the eight-bar hypermeter of the entire passage, which is texturally accented by the entrance of the voice at 4:32. If the symmetrical, large-scale phrase rhythm is to be maintained, these added attack-point intervals are vital to the musical surface.

The pitch and attack-point interval analyses of Examples 8 and 9 also suggest another important stratum of rhythmic interaction. The attack-point intervals within these examples have been arranged such that smaller, internal "pulse stream" relationships between sections A and B can be seen (Roeder 1994, 2003). Section A, given in Example 10, consists of four hypermeasures, divisible into the statement of a pitch- and attack-point stream and its repetition, respectively labeled (r) and (s). Each stream of pitch- and attack-point intervals lasts exactly 16 beats (one hypermeasure), and grouping them in this way seems to make sense as we pursue an architectonic analysis—section A is four hypermeasures long and is separated into a repetition of a grouping structure that lasts for two hypermeasures, labeled (c); this grouping structure can be symmetrically divided into two pitch and attack-point interval streams, (r) and (s), which last one hypermeasure each. Example 11 continues the pitch and attack-point analysis to section B where these two smaller streams, (r) and (s), play important roles. Stream (s), for example, begins section (d) in a slightly truncated form, breaking from an exact repetition of the complete stream at the last two attack points. We could call this variant (s'). Stream (r) appears in its entirety as the final stream of (d), and the remaining streams could receive labels, (x) and (y), that emphasize the almost-exact repetition of (d) as (d'). While

pitch and attack-point interval streams facilitate observation of symmetrical rhythmic strata in section A, this approach to rhythmic organization also clarifies the ways in which these streams make connections between sections on smaller hierarchical levels than phrase rhythm or hypermeter.

The use of truncation, as in the case of streams (s) and (s'), or elongation, as in the relationship of sections (d) and (d'), should come as no surprise. The songs from *Nothing* and *Chaosphere* also demonstrate this type of rhythmic technique but on a smaller scale. In general, the songs outlined in Examples 1–4 repeat measures of an odd meter that is slightly elongated or truncated in order to properly align with the hypermeter. In Example 3, "Stengah," the sixth repetition of the measure in 11/8 is truncated by one quarter note to create a measure of 9/8, but more importantly, it allows the entire passage to exist in two interpretative layers that align according to a four-bar hypermetric structure. This passage from *I* relies on similar techniques, but on a much larger scale.

One of the important differences, however, between 3:35–4:50 and previous Meshuggah songs exists in the structure of section B. Section B does not demonstrate symmetrical pitch and attack-point interval streams that align with the hypermeter (recall that [r] and [s] are each sixteen beats long, or one hypermeasure, and together they create the two-hypermeasure section [c] that is repeated, making the entire section A four hypermeasures). There is no rhythmic organization of the interval streams in section B that would allow it to be heard in smaller symmetrical units. Previous songs and section A consist of smaller hypermetric units that are repeated in order to create large-scale form. In this way, the larger, four-measure hypermeter arises out of the repetition of a two-hypermeasure group. Section B, though, is not only twice as long (eight hypermeasures), but there is no repeated two-hypermeasure rhythmic stratum created by pitch and attack-interval streams, and this contradicts the manner in which the interval streams and hypermeter have been organized in almost all of Meshuggah's music.



EXAMPLE 10. *I*, (3:35–3:55), *pitch and attack-interval stream labels*.

This inconsistency appears to be remedied by the solo guitar melody that originally functioned as the textural accent, signaling the division of large-scale form (sections A and B). The rhythmic structure of this melody creates what we might consider to be an intermediate rhythmic stratum between the larger phrase rhythm and the surface-level guitars/bass part. The solo melody, C–B–C–C[#], shown in Example 12, unfolds over the complete span of thirty-two beats in equal durations of eight beats for each pitch, labeled (z), and is repeated four times. This creates a rhythmic level that moves according to repetitions of units of two-measure

hypermeter—the exact level of rhythmic motion missing from this section when compared to other Meshuggah songs.

