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Dual-Aspect Meter: A Theory of Metrical Consonance, Dissonance, Weight, and Variety

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The last forty years have witnessed a surge of interest in the nature of musical meter. Most metrical research has focused on music of appreciable but moderate rhythmic consistency, namely instrumental music of the classical and romantic periods. Christopher Hasty’s theory of meter as projection examines the smallest degree of rhythmic consistency and extrapolates from meter’s simplest manifestations. This dissertation takes the opposite approach, interrogating the experience of meter in music with a very high degree of rhythmic consistency and exploring its implications for the broader nature of meter.

The core argument of the dissertation emerges as a synthesis of ideas introduced in the first four chapters. Resonances with recent metrical theories are explored in chapter 1. Chapter 2 problematizes modern and historical theories through a phenomenological examination of meter and phenomenal accent in a few baroque sarabandes. Meter in these pieces is shown to involve entrainment to both a beat hierarchy and a recurrent weight profile, clarifying that metrical dissonance is fundamentally an expressive category, not a phenomenal category. Chapters 3 and 4 articulate a theory of weight, reviewing and refining phenomenal-accent theory, developing a notion of musical mass, and offering a simple preference-rule system for the comparison of weight between musical moments. Chapter 5 synthesizes the arguments of chapters 2–4, positing a general theory of metrical experience situated on a spectrum of perceived rhythmic
consistency. I argue that a listener’s metrical attitude necessarily involves entrainment to or projection of both beat hierarchy and weight profile. The notion of dual entrainment developed in chapter 2 is thus supplemented by single entrainment and dual projection, all of which are categories of dual-aspect meter. The theory’s analytical and hermeneutic utility is demonstrated through a combined metrical and narrative analysis in appendix 1.

Other specific contributions of this dissertation include (1) clarification of the influence of dance choreography on rhythm in sarabandes and gavottes and the development of a rudimentary phenomenal-accent theory for French-baroque choreography; (2) recognition of the unique structure of attack embellishments and an explanation for their heaviness, a perennial difficulty for phenomenal-accent theory; (3) integration of Mathis Lussy’s hierarchically differentiated anatomy of the rhythmic group with metrical and phenomenal-accent theory; and (4) generalization of William Rothstein’s notions of “German” and “Italian” meters as departure meter and arrival meter, respectively.
Acknowledgements

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As any scholar knows, many of the epiphanies that shape research happen neither in isolation nor in formalized presentations. Conversations with Drew Nobile, Zack Bernstein, Loretta Terrigno, Ed Klorman, Tim Best, and Ben Geyer were crucial to the refinement of several of the ideas in this project.
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Chapter 1

THREADS

The theory of dual-aspect meter is not one whose necessity is obvious from the outside. This introductory chapter does not attempt to build a master narrative of events leading inexorably to its genesis. Instead, it brings together strands from three different areas in recent metrical research, preparing the work of the following chapters, which will weave from these diverse threads a new tapestry of musical meter.

Metrical Theory Divided

Writers on music today would likely agree that meter functions as a measure of the flow of music, yet recent attempts to take the conversation further have yielded wildly divergent answers. What constitutes music’s flow? Furthermore, how is the measurement performed? Answers to these questions overlap significantly and appear to organize around the relative significance of two main criteria: equal durations and salience. These categories must remain somewhat nebulous at the moment as their usage is not consistent among all theorists; however, basic definitions are in order. The category of equal durations refers to the equality of musically operative durations, rather than absolute clock-time; both the composer and the performer have ways of stretching and compressing time, though the relevant techniques will not be discussed here. The category of salience includes a wide variety of elements and is based on characteristics internal to the event itself in relation to the features of its larger context. The relative significance of these two ingredients productively organizes many recent contributions to metrical theory.

The classic modern formulation of musical meter comes from Fred Lerdahl and Ray Jackendoff’s *A Generative Theory of Tonal Music* (1983). In their theory, musical rhythm
consists of two separate but interacting phenomena: grouping and meter. Grouping consists of the nested, hierarchical segmentation of musical notes, including “motives, themes, phrases, periods, theme-groups, sections, and the piece itself” (12). Meter, on the other hand, consists of the “regular, hierarchical organization of beats” (17). Both are defined through well-formedness rules, which lay out the stipulations for what each can and cannot be, and preference rules, which enumerate the factors that inform an experienced listener’s interpretation of each. The metrical well-formedness rules define meter as a grid of strong and weak beats at multiple levels, where strong beats are beats on a higher level; strong beats are always either two or three beats apart on any level; and on higher levels all beats are equally spaced, while on lower levels weak beats must be equally spaced between surrounding strong beats (this allows for subdivisions to fluctuate).¹

Although these well-formedness rules serve to exclude impossible metrical interpretations, some of them are breakable. In particular, spacing among beats at higher metrical levels is subject to deviations from two sources: first, transformations of regular metrical structures, as through metrical deletion, which arises from overlapped groups and elisions; and second, simply more flexible composition at these levels, which results in inherently irregular structures.² Figures 1.1 and 1.2 demonstrate these irregularities, recreating the authors’ Figures 4.47 and 2.11, respectively. In figure 1.1, the fourth bar shown is simultaneously the cadential arrival of the first phrase and the initiation of the second phrase. The overlap between the two phrases results in two successive strong beats at the two-bar level: the third and fourth bars of the

¹ This summary addresses their Metrical Well-Formedness Rules 2, 3, and 4. Metrical Well-Formedness Rule 1 simply requires that all pitch attacks are associated with a beat at some metrical level.

² The authors also recognize a category of “extrametrical events,” such as quintuplet subdivisions, trills, and cadenzas, instead of attempting to accommodate all possible events.
example are both strong (the two bar-level is represented by the breve). A metrically normative situation would have separated this bar by its constituent functions into two bars, a cadential bar followed by a phrase-beginning bar, in spite of their shared harmonic content. In figure 1.2, two possible interpretations for meter at the one-bar and two-bar levels are shown. Despite some ambiguity, the passage must be analyzed as containing a three-bar hypermeasure, starting either at bar 11 or bar 7.³

![Figure 1.1. Phrase overlap in Haydn’s Symphony No. 92 in G Major, I, after Lerdahl and Jackendoff (1983), figure 4.47.](image)

3. The term *hypermeter* refers to levels of meter higher than the bar, where one or more bars serves as a single beat. It derives from Edward T. Cone’s coinage *hypermeasure* (1968, 79–81), which, although first used pejoratively, has since been widely accepted as an important phenomenon in tonal music.
Figure 1.2. Hypermetrical irregularity in Mozart’s Symphony No. 40 in G Minor, I, after Lerdahl and Jackendoff (1983), figure 2.11.

While the metrical well-formedness rules define what meter may be, they do not adjudicate between multiple interpretations that satisfy these rules. Metrical preference rules fill this gap. Lerdahl and Jackendoff’s metrical preference rules speculate that the interpretation of meter is influenced predominantly by a combination of three main elements. First, there is a preference to align strong beats with phenomenal accents, which are “any event at the musical surface that gives emphasis or stress to a moment in the musical flow” (17). For Lerdahl and Jackendoff, phenomenal accent tends to accrue from dynamic stress and the onset of relatively long durations in a number of parameters (including note values, dynamics, slurs, patterns of articulation, and harmonies, with some priority given to the bass voice). Second, beyond phenomenal accents, metrical interpretation is guided by a preference for simplicity, expressed through tendencies toward binary regularity and similar interpretations of parallel passages, as

4. This definition of phenomenal accent is an adaptation of Grosvenor Cooper’s and Leonard B. Meyer’s (1960) definition of accent: “a stimulus (in a series of stimuli) which is marked for consciousness in some way” (8, emphasis in original).
well as the avoidance of syncopation at cadences. Third and finally, there is a preference for the strongest beat of a group to be near its beginning.\(^5\) Thus, interpretation is especially guided by salience, as both the first and third factors attest.\(^6\) Metrical analysis proceeds by determining the strong beats preferred by each rule and, as necessary, weighing the rules against each other. The authors do not indicate a clear weight for each rule; instead, each conflict must be examined individually.\(^7\)

While Lerdahl and Jackendoff’s theory of meter aims to strike a complex balance between salience and equal time spans, Carl Schachter (1999) places the foundation of meter heavily on the latter:

Every piece of music is, among other things, a pattern of durations—or better, a complex of such patterns. For duration to become even a moderately important issue in a piece, the pattern must become intelligible to the listener, who must be able to compare one span of time with another and thus intuit relationships among the various durations that make up the pattern. In many kinds of music, including Western tonal music, such comparison is made possible by the articulation of regularly recurring equal segments of time. (80)

For Schachter, equal time spans give musical time its significance. Meter develops out of these time spans via their repetition. He asserts that it is the time spans themselves that create metrical

\(^5\) These three inputs summarize most of the content of the authors’ ten metrical preference rules.

\(^6\) Lerdahl and Jackendoff invoke salience as an effect that arises specifically from phenomenal accents (108); thus, they would not consider group location as a factor that imparts salience to an event. My usage here argues that a listener may attribute salience to an event because of its relative location within a group, though probably in combination with phenomenal accents and/or a previously established meter. The latter has been shown in the work of Mari Riess Jones and Jacqueline Ralston (1991), who found that listeners better remembered events that occurred in stronger metrical positions than those that occurred in relatively weak positions.

\(^7\) They do informally indicate relative weighting in Metrical Preference Rules 2 (Strong Beat Early), 7 (Cadence), and 8 (Suspension) by beginning with the locutions “Weakly prefer...” and “Strongly prefer...” Additionally, they indicate that MPR 5f (Harmonic Rhythm) is the strongest case of all the sub-rules of MPR5 (Length). Still, this is a far cry from a quantified theory. I expect such quantification is ultimately impossible, even within the limits of a single style, because phenomenal accent can mark an event to greater or lesser degree.
accent, directly undercutting the significance of phenomenal accents for meter: “Of course some kind of emphasis is required in order to make the listener aware of the spans, but equal divisions, once established, can persist in the listener’s consciousness without special sensory reinforcement” (81, emphasis in original). In other words, from an interpretive standpoint, meter resists change. This is an element of meter that is only indirectly implied in Lerdahl and Jackendoff’s preference for binary regularity as well as their well-formedness stipulation of equal spacing between strong beats at higher levels (which is certainly violable, as we have seen). Schachter seems to use the notion as an interpretive guide at hypermetrical levels, while Lerdahl and Jackendoff, to the extent that they examine hypermeter, seem more willing to admit deviations from equal time spans. Particularly, Schachter proposes that “a metrical unit can withdraw from the foreground but can continue to exert a controlling influence…” (91). In practice, this means that the “primary meter,” usually the meter established at the beginning of the piece (though it may be challenged or effaced during the course of the piece), will coincide with important structural events throughout the piece and should be re-established in order to conclude the piece.

Frank Samarotto likewise questions the importance of phenomenal accents for meter, which suggests a Schenkerian aspect to this “conservative” listening strategy (Samarotto 2000, 8).

8. As noted above, both the composer and the performer have means of stretching and compressing time. Schachter recognizes apparent movement away from absolute equal durations by invoking Schenker’s concept of Dehnung, which allows a passage on a structurally shallower level to transform a deeper-level prototype through expansion. For instance, expansion often results in phrases of five bars that are transformations of four-bar prototypes, spreading the contents of one bar of the prototype between two bars on the surface of the piece. Importantly, though, the metrical content of the passage derives from the prototype, so the five-bar phrase mentioned above produces the extremely common hypermetrical duration of four bars. Ultimately, Dehnung is compositional rubato; it is not movement away from equal durations. As William Rothstein (1989) has shown, the concept of Dehnung is anticipated in the writings of some late-eighteenth-century theorists, especially Heinrich Koch.
paragraph 3.4).\(^9\) Meter, in the conception of equal time spans, is essentially a musical yardstick, tending to measure absolute length through a consistent, recurrent unit. The yardstick is only shifted when absolutely necessary.\(^{10}\)

One of the signal achievements of Lerdahl and Jackendoff’s theory is the strong separation between grouping and meter, which they define as two aspects of rhythmic structure: while the two are mutually influential, each has its own distinct set of well-formedness and preference rules. Recently, however, Christopher Hasty (1999) has called this distinction into question through consideration of rhythm as a process. Eschewing spatial metaphors such as time spans, Hasty proposes that the perception of a duration engenders the expectation for it to be immediately repeated. This is the essence of projection, which Hasty argues is meter. If a listener perceives a first event to be ended by a second event, she will project the duration of the first event as the probable duration of the second event. After this second event, projection may become recursive as the combined duration of the first and second events is projected forward as the duration of a new event. This process is shown below in figure 1.3, a reproduction of Hasty’s figure 9.3. At the moment that the second quarter note is attacked, the duration Q is projected as the probable duration Q’. Likewise, at the moment that a third event begins, the duration R of the first higher-level event (encompassing the two lower-level events with durations Q and Q’) is

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9. Conservative and radical listening strategies were conceptualized by Andrew Imbrie (1973). In a conservative listening strategy, the listener attempts to retain a previous metrical interpretation in the face of contradictory signals for as long as possible; in a radical listening strategy, however, the listener adopts a new metrical interpretation as soon as possible. In the present survey, theories that place greater emphasis on salient events tend to be radical and those that emphasize equal durations tend to be conservative.

10. David Epstein (1979, 61) is the first theorist I have encountered to explicitly embrace the “yardstick” metaphor of meter: “In this sense meter is like a temporal yardstick, extending into time, segmenting and quantizing time by units (beats, measures) that are ‘neutral’ chronometric modules.” Frank Samarotto (1999a, 48) likewise engages the yardstick metaphor.
projected forward as the duration $R'$ for a second higher-level event. The third surface-level event (the beginning of the second higher-level event) is marked with a * in order to avoid specifying a particular duration for the third event; whatever its duration, the projection of $R'$ shown below will be made (though it may later be confirmed, denied by a premature ending, or deferred by an extension of the event containing durations $R$ and $R'$).\(^{11}\)

![Figure 1.3. Projective recursion, after Hasty (1997), figure 9.3.](image)

Not every conceivable duration may be projected, though; instead, projection is only possible for “mensurally determinate” durations, those durations for which the listener may accurately judge other durations to be equal, shorter, or longer.\(^{12}\) Thus, cognitive faculties limit meter’s recursion. Since for Hasty each mensurally determinate duration is projected, meter is infinitely variable, based on the rhythms given in any particular passage.\(^{13}\) Furthermore, even if the entire musical contents of two bars were identical, the latter would still be a creative production of its own metrical content, not simply a repetition. Thus, according to Hasty’s theory, there can be no strong distinction between rhythm and meter.

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11. The details of projective denial are irrelevant to my present aims, so it will be left undefined in this chapter. Projective deferral will be discussed shortly.

12. Although absolute limits for mensural determinacy have been proposed by researchers in the field of music cognition, Hasty avoids any simple limit, implying instead that the contents of a duration may significantly impact its mensural determinacy. See especially Hasty’s discussion of hypermeter (1997, 183–97).

13. To be more accurate, each perceived duration is projected as long as the projection does not overlap a higher-level projection; projections must nest hierarchically.
Because it is premised entirely on the prediction of equal durations, Hasty’s formulation of meter is also a yardstick conception of meter. Admittedly, though, there are three problems with this characterization. First, meter for Hasty is a process and not a product; the yardstick conception, which spatializes time, overlooks this fundamental aspect of his theory. Second, Hasty’s yardsticks do not persist, as Schachter’s do; the projected duration of a second event does not become projective for a third event. Instead, there are two possibilities at the onset of a third event.

If the first two events are not united into a higher-level event, then the actual duration of the second event (not its projected duration) becomes projective for the third event. Such an event occurs every time the duration of the highest-level metrical event is completed. Thus, Hasty’s meter is theoretically quite flexible on all levels whenever a projection is not recursively organized into part of a higher level of meter.

If, on the other hand, the first two events are united into a higher-level event, then projection at the level of each of the first two events starts over on the third event. This point is crucial for Hasty, who maintains that “[t]he projective potential or the duration of the measure is nothing apart from its constitution” (150). As a result, the second higher-level event is expected to reproduce the rhythms and metrical decisions of the first higher-level event, preventing any projections that would cross the boundary between the two. In figure 1.4 below (a reproduction of Hasty’s figure 10.1b), the second event of the second bar is perceived as occurring too soon. Notice that this perception contradicts the implications of the questionable projection Q–Q’; if

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14. For example, in a piece with four- but not eight- or twelve-bar hypermeter, projection would begin again at the start of every four-bar measure, e.g. at bars 1, 5, 9, 13, etc.

15. Hasty does not specify how much the second event may differ from the first and still be considered to satisfy this expectation.
Q–Q’ were truly operative, then the second event of the second bar would be perceived as occurring too late, not too early. Instead, the perception of the last event being too late derives from a comparison of the constitution of P with that of P’: the second event of P’ occurs earlier in the bar than the second event of P. In both of these “third-event” situations, Hasty’s yardsticks do not persist: they endure for only two events on the same level, and they do not overlap those of higher levels.16

![Figure 1.4.](image)

Figure 1.4. Higher-level projections prevent overlapping projections on lower levels, after Hasty (1997), figure 10.1b.

The third and final caveat in the yardstick classification of Hasty’s theory regards his discussion of unequal meter, which includes triple meter as well as asymmetrical meters, such as $\frac{3}{4}$ and $\frac{5}{8}$, and is based on the notion of projective deferral. Triple meter is a problem for the theory of projection, which understands a second beat as a continuation of a larger duration composed of both the first duration and the projected second duration.17 A third beat then should complete the larger duration and start a new event on the level of that larger duration. Deferral, as shown in figure 1.5 (a reproduction of Hasty’s figure 9.19), involves two components. First, it

16. In a personal correspondence, Mitch Ohriner points out that Hasty’s yardsticks are found objects put to the purpose of measurement, not a traditional yardstick, which is manufactured, notched, and labeled before seeking to measure any particular object or distance.

17. I use “beat” throughout this paragraph instead of “event” simply to clarify that all three low-level events must have the same duration.
denies closure to the projection S–S’. Second, it reproduces the duration of the second beat in the third (creating the projection T–T’). Together, these components result in the creation of the larger duration R.

Figure 1.5. Projective deferral, after Hasty (1997), figure 9.19.

Deferral is an important move away from equal durations, albeit an inequality felt through the bias of equality. Schachter, on the other hand, does not discuss triple meter as an exception to his rule of equal time spans, implying that it reflects equality of time span on the beat and bar levels. The difference in their treatment of triple meter is due primarily to the repetitive, past-oriented nature of Schachter’s theory, contrasted with the processive, future-oriented role of Hasty’s theory. These three issues—the processive nature of projection, the lack of persistence among projections, and the inequality created by deferral—make Hasty’s theory somewhat less of a yardstick theory than Schachter’s; as the next two theories will show, though, projection is much closer to a yardstick than it is to the alternative. In contrast, Schachter’s only
deference to salience resides in his preference to place strong beats near group beginnings, a preference that may certainly be overridden.

Wallace Berry (1976, 1987) takes an extreme position in relation to Schachter and Hasty (whose principal writings had not yet appeared at the time Berry was writing), defining meter as “accent-delineated grouping” that is “subject to fluctuation” (1976, 318). In Berry’s conception, meter consists of spans of time articulated by the strongest (phenomenal) accents; Berry’s meter is thus oriented primarily by salient aural landmarks. His accents ultimately recognize “change within any parameter of structure,” but the significance and degree of the change tend to determine the level at which they are metrically significant (338). Beyond this broad definition of accent, he identifies three categories of accentual criteria: “changes toward accentually ‘superior’ values” are by far the most significant for his theory, but “associations of impulse functions” and “accentual factors of particular conjecture” have an important place (339, 342). In the first category, Berry includes increase in tempo, rise in pitch, pitches arrived at through leaps, longer durations, louder dynamics and goals of crescendos, change to more intense timbre, change to denser texture, and progression to greater chromaticism and dissonance. The second category consists of the emphatic effect that an anacrusis has upon the ensuing downbeat, the effect of immediate repetition and elaboration upon the perceived duration of a note, and his association of closing gestures with weak metrical positions (although he omits this factor from

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18. See especially Schachter’s discussion of the metrical properties of phrases (1999, 81–83), and his analysis of Mendelssohn’s Song without Words, op. 102, no. 4 (112–15). In the latter, the downbeats of the “apparent meter”—i.e., not the “primary meter”—derive from the salience of melodic phrase beginnings.

19. In an analysis of the second movement of Beethoven’s Piano Sonata op. 27, no. 1 (1999, 83–86), Schachter analyzes a four-bar hypermeter beginning at bar 4, disagreeing with Artur Schnabel’s interpretation of four-bar hypermeasures starting at bar 2.
his “comprehensive” list on pages 339–44). Berry’s last category provides a bias towards beginning-accent, the possibility of one accent overshadowing a subsequent accent because of their close proximity, the lack of expectation for an event as intensifying its accent, the relation of an event to the preconditioned meter, and the position of an event as goal of an accelerating progression. All of these factors contribute to how much an event stands out from the musical flow, and thus, for Berry, the degree to which it serves as a point of orientation for meter. Like Lerdahl and Jackendoff, Berry does not seem to consider the degree of phenomenal accentuation to be quantifiable; instead, his analyses proceed by intuition of the strongest accents, supported afterward by citation of accentual factors.

Resonance between Berry and Hasty emerges in that both eschew persistent regularity as a defining feature for meter. Some of this resonance is a phantom, however, as Berry’s metric fluctuation is very different in kind from Hasty’s infinite variability of meter. For Hasty, the products created by various measures are often quite similar; when they differ, it is usually because of the presence or absence of some subdivisions. Since Hasty’s crucial point is that meter is a process instead of a product, even if two measures result in products that are “the same,” the creative process that led to each one’s existence is different; thus, for Hasty, there is no “return of the same.” On the other hand, despite his emphasis on musical motion, Berry’s meter is ultimately a product. His fluctuations can always be notated as a change in time.

20. Berry outlines four metric functions: anticipative, which anacrustically leads to initiative, the latter of which is subsequently followed by reactive and conclusive functions. The functions are recursive: an initiative may be anticipative, reactive, conclusive, or initiative on a higher level. Of these functions, initiative is the only one associated with a strong metrical position.

21. Berry’s metric functions, briefly discussed in footnote 19 above, constitute a more important resonance with Hasty’s theory, but they are tangential to the theory of meter to be developed here.

22. This phrase, introduced on page 8, echoes throughout Meter as Rhythm.
signature, and they derive especially from accelerations and decelerations in the repetition of motives and from accentual conflict. For instance, in his analysis of Chopin’s Nocturne in F Major, op. 15, no. 1, Berry traces changes in the presentation of the melodic motive that begins with the dotted-eighth–sixteenth rhythm: acceleration first, followed by deceleration (figures 1.6a and 1.6b below recreate his figures 3–30a and 3–30b). The motive in bars 43–44 is first presented in an equal pairing of three beats and three beats. The presentation, and thus the meter (as accent-delineated grouping), is accelerated in bars 45–46 to two beats plus two beats. In bars 46–48, however, the presentation is decelerated twice, to three beats and four beats, yielding an unequal presentation of the two segments. While in the theories of Lerdahl and Jackendoff and Schachter, the motives in bars 45–48 would be said to syncopate against a recalcitrant duple meter, Berry argues that the meter follows these fluctuations, yielding the processes of progression and recession, respectively.
Figure 1.6a. Chopin, Nocturne in F Major, op. 15, no. 1, after Berry (1976), Figure 3–30a.

Figure 1.6b. Metrical processes in Chopin, Nocturne in F Major, op. 15, no. 1, after Berry (1976), figure 3–30b.

Berry is not the only recent theorist to advocate a landmark-based approach to meter, though he may be the most extreme. William Benjamin (1984) at first requires that metrical beats be uniform in length, but he later deviates from this strict definition, especially for the analysis of hypermeter. Whereas Berry’s landmarks are always determined by phenomenal accents, Benjamin’s relaxation of metrical uniformity serves to accommodate what he calls ‘grouping.’
which refers to the fact that larger melodic groups often divide a piece quasi-uniformly, in terms of the number of notated downbeats that they ‘group’ together (360, 363–5, 390–403). The influence of ‘grouping’ is to locate the strongest metrical position of a group at its first downbeat.

Figure 1.7, a partial reproduction of Benjamin’s figure 23, demonstrates Benjamin’s ‘grouping’ landmarks in a durational reduction (reduced by a factor of 2) and hypermetrical analysis of the C-minor fugue from Book I of J. S. Bach’s *Well-Tempered Clavier*. The recurrences of two motives drive Benjamin’s analysis. Motive X, a descending fourth, is a reduction of the fugue subject’s main melodic line, first heard as A↓4, G↓4, F↓4, E↓4. Motive Y, on the other hand, is associated with the start of an episode. In accordance with the implications of ‘grouping,’ Benjamin interprets both the fugue subject and the episodic material as beginning-accented, despite Bach’s notation. While hypermeasures 1–8 (notated as single bars in Benjamin’s example) are all regular, lasting four half-note durations each, the recurrences of the motive Y in the bass of Bach’s notated bar 17 and the alto of bar 19 lead to a three-beat hypermeasure 9. Hypermeasure 10 is likewise three beats, owing to the return of the fugue subject in the middle of Bach’s notated bar 20. The latter commences another four-beat hypermeasure, parallel to hypermeasures 1, 2, 4, 6, and 8.

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23. The C-minor fugue is notated with bar lines before G↓4 and E↓4 of the subject; however, the meter is clearly compound $\frac{3}{4}$, so, according to Kirnberger (1776, 131–32), the first and second halves of the bar are equally strong. Nevertheless, it is quite a different argument to contend that the notated downbeat is metrically weaker than the notated middle of the bar throughout most of the piece. Benjamin’s only invoked support for this contention is the principle of ‘grouping.’
Hypermeasures 12–14 are more complex. Benjamin reads the episode of Bach’s bars 22–25 as a subtle expansion of the fugue subject’s motive X into seven beats. The final note of this recurrence, E5, however, is overlapped with the start of another expanded presentation of motive X, so hypermeasure 12 has only six beats. Hypermeasure 13 then accommodates an eight-beat presentation of motive X in the soprano voice, while ignoring (and metrically distorting!) the subject entrance in the bass voice. Finally, the start of hypermeasure 14 coincides with the start of the tonic pedal in the bass, and the last entrance of the fugue subject enters one beat later. With the notable exception of hypermeasure 14, the beginning of every hypermeasure corresponds to a ‘group’ that is defined by the presence of motive X or Y. ‘Grouping,’ clearly, is the primary factor associated with higher levels of meter for Benjamin.

24. Although the final note of motive X has occurred on a weak beat throughout hypermeasures 1, 2, 4, 6, 8, and 11, Benjamin does not seem to consider the start of hypermeasure 13 to be an elision of a seventh beat in hypermeasure 12. He does not address the anomaly.

25. Again, no explanation is given for the change in metrical orientation for the fugue subject, which becomes end-accented in hypermeasure 14. Also, Benjamin posits an implied fermata over the final resolution on the soprano’s E4, transforming the notated half note into an implicit breve.
This brief review of five recent metrical theories has demonstrated that there are two opposed conceptions to the structure of meter: the yardstick—that meter is organized by equality of duration; and the landmark—that meter is organized by salient musical events. In truth, a mixing of the two is present in nearly every metrical theory, though theories differ greatly in the relative significance they attribute to each factor. Thus, the theories surveyed here all fall somewhere on a spectrum between pure-yardstick and pure-landmark meter, as represented in figure 1.8. In their metrical well-formedness rules, Lerdahl and Jackendoff define meter as regular, but they allow phenomenal accents and the beginnings of melodic groups to yield metrical deviations, so they occupy a central position on the spectrum. Schachter and Hasty both define meter fundamentally as the reproduction of equal durations; even though they make some concessions to landmarks, these are treated less as natural aspects of meter than as extensions of the metrical norm. They are both closer to the yardstick extreme, Schachter a bit more so than Hasty. Benjamin at first requires regularity as a defining feature of meter, but his discussion of hypermeter completely erases this requirement, orienting metrical downbeats almost entirely by the influence of ‘grouping.’ Finally, Berry actively eliminates regularity from the very definition of meter, leading one to believe that any regularity that arises in meter results from the regular disposition of landmarks, which for him are the events with the strongest phenomenal accents. Benjamin and Berry are both closer to the landmark than the yardstick extreme, though Benjamin is quite a bit more centrally located than Berry. Numerous other theories could be

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26. More accurately, Benjamin occupies multiple positions on the metrical spectrum, as his hypermetrical levels differ massively from his lower metrical levels. Although the current discussion suffers from the “fallacy of hierarchic uniformity” (Meyer 1967, 96–97), it is not a problem with the theory of dual-aspect meter in general, which celebrates asymmetry in the metrical hierarchy. This issue will be discussed in depth in chapter 5.
added to this spectrum. However, the relevant point is not the specific location of any particular theory on the spectrum; it is the existence of the spectrum itself.

![Landmark-yardstick metrical spectrum](image)

**Figure 1.8.** The landmark-yardstick metrical spectrum and the relative locations of some recent theories.

It might be assumed that metrical analyses produced by the theorists reviewed here would resemble or differ from each other to the degree that their theories are related, as based on Figure 1.8. To a degree, this is true. David Temperley and Roger Grant have written of a “1980s consensus,” which points especially to the compatibility between Schachter’s and Lerdahl and Jackendoff’s theories (Temperley 2004, 60–61; Grant 2010, 4–5). Indeed, their analyses are similar, much more similar than Schachter’s and Berry’s analyses, for instance.

There is one major problem with this assumption, however, which is revealed by more careful consideration of the landmarks cited by each theory. Benjamin’s landmarks, which appear only in hypermeter, derive from the sole influence of ‘grouping’: once a group has been established, the first downbeat within that group is strongly preferred as a hypermetrical downbeat. The influence of ‘grouping’ thus amounts to a hypermetrical version of Lerdahl and Jackendoff’s “strong beat early” rule, mentioned above. On the other hand, Lerdahl and Jackendoff also admit the significant influence of phenomenal accents, which are primarily accents of length (in many domains, including surface rhythm, dynamics, patterns of articulation, harmonic rhythm, and so forth) and stress. While many of these phenomenal accents may fall in a variety of places within a melodic group, long durations tend to fall at the ends of groups, a feature included in Lerdahl and Jackendoff’s grouping preference rules. There is thus frequently a conflict in the influence of melodic groups on metrical hearing between the beginning-accent
preference of ‘grouping’ (or “strong beat early”) and the end-accent preference of phenomenal accent.²⁷

This conflict has been the source of a significant divide for theories extending back to the nineteenth century. With the notable exceptions of Hugo Riemann (1884, 1900, 1903) and Jérôme-Joseph de Momigny (1806, 1821), who famously asserted that all music is end-accented, most theorists have taken a preferential, rather than absolute, stance on the issue of beginning-accent versus end-accent. Cooper and Meyer (1960), as well as Arthur Komar (1971), argue for the predominance of end-accent. Heinrich Schenker (1935/1979) and theorists inspired by his work, including Schachter (1999), Samarotto (1999a, 1999b), William Rothstein (1989), Roger Kamien (1993), and Ryan McClelland (2006), indicate an orientation towards beginning-accent. Wallace Berry (1976, 1985),²⁸ Lerdahl and Jackendoff (1983), and Temperley (2004) also indicate an inclination toward beginning-accent, whether through an explicit preference rule or

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²⁷. In a recent study aimed to extend and clarify Hasty’s work, Rowland Moseley (2013) offers an important counter-explanation of ‘grouping,’ which amounts to a radical shift in the very ontology of meter. Acknowledging the frequent discomfort between (phenomenal) accent-derived notions of meter and the analyst’s musical experience, Moseley proposes that strong beats are not felt as such in the moment that they occur; instead, the experience of a weak beat creates meter—renders the sense of a prior strong beat and creates the durational projection that characterizes Hasty’s notion of meter (3). Moseley thus contends that meter is read “from the middle” rather than the beginning. On the surface, it may appear that Moseley’s work simply translates the question “what characterizes the experience of a strong beat?” to “what characterizes the experience of a weak beat?”; at the very least, however, Moseley’s shift introduces a notion of comparison. This shift makes reasonable the analysis that the very first beat of a piece or section may be metrically strong on many levels, before any of those metrical levels are even felt as relevant (perhaps long before so, as Moseley reads a 32-bar hypermeasure in the first reprise of the Gigue from J. S. Bach’s D-minor cello suite, “beginning” at bar 1).

²⁸. In spite of Berry’s emphasis on phenomenal accent, which has traditionally encouraged an end-accented perspective, he associates them with conclusive function, which in his theory is metrically weak.
by circumscribing the typical formal locations of end-accented groups.\textsuperscript{29} Relying on locutions such as “for any reason,” Hasty (1997) offers very little guidance about how the analyst may determine strong and weak beats, which he calls dominant beginnings and continuations, respectively. However, his “accent of beginning” (1999, 104) betrays his bias toward beginning-accents. Finally, three theorists—Edward T. Cone (1968), Peter Westergaard (1975), and Robert P. Morgan (1978)—even argue that both the beginnings and the ends of phrases (not groups in general) are accented, a position which leads them to deny the relevance of meter for the group level of the phrase and beyond.\textsuperscript{30} Metrical theories have thus been thoroughly divided on two fronts: regularity and orientation to group structure.

These metrical theories presume to describe the nature of meter. Lerdahl and Jackendoff address all “common practice” music, as Schachter implicitly does as well (with emphasis on the German canon). Benjamin, Berry, and Hasty, though, aim to describe meter across Western classical art music in general. Berry’s examples, for instance, range from Josquin and Dowland to Stravinsky, Webern, and Boris Blacher, while Hasty’s examples range from Monteverdi and Schütz to Boulez and Babbitt, granting only Lutosławski a true escape from meter.

While some part of these controversies undoubtedly resides in truly distinct listening strategies, perhaps another portion stems from the wide nets cast by these theorists. Rothstein (2008, 2011) has recently called into question the idea of meter as a monolithic entity, even within the familiar eighteenth and early nineteenth centuries. He distinguishes two interpretive practices within this time frame, which coincide with the two arguments concerning meter’s relation to melodic groups as described above. Crucially, he correlates these two interpretive

\textsuperscript{29} Temperley (2003) argues that end-accented phrases are useful for effecting closure, so that they are typically to be found in closing themes of sonata forms.

\textsuperscript{30} This theoretical stance is anticipated by Mathis Lussy (1883, 1903).
practices to two *compositional* practices: “German meter” is characterized by a strong preference for beginning-accents with relatively short upbeats or none at all, a flexibility for the metrical location of cadences, and a relatively small role for phenomenal accent in the articulation of metrical boundaries; “Italian meter” or “Franco-Italian meter” is characterized by a strong preference for end-accents with long upbeats, consistently strong cadences, and a greater sensitivity to phenomenal accents, especially in melodic lines.\(^\text{31}\) These two meters also correlate with national poetic traditions and perhaps derive from them.\(^\text{32}\) In French and Italian poetry, the last accented syllable is always, in principle, the strongest accent of the line. Naturally, then, aligning poetic and musical metrical accents yields end-accented groups and phrases in vocal music, and by extension instrumental music as well.\(^\text{33}\) In German poetry, on the other hand, the strongest accent in a line is not given a consistent location. By default, then, beginnings take on greater significance. For example, Hasty’s accent of beginning (1999, 104) implicitly rests on the notion that it is cognitively simpler to parse meter from the beginning of a unit than from the end. Compositionally, German meter predominates in the works of Haydn, Mozart, Beethoven, Schubert, Schumann, Wagner, and their followers (although exceptions do exist, especially in

\(^{31}\) This is not to say that those theorists who emphasize end-accents necessarily have a truly “Italian” or “French” way of hearing. Rothstein’s categories will be generalized in chapter 4 as *arrival meter* and *departure meter*.

\(^{32}\) The “national” component of Rothstein’s theory must not be taken out of its historical context, though. The confines of his articles (2008, 2011) are respectively, “the eighteenth and early nineteenth centuries” and “Verdi’s midcentury operas.” In particular, late nineteenth-century French compositions show influences from Wagner and the polka (Pau 2014), both of which tend toward beginning accent.

\(^{33}\) Rothstein assumes that approaches to vocal music transfer to instrumental composition and interpretive strategies, which I find intuitively convincing. Dance may perhaps offer the most significant counter-influence, though vocal and dance music likely exhibit mutual influence upon each other as well.
Haydn and Mozart), while Franco-Italian meter is especially representative of Lully, Couperin, Rameau, Rossini, Bellini, Donizetti, and Verdi.\textsuperscript{34}

Rothstein’s most significant contribution is not to legitimize the theories supporting any side of the controversies, though he does suggest that beginning-accented predominate in the traditional German-centric canon (especially in the nineteenth century). Neither is it to bridge the gaps among these metrical theories. Instead, his major contribution is to legitimize those very gaps by placing meter under stylistic critique. As he notes, “Theorists who seek to define ‘the’ nature of musical meter should be aware that there is no ‘the.’ Musical meter builds upon universally human predispositions, but it remains a culture-bound phenomenon…” (2011, 110).

Indeed, cultural distinctions may be drawn in many ways, not only via the political and linguistic boundaries shown by Rothstein: temporal-historical and \textit{registral} boundaries may be equally significant. Although I will focus on tonal music in this dissertation, my point of departure is not absolute music in the sonata, string quartet, or symphony of the First Viennese School or the nineteenth-century masters. Theories that depart from these canonic locales have enlightened us on many aspects of meter across the tonal repertoire, but they have also flattened the topography of this repertoire at the same time. My point of departure instead lies within one of these flattened-out regions. I detail a metrical phenomenon that arises most conspicuously from the rhythmic consistency of dance music, and I begin in the French baroque.\textsuperscript{35}

\textsuperscript{34} Although Rothstein’s later articles (2008, 2011) may appear at first to contradict his earlier work (1989), much of the latter was aimed to distinguish the styles of Haydn, Mendelssohn, Chopin, and Wagner through their individual manipulations of phrase rhythm and hypermeter. They thus share the common aim of style analysis.

\textsuperscript{35} There have been some notable attempts at baroque-specific theories of meter (Grant 2014; Mather and Karns 1987; Houle 1987). Their ideas will receive detailed discussion in later chapters with regard to specific pieces of music.
Continuous Meter: Shape and Precision

While Hasty’s deconstruction of the absolute separation between rhythm and meter is his signal achievement, in order to do so, he first had to re-temporalize meter. Instead of discrete, spatialized units, as in Lerdahl and Jackendoff’s grid and Schachter’s time spans, Hasty’s meter is a continuous process in time, creating a kind of shape for meter as nesting projections are confirmed, denied, or deferred. If meter is the act of projection as described in the previous section (including confirmations, denials, and deferrals of projection), then “the” meter of any work or passage is equivalent to the complex shape of projections occurring at any moment, which is highly dependent on the minutest details of surface rhythm. Thus, for Hasty, the usefulness of the traditional metrical types is quite circumscribed: metrical types, used in the traditional way, conceal perhaps as much about meter as they reveal.

The idea of continuous meter does not originate with Hasty, though; one notable predecessor is Victor Zuckerkandl (1956, 1959), who conceived of metrical levels as wave motions. For Zuckerkandl, metrical waves crest on the beats of particular levels and subsequently recede before reversing course and rising to new crests at subsequent beats (figure 1.9). The rhythms of a piece of music outline the path of the wave, emphasizing its continuity; the wave is thus a property of the music but nonetheless independent of the rhythms involved. Unlike Hasty, Zuckerkandl’s waves are not fully particular, and they do not involve complex interactions, such as denials and deferrals. From bar to bar they are structurally the same, differentiated only by Zuckerkandl’s claim that each new bar represents an intensification in some domain over the preceding bar, perhaps implying the renewed creativity of each bar that is so crucial for Hasty.
Justin London (2004) also advocates a time-continuous understanding of meter, invoking especially the work of music psychologists Mari Jones and Edward Large. Meter is the result of a listener’s entrainment to a pattern in the music, producing mental oscillations that resemble Zuckerkandl’s waves. London distinguishes the theory from that of Zuckerkandl by maintaining that the oscillations describe the attentional energy of the listener, essentially the listener’s expectation for a salient event as time flows. Figure 1.10, a reproduction of London’s figure 1.2, shows two levels of metrical oscillation within the mind of the listener (22). Attentional energy (marked as “expectancy” on figure 1.10) rises as the listener prepares for a salient event on the beat and falls afterward. The coincidence of both oscillations in the middle of the figure results in the perception of a strong beat at the peak. Note that the height of the wave at various points along the temporal axis does not describe the relative salience of the expected events, but instead the level of expectation for a salient event at that location.

