

The Role of Continuous and Ambiguous Tempo Changes in Doom Metal's Heavy Grooves

Dorian Stewart (University of Oregon)

David Heetderks (University of North Texas)

Texas Society for Music Theory



Doom metal

Duncan 1984, Garza 2020, Piper 2013

- Its speed: trudging.
- Its timbres: dark and dirty.
- Its lyrics: despairing.



Doom metal

Gradual changes in tempo.



Pallbearer, "Devoid of Redemption," performance at 2013 South by Southwest Festival (Austin, TX)

What we mean by *groove*:

- The combined features of a track that create a pleasurable desire to move.
- A general orientation toward the present moment created by musical repetition.
- The emotional affect and subjective experience that these types of motion and musical texture elicit

What creates groove:

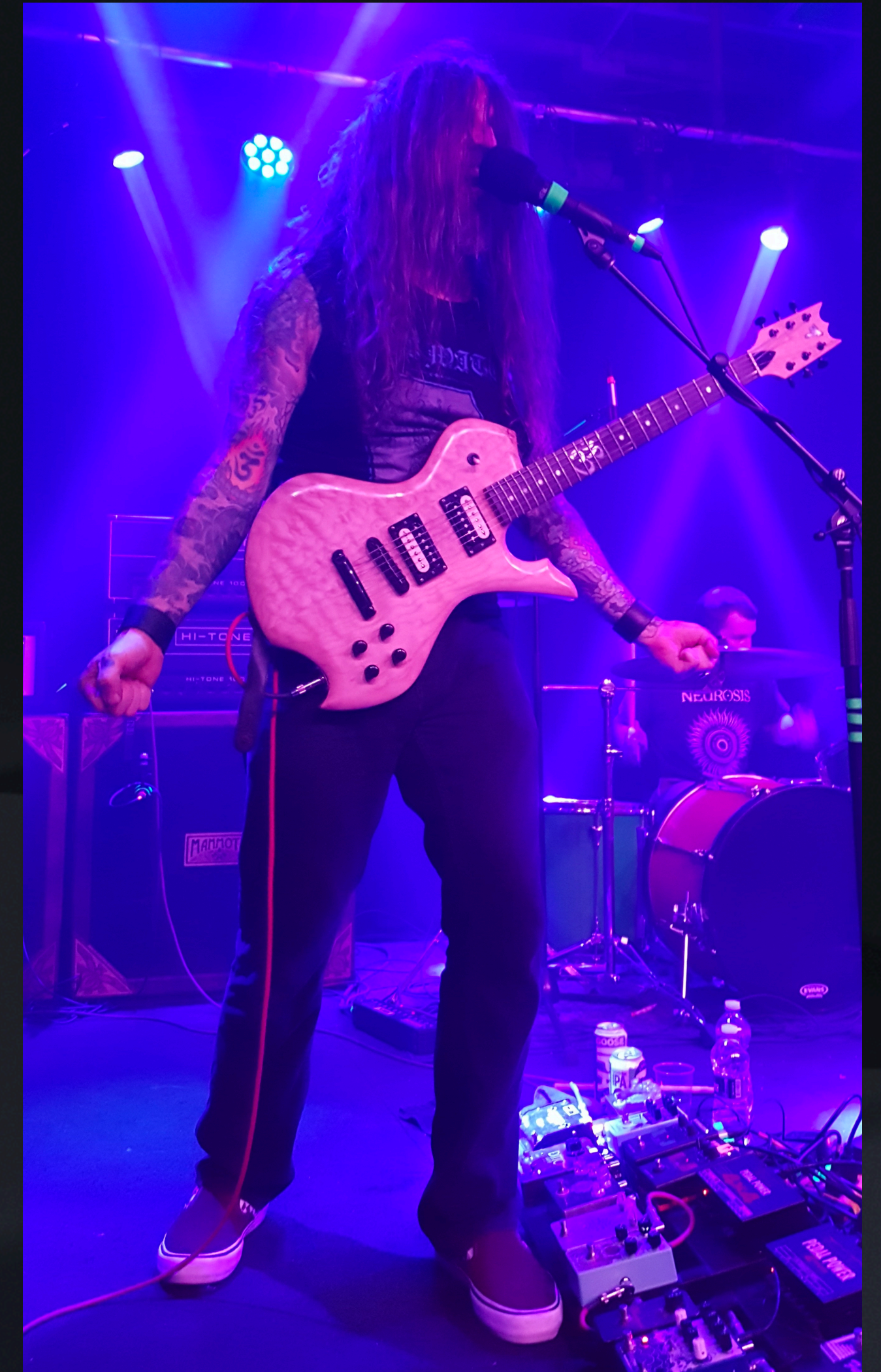
- Explicit beat.
- Subdivision of beat.
- Syncopation
- Gaps in percussion layer on strong beats.
- Polyrhythmic layers.

Groove and tempo change.



Tempo change creates *perceptual complexity* through

- ambiguous change in tempo, and
- beats of ambiguous virtual duration.



Ambiguous tempo change: Bismarck, "The Seer"



Verse
0:48
♩=120

Electric Guitar

Drum Set

ride cymbal snare

kick

toms

The image displays a musical score for the verse of the song "The Seer" by Bismarck. It consists of two staves: an Electric Guitar staff and a Drum Set staff, both in 4/4 time. The tempo is marked as 120 beats per minute. The guitar part is written in treble clef with a key signature of one sharp (F#). The drum part uses standard notation with 'x' marks for cymbals and arrows for snare and tom hits. The score spans 12 measures, with a bar line after the 6th measure.

Ambiguous tempo change: Bismarck, "The Seer"



Verse
0:48
♩=120

Electric Guitar

Drum Set

ride cymbal snare

kick

toms

8 secs

The image shows a musical score for the verse of "The Seer" by Bismarck. It consists of two staves: an Electric Guitar staff in treble clef and a Drum Set staff in bass clef. Both are in 4/4 time. The tempo is marked as 120 BPM. The guitar part features a sequence of eighth notes with various accidentals. The drum part includes a kick drum pattern, snare hits, and cymbal accents. An orange bracket under the first two measures of the drum set staff is labeled "8 secs".