Example 13 provides an analysis of the rhythmic strata within the complete passage 3:35–4:50. The example moves from left to right through large hierarchical layers of rhythm to smaller ones. (Bold Arabic numerals indicate hypermeasure length.) The passage is 16 hypermeasures long, which can be divided, as we saw in Example 7, into an A–B–A sectional form. Each section, A and B, contains a level of rhythm that moves according to two-hypermeasure units. In section, A, these are labeled (c), and in section B, these are

Section B
(3:55–4:32)
Eight hypermeasures

Attack-point interval: $\underline{2 \ 2 \ 2 \ 1 \ 2 \ 2 \ 2 \ 3 \ 2 \ 2 \ 2 \ 6} = (s')$
Pitch: F A A \flat F A A \flat A F F A A \flat F

Attack-point interval: $\underline{2 \ 1 \ 2 \ 2 \ 2 \ 3 \ 2 \ 1 \ 2 \ 2 \ 2 \ 2 \ 3 \ 2 \ 2 \ 2 \ 2 \ 1 \ 2 \ 2 \ 2 \ 3} = (x)$
Pitch: F A A \flat F A F A F A \flat A A \flat A \flat F A F A \flat A \flat F A \flat A \flat A \flat F

Attack-point interval: $\underline{2 \ 1 \ 2 \ 3 \ 2 \ 2 \ 2 \ 2 \ 2 \ 2} = (y)$
Pitch: A F A \flat F A F A \flat F A F

Attack-point interval: $\underline{2 \ 2 \ 4 \ 2 \ 1 \ 2 \ 2 \ 2 \ 3 \ 2 \ 2 \ 2 \ 1 \ 2 \ 3} = (r)$
Pitch: G \flat F F A F A \flat F F F F A A \flat F A F

—Repetition, slight alteration of (r) labeled (r')—

(s')
(x)
(y)
(r')

(d)
(d')

EXAMPLE II. *Pitch and attack-point interval streams of section B.*

Solo guitar melody

4x

EXAMPLE I2. *Solo guitar melody (z), (3:55–4:32), section B.*

Bold arabic numerals indicate hypermeasure length.

(3:35-3:55) Section A
4

(c), 2

(s), 1

Attack-point interval: 2 2 4 2 1 2 2 2 3 2 2 2 1 2 3
Pitch: G \flat F F A F A \flat F F F F A A \flat F A F

(c), 2

Attack-point interval: 2 2 2 1 2 2 2 3 2 2 2 6 2 2
Pitch: F A A \flat F A A \flat A F F A A \flat F A F

Solo guitar melody enters, (z)

(z), 2

(s')

Attack-point interval: 2 2 2 1 2 2 2 3 2 2 2 6
Pitch: F A A \flat F A A \flat A F F A A \flat F

(d)

(z), 2

(x)-Attack-point interval: 2 1 2 2 2 3 2 1 2 2 2 2 3 2 2 2 2 1 2 2 2 3
Pitch: F A A \flat F A F A F A \flat A A \flat A \flat F A F A \flat A \flat F A \flat A \flat A \flat F

(3:35-4:50) 16 (3:55-4:32) Section B
8

(y)

Attack-point interval: 2 1 2 3 2 2 2 2 2 2
Pitch: A F A \flat F A F A \flat F A F

(z), 2

(r)

(d')

(z), 2

(s')

(x)

(y)

(r')

Attack-point interval: 2 2 4 2 1 2 2 2 3 2 2 2 1 2 (2 2) 3 (2 2)
Pitch: G \flat F F A F A \flat F F F F A A \flat F A (A \flat A) F (F A)

Solo guitar exits, voice enters

(r), 1

(c), 2

(s), 1

(c), 2

EXAMPLE 13. (3:35-4:50), *rhythmic strata*.

labeled (z)—the rhythm of the guitar melody. Example 13 also shows smaller, connected levels of rhythmic motion between sections A and B based on pitch and attack-point intervals streams (r), (s), and their variants (r') and (s').