36. I do not call these expected events in London’s (and Large and Caroline Palmer’s) theory landmarks because they define meter by the periodic oscillation of expectancy, not the expected events themselves.

37. London’s figure is itself a modified reproduction from Large and Palmer 2002 (12), figure 3A.
Figure 1.10. Attentional energy in two levels of metrical oscillation, after London (2004), figure 1.2.

London’s metrical theory also broadens the number of extant meters by considering the ramifications of cognitive constraints and expressive timing, the latter made possible through his time-continuous approach. Concerning the former, London cites psychological research on the mind’s temporal limits for accurately measuring time, claiming that metrical periodicities must take place within a range extending from 100 milliseconds to about 5 (or 6) seconds, and that the periodicity of the tactus, the experientially primary metrical level, must occur within a range of approximately 250–2000 milliseconds, though we share a marked preference for a tactus of approximately 600 milliseconds (46). For London, meter is a hierarchic gestalt, a schema that consists of the combined periodicities of all metrical levels. Each distinct complex of periodicities is a distinct metrical type, and different metrical types, even those differing by only a single periodicity, are different meters; thus, two passages in \( \frac{3}{4} \) time are different meters if one features consistent triple (eighth-note) subdivision and the other consistent duple (eighth-note) subdivision.
<table>
<thead>
<tr>
<th>N-cycle IOI</th>
<th>Sub-cycle 1</th>
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Figure 1.11. Cyclical timings for the 8-cycle determine tempo-metrical types, after London (2004), table 4.1.

Metrical types may be further divided into specific *tempo-metrical types*, which describe a metrical type’s component periodicities as delimited by the upper and lower thresholds for the tactus mentioned above.\(^{38}\) London argues that what might be considered identical meters (e.g., two passages in \(\frac{3}{4}\) time with duple division at all levels) may actually be different if their tempos differ significantly, because of the constrained possibilities for what may be heard as a subdivision or a hyperbeat. Figure 1.11 reproduces London’s table 4.1, which demonstrates the four tempo-metrical types for an “8-cycle,” which is a duple grouping of pulses on three levels.\(^{39}\) The first tempo-metrical type ends somewhere between 125 and 150 milliseconds, the second

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38. London’s notion of tempo-metrical type is undercut by his own admission that the choice of tactus is flexible in a “sufficiently rich metric context” (76), though he cites Richard Parncutt’s study, which argues for peak pulse salience at about 600 milliseconds (Parncutt 1994, 31).

39. An 8-cycle might be notated as a traditional \(\frac{3}{4}\) bar, for instance, with eighth notes (=1 or “N-cycle” in figure 1.11), quarter notes (=2 or “Sub-cycle 1”), half notes (=4 or “Sub-cycle 2”), and whole notes (=8 or “Total Span”). Under London’s nomenclature, a piece notated in \(\frac{3}{4}\) and a piece notated in \(\frac{1}{4}\) at roughly the same tempo and with only duple divisions throughout would have the same meter, assuming that they exhibit the same number of subdivisions and levels above the tactus. In figure 1.11, IOI stands for inter-onset interval, the amount of time, measured in milliseconds, from the start of one pulse to the next.
between 250 and 300 milliseconds, the third between 500 and 600 milliseconds, and the fourth above 650 milliseconds.

London does acknowledge that the chosen thresholds are somewhat arbitrary and that listeners have some flexibility in the choice of tactus, but he implies that the tempo-metrical types are distinguished by the metrical level that would typically be chosen as the tactus; close consideration of the data shown in the table leads me to a somewhat different conclusion. Although London does not explain his table in detail, we may extrapolate the distinctions between tempo-metrical types by following the principles he previously developed. In the first type, the listener is unable to hear the N-cycle or sub-cycle 1 as tactus because both periodicities are below 250 milliseconds, so only the two highest levels are available to be the tactus; in the second type, the three higher levels are available to be the tactus; in the third type, the three lower levels are available to be the tactus, while the highest level is unavailable because it is longer than 2 seconds; and in the fourth type, only the two lowest levels are available to be the tactus. More accurately, then, the tempo-metrical types delimit the range of possible tactus choices; thus, the tempo-metrical types are not inherently distinct meters, and two examples of the same tempo-metrical type are not inherently the same meter. For instance, if the preference for tactus near 600 milliseconds is manifested by a listener, then both N-cycle inter-onset intervals 125 and 175 would consist of the same gestalt: an 8-cycle with duple division and subdivision, organized into one duple level above the tactus (500 and 700 milliseconds, respectively). Although tempo-metrical types thus do not inherently represent different meters, they may help to delimit the potentials for different meters. Still, the effort to distinguish taxonomically metrical hierarchies based on the number of levels above and below the tactus is
admirable. Danuta Mirka’s (2007, 2009) further advances in this area of London’s theory will be discussed in the following section of this chapter.

Concerning expressive timing, London cites the personal styles of swing for various jazz musicians and the ability of listeners to recognize a specific jazz artist aurally by the swing timing on a given recording. He conjectures that listeners match the timing patterns to distinct mental schemas that they have developed from prior listening experiences. London argues that these mental schemas are also distinct meters. The effects of both expressive timing and cognitive constraints thus lead to his *Many Meters Hypothesis*, which argues that competent listeners have internalized a “very large number of context-specific metrical timing patterns,” a number that “increases with age, training, and enculturation” (153).

Continuous theories have revealed two very important ideas about meter. First, meter is not simply some grid of time-points but is instead a shaped process. Second, the traditional metrical types are insufficient to delineate the metrical categories that listeners perceive, let alone to capture the finest details of metrical vitality. Interestingly, both of these ideas can be traced back to an important nineteenth-century precursor, one whose metrical theory is surprisingly far from continuous. This section will conclude with discussion of Moritz Hauptmann’s (1853) theory on the nature of meter.40

For Hauptmann, meter is the logical primitive of musical time; it provides the conceptual framework for all possible musical rhythms. This is a stark move away from the late eighteenth-century notion of a series of undifferentiated pulses as the origin of meter, and it has deep

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40. Quotes in the discussion that follows are taken from W. E. Heathcote’s translation (1888) of Hauptmann’s treatise. Several citations refer to this translation as well.
consequences for Hauptmann’s theory. Like Zuckerkandl, Hauptmann’s rhythm shows the metrical organization of a conceptually independent meter; however, the independence of Hauptmann’s meter far outstrips Zuckerkandl: Hauptmann’s meter is the generator of musical rhythm and thus the authority for the possible kinds of rhythms. Under this conception, rhythmic activity, whether consistent or not, is always metrical in origin.

Hauptmann asserts that the smallest unit of musical time is two beats (ended by the start of a third). The first beat does not exist until the start of the second beat, and when the second beat starts, it “projects” forward a duration equal to the first beat. This unit thus contains a determining first beat that “determines” the duration of a determined second beat; together they create the basic unit of musical time, which results in duple meter. Triple meter is produced by an overlapping of two of these units, the second unit starting on beat 2, in modern terms. Quadruple meter is then produced by an overlapping of three two-beat units, the second unit starting on beat 2 and the third unit on beat 3. The basic time unit has natural accentual properties: the determining (first) beat is metrically accented, owing to what Hauptmann calls its “energy of beginning,” while the determined (second) beat is weak (204). Duple meter is

41. For more on the listener’s generation of meter from an undifferentiated series of pulses, see the articles “Rhythmus” and “Tact” in vol. 4 of Sulzer (1771), as well as Kirnberger 1776 (113–17). Excellent recent discussions of Kirnberger’s metrical theories can be found in Mirka 2009 (3–12), Caplin 2002 (666–71), and Grant 2014 (93–123).

42. Hasty’s theory of metrical projection is based fundamentally on this tenet from Hauptmann. As shall become quite clear, however, the two differ quite drastically in the way they develop this initial kernel.

43. On the basis of Hegelian dialectics, duple, triple, and quadruple meters are the three organic meters: the single time unit in duple meter is a thesis, the two overlapping units in triple meter represent the antithesis, and they are brought together in the synthesis of quadruple meter. Hauptmann then argues that quintuple and septuple meters are artificial and inorganic because they do not fit into this dialectical model (Hauptmann 1888, 189–99).
accentually straightforward and familiar: it consists of one basic time unit, a strong beat followed by a weak beat (figure 1.12A).\footnote{Because duple meter is simply one instantiation of the basic time unit, henceforth, I will refer to this basic time unit as a “duple unit.”}

Although duple meter is simple, the accentual shapes of triple and quadruple meters are more complex, owing to their use of overlapping of time units (figures 1.12B and C). In triple meter, both determining beats of the two overlapping duple units are strong, but that of the first duple unit is stronger than that of the second duple unit, as it is a relationship of first and second on a higher order.\footnote{Hauptmann does not claim that the first duple unit determines the length of the second duple unit, nor does he describe the processive generation of the latter from the former; instead, he seems to rely simply on the notions of firstness and secondness in this case, with accent attributed to the former.} Three levels of accent thus arise: the first beat is strongest (first of the first duple unit); the second beat is moderately strong (first of the second duple unit); and the third beat is weak (second of the second duple unit). In quadruple meter, there are three duple units. While the first is clearly accented and the second is weak in relation to the first, the third is accented in relation to the second, “for that which has to follow a last can but be a new first” (1888, 209; 1853, 245). Hauptmann also reasons that in addition to the three overlapped duple units, there are two overlapped triple units (figure 1.13). The first of these overlappings of triple units proceeds from strong to weak, as expected, but the latter proceeds weak to strong: the overlapping of duple units takes preference in determining the firstness and secondness of each duple unit, so the second triple unit begins with a weak “second” duple unit. The final result of these two tiers of overlappings is the following accentual scheme in quadruple meter: the first beat is heavily accented (first of the first duple unit and also first of the first triple unit), the second beat is weakly accented (first of the second duple unit), the third beat is moderately

\begin{figure}
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\caption{Accentual shapes of duple, triple, and quadruple meters.}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure1.13}
\caption{Overlap of duple and triple units in quadruple meter.}
\end{figure}
accented (first of the third duple unit and also “first” of the second triple unit), and the fourth beat is weak (second of the third duple unit and also second of the second triple unit).46

![Accentual structures of positive (A) duple, (B) triple, and (C) quadruple meters, after Hauptmann (1853, 277–9).](image)

![Overlapping units in quadruple meter, after Hauptmann (1853, 244 and 246): (A) duple units and (B) triple units.](image)

The reverse-accented triple unit within quadruple meter is a harbinger of complexity for Hauptmann’s theory. While Hauptmann argues that metrical units naturally proceed from strong to weak (a “positive” determination), he acknowledges that they may also proceed from weak to

46. The weak accent on the second beat in quadruple meter is crucial for Hauptmann, because it confirms the authenticity of quadruple meter; it distinguishes quadruple meter from two successive duple measures, a situation that he calls “twice two-timed meter.” The latter has no accent on the second of its four beats.
strong (a “negative” determination). He supports this assertion of positive and negative metrical units by analogy to his harmonic theory, which explains the minor triad as the “dual,” essentially the negative or mirror image, of the major triad.47 Negative (weak-to-strong) metrical units are duals of their positive (strong-to-weak) counterparts. Hauptmann expands his metrical theory to allow nearly any positive duple or triple unit to be replaced by its negative, resulting in a profusion of “metrical formulations” with an astonishing variety of accentual shapes.48 These formulations are shown in appendix 2 with a likely musical barring.49 While the three and four tiers of accents in triple and quadruple meters are highly significant, Hauptmann importantly maintains that “the most highly emphasized need not always be the beginning of the bar. There are also metrical formulations in which the principal accent falls upon another member of the bar than the first” (214). Hauptmann does concede, though, that the strongest beat is assumed by the listener, upon repetition, to be the first beat in a bar (218). Owing to this characteristic of metrical perception, many of Hauptmann’s metrical formulations cross bar lines, implying a collapse of Lerdahl and Jackendoff’s later distinction between meter and grouping: for Hauptmann, meter implies grouping through its accentual shape.

The mechanics of Hauptmann’s theory differ markedly from those of Hasty, Zuckerkandl, and London. Their theories are premised on a continuous, in-time understanding of meter, while Hauptmann’s is ultimately a static, out-of-time product, despite the processive

47. For Hauptmann’s generation of the major and minor triads, based on the principles of “having” and “being” fifths and major thirds, respectively, see Hauptmann 1888 (5–8 and 14–17).

48. The only exception to free substitution of negative units for positive that Hauptmann addresses is that the third beat of a quadruple meter (i.e., two beats after the strongest accent) must have at least a weak accent.

49. In all barrings in appendix 2, where the bar line is not visible, it is assumed to fall before the first note.
origins of his metrical units—the duple unit in particular. Nevertheless, all of these theories share two fundamental (and interrelated) aims: the investigation of metrical shape and a fine distinction of metrical phenomena (projections, hierarchies, timings, and accents). If we take their attempts seriously, we can only be dissatisfied with the state of many current metrical categories.  

**Metrical Consonance and Metrical Dissonance**

The issue of conflict within the measure has spurred the most active program in metrical research in the past twenty years. Harald Krebs (1987, 1999) has been at the center of this effort, which aims to rescue meter from a static characterization as an expressionless grid by clarifying its vital, expressive role. To that end, his work has systematically developed the concept of “metrical dissonance,” a notion whose origin can be traced back to Hector Berlioz (1837; translated in Barzun 1969). Krebs’s theory strikes a balance between phenomenal accent and equal durations in the formation of meter. For Krebs, meter is the sum of all layers of motion sounding in a piece, where a layer of motion is a series of regularly recurring pulses that is articulated by phenomenal accents (1999, 23). Interpretive layers allow the listener to organize the pulse layer, which consists of “the most quickly moving pervasive series of pulses,” by grouping those pulses into a larger recurrent duration (23, emphasis in original). The most significant aspect of this definition of meter is that it allows for interpretive layers to be in a state

50. I consider Hauptmann’s metrical formulations to constitute distinct meters when and if they are invoked in real music. His wording suggests, though, that he conceives of them as subspecies within his four species of meter (duple, triple, twice-duple, and quadruple), probably because he expects a piece of music to move freely between the formulations illustrated in appendix 2.
of alignment or nonalignment, accommodating the notions of metrical consonance and dissonance, respectively.

Krebs outlines two types of metrical dissonance: *grouping dissonance* and *displacement dissonance.* Grouping dissonance consists of layers with differing cardinalities: for instance, one layer establishes a grouping of two quarter-note pulses, outlining half-note durations, while a second establishes a grouping of three quarter-note pulses, outlining dotted-half-note durations. Displacement dissonance consists of layers with the same cardinality that are temporally shifted in relation to each other: for instance, one layer establishes a two-quarter-note pulse starting on the notated downbeat, while another establishes a two-quarter note pulse starting on the notated beat 2. Figure 1.14, recreating Krebs’s figure 2.7, simultaneously demonstrates both grouping and displacement dissonances. The pianist’s left hand articulates a pattern that recurs every two quarter notes. Because the low bass notes are registrally extreme, they contribute a registral (phenomenal) accent; they thus establish an interpretative layer of two quarter-note pulses. The pianist’s right-hand pattern (temporarily ignoring the parenthesized threes) simultaneously establishes an interpretive layer of three quarter-note pulses, because it articulates a pattern that recurs every three quarter notes with durational (phenomenal) accents occurring on the notated downbeats. The three-to-two relationship between the outlined durations of these two layers creates a grouping dissonance.

51. These names actually originate in Peter Kaminsky’s dissertation (1989), replacing Krebs’s original (1987) “Type-A” and “Type-B” dissonances.

52. All forms of metrical dissonance occur simultaneously except Krebs’s “indirect dissonance,” which is the listener’s mental continuation of a prior layer when a new layer, dissonant with the old, completely displaces the old layer from the musical surface. Indirect dissonance is generally short-lived; if the old layer does not soon return to the musical surface, the listener will abandon it.
The right hand pattern also weakly articulates another metrical layer. Because the first eighth note of each bar initiates a relatively long pattern of eighth notes, because it begins a slur, and because of its implicit length (in each bar, the second and third eighth notes simply ornament the first, giving the first an effective dotted-quarter-note duration), the first eighth note of each bar also marks the strong beat of a three-pulse metrical layer. The two three-pulse layers, by virtue of their non-coinciding beginnings, produce a displacement dissonance.

Figure 1.14. Grouping and displacement dissonances in the “Préambule” from Robert Schumann’s *Carnaval*, after Krebs (1999), figure 2.7.

Krebs’s influence has been enormous, and reactions to his work have followed several paths. Numerous analyses have incorporated metrical dissonance into discussions of style and musical meaning, while John Roeder (1994, 2001) has used Krebs’s metrical model, shorn of the metaphor of consonance and dissonance, to elucidate form in Schoenberg and Bartók. Additionally, Justin London (2004) and Danuta Mirka (2007, 2009) have proposed a theory of metrical consonance in piecemeal, arguing that significant metrical fluctuations may arise even in the absence of nonalignment. London’s theory of metrical consonance deals especially with the number of metrical levels articulated at any time, their cardinality, and their relationship to

53. The metrical criteria listed in this sentence correspond respectively to Lerdahl and Jackendoff’s Metrical Preference Rules 5d, 5c, and 9.

54. The former is exemplified by the 2009 meeting of the Society for Music Theory, where one three-hour session was devoted entirely to the issue of metrical dissonance in jazz. For examples of the latter, see Richard Cohn 2001 and Daphne Leong 2007.
the tactus, including the possibility of “empty” levels that are not independently articulated through phenomenal accents or pitch attacks. Mirka summarizes these contributions as the “width” and “density” of the metrical hierarchy, and she contributes another element: the strength of the articulation of these levels, based especially on the number of accentual factors involved (2004, 332–4).

Another strand of thought has reacted to the very metaphor of metrical dissonance and consonance, since they imply the necessity, or at least the desire, for nonalignment (dissonance) to give way to alignment (consonance). Yonatan Malin (2008) suggests that many metrical dissonances simply “release” rather than “resolve” (65–66). Mark Butler (2006) observes that once dissonant metrical layers enter in electronic dance music, they are often maintained for the remainder of the piece (2006, 170). In fact, pieces “often end by highlighting the dissonant states with which they began” (170). To explain this issue, Butler proposes the emancipation of metrical dissonance in electronic dance music, specifically singling out the “diatonic” family of rhythms (maximally even yet not perfectly even, such as the 3-3-2 tresillo rhythm that is ubiquitous in Western popular musics) as embodying a new kind of grouping dissonance against the ¼ patterns that characterize electronic dance music (84–85, 88, 100–106, 169–71).

Furthermore, in his discussion of the music of Public Enemy, Robert Walser has complained about the assumption that metrical dissonance is a dependent state, implying a way out of the

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55. The concept of “empty level” (without the term) seems to originate with Zuckerkandl (1959, 102–4), though the term first arises in Mirka’s review of London’s Hearing in Time (Mirka 2004, 332). London refers not specifically to empty levels but to the “coming and going” of metrical levels in his analysis of the first movement of Beethoven’s Fifth Symphony (London 2004, 89–99).

56. The term “diatonic rhythm” was coined by Jay Rahn (1996), referring to the diatonic collection’s maximally even distribution of seven intervals within the chromatic octave while retaining a degree of asymmetry.
“foregone conclusion” that metrical dissonance must resolve to metrical consonance by linking rhythm and the body (1995, 214).

Frank Samarotto (2000) and Robert Hatten (2002) have called into question the relationship between rhythm and meter in Krebs’s theory. For both theorists, the issue at hand is whether many of Krebs’s dissonant layers are truly metrical. As noted above, for Krebs, an interpretive layer need only appear as a grouping of pulses in order to be metrical; however, Samarotto requires that meter involve “at least the potential for a nested metrical hierarchy” (2000, paragraph 3.4), and Hatten considers meter to be a field of upbeats and downbeats that enables embodied orientation in musical flow (2002, 276). In Krebs’s analyses, antimetrical layers often arise through durational accents or dynamic accents that are consistently placed in locations other than the downbeats of bars; while these produce a marked and predictable pattern, Hatten and Samarotto argue that they do not independently establish a distinction between strong and weak beats. Therefore they disapprove of Krebs’s conflation of patterned phenomenal accentuation and metrical accentuation. This is an important criticism: Krebs’s conception of a metrical layer departs from the work of Maury Yeston (1976), for whom it was a *rhythmic stratum.*

57. Indeed, before Krebs the majority of discussions of metrical dissonance referred to the concept as rhythmic dissonance or at least treated it as a rhythmic issue instead of a metrical one. This list includes Berlioz, Henry Cowell, Charles Seeger, and Joseph Schillinger. Curt Sachs (1953, 41), on the other hand, originated the term “metrical dissonance.”

London (2004) takes Hatten’s and Samarotto’s argument further, arguing that the dissonant layer can never truly articulate a second meter: “…hearing a pattern of contrasting organization against the context of an ongoing pattern of attentional invariance is not the same thing as generating two patterns of attentional invariance at the same time” (84). London does, however, recognize the aptness of metrical dissonance as a metaphor. With the caveat that listeners are likely to hear one of the competing “meters” as periodic rhythms instead of true meters, he approves of the theory of metrical dissonance as an analytical tool.

Krebs specifically refers to meter as the “union of all layers of motion active within a composition” (1999, 23); thus, individual interpretive layers do not in themselves constitute
Krebs’s conception of meter has received its share of defense as well. Samarotto had previously coined the term “shadow meter” to describe a kind of displacement dissonance where two fully hierarchical meters are in conflict;\(^{58}\) nevertheless, he admits of the attractive inclusiveness of Krebs’s notion of meter, as it seems to relate to the notion of “beat” that prevails among listeners to popular music (2000, paragraph 3.2). Malin defends Krebs’s notion of the metrical layer through a marriage of Zuckerkandl’s waves and Hasty’s arguments about the creativity of the measure and the metrical consequences of surface durations: “Each metric layer is a wave, shaped by the tones that form it. [Syncopations and cross-accents] are like perturbations of the wave...And since they contribute to the wave formation—to our experience of motion from one downbeat to the next—we may say that they are ‘metric’” (2010, 65). Malin then echoes Samarotto, noting how this expanded definition of meter is actually what most people outside the Western theoretical and pedagogical tradition call “rhythm.” Finally, as noted above, Butler extends meter even further into the traditional area of rhythm by including the non-isochronous “diatonic” patterns as possible metrical configurations.

Appearing at first to extend Krebs’s line of thinking, Hatten proposes that the gavotte could also be interpreted as featuring a displacement dissonance one half-note beat ahead of the notated downbeat, but he questions the validity of such an interpretation and hints at an intriguing alternative: “In general, the rhythmic gestures of dance meters might be said to contribute to a more richly conceived, background metrical field that would be a qualitative enhancement of meter along the lines Krebs envisions. In such ‘characteristic’ configurations, competing meters in his theory. This distinction between the components of meter (interpretive layers) and meter itself is unique to Krebs’s theory, and Hatten’s and Samarotto’s critiques imply that the distinction is false.

\(^{58}\) Shadow meters are often created by ambiguity between beginning-accented and end-accented interpretations of two-bar groups. The term was introduced in Samarotto (1992).
however, the metaphor of metrical dissonance may be strained” (2002, 278). By “dance meter,” Hatten is not simply invoking the usual sense of duple or triple, simple or compound meters; instead, he implies that there may be meters whose beats are not simply strong and weak in the traditional sense. Under such an interpretation, even the notion that the gavotte’s accents are in conflict must be rethought.

Conclusion

The three sections of this introductory chapter have exposed several important threads for the remainder of this dissertation. In short, these are (1) the conflict between landmarks (phenomenal accents and ‘grouping’) and equal durations in defining meter and the different kinds of landmarks that have gained theoretical currency; (2) the recognition of meter’s cultural connections; (3) the notion of metrical shape and the attempts to distinguish different meters through finely conceived nuances; and (4) the issue of nonalignment of phenomenal accents as dissonance or non-dissonance, conflict or non-conflict. In the following chapters, the significance of these ideas will become clear through the many ways they resurface in the development of several important extensions to metrical theory.
Chapter 2

METER IN THE SARABANDE: A PROBLEM OF WEIGHT

Figure 2.1 shows the opening of the sarabande from Handel’s Keyboard Suite in D Minor, HWV 437. Much of this chapter will be devoted to a metrical analysis of the passage, noting several ways that it defies metrical theories of the present and the past and developing new theoretical conceptions to accommodate these facets of the passage. As a thought experiment, I ask the reader to bracket knowledge of the generic conventions of the sarabande in order to examine the phenomena of this passage in themselves. To that end, bar lines and the time signature have been omitted from figure 2.1.

![Figure 2.1. The opening of the sarabande from Handel’s Keyboard Suite in D Minor, HWV 437 (bar lines omitted).](image-url)
In chapter 1, I noted that metrical theories tend to orient themselves around two major landmarks: group boundaries and phenomenal accents. The effects of both factors arise simultaneously, but we must consider each in turn. Let us now do so, focusing our analysis initially on the first half of figure 2.1.

Grouping in the soprano voice is very clear on the two lowest levels. Two- and three-note groups are ubiquitous, shaping the entire first line of the passage.¹ These two- and three-note groups, shown in figure 2.2, are easily recognized through their parallelism, which is made clear by the repeated melody notes and the heavy chordal support.² The groups themselves are also separated by rests in the notation, though in performance, these rests may be heard as continuations of the prior notes. Whether a listener hears the rests or not, the long interonset interval begun with the second of the two repeated notes is sufficient to close the group.³ The

1. Throughout this analysis I will discuss rhythms via the notated rhythmic values on the score. Listeners need not hear rhythmic values as instances of a rhythmic notational value; however, rhythmic proportions are cumbersome to discuss in the abstract. The use of the notated rhythmic values simplifies the discourse.

2. Lerdahl and Jackendoff (1983) argue in their Grouping Preference Rule 6 that “where two or more segments can be construed as parallel, they preferably form parallel parts of groups” (51), but the repeated notes of Figure 2.2 are not always the first notes of the low-level groups. It may initially appear that these two statements are in contradiction; however, Mathis Lussy’s (1903) division of a melodic group (his term is rythme) into body, optional anacrusis, and optional appendix could help to resolve this problem: the repeated notes are always the first and second notes of the body of the lowest-level melodic group. Lussy’s theory will be discussed further in chapter 4, pages 176–77.

3. An interonset interval is the duration between the attacks of two notes. In this study, the use of interonset interval assumes the listener’s separation of voices or streams; thus, the interonset interval between the soprano at event 5 and 9 is a whole note, not a half note. David Temperley (2001) calls this “registral interonset interval” (33).

Lerdahl and Jackendoff (1983) discuss the power of long interonset intervals to close groups in Grouping Preference Rule 2b (45), though they use different terminology. In this chapter, the “attack-point” conception of duration given by the notion of interonset interval will be used in the place of a sense of duration based on the notated rhythmic value of a note; rests will be treated as continuations of the prior note in the same voice or stream. Instances of rests acting as independent aural events will be discussed further in chapters 3 and 4.
two- and three-note groups range from five to seven quarter notes in duration, but the parallelisms emphasize durations of six quarter notes, or three half notes. Moving up to the next level, melodic groups of the first line are composed entirely of five- and six-note groups in the soprano. The ending of the first group is also determined by a long interonset interval and by parallelism. The second of the repeated E4s marks the end of a group because of the whole-note interonset interval spanning E4 and A4, which is the longest interonset interval thus far in the piece. The transposed melodic shape and harmonic motion in events 9–15 confirm this segmentation. Subsequent groups on this level are recognized primarily through parallelism to the first group, even when these cues are not all present. Although these groups range from eleven to thirteen quarter notes in duration, parallelism emphasizes durations of twelve quarter notes, or six half notes.

Melodic grouping’s clearest contribution to meter is the determination of metrical durations at the bar level and higher. Lerdahl and Jackendoff recognize this effect of grouping on meter through Metrical Preference Rule (MPR) 1: “Where two or more groups or parts of groups can be construed as parallel, they preferably receive parallel metrical structure” (1983, 75). The three- and six-half-note parallelisms produce a strong preference that two metrical levels span those durations. The location of the strongest beat within those metrical durations remains ambiguous, however: the beat could be near the beginning, in the middle, or near the end of the parallel groups. As David Temperley (2003) and William Rothstein (2008, 2011) have shown, the question whether meter aligns with group beginnings, endings, or both is informed by the group’s location within the formal structure of a work as well as the work’s cultural milieu.4 The

4. Temperley argues for a tendency among post-cadential passages to feature end-accented groups, in contradistinction to a broader tendency toward beginning accent. As discussed in chapter 1, pages 21–23, Rothstein distinguishes German and French-Italian metrical
alignment between grouping and meter is thus determined by two factors: the listener’s associations of the passage with other music and phenomenal accents.

Figure 2.2. A two-level grouping analysis of Handel’s sarabande, HWV 437.

A listener familiar with Handel’s other uses of this rhythm may recognize it as a favorite rhythm for the setting of *quinario*, a line of Italian poetry with five syllables and the chief accent (*accento comune*) on the penultimate syllable. Handel uses the rhythm most famously in the aria “Lascia ch’io pianga” from *Rinaldo* (1711), aligning the first and fourth notes of the five-note groups with the downbeats of bars (Figure 2.3). Following this association, a listener would prefer to align meter at the bar level with the start of HWV 437 and to hear subsequent beats at durations of every three and six half notes.6

traditions of the late eighteenth through mid-nineteenth centuries based in part on the influence of poetic structures in Germany, France, and Italy.

5. A line of *quinario* typically ends with the accented fourth syllable and an unaccented fifth syllable. This is the *piano* (plain) ending of a verse. Italian verse endings may also be *tronco* (truncated), when the final unaccented syllable is suppressed, or *sdrucciolo* (sliding), when an extra unaccented syllable is added to the end of a verse. The changes made by *tronco* and *sdrucciolo* endings do not affect classification of the verse’s length.

6. This is effectively an inter-opus application of Lerdahl and Jackendoff’s (1983) “parallelism” rule (MPR 1).
Phenomenal accent typically serves two roles in the establishment of meter: it affirms or contradicts the associations mentioned above, and it establishes lower metrical levels. Lower metrical levels are established simply by pitch attacks themselves, which produce “new-event accents”: the half-note chords immediately establish a half-note level, and the quick rhythms of the bass in events 6–8 and the soprano and alto in event 3 establish a quarter-note level. For higher levels in this piece, the three most significant kinds of phenomenal accent are generated by changes of harmony, changes of pitch in the soprano voice, and interonset intervals (Temperley’s [2001] “length rule”). All are deployed with extreme consistency (figure 2.4).

Nearly every harmony lasts exactly three half notes; the only exceptions are the C-major harmony beginning at event 12 and the F♯-diminished harmony beginning at 16. In comparison to the long durations of the previous four harmonies, the extremely short duration of the F♯-diminished harmony renders it as a passing harmony, one to be interpreted within the time span of the more significant C-major harmony. Since a strong phenomenal accent accrues to the start

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of each new harmony, the duration of three half notes is strongly marked, beginning on the very first note of the excerpt. Pitch repetition (Lerdahl and Jackendoff’s MPR 5e) likewise emphasizes the duration of three half notes, in complete agreement with harmonic rhythm and the inter-opus associations with “Lascia ch’io pianga.” Long soprano pitches begin at the start of each harmony (events 1, 4, 9, 12, etc.) and persist for five or six quarter notes, as do alto, tenor, and bass pitches, though the last are sometimes displaced by an octave. Durational accents also emphasize the duration of three half notes, but they do not align with the phenomenal accents generated by harmonic rhythm and pitch repetition; instead, they are displaced forward in time by one half note, occurring at events 2, 5, 10, 13, etc.

![Figure 2.4. Phenomenal accents in the first line from figure 2.1.](image)

H = change of harmony; P = pitch repetition; D = durational accent.

The consistent articulation of three-half-note durations by grouping, harmonic rhythm, pitch repetition, and durational accents strongly directs the listener’s attention to this duration. In
combination with the emphasized half-note durations, it thus suggests a time signature of $\frac{3}{8}$.

There remains a question of where the downbeat is located, however, since the accents do not align. In the tonal tradition, it is quite rare for harmony to be syncopated across bar lines; that is, harmonies usually do not start on a weak beat and continue through the next stronger beat. If bar lines were placed in accordance with the durational accents, every harmony in the excerpt would be syncopated—an extremely unlikely occurrence. So the bar lines of the $\frac{3}{8}$ time signature are marked by harmonic changes, occurring at events 1, 4, 9, 12, etc (figure 2.5).

![Figure 2.5. Handel, Suite in D Minor, HWV 437, Sarabande, bars 1–16.](image)

8. The recordings of this piece I examined employ a tempo between 66 and 88 beats per minute for the half note, which results in a half note ranging from 909 milliseconds to 682 milliseconds. Throughout this entire range of tempos, the half note is the closest rhythmic value to Richard Parncutt’s (1994) experimentally determined “maximal pulse salience” of approximately 700ms. London’s and Mirka’s metrical theories take the range surrounding Parncutt’s 700ms to be the most likely tactus choice for a listener. For this particular piece, the most likely tactus does correlate to the beat indicated by a $\frac{3}{8}$ time signature; no such correlation can be made across the literature, however. The relation of tactus to bar has much to do with genre and style, and it may also have to do with the listener herself, as Rothstein (2012) has suggested.

9. The anacrusis to the first bar of a phrase is a common exception to this rule, especially when it is the first phrase in a piece.
The determination of the time signature and bar-line placement for Handel’s sarabande should not lead us to believe that we have resolved the issue of meter in this work; indeed, we are still quite far from a satisfactory answer to that question. The establishment of $3 \over 4$ time and the generic conventions of the sarabande raise at least as many questions as they answer. We turn next to the question of history. In the baroque period, especially around the turn of the eighteenth century, triple meter was not a monolithic entity.

**Triple Meter in the Baroque Period**

The foregoing analysis might be criticized on the grounds of ahistoricism, that it fails to consider baroque-era theories of meter. Roger Grant (2010) has recently indicted the broader field of metrical theory on just that account.\(^1\) He takes first steps to remedy that deficiency by connecting the history of meter from 1611 to 1853 to the history of conceptions of time.\(^1\) For our purposes, Grant’s most significant contribution is a revival of the theory of unequal meter.

For much of the baroque period, triple meter was construed not as a meter composed of three equal parts but as a meter composed of two *unequal* parts.\(^1\) This bipartite division derives from the two motions used in beating the *tactus*: a falling motion of the hand (*thesis*) followed by a rising motion (*arsis*). Both duple and triple meters were beat with these two motions; in duple meters the fall and rise were of equal length, but in triple meters the fall was twice as long as the rise. This conception seems to have been nearly ubiquitous throughout most of the seventeenth

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10. *Beating Time and Measuring Music in the Early Modern Era* (2014) is a reworking of Grant’s dissertation (2010), expanding certain facets of the latter and reducing or eliminating others. The broad indictment of metrical theory is absent from Grant 2014.

11. The temporal window of Grant 2014 shifts to the years 1500–1830.

century. Étienne Loulié (1696) and Wolfgang Caspar Printz (1676/1677/1696) were the first to write of triple meter as consisting of three equal beats; even after 1696, however, the theory of unequal meter was still held by many.\(^{13}\) To my knowledge, Johann Matheson’s *Der Vollkommene Capellmeister* (1739) is the last treatise to adopt unequal meter as the model for all triple meters, while Joseph de Lacassagne’s *Traité générale des éléments du chant* (1766) is the last treatise to recognize both unequal and equal triple meters (98–101).

Grant makes a strong case for the deep entrenchment of twoness in all meters, equal and unequal, in sixteenth- and seventeenth-century thought, connecting the issue to the derivation of triple-meter after-dances from duple-meter fore-dances (2014, 71–72). The simplest way to derive such an after-dance was simply to double the length of the first beat from the duple meter, doubling the notated durations of all notes within that beat as well. This method could suffice for improvised after-dances, though more nuanced derivations were certainly used when composers wrote out after-dances.

Beyond the appeal of authenticity, Grant demonstrates that unequal meter houses unique possibilities for rhythmic dissonance. Under a modern conception of triple meter as three equal beats, with beats 2 and 3 equally weak, syncopation can occur from a weak part of a beat to a stronger part (rare in baroque dance music), from an off-beat to a beat, and from a weak beat of the bar (beat 2 or 3) to the downbeat (figure 2.6).\(^{14}\) Under the unequal conception of triple meter,

\(^{13}\) Only volume 3 of Printz’s *Phrynis Mitilinaeus* explicitly discusses division into three equal beats. Although Printz (1690) claims that it was ready for publication in 1679, volume 3 was not published until 1696 (222).

\(^{14}\) In this study, I retain a strict definition of syncopation as the holding of a note or harmony through a stronger metrical position. This definition excludes such broader conceptions of syncopation as David Huron’s (2006) “dynamic” and “agogic” syncopations (295–97), which involve unexpected dynamic and durational accents occurring in relatively weak metrical positions but not the holding of notes or harmonies from weak to strong metrical positions.
metrical topology changes significantly. While the principles of syncopation remain the same, the first beat now encompasses the first two pulses of the bar. As a result, the continuation of a note or harmony over the third pulse from the second pulse constitutes a syncopation; for instance, Marin Mersenne’s (1636–37, 376) and Johann Mattheson’s (1739, 160–70) iambic foot, which occurs in ¾ time as the rhythm quarter-note-half-note (beginning on the downbeat), is a syncopation in unequal meter. The use of an iambic rhythm in equal triple meter, as in figure 2.7, is still a marked event and possibly rhythmically dissonant, but it is a more extreme dissonance, a true syncopation, in unequal meter.

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Although there are several good reasons to recognize modest hypermeters of at least two bars in dance music of the baroque, for the moment I limit discussion to the notated bar and below. For this reason, I do not illustrate syncopation from a weak downbeat over a stronger downbeat.

15. I use the term pulse to describe each of the equal durations that exist within a measure on any metrical level of an unequal meter. In baroque (long-short) unequal meter, there are three pulses to the bar, though only the first and third are beats of the tactus. I use the term beat to indicate the metrical division of a measure on any level; beat need not refer to the level of the tactus, nor to the metrical level(s) traced in a conductor’s motions.

16. Mersenne and Mattheson both require that rhythmic feet start on a downbeat; they occur within a tactus. This presumption and its larger implications became problematic as the seventeenth century gave way to the eighteenth. In particular, the writings of Wolfgang Caspar Printz (1676/1677/1696), Étienne Loulié (1696), and Michel de Saint-Lambert (1702) emphasize the sovereignty of beats rather than the tactus. I use Mersenne’s and Mattheson’s tactus-based terms for the moment because they are more familiar and simpler than Printz’s.

17. Rhythmic dissonances are events that contradict the meter of a passage, including cross-accents and syncopations.
Figure 2.6. Syncopations under an equal conception of triple meter.\footnote{Figures 2.6 and 2.7 should not be interpreted as claims that the excerpted pieces are best understood through equal or unequal triple meter; they are simply illustrations of syncopations under the two conceptions.}

A. Syncopation from a weaker part to a stronger part of the beat.
J. S. Bach, English Suite No. 2 in A Minor, Sarabande (Bach’s written embellishments), bars 6–8

B. Syncopation from an off-beat to the next beat.
Bach, French Suite No. 3 in B Minor, Sarabande, bars 1–4

C. Syncopation from a weak beat to the downbeat.
Bach, French Suite No. 2 in C Minor, Sarabande, bars 1–3
Figure 2.7. A syncopation unique to the unequal conception of triple meter.
(Bach, French Suite No. 1 in D Minor, Menuet II, bars 1–2)

Grant’s project is enlightening and certainly overdue, but I would offer two notes of caution. First, there are important historical contingencies to the theory of unequal meter; second, it should not be assumed that the music theory of any era offers a complete account of its music, or even a complete account of a single musical parameter. Regarding the first point, Grant overlooks some important sources relevant to his analysis of the hemiola pattern in Handel’s Oboe Concerto in B♭ Major, HWV 301, IV (88–90). The relevant passage is shown in Figure 2.8. This concerto is thought to have been composed between 1700 and 1710, though it was not published until 1740.19 Grant’s analysis extends his earlier discussion of unequal meter to note how the first bar of a typical hemiola arises naturally from the beat durations of unequal meter (see, e.g., bar 14 of figure 2.5) and how the second bar of a typical cadential hemiola reverses the usual durations of long-short, as in figure 2.7. As mentioned above, though, in the 1690s a revolutionary conception of triple meter as three equal beats developed, a conception that was apparently shared by a few French pedagogues, including Loulié (1696) and Michel de Saint-Lambert (1702), as well as the German Printz (1676/1677/1696). Equal and unequal conceptions

19. The attribution of the concerto to Handel has recently come under scrutiny (Humphreys 2010, Burrows 2011), though Handel’s influence on the piece remains clear, even if he is not the composer.
of triple meter coexisted afterward for at least half a century, so triple-meter music from this period cannot automatically be assigned to one category or the other. The analysis of triple meter in German music of this period is especially problematic: on the one hand, the conservative Mattheson, a friend of Handel’s, continued to argue for unequal meter through 1739; on the other hand, French dance instruction, widespread throughout German cities and courts after the end of the Thirty Years’ War in 1648 (Little and Jenne 2001, 9), heavily favored the equal approach by the turn of the eighteenth century. Therefore, in the present state of knowledge, the analyst of any triple-meter work by Handel ought to justify the adoption of either equal or unequal triple meter.