Ambiguous tempo change: Bismarck, "The Seer"



Verse
0:48
♩=120

Electric Guitar

Drum Set

ride cymbal snare

kick

toms

Chorus
0:57
♩=95

8 secs

rit.

rit.

El. Guit.

Dr.

The musical score illustrates the transition from the Verse to the Chorus. The Verse is in 4/4 time with a tempo of 120 BPM. The Chorus is in 4/4 time with a tempo of 95 BPM. An orange arrow labeled "rit." points from the end of the Verse to the start of the Chorus, indicating a deceleration. A bracket labeled "8 secs" spans the 8-measure transition period. The guitar part in the Chorus is marked "rit." and the drum part is also marked "rit.".

Ambiguous tempo change: Bismarck, "The Seer"



Verse
0:48
♩=120

Electric Guitar

Drum Set

ride cymbal snare

kick

toms

8 secs

Chorus
0:57
♩=95

rit.

1. Guit.

Dr.

rit.

5.0526 secs.

Perceived and felt tempo, created through head banging:

Verse

The image shows a musical score for a verse in 4/4 time. The score consists of two staves. The top staff is a treble clef with a key signature of one sharp (F#) and a time signature of 4/4. It contains a melody of eighth notes. The bottom staff is a bass clef with a time signature of 4/4, representing a drum pattern. The drum pattern includes a kick drum and a snare drum. A ride cymbal is indicated by an arrow pointing to a specific note in the drum pattern. A bracket above the melody indicates a duration of 1.0 seconds. The word 'kick' is written below the first note of the drum pattern.

1.0 secs.

ride cymbal snare

kick

Perceived and felt tempo, created through head banging:

Verse

1.0 secs.

ride cymbal snare

kick

The Verse section is written in 4/4 time with a key signature of one sharp (F#). The melody line (treble clef) consists of a sequence of eighth notes: F#4, G4, A4, B4, C5, B4, A4, G4, F#4, E4, D4, C4. Four red brackets are placed above the melody, each spanning a 1.0-second interval. The drum part (bass clef) features a kick drum on the first and third beats of each measure, and a snare drum on the second and fourth beats. The snare drum is marked with an 'x' and an arrow pointing to the label 'snare'.

Option 1

Chorus

The Chorus section is written in 4/4 time with a key signature of one sharp (F#). The melody line (treble clef) consists of a sequence of notes: F#4, G4, A4, B4, C5, B4, A4, G4, F#4, E4, D4, C4. Four red brackets are placed above the melody, each spanning a 1.0-second interval. The drum part (bass clef) features a kick drum on the first and third beats of each measure, and a snare drum on the second and fourth beats. The snare drum is marked with an 'x'.

Perceived and felt tempo, created through head banging:

Verse

1.0 secs.

ride cymbal snare

kick

The Verse section is written in 4/4 time with a key signature of one sharp (F#). The melody line (treble clef) consists of a sequence of eighth notes: F#4, G4, A4, B4, C5, B4, A4, G4, F#4, E4, D4, C4. A horizontal line above the first two measures is labeled "1.0 secs." with a double-headed arrow. The drum part (bass clef) features a kick drum on the first and third beats of each measure, and a snare drum on the second and fourth beats. The snare drum is indicated by an 'x' on the staff, with an arrow pointing to it from the label "snare".

Option 2

Chorus

The Chorus section is written in 4/4 time with a key signature of one sharp (F#). The melody line (treble clef) consists of a sequence of notes: F#4, G4, A4, B4, C5, B4, A4, G4, F#4, E4, D4, C4. The drum part (bass clef) features a kick drum on the first and third beats of each measure, and a snare drum on the second and fourth beats. The snare drum is indicated by an 'x' on the staff.

Perceived and felt tempo, created through head banging:

Verse

1.0 secs.

ride cymbal snare

kick

The Verse section is written in 4/4 time with a key signature of one sharp (F#). The melody line (treble clef) consists of a sequence of eighth notes: F#4, G4, A4, B4, C5, B4, A4, G4, F#4, E4, D4, C4. A bracket above the first two notes indicates a duration of 1.0 second. The drum line (bass clef) features a kick drum pattern on the first and third beats, and a snare drum pattern on the second and fourth beats. The snare part includes a ride cymbal on the second and fourth beats, indicated by an arrow.

Option 2 0.632 secs.

Option 1 1.263 secs.

Chorus

The Chorus section is written in 4/4 time with a key signature of one sharp (F#). The melody line (treble clef) consists of a sequence of notes: F#4, G4, A4, B4, C5, B4, A4, G4, F#4, E4, D4, C4. The drum line (bass clef) features a kick drum pattern on the first and third beats, and a snare drum pattern on the second and fourth beats. The snare part includes a ride cymbal on the second and fourth beats, indicated by an arrow.

Perceived and felt tempo, created through head banging.

Headbanging performed in live performance, June 2020.

Option 1 **Option 2**

1:25 1:32 1:37

$\text{♩} = 120$

End of chorus

YOB, "The Illusion of Motion" (2004)



YOB, "The Illusion of Motion" (2004)



1 ≈ 40 2 3 4 5 6

vocal rhythms

electric guitars

ride cym crash cymbal

drums

kick snare toms

5.694 5.693 5.722 6.220 6.318 6.588

7 8 9 10 11 ≈ 34 12 ≈ 64 13 ≈ 55

vocal rhythms

electric guitars

drums

6.727 6.760 6.890 7.110 6.849 3.698 4.294

14 15 16 17 18 19 20 21

vocal rhythms

electric guitars

drums

cymbal swell

4.351 4.485 4.862 4.873 4.767 5.019 5.846 4.857

22 23 24 25 26

vocal rhythms

electric guitars

drums

5.004 4.914 5.078 5.260 5.442

etc.