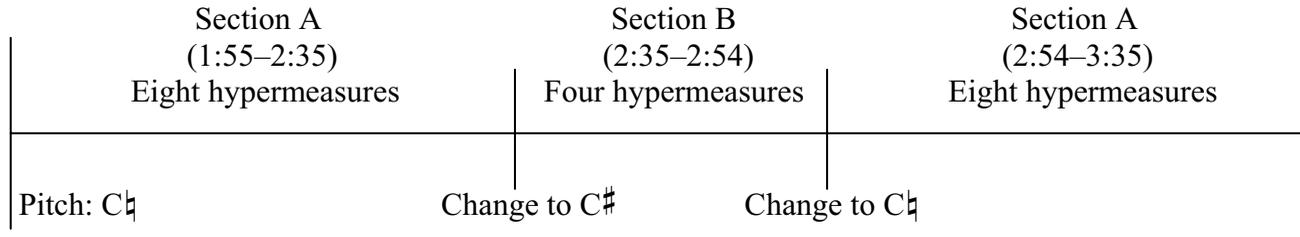
One of the problems we encounter when interpreting rhythm on multiple levels is the degree to which the hierarchy of strata can be extended. Lester, for one, warns against interpreting extensive levels of phrase rhythm, as do Lerdahl and Jackendoff, which implies that they find a definite limit in the degree to which rhythmic hierarchy can be interpreted in music. On the other hand, Berry and Kramer believe that hypermetric analysis can be effectively applied to entire movements. Carl Schachter points out that there are definite limits to the listener's perception of equivalent time spans (1987, 16). It is not my intention to debate the rhythmic level at which the hypermetric structure of this excerpt from *I* ceases to be audible; I do, however, find it useful to extend the hierarchy of rhythmic analysis to higher levels because these levels appear to provide a backdrop against which large-scale form can be read. I also believe that a number of intermediate levels, which connect the surface-level rhythm to higher strata like those outlined in Example 13, might make the aural interpretation of the larger strata more feasible than if the passage only consisted of, say, the lowest and highest levels.

The analytic tools developed in the examination of 3:35–4:50 help to clarify the temporal organization of the work, and the entire song might be analyzed using the architectonic approach developed above, coupled with concepts that involve pitch and attack-point interval streams to address local rhythmic phenomena. The remaining music is not organized exactly according to the characteristics of the excerpt in Example 13, but this analytic perspective allows us to distinguish the specifics of rhythmic organization within each section, as well as notice similarities among sections. 1:55–3:35 offers a good example. This excerpt immediately precedes the one analyzed above and demonstrates a similar large-scale form; Example 14 provides a large-scale phrase

rhythm outline of the passage. The first section, A, is eight hypermeasures, followed by section B (four hypermeasures), and section A is then repeated in a slightly-altered form but still eight hypermeasures in length. This sectional design is similar to 3:35–4:50 in the respect that both present an A–B–A structure, but the hypermetric length of 1:55–3:35 is the exact reverse of the order in 3:35–4:50: the A and B sections from 3:35–4:50 are four and eight hypermeasures, respectively; and the A and B sections from 1:55–3:35 are eight and four hypermeasures, respectively.

An important difference between these two passages involves pitch. In the music of 1:55–3:35, the pitch content of the guitars and bass is almost entirely static and involves only an alternation between C and C#. The change in pitch, however, is important for outlining the structure of the large-scale, A–B–A form. As shown in Example 14, the initial change from C to C# substitutes for the textural accent as a signal for boundaries of hypermeter. The motion to C# at 2:35 marks the end of an eight-bar hypermetric unit or section A, and the motion back to C (in conjunction with the textural accent of the added solo guitar melody) delineates the B section of four hypermeasures. The large-scale, sectional structure of 1:55–3:35 is defined by changes in pitch as well as textural accent.

Like 3:35–4:50, the small-scale rhythmic organization of this passage resists repeated patterns that imply any reasonable interpretation of meter, but it does reveal larger groupings that become analytically significant when understood through attack-point interval analysis. Example 15 provides a transcription of section A and its corresponding attack-point interval analysis. Below the first sixteen beats of the example, I have provided a corresponding attack-point interval interpretation, and the lower portion of the example outlines the complete attack-point interval analysis of this section. In the attack-point interval analysis, one can immediately notice how the attack-point intervals are organized according to related streams. The attack-point interval analysis of the entire passage from 1:55–3:35 no longer in-



EXAMPLE 14. *I*, (1:55–3:35), phrase rhythm as articulated by pitch change.