Figure 2.8. Handel(?), Oboe Concerto in B, Major, HWV 301, IV, bars 33–40.

Handel’s D-minor sarabande, HWV 437, also exposes an important problem in the theory of unequal meter. The rhythm of figure 2.7 is unequivocally a syncopation from the unequal-meter perspective, but a modified version of this rhythm is present in nearly every bar of

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20. Although the two notoriously dueled in 1704, the incident did not weaken their friendship in the long term.
Handel’s sarabande. Handel always marks a rest at the beginning of the third pulse, preventing a literal syncopation, but the formulation is still rhythmically dissonant from the perspective of unequal meter, since the emphasis placed on the second pulse is followed by nothing at all on the third pulse. As mentioned before, Handel wrote several pieces that consistently follow this rhythm, including “Lascia ch’io pianga” from act II of Rinaldo (1711), as well as an instrumental sarabande from the first act of his opera Almira (1705), the aria “Lascia la spina” from act II of the oratorio Il trionfo del Tempo e della Verità (1707), the sarabande from the G-minor keyboard suite, HWV 432 (published 1720, probably written between 1700 and 1710), and the chaconne in C major, HWV 484 (ca. 1700–1705). In the two arias and the keyboard sarabande, the rest on the third pulse is sometimes omitted, replaced by an extended second note on the second pulse (as in figure 2.7); such cases constitute clear syncopations from the standpoint of unequal meter.

Does this mean that nearly every bar of the sarabande HWV 437 is rhythmically dissonant, including the cadence? Under the theory of unequal meter, bars 1–13 and 15–16 are dissonant, and only bar 14 is consonant. Yet surely the rhythm of bar 14 generates the most intense rhythmic dissonances in the passage: upon encountering no emphasis on the second pulse, my metrical orientation is thrown off-kilter. Moreover, the rhythmic content of bar 16 feels unequivocally consonant to me, partially because of the hemiola’s resolution, but also because of the return to the rhythms of bars 1–13. The theory of unequal meter produces an analysis that contradicts my hearing in every bar.
Nevertheless, Handel’s sarabande and unequal meter can be reunited. Instead of seeking concessions from the former, we should instead interrogate the latter. Must unequal meter be long-short, or could it sometimes be short-long? 21

One might justify the necessity of the long-short constitution through an appeal to nature. This particular arrangement could be interpreted as more “natural” because it aligns the durational accent of the long beat with the beginning of the tactus. Such was the reasoning of the baroque theory of quantitas intrinseca, which sought to explain the perceived difference in length (“intrinsic length”) between two notes of equal notated rhythmic value (“extrinsic length”). Among two notes, the one that falls on a stronger metrical position was perceived to be intrinsically longer. The theory of quantitas intrinseca was especially significant for Wolfgang Caspar Printz (1676/1677/1696), whose classification of common rhythmic patterns (rhythmopoeia) aligned their prosody with corroborating metrical positions. Printz’s iamb, for instance, is a rhythmic foot consisting of either two notes of equal duration (vulgaris) or a short and a long note (proportionatus). In either case, Printz places the second note in a stronger metrical position than the first because the poetic iamb consists of a short and a long syllable, in that order. The strong metrical position makes the latter note intrinsically longer than the former, whether or not it has an extrinsically longer (notated) duration. Thus, it might be said that long-short unequal meter is more natural than short-long because it aligns the intrinsic and extrinsic lengths of beats, whereas short-long unequal meter places them in opposition.

21. The recognition of a short-long unequal triple meter would not invalidate Grant’s analyses of syncopation. In the context of rhythmically consistent music, a metrical beat hierarchy is something that is established, not something that switches capriciously to accommodate any and all isolated rhythms.
In this case, as in many others, the argument about naturalness comes down to an argument for simplicity; Printz was aware, however, of accentually complex situations, as evinced by his *contrarius* rhythmic foot (he also called it the *enantius*), which could be either short-long or short-long-short, as shown in figure 2.9. Unlike all of his other rhythmic feet, Printz describes the scansion of *contrarius* by its *extrinsic*, not intrinsic length: in spite of its prosodic status as “short,” the first note is always placed in the strongest metrical position.\(^22\) It is striking that the *contrarius* almost perfectly mirrors the rhythms of Handel’s sarabande.\(^23\) The apparent self-contradiction that Printz makes in scanning the pattern as short-long(-short) points to a problematic bluntness in his labeling system caused by the use of only two values.\(^24\) It is this same impoverished binariness in the realm of phenomenal accent, accented vs. unaccented, that this study seeks to rectify by substituting the concept of weight—an analog, rather than digital, construal of phenomenal accent.\(^25\) Printz’s scansion emphasizes the novelty of the *contrarius* rhythmic foot, the fact that its second note feels long (or heavy) even though it does not belong on the downbeat; he does not emphasize that the first note feels long (or heavy) because that

\(^22\) Printz’s spondee, which consists of two longs, also does not reflect the distinction of long and short metrical positions in *quantitas intrinseca*: its two equal durations fall on beats 1 and 2 of a duple bar. Printz does not explicitly address how it is distinguished from the trochee, but his examples of the spondee all involve long durations, while the trochees usually involve shorter durations.

\(^23\) For this reason, I will hereafter refer to this rhythmic pattern in the Handel as a *contrarius* foot.

\(^24\) It should be noted that Printz emphasizes, rather than conceals, this contradiction through the name *contrarius*.

\(^25\) Detailed examination of the nature and construction of weight will be saved for chapters 3 and 4. In the remainder of this chapter, the concept of weight must be approximated as an intuitive measure of the degree of phenomenal accentuation at a musical location. For now, it must suffice to note that weight and metrical accent are two largely different phenomena; the heavier of two beats is not necessarily the stronger. In this way, my usage differs from that of Hugo Riemann and John Paul Ito (2004, 2013).
should be assumed. Its strong metrical placement guarantees a certain intrinsic length (or heaviness). Printz confirms this assumption with his verbal explanation of the *contrarius*, which consists of two longs, the first of which is long intrinsically, the second extrinsically.²⁶ The principle of *quantitas intrinseca* is still in effect; it is simply countered by a heavy “contrary” emphasis on the second note.

![Figure 2.9. Printz’s (1676/1677/1696) contrarius rhythmic foot.](image)

Although Printz only allows the *contrarius* in triple meter, the name *contrarius* does not imply syncopation against the long-short unequal division of a triple measure. Printz shows several examples of syncopation in duple and triple meters, and he calls these rhythmic feet *syncopaticus*, not *contrarius* (1696, vol. 3, 106).

The experiential evidence in support of a short-long unequal triple meter in Handel’s sarabande is straightforward. The second and third pulses receive radically different treatment. The second pulse is given substantial weight and the third is given little or no weight in places of repose—the ends of phrases and subphrases. Instability arises in bar 14 when the third pulse is given more weight than expected and the second pulse is underplayed. Moreover, a feeling of resolution arises in bar 16 when the second pulse regains its accustomed weight and the third loses weight.²⁷

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²⁶. “Die Contrare, wenn in einer Proportion, unter denen Noten / so aus der division per numerum ternarium entstehen / die erste Quantitate Instrinseca, die andere Extrinseca lang” (1676/1696, vol. 1, 21).

²⁷. This cadential hemiola will be discussed in more detail below. The effects of instability in bars 14–15 and stability in bar 16 do not arise entirely from the hemiola’s inception and resolution.
This experiential evidence is further buttressed by historical evidence. The rise of an equal conception of triple meter was accompanied by the need for new methods of beating time. While Saint-Lambert (1702) introduces the triangular pattern of down-right-up still used today, Loulié (1696) and other theorists cling to more traditional down-up patterns. Loulié’s patterns largely defer to the spirit of long-short unequal meter, even if he counts the measure in three equal beats. Though he also counts triple meter in three equal beats, Henri Bonaventure Dupont (1718) advocates conducting it with a downward motion on beat 1 and a single upward motion for beats 2 and 3 (Houle 1987, 38). This is not the same as the modern way of conducting triple meter in a very fast tempo, where only the downbeat is articulated by the conductor. Instead of a rise that begins immediately after the start of beat 1, Dupont’s rising motion begins on beat 2; beats 1 and 2 are thus marked by a change of direction in the conducting pattern. Dupont’s pattern would work quite well for Handel’s sarabande, HWV 437, highlighting the changes of harmony and repeated notes on the first pulse and the durational accents on the second.

Figure 2.10. Lully, *Trios pour le coucher du Roi* (1660s), Chaconne in B Major, bars 1–9.

Though the pattern for conducting a short-long unequal meter first appeared within a treatise that adopts an equal perspective, the rhythm of our sarabande is not inherently a product of equal triple meter. While many sarabandes throughout the baroque engage the *contrarius* foot
consistently employed by Handel in this piece, the pattern has a longer history. The *contrarius* is a consistent occurrence in a chaconne from Lully’s *Trios pour le coucher du Roi*, LWV 35 (figure 2.10); in “Su, su, su pastorelli vezzosi” from Monteverdi’s Eighth Book of Madrigals (figure 2.11); and in the sarabande from, of all people, Johann Mattheson’s Suite No. 10 in E Minor (1714), where it appears sometimes with extended durations on the second pulse and sometimes with rests on the third pulse (figure 2.12)—Mattheson’s flexibility suggests a degree of equivalence between the two rhythms. These examples highlight the continuity of a tradition dating back at least to the 1630s, sixty years before the theoretical advent of equal triple meter.

![Figure 2.11. Monteverdi, Eighth Book of Madrigals (1638), “Su, su, su pastorelli vezzosi,” bars 1–10.](image-url)
Long-short unequal meter is the default approach a baroque listener before the 1690s would have adopted for a triple-meter piece; even though short-long unequal meter is sometimes found in sarabandes, chaconnes, passacaglias, and even some minuets—as well as larger works that adopt their rhythms—it is the exception, not the rule. It may thus appear that short-long unequal meter is fragile and inflexible, but in at least one important way, it is more accommodating than its long-short counterpart. Figures 2.13A and B show the two rhythms that characterize the long-short and short-long unequal meters, respectively. Whereas the rhythm in figure 2.13B is a syncopation in long-short unequal meter, the rhythm in figure 2.13A is not inherently dissonant in short-long unequal meter. Instead, the latter acts, in effect, as a dotted rhythm, much like a dotted quarter followed by an eighth note in a ¾ bar, where the weaker
second beat falls similarly within the longer note value. The rhythm of 2.13B in long-short unequal meter is akin to the “Scotch snap” in figure 2.6A.

![Figure 2.13. Characteristic rhythms of the two unequal triple meters.](image)

The foregoing discussion should not be understood to posit a “sarabande meter” applicable to the entire genre. Sarabandes are rhythmically diverse. Both unequal triple meters have their place; while short-long triple meter is instantiated in Handel’s D-minor sarabande, there are also clear examples of long-short triple meter, both before and after 1696. Figure 2.14 shows the first reprise of the sarabande from Élisabeth Jacquet de la Guerre’s Suite in D Minor, published in her first volume of *Pièces de clavecin* (1687). In bars 1–5 and bar 8, the two beats of the bar are clearly articulated by changes of harmony. Bar 6 could likewise be interpreted to feature a weak change of harmony on the third quarter-note pulse; however, the placement of ornaments on the first and third quarter-note pulses of the bar is sufficient to articulate both beats.²⁸

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²⁸ There are two syncopations in the passage, occurring in the tenor on the second pulse of bars 1 and 7. The latter is accompanied by a cross accent arising from the mordent on the soprano E4.
Occasionally, rhythms indicative of both unequal meters are emphasized in a single passage. Jacques Chambonnières’s F-major sarabande from book I of *Les pièces de clavecin* (1670) is shown below in figure 2.15. The durations of the soprano voice, the ornamentation, and the tenor voice all seem to indicate short-long triple meter in bars 1–3 and 5; the durations of bars 6–8 strongly articulate the trochaic feet of long-short triple meter. Bar 4 does not strongly commit to either foot, *contrarius* or *trochee* (in Printz’s terminology). Three possible metrical interpretations of the first eight bars emerge: (1) the meter changes from short-long to long-short unequal meter; (2) the passage is in long-short unequal meter and progresses from dissonance to consonance; or (3) the passage is in short-long unequal meter and progresses from consonance to dissonance. While I would not rule out the possibility of a rhythmically dissonant cadence as a theoretical possibility, both perfect authentic cadences in the piece conclude phrases that

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29. The ambivalence of bar 4, which is common among cadential bars, suggests an instantiation of Justin London’s (2004) concept of metrical malleability for non-isochronous meters. Metrical malleability is the condition in which a musical passage may fit comfortably into multiple meters (79–80).
unambiguously move from *contrarius* to trochee. This progression suggests motion toward consonance, and the bass motion in bar 1 might also imply long-short unequal meter.

Furthermore, the purported changes from short-long to long-short unequal meter (bars 6, 11, and 18) would occur in the middle of phrases rather than between them, an unconvincing interpretation because it is based on a lack of consistency within a formal unit rather than a larger consistency or coherence. The changes from trochee to *contrarius*, on the other hand, fall between phrases (bars 9, 13, and 17). Thus the *contrarius* feet of bars 1–3 and 5, which at first seem consonant, are revealed to articulate a metrical dissonance, yielding to the consonant trochees of bars 6–8.

![Figure 2.15. Chambonnières, *Les pièces de clavécin* (1670), Book I, Suite in F Major, Sarabande.](image-url)
Like other triple-meter works in the baroque, many sarabandes engage a beat hierarchy based on two beats of unequal length. Many of these pieces feature syncopations that would go unrecognized when analyzed from the modern-day perspective of equal triple meter. While the study of historical modes of listening obviously has much to offer music theory in the present day, we must recognize the historical contingencies of all theories, and we must not assume that any theory offers a complete account of the music of its era.

I noted earlier that the decision to analyze baroque triple-meter works after 1696 from the perspective of equal or unequal meter should be carefully considered. At the time I referred to the difference between equal and unequal (long-short) triple meters, which lies primarily in how each treats the *contrarius* foot: in equal triple meter, it is one of many rhythmic possibilities, though not one of the most commonly used; in long-short unequal triple meter, it is a genuine syncopation against beat 2. In terms of their treatment of the *contrarius* foot in Handel’s sarabande, the difference between equal and short-long unequal triple meter is much subtler. The following section will consider this question and, in the process, will develop a new approach to meter in pieces like Handel’s sarabande.

**Dual-Aspect Meter**

Sarabandes are often described as (equal) triple-meter dances that emphasize beat 2, a description that highlights the use of the *contrarius* foot in sarabandes. As was shown in the previous section, this is a misleading description when applied to the genre as a whole, but it is valid for many individual pieces, including Handel’s D-minor sarabande. Among contemporary musicians, this description is usually understood to invoke both the metrical (“triple-meter”) and rhythmic (emphasis on beat 2) domains; in this piece, however, I argue that the emphasis on the
second beat (or pulse) is an integral component of its meter. As a listener, my metrical orientation results from both the beat hierarchy and the consistent profile of very heavy first pulse, moderately heavy second pulse, and very light third pulse. This recurrent profile is a second metrical aspect, supplementing the beat hierarchy at the level of the bar with a series of landmarks.  

For the twenty-first-century reader, such an accentual profile likely evokes an association with metrical dissonance. Indeed, Harald Krebs (1999) has posited metrical dissonance as a feature common to many sarabandes (71). In Krebs’s terminology, the profile results from two interpretive layers, each a dotted whole note in duration, displaced from each other by one half note. One interpretive layer arises chiefly from harmonic rhythm and pitch repetition, the other chiefly from durational accents. Pitch repetition and changes of harmony align with the notated downbeat and are thus part of the work’s fundamental metrical consonance; they articulate a “metrical layer.” The durational accents are consistently displaced forward in time from the metrical layer by one half note, so they articulate a dissonant, “antimetrical” layer. The passage thus instantiates a D3+1 displacement dissonance.

30. The notion of a weight profile has significant precedent in music scholarship. Joseph Kraus (2009) discusses the notion of a “basic rhythmic shape” in Mozart’s String Quintet in E, Major, K. 614, I; while his shapes are recurrent motives, they are not necessarily periodic. Charles Rosen (1998), following Edward T. Cone (1968), essentializes baroque rhythms as tending toward nearly even weight among all beats while classical rhythms tend toward a distinctive weighting for each beat of the bar (90). Grosvenor Cooper and Leonard Meyer (1960) note a tendency toward periodic replication of rhythmic patterns: “once a rhythm has been established, it tends, if possible, to be continued in the mind of the listener—it tends, that is, to organize later patterns in its own image” (13). Finally, much like the present chapter, Richard Blom-Smith (1994) proposes a kind of dual-aspect meter consisting of a beat hierarchy and a “phenomenal component” in which the weight of phenomenal accents is projected forward into the next measure on that metrical level. Blom-Smith’s theory will be discussed at length in chapter 5.

31. This shorthand follows Krebs’s (1999) conventions: “D” stands for displacement dissonance, “3” is the cardinality of both the consonant and the dissonant layer (1 is defined as a
There is a fundamental problem with the attribution of displacement dissonance to this excerpt, one that I have already mentioned in the discussion of long-short unequal meter: the passage does not feel dissonant. The metaphor of metrical dissonance fundamentally concerns the desire for a perceived conflict between two meters to resolve to consonance. Metrical dissonance is thus a temporary, conflicted state dependent on its implicit resolution for meaning. Except for bars 14–15, which employ a cadential hemiola, I perceive neither rhythmic nor metrical conflict throughout the sixteen bars of Handel’s sarabande (figure 2.16A); more importantly, I feel no inclination toward a “resolution” of the nonaligned phenomenal accents. Instead, the accents of this sarabande coalesce into a profile that articulates one particular way of moving through time, delineating a certain gestural quality of motion for the piece, with strong implications for the ways it might be choreographed (figure 2.16B). As I listen to the sarabande, I expect this particular weight profile—a very heavy first pulse, a moderately heavy second pulse, and a very light third pulse—to continue in the same way for the duration of the piece.

A. Metrical layer
   Antimetrical layer

B. Beat hierarchy (bar level)  
   Weight profile

Figure 2.16. Two interpretations of the nonaligned accents in Handel’s sarabande, HWV 437: (A) displacement dissonance D3+1; (B) dual entrainment.

half-note duration here), and “+1” indicates that the dissonant layer is displaced one half-note duration forward in time.
The ultimate problem with the assertion of metrical dissonance in this case is methodological. The facile application of metrical dissonance to Handel’s sarabande makes the false assumption that structure precedes expression, an issue familiar to scholars of the relationship between analysis and performance.\textsuperscript{32} The methodology used in the interpretation of metrical dissonance above suggests that analysis functions in a prescriptive role for musical interpretation: the analysis of musical structure serves as the means for the performer to learn how the piece should be played and the means for the listener to learn how the piece should be heard.\textsuperscript{33} This perspective, which received its most direct and thorough expression in the work of Wallace Berry (1971, 1988, 1989), has been superseded by a dialogic perspective between the two fields. The latter understands analysis and interpretation as mutually informing perspectives and is exemplified in the work of Janet Schmalfeldt (1985), John Rink (1990, 2003), and Jonathan Dunsby (1995), among others.

I do not mean that Krebs’s analyses are merely prescriptive. His sensitivity to a wide variety of expressive effects and issues informs many of his metrical analyses, as well as his Schenkerian analyses.\textsuperscript{34} The problem of analytical prescription relates to the larger context of Krebs’s metrical work. The theory of metrical dissonance aims first and foremost to reestablish the connection between metrical analysis and expression. Krebs argues that Schumann’s off-kilter accents may portray a multiplicity of characters (1999, 193), “a maniacal dialogue” (204), rebellion against the “tyranny and cultural demagoguery” of life in Vienna (218), comedic

\textsuperscript{32} A concise summary and excellent bibliography of theoretical work on the relationship between analysis and performance between 1962 and 2005 can be found in Latham 2005.

\textsuperscript{33} “Interpretation” should be understood here to involve a wide variety of musical acts made by performer, listener, and composer pertaining to how the music “goes.”

\textsuperscript{34} See, for example, his discussion of tonal pairing in Schubert (Krebs 1996, 17–33).
effects (6), “breathless excitement” (6), and even “irreconcilable conflicts of the soul” (7).
Clearly, he understands metrical dissonance as the means to a variety of expressive ends. The common ground, the place to start building the conceptual bridge between meter and expression, seems to be at the shared structural manifestation of nonaligned accents, rather than the various marked expressive effects they may yield.35 The study of metrical dissonance then begins as a search for nonaligned accents. As a result, he defines Maury Yeston’s (1976) conception of the interpretive layer as the basic component of meter.36

It is a mistake, however, to lump together every manifestation of nonaligned accents under the rubric of “dissonance.” For the theory of metrical dissonance, the deviation of a marked state of accentual nonalignment from an unmarked state of alignment reflects the deviation of some unstable, dependent condition from a stable, independent condition, to which the former desires to resolve. In Handel’s sarabande, the concept of a metrical resolution for the durational accents is nonsensical; there is no resolution to be imagined and no dissonant deviation to be discussed. Thus nonalignment, even consistently periodic nonalignment, need not engender any sense of metrical or rhythmic dissonance. What is needed for the theory of metrical dissonance, then, is a deeper consideration of musical context and expression. The label of displacement dissonance should only be applied to musical passages in which one yearns for a release from the condition of nonalignment.37

35. For more on binary oppositions and markedness in music, see Hatten 1994.

36. Yeston (1976) uses the term “rhythmic stratum” instead of Krebs’s “interpretive layer,” placing the phenomenon of nonaligned accents in the realm of rhythm, not meter.

37. Many of Krebs’s expressive ends for metrical dissonance, listed in the paragraph above, do not strictly follow the metaphor of dissonance in the sense that they desire resolution. In particular, comedic effects and the presence of multiple characters derive their meaning from the markedness of their nonaligned accents and the gestures that result. Markedness is a
By separating nonalignment from metrical dissonance, we have created a new category of metrical consonance. *Dual entrainment* is the condition of entrainment to both a measure’s duration and a distinct weight profile throughout the measure on a particular metrical level, most commonly the level of the bar. Dual entrainment is one manifestation of the broader phenomenon of *dual-aspect meter*, which encompasses all metrical experiences that include a beat hierarchy and weight profile. Frequently, dual entrainment involves a profile that is marked in comparison to the implicit weight distributions of traditional, unmarked metrical schemas. This sarabande’s weight profile is marked because of the heaviness of the second pulse, especially in comparison to the lightness of the third pulse. More traditional, unmarked weight profiles in triple meter consist of a very heavy first pulse, a relatively light second pulse, and a moderate third pulse, or a heavy first pulse and equally light second and third pulses. These rough profiles are represented in figure 2.16. The entrainment to any of these profiles constitutes dual entrainment, whether the profile is marked or unmarked.

![Figure 2.17. Three approximate weight profiles in a measure of triple meter.](image)

Weight profiles do not involve absolute levels of weight. Instead, expectations develop for relative amounts of weight to fall at particular locations. Tolerance for some flux in weight is both a characteristic of perception and a feature of this music. In figure 2.5, notice that the bass voice does not articulate the second pulse in bars 2, 4, 10, and 12, and that the third pulse is necessary component of dissonance, but it is insufficient to define the latter, so I would argue that these representations are not inherently dissonant either.

38. Other categories of dual-aspect meter will be discussed in chapter 5.
marked by note attacks only in bars 2, 4, 5, 8, 10, 12, and 13. More subtly, the descending octave in the bass of bars 1 and 8 places slightly more weight on the second pulse than the repeated notes of bars 3 and 11 and the ascending octave of bars 5 and 7. These differences help to define the degree of consistency that the listener is to expect: because bars 2 and 4 do not perfectly recreate the weight profiles of bars 1 and 3, a listener comes to expect a degree of flexibility in the weight profile. Thus, while bars 1–12 are not perfectly consistent, I would argue that they are similar enough to fulfill the expectations of the metrical weight profile established in the first few bars.

Dual-aspect meter differs fundamentally from most previous metrical theories, which have taken meter principally to be an issue of boundaries (Yeston 1976; Schachter 1999; Lerdahl and Jackendoff 1983; Benjamin 1984; Lester 1986; Rothstein 1989; Krebs 1999; Temperley 2001; Mirka 2009). For these theories, a measure on each metrical level consists of a starting point and undifferentiated space until the start of the next measure. The profiles of dual-aspect meter, on the other hand, show that meter may involve measures that are internally differentiated. To be sure, some previous theories have recognized a degree of internal differentiation to measures. As discussed in chapter 1, Hauptmann (1853), Zuckerkandl (1956), and London (2004) argue for the existence of metrical shapes. For Zuckerkandl, the shape of a measure largely amounts to a sine wave that crests at the beat and recedes to a trough in the

39. Because they do involve a metrical dissonance, I exclude bars 14–15 from the present discussion.

40. For these theories, meter as a Gestalt differentiates measures via the ways that they are articulated by smaller measures (e.g. Lerdahl and Jackendoff 1983); nevertheless, it is only the presence of a boundary on a smaller metrical level that articulates a measure.

41. None of the theories to be discussed in this paragraph recognize unequal triple meter, so I will refer to three beats in triple meter for the remainder of the paragraph, rather than three pulses.
middle, so his shapes ultimately reify the traditional notion of meter as a concern for the location of boundaries. Because London recognizes meter as a listener’s psychological Gestalt consisting of all active metrical levels, his measures are affected by the number and (non-syntactic) durations of lower metrical levels present. Nevertheless, his shapes are effectively composites of Zuckerkandl’s waves; they too reify meter as shaped only by the location of boundaries.42

Hauptmann is perhaps the only theorist to recognize true internal differentiation to a measure, though he addresses only the bar level. His various formations of duple, twice-duple, triple, and quadruple meter are shown in Appendix 2. In triple meter, Hauptmann recognizes the possibilities of a heavily accented beat 1 and unaccented beats 2 and 3; a heavily accented beat 1, lightly accented beat 2, and unaccented beat 3; and a heavily accented beat 1, unaccented beat 2, and lightly accented beat 3. These three formations strongly resemble the contours of the three weight profiles shown above in figure 2.17. Because Hauptmann’s theory is based on the summation of unit accents, it allows for a simple, discrete ranking of beats by degree of accent, with the stipulation that the most accented beat will be heard as the downbeat if the pattern is repeated.43 Dual-aspect meter allows for greater flexibility, granting an analog spectrum of

42. Zuckerkandl and London also argue for meter as a continuous, not discrete, phenomenon. While I do not discuss metrical continuity in this dissertation, I do not dispute their core premise. Many compositional and performance traditions distinguish beats through consistent, minute durational differences. For example, in the Viennese performing tradition of the waltz, consistent “early” entries of beat 2 and “late” entries of beat 3 not only affect a listener’s metrical expectations of timing, they also result in a heavier beat 2 and lighter beats 1 and 3 than in waltzes performed in strict time. In the Western classical tradition of the seventeenth through twentieth centuries, meter may be discussed as a discrete phenomenon by distinguishing syntactic from non-syntactic rhythms (durations as represented in notation and in actual sound), as long as one acknowledges that the exclusive reference to syntactic rhythms is a simplification.

43. Hauptmann’s formulations of triple meter also include a weakly accented beat 1, heavily accented beat 2, and unaccented beat 3. Because of his concession that listeners will hear the strongest accent as beat 1 upon repetition, though, I do not consider this a genuine meter.
weight and positing that the heaviest location in a bar need not be the downbeat. Contrary to some traditions of metrical theory (e.g., Riemann’s), *weight is not always a decisive factor in the establishment of the beat hierarchy.*

Is dual entrainment truly different from displacement dissonance? From an interpretive standpoint, there is a world of difference between viewing a musical passage as conflicted, yearning for resolution, and viewing that same passage as untroubled. The theory opens up other possibilities as well. In metrical-dissonance theory, once an antimetrical layer is established, every periodic cross-accent perpetuates the dissonance, while every missing cross-accent either destabilizes the dissonance or resolves it. By contrast, dual-aspect meter considers the presence, absence, and even the relative weights of phenomenal accents. The perception of weight missing from its expected location is a rhythmic dissonance against the meter, as is the perception of unexpected weight; if a listener comes to expect these dissonances to continue (though desiring a resolution), they may become metrical dissonances.\(^4\) Just like any other metrical consonance, an entrained weight profile may be subjected to rhythmic *and* metrical dissonances.

In my hearing, only the changes in bars 13–15 are significant enough to contradict the weight profile established at the beginning of Handel’s sarabande. In bar 13, for the first time in the piece, the harmony changes within the bar, moving to a C dominant-seventh chord on the second pulse. The harmonic change places extra weight on the second pulse, although some of this weight is countered by the addition of continuous quarter notes in the bass beginning on the first pulse. On the second pulse of bar 13, then, the first rhythmic dissonance occurs. Because it involves greater weight than was expected falling in a particular location, this is a *positive*

\(^4\) The boundary between rhythmic and metrical dissonance thus depends on the listener’s (not necessarily conscious) attitude toward the dissonant material. Metrical attitude will be discussed further in chapter 5, pages 209–20.
rhythmic dissonance. Albeit very subtle, it is significant because of the preparation it provides for the ensuing hemiola, highlighting the whole-note span from the second pulse of bar 13 to the first pulse of bar 14 ever so slightly more than in the prior passage. Shortly thereafter, the second pulse of bar 14 is severely underplayed, filled only by the continuation of the F-major chord from the downbeat, in a location where a substantial amount of weight was expected; this is an intense negative rhythmic dissonance. The third pulses of bars 14 and 15 are likewise positive dissonances, and the first pulse of bar 15 is a negative dissonance. The dissonances of bars 13–15 are isolated in figure 2.18 below. Note that the perception of rhythmic dissonance on the third pulse of bar 14 does not arise from the hemiola itself. The dissonance would exist even if a cadential six-four were placed on the downbeat of bar 15 instead of the second pulse; it arises simply because the third pulse of bar 14 is much heavier than that of bars 1–13.

In addition to some rhythmic dissonances, this sarabande also contains one metrical dissonance. As noted above, bars 14–15 instantiate a cadential hemiola, a brief but intense grouping dissonance that arises from the combination of the negative dissonances on the second pulse of bar 14 and the first pulse of bar 15, and the positive dissonance on the third pulse of bar 14. Interestingly, the second pulse of bar 15 marks a point of coincidence (rhythmic consonance)
between the hemiola and the entrained weight profile, as both patterns suggest that this location should be quite heavy. The relation of rhythmic consonance and dissonance to metrical dissonance under dual-aspect meter can be unexpectedly complicated.

This is not to say that rhythmic consonance is impossible under traditional metrical dissonance. In Krebs’s displacement dissonances, all accents within antimetrical layers are also rhythmic dissonances; grouping dissonances, on the other hand, follow a “cycle” (Krebs 1999, 32, after Yeston 1976, 140, and Horlacher 1992, 174), which is found by multiplying the cardinalities of each layer and dividing by their common factors. For instance, in a G6/4 grouping dissonance, each cycle spans 6 * 4 / 2 or 12 pulses. As a displacement dissonance’s cycle progresses, the dissonant antimetrical layer’s attacks shift in relationship to the consonant metrical layer; at the end of each cycle, one attack aligns between the two layers. This process is shown for a G3/2 dissonance in figure 2.19, where every vertical point of coincidence between the two layers (after the first) may be understood as the end of a cycle. Metrical dissonances may theoretically endure for any number of cycles (stylistic and historical considerations provide tighter or looser constraints), but the points of coincidence recur only at the end of each cycle.

Figure 2.19. Coincidence and noncoincidence of attacks in G3/2 metrical dissonance.

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45. This shorthand follows Krebs’s (1999) conventions. G stands for grouping dissonance, and the two numbers afterward indicate the cardinalities of the conflicting interpretive layers.

46. If a grouping dissonance is combined with an entrained weight profile, the potential for coincidence (rhythmic consonance) is determined by the shape of the profile, in addition to any consideration of cycles. This complicated relationship can be a significant resource for a composer, as it may strengthen or weaken the intensity of the dissonance at various stages throughout the cycle.
Once we recognize that dual entrainment and metrical dissonance are distinct phenomena, one crucial objection must be addressed: are weight profiles truly metrical, or are they better attributed to the domain of rhythm? The fact that the sarabande has been analyzed as metrically dissonant may convince some that we are speaking of meter; however, as discussed in chapter 1, a frequent criticism of metrical-dissonance theory is that it either sometimes (Samarotto 2000, Hatten 2002) or always (London 2004, Temperley 2001, 2009) confuses rhythm for meter.\(^ {47}\) If “metrical dissonance” is not actually metrical, perhaps dual-aspect meter is not either. Indeed, if we restrict our conception of meter to a periodic, nested, hierarchic grid, dual entrainment does not seem to fit the bill, as it concerns the connections between points on the grid. However, the very perception of rhythmic and metrical dissonances in bars 13–15 qua dissonance implies prior entrainment to the periodically recurring weight profile that they challenge.

The idea that these profiles may be entrained or projected is not far removed from Christopher Hasty’s theory of meter as projection.\(^ {48}\) In his discussion of metrical particularity, Hasty explains that projection involves not just the duration of an event but also the entire inner constitution of that event—the smaller durations and metrical decisions within the event (1997,

\(^ {47}\) For Krebs, meter is the union of all interpretive layers in a piece, and interpretive layers are established by the presence of periodically recurring phenomenal accents. Samarotto and Hatten consider this definition of meter to be too inclusive. Missing from the definition are any implications of nested hierarchy (Samarotto 2000, paragraph 3.4) and any embodied consideration of downbeat and upbeat (Hatten 2002, 276): interpretive layers are not necessarily registered by any listener as strong beats and weak beats. London and Temperley argue that a listener may only consciously hear a single meter at one time. London argues that metrical dissonances are therefore rhythmic patterns heard against an entrained meter (2004, 50, 83), while Temperley argues that they are metrical structures under subconscious consideration (2009, 313).

\(^ {48}\) See the discussion in chapter 1, pages 7–12, for a summary of Hasty’s projection theory.
Two of his demonstrations to support this assertion are reproduced in figure 2.20. In figure 2.20A, the perception that the final event begins “too late” is explainable only through an implicit projection of the three durations from the first bar: the fifth note was expected to begin on the second pulse of the bar in order to reproduce these durations. In figure 2.20B, the perception of the final event beginning “too soon” may derive from either, or perhaps both, of two sources. Hasty suggests that it may derive from a projection of the two event durations within the first bar. Here the feeling of “too soon” comes from an expectation for the same half-quarter rhythm as in the first bar. It may instead be felt much like a traditional syncopation, most of which occur “too soon” and hold through their expected starting points. The first example better isolates the issue, but both suggest that projection—and by extension, entrainment—may involve more than just boundaries.49

49. Although entrainment has been defined in opposition to projection, it can be argued that projection is a necessary component of entrainment. The relation between the two will be discussed further in chapter 5, pages 209–20.
Since Hasty’s analyses admit some simplification of rhythms, his theory provides significant support for the theory of dual-aspect meter. In Handel’s sarabande, a simple rhythmic reduction may render the repeated bar-long rhythmic pattern as a half note followed by a whole note. The expectation for the persistence of rhythmic patterns that convincingly reduce to this rhythm attests to the presence of a weight profile.

But dual-aspect meter requires one step beyond Hasty’s argument. Simple rhythmic reductions, like the one made in the previous paragraph, involve distinctions based on the weight of phenomenal accents, but they allow only a binary distinction to be made, rendering all locations as simply heavy or light: either an event survives the reduction (“heavy”), or it does not (“light”). I argue that we may attend to weight with more nuance than this. In Handel’s sarabande, we may interpret the rhythm in simplified form as an alternation of half notes and whole notes, but this analysis greatly distorts the weight profile presented in each bar. More than simply overlooking the individual weights of the first and second pulses (both of which survive the reduction), the reduction to pure durations suggests that the second pulse is heavier than the first, since it is the site of the longer (whole-note) attack in each bar. As noted earlier, though, the downbeat is substantially heavier than the second pulse of the bar because it is the site of a change of harmony and because it supports the first of the two repeated notes in the soprano, alto, and tenor in most bars.

The reduction of meter to pure durations may also overlook important rhythmic dissonances. Figure 2.21 provides a hypothetical recomposition of Handel’s first phrase, altering only the contents of bar 7. The changes in this bar are as follows. On the first pulse, the alto is adjusted to B♭4 and a second alto voice on F4 is added to make a clear B♭-major harmony; the bass B♭2 is changed to a quarter note, and a passing tone A2 is added. On the second pulse, the
soprano D₅ is changed to E₅, and the bass B♭₂ is changed to G₂ in order to start a new, relatively long E⁰ harmony (replacing the simple resolution of the alto’s suspended A₄ on the second pulse) and to introduce a registral accent in the soprano on this beat. On the second half of the third pulse, the soprano is changed from E₅ to D₅ to improve melodic fluency into the C♯₅ on the following downbeat. Because of these changes, the second pulse is now heavier than the downbeat, and it is significantly heavier than expected; it constitutes a positive rhythmic dissonance against the complex consonance. A reduction to pure durations cannot capture the effects of this adjustment, since it reduces each of bars 1–8 to a half-note-whole-note rhythm; bar 7 would be just another iteration of the same rhythm. Hauptmann’s system of ranked beats (or pulses) by accent fares slightly better. It recognizes that bar 7 is different from bars 1–6 and 8 in that the second pulse is stronger than the first, but it cannot adequately describe the change in bar 7: the ranking of beats cannot explain whether this occurs through extra emphasis on the second pulse, reduced emphasis on the first, or a combination of the two. By describing the second pulse as a positive dissonance, dual-aspect meter explains that the contents of the first and third pulses meet the listener’s expectations for weight but that the second pulse is significantly heavier than expected. Ultimately, whether the first or second pulse is heavier matters less than the question of how the weight of each pulse relates to the listener’s expectations.

Figure 2.21. A hypothetical recomposition of Handel’s sarabande, HWV 437, bars 1–8.

50. Coincidentally, Handel uses this alteration of the soprano voice in the sarabande’s second variation.
We return to the question: Can weight profiles be a component of meter? If we understand meter as a periodic recurrence that measures the flow of a piece of music, then yes, weight profiles can become a component of meter. Dual-aspect meter does not efface the equal durations and beat hierarchies that characterize previous metrical theories. It supplements those theories with more detailed information about the qualities of the beats within a measure, giving each beat of the weight profile a stronger role in metrical orientation: each beat becomes a landmark.

Whether one analyzes Handel’s sarabande from the perspective of equal or short-long unequal triple meter, the framework of dual-aspect meter adds something crucial. Neither triple meter registers the dissonance of the second and third pulses of bar 14 without this framework. For equal triple meter, bar 14 shifts from a marked rhythm that accents the second beat (bar 13) to a more normal, less marked rhythm that emphasizes beats 1 and 3. For short-long unequal meter, bar 14 shifts from a rhythm that articulates the two beats of the bar to a kind of dotted rhythm, not far removed from the division of a half note into dotted-quarter and eighth notes. When dual-aspect meter is added, the dissonances are clear. Regardless of any difference in the beat hierarchy, a listener expects the profile of a very heavy first pulse, a moderately heavy second pulse, and a very light third pulse. The experiential difference between equal and short-long unequal triple meter is surprisingly subtle, boiling down to the issue of the dotted rhythm: the anacrustic tendency of quarter notes and eighth notes at the end of a bar of equal triple meter is intensified in short-long unequal meter because these same durations now occupy the latter

51. I describe both perspectives from the moment that the second and third pulses are perceived, before the hemiola is registered at the downbeat of bar 15.
half and quarter, respectively, of the bar’s second beat. From a performance standpoint, short-long unequal meter suggests greater direction toward the downbeat.

Given the subtlety of this difference, the decision whether to adopt equal or short-long unequal triple meter is open to interpretation, not a historical given. For me, Handel’s close relationship to Mattheson, the contrarius’s connection to a compositional history dating back at least to 1638, and the subtly increased passion of the resulting performance—a trait often attributed to the sarabande—tip the scales in favor of short-long unequal meter.