YOB, "The Illusion of Motion"

1 ≈ 40 2 3 4 5 6

vocal rhythms

electric guitars

ride cym crash cymbal

drums

kick snare toms

5.694 5.693 5.722 6.220 6.318 6.588

7 8 9 10 11 ≈ 34 12 ≈ 64 13 ≈ 55

vocal rhythms

electric guitars

deceleration

drums

kick

snare

toms

YOB, "The Illusion of Motion"



7 8 9 10 11 ≈ 34 12 ≈ 64 13 ≈ 55

deceleration

vocal rhythms

electric guitars

drums

6.727 6.760 6.890 7.110 6.849 3.698 4.294

14 15 16 17 18 19 20 21

vocal rhythms

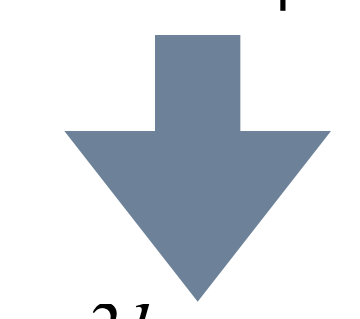
electric guitars

drums

cymbal swell

6.727 6.760 6.890 7.110 6.849 3.698 4.294

YOB, "The Illusion of Motion"



14 15 16 17 18 19 20 21

vocal rhythms

electric guitars

drums

cymbal swell

4.351 4.485 4.862 4.873 4.767 5.019 5.846 4.857

22 23 24 25 26

vocal rhythms

electric guitars

drums

5.004 4.914 5.078 5.260 5.442

Beats of ambiguous virtual duration
Windhand, "Two Urns" (2015)



Windhand, "Two Urns"



in tempo *(acceleration, sometimes)* *in tempo*

deceleration

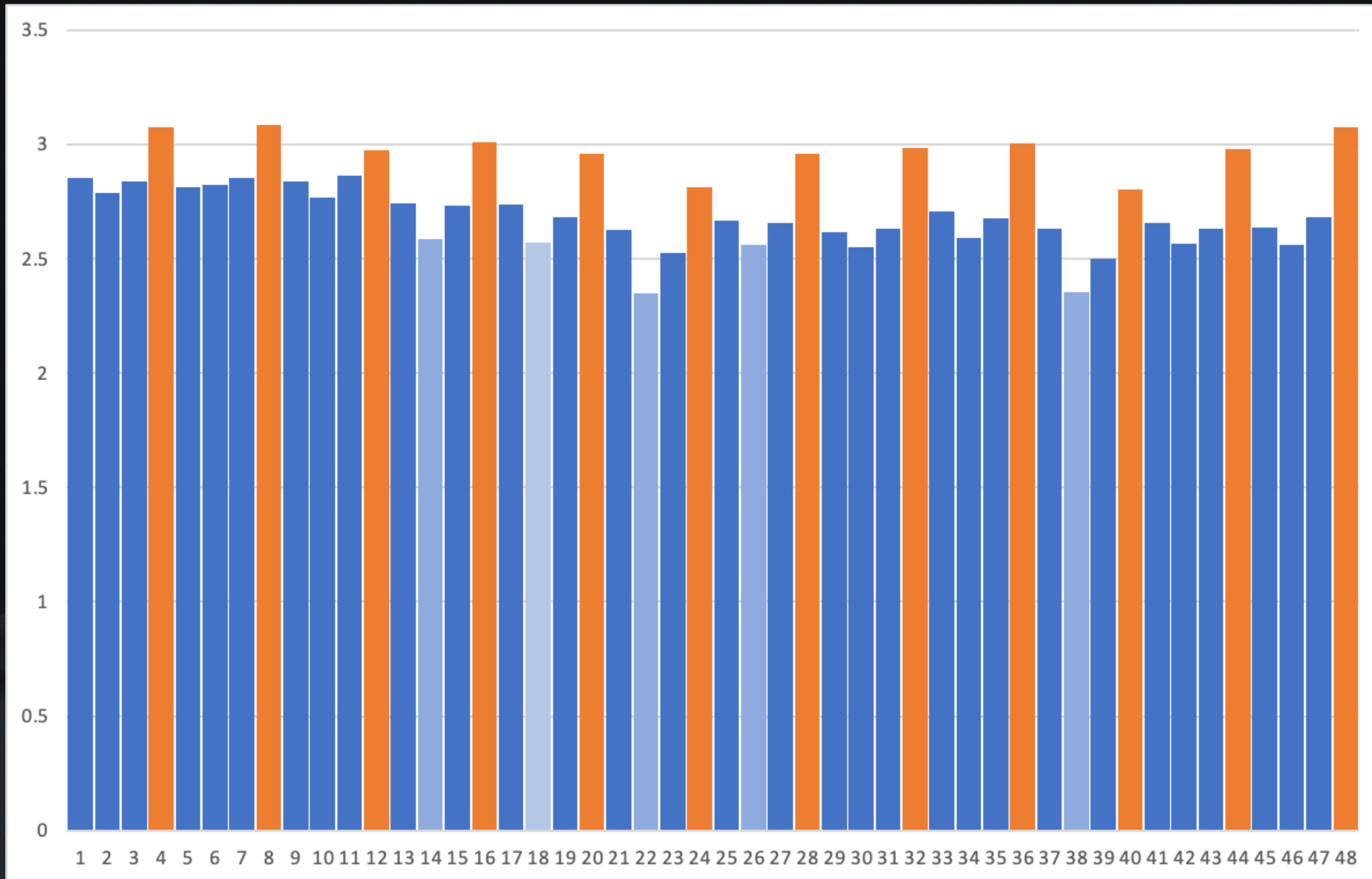
hearing 1
(measure is 4 ♩s)

hearing 2
(measure is 4.25 ♩s)