volves pitch relations, which following Yeston, were important in the previous analysis. But the attack-point intervals prove to be useful in observing stream relationships among sections. As shown in an attack-point interval analysis of the entire excerpt, Example 16, both A sections reveal a distinct similarity of streams with a few minor alterations among these streams. In fact, one can consider the A section to consist, for the most part, of a single stream, labeled (x), that is slightly altered (the bold numbers within the (x') streams of Example 16 indicate points of variations from the original (x)). In addition, the attack-point interval analysis reinforces the sectional division of the complete passage because the stream within section B demonstrates very few similarities to (x). Example 16 outlines the rhythmic strata of 1:55–3:35, and I hope it has become apparent how the analytical perspective developed for both excerpts 1:55–3:35 and 3:35–4:50, which involves a combination of different hierarchical rhythmic concepts, provides significant insight into the temporal organization of *I*. Yeston's concept of attack-point analysis has been a useful substitute for conventional ideas of meter, and Lerdahl and Jackendoff's "grouping structure," Lester's "textural accent," and Roeder's "pulse stream" relationships have provided methods to observe large-scale rhythmic strata and hypermetric structure.

Before concluding my analyses, I would like to explore two final points about 1:55–3:35. First, this passage, unlike 3:35–4:50, expresses a continuous, quarter-note pulse in the

form of the hi-hat and snare; the hi-hat is struck every quarter note and the snare is hit on the offbeat eighth note of every beat in the transcription in Example 15. This creates a rhythmic layer that is dissonant to the guitars and bass layer, and resembles the technique used in earlier Meshuggah songs, as shown in Examples 1–4. One important difference, though, is that the alternating hi-hat and snare hits remain constant throughout the entire excerpt and do not seem to contribute to the possible interpretation of surface-level meter as could be done in previous songs. Rather, they operate as a second stream of unchanging attack-point intervals that is dissonant to the rhythmic stratum of the guitars and bass. Secondly, in 3:35–4:50 the repeated rhythmic structure of the solo guitar melody plays an important role in articulating a stratum of hypermeter, and the second A section, from 2:54–3:35, likewise includes a repeated guitar melody. In this case, however, the repeated guitar melody does not align with the hypermetric structure. The guitar melody, given in Example 17, is 22 quarter notes long, which cannot be equally stated over the period of eight hypermeasures, or 128 beats. It should be obvious how important the eight-bar hypermeter is to the large-scale formal division of this section and that the smaller rhythmic strata have always been governed by hypermeter, so why does the rhythm of the guitar melody not align?

To explain this inconsistency, we must turn to a part of the music that may, at first hearing, seem inconsequential to

Hi-Hat Snare

Pedal Bass Drum

Guitars and Bass

Attack Interval: 1 1 3 2 1 1 2 2 2 1

Attack-point interval analysis: 1 = \downarrow (♩♩♩♩♩♩), 2 = \downarrow (♩♩♩♩♩♩), 3 = \downarrow (♩♩♩♩♩♩)

//

//

EXAMPLE 15. I, (1:55–2:35), section A, transcription and attack-point interval analysis.

//

The first system of musical notation consists of two staves. The upper staff is in treble clef with a common time signature (C). It features a complex, syncopated rhythmic pattern of eighth and sixteenth notes, with many notes beamed together. The lower staff is in bass clef and contains a simpler, more regular rhythmic pattern of eighth notes, often with rests. The two staves are connected by a brace on the left.

//

The second system of musical notation consists of two staves. The upper staff is in treble clef with a common time signature (C). It continues the complex, syncopated rhythmic pattern from the first system. The lower staff is in bass clef and continues the simpler rhythmic pattern. The two staves are connected by a brace on the left.

//

The third system of musical notation consists of two staves. The upper staff is in treble clef with a common time signature (C). It continues the complex, syncopated rhythmic pattern. The lower staff is in bass clef and continues the simpler rhythmic pattern. The two staves are connected by a brace on the left.

EXAMPLE 15. [continued]

//

The first system of musical notation consists of two staves. The top staff is a guitar staff with a treble clef, showing a complex rhythmic pattern of eighth and sixteenth notes with various accents and slurs. The bottom staff is a piano staff with a treble clef, showing a corresponding melody of eighth and sixteenth notes.

//

The second system of musical notation continues the guitar and piano parts from the first system. It features the same complex rhythmic patterns and melodic lines on both staves.