**Choreography, Weight, and Meter**

The relationship between music and French noble dance is complex. Dance is not simply a servant of music, required to imitate its rhythms; nor is it simply a conductor, providing a consistent rhythmic grid from which one may extract the metrical hierarchy. Downbeats of musical bars are almost always preceded by a bend (plié) and marked by a rise (élevé) or the landing from a hop or spring (jeté, demi-jeté, pas assemblé, or sauté), but there are exceptions. Perhaps most famously, in the late-baroque minuet and passepied, the two most basic step-units (pas de menuet à deux mouvements and pas de menuet à trois mouvements) accent the third beat.

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52. I thank Thomas Baird for his helpful comments on an earlier draft of this section.

53. It should be noted that this section can only address the conventions of choreography from approximately 1690 to 1725 in France, as these are the conventions that have been best preserved. They were likely still relevant in Germany and other countries for some time afterward, as the dance fashions of France traveled throughout Europe with some delay. Pierre Rameau (1725a) notes that “there is hardly a court in Europe that does not have a [French] dancing master” (ix).

54. The combination of a bend and a rise is called a mouvement. Many step-units contain a single mouvement, but as we shall see, several contain more.
of each odd-numbered bar instead of the downbeat of the ensuing even-numbered bar.\textsuperscript{55} This counter-rhythm helps to establish a hemiola between the dance’s accents and the music’s barring (figure 2.22).\textsuperscript{56} The counter-rhythms only intensify when the music effects a cadential hemiola, as cadential hemiolas tend to start in even-numbered bars of a phrase: starting in a hypothetical bar 6, the music emphasizes beats 1 and 3 of bar 6 and beat 2 of bar 7, while the dancer emphasizes beat 2 of bar 6 and beats 1 and 3 of bar 7 (figure 2.23). In such passages, music and dance rhythms completely disagree. Thus, neither the accents of the dance choreography nor those of the music can be taken as an absolute indication of the metrical hierarchy. Rather, meter must be continued from simpler passages while both musical and dance rhythms are free to conform to it or to contradict it.

\textsuperscript{55} Step-units (\textit{pas composé}) form the basic group in French noble dance, usually spanning a bar in length. They consist of a group of two to four steps and they are begun by a \textit{mouvement}.

Surviving choreographies of French noble dance are mostly available in Beauchamp-Feuillet notation, developed by Pierre Beauchamp and published first by Raoul-Auger Feuillet in the treatise \textit{Chorégraphie, ou l’art de décrire la danse} (1700), though Rameau (1725b) made some alterations to the notational system in the 1720s. Feuillet’s and all later publications on choreography adopt an exclusively equal conception of triple meter, as do modern explications of these sources (e.g., Hilton 1997). For this reason, I will use the term \textit{beat} instead of \textit{pulse} throughout this section to describe the three equal rhythmic values of triple meter.

\textsuperscript{56} The hemiola is more strongly articulated by the \textit{pas de menuet à deux mouvements} than the \textit{pas de menuet à trois mouvements} because of its treatment of the fifth and sixth beats of the pattern: in the former, the last step occurs on beat 5; in the latter, beat 5 coincides with a bend that prepares a short rise/step on beat 6. Although the latter completes a \textit{mouvement} on beat 6, Hilton (1997) argues that the final step is neither accented nor even rhythmically strong (195).

Because of this emergent hemiola relationship between dance step and music, dancers counted the minuet in six rather than three, beating time like a $\frac{4}{4}$ bar: down on the first beat and up on the fourth. The apparent even-numbered downbeats were considered false downbeats (Loulié 1696, 71).
Dance: \( \bullet \) \( \bullet \) \( \bullet \) \( \bullet \) \( \bullet \) 
Meter: \( \bullet \) \( \bullet \) \( \bullet \) \( \bullet \) 

Figure 2.22. The \textit{pas de menuet à deux mouvements} articulates a hemiola against triple meter.

Dance: \( \bullet \) \( \bullet \) \( \bullet \) \( \bullet \) \( \bullet \) 
Cadential Hemiola: \( \bullet \) \( \bullet \) \( \bullet \) 

Figure 2.23. Because cadential hemiolas typically begin in even-numbered bars, their accents contradict those of the \textit{pas de menuet à deux mouvements}.

Sarabandes differ markedly from the minuet (and passeped) as discussed above. First, they do not share the quirks of the minuet; like most genres of French noble dance, sarabandes use one step-unit per bar, and they clearly articulate the downbeats of each bar. But one may not learn to dance “the sarabande” as one may learn to dance “the minuet”; instead, one learns individual choreographies developed for specific sarabandes. The implications of this difference are far-reaching, resulting in three broad distinctions between the conditions of the sarabande and the minuet: sarabandes use a variety of step-units instead of one repeating step-unit; sarabandes use step-units common to many dances instead of step-units unique to the genre; and sarabandes use rhythmically flexible step-units instead of the rhythmically rigid step-units of the minuet.\(^\text{57}\)

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\(^{57}\) Jennifer Thorp (2003) reminds us that there were many “choreographed minuets,” minuets that made use of a common vocabulary of step-units, and that noble dancers were expected to demonstrate good taste and skill through variation and improvisation as well. Even with these caveats, the predominance of a consistent step-unit in the genre forms an important rhythmic background for the composer (and choreographer) and thus conditions the context of musical composition.
These three points of distinction lead to a conceptually more complex interaction between dance and music in sarabandes than in minuets.

Sarabandes were not danced with a single repeating step-unit, as minuets or passepieds often were. Dances that employ a fixed step-unit forfeit agency on the part of the dancer and choreographer. While the choreography of a consistent step-unit produces rhythms consonant or dissonant at various points with a metrical grid, perhaps in a fairly complex way, the consistency of that choreography leaves the power to be rhythmically consonant or dissonant largely in the hands of the composer. The accentual characteristics of the pas de menuet à deux mouvements will inevitably create rhythmic dissonances with the music, unless the music is composed with continuous hemiolas throughout, but because of its consistency the choreography of the minuet becomes a foil for the rhythm of the musical surface: the unchanging step-unit may be presupposed by the composer as a background to interact with. Sarabande choreography is very flexible because French baroque sarabandes were always choreographed for the rhythms of the individual piece. Thus the composer does not have a fixed grid to interact with. She is only constrained by her prior exposure to sarabande music and choreography, which would have led her to internalize certain generic guidelines of rhythm and expression. For sarabandes, music is the foil for choreography: the choreographer may choose to support or contradict the surface rhythms of the music at will. The agency for rhythmic consonance and dissonance in sarabandes is firmly in the hands of the choreographer. 58

The sarabande does not have its own unique step-units. It borrows steps used in other dance genres, particularly the courante and bourée, though with important changes. This use of

58. The composer of a sarabande likely envisioned a particular choreography, or at most a few possibilities, while composing.
borrowed steps affords much greater rhythmic flexibility for the dancer or choreographer: she is free to choose a step-unit whose rhythms either reflect or contradict those of the music at any particular moment, depending on the desired expressive effect. Three of the most common step-units in sarabandes are the *pas de bournée*, *temps de courante*, and *pas coupé* (Little and Jenne 2001, 92). Each of these step-units spans a single bar in a sarabande, even though the *temps de courante* generally occupies only two of three beats within the courante itself.\(^{59}\)

To appreciate the rhythmic flexibility of common step-units in sarabandes, we must first explore the basics of choreographic weight. French baroque dancers tend to reserve the term *accent* for the beat that follows a bend or coincides with the landing from a spring. Accent is thus binary in nature: a beat is either accented or unaccented. Most of the time, these landings and rises mark a downbeat, which is nearly always accented. Dancers do sometimes indicate more nuance in discussing points internal to a bar that receive greater or lesser choreographic weight, however. In her discussion of timing variants for the *coupé à deux mouvements*, Hilton (1997) suggests that one pattern would be compatible with a sarabande rhythm, implying that the other would not (181). The difference between the two interpretations lies in the relationship between beats 2 and 3. In the “sarabande-compatible” version, beat 2 coincides with a transfer of weight and the landing from a half spring; beat 3 then consists of a bend that starts the next step-unit and prepares the following downbeat. In the other version, the landing from the half spring is moved

\(^{59}\) The other common exceptions to this rule of one step-unit per bar are the minuet and passedepied, whose step-units tend to span two notated bars, as discussed above, and the dances written in compound bars—especially the entrée grave, the slow gavotte, and the louré—which, like the courante, usually support two step-units in one notated bar.
to beat 3, moving directly to a bend upon landing; the bend to prepare the half spring occurs on beat 2.  

While the example of landing from a half spring would qualify as an accent in French baroque dance, the following example would not. For the temps de courante, Hilton (1997) argues, based on her own experience, that the climax of the step-unit occurs on the second beat, the “arrival,” where “the dancer’s weight [is] newly transferred to the stepping foot, the back foot remaining momentarily on the toe without weight, and the arms in opposition” (205). The downbeat is still heavy because of the rise, but the motion of the step-unit is directed toward beat 2, not beat 1. In the temps de courante, then, the second beat is almost as heavy as the first.

Hilton’s discussion has deep implications for a notion of choreographic weight, some of which are too involved to pursue here; but it does afford space for a discussion of weight along the lines of music-theoretical work on phenomenal accent, especially that of Lerdahl and Jackendoff (1983) and Lester (1986). From the discussion above, it follows that rises and landings increase weight at a particular location. I would further suggest that the presence of a step (weight transfer from one foot to another) also increases weight, akin to Lerdahl and Jackendoff’s “event” rule (MPR 3). In dancing the sarabande, the temps de courante, for

60. Presumably, Hilton assumes a bar with emphasis on beats 1 and 2 to be indicative of “the sarabande rhythm.” As we have seen, emphasis on beats 1 and 3 is also very common in sarabandes. While the language of Hilton’s assertion should be softened, her central point remains: the timing of the coupé à deux mouvements can be varied to emphasize beat 2 or beat 3.

61. Most of Hilton’s recommendations for performance are based upon the treatises of Feuillet, Rameau, and Kellom Tomlinson.

62. Hilton’s interpretation of the temps de courante differs significantly from that of Little and Jenne (2001). In simplified choreographic notation, they show the sliding step (pas glissé) of the temps de courante beginning on the downbeat and spanning the rest of the bar (22–23, 93). Their interpretation deemphasizes the dancer’s transfer of weight on the second beat.
instance, features a rise on beat 1, a sliding step with weight transferred on beat 2, and a preparatory bend on beat 3. Lacking a step, beat 3 is lighter than beat 2. For comparison, when the *temps de courante* is performed in duple time, the weight transfer in the sliding step occurs on beat 2 and the bend occurs on the second half of beat 2. Bends are not weightless, though: a bar of triple meter with a rise and step on beat 1 that hold over beat 2, leading to a bend on beat 3, emphasizes beat 3 more than beat 2. A four-tier hierarchy emerges: rises and landings are heaviest, steps are moderate, bends are light, and holds are lightest.  

The duration between steps is relevant as well. Two of Lerdahl and Jackendoff’s “length” rules (MPRs 5a and 5d, which pertain respectively to the duration of a pitch event and the duration of a pattern of rhythmic articulation) suggest greater weight for a relatively long step and for the step that begins a new, relatively long pattern of rhythmic articulation. The complex step-unit shown in figure 2.24 is performed in the rhythm eighth–eighth–quarter–quarter in a bar of ¾; thus, the third step increases the weight on the second beat both because it is a longer step than the previous and because it starts a two-beat-long pattern of articulation (the eighth-note pattern of articulation only began on the downbeat). As it accompanies a musical rhythm of

63. Overlap may exist between these categories, in the form of step-bends, rise-steps, land-steps, land-bends, etc. Whenever such overlaps occur, I believe the weight of the action is largely determined by its heaviest component. Thus, a step-bend has approximately the same weight as a regular step, and a rise-step has approximately the same weight as a rise without a step.

64. I follow Lester’s (1986) conception of relative length here. While Lerdahl and Jackendoff’s notion of relative length refers to the broader context of the passage under consideration, Lester attributes a durational accent to a note only when it is directly preceded by a note of shorter duration (18). Relative length thus derives from a comparison between only two events. Lester’s and Lerdahl and Jackendoff’s conceptions invoke levels of accentual context, which will be discussed further in chapter 3, pages 111–15.
quarter–quarter–quarter, the choreography suggests an emphasis on beat 2 that is not present in the music.

![Diagram](image)

**Figure 2.24.** (A) A complex step-unit in Guillaume-Louis Pécout’s “Sarabande pour un homme,” bar 13, from Feuillet’s *Recueil de dances* (1704). Numbers have been added by the present author to indicate the rhythmic location of steps within the bar. (B) The rhythm articulated by this step-unit.

The common sarabande step-units mentioned above (*pas de bourée, temps de courante, pas coupé, and coupé à deux mouvements*) usually differentiate beats 2 and 3 by weight (figure 2.25). The *temps de courante* emphasizes beat 2 because it steps on this beat and only bends on beat 3. The *coupé* (in its many varieties) may either emphasize beat 2 or beat 3 as the choreographer prefers. The *pas de bourée* is also flexible in its triple-meter rhythm, if we include the closely related *fleuret* as a variant. The *pas de bourée* involves three steps placed on each of the three beats of a bar, with a preparatory bend on the second half of the third beat. The *pas de bourée* also includes a *mouvement* and a *demi-jeté* for the third step. Because

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65. The baroque sources are inconsistent in their classification of the *pas de bourée* and *fleuret*. Rameau (1725a) distinguishes the two, but Tomlinson (1735) equates them, probably because the *pas de bourée* was out of fashion as the basic step for the bourée by 1700. For the purposes of this discussion, I follow Tomlinson, considering them to be variants of the same step-unit.

66. Hilton (1997) refers to these situations, where steps and bends occur within the same beat, as “step-bends,” suggesting that the bend could start on the third beat. For the sake of simplicity, in the analyses below I render step-bends with the step on the beat and the bend on the second half of the beat. This simplification does not affect the analysis.
of this *mouvement*, the *pas de bourée* emphasizes beat 3. The *fleuret*, on the other hand, involves a single *mouvement* and three steps. These steps may occur in two different timings: they may fall on each of the three beats of the bar, thus yielding equal weight on beats 2 and 3; or they may fall on beat 1, the second half of beat 1, and beat 2. In the latter, beat 3 is only a preparatory bend for the next step-unit, so beat 2 is emphasized.

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<tbody>
<tr>
<td><em>Pas de bourée</em>:</td>
<td>Rise-step on 1,</td>
<td>Emphasizes 1 and 3</td>
</tr>
<tr>
<td></td>
<td>step-bend on 2,</td>
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<td></td>
<td>spring, land-</td>
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<tr>
<td></td>
<td>bend on 3.</td>
<td></td>
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<tr>
<td><em>Fleuret</em>:</td>
<td>Rise-step on 1,</td>
<td>1 only; 2 and 3 equal</td>
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<td></td>
<td>step on 2, step-</td>
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<tr>
<td></td>
<td>bend on 3.</td>
<td>1 and 2</td>
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<td>OR rise-step on 1,</td>
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<td>step on &amp;, step on 2</td>
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<td>bend on 3.</td>
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<td><em>Temps de courante</em>:</td>
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<td>begins a sliding</td>
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<td>step that is</td>
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<td>completed (body</td>
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<td>weight transferred) on 2, bend on 3.</td>
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<td><em>Pas coupé</em>:</td>
<td>Rise-step on 1,</td>
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<tr>
<td></td>
<td>step on beat 2,</td>
<td></td>
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<tr>
<td></td>
<td>bend on 3</td>
<td>1 and 2</td>
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<tr>
<td>OR rise-step on 1,</td>
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<tr>
<td>step-bend on 3</td>
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<td>*Coupé à deux</td>
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<tr>
<td>mouvements*:</td>
<td>Rise-step-bend</td>
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<td></td>
<td>on 1, spring,</td>
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<td></td>
<td>land on 2, bend</td>
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<td></td>
<td>on 3.</td>
<td>1 and 2</td>
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<tr>
<td>OR rise-step on 1,</td>
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</tr>
<tr>
<td>bend on 2, spring,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>land-bend on 3.</td>
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<td>1 and 3</td>
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</tbody>
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Figure 2.25. Common step-units in sarabandes and their rhythmic emphases.

To summarize: Of the step-units most commonly used in sarabandes, one always emphasizes beat 2; three may emphasize either beat 2 or beat 3, as the choreographer wishes; and one may give equal weight to beats 2 and 3. Sarabande choreography is well equipped to handle a variety of rhythmic conditions and thus theoretically supports the distinctions of short-long and long-short unequal triple meters posited in this chapter. It also suggests why Loulié’s concept of

In duple meters, the third step of the *pas de bourée* is placed on beat 2, creating a rhythm of short-short-long. One may be tempted to say that the *pas de bourée* thus places greater weight on beat 3 in triple meter, since this is the location of the third step. I suggest that the effect of weight does not arise from the mapping of the step-unit from duple to triple meter. Instead, weight arises from the phenomenal characteristics of the step-unit in triple meter.
three equal beats in triple meter was so useful, and therefore so successful, in the dance-centric realm of Louis XIV.

We are now ready to examine a complete sarabande with its choreography. Figure 2.26 shows the male dancer’s part for the sarabande from the suite *La Bourgogne*, choreographed by Pécout and published by Feuillet (1700); the composer remains unknown. Annotations in figure 2.26 adopt the choreographic notation developed by Meredith Little (1975). A summary of step units, their rhythmic emphases, and the musical emphases of each measure is given in figure 2.27. The piece consists of two four-bar phrases with repeats, though the choreography differs markedly between repeats. Musically, the first eight bars offer little distinction between beats 2 and 3: phrases begin on the second beat and implied harmonies change at the bar line. The choreography begins with a bend on the third beat of bar 0, establishing the downbeat and lightly marking beat 3 in bars 1 and 3; beat 2 is unarticulated in these bars. Bar 2 deviates by placing a heavier emphasis on beat 2 through the use of a “weightless step”—the dancer moves his left leg forward and then sweeps it outward from the body but does not transfer body weight to that foot. Bar 4 begins a different take on the same material, adding emphasis to beat 2 through the temps *de courante*. The temps *de courante* alternates with the closely related coupé *soutenue* through bar 8, consistently emphasizing beat 2 in the dance, in spite of the continued even treatment of beats 2 and 3 in the music.

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Musical and dance rhythms become more complicated in bars 9–16. Beginning on beat 2 of bar 8, a clear and consistent emphasis on beat 2 is established in the music, though the cadential hemiolas in bars 10–11 and 14–15 deviate from the pattern in preparation for the cadences. The choreography playfully contradicts most of the musical accents throughout this passage. A *contretemps de chaconne* occurs in bar 9, weighting beats 2 and 3 equally despite the music’s emphasis on beat 2. A variant of the *pas coupé* occurs in bar 10, emphasizing beat 2 in spite of the music’s cadential hemiola, which emphasizes beat 3. A *contretemps de gavotte* equalizes choreographic weight on beats 2 and 3 in bar 11, ignoring the music’s strong emphasis on beat 2. As in bars 1–8, the choreography changes dramatically during the musical repeat. The
The *pas coupé* of bar 12 matches the music’s emphasis on beat 2, and the *demi coupé* of bar 14 matches the hemiola’s emphasis on beats 1 and 3. The *demi coupé* of bar 13 contradicts the musical emphasis on beat 2, however, and a variant of the *pas de bourée* in bar 15 strongly articulates beats 1 and 3, sharply contradicting the hemiola’s emphasis on beat 2.68

Pécour’s choreography supports many of the arguments I have made in this section. Figure 2.27 summarizes the most pertinent information, listing the step-units used and the treatment of weight on beats 2 and 3. No step-unit is used more than four times within this sixteen-bar piece, and the most common step-unit, the *demi coupé*, differs significantly in bars 1 and 3 from its altered return in bars 13 and 14. The former serves as a simple and graceful introduction to the piece, content to rest in one place, while the latter is playful and humorous, feinting at motion toward and away from the presence but not actually moving at all. Pécour’s choreography also demonstrates that the agency for rhythmic consonance and dissonance lies in the hands of the choreographer. Musical repetitions are choreographed with marked difference, and dance rhythms frequently contradict musical rhythms throughout the short piece. Perhaps most importantly, Pécour’s choreography is inconsistent in its weighting. All three approximate weight profiles in triple meter from figure 2.16 are given significant representation: eight bars emphasize beat 2 (bars 2, 4–8, 10, and 12), five bars emphasize beat 3 (bars 1, 3, and 13–15), and three bars equalize beats 2 and 3 (bars 9, 11, and 16), including the final cadential bar. Although the musical rhythms strongly emphasize beat 2 in bars 8–15, this passage receives the most choreographic emphasis on beat 3. In opposition to the unequal meters demonstrated in the

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68. The step-unit in bar 15 bears significant resemblance to the *pas de bourée*, but there are two important differences. The third step of a *pas de bourée* is a half-spring from one foot to the other, while here the third step is a full spring (*jeté*). Also, the two lines of liaison connecting the first two steps suggest a faster timing than is traditional: steps occur on beat 1 and the second half of beat 1, a bend on beat 2, and the spring on the second half of beat 2, landing on beat 3.
previous section of this chapter, this coy attitude toward the weight of beats 2 and 3 reveals an equal conception of triple meter, reminding us of the close alignment between the published choreographies from this era and Loulié’s theory.

<table>
<thead>
<tr>
<th>Bar</th>
<th>Step-Unit</th>
<th>Dance Emphasis</th>
<th>Musical Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Demi-coupé</em>⁶⁹</td>
<td>Beats 1 and 3</td>
<td>Beat 1; 2 and 3 even</td>
</tr>
<tr>
<td>2</td>
<td><em>Pas coupé</em></td>
<td>1 and 2</td>
<td>1; 2 and 3 even</td>
</tr>
<tr>
<td>3</td>
<td><em>Demi-coupé</em></td>
<td>1 and 3</td>
<td>1; 2 and 3 even</td>
</tr>
<tr>
<td>4</td>
<td><em>Temps de courante</em></td>
<td>1 and 2</td>
<td>1 and 2</td>
</tr>
<tr>
<td>5</td>
<td><em>Coupé soutenue</em></td>
<td>1 and 2</td>
<td>1; 2 and 3 even</td>
</tr>
<tr>
<td>6</td>
<td><em>Temps de courante</em></td>
<td>1 and 2</td>
<td>1; 2 and 3 even</td>
</tr>
<tr>
<td>7</td>
<td><em>Coupé soutenue</em></td>
<td>1 and 2</td>
<td>1; 2 and 3 even</td>
</tr>
<tr>
<td>8</td>
<td><em>Temps de courante</em></td>
<td>1 and 2</td>
<td>1 and 2</td>
</tr>
<tr>
<td>9</td>
<td><em>Contretemps de chaconne</em></td>
<td>1; 2 and 3 even</td>
<td>1 and 2</td>
</tr>
<tr>
<td>10</td>
<td><em>Pas coupé</em></td>
<td>1 and 2</td>
<td>1 and 3</td>
</tr>
<tr>
<td>11</td>
<td><em>Contretemps de gavotte</em></td>
<td>1; 2 and 3 even</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td><em>Pas coupé</em></td>
<td>1 and 2</td>
<td>1 and 2</td>
</tr>
<tr>
<td>13</td>
<td><em>Demi-coupé</em></td>
<td>1 and 3</td>
<td>1 and 2</td>
</tr>
<tr>
<td>14</td>
<td><em>Demi-coupé</em></td>
<td>1 and 3</td>
<td>1 and 3</td>
</tr>
<tr>
<td>15</td>
<td><em>Pas de bourée</em></td>
<td>1 and 3</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td><em>Fleuret</em></td>
<td>1; 2 and 3 even</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 2.27. Step-units and weight in the sarabande from *La Bourgogne*.

**The Specificity of Weight**

The preceding discussion of French baroque choreography in triple meters has given credence to the distinctions posited above between equal triple meter and both long-short and short-long unequal triple meter. It has shown step-units that a choreographer may employ to emphasize the second or third pulse of the bar or to render them equal. It has also demonstrated an approach to weight within the bar that is suggestive of equal rather than unequal meter. What remains to be done in this chapter is to justify why a conception of meter involving specific

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⁶⁹. Strictly speaking, the *demi-coupé* is not a step-unit because it contains only one step. It is often the first component of a step-unit. In this piece, however, the *demi-coupé* is sometimes treated as an independent step-unit.
weight profiles is necessary—why, for instance, in the opening passage from Handel’s sarabande it is important to note that the second pulse is somewhat lighter throughout than the first (except in bars 14–15, as noted earlier). I have already shown that the analog approach of dual-aspect meter has important benefits for both the recognition and the analytical isolation of rhythmic dissonances, but it is just as important for the analysis of a piece’s larger metrical consonance.

To demonstrate this, I turn to the sarabande from J. S. Bach’s French Suite No. 6 in E Major, BWV 817 (figure 2.28).

The first four bars of Bach’s sarabande establish a subtle two-bar accentual profile that is maintained throughout the piece.\(^{70}\) Bach treats the contents of even and odd bars with substantive difference, contrasting markedly with Handel’s sarabande, where each bar exhibits the same basic profile. Thus, in spite of the predominance of \textit{contrarius} rhythms throughout both the Handel and the Bach, the two sarabandes produce quite different metrical experiences.

\(^{70}\) Because of this consistency, I generalize the following discussion of the accentual shape to odd and even bars. Odd bars are always the first bar of the accentual shape and even bars the second.
A distinction between strong and weak harmonic changes is useful for recognizing the difference between odd and even bars in this sarabande.\(^7\)\(^1\) Schoenberg’s (1911) categories of

\(^7\)\(^1\) I do not intend this distinction to generalize beyond Bach’s sarabande; within these narrow confines, however, it simplifies the discourse significantly. Strong and weak changes of
ascending (strong), descending (weak), and super-strong progression may immediately come to mind, but my notion of strength differs markedly from his. While Schoenberg’s conception is primarily focused on the relation between the roots of the source and destination harmonies, my conception balances what might be considered harmonic and contrapuntal concerns, weighing changes of pitch class between harmonies in addition to the motion of individual voices and emphasizing the most salient voices, which are usually the bass and soprano, rather than prioritizing root motion. In this piece, a strong change of harmony requires the introduction of at least two new pitch classes in the destination harmony and a change of pitch in more than half of the voices, including both the bass and soprano; weak changes of harmony introduce only one new pitch class and have mostly static voices, including the bass. For example, in bar 2 the downbeat is articulated by a strong change of harmony: the pitch classes C♯ and E are introduced in the bass, alto, and soprano, and three of the four voices change pitch, including the bass and soprano. The second pulse of bar 2 is articulated by a weak change of harmony, despite the change of root from C♯ to A (a strong change in Schoenberg’s system): the pitch class A is introduced by leap in the soprano, while the four lower voices remain on the same pitches from the downbeat, the bass not even rearticulating its C♯3.

The distinction between odd and even bars derives mostly from Bach’s treatment of the second pulse of the bar. In all odd bars of the first reprise, the second pulse coincides with a strong change of harmony, but in even bars, the second pulse either supports a weak change of harmony (bars 2 and 6) or none at all (bars 4 and 8). Although the second pulses of both even

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harmony can be explained as collections of other phenomenal accents, but these distinctions involve many nuances of phenomenal accent that will be discussed in chapters 3 and 4.
and odd bars are supported by durational accents, the distinction between strong and weak changes of harmony greatly impacts the weight that falls on each.

A two-bar accentual profile emerges from these differences in the treatment of the second pulse. In both odd and even bars, the first pulse is heavy, the even downbeat heavier than the odd because many of the former’s pitches and pitch classes are maintained throughout the bar. In contrast, the second pulse of odd bars displaces nearly all of the pitches and pitch classes of the downbeat, so the durations of the pitches and pitch classes begun on the downbeat of the odd bars are shorter and lighter.\textsuperscript{72} The second pulses of odd and even bars both feature durational accents in most voices and in the surface harmonic rhythm, but they differ by strength of harmonic change: the second pulse of odd bars is very heavy because of its strong change of harmony, while the second pulse of even bars is significantly lighter because of its weak change of harmony or its continuation of the harmony from the downbeat.\textsuperscript{73} The third pulse is extremely light in both even and odd bars, being weakly articulated if at all. As a gesture, the profile grows from a fairly heavy odd-bar downbeat to its peak on pulse 2, recedes massively to pulse 3, and then builds to its second-heaviest point on the even-bar downbeat, receding afterward to a lighter pulse 2 and a still lighter pulse 3. An approximation of this profile is given in figure 2.29 below.

\begin{figure}[h]
\centering
\begin{tikzpicture}
\draw[very thick, step=0.5cm, color=black] (0,0) grid (3,1);
\node at (1.5,0.5) {1};
\node at (2,0.5) {2};
\node at (2.5,0.5) {3};
\node at (0.5,0.5) {1};
\node at (1,0.5) {2};
\node at (1.5,0.5) {3};
\end{tikzpicture}
\caption{A qualitative representation of the two-bar weight profile in J. S. Bach’s E-major sarabande, BWV 817.}
\end{figure}

\textsuperscript{72} The effects of absolute duration upon weight will be discussed further in chapter 4, pages 155–56, as a component of what I call musical \textit{mass}. For now, one may simply recognize that longer durations have more mass than shorter durations; hence, all else being equal, longer durations are heavier than shorter durations.

\textsuperscript{73} I discuss a few more subtle aspects of weight in this passage in chapter 3, pages 130–31, and chapter 4, pages 173–74.
Bach’s two-bar profile is maintained throughout the sarabande, though it is challenged by rhythmic and metrical dissonances in bars 5–8 and 17–24. In the former passage, complications result from a cadential hemiola, which overlaps bars 6–7 through heavy accentuation every two pulses. The hemiola is established by the strong change to the local tonic, B major, on the third pulse of bar 6 and the soprano and bass durational accents and strong change to the local dominant harmony on the second pulse of bar 7. The quick harmonic changes and short surface rhythms on the downbeat of bar 7 lighten its phenomenal accents and thus also strengthen the hemiola. While bars 6 and 7 pose a disruption to the two-bar profile established in bars 1–4, bars 5 and 8 conform perfectly, bar 5 reflecting the odd bar of the profile and bar 8 the even.

The relationship between bars 6–7 and the entrained weight profile bears more careful scrutiny. Though the hemiola is disruptive to the beat hierarchy, it interacts surprisingly smoothly with the profile. In an even bar, the second pulse is expected to have some relatively light accentual support: in even bars prior to bar 6, this weight came from durational accents. In bar 6, there is a durational accent in the soprano on the second pulse, which is enhanced by the preceding motion in sixteenth notes, a gesture that had previously been used to signal the approach to a heavy downbeat in even bars. The instability of the first-inversion dominant-seventh chord is notable, but the bass has never articulated the second pulse of an even bar. Thus, at the moment that the second pulse of bar 6 is processed, the expectations for the most salient events in the two-bar profile have already been fulfilled. Bar 7, being an odd bar, should feature a heavy downbeat and an even heavier second pulse. As mentioned above, the second pulse

74. The harmonic change on the third pulse of bar 6 is strong even though only one voice moves on the surface. In processing the E and C± as suspensions in the soprano and alto, one affirms an underlying pitch change at that moment. This aspect of suspensions will be further discussed in chapter 4, pages 171–72.
supports a strong change of harmony to the dominant, which spans the rest of the bar, and it is further supported by a durational accent in the melody and a trill, which has also been present on the second pulse of each prior odd bar. The source of the conflict between hemiola and the two-bar pattern, then, lies in the third pulse of bar 6 and the first pulse of bar 7. As in most hemiolas, the downbeat of the second notated bar is somewhat ambivalent between the notated meter and the meter of the hemiola. Here the downbeat is confirmed with a strong change of harmony, but unlike previous odd-bar downbeats, the harmony changes again before the second pulse. The shortened durations of the harmonic rhythm are mirrored in the surface rhythms of all voices, directing emphasis away from the notated downbeat, as noted above. Both factors agree much better with the hemiola than with the two-bar profile established in bars 1–4. The real linchpin for the hemiola, however, is the third pulse of bar 6: unlike all prior third pulses, it supports a strong change of harmony and is immediately preceded by two sixteenth notes in the bass, which again cue the expectation for an immediately ensuing heavy pulse. In summary, the contents of the first two pulses of bar 6 and the last two pulses of bar 7 completely satisfy the listener’s expectations for the two-bar weight profile; only the third pulse of bar 6 and the first pulse of bar 7 present a clear challenge to the established meter. In contrast to Handel’s hemiola, which enters with a shock through the powerful negative dissonance on the second pulse of bar 14, Bach’s two-bar profile smoothly prepares both the onset and the resolution of his hemiola.75 Furthermore, while Handel’s hemiola involves four rhythmic dissonances, Bach’s involves only two.

75. Both cadential hemiolas contradict Grant’s (2014) assertions that hemiolas are marked chiefly by the short-long construction of their second bar and that their first bar is rhythmically normal (89–90). In both the Handel and Bach examples, the second bar of the cadential hemiola fits the established weight profile more closely than the first.
Bars 17–24 involve a more sustained challenge to the pattern, resulting primarily from imitation in the soprano and bass voices, though another cadential hemiola is weakly articulated in bars 22–23. In bar 18 the bass’s imitation creates an overlap between thematic gestures, articulating the odd-bar profile: while the second pulse of this bar should feature a relatively light accent, the bass imitation results in a strong harmonic change coupled with durational accents in all voices, factors appropriate to an odd bar. Bar 19 features a near equalization of weight across the three pulses because of the strong harmonic change on each pulse. The second pulse is slightly heavier than the third because the pitches E5 and C♯ persist from the second to the third pulse. Bars 18–19 thus feature two positive dissonances against the still operative two-bar profile, which is clearly supported in bars 17 and 20.\textsuperscript{76}

Bars 21 and 24 likewise fit very comfortably into the two-bar profile, though the intervening bars issue one final, relatively weak challenge. The hemiola in bars 22–23 is supported by four factors: (1) a weak change of harmony from A major to a first-inversion F♯ minor on the third pulse of bar 22, (2) the start of the soprano’s sixteenth-note pattern of articulation near the third pulse of bar 22, (3) the durational accent on the second pulse of bar 23, and (4) the accelerated harmonic rhythm at the downbeat of bar 23 (moving from dominant to tonic within the first pulse). These factors are contradicted, however, by the strong change of harmony and durational accent in the bass on the second pulse of bar 22.\textsuperscript{77} The second pulse of

\textsuperscript{76} The use of consecutive odd-bar profiles also occurs in bars 13–14. After a normal (profile-conforming) odd bar, a strong change of harmony on the second pulse of bar 14 results in a substantial positive dissonance on that pulse and a reproduction of the odd-bar profile.

\textsuperscript{77} Strictly speaking, the sixteenth-note pattern of articulation begins in the soprano on the second half of the second pulse of bar 22. I would argue, however, that the first two sixteenth notes are best heard as the two-sixteenth-note anacrusis gesture that always leads to a heavy pulse, thus bestowing the weight that arises from beginning a pattern of articulation on the third
bar 22 thus conforms much better to the two-bar profile than to the hemiola, though it is not a perfect fit for either. Bar 24 perfectly follows the even-bar weight profile. Thus, although bars 17–24 feature multiple challenges to the two-bar profile, the latter persists throughout the sarabande.

Beyond the important differences in the way Bach’s weight profile interacts with hemiolas, imitation, and isolated rhythmic dissonances, the basic metrical consonance of Bach’s sarabande is very different from that of Handel’s. This difference primarily derives from the difference between their weight profiles. The contour heavy–moderate–light that shapes the flow of Handel’s sarabande is found in most even bars of Bach’s sarabande, but this pattern is part of a larger and more complex two-bar accentual profile for Bach. Also, while one may or may not be inclined toward hypermeter in Handel’s sarabande, the two-bar duration of Bach’s weight profile requires a modest hypermeter at the two-bar level, whether one marks the hyperdownbeat at the beginning of the profile or at the heavier of its two downbeats. Furthermore, the notated downbeat of Handel’s sarabande is the heaviest pulse of its profile, but in Bach’s sarabande the second pulse of odd bars is the heaviest. Bach’s profile thus flows toward the second pulse in odd bars but recedes away from the first pulse in even bars, producing a complex ebb and flow not found in Handel’s simpler, recessive profile. Thus, although the two sarabandes at first appear to be very similar rhythmically, subtle differences between the two lead to quite different metrical experiences.

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pulse of bar 22. This example points to a problem of hierarchy for phenomenal accent, which will be discussed further in chapter 4, pages 166–80.
Conclusion

In this chapter, I have suggested that the nonaligned accents of some apparent metrical displacement dissonances may better be understood as consonant, calling for greater attention to musical context and expressive environment in metrical analysis. In the realm of dance music, for instance, it is dangerous to declare outright that the consistent, basic rhythms of a piece are dissonant. Rather, such rhythms may serve to articulate a particular gesture in the music’s temporal flow, a complex kind of metrical consonance with significant implications for choreography. These rhythms may establish a weight profile to which a listener may entrain, in addition to the beat hierarchy. In situations with a consistent weight profile, meter encompasses both aspects, suggesting that metrical experience may sometimes be more than a search for boundaries—that *measures* (not only rhythms) may have significant internal differentiation, and that a consistent weight profile may register as part of a listener’s *metrical* experience.

Awareness of weight offers two important advantages for listeners and analysts. First, it sensitizes them to a new kind of rhythmic dissonance based on deviation from an entrained weight profile. Recognition of positive and negative dissonances allows for more nuanced hermeneutic interpretations in passages with dual-aspect meter. Second, in the spirit of recent work by Hasty (1997) and London (2004), analysis of weight offers new insight into the uniqueness of a particular musical work’s metrical experience. Although both the Handel and Bach sarabandes feature *contrarius* rhythms throughout, the bar-long recessive profile of the Handel contrasts significantly with the more complex two-bar profile of the Bach. London’s “Many Meters Hypothesis” proposes that we distinguish meters by consistent timing discrepancies. I suggest that meters may be further distinguished by the difference between their weight profiles and by the presence or absence of an entrained profile. Additionally, the unique
qualities of a passage’s weight profile offer an important resource for compositional play: as shown in the deployment of cadential hemiolas in the Bach and Handel sarabandes, the recognition of weight profiles may offer insight into a composer’s rhythmic decisions.

Many passages and even complete pieces do not distribute weight consistently enough to allow dual entrainment. Such is the case for much of the canonic repertoire of the First Viennese School, for instance. Dual entrainment is a feature of rhythmically consistent music, especially music connected to dance. The study of weight profiles thus supports an emerging consensus that meter is not a monolithic entity, even within the “common practice” (Rothstein 2008, 2011; Mirka 2009; Grant 2014); rather, meter is subject to cultural, historical, stylistic, and even registral distinctions. Music connected to dance may support relatively few hypermetrical complexities, but the larger rhythmic consistency that leads to this supposed deficit (Rothstein 1989, 184–85) may shift the interest to a different level. Whereas phrase expansions and metrical reinterpretations might disrupt the dancers’ steps or at least disturb the aesthetics of symmetry and grace, the ebb and flow of a periodic weight profile and subtle inflections against it probably would not. Cultural boundaries are rarely hard and fast, however. Because of their German linguistic heritage, works by Mozart, Haydn, and Mendelssohn “should” begin in Rothstein’s German meter, though not all do. Likewise, dual entrainment transcends its apparent origins in late renaissance and baroque dance and appears throughout both art and popular traditions from the sixteenth through the twenty-first centuries.
Chapter 3
WEIGHT I: BASICS OF EMPHASIS

In chapter 2, I argued that rhythmic consistency in a sarabande may allow a listener to generate periodic expectations beyond how long a measure is and where the next measure on a certain metrical level will begin. In addition to the temporal locations of these metrical boundaries, I argued that a listener may also entrain to a consistent weight profile throughout a measure, rendering the latter a normative aspect of a passage’s meter. In such situations, the listener may be said to experience a dual-aspect meter consisting of a beat hierarchy and a weight profile.

Dual-aspect meter offers new insight into rhythmically consistent music—traditionally, music connected to dance—and it offers an apparatus to articulate finer-grained distinctions between meters. There are significant differences between the three paradigms of weight distribution in triple meter shown in Figure 2.17 (heavy–moderate–light, heavy–light–moderate, and heavy–light–light), and dual-aspect meter allows us to easily distinguish the disparate experiences that result. On the other hand, dual-aspect meter also recognizes more subtle distinctions. Despite the very similar surface rhythms in the sarabandes from Handel’s D-minor keyboard suite, HWV 437, and Bach’s French Suite No. 6 in E Major, BWV 817, the two pieces generate substantially different weight profiles, a factor that leads to very different metrical experiences in the two pieces.