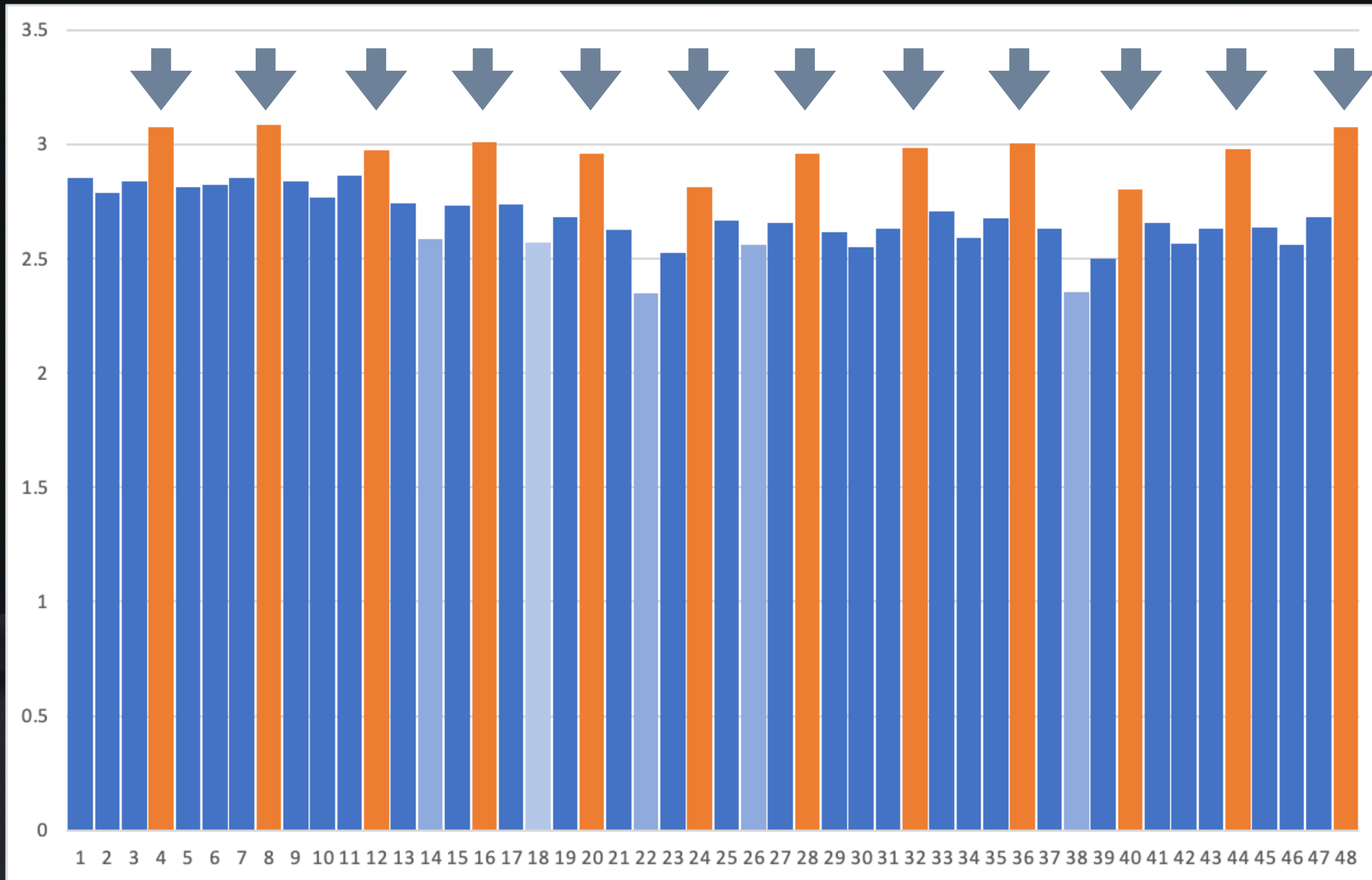
hearing 3
(measure is 4.5 ♩s)

The diagram illustrates three different ways to hear a single measure of music. On the left, a single measure of music in 4/4 time is shown. Above it are the labels 'in tempo', '(acceleration, sometimes)', and 'in tempo'. Three arrows point from the end of this measure to three different musical staves on the right. The top staff is labeled 'hearing 1' and '(measure is 4 ♩s)'. It shows the same four notes as the original measure, but with a 4/4 time signature and a deceleration arrow pointing left above it. The middle staff is labeled 'hearing 2' and '(measure is 4.25 ♩s)'. It shows the same four notes, but with a 4+4+5+4 time signature and a 16 below it. The bottom staff is labeled 'hearing 3' and '(measure is 4.5 ♩s)'. It shows the same four notes, but with a 2+2+3+2 time signature and an 8 below it.