Complete attack-point interval analysis, (1:55–2:35).

```

1 1 3
2 1 1 2 2 2 1 1 1 3 2 1 1 1 2 2 1 2 2 1 1 1 3 2 1 1 1 1 1 1 2 1 1 1 1 3
2 1 2 2 2 1 1 1 3 2 1 1 1 2 2 1 2 2 1 1 1 3 2 1 1 1 1 1 1 2 1 1 1 1 3
2 1 2 1 1 1 1 1 1 1 3 2 1

```

EXAMPLE 15. [*continued*]

the rhythmic structure. At the conclusion of the second eight-hypermeasure A section, 2:54–3:35, a guitar effect, called a “dive-bomb,” functions as a transition into 3:35–4:50.¹⁵ If we analyze the duration of the dive bomb transi-

tion, it becomes apparent that this transition is not purely ornamental. The dive bomb moves from A to G \flat over the exact duration of four beats, which coincidentally (or perhaps not) allows for the rhythmic stratum created by the solo guitar melody to come to completion in the form of six full repetitions. Given the fact that the smaller rhythmic strata have always been regulated according to the larger hypermeter, it seems unusual that the repeated guitar melody cannot be equally subdivided within four or eight hypermeasures.

15 The “dive bomb” is a technique created by depressing the whammy bar of the guitar, which lowers the bridge and creates a glissando to pitches lower in the register without physically changing fret position.

1 = $\text{♩} (\text{♩} \text{♩} \text{♩} \text{♩} \text{♩})$, 2 = $\text{♩} \text{♩} (\text{♩} \text{♩} \text{♩} \text{♩} \text{♩})$, 3 = $\text{♩} \text{♩} \text{♩} (\text{♩} \text{♩} \text{♩} \text{♩} \text{♩})$

Section A (1:55–2:35) 8 hypermeasures	1 1 3 2 1 1 2 2 2 1 1 1 3 2 1 1 1 2 2 1 2 2 1 1 1 3 2 1 1 1 1 1 1 2 1 1 1 1 3 = (x) 2 1–2 2 2 1 1 1 3 2 1 1 1 2 2 1 2 2 1 1 1 3 2 1 1 1 1 1 1 2 1 1 1 1 3 = (x') 2 1 2 1 1 1 1 1 1 1 3 2 1
Section B (2:35–2:54) 4 hypermeasures	1 1 3 2 2 1 3 1 1 1 2 1 3 1 1 3 2 2 2 1 1 2 1 1 3 2 1 3 1 1 1 1 1 1 1
Section A (2:54–3:35) 8 hypermeasures	1 1 2 1 1 1 1 3 2 1 2 2 2 1 1 1 3 2 1 1 1 1 1 2 2 2 2 1 1 1 3 2 1 1 1 2 2 1 2 2 1 1 1 3 2 1 1 1 1 1 1 2 1 1 1 1 3 = (x') 2 1–2 2 2 1 1 1 3 2 1 1 1 2 2 1 2 2 1 1 1 3 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 = (x')

EXAMPLE 16. *I*, (1:55–3:35), *attack-point interval analysis*.

5x

EXAMPLE 17. *I*, (2:54–3:35), *solo guitar melody*.

The rhythmic layer of the solo guitar melody is expressed in the form of six complete statements without threatening the distinction of the eight-bar hypermeter even though these two layers do not align. The large-scale form is clearly distinguished as the bass and drums drop out for the dive bomb transition, and the guitar articulation dramatically changes from tremolo picking and palm muting on a single pitch to a dive bomb. But at this, the rhythmic layer of the solo guitar melody is incomplete and only through the exact duration of the dive bomb transition (four beats) is it allowed to reach a full statement as a rhythmic stratum. The section contains 128 beats. But the guitar melody plays 22-beat units. Since 128 cannot be divided by 22 without remainder, the two parts will not conclude at the same. The dive bomb, however, adds four beats to this total, to produce a 132-beat unit, which accommodates 6 complete repetitions of the guitar's melody. In this way, the textural change of the dive bomb permits the large-scale form, determined by the eight hypermeasures, to be clearly delineated. At the same time, the duration of the dive bomb, which may seem inconsequential considering the ornamental and transitional nature of this guitar effect, is vital to the rhythmic layer of the solo guitar in that it allows for the complete expression of the sixth repetition.