While chapter 2 focused on the uncovering of dual-aspect meter in a few sarabandes, the remainder of this dissertation completes the theoretical picture. First, some gaps need to be filled. In this chapter, I will begin to clarify the nature of weight, discussing historical usage of the term and investigating the connection between weight and phenomenal accent. Chapter 4 will
continue the task, clarifying more complex aspects of phenomenal accent as well as illuminating other factors that generate weight. Chapter 5 will explore the implications of dual-aspect meter and weight for the nature of meter itself.

A Brief Historical Background

The term weight is perhaps most closely associated with Hugo Riemann. For him, weight was a highly political term, which he used to position his metrical theory in opposition to what he called the Akzenttheorie, the theory of meter as consisting of accents and unaccents. Akzenttheorie originated in the writing of Johann Philip Kirnberger (1771–79), though it was the pedagogical side of the theory that drew Riemann’s ire. Daniel Gottlob Türk (1789) and several later theorists advised performers to dynamically stress (or “accent”) musical notes in accordance with metrical strength: the stronger the metrical position, the louder the dynamic stress (figure 3.1).¹ Riemann decried the poor musical results obtained from such mechanical accentuation, preferring instead to speak of metrical positions as relatively heavy or light, borrowing the metaphor of weight from Heinrich Christoph Koch (1802, 1474–75) and Gottfried Weber (1832, 106–8).² This latter terminology emphasizes an innate property of composed notes rather than a property unique to performance, harkening back to the seventeenth- and eighteenth-century notion of Quantitas Intrinseca.³

¹. Türk recognizes that other accentuations are possible within a measure, but he indicates that these are the assumed accentuations; the composer must indicate a different accentuation if that is what he or she means (336).

². Kirnberger also adopts the metaphor of weight on occasion (e.g., Kirnberger 1776, 131).

³. Mirka emphasizes the connection between Koch’s grammatical accent (1802, 49–51) and the Akzenttheorie based on his use of stress alongside weight (2009, 41). Interestingly, while
Although it may at first appear otherwise, Riemann’s *heavy* and *light* are not a simple substitution for the *strong* and *weak* of the *Akzenttheorie*. The difference resides in the events that each highlights with the marked term of their binary opposition (heavy, strong). While the theorists who promulgate the *Akzenttheorie* heavily favor group beginnings as *strong* locations,\(^4\) Riemann famously argues that music is generally anacrustic at all metrical levels (one-, two-, four-, and eight-bar), proceeding from light beginning to heavy ending within a group or motive.\(^5\) While the two schools of thought may not always arrive at contradictory analyses, they nonetheless exhibit a fundamental incompatibility in what they imbue with metrical priority. As Lerdahl and Jackendoff note, groups tend to end with long durations (1983, 45).\(^6\) At the level of two-bar groups and above, these long durations tend to occur in both the surface rhythm and in

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Koch does connect weight (*Gewicht*) and accent (*Accent*) explicitly in discussion of *Takt*, he offers weight as a substitution for metrical accent, not as an equivalent for grammatical accent (1802, 1480). Koch thus offers a unique amalgamation of early and late eighteenth-century perspectives.

On *Quantitas intrenseca*, or internal length, see Houle (1987, 78–84) and Caplin (2002, 662–63). Seventeenth- and early eighteenth-century conceptions of metrical accent most often distinguished beats as *long* and *short*, *good* and *bad*, or *struck* and *passing*, though the metaphor of weight was pervasive enough to be adopted by Joshua Steele, who attempted to adopt conventions of music notation for the representation of speech (1779, 68). With the rise of the *Akzenttheorie* later in the eighteenth century, *accented* and *unaccented* became the predominant conception.

4. Türk (1789) specifically writes that the first downbeats of larger gestures should be given a more perceptible accent than a normal downbeat (336).


6. This observation forms the basis of their Grouping Preference Rule 2b, “Attack-Point.”
the harmonic rhythm, resulting in the placement of two of the most significant phenomenal accents at the end of a group. Riemann’s metrical prioritization of group endings thus seems to be a preference to align metrical structure with phenomenal accents, as William Rothstein observes (2011, 109). Indeed, this has been a source of criticism for his analytical practice: Oswald Jonas criticizes Riemann for “chas[ing] after the accents with his bar lines” (1982, 15 and 151).

Since Riemann’s heaviness ultimately seems to derive from phenomenal accent, the metaphor of weight need not be tied directly to metrical accent. Indeed, Roger Sessions takes a step in this direction with his “accent of weight,” defined as “the principal rhythmic accent, which corresponds with the end of a musical ‘phrase’” (1951, 83). Discussing the opening of the first movement of Beethoven’s String Quartet op. 18, no. 1, Sessions complains that performers too often over-accentuate the first downbeat and underplay the downbeat of bar 2 (figure 3.2). Sessions requests a certain solidity and emphasis in the performance of the phrase in order to articulate the point of arrival and to initiate the ascending line C–D–E–F that begins in the entire ensemble before transferring to the cello in bar 5. Like Riemann, Sessions connects weight to group endings, but he recognizes a distinction between accent of weight and metrical accent, specifying that an accent of weight may not be “[metrically] accented, but it should be very solid” (1987, 187–88).

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7. Rothstein considers the “German accent” originating in the Akzenttheorie to be a psychological accent, deriving from “firstness” (2011, 109). Presumably, in the absence of any decisive clues as to the location of a future strong beat, it is cognitively simpler to orient by an event in the past. Because of the psychological nature of the “German metrical accent,” the terminology of heavy and light could certainly have been used in the service of beginning-accented preferences as well. John Paul Ito (2013) adopts the weight metaphor in the description of his four-bar metrical schemas, of which the most pervasive is a beginning-accented model.
Howard Smither (1960) takes a further step away from the equation of weight and metrical accent. He uses the term *weight* to indicate the relative strength of a durational accent, a phenomenal accent arising from relatively long duration (341). Like Sessions’s *accent of weight*, durational accents do not always align with relatively strong metrical positions. Syncopations frequently feature durational accents, which by definition occur at a relatively weak metrical position (compared to the unarticulated strong position that occurs during the syncope), so a weak beat may be heavier than a strong beat (figure 3.3). Because many durational accents are likely to occur throughout a phrase, one may also speak of a particular moment being heavier than another.

Although I have argued that a weight profile may constitute an aspect of meter, my conception of weight fully disentangles itself from *metrical accent*, referring partly to the relative strength of phenomenal accent, the apparent source for the metaphor of weight invoked by
The ensuing discussion will clarify what a phenomenal accent is, what the various types of phenomenal accents are, and how weight and phenomenal accent relate.

**Phenomenal Accent and Accentual Context**

Lerdahl and Jackendoff (1983) propose that phenomenal accent is “any event at the musical surface that gives emphasis or stress to a moment in the musical flow” (17). Like all other forms of musical organization, phenomenal accent is a property attributed to music by a listener. It is not something inherent in a musical event, it is not something that can be measured precisely, and it is not something that all listeners (including composers, performers, and audience members) will necessarily agree upon. Therefore, I offer a revised definition: phenomenal accent is emphasis that a listener attributes to a moment in the musical flow. In general, I will tend to speak of musical moments as receiving phenomenal accents, implying the listener’s action, which results from the perception of some musical factor that distinguishes a musical event from its context. On some occasions, I might say that a musical event generates or imparts a phenomenal accent; this should be understood simply as a shorthand for the complex process outlined above. Likewise, it is often convenient to say that an event is accented, but, properly speaking, it is the moment of an event’s perceived beginning or “attack” that is accented or emphasized.

8. Admittedly, since phenomenal accent is one of the most significant inputs to a metrical beat hierarchy in Western tonal music, weight and metrical accent can never be absolutely disentangled; however, the conception offered here separates the two as fully as possible.

9. Indeed, the weight of a particular phenomenal accent depends heavily on myriad contextual factors. For example, as Richard Parncutt (1994) has shown, the weight of durational accents is dependent upon tempo (427). The effects of absolute time will be discussed further in chapter 4, pages 178–80.
Nearly any musical event may produce a phenomenal accent. Even the mere presence of a note grants some emphasis to a musical location, especially if it is the first note of the piece or the first note after an extended pause; likewise, the presence of a rest in the context of a moto perpetuo passage may emphasize a lack of motion at a particular moment. As a result, the analytical study of phenomenal accents concerns an accumulation of emphasis from multiple phenomenal accents at any given moment. Furthermore, it also makes sense to think of various phenomenal accents as encouraging more or less emphasis at particular moments. If the very first note of a piece is immediately followed by the simultaneous attack of four notes, both moments probably would seem somewhat emphasized to the listener, though the latter probably much more so than the former; likewise, a long rest that interrupts a moto perpetuo passage would likely seem more emphasized than a short rest in a passage of short, broken phrases. In general, the more an event contrasts with its context, the more emphasis it receives.  

While emphasis is an acceptable word to describe the accumulation of phenomenal-accentual effects, it may carry connotations of effort, suggesting that phenomenal accent is necessarily the result of the energetic expense of an agent. This is sometimes the case; the creation of a registral accent through motion to a melodic highpoint often feels like resistance against a downward gravitational pull. For example, effort is especially palpable in the rising violin lines throughout the climax of Isolde’s Liebestod from Wagner’s Tristan und Isolde.

10. Grosvenor Cooper and Leonard Meyer (1960) offer a similar definition for accent: “a stimulus (in a series of stimuli) which is marked for consciousness in some way” (8). Cooper and Meyer mostly restrict themselves to a binary conception of accent, however—accented or unaccented.

The C♯6s on the downbeats of bars 41–43 each articulate a small sense of arrival before giving way to the arduous climb beginning in bar 44, which ultimately leads to the climactic arrival at C♯7 in bar 58 (not shown). The effort required to reach even the low-level highpoints in bars 41–43 is significant.¹²

Figure 3.4. Wagner, *Tristan und Isolde*, Act III, “Isolde’s Liebestod,” bars 38–45.

Despite what Wagner’s example seems to tell us, there is no broad correlation between effort and phenomenal accent. Much of the time, phenomenal accents seem to arise without special effort. The durational accents associated with cadences, for instance, do not represent expenditure of energy; instead, cadences are usually points of relaxation.¹³

The broader category of *weight* avoids energetic connotations and draws a connection to visual art, where weight describes the thickness of a line. The use of a thicker—or *heavier*—line, perhaps only for part of its length, brings emphasis to the form or the region of the form it depicts. Consistency of line weight is usually seen as a deficit, resulting in drawings that are “flat.” In the final and most abstract lithograph of the series *Bull* from 1946 (figure 3.5), Pablo

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¹². The register of the melody in this passage and the ensuing passage that leads to the climactic C♯6 certainly plays an important role in conveying a sense of effort and intensifying the registral accents at the C♯6s and C♯7. Interactions like these will be discussed as they pertain to each kind of phenomenal accent.

¹³. This is not to preclude the interpretation of a cadence as a feat of achievement, as perhaps most obviously in the wresting of a major-mode cadence out of unstable chromatic or minor-mode material. Such cadences are marked, however; normatively, cadences are points of repose.
Picasso uses the heaviest weight of line to define the top of the bull’s back, followed by the front left leg and the chest just in front of that leg. Together, this extra weight brings emphasis to the front of the bull, making it seem to be in motion. In the same way, phenomenal accents bring emphasis and thus weight to particular musical moments and dimension to musical passages.

Figure 3.5. Pablo Picasso, *Bull*, plate 11 (1946).

Because musical weight does not arise solely from phenomenal accents, I will continue to use *emphasis* to describe the effect of a phenomenal accent, reserving the term *mass* for the component of weight not arising from phenomenal accent.\(^\text{14}\)

**Context:** As explained above, a phenomenal accent occurs when an event gives emphasis to a particular musical moment. Implicit in this definition is a comparison; a moment is only heavy or marked in opposition to a light, unmarked moment. The unmarked element serves as *context* for the marked element. Context is not a simple matter, though. In the recent theoretical literature, three different definitions of context have been offered. Although these contexts were

\[\text{14. My use of } emphasis \text{ follows Joel Lester’s (1986) definition of accent as a “point of emphasis,” though his broader conception includes metrical and phenomenal accents.}\]
introduced by theorists specifically to address durational accent (which arises from the perception of relatively longer events), they provide a useful framework for phenomenal-accidental context in general. Howard Smither compares the events immediately preceding and immediately following an event (1964, 62). Joel Lester employs an even narrower context, considering only the immediately preceding event (1986, 18). I call Lester’s and Smither’s senses of context together the immediate level, recognizing both the “immediately preceding context” and the “immediately following context.” On the other hand, Lerdahl and Jackendoff do not clearly define the context for durational accents, but, as I will demonstrate, their analyses show that they are willing to consider a larger musical passage, perhaps as much as eight bars (1983, 90–91).

Lerdahl and Jackendoff’s use of a larger musical passage as context for accents is important because it allows two or more similar consecutive events to receive phenomenal accents in the same domain. In the opening eight bars of the finale to Haydn’s String Quartet in E♭, op. 76, no. 6, for instance, Lerdahl and Jackendoff assert durational accents on all three of the cello’s notes in bar 7 (figure 3.6), an analysis that I find intuitively appealing. The quarter note E♭4 is immediately preceded by an eighth note, so Smither and Lester would also recognize a durational accent there; however, the quarter notes A♭4 and A4 are both preceded and followed by other quarter notes, so Smither’s and Lester’s notions of context would not recognize durational accents on these notes. By asserting durational accents on the A♭4 and A4, Lerdahl and Jackendoff assert that quarter notes are relatively long durations in the context of the passage,

15. As Lester and others have warned, it is extremely difficult to isolate the different types of phenomenal accent outside of examples composed by the theorist (1986, 17). Whenever possible, I prefer to study accents “in the wild,” though, so I ask the reader’s patience in attempting to separate the effects of different types of phenomenal accents in the examples that follow.
which moves predominantly in eighth notes.\textsuperscript{16} I refer to this sense of context as the \textit{passage level}.\textsuperscript{17}

Figure 3.6. Haydn, String Quartet in E\text,, Major, op. 76, no. 6, IV, bars 1–8.

The assertion that an event may be accented in relation to an abstract context, rather than a concrete and immediate one, has important ramifications for the theory of phenomenal accent.

\textsuperscript{16} Lerdahl and Jackendoff’s Metrical Preference Rule 5a specifically says to “prefer a metrical structure in which a relatively strong beat occurs at the inception of a relatively long pitch-event” (1983, 84); nevertheless, this wording implies that the particular locations marked by MPR 5a are durational accents.

\textsuperscript{17} Other applications of their metrical preference rules show the influence of the immediate level of context.
For much music, normal behaviors are established on much broader levels than just the surrounding passage. When such norms are well established (or were, historically), why should they not serve as an unmarked context for phenomenal accent? In other words, an event may be marked in relation to the broader styles that a piece engages. I call this the *stylistic level* of context. Style is, of course, a notoriously slippery word, embracing a massive range of levels. The stylistic “level” may likewise engage a broad range of levels. One may refer to the style of a piece, the style of a genre (e.g., song style, toccata style, sonata style), the style of a group of pieces by a single composer (e.g., Beethoven’s late style), a composer’s style, the style of a group of composers (e.g., the Second Viennese School), a style of writing for a particular instrument or ensemble (e.g., keyboard style vs. orchestral style), a cultural style within a historical period (e.g., the classical style, *bel canto* style, the “common practice”), and even a national style. Any of these notions of style may be relevant in the perception of a particular musical event. Indeed, the stylistic level may also engage technological aspects of an instrument’s history or a performance venue, and historical and cultural traditions of rehearsal and performance.

Phenomenal accent at the stylistic level arises from a transgression of the tacit conventions of a style, e.g., the use of a duration that is markedly long or a note that is markedly high in the melody or markedly low in the bass; therefore, discussion of accent at the stylistic level will always invoke the limit that is being met or exceeded. In some cases, the stylistic context results in marking the limit itself. On the second beat of bar 9 of the sarabande from Bach’s G-major cello suite, a quadruple stop occurs (figure 3.7). This is the only quadruple stop in the first cello suite.\(^{18}\) Quadruple stops are marked occurrences in Bach’s cello suites and in

\[^{18}\text{In the other cello suites, quadruple stops are more common.}\]
cello repertoire in general, because they engage the physical limitations of textural density for the cello, and thus by default the stylistic limitations as well. The density accent on beat 2 of bar 9 is made heavier by engaging this broader physical-stylistic limit.

![Figure 3.7. J. S. Bach, Cello Suite No. 1 in G Major, BWV 1007, Sarabande, bars 9–12.](image)

In sum, I believe there are three levels of context for phenomenal accents: the immediate level, which addresses only the immediately surrounding events; the passage level, which addresses a larger patch of music (defined loosely here as roughly up to a phrase or eight bars); and the stylistic level, which addresses a range of broader contexts to which a particular event responds. Phenomenal accents may derive from markedness at any of these levels, and they often involve multiple levels at once.

Because of the vast complexity introduced by the concept of the stylistic level, only the immediate and passage levels of context will be discussed in this dissertation. A fuller exposition of the stylistic level with reference to the specific types of phenomenal accent is beyond the scope of this chapter.

**Types of Phenomenal Accent**

**Stress Accent:** Perhaps the most obvious category of phenomenal accents is simply the use of dynamic stress. A louder event will tend to attract more attention from a listener than a
similar but softer event, marking the moment corresponding to the onset of the louder event. In figure 3.8, the four-hands piano version of the opening to the “Augurs of Spring” dance from Stravinsky’s *The Rite of Spring* nicely isolates the effects of stress accent through its persistent chordal repetitions: the repetitions marked with stresses (>) become clear focal points, placed into relief by the unstressed and undifferentiated repetitions.

![Figure 3.8. Stravinsky, *The Rite of Spring*, “Augurs of Spring: Dance of the Young Maidens,” bars 1–8.](image)

Composers have a variety of means to indicate stress, including, for example, >, ^, –, fz, sfz, and fp. Not all stresses are notated explicitly; some are assumed aspects of performance practice. Performers often “lean” on the dissonance when performing a suspension or first inversion.

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19. Under particular circumstances, there may be reason to consider an isolated softer event as attracting more attention than surrounding louder events *because of its softness*. Such situations are relatively rare and are best discussed as a class of “negative” phenomenal accents. I will discuss negative accents in chapter 4, pages 157–66.

20. The orchestral version of the dance does not quite isolate stress accents. While the strings apply stress accents in the same places as the piano, the horns join the ensemble for the accented notes, resting during the unstressed events. As a result, Stravinsky applies an additional type of phenomenal accent in the orchestral version of the dance.

21. A tenuto may instead indicate the lengthening of a note or a small separation of the marked note from the preceding and following notes.
appoggiatura, giving it a subtle emphasis;\textsuperscript{22} this principle holds in general for dissonances occurring in a stronger metrical position than their resolutions. The downbeat of bar 4 in Haydn’s String Quartet, op. 76, no. 6, IV (figure 3.6), features an appoggiatura; appropriate performance of the passage would involve a subtle stress on the F#4.\textsuperscript{23} Additionally, C. P. E. Bach (1753/1949) instructs performers to indicate the start of a slur by lightly stressing the first note (154). Beyond the conventions of performance practice, performers also contribute unnotated stress accents in accordance with their personal interpretations of gesture and flow in a passage.\textsuperscript{24} Often, these stress accents coincide with metrical accents or other phenomenal accents, but that need not be the case.

The heaviness of a stress accent derives from the degree(s) of contrast between the accented event and its various contexts as defined above. Stress accents tend to be experienced with immediacy because loudness is a sonic property that can easily be determined when an attack is perceived. As a result, listeners tend to compare a sound’s dynamic level to preceding

\begin{itemize}
\item \textsuperscript{22} Appoggiatura derives from the verb \textit{appoggiare}, which the Oxford Italian-English Dictionary defines as “to lean, to rest.” On certain instruments, it may be impossible for the player to crescendo on a tied note (or even to play a note more loudly than another), but even performers on these instruments are encouraged to imagine the note becoming louder when it becomes dissonant. As a result, the performer finds a way to compensate for the instrument’s limitations.
\item \textsuperscript{23} Bars 1–3 contain accented passing tones on the downbeat. These should also be somewhat stressed, though perhaps less so than the downbeat of bar 4. Underplaying the stress helps to preserve the metrical ambiguity Haydn composed into these opening bars. For a fuller discussion of this metrical ambiguity, see Lerdahl and Jackendoff (1983, 90–96).
\item \textsuperscript{24} Richard Blom-Smith distinguishes between “structural accents” and “executive accents,” considering the former to be “inherent in the nature of the work” and the latter to be determined by the performer (1994, 9–10). The perception of weight is always subjective, produced by a particular listener in response to a particular performance (real or imagined); thus, although one may question Blom-Smith’s assertion of an essential nature of the work apart from its performance, in the present context the distinction is irrelevant.
\end{itemize}
material. Thus, the preceding immediate and passage contexts are especially significant for stress accents. In general, stress accents occurring in isolation tend to be heavier than those occurring frequently or in succession within a passage, as both the immediate and passage contexts offer a more significant contrast to the former than the latter. Furthermore, stress accents notated by composers tend to be heavier than the unnotated stress accents supplied by performers that serve to emphasize other phenomenal accents or metrical accents, because the latter tend to involve a smaller difference in dynamic level than the former.

The latter distinction between notated and unnotated stress accents can be observed in bars 42–48 of the first movement of Beethoven’s Piano Sonata in F Minor, op. 2, no. 1 (figure 3.9). While most performers would likely supply a subtle stress accent to each C5 in bars 41 and 43 and the C6 in bar 45, the notated sforzandos on E5 on the downbeats of bars 43 and 45 would likely produce much heavier stress accents. The stress accent on the downbeat of bar 47 is heavier yet because of the larger contrast between its marked *fortissimo* and the contextual *piano* dynamic of the passage, as well as the performative emphasis suggested by the suspended G, D♭, and B♭.

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25. The first note of a piece, the first note after a grand pause, and the first note after a long fermata are probably the only situations in which the dynamic level of later material may significantly impact the weight of a stress accent. These events are already marked, though, because they each have no preceding musical context on the immediate level.

26. Heinrich Schenker makes this point in support of an argument to leave many performance nuances unnotated: notations in the score indicate the composer’s desired effects, but the means to accomplish these effects must be left up to the performer (2000, 42; the argument originates from the unpublished manuscript *Vom Vortrag*, ca. 1910, ch. 9, §3; see also Rothstein 1984, 24).
Density Accent: Very closely related to the stress accent is the density accent. Both arise at moments with greater volumes of sound production than their contexts. Unlike stress accents, which arise from a greater volume of sound produced on a single note, density accents arise because the total volume of sound at one moment exceeds that of its context, typically because more notes sound at one moment than another. Stress accent is a property of a single voice, while density accent is a property of the entire texture.27 In figure 3.10, for instance, which shows bars 1–4 of the sarabande from Bach’s Cello Suite No. 1 in G Major, BWV 1007, density accents occur at the immediate level on beat 2 of bars 2 and 4 because the immediately preceding material sounds only a single voice. Like stress accents, density accents tend to be perceived immediately with the attack of a musical event, so the preceding immediate context for a density

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27. My usage of “density accent” differs significantly from previous usages of the term (e.g. Pierce 1968, Krebs 1999), which has generally been synonymous with “textural accent” (Lester 1986). As Richard Blom-Smith (1994) has shown, the mechanism that creates these “density” and “textural” accents is in fact the “new-event accent”; the accentual effect of textural accents simply results from more new-event accents occurring at a particular location than in its context (193). In that usage, then, density and textural accents are misnomers or at least terminologically imprecise, the convenience of those terms notwithstanding. My usage avoids Blom-Smith’s critique, as it refers to the increased dynamic level resulting from a greater number of sounding notes, rather than the number of notes themselves.
accent is the most significant. The preceding passage can also produce a density accent, if
textural density has been consistently lower than the accented moment. In figure 3.10, the
density accent in bar 4 is heavier than the one in bar 2 because bar 1 suggests a context where
triple stops are normative; by the middle of bar 4, however, the texture has been monophonic for
five beats.

![Figure 3.10. J. S. Bach, Cello Suite No. 1 in G Major, BWV 1007, Sarabande, bars 1–4.](image)

Modern string players tend to play quadruple stops as a double stop followed very
quickly by another double stop, but knowledgeable listeners recognize the two sonic events as a
single musical event and interpret the weight of the event accordingly. Accent is not simply a
biological or neurological fact; it involves learning and acculturation. Though the notes are not
attacked simultaneously, acculturated listeners learn to package them together into a single
musical event and a single musical moment, while still recognizing the literal brokenness of the
sound.

This is not to say that the choice to arpeggiate a sonority (and the manner of arpeggiation)
or to play it as a simultaneity has no effect upon density accent. Certainly it does, including the
choices of both the performer and the composer. My point is that one should not get caught up in
either the literal presentation of sonic events or the literal depiction on the musical score. Both
are necessary, mediated by awareness of compositional and performance conventions. The
performance of triple (and quadruple) stops on the cello necessarily requires the breaking of a
single musical moment into multiple chronological moments, and both the chronological and
musical conceptions of time affect perception.
Stress accent and density accent might be considered together as a single category of phenomenal accents. I call them literal accents because they occur at locations with contextually higher volumes of sound; they are literally accented in the common musical usage of the word accented, meaning louder than another event. The remaining phenomenal accents to be discussed do not necessarily involve a greater volume of sound. I refer to new-event accents, durational accents, and registral accents as figurative accents.

New-Event Accent: The start of every new aural event in a piece of music draws attention to itself as something distinct from the context that had been established beforehand; ultimately, then, every event in a piece of music is phenomenally accented to some degree. On the other hand, if every aural event has at least this basic level of accent, such a level of accent is trivial: all musical events receive the same amount of weight. A particular moment may have a greater or lesser number of new aural events than another moment, though. In Bach’s sarabande (figure 3.10), part of the difference in weight between beat 2 of bar 1 and the downbeat of bar 2 arises from the number of note attacks at each location, three at the former and one at the latter.28

28. There are other accentual factors that lead to the significant difference in weight between these two moments, especially durational accent, which will be discussed after new-event accents.

It is not always a simple matter to determine how many new-event accents occur at a particular moment (even those arising from surface pitch attacks), as listeners may not perceptually distinguish all notated events. It seems unlikely, for instance, that listeners hear twenty-four new events (and new-event accents) in the tutti chords of the opening of Beethoven’s Eroica Symphony. Instead, listeners likely engage a process of “streaming” that prioritizes certain voices and hears others as doublings or extensions. While the specifics of streaming may vary from listener to listener—a wind player may hear more events in those opening chords than a string player—the primary distinctions likely arise from the number of independent voices perceived and the number of pitch classes perceived, though I suspect the bass and main upper voice generate heavier new-event accents than other voices, at least in Western classical music. For more on the phenomenon of streaming in music, see Mirka (2009, 57–69) and Temperley (2001, 87–101). On streaming in general, see Bregman 1990.
I emphasize that only *aural events* produce new-event accents, implying a distinction between music as heard and music as notated. Based on this distinction, I also distinguish *notated events* and *aural events*. For example, all notes and rests are notated events; however, notated events are sometimes not aural events. In particular, rests are frequently *not* separate aural events but instead continuations of the previous note. If a performer allows the end of a note to taper into a rest, the point of transition between the note and rest may be inaudible for the listener, resulting in a single, combined aural event. The opening melody of the second movement of Beethoven’s *Eroica* symphony, shown in figure 3.19, includes two instances: in bars 2 and 4, the end of the note on the second beat will likely disappear into the rest. The same applies to a note marked staccato.

On the other hand, there are many instances in which a rest *is* a separate aural event. The mechanism for sound production in certain instruments results in an audible artifact when notes are released. For instance, the harpsichord has a release sound that is audible when sounding voices enter a rest; such releases on the harpsichord sometimes constitute the start of an event, depending on the specific circumstances of the passage.29 Furthermore, the abrupt cutoff of a note on any instrument may signal a decisive ending. Careful attention to the sound of an actual performance will help the analyst to determine whether aspects of sound production distinguish notes from the rests that follow.

“Loud rests” (London 1993, Cooper and Meyer 1960) are also aural events. In the first movement of Haydn’s String Quartet in E, Major, op. 33, no. 2 (figure 3.11), the development section appears to conclude as all four instruments halt on the dominant of C minor on the

29. The durations of the released notes are relevant, because they affect the amount of decay the notes have undergone. This helps to indicate whether the notes are ended abruptly, which constitutes a new event, or if they are tapered, which does not create a new event.
second half of the second beat of bar 58. The ensuing dotted-quarter rest constitutes an aural event, as it suppresses the highly expected resolution to C minor. Loud rests usually occur on metrically strong beats and are preceded by note attacks occurring on metrically weaker beats. They constitute separate aural events, whether articulated as a grand pause or a rest in a single voice.

Figure 3.11. Haydn, String Quartet in E; Major, op. 33, no. 2, I, bars 56–58.

Beyond empty downbeats, the release of a note is sometimes as dramatic and important an aural event as its attack, creating a pregnant pause. A well-known instance occurs at the end of Schubert’s “Erlkönig.” Figure 3.12 shows the last few bars of the song in four of Schubert’s versions, demonstrating the painstaking care Schubert took in the exact effect of the passage. While Schubert makes several adjustments to the passage, two of the most notable changes concern the articulation of the final four words, “das Kind war todt.” In the first three versions, the eighth rest dividing these lyrics is articulated as a rest for both the singer and the pianist, the first shared rest in the song. In the final version, Schubert delays the pianist’s C; diminished-seventh chord by one eighth, eliminating any complete silence. He places a fermata on the

30. See also “the loudest silence in musical literature” (Cooper and Meyer 1960, 39; London 1993), the rest on the downbeat of bar 280 in the development section of the first movement of Beethoven’s Eroica symphony. I discuss this passage in chapter 4, pages 164–65.
singer’s rest, though, a device he had employed in the second version of the ending as well, which emphasizes the importance of the rest. One way to emphasize the rest in performance would be to mark the start of the rest clearly by placing the final consonants of Kind and a shadow vowel directly on the eighth rest. In all four versions of the ending, this eighth rest can be made into a distinct aural event.

A. First version

B. Second version

C. Third version

Figure 3.12. Schubert, “Erlkönig,” four versions, final bars.
D. Final version (published as op. 1)

Figure 3.12. (continued)

In cases when the start of a rest is not to be considered a separate aural event, one must not assume that the composer’s notation is irrelevant. Whenever a performer inserts space between two notes, through either a notated rest or shorter articulation, the dynamic level of the first event tapers more than if the note had been sustained. This can increase the strength of a stress accent on the second note; indeed, this is the primary method of generating stress accents on the organ. The notation of a rest may also affect the performance of the note beforehand. In bars 2 and 4 of figure 3.19, Beethoven’s decision to make the second note an eighth note followed by an eighth rest has important implications for performative stress accent. The shorter notated duration encourages a lighter performance on this note, intensifying the implied decrescendo of the two-note slurs in these bars. Writing these eighth notes instead as quarter notes without rests would encourage a heavier performance of the latter notes.\(^{31}\)

A wide variety of new-event accents exists, corresponding to the wide variety of ways that grouping may occur. Repetitions of pitches may be grouped together, so that change of pitch becomes a new event. In bars 248–50 of the chaconne from Bach’s Partita No. 2 in D Minor, BWV 1004 (figure 3.13), the repetitions of A4 and E5 in the soprano and of D4 in the bass group together, marking new events in the soprano on the second beat of bar 248 and the downbeats of

\(^{31}\) For the remainder of this chapter, I will refer to aural events simply as “events,” recognizing that weight is an attribution from listeners.
bars 249 and 250, and in the bass on the second beat of bar 248 and the second beat of bar 249.

To describe new-event accents arising from grouping, I will rely on one of two formulas: I may insert a clarifying adjective beforehand, as in “harmonic new-event accent”; otherwise, I will tend toward the formula “change-of-X accent,” where X describes the relevant parameter, as in “change-of-pitch accent.”

Figure 3.13. J. S. Bach, Partita No. 2 in D Minor for Violin Solo, BWV 1004, Chaconne, bars 239–56.

In spite of their seemingly trivial nature, change-of-pitch accents play an important role in the expressive characteristics of a passage, though their effects are much easier to reveal through comparison than to describe verbally. Lester (1986) very effectively demonstrates the power of change-of-pitch accents through recompositions of the opening theme from the first movement of Mozart’s Symphony No. 40 in G Minor (24). His examples 2–16 and 2–17 are
adapted as figure 3.14. In the original passage, shown in figure 3.14A, accents fall on every note: a change-of-pitch accent falls on every eighth-note duration, a stress accent falls on the first eighth note of each pair, and a durational accent occurs on each quarter note. Figure 3.14B changes each eighth-note D5 to an E♭5, which results in a much simpler accentual profile: phenomenal accents now fall only on the quarter-note pulses; the second eighth-note of each pair receives no durational, change-of-pitch, or stress accents.32 The expressive effect of this change is massive. Instead of the subtle sophistication of figure 3.14A, the theme in figure 3.14B feels very simple, even trivial, and it is much less interesting. In figure 3.14C, Lester swaps the two eighth notes from the original theme: the D5s become E♭5s, and the original E♭5s become D5s. The melody in 3.14C sounds significantly more sophisticated than 3.14B but more square than Mozart’s original, owing to the increased weight that falls on each quarter note.33

32. Strictly speaking, the second eighth note of each pair receives a new-event accent, since one occurs on every note. This does not impact the weights of each note relative to each other, though.

33. Johann Mattheson (1739) argues that ascending minor seconds place emphasis on the upper note (II, ch. 8, §11–13). Since he understands emphasis to derive from a need to highlight semantically focal words in vocal melodies, Mattheson would likely find the very weak metrical placement of these emphases in figure 3.14C to be problematic.

A more thorough explanation of the different expressive effects of these melodies would require analysis of the interaction of structural levels. Because diminution raises complex issues for phenomenal accent, though, I will defer further discussion of hierarchy until chapter 4, pages 166–80.
A.

D = durational accent
P = change-of-pitch accent
S = stress accent

Figure 3.14. Analysis of durational and change-of-pitch accents in the opening of Mozart’s Symphony No. 40 in G Minor, I, after Lester (1986).

Since the late Renaissance, harmony has been one of the most important elements of grouping in Western music. Like a metrical hierarchy, each harmony creates an orienting field for the duration in which it is operative, casting musical notes as either stable members of the chord, unstable members of the chord, or non-chord tones (which are dissonant, at least conceptually). Each change of harmony involves a change in this orienting field and thus constitutes an important new event in a passage. Accordingly, change to a new harmony often accompanies a significant new-event accent. One important aspect of closure in bars 251–56 of Bach’s chaconne (figure 3.13) is the careful deceleration of harmonic rhythm from every quarter note in bars 251–53 to every half note in bars 254–55, resulting in a hemiola in those two bars, and ultimately to a dotted-half note in bar 256.
Change of key or mode may sometimes serve as a higher-order change of harmony. Acting as a super-harmony, key and mode define a tonic focal point, a set of harmonic relationships around that tonic, a set of expected diatonic pitches, and a hierarchy between those diatonic pitches. Some key and mode changes do not have clearly articulated starting points for a listener; pivot chords and pivot areas between closely related keys may create smooth transition, preventing clear segmentation for a listener and thus attenuating new-event accents.

Direct modulations and changes of mode, especially those occurring between phrases, create definitive segments. In “Gute Nacht,” the opening song from Schubert’s Winterreise, the piano interlude between the third and fourth strophes effects a dramatic shift from D minor to D major, cadencing in the latter on the downbeat immediately prior to the voice’s entry. Although continuous with the prior material in terms of harmonic syntax and form, the mode shift in bar 71 creates a significant disjunction, as the first three strophes remain in D minor throughout (though with internal cadences in F major and B♭ major). The beginning of the third stanza and the end of the fourth stanza are shown in figure 3.15. The fourth stanza remains in the parallel major, even achieving complete closure in D major through a perfect authentic cadence in bar 97. In a dramatic twist, Schubert repeats the final two-bar subphrase of the strophe in D minor, where the song remains until its conclusion. As a result, a rather emphatic change-of-mode accent occurs on the second half of beat 2 in bar 97.

34. Fred Lerdahl (2001) locates the operative diatonic scale as one of the deepest aspects of tonal pitch space, and Dmitri Tymoczko (2011) refers to the scalar pitch-class collection occupying a governing position in a listener’s mind at any particular moment as a “macroharmony” (154).
The weight of a change-of-key accent is affected by its apparent level of significance. In the first bar of the sarabande from Bach’s French Suite No. 6 in E Major, BWV 817 (figure 3.16),
the change from an E-major harmony to a G♯-dominant-seventh produces a change-of-key accent because it implies a switch from the key of E major to C♯ minor. This change-of-key accent is particularly heavy because of its striking location. Occurring before the home key of E major has been well established, the chromatic harmony is very unusual stylistically. It calls into question the tonic of the piece as a whole. Even though the move to C♯ minor is revealed to be a short digression, the disturbance created by the G♯-dominant-seventh remains.

The A♯-diminished-seventh harmony of bar 3 also effects a change of key to B major. This accent is significantly weaker, though, owing to the effects of diminution and association. Because of the lack of bass motion on the third pulse and the parallelism to bars 1–2, the A♯-diminished-seventh clearly implies a forthcoming half cadence in the well-established key of E major; the limited scope of this harmonic detour is clear from the outset, making the chromatic harmony stand out less from its context and suggesting that the chromatic inflection is a low-level event.35 Beyond the scope of a key change, the emphasis attributed to chromatic harmonies may also be tempered by the passage-level context or the style of a piece if chromatic harmonies become commonplace or idiomatic.

Figure 3.16. Bach, French Suite No. 6 in E Major, BWV 817, Sarabande, bars 1–4.

35. The effects of diminution will be discussed further in chapter 4, pages 166–80.
Events may be grouped by other factors as well, including dynamic level, register, texture, instrumentation, timbre, articulation, melodic direction, and consistent rhythmic pattern. Such groupings arise when musical events can be clearly articulated into two sets, each internally unified by sharing the same value in one of these properties while externally differentiated from the other by the same property. In the closing theme of Beethoven’s F-minor piano sonata (figure 3.9), the melody from bar 41 through the downbeat of bar 45 sits in an alto register. When the melody repeats an octave higher starting on the second beat of bar 45, a change-of-register accent accrues to the C♭6.

Changes in rhythmic pattern tend to mark important formal divisions in variation forms, as in bars 247 and 248 of Bach’s chaconne (figure 3.13). After the cadence in bar 248, the unadorned theme of the chaconne returns to conclude the piece. Its *contrarius* surface rhythms contrast sharply with the triplet sixteenth notes throughout bars 240–46. Bach prepares this cadential arrival and its concomitant rhythmic shift with disruptive thirty-second notes throughout bar 247. A change-of-rhythm accent also accrues to the B3 that begins the thirty-second-note run.

As in the case of modulation and change of mode, grouping by dynamic level, register, texture, instrumentation, articulation, and rhythmic pattern only occurs when changes produce perceptible segmentations of the musical flow. For example, abrupt shifts in dynamic level create

36. Changes to a louder dynamic level also receive a stress accent on the first event of the louder dynamic level.

37. As discussed in chapter 2, the term *contrarius* originates in the writing of Wolfgang Caspar Printz, who uses it to describe a rhythm in triple meter beginning on the downbeat and consisting of the proportion 1:2 or 2:3:1. In $\frac{3}{4}$ notation, these are equivalent to quarter–half and quarter–dotted quarter–eighth, respectively.
a much stronger sense of segmentation—and thus a heavier new-event accent—than the start and end of a crescendo or decrescendo, which may or may not be perceptible at all.