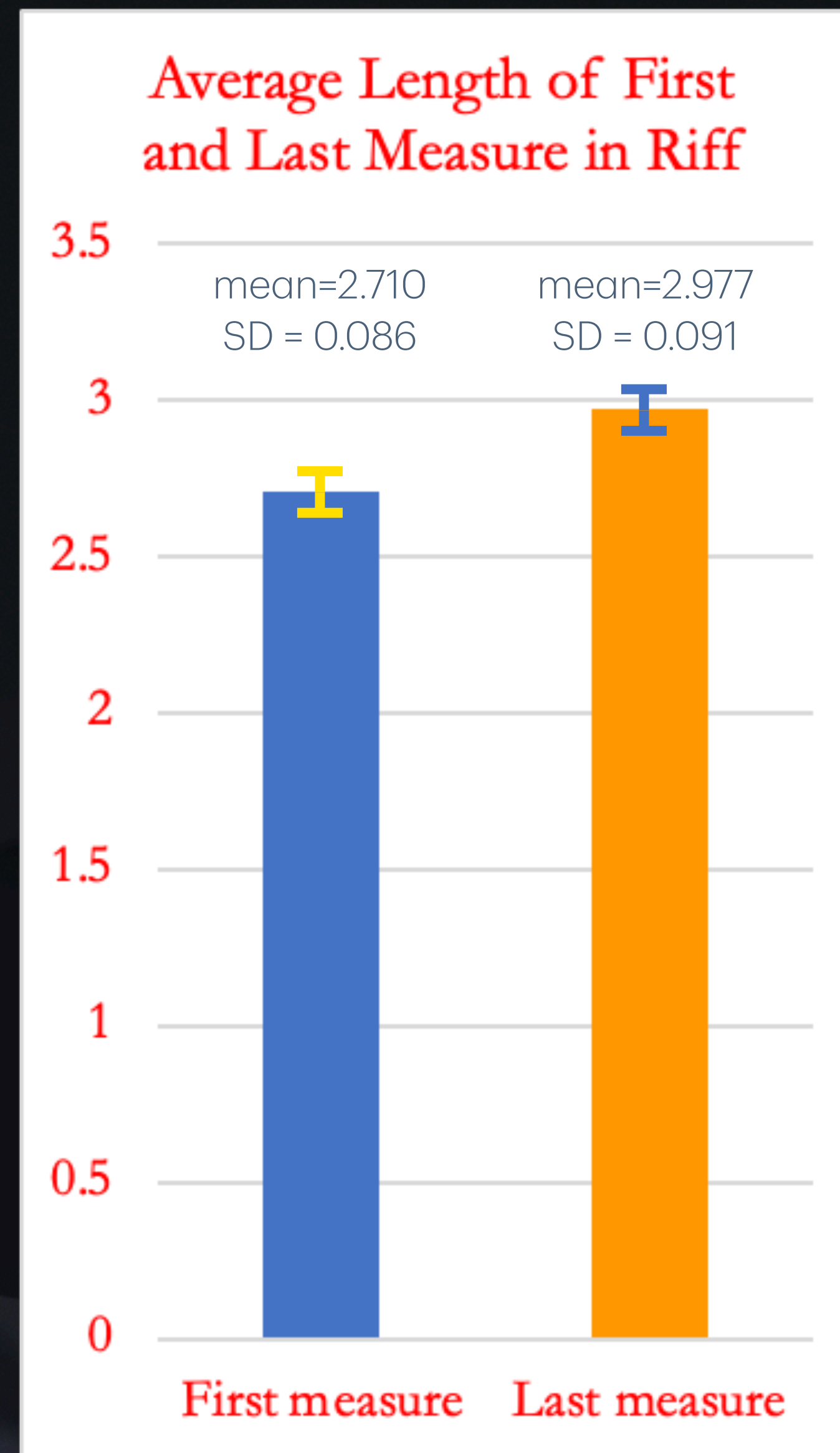
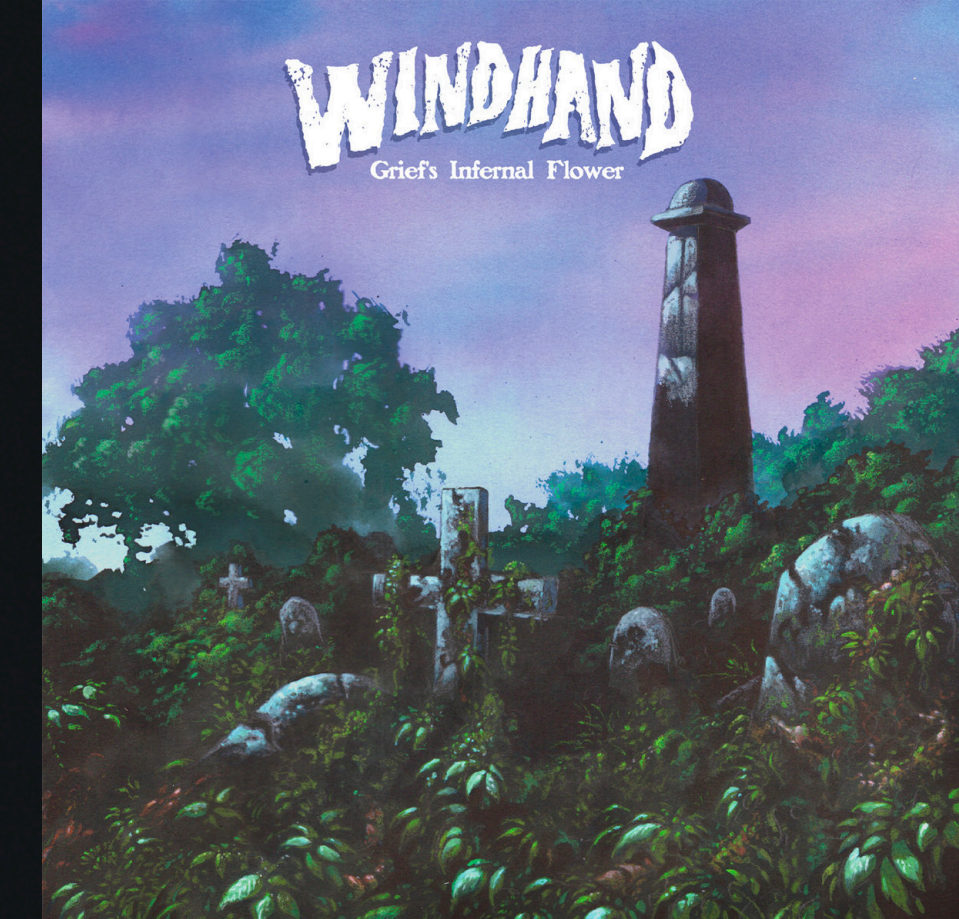
Windhand, "Two Urns," length of each measure