There is much more that could be said about the music, but a detailed analysis of the entire 21 minute piece requires more space than the context of a single article allows. Nonetheless, a few closing analytic remarks are worth mentioning. Given the analyses of *I*, it may be worthwhile to reconsider the interpretation of rhythmic organization in songs from *Nothing*, *Chaosphere*, and other albums. In these songs, I originally argued that meter could be read due to the relatively small size of repeated groupings, however, this approach seems to overlook certain relationships that might be observed through a perspective that involves rhythmic strata and grouping structure/pattern recurrence as understood by Lerdahl and Jackendoff, and Yeston. In "New Millennium Cyanide Christ," Example 4(b), for instance, the repeated

guitars and bass part were originally interpreted in 23/16, but the necessity of having to find a "series of regularly-recurring pulses," or meter, seems to ignore that the measure of 23/16 is composed of two smaller groupings, (z), and a fragmentation of (z), labeled (z'), shown in Example 18. Although one could contend that two measures of 10/16 are followed by a measure of 3/16, this perspective of meter seems unreasonable given that the tempo is approximately 144 beats per minute. The analytic tools developed for *I* may provide an alternate approach to previous Meshuggah songs that offers more detailed insights into the rhythmic structure of the music than interpreting two, superimposed layers, and may call into question the idea of interpreting surface-level meter.

In terms of the large-scale, formal structure of *I*, the entire work can be separated into fourteen distinct sections based on changes in pitch and rhythmic organization, like the ones described between 1:55–3:35 and 3:35–4:50. Each of these sections is relatively short; the shortest lasts forty seconds while the longest lasts one minute and fifty-five seconds. If we analyze these sections according to textural accent, it becomes clear how distinct changes in texture divide the complete song into three larger, relatively-equivalent parts. The music is dominated by drums, bass, distorted guitars, and vocals, but in two sections, the drums, bass, and vocals drop out and the guitar timbre changes to a clean or undistorted tone, accompanied by a dramatic decrease of rhythmic activity. This radical change of musical texture partitions the entire piece into three sections of relatively equal size 0:00–7:47, 8:40–14:42, and 16:01–21:00.

There is, however, another possible interpretation of large-scale form in *I*. One of the distinguishing features of *I* is that the vast majority of music resists metric interpretation on a surface level. In fact, there are only two occasions where surface-level meter is presented. The beginning of the track opens with a four-bar hypermeasure in 7/4 0:00–0:09. The music that follows fails to articulate a localized metric organization until 10:34, when 4/4 is projected clearly. In

Like any attempt to identify the characteristics of a broad category of music, we risk generalization and oversimplification in the construction of a definition for the diverse musical genre of metal. Robert Walser believes that “nowhere are genre boundaries more fluid than in popular music. Just as it is impossible to point to a perfect exemplary Haydn symphony, one that fulfills the ‘norms’ in every respect, pieces within a popular genre rarely correspond slavishly to generic criteria” (1993, 27). Moreover, Bruno Freisen and Jonathon Epstein observe that there are currently well over forty different subgenres of metal: pop, thrash, speed, death, progressive, porno, grind, power, dance, ambient, black, punk, symphonic, aluminum, nü, and so forth (Friesen and Epstein 1994; also Walser 1993, 5).¹⁷ Scholars have negotiated the problems of genre and subgenre in metal by primarily focusing on musical practices and thematic content. Walser, for instance, describes metal in terms of musical features: volume, vocal timbre, mode and harmony, rhythm, melody, and guitar solos (1993, 44–51). These features provide a platform for identifying metal, and for the most part describe songs based on a single tonal center, in the Dorian/Aeolian or Phrygian/Locrian modes, the loud, distorted power chord as the fundamental unit of pitch, and repeated, power chord-driven riffs in 4/4 time. The vocal articulation in metal ranges from a quasi-operatic, vibrato-laden style to unpitched yelling or screaming. The use of a distorted guitar timbre and/or power chords is frequently the sole determinant used by scholars to qualify the music as metal or as exhibiting a metal influence.