Referred to by Lerdahl and Jackendoff (1983) as “grouping” itself, hierarchical melodic grouping structure produces the major units of phrase structure and form: subphrases, phrases, periods, and formal sections. Melodic grouping structure operates through the combined influences of temporal proximity, stylistic conventions of group lengths, and the grouping suggested by dynamic level, register, texture, instrumentation, articulation, and rhythmic pattern. Melodic grouping structure produces a new-event accent at the start of each new segment as well, but only at the lowest level of the grouping hierarchy. The start of the first subphrase in the exposition of a sonata form receives the same new-event accent that the start of the next subphrase does.38

Additionally, although temporal proximity is perhaps the most significant factor in melodic grouping structure, whenever its suggested grouping is overridden, it does not produce a proximity new-event accent. For example, in the opening of Chopin’s Mazurka in A Minor, op. 7, no. 2 (figure 3.17), temporal proximity suggests breaking melodic groups after the first notes of bars 2 and 4. Chopin’s slurring directly contradicts this grouping, and the first notes of bars 2 and 4 are accented embellishing tones that resolve to the notes on beat 3 of those bars; as a result, the grouping suggested by temporal proximity is overridden. I find no trace of a proximity new-event accent at the start of the melodic groups suggested by temporal proximity. In the recomposed version in figure 3.18, however, the melodic grouping suggested by temporal

38. A performer may wish to delineate formal hierarchy by setting off the beginnings of higher-level melodic groups via dynamics or rubato, but the increased weight at the start of these higher-level groups derives from heavier stress accents, durational accents, and possibly the start of deeper-level pitch events, not a heavier new-event accent for the group itself. The implications of pitch hierarchy for weight will be discussed further in chapter 4, pages 166–80.
proximity is realized, and extra weight falls on the E5 and C5 of bars 2 and 4. Since it does not produce independent new-event accents, temporal proximity differs from the other grouping factors.\textsuperscript{39}

![Figure 3.17. Melodic grouping and grouping suggested by temporal proximity in Chopin, Mazurka in A Minor, op. 7, no. 2, bars 1–8.](image)

![Figure 3.18. Recomposition of Chopin, Mazurka in A Minor, op. 7, no. 2, bars 1–8.](image)

The reason for this distinction may relate to the mechanism operating beneath each factor. As mentioned above, most factors unify groups by a shared value in the domain of some musical property; temporal proximity, however, is not a property of the event itself but a comparison between the duration of an event and that of nearby events. In fact, it is the presence of a longer duration for the previous event that causes temporal proximity to suggest the start of a new melodic group. Perhaps it is because temporal proximity is more dependent on the properties of

\textsuperscript{39} Whenever melodic grouping agrees with other factors of grouping, I do intuitively feel that the location is heavier, which suggests new-event accents produced by the factor of grouping (e.g. dynamic level, timbre, instrumentation, articulation, rhythmic pattern) and by the start of the melodic group itself.
the events surrounding the start of a new melodic group that it does not produce a new-event accent for its suggested groupings.

Ultimately, any musical factor that causes a listener to distinguish a musical moment or event as *not* belonging to the immediately prior context produces a new-event accent, whether segmentation by that factor is consistently possible or not. For example, even if a sudden change of dynamic level only occurs once in a particular piece of music, there is no reason to deny the change as a new event if it is clear.

In musical passages of even the lowest level of complexity, many types of grouping operate simultaneously. They need not agree in their segmentation of a musical passage. New-event accents may occur for dynamic level in one location, harmony in another, texture in a third, and rhythmic pattern in a fourth. Bar 71 of Schubert’s “Gute Nacht” (figure 3.15) demonstrates such grouping and accentual pluralism. A harmonic new-event accent occurs on the downbeat of the bar, since the D major harmony begins there and continues for two bars. On the second eighth note of bar 71, leaps establish a new register for each of the piano’s four voices (change-of-register accents); they also articulate grouping by pitch, since each voice remains in place for at least the remainder of bar 71 and all of bar 72. Finally, the entrance of the vocal melody on the last eighth note of the bar begins a new melodic group.

The same parameter may also segment a passage in conflicting ways. In bar 249 of Bach’s chaconne (figure 3.13), for instance, segmentation based on change of pitch results in a new event in the soprano on the downbeat and a continuation of the same event in the bass; in the bass, a new event begins on beat 2 with the change to C♯4. In spite of the nearly homorhythmic articulation of this passage, polyphony emerges through change-of-pitch accents.
Neither of these apparent accentual conflicts is reason for concern; in fact, accentual non-alignment is a source of richness. As demonstrated above, much of the beauty of the opening theme to Mozart’s fortieth symphony derives from the non-alignment of phenomenal accents and the particular weight profile they bestow on the melody.

Despite the large variety of parameters that may instantiate them, new-event accents only apply to the preceding immediate context. On the immediate level, it is the “newness” of the event that accents it, so the material following the start of the new event is irrelevant, beyond confirming that a new event has indeed begun. Comparisons on the passage level contribute nothing extra. If a passage of events serves as context for a new event, then that passage acts as a single event; thus, the passage level and immediate level are one and the same for new-event accents.

The perception of new-event accents is more varied and complex than that of stress and density accents. Some new events are perceived nearly immediately. In particular, surface new-event accents are delayed only by the time it takes to recognize the start of a new aural event (attack or rest). Change-of-pitch accents are also rather quick, requiring the recognition of difference between a previous pitch and the one just begun. In this way, new-attack and change-of-pitch accents are similar to literal accents; other new-event accents require listeners to perceive subsequent material in order to discern that a new event has in fact begun. For example, a change-of-dynamic accent requires the listener to hear at least one subsequent event. An isolated louder note, even one much louder than its preceding immediate context, is better conceptualized as a stress accent than the start of a new group of events. Change-of-rhythmic-pattern accents require the recognition that a rhythmic pattern is repeated consistently. In the case of Bach’s chaconne (figure 3.13), the recognition of a new event articulated by the rhythms
of bars 248–50 might not occur until the downbeat of bar 250, when the rhythmic pattern is heard in its entirety twice. In this case, recognition of the return of the rhythmic, melodic, and textural configurations of the opening of the chaconne may allow a listener to speculate in bar 248 or 249 that a new group unified by the contrarius rhythm has begun, but this speculation would still require confirmation through a recurrence of the rhythmic pattern.

The complexity of change-of-rhythmic-pattern accents demonstrates that weight is not necessarily determined “in the moment”; instead, subsequent events may change the meaning of a musical event and thus its attributed weight as well. Analyzing my own listening, it seems that retrospective changes in weight usually result in an increase in weight, rather than a decrease—I may miss the start of a new event (or be unsure that it is indeed a new event) but later recognize its onset and attribute weight accordingly. At least in my own listening, then, weight requires finality in order to be conferred. This post-hoc application of weight is characteristic of most figurative accents, and it is a fundamental aspect of durational accents and registral accents.

40. Rowland Moseley (2013) similarly claims that strong beats in the beat hierarchy are frequently felt as such retrospectively, arguing that meter is read “from the middle.”

41. Andrew Imbrie’s (1973) distinction between “conservative” and “radical” listening strategies may be relevant here. My listening process may be a “conservative” stance. Others may confer weight “radically,” experiencing a loss of weight after determining that an orchestral tutti only involves attacks in one simultaneity, resulting in a density accent rather than a density accent and a change-of-texture accent. The tutti attack on the second beat of bar 16 in the second movement of Haydn’s Symphony No. 94 in G Major is a paradigmatic example.

42. Mirka (2009) and Blom-Smith (1993) have argued for the existence of terminal accents, which apply to the last event of a group. Neither is able to isolate terminal accent from other phenomenal accents, however. Mirka argues that terminal accents apply to the last note of a group defined by temporal proximity (44), citing experimental evidence by Dirk-Jan Povel and Hans Okkerman (1981); however, that evidence is best interpreted as demonstrating the effect of durational accent, with duration resulting from interonset interval. Blom-Smith argues that cadences are more closural when they occur in stronger metrical positions. Cadences are always relatively high-level events, though (see the discussion of diminution and hierarchy in chapter 4, pages 166–80); they receive extra weight from the phenomenal accents attributed to the higher-
**Durational Accent:** After stress accents, durational accents are probably the best-known phenomenal accents. They apply to musical events that stand out from their contexts by virtue of longer durations. They also tend to be some of the heaviest phenomenal accents.

The duration of an event may be defined as the time interval spanning the onset of that event and the onset of the next event; this is often called an *interonset interval*. In figure 3.19 (Beethoven’s *Eroica* symphony, second movement, bars 1–8), the duration of each surface event spans the interval from the attack of one note to the attack of the next note (recall that rests are often not aural events but continuations of immediately previous events). The most traditional conception of interonset interval refers to the duration between one note and the next in the composite rhythm—the combined rhythm of every sounding voice. Since other voices in the orchestral texture are ignored in figure 3.19, we may more accurately say that the durations in this excerpt are *registral interonset intervals* (Temperley 2001, 33). Generally, registral interonset intervals are the most significant context for durational accents.

Figure 3.19 shows many durational accents in the surface rhythm of Beethoven’s theme. These durational accents are a key element of the theme’s funeral-march topic. The annotations in the figure follow distinctions made by Smither (1960) among durational accents, recognizing the effects of both the immediately preceding and the immediately following context. Smither argues that, in general, events that are both immediately preceded and immediately followed by shorter durations are the most heavily accented; those that are only preceded by shorter durations are moderately accented, and those that are only followed by shorter durations are the most lightly accented. The duration of a shorter event following the longer, accented event usually plays a rather minor role, so Smither’s accented events preceded and followed by shorter

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level event. Lacking any clear demonstration that terminal accents exist, I omit them from this discussion.
durations are often not significantly heavier than accented events only preceded by shorter durations, and his lightest category, accented events only followed by shorter durations, is much lighter than the second, moderate category.

Smither also recognizes that the ratio between the longer and shorter durations affects the weight of a durational accent. The numerals added above the staff in figure 3.19 indicate the relative durations between a long event and the relevant shorter events in its immediate context.

For example, the ratio 3:1 describes the durational accent on the very first note of the phrase, resulting from a dotted sixteenth note (3) followed by a thirty-second note (1). The durational accent applies to the event with the largest duration in the ratio, whether the ratio compares two or three values. The ratio 1:8:3, centered over G3 on the downbeat of bar 1, indicates that the duration of the quarter note on the downbeat is eight times the duration of the preceding event, a thirty-second note, and eight-thirds (8:3) the duration of the following event, a dotted sixteenth note.

Although Smither’s categories of durational accent—those both preceded and followed by shorter events, those preceded by a shorter event, and those followed by a shorter event—are helpful in approximating the weight of a durational accent, the ratio between the durations is much more significant. The accent on the downbeat of bar 6, at a ratio of 1:12:2, is undoubtedly the heaviest durational accent in the theme—even without the underscoring of the notated stress accent—followed by the 1:8:3 accent on the downbeat of bars 1 and 2. Accents involving larger ratios may even override the categories established in Smither’s heuristic. For instance, in my hearing, the 1:8 accent on the downbeat of bar 2 is much heavier than the 2:4:3 accent on

43. Recall that the eighth rest at the end of bar 2 acts as a performance nuance for the event begun on beat 2 (with the onset of C4), not a separate aural event in itself. Each event of bar 2 thus has a duration of one quarter note.
beat 2 of bar 7. Consideration of durational ratios is thus more useful in approximating the weight of durational accents than Smither’s heuristic; used together, the two aspects can give a good sense of the relative weight of a durational accent.

\[
\begin{align*}
\text{– Event is followed by a shorter duration} & \quad \equiv (\equiv) \quad \equiv = \\
\text{– Event is preceded by a shorter duration} & \quad \equiv = = = \\
3:1 & \quad 1:8:3 \quad 3:1 \quad 1:3:1 \quad 1:8 \quad 8:1 \quad 1:3:1 \quad 1:3 \quad 3:8
\end{align*}
\]

Figure 3.19. Surface-rhythmic durational accents in the immediate context in Beethoven, Symphony No. 3 in E♭ Major, op. 55, II, bars 1–8.

We might approach the passage-level context of durational accents in two ways. If surface-rhythms are very consistent in a given voice, a listener may be able to abstract a particular duration as representative of the passage-level context. Throughout bars 240–46 of Bach’s chaconne (figure 3.13), the triplet sixteenth note is the only surface duration used, so the arrival on the downbeat of bar 247 with a regular sixteenth note results in a passage-level durational accent, making the arrival on A3 significantly heavier than the accent produced through its immediate context. Likewise, in bars 1–4 of the fourth movement of Haydn’s String Quartet, op. 76, no. 6 (figure 3.6), the first violin part is dominated by eighth notes. The massive 13:1 ratio between the B♭5 on the downbeat of bar 5 and the eighth-note context of the preceding passage results in a very heavy durational accent on the B♭.
In less rhythmically consistent passages, it may make more sense to consider the range of regular durations, recognizing only events that exceed this range as durationally accented on the passage level. In the funeral march from the *Eroica*, the quarter note is established as the longest regular duration. Throughout the phrase, only one duration exceeds this contextual limit, the dotted quarter note on the downbeat of bar 6. We already noted that in the immediate context, this note receives the heaviest durational accent because of its 1:12:2 ratio with the surrounding durations; a passage-level durational accent makes it even heavier. Like durational accents at the immediate level, the ratio between the accented event and its context—in this case, the longest regular note value of the phrase—impacts the weight of the accent. The duration of this dotted quarter note forms a ratio of 3:2 with that of the quarter notes that are the longest regular durations of the passage.

Like many types of new-event accents, durational accents necessarily involve some retrospective processing. This should be obvious, as the duration of an event cannot be known until the event is complete. The specific point at which durational accents are applied depends on a few factors. First and foremost is the relevant context: preceding or following, immediate level or passage level. Accented surface rhythms involving the preceding immediate level of context are the simplest cases. In these situations, such as the downbeat of bar 1 in the second movement of the *Eroica* (figure 3.19), part of the accent applies once it is clear that the current duration is longer than the preceding duration; in my hearing, weight continues to apply until the longer duration is complete. Emphasis arising from the comparison of duration with the immediately following material, of course, is applied whenever the following duration is complete.

Durational accents at the passage level are usually applied in the same manner as the preceding immediate context, although passage-level accents that begin a piece or a major formal
section may lack clear context until a few subsequent events occur. Two examples occur in the beginnings of the Air from J. S. Bach’s Orchestral Suite No. 3, BWV 1068 (figure 3.20), and Chopin’s Ballade in G Minor, op. 23 (figure 3.21). Both pieces begin with notes that are significantly longer than most other events in the remainder of each passage. They differ significantly, however, in terms of composite rhythm. In the Chopin, all sounding voices (the unison texture may also be regarded as monophonic) begin with the same duration, while Bach includes much faster durations in his bass voice. A sense of temporal scale develops very quickly in the Bach, so that the status of the melodic F♯5 as a very long duration for the passage (9:1 in comparison to the eighth notes of the walking bass) is apparent almost immediately; in contrast, a sense of the eighth note as normative duration for the opening of the Chopin does not materialize for me until around the downbeat of bar 2, so it is only at this point that the (relatively indeterminate) long duration of the opening C receives emphasis at the passage level. It seems that the duration between the occurrence of an event and the time at which an accent is applied significantly impacts the weight of the accent. Passage-level durational accents applied long after the relevant event appear to be significantly lighter than those applied during and at the completion of the accented event.

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44. Generally, the durations of other voices are relevant for the determination of durational accents at the passage level rather than the immediate level.

45. Further development of this speculation is beyond the scope of this chapter. I will return to the issue in chapter 4, pages 178–80, placing it within a broader discussion of time, weight, and the psychology of music listening.
My discussion of durational accents has thus far centered on the composer and musical notation. Obviously, performance is also a critical aspect of musical timing. We can distinguish quantized duration from absolute duration. Absolute duration denotes the chronological duration of an event in a particular performance. Quantized duration refers to the relative duration that a listener assigns to that event. For instance, at a tempo of sixty beats per minute, with the quarter note marking the beat, a quarter note “should” be one second in duration. For various reasons, a performer may choose to hold a quarter note longer. If the listener interprets that event as a quarter note (or an equivalent duration to other events that are notated as quarter notes), its quantized duration is still equal to all the other quarter notes of the passage, even though its
absolute duration might be longer than some of the others. As listeners, we perceive both absolute and quantized duration simultaneously.

Normally, quantized duration is a more overt influence on durational accent than absolute duration, since it tends to involve more intense contrasts; absolute duration may alter the weight of an accent, though, and it may create subtle durational accents of its own, especially in passages consisting mostly of equal notated durations. In the opening of the second movement of the Eroica (figure 3.19), for instance, a performer may be inclined to “overdot” the first duration, lengthening the dotted sixteenth note by taking away time from the following thirty-second note. This would intensify both the relatively light durational accent on the first G3 and the heavy accent on the third G3, the downbeat of bar 1. On the other hand, a performer might hesitate slightly on the D4 thirty-second note at the end of bar 1 in preparation for the end of the subphrase, a choice that would perceptibly lighten the durational accent on the following note (assuming that the performer does not also stretch the E on the downbeat of bar 2).

We might also distinguish quantized duration from notated duration based on the aforementioned distinction between aural and notated events. As mentioned above, a notated rest is often interpreted as a continuation of the aural event begun with the attack of the previous note. The quantized duration of the aural event would include the notated durations of the note and the ensuing rest. Discrepancies between quantized and notated duration may also arise when

46. A listener’s quantization of an absolute duration varies with three factors: the listener’s grasp of the relevant compositional style(s), the clarity of the listener’s metrical framework, and the degree of expectation for a performer’s stretching or compression of musical time during a particular event. The last factor itself depends on a listener’s acculturation to one or more performing traditions. While these factors problematize the a priori assumption of quantized duration as a factor for durational accent, a concept of entrained meter at multiple levels depends on such quantization: if we assert hierarchical meter in a passage, we necessarily assert an intention for listeners to be able to quantize the passage’s durations from their absolute performed duration. Some devices and styles attenuate the effect of quantized duration, including cadenzas and recitative.
composers “write out” fermatas, ritardandos, and accelerandos through durational values. For example, in the second movement of Beethoven’s Fifth Symphony (figure 3.22), a listener may interpret the long durations of bars 149–50 and 152–53 as quarter notes with fermatas, feeling the impact of the long absolute duration of the events but perceiving only a 4:8:3 quantized durational relationship in its immediate context.  

![Figure 3.22. Beethoven, Symphony No. 5 in C Minor, II, bars 148–57.](image)

Durational accent applies to all musical events, not just surface durations. Thus, all of the means of grouping discussed in reference to new-event accents are relevant for durational accents as well, including change of pitch, harmony, dynamics, articulation, register, rhythmic pattern, timbre, and instrumentation, the start of a slur, and melodic grouping. In the first phrase of the slow movement of the *Eroica* (figure 3.19), the downbeat of bar 8 receives a surface-

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47. The example comes from Rothstein (1989, 81). Not all of his examples of internal phrase expansion by “composed-out” fermata or deceleration would likely result in a discrepancy between quantized duration and notated duration, though, because he includes passages with consistent surface figuration before and during the expansion. The continuous figuration prevents a listener from stretching beats.

For more on written-out fermatas and ritardandos, see Norman Wick 1994.
rhythmic durational accent because the C4 eighth note is both preceded and followed by shorter rhythms, but it also receives a change-of-pitch durational accent at the immediate level of context, as the C4s of bar 8 group together for a total duration of three eighth notes, exceeding the thirty-second-note B4 by a 12:1 ratio.

In Western tonal music, harmony is the most significant event-grouping criterion for durational accents. In fact, it is the only criterion for which there is terminology in common parlance: harmonic rhythm, a term coined by Walter Piston (1944, 319), refers to the rhythm generated by changes of harmony in a passage of music. In his chaconne (figure 3.13), Bach places significant weight on beat 2 in bars 249–50, partly because of the consistent quarter-note–half-note harmonic rhythm. The long harmonies fall on beat 2, and they are surrounded by shorter harmonies in their immediate context at a 1:2:1 ratio. In bars 251–53, he accelerates the harmonic rhythm to a consistent quarter-note motion, resulting in a heavy harmonic-durational accent on the downbeat of bar 254, which again is surrounded by shorter harmonies in a 1:2:1 ratio. The half-note dominant that initiates the hemiola at bar 254 is likewise marked at the level of the passage, gaining weight because it is preceded by three bars of consistent quarter-note harmonic motion.

Excepting harmonic rhythm and melodic grouping, durational accents among groups of events mostly derive from the immediate context. This is chiefly because the passage level of context for pitch repetition, dynamics, articulation, register, rhythmic pattern, timbres, and instrumentation is often poorly defined.

Under specific conditions, however, rates of change in these parameters may become normalized within a passage. For instance, in the development section of the first movement of

48. For more on harmonic rhythm, see also Jan LaRue 1957/2001 and Joseph Swain 2002.
Mendelssohn’s “Italian” Symphony, the movement’s opening thematic gesture returns in a dialogue between woodwinds and brass in bars 246–61 (figure 3.23). In this dialogue, the fanfare-like dotted rhythms are traded back and forth every four bars, establishing a clear passage-level context for changes in instrumentation. The pattern is broken at bar 262, when a statement of the melody in the woodwinds and first violins begins, continuing for twelve bars before the *tutti* return of the development theme. A durational accent thus occurs at the upbeat to bar 262; it is, of course, assigned retrospectively.

Figure 3.23. Mendelssohn, Symphony No. 4 in A Major, “Italian,” I, bars 246–75.
Figure 3.23. (continued)
Outside of development sections and antiphonal (e.g., polychoral) works, such clear establishment of a passage-level context for instrumentation is certainly not the norm. Similarly, clear higher-level contexts for pitch repetition, dynamics, articulation, register, rhythmic pattern, and timbre do not arise unless the composer carefully structures a passage to create them.

**Registral Accent:** The last class of phenomenal accent is also one of the simplest. A registral accent occurs at the point that a voice changes direction, whether apex or nadir. Because registral accents coincide with the start of a new melodic direction, they could be considered another subset of new-event accents. I classify them as a separate type of phenomenal accent because their weight seems to be impacted by the change of direction involved; this suggests that the mechanism for registral accent is not simply instantiated by the initiation of a new melodic direction. Apexes, in most voices, are generally perceived as heavier than nadirs, despite the
embodied association between “low” and “heavy” (owing to physical gravity). In the bass voice, however, nadirs tend to be heavier than apexes. In part, the weight of upper-voice apexes and bass nadirs derives from their extreme positions and a sense of distance that they produce: bass nadirs are the farthest notes from the upper voices and upper-voice apexes are the farthest from the bass voice.

A straightforward example of registral accent can be found in bar 247 of Bach’s chaconne (figure 3.13). The weight that falls on G5 just before the third pulse is almost entirely attributable to the presence of the melodic apex and concomitant registral accent. Another clear example occurs at the start of the fourth strophe to Schubert’s “Gute Nacht” (figure 3.15A). Beginning the opening melodic gesture on its highest point places a significant amount of weight on that initial F♯5 occurring at the end of bar 71 and thus a substantial cross-accent against the established meter. If one replaces this F♯5 with a D5, the cross-accent is entirely removed, resulting in a much less interesting melody.

The increased weight of melodic extremes, apexes in upper voices and nadirs in the bass, also derives from the effects of metaphorical “musical forces.” Steve Larson (2012) identifies three environmental forces that constrain the interpretation of melodies: gravity, magnetism, and inertia. Gravity is the tendency of melodies to descend, magnetism is the melodic tendency to move toward a more stable tone, and inertia is the melodic tendency of a process or state to continue. As previously mentioned, ascending upper-voice motion usually implies energetic

49. When bass voices take on the melodic nature of an upper voice, however, their apexes become more salient.

50. Because “Gute Nacht” is strophic, the motivation for beginning the strophe with a registral accent may derive from another strophe. The first stanza of the poem begins with the word “Fremd,” strange; Schubert’s registral accent emphasizes the semantic significance—what Oswald Jonas (1982) calls a “meaning accent” (Gestalteter Akzent or Sinnakzent in the original German) (149)—of this very charged first word.
exertion, namely exertion against gravity (Hatten 2012). In order to project this implicit energetic expense, performers often crescendo during ascending motion; thus, upper-voice apexes gain some of their weight through stress accents.\textsuperscript{51}

Like durational accents and many new-event accents, registral accents can only be applied after a new melodic direction has begun. Obviously, a listener may not determine that a change in direction has occurred until the first interval in the new direction has been determined—that is, until the second note has begun. This generally results in a relatively small time delay between the start of the new direction and the application of the accent.

**Summary**

In this chapter, we have produced a first approximation of the nature of weight. Phenomenal accent is a chief element of weight, generating the latter through the degree of emphasis at a particular moment in musical time. Phenomenal accents arise when musical moments and events distinguish themselves from their contexts, whether through increased dynamic level, longer duration, marking a change of melodic direction, or by initiating a new event or group of events. These contexts are varied, and they include the events immediately preceding and following, the norms of the surrounding passage, and the norms of the many levels of style relevant to a given musical moment.

\textsuperscript{51} Further stress may be needed to resist the pull of magnetism or to overcome the force of inertia.
Chapter 4

WEIGHT II: MASS AND SUBTLETIES OF EMPHASIS

In chapter 3, I examined the most common kinds of phenomenal accents and developed a basic sense for how they operate in order to establish a framework for the emphasis component of weight. I have not yet articulated a comprehensive picture of weight, nor even of phenomenal accent. Several thorny issues still merit consideration: diminution and tonal function, “negative” accents, and the question of metrical accent as a generator of phenomenal accent. I address these issues individually in this chapter. Additionally, I offer a conception of musical mass as a second component of weight.

Mass: Loudness and Duration

Consider a series of four repeated notes (figure 4.1). Assuming that they are performed with exactly the same duration, articulation, and dynamic level, the following phenomenal accents will occur: the first note will receive a new-event accent, a new-pitch accent, a new-harmony accent, a stress accent, a new-dynamic-level accent, and a new-group accent; the other notes will receive only new-event accents.\(^1\) From this list, one would expect the first note to be much heavier than the others—certainly new-pitch, stress, and new-group accents are heavier than the new-event accent that applies to every event of a piece! Why then does the first note only seem a bit heavier than the others, rather than incomparably so?

\(^1\) It may be impossible to avoid hearing a durational accent on the final note of the series, making it seem heavier than the second and third notes. A reader who experiences this heaviness on the final note may simply ignore the final note. The purpose of this exercise is to examine the relationship of the heavily accented and the mostly unaccented notes, which is possible by comparing the first note to the second and third.
Figure 4.1 A series of four repeated notes.

Weight is also affected by a sense of the size of an event, what I call *mass*. Because each of the events in figure 4.1 has the same internal properties, they each have the same mass. Thus, in spite of the vast differences in weight from phenomenal accents, the equal mass of all four notes results in a perception that the first note is only a bit heavier than the others. *It is the combination of mass and emphasis that determines weight.*

The factors that give rise to mass are loudness and duration. Loudness is simple to explain: the louder an event is, the larger and heavier it seems. Imagine a performance of figure 4.1 in which all four notes are played at exactly the same dynamic level and sustained through to the next note. As mentioned above, the first note seems a bit heavier than the others, but not considerably heavier. Now imagine a lilting performance that strongly favors the first and fourth notes. In the latter performance, notice how much lighter the second and third notes seem in comparison to the first. The effects of near evenness and lilt in these two performances arise through differences in mass in addition to the emphasis of stress accents.

Loudness can also produce significant differences in the perception of weight. Perform figure 4.1 so that the first two notes are *forte* and the last two *piano*. A receding contour is produced: the first note is the heaviest, the second is a bit lighter, the third is much lighter than the first and second, and the fourth is a bit lighter than the third. The small difference between the first and second notes arises from emphasis, as does the small difference between the third

2. An ecological origin for this perception is most likely: louder sounds tend to emanate from larger sources, such as large animals.
and fourth notes—the first note receives all of the phenomenal accents mentioned above, and new-dynamic and new-group accents occurs on the third note, while the second and fourth notes receive only new-event accents. The substantial drop in weight from the second to the third note, however, arises solely from the effect of mass, which overwhelms the extra emphasis resulting from the third note’s new-dynamic and new-group accents.

As discussed in chapter 3, the density of sound at a particular moment also affects loudness. In figure 4.2, phenomenal accents provide significant emphasis on the moment of the first attacks but, similar to figure 4.1, the equal density throughout figure 4.2 counteracts the much greater emphasis on the first attacks, minimizing the weight disparity. In figure 4.3, a receding weight profile results from a significant reduction in emphasis and mass on the third pulse: while the third quarter-note pulse receives a change-of-texture accent, it receives three fewer new-event accents and the much-reduced density at the third pulse produces significantly less sound, resulting in a significant reduction of mass.\footnote{As in chapter 2, I use the term pulse here simply to indicate one of the equal divisions of a measure, possibly but not necessarily a beat in unequal meters.} The weight profile of figure 4.3 recedes slightly from the first pulse to the second, drops precipitously from the second to the third, and reduces slightly more from the third to the fourth.

Figure 4.2. A series of four repeated notes in four voices.
Duration acts similarly to loudness: the longer an event is, the larger and heavier it seems to be. Discussing the differences between slow and fast movements, Sir Donald Francis Tovey (1927) writes that “slowness is bigness” (137). In figures 4.1 and 4.2, the equality of duration among notes helps to counteract the heavy emphasis on the first quarter note, producing nearly even weight throughout each figure. In figure 4.4, however, the change from half notes to quarter notes results in a large reduction of weight, although the two half notes are nearly equal in weight, as are the two quarter notes.

The perception of durational mass is not limited to notated duration. In an attempt to preserve the vanishing tempo giusto—the “natural tempo” of a meter—Johann Philip Kirnberger

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4. Discussing the slow movement of Beethoven’s Piano Sonata in D Minor, op. 31, no. 2, Tovey compares the enormous scale of the first theme, which spans sixteen bars, to the new material six bars before the end of the movement, which initially occupies two bars before fragmenting into a gesture of a single beat: the latter, new material is “a human figure placed in front of the sphinx, so as to show the colossal scale” (137).

5. Howard Smither (1960) recognizes this aspect of durational mass, though he attributes it to the weight of a durational accent. His first principle for determining the relative weight of a durational accent is the “‘absolute’ or notated length of the note”: whole notes are heavier than half notes, which are heavier than quarter notes, etc. (341).
(1771–79) explains the different tempos and “characteristic motions” implied by particular meters (vol. 2, 111). In general, he notes that the larger the durational values of the meter, the slower and heavier a performance should be (106). A loure in \( \frac{3}{4} \) is slower than a minuet in \( \frac{2}{4} \) (106), for instance, and \( \frac{3}{4} \) should be performed “far more lightly” than \( \frac{2}{4} \), alla breve, which is much more “heavy and emphatic” (118). While the implications of tempo and characteristic motion are separate, they are related: slower tempos encourage heavier motion and faster tempos encourage lighter motion (380). Thus, the effect of duration on weight does not derive simply from the surrounding musical passage; it is also informed by broader stylistic contexts.

Performing figure 4.1 at a tempo of 60 beats per minute for the quarter note and 120 beats per minute for the quarter note demonstrates the effect of tempo on durational mass. Corroborating Kirnberger, to my ear the first performance sounds heavier as a whole than the latter. Tempo changes are unlikely to play a significant role in the analysis of weight profiles; they do, however, clarify the role of absolute duration in the perception of mass.6

As a component of weight, musical mass is an entirely new conception. If many of the factors that give rise to phenomenal accents have been known for hundreds of years, it may at first seem baffling that mass has been discussed only indirectly. The most likely reason is that musical mass almost never determines the location of strong beats: one almost never has reason

6. One may also wonder whether register affects the perception of mass. The humor of Saint-Saëns’s “The Elephant” from Carnival of the Animals suggests an association of increased mass with descending registral transfer: as is well known, the elephant performs flute and violin melodies from the scherzo of Mendelssohn’s incidental music to A Midsummer Night’s Dream and Berlioz’s The Damnation of Faust on the double bass. Furthermore, an ecological origin readily presents itself: deeper pitches tend to emanate from larger sources. It remains very difficult, however, to demonstrate an independent increase of mass associated with descending motion; attempts to do so will almost certainly involve registral accents, change-of-register accents, or issues of hierarchy (discussed below, pages 166–80). If lower register does contribute to mass, its effects are very subtle and easily overwhelmed by the other factors of weight.
to appeal to the loudness of an event that is not louder than its contexts or to a duration that is not longer than its contexts; instead, one appeals to a change of harmony, a registral accent, a relatively long duration, or a relatively loud sound. Mass rarely, if ever, independently determines the beat hierarchy, but it is crucial in shaping the weight profile of a measure.

Upon recognizing the influence of mass upon weight, a question arises concerning the emphasis of phenomenal accents: do more extreme stress accents, durational accents, and registral accents actually differ in emphasis from less extreme versions, or does the increased weight of the more extreme versions of these accents arise instead from the increased mass perceived in louder and longer notes? Phenomenal accents arise when events separate themselves from their contexts; the more they exceed their contexts, the more “marked for consciousness” they are, and the more emphasis they seem to have. It follows that more intense contrasts in stress and duration produce heavier phenomenal accents. Unfortunately, it is impossible to isolate the effects of a durational accent’s emphasis from mass, because all durational accents necessarily involve the increased mass of a longer duration. It is possible, however, to isolate stress accent from mass. In order to do so, we must consider a new class of phenomenal accent.

**Negative Accents**

Many of the phenomenal accents discussed in chapter 3 arise from motion toward larger values in some domain: longer durations, louder sounds, greater densities, and registral extremes.\(^7\) There are situations, however, in which motion toward smaller values may generate phenomenal accents. These accents are sometimes called “negative” accents because of this

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7. Indeed, for Wallace Berry (1976), “element changes toward accentually ‘superior’ values” defines one of the main classes of accentual criteria (339).
apparent negative motion, moving in the opposite direction of the motions that typically generate emphasis.

Discussions of negative accent in the literature involve an unexpected reduction in loudness. William Rothstein (1984), for instance, says that negative accent is “created by especial softness rather than added force” (20, emphasis in original). Because loudness is created through two mechanisms, stress and density, I recognize two types of negative accent: negative stress accent and negative density accent. The two may exist independently, but they are frequently combined.

Like the (positive) stress accent, negative stress accent applies to the attacks at a single moment, arising from an abrupt reduction of stress at that moment. The long opening phrase from the first movement of Beethoven’s Piano Sonata in F Minor, op. 57, offers a clear example (figure 4.5). In this 16-bar sentence, the first thirteen bars remain within a pianissimo dynamic, but the dynamics abruptly switch to forte at the propulsive three-note anacrusis to bar 14. The forte dynamic continues until the arrival of the half cadence on the downbeat of bar 16, when the dynamic level suddenly drops to piano. Beethoven emphasizes the abruptness of this change by reiterating the forte dynamic on the fourth beat of bar 15; this reiteration eliminates any hint of the coming dynamic change, preventing the performer from using the textural shift in bar 15 to ease the dynamic shift. The sudden drop in dynamic level is unpredictable, and it strongly marks the moment of the cadential arrival, creating special emphasis on that moment.
Many negative stress accents shift to a new dynamic level for a few notes or a full passage, not just a single note. In these situations a negative stress accent and a change-of-dynamic accent arise together. In the second movement of Beethoven’s Piano Sonata in E Minor, op. 90, for instance, sudden drops of dynamic level function motivically (figure 4.6). At the end of bar 7, just before the cadential arrival, a crescendo is interrupted by a sudden and

8. The latter is a kind of new-event accent, arising from the start of a new group articulated by dynamic level.
precipitous drop to a *piano* dynamic that persists through the cadence. Similar drops occur in bars 15 and 23, before the final phrase of the rondo’s refrain overwrites the dynamic drops with a *forte* arrival in bars 25–26, and the ensuing episode places *forte* and *piano* dynamics in conversation.

Building on this motivic play of dynamics, Heinrich Schenker suggests that a pianist may create a related negative accent in bar 9 (and presumably in bars 11, 17, and 19 as well) (Rothstein 1984). During the first beat of bar 9, Schenker advocates the use of “hand pedal” in the left hand, leaving the fingers on the keys longer than the notated duration in order to produce a pedal effect; at the second beat, the pianist is to shift to use of the damper pedal in conjunction with a quick change to a *piano* dynamic. The “release” of hand pedal at the second beat of bar 9 results in a brief, marked drop in dynamic level at the start of the beat, a reduction from four sounding voices to two. The negative accent produced by Schenker’s “hand pedal” is aided by the arpeggiated diminutions of the accompaniment, since only one accompanimental voice need literally sound at any moment.

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9. As Rothstein (1984) notes, Schenker’s suggestion emphasizes that E5, D#5, D5, and C#5 are cover tones (20).

10. The depression of the pedal at beat 2 also noticeably changes the piano’s timbre, producing at that moment a change-of-timbre accent (a kind of new-event accent).
Figure 4.6. Beethoven, Piano Sonata in E Minor, op. 90, II, bars 1–32.

So far, I have largely considered dynamic level to be the loudness of individual notes. Schenker’s negative accent at beat 2 of bar 9 is analogous to a durational accent of the composite
rhythm rather than an individual voice. It is a negative accent of the composite dynamic level, produced by the loudness of all notes sounding at a particular moment, an aspect of density. It is thus a negative density accent.

Negative accents arise through transgressions of their passage-level contexts. The preceding passage establishes a bandwidth of expected dynamic level, through stress and textural density, and a sudden move to a dynamic level beneath the lower threshold is unexpected, creating marked emphasis through a lack of loudness. It is perhaps easiest to create negative accents within the context of a crescendo, as in the precadential negative stress accents of Beethoven’s piano sonata, op. 90, because the bandwidth of expected dynamic level for anticipated events is rather narrow during a crescendo.

Loudness is the only sonic property that creates negative accents.\textsuperscript{11} There are no negative durational accents because shorter durations are typically interpreted within the space of some larger event, usually grouping the shorter event with at least one previous event. Likewise, negative registral accents do not exist; “positive” registral accents already include both apexes and nadirs. Finally, new-event accents cannot be made negative because they occur only through positive motion, the onset of a new event. The lack of a new event where one was expected may create a new-event accent at that moment, as in the case of the loud rest; otherwise, it either creates a durational accent or intensifies an extant durational accent by extending the duration of the previous event.\textsuperscript{12}

\textsuperscript{11} Recall that density accents arise from increased loudness, not an increase in the number of new-event accents. See the discussion in chapter 3 (pages 119–21).

\textsuperscript{12} As discussed in chapter 3 (pages 121–25), loud rests are some of the relatively few situations in which rests are new aural events. Rests are frequently interpreted within the duration of the previous note.
Though they do not constitute negative new-event accents, loud rests are perhaps the most extreme examples of negative accents, often being the combination of zero loudness with negative density and stress accents.\

As discussed in chapter 3, a loud rest occurs in bar 58 of the first movement of Haydn’s String Quartet in E♭ Major, op. 33, no. 2 (figure 4.7). On the third beat of bar 58, the expected resolution to C minor is suppressed and replaced by rests. Instead of four sounding notes, there are none, producing a negative density accent; instead of a forte dynamic, no sound is produced, yielding an intense negative stress accent in each voice.

![Figure 4.7. Haydn, String Quartet in E♭ Major, op. 33, no. 2, I, bars 56–58.](image)

The use of negative accents near formal seams is a favorite device of Franz Liszt. Typical examples occur in bars 56–57 of Liszt’s “Bénédiction de Dieu dans la Solitude,” no. 3 from Harmonies poétiques et religieuses, S. 173 (figure 4.8). In bars 51–54, Liszt establishes an afterbeat accompanimental pattern that reaches a goal through ascending stepwise motion on the downbeats of even bars. The lack of new attacks in the accompaniment at bar 56 is thus quite surprising, feeling like a suppression and thus both a loud rest and a negative density accent. Because the pedal has been depressed throughout bars 55 and 56, all the notes of bar 55 continue

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13. The term “loud rest” was coined by Justin London (1993) to generalize the phenomena that produce what Cooper and Meyer (1960) famously call the “loudest silence in musical literature” (139).
to sound during bar 56, which mediates the effect of the loud rest at the downbeat of bar 56, preventing a stark reduction of dynamic level. The release of the pedal just before the downbeat of bar 57, however, results in an intense negative density accent on the downbeat, leaving the lone soprano voice exposed and vulnerable.

Figure 4.8. Liszt, “Bénédiction de Dieu dans la Solitude,” no. 3 from *Harmonies poétiques et religieuses*, S. 173, bars 51–61.

Though they have duration, loud rests do not have mass. Mass is a (metaphorical) property attributed to aural events, and loud rests arise through suppressions of attacks, resulting in the absence of sound. The absence of sound cannot have mass, just as the absence of matter cannot have mass. Because they have emphasis without mass, loud rests offer compelling evidence for the separation of mass and emphasis. All weight that accrues to a loud rest derives from the emphasis generated by a new-event accent, a negative stress accent, and a negative

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14. In situations like bars 55–56, the piano has the rare ability to create the sensation of a rest while sustaining the previous notes, an ability shared by the harp, guitar, dulcimer, and vibraphone. I still analyze the downbeat of bar 56 as a negative density accent because of the perception that new attacks in the inner voices have been suppressed.
density accent; thus, for the “loudest silence in musical literature” (Cooper and Meyer 1960, 139), the downbeat of bar 280 in the first movement of Beethoven’s *Eroica* Symphony (figure 4.9), its superlative “loudness” arises from the extreme intensities of a negative stress accent (a rest as an aural event in the context of consistent accented *forte* attacks) and a negative density accent (a grand pause in the immediate context of *tutti* orchestral attacks).