Windhand, "Two Urns," length of each measure



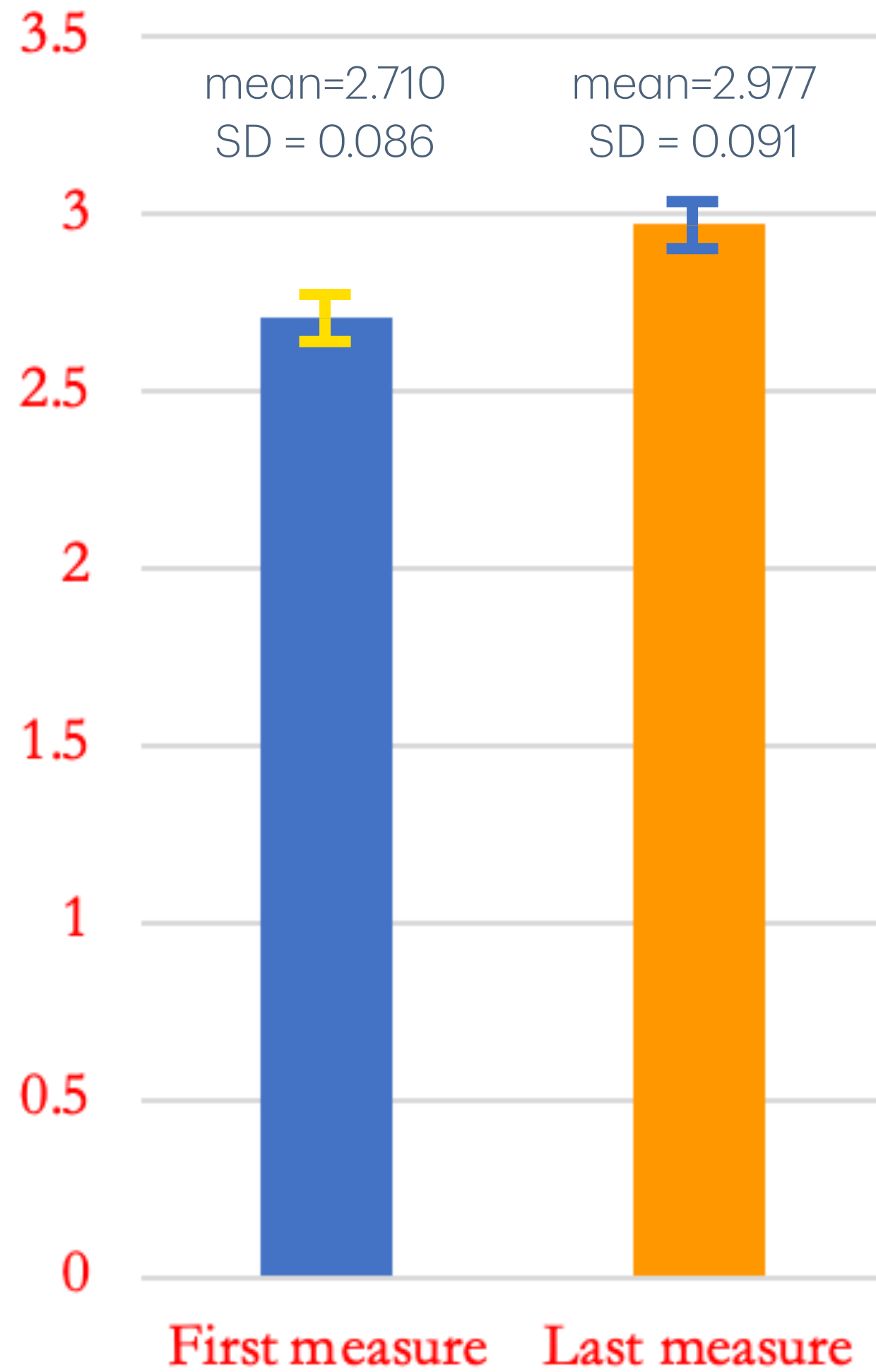
Windhand, "Two Urns," length of each measure