The musical features Walser describes are also helpful to understand how subgenres are distinguished. Friesen and Epstein, for example, differentiate pop metal from thrash metal according to many of Walser’s categories: pop metal emphasizes a semi-vibrato vocal articulation, blues-derived harmony or Aeolian/Dorian modes, and syncopated guitar/

bass parts; thrash metal utilizes guttural growls and screams, Phrygian/Locrian modes, little or no harmonic motion, and less syncopated guitar/bass parts. In addition to musical practices, scholars like Deena Weinstein find that thematic content is a useful way to engage metal subgenres. Weinstein divides lyrical topics into two opposing categories, “Dionysian” and “Chaotic” (1991, 23). Dionysian themes involve “sex, drugs, and rock and roll,” and focus on forms of physical gratification and ecstasy. Chaotic themes rebel against social norms and reveal a fascination with conflict, violence, and death. Bands that are considered pop metal, such as Bon Jovi, Van Halen, and Def Leppard, tend to adopt Dionysian themes in their lyrics, while thrash metal bands, like Metallica, Anthrax, and Slayer, focus on Chaotic themes. Many metal subgenres stand ideologically opposed or in direct conflict with one another, and the antagonisms among subgenres tend to be strong and often rhetorically violent. Fans of thrash metal, for instance, consistently refer to those who enjoy pop metal as “poseurs,” who “have not developed an appreciation for the true aesthetic of metal, and must therefore be accorded less prestige with the subculture” (Freisen and Epstein 1994, 13).

Although the process of identifying metal and differentiating subgenres according to musical features and thematic content may be somewhat loose, scholars have used it as a way to discuss metal and different developments within the genre. Given the current system of subgenre classification and nomenclature, the closest subgenre that could be used to describe Meshuggah’s music is “progressive metal.”¹⁸ Along

¹⁸ Many fans of Meshuggah and possibly the band members themselves might object to the label “progressive metal.” The use of the term “progressive” might be rejected on the basis that it associates this music with so-called “progressive” rock bands, like Don Caballero, King Crimson, Pink Floyd, or Rush. Fans and bands tend to describe the music in terms that represent a fusion of different styles even if they choose to adopt the “progressive” label. The Dillinger Escape Plan identifies itself as “a creation merging new-school hardcore, progressive metal, and free jazz” (www.dillingerescapeplan.com). Of course, such

¹⁷ These terms, like trash, speed, death, and so forth, are scholar-accepted as well as fan-based designations.

with bands like The Dillinger Escape Plan, Fantômas, and Ion Dissonance, progressive/math metal is best characterized by its musical practices. While maintaining the loud, distorted guitar timbre associated with metal music in general, progressive/math metal emphasizes a sophisticated musical structure, particularly with regard to rhythm and meter, and requires skilled technical performances by the entire ensemble. The tendency to focus on rhythmic and metric complexity is often the determining factor for qualification in the progressive/math subgenre. Many progressive/math metal songs consist of large-scale odd meter and mixed meter, which deviates from the norm of common-time meter typical of songs in other metal subgenres. My analyses of Meshuggah's music (1987–2002) suggest one way in which odd and mixed meter is structured in progressive/math metal, and in the case of *I*, the analysis reveals a distinct absence of surface-level meter. Moreover, individuality and originality are highly prized in this subgenre, and bands frequently develop idiosyncratic musical practices to assert individuality. For example, the techniques of metric superimposition discussed in the analyses are particular to Meshuggah's music, and the analytic tools used to explain these techniques are largely specific to Meshuggah.

The rhythmic organization of music composed by progressive/math metal bands is vital to the process of fan identification and plays a significant role in shaping the surrounding subculture. In 2003, I began ethnographic research on Meshuggah and the progressive/math metal subculture. Through fan interviews, concert attendance, and internet research, I discovered that the structure of pitches and rhythms (formal aspects of the music) carry significant

labels can reach the point of absurdity wherein each band creates and becomes its own sub-subgenre. In the present case, a preference might be given to the label "math metal," which is a designation used by fans and the media. I will combine the two labels as "progressive/math metal." However, any distinctions between "math" and "progressive" are peripheral to my purposes.

meaning for the fans of progressive/math metal, and in many cases determines not only how fans relate to the music, but how they distinguish themselves from other metal subgenres. During interviews, fans consistently emphasize the technical aspects of the music as a source, if not *the* source, of attraction.¹⁹ They describe their relationship with the music as revolving heavily around "the notes," and our conversations frequently involved formal considerations of the music. While many fans may not be able to articulate their analytical understanding of the music with theoretical terminology, they are acutely aware of the relative complexity behind the music and admire it for its sophisticated structure.

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¹⁹ These include informal interviews at twenty-seven concerts, twenty formal fan interviews, and online research.

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