![Figure 4.9](image)

Figure 4.9. The “loudest silence in musical literature,” Beethoven, Symphony No. 3 in E, Major, I, bars 272–83.

The “negativity” of negative accents may seem arbitrary; I suspect that they are most often called *negative* because they arise from motion in the opposite direction of normal stress accents—reductions in loudness rather than increases. With the clarification of musical mass offered in this chapter, however, this negativity is revealed to be much closer to the core experience of music, not simply an arbitrary designation of positive and negative. Negative stress
accents and negative density accents receive weight through an unexpected reduction in loudness, which causes a loss of mass. Negative accents are the only phenomenal accents that place emphasis and mass in direct opposition.

**Tonal Function, Diminution, and Weight**

An important lingering issue in the study of phenomenal accent concerns the role of tonal functions. Is there such a thing as tonal accent? Is tonic harmony inherently more accented than dominant and subdominant harmonies (Caplin 1981, 1983; Lerdahl 2001; Mirka 2009), or is harmonic function accentually neutral (Berry 1976)? Do melodic representatives of tonic harmony receive more weight than other scale degrees (Schachter 1976)? Are melodic intervals inherently weighted toward the source or destination note depending on the interval (Graziano 1975), or does the musical context negate any inherent accent (Lester 1986)? Is dissonance more accented than consonance (Berry 1976), or is it the other way around (Blom-Smith 1994)? Is accent determined with reference to pitch hierarchy (Lerdahl and Jackendoff 1983, Benjamin 1984, Blom-Smith 1994)? In the past forty years, all of these positions have been argued, even though many directly contradict each other. In this section, I will show that tonic accent does not exist, strictly speaking, while accommodating the impulses that lead to many of the claims above.

Wallace Berry perhaps ignited the argument when he asserted that “tonal function…is in and of itself metrically neutral” (Berry 1976, 330). Carl Schachter (1976) and William Caplin (1981) responded with claims that tonic function is inherently more accented than other functions, and Caplin (1983) marshalled support from many of the major theorists of the eighteenth and nineteenth centuries: Rameau, Vogler, Sechter, Hauptmann, and Riemann all
argue for inherent accent of particular tonal functions, though they offer differing (and conflicting) explanations. Berry’s controversial argument rests on a demonstration that V–I motion is equally plausible in weak–strong and strong–weak metrical settings. While Berry’s evidence may seem scant, it raises a fundamental issue: if one does not experience a weak-beat perfect cadence as syncopated or at least weakly cross-accentual, then tonic function cannot be inherently accented. Given the apparent preference among contemporary Anglo-American theorists for weak-beat cadences (Rothstein 2008), it seems unlikely that weak-beat cadences are experienced as rhythmically dissonant.

Similar demonstrations could be performed to show that tonic scale degrees and melodic intervals are not inherently accented. For example, tonic and mediant scale degrees do not necessarily offer any resistance within a dominant prolongation (figure 4.10). Further, as John Graziano (1975) notes, the harmonic context surrounding an interval may change the accentual interpretation given to it by a listener (21–22). Thus, the accent depends upon the interpretation, not the interval, scale degree, or harmonic function—even if listeners most often associate isolated intervals with particular scale degrees and harmonic functions. These demonstrations do not contradict the intuition that melodic and harmonic representatives of tonic function tend to be accented, but they do show that the source of the phenomenal accent lies elsewhere.

15. Although Graziano recognizes that context influences the perception of accent, he offers an alternative interpretation: the accents perceived in an interval or chord progression in isolation are still present in full musical contexts, though they may be changed or overwhelmed by other accents (1975, 22). I see no reason to argue that listeners isolate all the individual melodic intervals and chordal successions of a full musical texture in order to determine the implied tonics and accentuality of each; instead, it seems more plausible that listeners arrive at a holistic interpretation of tonality and hierarchy that is based on the combination of melodic intervals, known stylistic schemata, and the evidence of the piece prior to that point.
A few theorists have argued that the interpretation of structural hierarchy produces tonal accent. For example, Richard Blom-Smith (1994) defines his conception of tonal accent as follows:

[Tonal accent is] the phenomenal accent determined by an event’s tonicity. That is, however and at whatever hierarchical level events define tonality—be it by interval, harmonic motion, or linear-contrapuntal motion—such events determine phenomenal accents, and the strength of a tonal accent is determined by the pitch-structural importance of the articulating event (248).¹⁶

Under this conception, the D and F♯ of figure 4.10 receive less emphasis than the C♯, E, and G because they have less hierarchical depth; in contexts of tonic prolongation, the tonic, mediant and dominant scale degrees tend to receive more emphasis than the leading tone, supertonic, subdominant, and submediant.¹⁷

As William Benjamin (1984) has shown, however, it is not hierarchical depth alone but the simultaneous hearing of the musical surface with hierarchical reductions that produces the so-called “tonal accent” (383–84).¹⁸ Figure 4.11 shows bars 1–8 of the second movement of Mozart’s Piano Sonata in C Major, K. 330, and Benjamin’s three-level reductive analysis of the

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¹⁶. Anne Alexandra Pierce (1968) offers a similar definition for structural accent (28).

¹⁷. On the occasion that tonic, mediant, and dominant embellish other tones within a tonic prolongation, they do not receive greater emphasis, of course.

¹⁸. Lerdahl and Jackendoff (1983) likewise imply that (time-span) reductions may produce phenomenal accents, but they only directly acknowledge that reductions produce durational accents: in their metrical preference rules (MPRs), they prefer to align relatively strong beats with the beginning of relatively long durations and harmonies in the time-span reduction (MPR 5e and f), and they prefer a metrical interpretation that minimizes syncopation in the time-span reduction (MPR 9).
passage is included in figure 4.12. If a listener hears something akin to Benjamin’s analysis, that listener will perceive events and harmonies moving at multiple levels. One may simultaneously hear the first harmony lasting for two beats, its surface duration, and three bars, as at level C.
That listener will also feel the same phenomenal accents of the surface applied to the reductions. The most salient of these are new-event and durational accents. Because of the durations at level C, for instance, a heavy 3:1 durational accent in the harmonic rhythm applies to the attack of the F-major harmony on the downbeat of bar 1, and an even heavier 1:3:1 accent applies to the downbeat of bar 5 at the onset of the G-dominant-seventh harmony. Notice that these phenomenal accents do not necessarily apply to the same location as their surface manifestations, which are often delayed. For example, at level A, the appoggiaturas on the downbeats of bars 2 and 4 are removed, and the relevant new-event and durational accents for A3 and F4 (in bar 2) and E4 and G4 (in bar 4) apply to the downbeat of those bars, not beat 2.19

Benjamin’s use of reductions, rather than simply hierarchical depth, fixes three crucial problems with Blom-Smith’s notion of tonal accent. First, it shows that the accent does not derive from a separate accentual mechanism—“tonal accent” is actually the experience of new-event, durational, and registral accents on deeper hierarchical levels. Second, it eliminates the redundancy of multiple references to the same deep-level phenomenon, which would be equally accented under Blom-Smith’s conception. Repeated returns to a prolonged tonic do not each receive the same emphasis. For example, the returns to tonic harmony in bars 2 and 3 are relatively low-level events, occurring within the time-span of the tonic harmony begun at the downbeat of bar 1 in levels B and C. Finally, the recognition of reductions as the generators of emphasis clarifies the location of the apparent tonal accent: the extra emphasis occurs at the

19. It is not my intention to tacitly promote either Benjamin’s analysis or his reductive method as being correct or more appropriate than any other hierarchical analysis or reductive method, Schenkerian or otherwise. Instead, I simply wish to recognize the significance of hearing hierarchy in time: if one hears a particular hierarchy, then one necessarily hears real deeper-level events happening at particular moments and having specific durations. These events significantly affect weight. I cite Benjamin’s analysis because it was the first discussion, to my knowledge, of the impact of hierarchical reductions on phenomenal accent.
onset of the relevant event at a deeper hierarchical level, not its surface manifestation. It is not the soprano F4 on beat 2 of bar 2 that receives a new-event accent for being the surface location of the relatively deep-level F4 (occurring on level A); instead, the downbeat of bar 2 receives the deeper level new-event accent because it is the location of that F4’s onset on level A.

The third correction may be the most crucial. The proper alignment of deeper-level new-event accents helps to clarify the source of phenomenal accent in suspensions, appoggiaturas, and the other types of “attack embellishments.” Attack embellishments are unique: they are the only musical events whose onsets are simultaneously the onsets of different deeper-level events, whose surface manifestations they delay (figure 4.13). All other events of the musical surface

20. Included in this list are accented passing tones, accented neighboring tones, slides (Schleifern), acciaccaturas, “attack” or “appoggiatura” chords (such as the cadential 6/4), and all other embellishments that prolong a note or harmony by delaying its onset at the musical surface, whether consonant or dissonant with the underlying harmony. Indeed, even Couperin’s suspension, in which a note is delayed by a rest (1713, 75), may constitute an attack embellishment if the rest is heard as an aural event that delays the main note.

Attack embellishments are particularly abundant in French-baroque harpsichord music and Italian opera of the eighteenth and nineteenth centuries. Italian opera composers explored many non-standard formulas to emphasize the accento comune at poetic line endings (e.g. the embellishments at the end of the first two lines of Verdi’s “La donna è mobile” from Rigoletto). And, as is well known, French-baroque harpsichordists used ornaments to combat their instrument’s quick decay. Increased emphasis on the embellished note is a secondary effect.

Caplin (1978), Lester (1986), and Mirka (2009) have claimed that suspensions (and presumably all attack embellishments) do not generate independent phenomenal accents, that they simply occur simultaneously with other phenomenal accents—for instance, a change of harmony. One may illustrate that attack embellishments do create greater emphasis upon a particular moment, however, by playing in alternation a passage with an attack embellishment and the same passage without it. In the two examples below, the attack embellishment clearly results in greater weight at the moment of its onset.
either occur within the time-span of a deeper event or they are the surface manifestation of a deeper event, and their onsets occur simultaneously. It is this unique cognitive dissonance that marks attack embellishments for consciousness.

![Figure 4.13. (A) Surface and (B) reduced versions of a suspension.](image)

So far, I have discussed only the contributions of hierarchy to emphasis. Do deeper-level events have mass? Intuitively, it would seem logical that they do have mass from duration but not loudness, since loudness (via stress and density) is a feature of the musical surface alone. Deeper-level events certainly do have duration and durational differences, though, so one could imagine that the onsets of deeper-level events receive extra durational mass in accord with the

21. David Temperley (1999) offers a related argument regarding the perception of syncopation in rock. His “syncopation shift rule,” a rhythmic transformation that supplements Lerdahl and Jackendoff’s theory of metrical well-formedness and preference rules, argues that listeners shift melodic syncopations in rock music forward “one beat on a small metrical level” to infer a deep structure that satisfies the metrical preference rules (26–27). His argument differs from Benjamin’s and mine in that his “deep structure” is only a single level and does not involve any hierarchical reduction.

22. To be sure, there may be other phenomenal accents operative during an attack embellishment. As mentioned in chapter 3 with reference to suspensions and appoggiaturas, performers often add dynamic stress. Also, appoggiaturas often involve a registral accent, and suspensions usually involve a change of harmony and a deeper-level durational accent when the suspension is reduced: the duration of the preparation is usually shorter than the combined duration of the suspension and the resolution.

Because the source of phenomenal accent for attack embellishments is the unique structural condition of surface delay, attack-embellishment accent is not itself subject to degrees of intensity, though the marked moment may be emphasized through greater or fewer and heavier or lighter accents, including the simultaneous onset of other attack embellishments.
duration of the deeper event. If this were true, moments that coincide with the onsets of deeper-level events would almost certainly be much heavier than the onsets of diminutions; it would be unthinkable for the onset of a diminution (other than an attack embellishment) to be heavier than the onset of a deeper-level event because the duration of the deeper-level event necessarily includes the duration of the diminution.

Figure 4.14. J. S. Bach, French Suite No. 6 in E Major, BWV 817, Sarabande, bars 1–8.

Figure 4.15. (A) Foreground and (B) middleground contrapuntal reductions of Bach, French Suite No. 6 in E Major, BWV 817, Sarabande, bars 1–8.
In chapter 2, I argued that this “unthinkable” situation occurs several times in the sarabande from Bach’s E-major French Suite. Figure 4.14 shows the first reprise of the sarabande, bars 1–8, and figure 4.15 provides a foreground and middleground reduction. Throughout the first reprise, the downbeat is articulated by the deepest structural events, except in bars 6 and 7, which are disrupted by the cadential hemiola. In bars 1, 3, and 5, however, the second pulse is heavier than the downbeat primarily because of greater mass, the durational accents on the surface and foreground levels, the changes of harmony and pitch, and the durational accents of harmonic rhythm at the foreground. If deeper-level events had mass like the surface, the downbeat would be much heavier than the second pulse, as it consistently begins one and two-measure durations and harmonies.

Figures 4.16 provide an example from the opening of Chopin’s Nocturne in C Minor, op. 48, no. 1. In the first bar, mass heavily favors the even-numbered weak beats at the surface, as they are articulated by four onsets rather than the two onsets that articulate odd-numbered strong beats. Changes of harmony and deeper-level events occur on the strong beats, however, and the deeper events are twice as long as their displaced surface manifestations (figure 4.17)—I interpret the rests in the treble clef as aural events in the first bars because of the changes of harmony and Chopin’s pedaling, so the surface upper-voice events are each a quarter note in duration. In spite of the deeper-level events on the downbeats, the weak beats of the first bar feel quite a bit heavier than the strong beats. Thus, the weight profiles of the Bach and the Chopin strongly argue for the limitation of mass to the musical surface.\(^\text{23}\)

\(^{23}\) Both passages also demonstrate a separation between weight and metrical strength: even though the weak beats are heavier than the strong beats, the meter of the opening is defined by the harmonic rhythm (at the foreground and middleground levels). Even during the establishment of a beat hierarchy, strong beats need not be heavier than weak beats.
Returning to the conflicting claims made at the beginning of this section, we may now clarify that the C♯4s, E4s, and G4s of figure 4.10 are heavier than the D4s and F♯4s not simply because they are hierarchically deeper but because the most basic reduction of the passage would involve the elimination of the Ds and F♯s as passing tones, resulting in quarter-note durations for the C♯s, Es, and Gs and higher-level new-event accents on the moments of those onsets. We may also explain why theorists have intuited that tonic representatives are accented: tonic prolongation is the simplest and most common prolongational situation, so non-tonic pitches are most commonly diminutions of tonic representatives. Like the assertions of inherent accent in tonic function, Graziano’s claims of accentual status among intervals and chord progressions rely foremost on an implicit sense of progression from or toward a tonic representative, suggesting that the non-tonic pitch or chord is a diminution of the tonic. Graziano informs us which element of the progression a listener is likely to perceive as tonic when a motion is heard in isolation. It is
not the motion itself that determines accent, however, but the interpretation. In a full musical context, the interpretation is influenced by many factors beyond each isolated interval and progression.

Schenkerian or quasi-Schenkerian reductions are certainly not the only means of creating hierarchy. Mathis Lussy’s (1883) anatomy of the melodic group (rythme) merits discussion in this section, although thorough examination of his theory’s implications is beyond the scope of this dissertation. Lussy considers melodic groups to consist of up to three sections: a body that is demarcated by an initial ictus and a final ictus, an optional anacrusis, and an optional appendix.24 In figure 4.18A, the first complete phrase of the Marsellaise is given, following Lussy’s analysis (1903, 2). It consists of two subphrases, each of which begins with a three-note anacrusis, and the first ends with a two-note appendix. A reduction is given in 4.18B, following Lussy’s hierarchical distinctions.25 Any material of a melodic group that precedes the initial ictus or follows the final ictus reflects rhythmic embellishment of the material of the body. It therefore occurs within the timespan of a hierarchically deeper event that coincides with the prior final

24. Lussy’s initial ictus is closely related to the idea of Türk’s (1789, 336) phrase-beginning accent, which accrues to the first downbeat of a rhythm. Unlike Lussy, though, Türk’s phrase-beginning accent is fully hierarchical: the first downbeat of a period is more accented than the first downbeat of an internal phrase.

25. Lussy does not perform the kind of reduction shown in figure 4.18B, instead simply labeling the moments of the initial and final icti to indicate the rhythmic accent that falls at that moment; however, he does indicate that an anacrusis may be eliminated without affecting the identity of a melodic group—the essential character of a group lies in its body. On this principle, he eliminates the first few melody notes of Mendelssohn’s Song without Words in E Major, op. 62, no. 1 and the folk song “Petit grillon” to demonstrate that they are anacruses (1903, 71–72 and 76–77).
In Figure 4.18, the first group’s appendix and the second group’s anacrusis are both subsumed within the deeper-level articulation of the first group’s final ictus, the embellished arrival on E5.27

A. anacrusis body appendix anacrusis body

Figure 4.18. (A) Body, anacrusis, and appendix in the first two subphrases of the Marsellaise with (B) Lussian reduction.

Far from an arcane, purely gnostic musical experience, hierarchical approaches to music powerfully shape immediate and visceral aspects of a listener’s hearing. After learning to recognize and hear stylistic paradigms and schemata, a listener may come to hear them sounding beneath the surface of a musical passage, even in the first hearing of a piece.28 Those perceived

26. This is true of both appendices and anacruses. Appendices are embellishments within the time-span of the final ictus of their group, while anacruses are embellishments that occur within the time-span of the final ictus of the prior group.

27. The choice of E5 as the final ictus of the first melodic group represents an intrusion of contrapuntal concerns into this Lussian group-hierarchical reduction: I take E5 as the goal tone of the first group, arising at the downbeat of bar 2 through the stepwise ascent C–D–E and subsequently decorated by the upper neighbor F5 before descending through D5 to C5 at the downbeat of bar 4.

28. Beyond Schenkerian and related contrapuntal and harmonic reductions, as well as Lussian rhythmic reductions, the category of “hierarchical approaches to music” includes an immense variety of standardized gestures, such as the romanesca, the folia, the “rule of the octave,” the contrapuntal schemata discussed by Robert Gjerdingen (2007) and others, and even
deeper events become as real as the musical surface, and they have weight, too, obtaining emphasis when they distinguish themselves from their surrounding contexts.

Before concluding this section, I would like to address briefly the issue of cognitive constraints on durational weight. Richard Parncutt (1994) argues that the processing of duration and durational accent occurs through a kind of “echoic storage,” which is “a lingering of sensory experience in the absence of conscious cognitive processing” (427). As time passes, the onset of an event becomes less available for the kind of precognitive, visceral processing characteristic of weight attribution. The event passes from echoic storage to memory, and the listener’s experience of that event shifts from somatic to intellectual. As Parncutt suggests, the duration of echoic storage is likely flexible and dependent upon a number of factors, and I believe that precognitive access to the onset of an event tapers rather than starkly switching from available to unavailable.

Perform figure 4.19 at a moderate tempo of 80bpm for the quarter note and without any extra stress on the second note. In my hearing, the second note is not immediately heavy, but, shortly after beginning, it undergoes a transformation, a sort of bloom in which it rapidly receives weight. It continues to receive weight after that initial period, though less rapidly than at first. This deceleration of weight gain continues until the point at which it no longer receives weight.

the notions of harmony and key. One may come to hear any of these as a deeper structure elaborated by the musical surface of a passage.

29. Several theorists invoke similar conceptions, calling the related ideas variously working memory (Brower 1993), short-term musical memory (Jackendoff 1987), and the psychological present (Temperley 2001, Mirka 2009, Love 2015).
Echoic storage has important ramifications for durational weight. London, Hinberg, and Cross (2009) have shown that the effects of durational accent tend to be stronger in faster tempos. Because faster tempos tend to involve shorter durations, the duration of longer events is known more quickly; thus, weight may be applied to the moment of the long event’s onset sooner, so the moment is still available for significant processing and a considerable amount of weight may be applied. In slower tempos, the lag tends to be much greater between the onset of an event and the recognition that its duration is relatively long and even longer until one knows how long the event actually is; the moment of the onset is less available for processing, and less weight may be applied. Thus, durational accents and differences in durational mass tend to be less impactful at slower tempos.\(^{30}\)

This effect of tempo is quite easy to demonstrate. Figure 4.20 presents Wolfgang Caspar Printz’s (1676/1677/1696) *contrarius* or *enantius* rhythm (he uses both names), a rhythmic pattern associated with sarabandes, chaconnes, passacaglias, and folias.\(^{31}\) It contains two durational accents in the immediate context: 2:3:1 between the second note of the pattern and the

\(^{30}\) By the same logic, echoic storage may impact the weight produced by hierarchical interpretation. The sooner an interpreter arrives at a particular hierarchical interpretation, the more weight that may be applied to the onsets of deeper-level events. Thus, the perception of weight not only changes as a listener’s interpretation of a passage develops but also as a person becomes more familiar with a passage, whether through self-initiated study or simply repetition within a musical work.

\(^{31}\) Printz describes two versions of the *contrarius*, the 2:3:1 durational pattern illustrated in figure 4.20 and a 1:2 durational pattern beginning on the downbeat of a bar in triple meter.
surrounding notes and 1:2 between the last note of the pattern and the first (upon repeat). The second note is further emphasized by a durational accent at the passage level—it is the longest note of the pattern—and it has the greatest durational mass of the three notes. The effect of tempo on durational weight can be observed by singing the *contrarius* in figure 4.20 through a few times at two tempi: 80bpm and 40bpm for the quarter note. In my hearing, the contrast in weight between the first and second notes is much greater at 80bpm than at 40bpm; at 40bpm, the increased absolute durations reduce the relative impact of the durational accents, especially on the long dotted quarter note, and they reduce the contrast in mass between the first and second notes, resulting in a much more even weight profile.

![Figure 4.20. Slower performance of Printz’s *contrarius* rhythm yields a smoother weight profile.](image)

With the recognition of hierarchical hearing’s impact on weight comes the possibility of extremely long durations. Whenever such durations exceed a few seconds in length, one must be aware that durational differences become harder to perceive and less significant for the quasi-immediate, visceral experience of weight.

**Metrical Accent as a Generator of Phenomenal Accent**

Weight is a complex negotiation between performer, composer, and listener. A composer establishes relationships between events, constraining weight: notated durations, pitches,

\[\text{32. The instrument one uses for these performances may affect the production of weight. Instruments incapable of sustaining the dynamic level of longer notes may result in stress accents at the attack of the next note. It is for this reason that I recommend singing the passage, rather than playing it at a piano, for instance.}\]
dynamics, and articulations provide an approximation of the weight profiles that should arise in performance of the piece. We might call the weight that arises from the evidence of a musical score *compositional weight*, which includes all new-event accents, registral accents, density accents, negative accents, notated stress accents, and quantized durational accents. Performers generally make finer-grained contributions, adjusting the precise weight of an event especially through its relative loudness and absolute duration.\(^{33}\) *Performative weight* generally determines the precise mass of an event and the precise emphasis a particular composed stress accent or durational accent should have, and it may create more subtle stress accents, accents of absolute duration, and certain new-event accents, including new-group accents and change-of-timbre accents.\(^{34}\)

Of course, none of this weight exists without a listener-interpreter, who attributes compositional and performative weight to events while hearing either an audiated or external performance.\(^{35}\) Though I framed the typical Western classical musical work above without reference to any performance or hearing, the same division of compositional and performative weight still holds when performance is explicitly considered.\(^{36}\) Except under relatively rare

\(^{33}\) Performers do sometimes make coarse distinctions in weight, as in Schenker’s negative density accents in Beethoven’s Piano Sonata in E Minor, op. 90, II.

\(^{34}\) The exact boundary between these two categories is fraught. The question whether historical performance practice informs compositional or performative weight is particularly difficult, tying in deeply with the ontology of the musical work. In this chapter I assume a pragmatic position: anything I might consider performing in two or more ways concerns performative weight.

\(^{35}\) As discussed with reference to phenomenal accent in chapter 3 (page 108), weight is a property attributed to musical events, not an inherent property of those events.

\(^{36}\) For extemporaneous musical traditions, though, the distinction collapses.
circumstances, listeners to music of the Western classical tradition generally attribute weight corresponding to a work’s “structure” to the composition of the piece, including approximate mass, quantized durational accents, registral accents, new-event accents at the surface and deeper levels, and heavy stress accents. Performers are generally credited with subtleties of weight arising from “interpretation,” especially details of absolute duration, loudness, and timbre. Because the two perspectives of the listener and the analyst tend to correspond so closely, I adopt the two categories of compositional and performative weight.  

In this section, I wish to explore one aspect of performative weight. The question whether a performer should emphasize metrical accents has vexed musicians for hundreds of years. As discussed in chapter 3, the so-called Akzenttheorie of meter, originating in the ideas of Kirnberger but developed by Daniel Gottlob Türk (1789), A.B. Marx (1839), and Mathis Lussy (1874, 1883, 1903), instructs performers to provide stress accents in accord with metrical strength (figure 4.21). While Riemann criticizes the unmusical results of performing with strict adherence to the Akzenttheorie, his substitution of Dynamik largely reinstates the stress accent of the Akzenttheorie, in the form of a paired crescendo and decrescendo, even if it need not be applied as strictly as in the Akzenttheorie (Caplin 1983, 12). His principle of Agogik then suggests that performers also add an absolute durational accent to the location of the metrical accent (owing to the effects of rubato),

Figure 4.21. Türk’s (1789, 335) recommended accentuation of bars in 1/4 and 3/4.

37. This is not to say that casual listeners and analysts hear musical passages similarly but that their perception of weight follows the principles outlined in this chapter: for example, whatever system and degree of hierarchy they hear, phenomenal accents will accrue to the onsets of the deeper-level events they hear.
Before Türk, most performance treatises of the seventeenth and eighteenth centuries avoid direct indication of stress accent in the articulation of meter; instead, they generally rely on keyboard fingerings, bowing patterns, and tonguing patterns (Houle 1987). Still, these aspects of performance produce stress accents of their own. Throughout the seventeenth and eighteenth centuries, many wind-instrument tutors maintain an emphasis on the plosive consonants $t$ and $d$ for the articulation of group beginnings, while using the softer $r$ in alternation with $t$ or $d$ to create small two-note articulations. Some authors instruct the reader to align the groupings with the meter (Freillon Poncein 1700, 16), while others group against the meter in particular situations (Quantz 1752, 6.2.4). Bowing of string instruments is more consistent. Lully’s “rule of the downbow” aligns the stronger, more focused tone of downbows with notes in strong metrical positions (Muffat 1698, xxii). The effect of the downbow produces a stress accent that helps to articulate the meter.

Contemporary theorists have been more cautious. Danuta Mirka (2008) describes many subtle instances of metrical ambiguity at the start of movements by Haydn and Mozart that would be destroyed by articulating the notated meter too clearly. For instance, the fourth movement of Haydn’s String Quartet in B-flat Major, op. 64, no. 3 (figure 4.22), begins with a conflict between phenomenal accents at the eighth-note level of the piece (Mirka 2008, 37). Melodic group beginnings, registral accents, and the repeated notes of the cello in the first two bars suggest that the piece begins on a downbeat, while surface durational accents in the first violin and the long interonset intervals in the second violin, viola, and cello on the downbeat of bar 2 suggest that it begins on an upbeat. For Mirka, it is not until one hears the long durations in the viola and cello in bar 3 that the balance is tipped in favor of an upbeat beginning. In order for
this metrical ambiguity to persist until bar 3, one must not overtly emphasize the notated downbeats.

![Allegro con spirito](image)

Figure 4.22. Mirka’s (2008) example 2.4, a metrical analysis of Haydn, String Quartet in B, Major, op. 64, no. 3, IV, bars 1–4.

While Mirka encourages performers not to emphasize the notated meter, Harald Krebs (1999) shows musical passages by Robert Schumann that beg for increased emphasis on metrical accents. In particular, he argues that during passages of subliminal metrical dissonance—passages in which the notated meter is not supported by any compositional emphasis—the performer should emphasize the otherwise suppressed metrical layer (97). This emphasis, most often through stress and absolute durational accents, maintains a sense of conflict or unease, which otherwise might be lost. For example, in the opening of the scherzo from Schumann’s Second String Quartet, op. 41, no. 2 (figure 4.23), the notated downbeats of bars 1–3 are not emphasized by any phenomenal accents; group beginnings and harmonic changes consistently occur on the sixth eighth-note pulse of the notated bar, and registral accents fall on the fifth
pulse. Krebs suggests that performers should find a subtle way to show the conflict between the notation of bars 1–3 and the composed phenomenal accents before the conflict intensifies on the downbeats of bars 4–5 (51, 124).

Figure 4.23. Robert Schumann, String Quartet in F Major, op. 41, no. 2, III, bars 1–5.

Krebs does not advocate stressing the notated meter at all times, however. In pieces that include both surface and subliminal metrical dissonances, the metrical layer may be submerged for a period of time before it surfaces and intensifies the experience of direct conflict. In these pieces, he emphasizes that the distinction between the two forms of metrical dissonance would be unacceptably blurred if a performer “overstresses” the notated meter (97).

I would like to suggest one more situation in which metrical accent might encourage increased emphasis from the performer. Figure 4.24 shows the gavotte from J. S. Bach’s French Suite No. 5 in G Major, BWV 816. Notated in the French style, the piece characteristically begins on beat 2, creating the appearance of an opening anacrusis.
Figure 4.24. J. S. Bach, French Suite in G Major, BWV 816, Gavotte, bars 1–10.

The notated barring is not overtly supported by the distribution of compositional weight. In the first phrase, bars 1–4, the notated downbeats are supported by registral accents from soprano nadirs, durational accents in the soprano and alto on the downbeats of bars 1 and 2 (as shown in the Lussian reduction in figure 4.25), a new pattern of rhythmic articulation in the alto at the start of bar 3, a durational accent of harmonic rhythm on the downbeat of bar 3 for the long D-major harmony, and an implied suspension in the soprano on the downbeat of bar 4 (see figure 4.26A). In contrast, the notated upbeats are heavily emphasized by melodic group beginnings (figure 4.25), registral accents for soprano apexes (with greater emphasis than the registral accents on the downbeats because of their more extreme register), registral accents in the bass, the initiation of the walking bass pattern, and most of the hierarchically deeper harmonies and pitches, resulting in more new-event and durational accents on the upbeats (figure 4.26). With

38. Lussy generally prefers *rythmes* to be two bars in length, likening a *rythme* to a verse of poetry or a hemistich of an alexandrine verse (1903, x); however, he does recognize one-bar *rythmes* that arise because of fragmentation (9–10) and because of a sentential four-bar phrase (30–31). The sentential construction of Bach’s opening phrase suggests hearing an equivalence between the downbeats of bars 1 and 2.
the exception of bar 3, in which the long D-major harmony significantly emphasizes the
downbeat, the notated upbeats of the phrase are slightly heavier than the notated downbeats.

Figure 4.25. A Lussian reduction of the gavotte, BWV 816, bars 1–4.
I = initial ictus; F = final ictus.

Figure 4.26. Contrapuntal reductions of the gavotte, BWV 816, bars 1–4. Hierarchically deeper events occur on the notated upbeats in bars 0–2 and the notated downbeats in bars 3–4.
The French barring of gavottes reflects Rothstein’s (2008) “Franco-Italian” meter, a disposition to interpret musical groups and phrases as arriving on their strongest beat. Franco-Italian meter derives in part from French and Italian poetic conventions, in which the strongest syllable of a line is consistently the last accented syllable. Accordingly, metrical notation for Franco-Italian meter consistently highlights cadences and group endings. “German” meter, on the other hand, reflects a preference to interpret musical groups and phrases as departing from their strongest beat, letting the heaviest moments fall anywhere in a bar (Rothstein 2008, 148; Saint-Säens 1922, 12); it arises partly because German poetry does not feature a consistent location for the strongest accent of a line. As a matter of cognitive efficiency—it is simpler and safer to orient from a known, past event than to orient toward an anticipated, future event—beginnings become the default point of orientation.

Rothstein’s terms house a significant potential for confusion, however, as they pertain only to French and Italian metrical practices in specific eras. For instance, German meter is quite common in late-nineteenth-century French practice; likewise, the gavottas of Corelli and Scarlatti exhibit “German” meter, too, beginning on a downbeat and cadencing on an upbeat. On the other hand, the gavottes of the German composers J. S. Bach, Handel, Telemann, Fischer, and Muffat exhibit “Franco-Italian” meter. Because of this potential confusion, I offer instead the terms arrival meter and departure meter as broad categories that include Rothstein’s “Franco-Italian” and “German” meters, respectively. Arrival meter is simply meter oriented around points

39. Rothstein (2008) suggests that Wagner’s influence may be an important factor in the use of German meter in late nineteenth-century French music. Andrew Pau (2014) suggests that the use of departure meter was a marker for diegetic music in French operas (53–66, 172–74, 212). Whenever a composer wished to highlight a number as being heard as music by the operatic characters, a simplified approach to text setting was used, often resulting in departure meter.
of arrival, specifically the final ictus of groups and phrases; departure meter is meter oriented around points of departure, specifically the initial ictus of groups and phrases. Both of these meters are interpretive and compositional practices (the latter presupposes the former). Thus, arrival meter not only describes the compositional practices of the late French-baroque gavotte and Italian bel canto opera but also Hugo Riemann’s Auftaktigkeit, which probably did not derive from Italian or French poetic traditions.

Unfortunately, identifying Bach’s gavotte as an instance of arrival meter does little to resolve the problem. If arrival meters generally align strong beats with the heaviest time-points, Bach’s gavotte should begin on a downbeat, because the notated upbeats are generally heavier than the notated downbeats. Might Bach be offering a “German” take on a “French” meter? Probably not—even a cursory glance at French gavottes of the early eighteenth century reveals similar circumstances within France. For example, in both gavottes of the first ordre from François Couperin’s Premier livre de pièces de clavecin, the distribution of weight offers only weak support for the notated bar lines (figure 4.27). In figure 4.27A, density accents emphasize the first and fourth half-note beats of each two-bar phrase (as at the upbeat to bar 1 and the downbeat of bar 2), and the third beat of the first phrase, beat 2 of bar 1. The contrapuntal hierarchy (figure 4.28) also emphasizes the outer beats of each phrase with the deepest events, while the second and third beats alternate in relative significance between the two phrases.

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40. Lussy’s anatomical distinctions clarify that German meter does not seek to align the strongest metrical accent with groups’ absolute beginnings but instead the beginning of groups’ structural bodies; likewise, Franco-Italian meter does not seek to align the strongest metrical accent with groups’ absolute endings but instead the ending of groups’ bodies.

41. Arrival meters align with group endings and cadential arrivals, of course, as is the case in Bach’s gavotte, but group endings and cadential arrivals are frequently the heaviest time-points in a phrase, as Rothstein (2008, 147) implies.
Countering the emphasis on the outer beats of the phrase are durational and registral accents on the second and third beats (as at both beats of bar 1). Attack embellishments emphasize the first three beats of the first phrase and the first, third, and fourth beats of the second phrase. While all four beats of each phrase are quite heavy and close in weight, the first and last beats are the heaviest, followed by the third, and then the second, producing the profile heavy–light–moderate–heavy. A similar profile arises in “La Bourbonnoise” (figure 4.27B), though all beats are much lighter and the weight differences are much larger. In both gavottes, the odd beats of the phrase slightly outweigh the even, in apparent contradiction of the arrival-meter barring.

A.

![Gavotte](image)

Figure 4.27. François Couperin, *Premier livre de pièces de clavecin*, first *ordre*, (A) “Gavotte,” bars 1–8, and (B) “La Bourbonnoise,” bars 1–12.

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42. Taken as an equivalence class, the profile heavy–light–moderate–heavy is common to late-baroque gavottes in France and Germany, and it bears striking resemblance to Edward T. Cone’s (1968) accentual profile of the classical phrase as strong–weak–weak–strong.
B.

Figure 4.27. (continued)

A.

B.

C.

Figure 4.28. Contrapuntal reductions of the gavotte from Couperin’s *Premier livre*, bars 1–4 (score in figure 4.27A).
Metrical displacement dissonance is another possible interpretation.\textsuperscript{43} Bach’s gavotte could be said to exhibit D2-1 displacement dissonance at the level of the half note. There are several problems with this interpretation, though. First, the gavotte as a genre was closely associated with the pastoral, especially during the 1720s and 1730s, which was the height of the gavotte’s popularity and the time period when nearly all of Bach’s gavottes were written (Little and Jenne 2001, 47). Metrical dissonance suggests an artifice that does not accord with the natural simplicity of a pastoral genre.\textsuperscript{44} Second, the continued emphasis on upbeats throughout

\textsuperscript{43} See, for instance, Willner 2007a.

\textsuperscript{44} This is not to deny that rhythmic and metrical dissonances may arise within individual gavottes—they certainly do—but an interpretation of the genre as most often metrically dissonant is at odds with its pastoral associations.
Bach’s gavotte, as well as Couperin’s, also argues against an interpretation of metrical
displacement dissonance by suggesting that this is a common feature of the genre, though there
are also French and German gavottes that do not emphasize the upbeats (figure 4.29). Most
importantly, though, as in the sarabandes discussed in chapter 2, there does not seem to be a
quality of instability and a concomitant yearning for rhythmic resolution—for removal of the
upbeats’ emphasis. This gavotte simply exhibits a kind of motion that flows nearly evenly from
beat to beat; in fact, a significant reduction of upbeat emphasis would feel rhythmically dissonant
to me. Thus, I argue again for a metrically consonant interpretation involving dual entrainment—
to a beat hierarchy and a weight profile. In the weight profile maintained throughout Bach’s
gavotte, upbeats are roughly even in weight to the downbeats.

The dance steps of the social gavotte also inform French and German barring practices
for the genre. The basic step units of the gavotte are the contretemps de gavotte, pas de bouréé,
and pas assemblé. Figure 4.30 presents each of these step units with the simplified notation
introduced by Meredith Little (1975). As is typical of step units in French noble dance, each
spans one bar in duration and begins with a bend (plié) to prepare the notated downbeat. In the
contretemps de gavotte, the dancer hops just before the downbeat and lands on the beat, followed

45. Theatrical versions of French-baroque dances differ markedly from the consistent
dance steps used for social dancing. The choreography of theatrical dances is usually much more
ornate, and it often fluctuates from bar to bar, in opposition to social dancing, which tends to
maintain much more consistent step patterns. As mentioned in chapter 2, theatrical dances were
also usually choreographed after the music was written.

46. This is not true of all step units in French noble dance. The most common exceptions
occur in minuets, passepieds, and courantes. In minuets and passepieds, the typical step units
span two bars, while two step units sometimes occur within a bar in courantes.
by two steps in quarter-note rhythm (assuming ¾ time). In the *pas de bourée*, the dancer rises (élevé) and steps at the downbeat followed by two more steps in quarter-note rhythm, as in the *contretemps de gavotte*. In the *pas assemblé*, the dancer leaps (*jeté*) and lands on the downbeat, bringing the feet together and holding this position throughout the bar. As discussed in chapter 2, the rise and the landing from a leap or hop are the strongest motions a French-baroque dancer can make, the only motions that dancers typically call “accents.” Within a four-bar phrase, a characteristic succession of step units begins with the *contretemps de gavotte*, followed by a *pas de bourée* (or possibly a *pas coupé*), then another *contretemps de gavotte*, and finally a *pas assemblé* to mark the cadence. Figure 4.30 sets the first phrase of Bach’s gavotte with typical social dance steps.

![Figure 4.30](image)

Figure 4.30. A setting of typical social dance steps to bars 1–4 of the gavotte from Bach’s French Suite No. 5 in G Major, BWV 816.

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47. The difference between a hop and a leap (*jeté* or *demi-jeté*) primarily regards the transfer of body weight. In a hop, weight remains on the same foot upon landing; in a leap, weight transfers from one foot to the other.

48. Kellom Tomlinson (1735) describes this version of the *pas assemblé* (37). Pierre Rameau (1725b) also describes a variant with a rise instead of a spring (59).
The French barring of the early-eighteenth-century gavotte aligns with the final ictus of melodic groups and with the strongest accents of the dance steps, and it encourages the performer to add emphasis to the notated downbeat. Many composers mark a short release before the first downbeat in harpsichord gavottes of the early eighteenth century. The early release causes the note to decay more quickly, and the attack of the subsequent note contrasts more strongly with the decayed dynamic of the previous note. This contrast produces a stress accent on the downbeat, which accords with the “rule of the downbow” mentioned above.