Windhand, "Two Urns," length of each measure



Average Length of First and Last Measure in Riff



ratio of means: **4 : 4.394**

Halfway between hearing 2 and 3

in tempo *(acceleration, sometimes)* *in tempo*

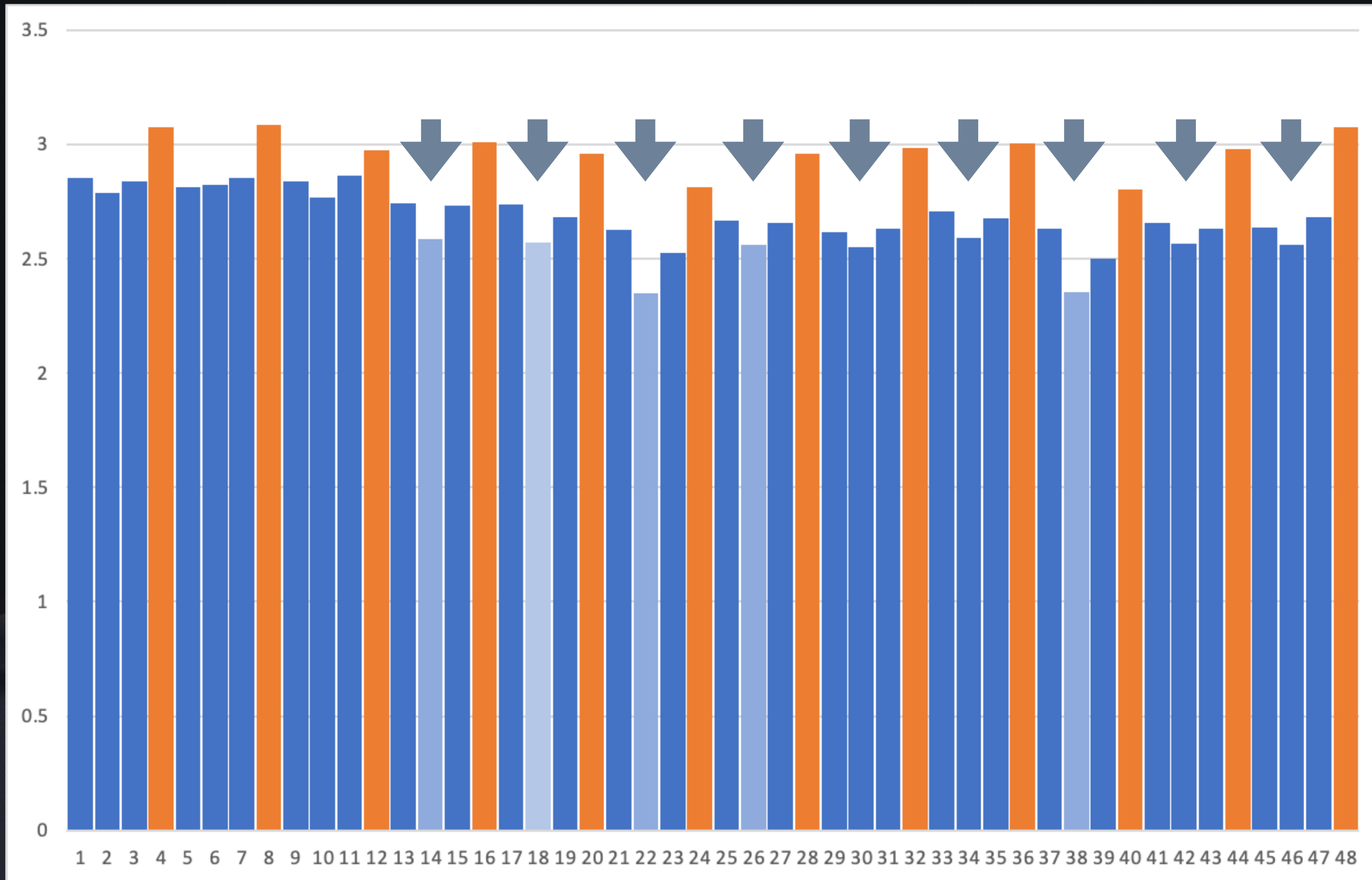
deceleration ←

hearing 1 (measure is 4 s)

hearing 2 (measure is 4.25 s)

hearing 3 (measure is 4.5 s)

Windhand, "Two Urns," length of each measure



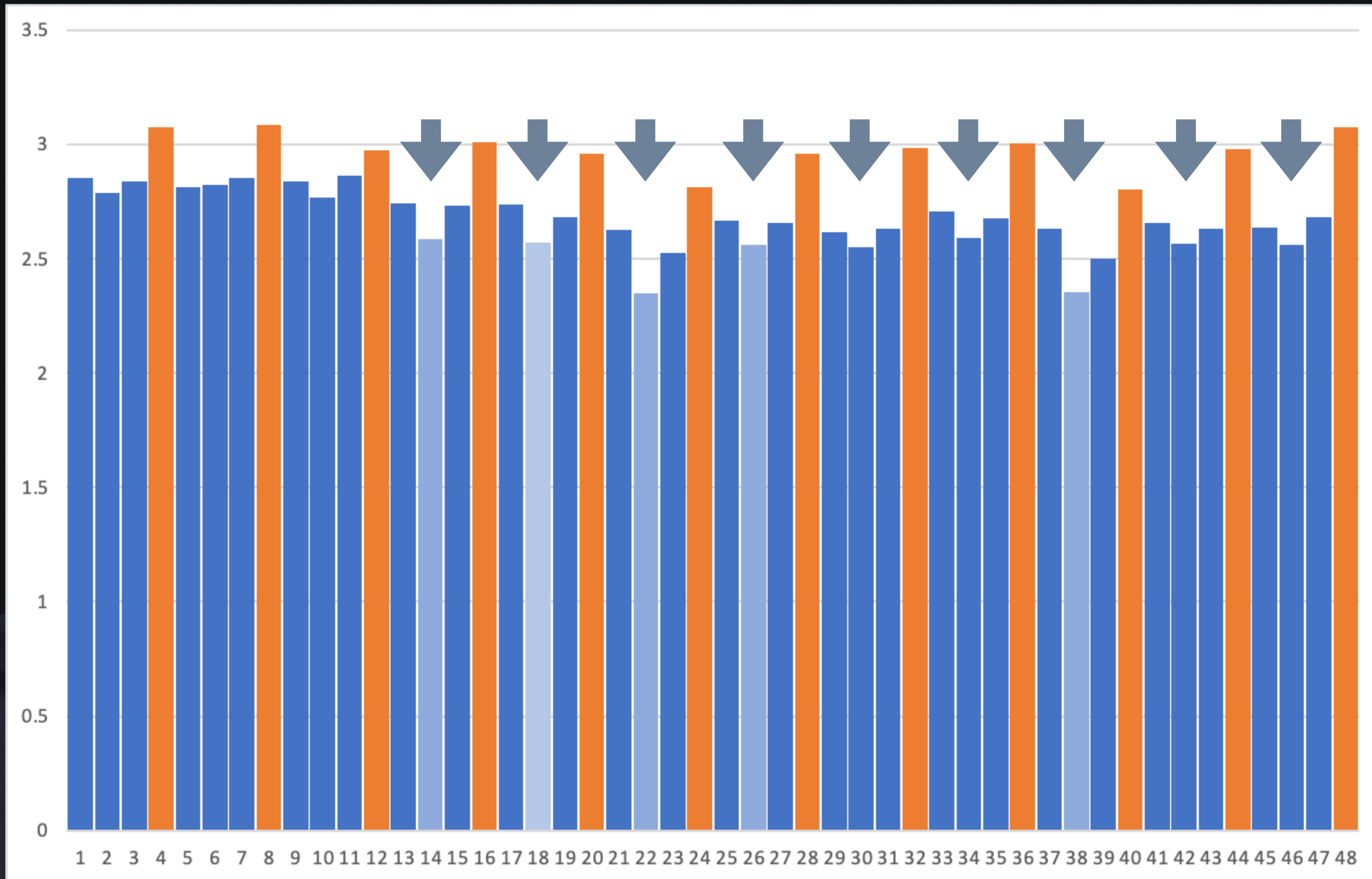


Windhand

Beat Bin Theory of Groove

- Beat bin: “The internal pulse reference we use to structure and understand beat-based musical rhythms is not a series of points in time but has temporal extension and a particular shape.”
(Danielsen, 2023)
- Perceptual affordance for slight temporal fluctuations between downbeats without losing pre-existing underlying metric interpretation,

Windhand, "Two Urns," length of each measure



Groove And Affect in Doom

- “Groove in doom functions in an affective capacity and contributes directly to [this] sense of heaviness. Doom metal simply would not be as heavy, as crushing, as enveloping without groove.” (Piper, 2013)

Conclusion

- Doom differentiates itself as a metal subgenre through sonic ambiguity (Piper, 2013)
- Two ways that doom metal creates groove:
 - Ambiguous tempo changes
 - Elongated beats

Conclusion

- Further topics of research:
 - Examining how instrumentation, effects, and studio production affect rhythmic ambiguity
 - Ethnography of live shows and audience embodiment of ambiguous tempo changes

- Dance rhythms are an assemblage of stock figures that are designed to stretch and distort.
- The temporal distortion provides long-range form.



Thank you for listening!

Attas, Robin. 2015. "The Buildup Introduction in Popular Music." *Music Theory Spectrum* 37 (2): 275–296.

Biamonte, Nicole. 2014. "Formal Functions of Metric Dissonance in Rock Music." *Music Theory Online* 20 (2). <https://www.mtosmt.org/issues/mto.14.20.2/mto.14.20.2.biamonte.html>

Boyle, Antares. 2021. "Flexible Ostinati, Groove, and Formal Process in Craig Taborn's Avenging Angel." *Music Theory Online* 27 (2). <https://mtosmt.org/issues/mto.21.27.2/mto.21.27.2.boyle.html>

Butterfield, Matthew. 2006. "The Power of Anacrusis: Engendered Feeling in Groove-Based Musics." *Music Theory Online* 12 (4). <https://doi.org/10.30535/mto.12.4.2>.

Cairns, Zachary. 2022. "Switching the Backbeat: The Quick Flip and Polymetric Pogo in 1980s-era Rock Music." *Music Theory Online* 28, No. 1. <https://mtosmt.org/issues/mto.22.28.1/mto.22.28.1.cairns.html>

Danielsen, Anne, Mats Johansson and Chris Stover. 2023. "Bins Spans and Tolerance: Three Theories of Microtiming Behavior." *Music Theory Spectrum* 45 (2): 181–198. <https://doi.org/10.1093/mts/mtad005>.

De Clercq, Trevor. 2016. "Measuring a Measure: Absolute Time as a Factor for Determining Bar Lengths and Meter in Pop/Rock Music." *Music Theory Online* 22 (3). <https://mtosmt.org/issues/mto.16.22.3/mto.16.22.3.declercq.html>

Duncan, Robert. 1984. *The Noise: Notes from a Rock 'n' Roll Era*. United States: Ticknor & Fields.

Duncan, Robert. 1984. *The Noise: Notes from a Rock 'n' Roll Era*. United States: Ticknor & Fields.

Garza, Jose. 2020. “Transcending Time (Feels): Riff Types, Timekeeping Cymbals, and Time Feels in Contemporary Metal Music.” *Music Theory Online* 27 (1). <https://mtosmt.org/issues/mto.21.27.1/mto.21.27.1.garza.html>

Geary, David. 2023. “Analyzing the Beat in Metrically Consonant Popular Songs: A Multifaceted Approach.” *Music Theory Online* 28 (4). <https://mtosmt.org/issues/mto.22.28.4/mto.22.28.4.geary.html>

Hasty, Christopher F. 1997. *Meter as Rhythm*. Oxford University Press.

Hudson, Stephen. 2022. “Bang your Head: Construing Beat through Familiar Drum Patterns in Metal Music.” *Music Theory Spectrum* 44 (1): 121–140.

Hudson, Stephen. 2015. “Metal Movements: Headbanging As A Legacy Of African American Dance.” *Proceedings of the Modern Heavy Metal: Markets, Practices and Cultures International Academic Conference*.

Kozak, Mariusz. 2021. “Feeling Meter: Kinesthetic Knowledge and the Case of Recent Progressive Metal.” *Journal of Music Theory* 65 (2): 185–237.

London, Justin. 2011. “Tactus ≠ Tempo: Some Dissociations Between Attentional Focus, Motor Behavior, and Tempo Judgment.” *Empirical Musicology Review* 6 (1): 43–55.

London, Justin. 2012. *Hearing in Time: Psychological Aspects of Meter*. Oxford University Press.

London, Justin. 2023. “What is Musical Tempo?” In Clemens Wöllner and Justin London, eds. *Performing Time*

London, Justin. 2012. *Hearing in Time: Psychological Aspects of Meter*. Oxford University Press.

London, Justin. 2023. "What is Musical Tempo?" In Clemens Wöllner and Justin London, eds. *Performing Time*. Oxford University Press.

Osborn, Brad. 2013. "Subverting the Verse–Chorus Paradigm: Terminally Climactic Forms in Recent Rock Music." *Music Theory Spectrum* 35 (1): 23–47.

Pearson, David. 2019. "Extreme Hardcore Punk and the Analytical Challenges of Rhythm, Riffs, and Timbre in Punk Music." *Music Theory Online* 25 (1). <https://mtosmt.org/issues/mto.19.25.1/mto.19.25.1.pearson.html>

Piper, Jonathan. 2013. "Locating Experiential Richness in Doom Metal." PhD Dissertation, UC San Diego.

Shelley, Braxton. 2019. "Analyzing Gospel." *Journal of the American Musicological Society* 72 (1): 181–243.

Schmidt Câmara, Guilherme, and Anne Danielsen. 2018. "Groove." In *Oxford Handbook of Critical Concepts in Music Theory*, ed. Alexander Rehding and Steven Rings. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780190454746.013.17>.

Witeck, Maria. 2016. "Filling In: Syncopation, Pleasure, and Distributed Embodiment in Groove." *Music Analysis* 36 (1): 138–160.