I believe the extra emphasis on the downbeat should remain subtle, though. Bach’s gavotte should flow with nearly even weight from beat to beat, as suggested by his barring practice for both titled gavottes and gavotte rhythms within other pieces. Although Italian gavottes of the seventeenth and eighteenth centuries and French gavottes before Lully begin on the notated downbeat, all of Bach’s titled gavottes begin on the notated upbeat, even those that are Italian in style. This barring suggests that the generally heavier upbeats are not to be overplayed, that the piece should not simply sound as though it begins on a downbeat. Furthermore, whenever Bach uses gavotte rhythms outside of titled gavottes, he frequently uses twice as many bar lines as in titled gavottes (Little and Jenne 2001, 217). This change causes both the upbeats and the downbeats of gavottes to become notated downbeats in “short bars.”

49. See, for example, the gavotte from the second ordre of Couperin’s Premier livre de pièces de clavecin, “Les Moissonneurs” from the first ordre of the Second livre, and “l’Adolescente” from the second ordre of the Second livre. The release can also be found in some harpsichord tutors of the era, as for instance in the gavotte accompanying Michel de Saint-Lambert’s Les principes du clavcinein (1702).

50. Italianate gavottas are characterized by faster tempo, contrapuntal and imitative textures, four harmony changes per measure, and weak-beat cadences (Little and Jenne 2001, 54; Mattheson 1739, book 2, ch. 13, §89).
and it correlates with a shift from $\frac{3}{4}$ to $\frac{4}{4}$ time (though durational values remain the same).\(^{51}\)

Figure 4.31 shows an example from the first movement of Bach’s Organ Sonata No. 6 in G Major. Bach’s use of “short bars” suggests a sense of equality among the notated downbeats, which in turn encourages the performer to project roughly equal weight.\(^{52}\)

Figure 4.31. J. S. Bach, Organ Sonata No. 6 in G Major, BWV 530, I, bars 1–15.

There is most certainly not a single answer to the question whether metrical accent should encourage performed phenomenal accent. Different styles, pieces, and structural conditions call

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51. The term “short bars” comes from Tovey (1931), who similarly argues that the use of extra bar lines in Beethoven’s piano sonatas “equalizes the accents” (105). Coincidentally, Bach’s use of short bars with gavotte rhythms contradicts Tovey’s related assertion that short bars in the scherzo of the Piano Sonata in A\(^\#\) Major, op. 110, indicate that the movement is not a gavotte (259).

Johann Phillip Kirnberger (1776) also discusses the “required weight of the downbeat” that results from metrical notation. He warns against the use of short bars, arguing that it leads to “a melody of only heavy beats” (131).

52. This sonata movement does wander away from the clarity and symmetry of these opening four-bar statements; nevertheless, the clear and balanced four-bar gavotte rhythms guide the movement much like the opening ritornello of a late-baroque concerto.
for different degrees of metrical articulation by the performer; interpreters must carefully consider the ramifications of performative weight for the piece at hand.

**Toward a Synthesis**

Throughout chapters 3 and 4, I have avoided discussion of quantity, preferring more indefinite descriptions of weight qualities. In part, this is because my experience of weight lacks many basic aspects of quantification. I have no conception of “twice as heavy” or “four times as heavy,” nor any idea what the difference between the two would be; instead, I simply feel that one moment is *much* heavier, *quite a bit* heavier, or *slightly* heavier than another. One may wish to develop a quantification system for weight, but such a system is not possible at present. Two crucial problems interfere. First, some categories of phenomenal accent presuppose other factors of weight: density accents require more new-event accents than their contexts, durational accents of all kinds require events with greater mass than their contexts, and change-of-harmony accents require at least one change-of-pitch accent. A quantification system must be able to reliably separate the contributions from each of the combined components.

Second, most categories of phenomenal accent manifest with significant variability of weight. To cite a few examples, registral accents produce much more weight in a salient outer voice (and in the “outer” direction) than in an inner voice, accents that invoke multiple levels of context tend to be much heavier than those that do not, and performers are capable of myriad distinctions in dynamic level and duration—in addition to the more obvious variability of stress accent, density accent, and durational accent that arises because of the degrees of difference in loudness and duration between an event and its contexts. A quantification system must be able to
account for significant variability in many components of weight. Because of these exceedingly complex problems, I make no attempt toward quantification in this dissertation.

For the comparison of weight between two moments, I offer a set of three preference rules. These rules state the three reasons a listener may hear one moment as heavier than another. First is the *quantity rule*: moments that receive weight from more sources tend to be heavier than those that receive weight from fewer. Since nearly all events have mass—rests heard as aural events are the only exception—the effects of mass are ignored in the application of this rule (differences in mass will be addressed in another rule). Thus, moments with more phenomenal accents tend to be heavier than those that receive fewer. For example, in the opening of the gavotte from Muffat’s Concerto Grosso No. 10, “Perseverentia” (figure 4.29), the initial upbeat (beat 2 of bar 0) is obviously lighter than the downbeat of bar 1, though tonic harmony begins at the upbeat, at least on the surface. The upbeat receives a new-event accent, a new-pitch accent, a 3:1 durational accent in reference to the sixteenth note that follows, a new-dynamic accent, a new-melodic-group accent, and a new-harmony accent for being the start of the tonic harmony; the downbeat of bar 1 receives twelve new-event accents for notes that begin on the downbeat, a density accent for the increased sound arising from the *tutti* orchestra in comparison to the solo violin, twelve new-pitch accents, a change-of-texture accent for the switch from monophony to homophony, durational accents in the orchestral and solo violins, and many further new-event accents because the downbeat of bar 1 marks the onset of tonic harmony at deeper levels. Even ignoring hierarchical contributions, the downbeat of bar 1 has more than quadruple the sources of phenomenal accent as the upbeat.

Two important corollaries arise from the quantity rule. First, the onsets of deeper-level events are usually heavier than those limited to shallower events because they are supported by
new-event accents on the surface and the deeper level. Second, accents pertaining to harmony tend to be quite heavy because they necessarily involve changes in the imaginary continuo and the musical surface. The onsets of relatively long harmonies tend to be among the heaviest time-points of a passage because they tend to coincide with deeper-level events, as at the beginnings and endings of phrases, and they involve new-event accents on the surface, new-event accents in the imaginary continuo, changes of pitch on the surface, changes of pitch class in the imaginary continuo, durational accents in the imaginary continuo, and usually durational accents on the surface—all of these in addition to the durational accent of harmonic rhythm.

The second preference rule concerns the contribution of mass, so I call it the mass rule: moments with more mass tend to be heavier than those with less. Listen to figure 4.19 but suppress your hearing of meter, harmony, and hierarchy. Without any sense of the first event as an upbeat to the second, the latter is still obviously heavier than the former because its mass is much greater. Similarly, listen to figure 4.32 and suspend interpretation of hierarchy and harmony. The second event is clearly heavier than the first because of its greater loudness.

![Figure 4.32. The second event is heavier than the first because of its greater mass.](image)

The quantity and mass rules are most often in accord; when they do conflict—most often the result of nonalignment between hierarchical depth and mass—a third preference rule is

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53. Rothstein (1991) defines the imaginary continuo as “a continuo ‘accompaniment’ abstracted from a composition that does not actually call for one” (297). It consists of the pitch classes implied by a harmony within the registral space delimited by the bass and soprano voices. The operative bass and/or soprano may only be implied in certain situations, for example, in works for unaccompanied violin, flute, or cello.
necessary. The *intensity rule* states that moments with phenomenal accents of greater intensity tend to be heavier than those with phenomenal accents of lesser intensity.\(^{54}\) In Printz’s *rhythmopoeia*, *contrarius* rhythms are the only rhythmic feet that do not align durational mass with the downbeat; they are thus prime candidates for a conflict between the quantity rule and the mass rule.\(^{55}\)

![Figure 4.33. Johann Mattheson, Suite No. 10 in E Minor, Sarabande, bars 1–8.](image)

In the sarabande from Mattheson’s Suite No. 10 in E Minor (figure 4.33), the quantity rule and the mass rule conflict in nearly every bar. In bar 1, the downbeat articulates the harmony for the bar; it provides the three pitch classes to be used throughout the bar as well as the pitches

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54. It may at first appear that there are three possible resolutions when the quantity rule and the mass rule conflict: the number of phenomenal accents may overwhelm the difference in mass, the difference in mass may overwhelm the number of phenomenal accents, or the intensity of phenomenal accents at one moment may overwhelm the other (the intensity rule, as given above). In practice, these three situations are nearly impossible to distinguish. Because the factors that increase the difference in mass between two moments also intensify stress, density, and durational accents, an overwhelming difference in mass also means intense stress, density, and/or durational accents. Likewise, if greater mass at one moment is overwhelmed by the phenomenal accents in another, by implication the stress, density, and/or durational accents accompanying the difference in mass are not very intense. Interpreting the relative strength of the quantity and mass rules implies an interpretation of the relative intensity of the phenomenal accents involved.

55. Mattheson’s *rhythmopoeia* treats the measure (usually the notated bar) as a container for rhythm, so his rhythmic feet begin on the downbeat (the *bacchius* and the *first epitritus* are the only exceptions among his taxonomy of twenty-six feet). As a result, many of his feet do not align greater durational mass with metrical accent. Mattheson’s system is more comprehensive than Printz’s, but Printz’s system implies a recognition of skeletal similarity among rhythms; many of Mattheson’s feet would likely be classified as variants of the same foot by Printz.
to be used in the soprano and alto voices; and its soprano, alto, and bass pitches are the hierarchically deepest events of the bar. The events of the second half-note pulse have greater durational mass, receive 2:3:1 durational accents, and the bass receives a registral accent. Because of the significance of the change of harmony accent, the repetition of pitches in the soprano and alto, the repetition of pitch class in the bass (rendering the registral accent relatively weak), and the relative mildness of the durational accents on the second pulse, I apply the intensity rule to the downbeat of bar 1 and interpret a weight profile for the bar that recedes slightly from the first simultaneity to the second and falls precipitously to the third—heavy–moderate–very light. This weight profile is largely maintained in bars 2 and 4: the extra durational mass and emphasis at the second pulse is counterbalanced by the presence of attack embellishments (suspensions) in the soprano and alto on the downbeat. As a result I entrain to this receding weight profile. Positive dissonances occur against the weight profile in bars 3 and 5 at the second half-note pulse of both bars because of the changes of harmony and their relative length, producing durational accents in the harmonic rhythm; in both bars, I apply the intensity rule to the second half-note pulse and interpret a weight profile that grows from the first pulse to the second.

56. I do not interpret the rests of bars 1–3 as aural events, in spite of the sound a harpsichord makes upon the release of keys; instead, I interpret them as nuances of dynamic shading, intensifying the stress accents that occur on the anacrusis to the next bar. Mattheson’s change to a dotted half note in bar 5 indicates a subtle reduction of emphasis on the anacrusis, which helps to emphasize the positive dissonance on the second simultaneity of the bar (to be discussed below).

Although the rhythms of bars 1–5 and 8 do not conform perfectly to any of Mattheson’s demonstrations of rhythmic feet, he would likely classify the rhythm of bars 1 and 5 as amphibrachs (short–long–short), the rhythm of bars 2 and 3 as the third peon (short–short–long–short), and the rhythm of bars 4 and 8 as anapests (short–short–long).

57. I also interpret rhythmic dissonances on the final quarter-note simultaneities of bars 3, 4, and 5, not to mention within the cadential hemiola of bars 6 and 7. In bar 3, the change of
The analysis of weight is not simply concerned with binary judgments of whether one moment is heavier than another; determining *how much* heavier one time-point is than another is crucial. Without a strong quantification system for weight, such judgments must be intuited, but the quantity, mass, and intensity rules help to estimate weight differences. If the quantity and mass rules both prefer the same moment over another, that moment is probably significantly heavier than the other, though the relative intensity of the mass and phenomenal-accentual differences will determine just how much heavier it is. If the quantity rule and the mass rule conflict, the two moments are likely close in weight, and an appeal to the intensity rule may suggest that the two are approximately equal or that one is a bit heavier than the other.

I conclude this section with a more extended analysis of weight in the first 52 bars of the chaconne from J. S. Bach’s Partita No. 2 in D Minor for Violin Solo, BWV 1004 (figure 4.34). Over the course of this passage, Bach’s varied gestures and textures transform the *contrarius* rhythms and the heavy–moderate–very-light profile of the first variation into iambic rhythms (in Printz’s sense)—a heavy–very light–moderate profile.58 I will often refer to equivalence classes of weight profiles: in a “1–2 profile,” the first and second pulses (of three) are the heaviest, and in a “1–3 profile,” the first and third pulses are the heaviest. Like equivalence classes in other

\[ \text{equivalence classes} \]

harmony produces a positive dissonance; the lack of any articulation in bar 4 results in a significant negative dissonance; and the lack of a bass note attack and a rest preceding the soprano and alto attacks in bar 5 results in a mild negative dissonance.

58. The movement is pervasively organized into variation pairs by rhythmic motives, texture, and harmony. The variations of bars 1–8 strongly resemble each other through surface rhythm, emphasis on connected block chords, shared bass line and similar soprano, and they contrast strongly with the dotted rhythms and more disconnected block chords of bars 9–16. Because of this pairing, it makes less sense to think of bars 1–4 as theme and bars 5–8 as variation 1; instead, I simply start with variation 1 in bars 1–4.
musical domains, I regard this equivalence as both a perceptual reality and a simplification: in my hearing, I recognize both the similarity of various 1–2 profiles and differences among them.

Figure 4.34. J. S. Bach, Partita No. 2 in D Minor for Violin Solo, BWV 1004, Chaconne, bars 1–52.
The first variation begins with an emphatic statement of the tonic D minor that sounds at first like a downbeat but is eventually revealed to have been the second pulse of an incomplete, anacrustic bar. Its great durational mass and hierarchical significance threaten to overwhelm

59. Beginning on the second pulse of triple meter is not unusual in a chaconne, but neither is it simply expected. Many chaconnes begin on the downbeat of a triple bar, some begin on the third pulse of a triple bar (e.g. Louis Couperin’s G-minor chaconne for organ), and some are even in duple meter (e.g. François Couperin’s “La Favorite,” Pièces de clavecin, first livre, third ordre). Of those that begin on the second pulse of a triple bar, the first notated downbeat is
the downbeat of bar 1, which is a short supertonic harmony. The ensuing long dominant
harmony clarifies that the supertonic serves as an attack embellishment, with a bass suspension
and appoggiaturas in the soprano and alto. As a result, the first downbeat is the start of the
dominant harmony at a shallow middleground level. Because of the attack of this deeper-level
relatively long dominant harmony, the presence of the attack embellishment, the energetic
upward leap of a fifth and the density accent arising from the quadruple stop, a 1–2 weight
profile is articulated, receding slightly from the first pulse to the second and dropping to nothing
on the third pulse. This recessive weight profile is confirmed in bars 1 and 2, the intensity of
phenomenal accents on the downbeat overwhelming greater durational mass on the second pulse
in both bars.

In the precadential bar 3, the weight profile is altered: in spite of the attack embellishment
provided by the cadential six-four and its greater hierarchical significance, reduced durational
mass significantly lightens the second pulse and the third pulse is much heavier than in bars 0–2,
being articulated for the first time in the piece and receiving further emphasis from the change of
harmony (cadential 6/4 to V) and the initiation of the sixteenth-note rhythmic pattern in the
soprano.60 The accelerating rhythms of bar 3 and the consequent lightening of pulses continues
into the beginning of bar 4, leading to a hasty melodic cadence in surface sixteenth notes, which
represent underlying eighth-note motion in the soprano and alto voices. This accelerative process
is halted by an authoritative return to the half notes and dotted quarter notes of the piece’s

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invariably heavier through mass or durational accents; most often, the opening events outline the
rhythm $\frac{3}{4}$ $\uparrow$ $\downarrow$ $\uparrow$ $\downarrow$, either through surface durations or some element of grouping.

60. Deviation from an established weight profile often serves a similar function to the
cadential hemiola, as well as the suspension in the renaissance soprano cadential formula, though
the cadential hemiola is generally reserved for the most significant cadences in the baroque.
opening, resulting in intense surface durational accents on the second pulse; for the first time in the piece, the second pulse is heavier than the first.

The second variation returns to the weight profile of bars 1–2, adhering to this profile more strongly in bar 7 than in bar 3, though the soprano introduces a dotted-eighth-note motive that begins the larger process of transforming the weight profile. Compared to the long dotted rhythms of the opening, the greater continuity of this dotted-eighth-note rhythmic pattern leads to increased emphasis on the third pulse and slightly reduced emphasis on the second pulse in bars 9–23. A 1–2 profile still pervades the third through sixth variations, but it is noticeably different from the first variation.

The seventh and eighth variations, bars 24–32, bring a renewal of emphasis on the second pulse. In spite of the greater hierarchical significance of the downbeat in bars 25, 26, 29, and 30, its relatively weak articulation and the significantly stronger emphasis on the second pulse (through durational accents of harmonic rhythm and rhythmic pattern, as well as implied suspensions in bars 25–26), the weight of the second pulse of bars 25, 26, 27, 29, and 30 exceeds that of the first, recalling the weight profile of bar 5. In opposition to the weight profiles of bars 1–24, in bars 25–30 the beat hierarchy is truly conflicted, seeking stable resolution: a metrical displacement dissonance emerges, the second pulse challenging the first for the status of downbeat. Interestingly, it is the cadential hemiola in bars 30–31 (articulated through harmonic rhythm and the half-note durations between ascending slurred arpeggios) that destabilizes the dissonance, permitting a return to metrical consonance in bar 32.61

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61. Willner (2013) discusses further instances of hemiolas that serve to destabilize metrical displacement dissonances, considering them agents of metrical consonance.
In bars 32–34, for the first time in the piece, the third pulse of the bar is heavier than the second. Implicit durational accents in the soprano and changes of harmony on the third pulses overwhelm the relatively meager registral accents on the second pulses, leading to the establishment of a 1–3 profile in these bars—not quite the eventual heavy–very light–moderate profile of bar 48, but close to it.

The respite attained in bars 32–34 does not last long. The precadential bar 35 deviates from the 1–3 profile, emphasizing the second pulse through a long cadential dominant. Though precadential rhythmic deviations often serve as innocuous cadential preparations, this brief reassertion of the second pulse initiates an erratic conflict in bars 36–47. Throughout the first nine variations, bars 1–36, each phrase is largely dominated by a single weight profile, with deviations being relatively isolated occurrences, mostly confined to precadential bars. In contrast, throughout bars 36–47, 1–2 profiles attempt to reassert themselves during the second bar of a variation (bars 37, 41, and 45), the pre-cadential third bar (bar 47), and the cadential fourth bar (bar 44). These bars are confrontational: the gestures on the first and second pulses of bar 37 are displacements of the same gestures used on the second and third pulses in bar 36; the downbeat of bar 44 leaps upward from the leading tone to the subdominant, refusing to accept the 1–3 profile of bar 43 and displacing the soprano tonic to the second pulse. The tumult of this conflict even manifests in cross-accents at lower metrical levels, with three-note slurs (bars 38–39) and ascending semitones (bar 47) beginning variously on and off the quarter-note pulse.

The attack mounted by 1–2 profiles proves insufficient, and 1–3 profiles establish a new consonance from bar 48, dominating the chaconne until bar 98 (not shown). Emphasis on the second pulse is greatly attenuated in this passage, and the transition from the opening profile heavy–moderate–very light to the new heavy–very light–moderate is complete.
Conclusion

Over the course of chapters 3 and 4, I have articulated a theory of weight. The experience of weight at a musical moment derives from two sources: emphasis, the degree to which an event beginning at that moment is marked for consciousness, and mass, the apparent size of the event. Emphasis is a measurement of phenomenal accent, usually arising from perceptions of difference and “positive” motions—progressions to events with louder dynamics, longer durations, or more extreme registers—but negative dynamic motions are capable of generating emphasis under specific circumstances. Mass is a measurement of the combined effects of the loudness and duration of an event.

Hierarchical reductions play an active role in the experience of weight, contributing further emphasis to the moments coinciding with the onsets of deeper level events. Recognition of the role of reductions clarifies two traditional difficulties of phenomenal-accent theory, the apparent accents of tonic function and suspensions. Tonic function is not inherently accented, but its surface representatives are often interpreted as hierarchically deeper than other harmonic functions. Suspensions, on the other hand, are inherently accented. They and the broader category of attack embellishments are the only events in tonal music that are simultaneously the onsets of different surface and deeper-level events; they delay the surface manifestation of the deeper event. This marked structural situation draws special attention to them.

The question whether metrical accent should encourage increased performative weight may never be fully resolved, as the answer is highly dependent upon context. One must be careful to determine how articulation of the meter affects expression in a particular passage, aiming to protect ambiguities, highlight metrical conflicts, and choreograph the gestures of recurrent weight profiles.
The analysis of weight is greatly aided by three heuristics: moments with more sources of phenomenal accent tend to be heavier than those with fewer (the “quantity rule”), moments with more mass tend to be heavier than those with less (the “mass rule”), and moments with phenomenal accents of greater intensity tend to be heavier than those with phenomenal accents of lesser intensity (the “intensity rule”). Of these, the quantity rule and the mass rule tend to be the most decisive. Whenever the quantity and mass rules both prefer one moment as heavier than another, it tends to be much heavier than the other; whenever they are opposed, the two moments tend to be close in weight, and an appeal to the intensity of the relevant phenomenal accents must be made to determine the heavier moment.
Chapter 5
A DISUNIFIED THEORY OF METER

Metrical Attitude

In recent years theorists have argued that meter, even within the Western classical tradition, is not a monolithic phenomenon but is instead subject to cultural and historical constraints—whether owing to poetic traditions (Rothstein 2008, 2011), conceptions of time and motion (Grant 2014), or simply music-stylistic conventions (Mirka 2009). Such arguments have begun to direct inquiry away from the vexing question whether meter is projection (Hasty 1997), entrainment (London 2004), or a combination of the two (Mirka 2009, Temperley 2009), encouraging us to ask not what meter is but instead what meter was for listeners in a specific historical-cultural space and what meter can be.

Analysts have traditionally thought of music as either metrical or ametrical, with the distinction resting on the condition that a musical passage establishes a highly persistent, periodic pattern. Christopher Hasty’s (1997) idea of meter as a listener’s aural projection of an immediate durational repetition, even of a single perceived duration (figure 5.1), challenges us to reevaluate the particulars of this distinction. Hasty argues for metrical interpretations of a great deal of music that would traditionally have been considered ametrical, finding projection in some rather inconsistent rhythms of Webern, Babbitt, and Boulez. While considering the precipice of the metrical and the ametrical, Hasty does not formulate the minimum musical requirement for meter to exist; instead, he proposes perceptual limits: meter ceases to exist whenever durations are all too short or too long to be accurately perceived (1997, 284–86), whenever a listener can no longer clearly distinguish beginnings and endings of events (295), or whenever there is a very high degree of rhythmic irregularity and he finds little evidence of projection in his own
introspection (168). Rhythmic irregularity must be extreme, though: projective distinctions are nearly inescapable when “middle-sized” durations are perceived (284–86).

Figure 5.1. Projection of a duration, after Hasty (1997), example 9.3.

Hasty’s reconceived distinction between the metrical and the ametrical emphasizes the role of a listener’s perceptions as well as her attitude toward the likelihood of the periodic repetition of musical material: since projection requires only the perception of one complete duration and the start of another, the absence of projection owing to rhythmic inconsistency may only occur when a listener no longer believes that the duration of an event may be immediately replicated in the duration of another. Justin London (2004) and Kofi Agawu (2006, 2016) have also argued that meter is an attitude brought to music by a listener, though they focus on the listener’s musical acculturation.

Agawu asserts that meter cannot be determined by structural analysis of phenomenal accents, even in conjunction with awareness of rules of metrical well-formedness; a listener’s internalized conventions are also brought to bear in the act of perception (2006, 23–24). Agawu’s argument recalls our recognition in chapter 2 that a listener aware of Handel’s setting of quinario verse in “Lascia ch’io pianga” from Rinaldo will prefer to apply its associated meter to his sarabande, HWV 437. As discussed in chapter 2, this associative process may be likened to a broader version of Lerdahl and Jackendoff’s (1983) parallelism rule (Metrical Preference Rule 1).  

London (2004) argues that metrical distinctions may arise from a listener’s prior exposure

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1. See page 44.
to specific patterns of absolute duration. In his *Many Meters Hypothesis*, London claims that listeners internalize expressive timing patterns associated with styles, genres, and particular artists—for example, the early arrival of the second beat in the Viennese waltz or the swing timings of a particular big band or musician (153–56). The internalization of these consistent expressive-timing patterns results in subtle distinctions between meters that are equivalent in notation and quantization.

The notion of attitude as a crucial component of meter perhaps originates in Andrew Imbrie’s (1973) distinction between radical and conservative listening strategies (65). Discussing passages in Beethoven that require a shift between two hypermetrical interpretations, Imbrie proposes a radical listening strategy, in which a listener quickly switches to a new hypermetrical orientation, and a conservative listening strategy, in which a listener attempts to maintain the original orientation despite cross accents. He acknowledges that these strategies exist on a continuum and seeks to determine the earliest and latest locations that a listener may plausibly switch between the two orientations, reflecting the most radical and most conservative listening strategies, respectively, for a given passage.

In this chapter I wish to explore two of the chief components of metrical attitude: how much musical information a listener expects to be preserved from one duration to the next and how strongly the listener expects this repetition to continue. These components of metrical attitude may arise in response to a listener’s perception of the degree of rhythmic consistency in a musical passage. My hypothesis is this: the more musical information a listener perceives to be

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2. As discussed in chapter 3, absolute duration is the precise chronological duration of a performed rhythm, while quantized duration is the categorical duration of a syntactical rhythm perceived by a listener. Owing to expressive variations in timing, quantized duration often involves stretching or compression of absolute durations.
preserved from one duration to the next in a particular context, the more musical information the listener may expect to be preserved in future durations within that context. The varying degrees of periodic repetition lead to four categories of metrical experience: dual projection; single entrainment; dual entrainment; and the absence of meter.

**Periodicity: Radical Projection and Conservative Entrainment**

Like Hasty, Agawu, and Imbrie, Justin London argues that meter is located in the cognition of a listener, not in the music itself. As discussed in chapter 1, he defines meter as an anticipatory schema of attentional energy entrained to a perceived periodicity in a musical stimulus (2004, 12). In figure 5.2, meter is shown as an oscillating curve of attentional energy in absolute time, with the peak of each curve representing a listener’s most anticipated temporal location for a salient event, London’s conception of a metrical accent. This graph shows expectancy across one bar in \( \frac{3}{4} \) time—equivalent to one oscillation at beat level 2.\(^3\) The horizontal axis shows the phase of the oscillation, with the strong beat at 0, the center of the figure, and the two weak beats at roughly 0.33 and -0.33, or 33% out of phase with the strong beat.

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3. Throughout this chapter, I adopt Hasty’s (1997) usage of *measure* to mean any metrical duration; *bar* refers to the duration demarcated by bar lines.
At the surface, London’s entrainment theory and Hasty’s projection theory seem to involve vastly different mental activities: London’s entrainment theory involves oscillators and is heavily focused on absolute duration, while Hasty’s projection theory addresses individual quantized durations. In practice, the two are more similar. The metaphor of a listener’s internal oscillator adopted by London (2004) must not be taken too literally. While the word oscillator may suggest the mechanical reproduction of an absolute duration independent of later musical events, a metrical oscillator must necessarily adjust to the varied absolute durations given in a real performance, which convey aspects of melodic grouping structure in addition to energetic and expressive shape. The oscillator reproduces metrical durations individually in response to the durations presented to it; thus, entrainment occurs through the mental activity of projection.  

The metrical experiences of entrainment and projection both involve the mental activity

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4. London’s figure is itself based on Edward Large and Caroline Palmer’s (2002) figure 3A.

5. To be clear, entrainment involves the continued projection of a quantized duration that varies in absolute duration based on feedback from a musical performance in concert with broader stylistic expectations.
of projection, but they reflect different attitudes toward the periodicity of the durations
projected. The attitude of projection takes a skeptical stance toward the continued relevance of a
particular duration, while the attitude of entrainment takes a more confident stance. In Imbrie’s
paradigm, the attitude of projection is a very radical listening strategy, while the attitude of
entrainment is more conservative.

Harald Krebs’s (1997) concept of indirect metrical dissonance and Hasty’s notion of
metrical particularity illustrate a key difference between the metrical attitudes of projection and
entrainment. While metrical dissonance is perhaps most often conceived as the simultaneous
sounding of non-aligned metrical layers on the musical surface (whether through displacement or
a difference in the duration of measures), indirect dissonance involves the incongruence between
currently sounding metrical layers and a listener’s continuation of previously established layers
(figure 5.3). By defining meter as a kind of entrainment, London implies that a listener may
continue to project durations of the entrained pattern forward despite rhythmic contradictions;
thus, under entrainment, a listener may perceive the parenthesized strong beats marked above the
staff. Projection theory insists on continuous confirmation from the musical surface; for similar
projections to continue, they must be confirmed by similar measures of actual content. The
parenthesized strong beats of the previous duple meter marked above the staff are not confirmed,
so a projection from the first parenthesized strong beat to the next does not occur under a
projection attitude.7

6. Conversely, I see no reason why the expectancy curves of London’s entrainment
model must be absent from projection. Expectancy curves may help to motivate the analysis of
realized and denied projections.

7. If a listener does not recognize a switch from duple to triple at the third beat of bar 5
and begins a projection to the second beat of bar 6, the downbeat of bar 6 denies the projection,
replacing it with a dotted-half-note projection to the downbeat of bar 7.
More subtly, under the projection attitude, each metrical projection is fully particular to the previous, projective measure. Hasty writes that “the projective potential of the first measure cannot be abstracted from the actual first measure and from everything that is involved in its becoming just this measure with just this projective potential” (150). In other words, a projection involves a potential for the recreation of all the lower-level metrical aspects of a measure in its entirety, in addition to the broad boundaries of that measure. If a measure involves a syncopation, the projection of that measure necessarily replicates the syncopation. In figure 5.4, adapted from Hasty’s example 10.1C (1997, 150), I show projections of bar-level measures. The particular content of these projections is indicated in parentheses beneath the projection. The even quarter-note rhythm of the first bar yields a projection of the same rhythm into the second (projection A). Because the actual rhythm of the second bar consists of two dotted quarter notes, a listener may have the impression that the second note occurs “too late.” In spite of this impression, the actual rhythm of the second bar becomes projective for the third bar; thus, a rhythm of two dotted quarter notes is projected into the third bar, not three quarter notes (projection B).
Entrainment allows a listener to interpret some rhythms as deviating from an established meter without challenging that meter, thus relatively without consequence; the projection attitude, however, implies that the new rhythms are at least mildly disruptive for the previous projection and are involved in the creation of new projections. Under the projection attitude, a listener hears a duration and projects that duration forward as a measure of the next but discards it afterward, replacing it with a projection of the actual contents of the second event or a higher-level event, whether or not the internal rhythms of the second event are different from those of the first; the projection of a duration does not gain momentum through confirmation. This single-use nature of the projection attitude imbues rhythmic differences with productive and disruptive powers. As a result, the distinction between rhythmic consonance and rhythmic

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8. By *challenge*, I mean a situation where a listener is no longer confident that the previously entrained meter will return; this is quite different from the feeling of rhythmic dissonance against an entrained meter in which a listener is confident that the dissonance will not persist and that the previous normal state will return.

9. To be clear, projections in themselves (as mental activities) do not gain momentum through confirmation, though a listener may be encouraged to have more confidence in the continued reproduction of that duration, leading to a change of attitude from projection to entrainment. A listener may still remain skeptical of the continued relevance of that duration, however.
dissonance collapses significantly. Under the attitude of projection, rhythmic dissonances are only dissonant in reference to past durations; they are consonances in reference to the future—in fact, they *define* rhythmic consonance and dissonance with respect to anticipated events.\(^{10}\)

Because of this collapse, perhaps the term *dissonance* is no longer accurate to describe the experience of rhythmic change under the projection attitude. In the domain of pitch, dissonances are temporally independent; they remain dissonances in reference to the past and the future. For rhythmic contradictions under the attitude of projection, I substitute the category of *rhythmic* (or projective) *difference*.

There are musical situations for which this notion of rhythmic difference is compelling. For instance, when rhythm is not (or not yet) consistent enough to permit entrainment, rhythmic change produces a different effect than rhythmic dissonances experienced under entrainment. Figure 5.5 shows my projective analysis of the opening viola melody of Webern’s Movement for String Quartet, op. 5, no. 2. The melodic progression G₄–B₄ yields a projection that is realized but exceeded by the duration of B₄. As a result, a new projection arises from the start of B₄ (after its duration has been determined by a return to G₄), rather than a higher-level projection encompassing the durations of both G₄ and B₄. This second projection is denied by a very early entry of the next event, C♯₄. While this sharp denial does produce a mild surprise in my hearing, it does not feel like a *deviation*. I do not expect that some other event will occur to correct for

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\(^{10}\) In spite of his aforementioned claim for complete metrical particularity, Hasty writes that “this particularity may be more or less relevant for the realization of projected potential.” (1997, 150). In practice, Hasty mostly distinguishes between projections for which the broadest outlines of the duration are reproduced and those for which they are not (the latter are denied projections). He does not categorically distinguish between projections in which all of the lower-level metrical contents are perfectly reproduced and those in which they are not; until the internal metrical contents differ enough to deny a projection, Hasty simply considers the projection to be realized.
this surprise, leading to a *return* to dotted-quarter-note rhythms, nor do I experience a feeling of loss for the denied projection; instead, I feel that the duration simply *is* and that the longer half-note duration begun at B4 may shape the continuation of the passage.

![Figure 5.5. A projective analysis of the viola’s opening phrase from Webern’s Movement for String Quartet, op. 5, no. 2.](image)

While compelling in the context of relatively inconsistent rhythms, the collapse of rhythmic consonance and dissonance in the projection attitude is untenable in other musical contexts. For example, in my hearing, no part of the cadential hemiola in bars 14–15 of Handel’s sarabande from the D-minor keyboard suite, HWV 437, may reasonably be argued to be projective into bar 16 (figure 5.6); under a projection attitude, however, some part of the cadential hemiola must project onto bar 16. Depending on the highest level of meter active in this passage for a listener, she will either project the durations of bar 15 onto bar 16 or the durations of bars 13–14 onto bars 15–16.\(^\text{11}\) In either case, the elimination of two-half-note divisions of the bar would constitute a rhythmic difference similar to the one that arises from the comparison of bars 13–14. Listeners familiar with the trope of the cadential hemiola will certainly recognize it, understand the durations and accentuations of bars 14–15 as part of a

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11. Bars 14–15 will be projected onto 16[–17] only in the extreme case that a listener is so unfamiliar with the trope of the cadential hemiola that it replaces her previous meter; otherwise, a projection of bars 14–15 would overlap the projection implied by the two-bar hypermeasure (bars 13–14 onto 15–16). Hasty (1997) explicitly forbids the overlapping of projections, though: lower-level projections may occur within the space of a higher-level projection, but they may not contradict it by projecting across its boundaries (108).
temporary deviation, and expect a cadence in bar 16 with a return to the rhythmic content of bars 1–13. To continue with the rhythms of the hemiola would be shocking! In other words, some abstract representation of the rhythmic content of bars 1–13 must be projected onto bar 16. For this class of listener at least, cadential hemiolas invoke a strong, temporally independent distinction between rhythmic dissonance and rhythmic consonance.

Figure 5.6. Handel, Keyboard Suite in D Minor, HWV 437, Sarabande, bars 1–16.

Rapprochement between the attitudes of projection and entrainment is possible. I have already shown that projection as a mental activity underlies both attitudes. Danuta Mirka (2009) has also sought a degree of compatibility, asserting that projection is the means of establishing meter, though it is superseded when meter is entrained.\(^\text{12}\) The attitude of projection need not simply be conceived as “metrical induction” (Mirka 2009, 23), which implies a lower, not-yet-metrical status. Projection as a metrical attitude is apropos for any musical passage in which a listener is not confident that a particular duration will maintain continued relevance, even in the

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\(^{12}\) Mirka also recognizes that the mental activities occurring in her phases of “finding meter” and “sustaining meter” are both predictive, not simply responsive to past events (2009, 24–25).
face of rhythmic contradictions. This includes passages of relatively inconsistent rhythms in
addition to beginnings of movements and moments when an entrained meter dissolves or
encounters a challenge. Conversely, entrainment occurs when a listener is confident that a
duration will continue to be relevant indefinitely and that it will return, even if contradicted.
Broader philosophical engagements notwithstanding, the experiential difference between the two
attitudes is felt most clearly as a difference in the listener’s experience of rhythmic changes.\(^{13}\)
Beyond this key difference, the two operate similarly.

**Metrical Variety: Weight and Blom-Smith’s Context-Sensitive Meter**

In his provocative dissertation, Richard Blom-Smith (1994) argues for a novel conception
of meter. His point of departure is the idea that meter is a kind of musical yardstick, but he
emphasizes that it differs from tangible yardsticks used for measuring distance in that it is a
yardstick derived from the object measured; meter exhibits a fundamental “event-dependency”
because it defines its own units for measurement (101–2). In a critique of Lerdahl and
Jackendoff’s highly influential theory of meter, Blom-Smith argues that they initially propose
event-dependency for meter but only partially incorporate it into their metrical theory (102). He

\(^{13}\) It should be noted that Mirka amalgamates Hasty’s projective process and Ray
Jackendoff’s (1991, 1992) idea of a multiple-parallel processor. This amalgam aims primarily to
address the problem of switching between metrical interpretations of present and recent past
events. She argues that a listener must simultaneously develop several metrical interpretations of
events in this phase in order to choose the best interpretation, though only one is consciously
experienced by a listener (2009, 19). The non-preferred interpretations are discarded in either of
two situations: when one entrains to a particular metrical interpretation, or when one reaches the
limits of “working memory” or the “psychological present,” which she understands to be marked
by the end of a musical phrase (2009, 21), following Brower (1993), Parnscutt (1994), and
Temperley (2001). Although the question whether multiple metrical interpretations are
maintained in parallel under an attitude of projection is important, since only one is consciously
experienced, the difference is not crucial for the purposes of this chapter.
proposes a “context-sensitive” conception of meter in which events are always both measured by meter and impactful for meter.

The distinction between the two metrical functions of events as measured and measuring—to borrow a phrase from Hasty (1997, 69)—arises when meter is considered from a temporal perspective: events measure future events, and they are measured by past events.\(^\text{14}\) Blom-Smith argues that it is in this temporal distinction between future and past that the definitions of phenomenal accent and metrical accent lie. Metrical accents are accents projected into the future by a listener, and phenomenal accents are the accents in the past that shape the projection (104–5).

Blom-Smith emphasizes that context-sensitive meter is not simply a question of “where” but also, to some degree, a question of “what”:

In a context-sensitive model of metre…the measuring of time-points and events is not only with respect to their place in a metric time-span structure but also with respect to their *phenomenal accentuality*; it is measured according to what might intuitively be described as ‘weight.’ (106, emphasis in original)

Listeners not only expect weight to fall at specific temporal locations, but they also expect a certain amount of weight to occur at those locations.

Blom-Smith proposes that meter consists of two components: a time-span structure and a ‘phenomenal’ component (106).\(^\text{15}\) The time-span structure is essentially equivalent to the

\(^{14}\) The reference to Hasty’s work is by no means incidental. As may already be clear, there are many striking resemblances between their work, and Blom-Smith even formulates some tenets of projection prior to Hasty’s published work. The two seem to have arrived at similar formulations independently; Hasty does not cite Blom-Smith, and Blom-Smith only cites Hasty (1981) in reference to the idea of “tonal accent.”

\(^{15}\) Blom-Smith’s use of single quotes in ‘*phenomenal*’ indicates the projection of phenomenal accentuality into a future measure; without the quotes, *phenomenal* accent refers to the phenomenal accentuality of an actual, complete measure.
traditional notion of beat hierarchy, with the caveat that metrical accent be conceived as the projection into the near future of an accented location, based on the heaviest previous phenomenal accents. The ‘phenomenal’ component consists of a listener’s perception of the degree of phenomenal accentuation (hereafter “weight”) at a particular metrical location and the projection of that same weight forward to the equivalent location in the next measure (at all levels of meter). Thus, Blom-Smith’s conception of meter involves two simultaneous projections: duration (beat hierarchy) and weight. Like Hasty’s, Blom-Smith’s projections have a short lifespan: they are replaced by the durations and weight of the actual next measure.\footnote{Blom-Smith is somewhat inconsistent on this point; in other passages from his dissertation, he mentions “established” meter as having “structural inertia” (198). As previously discussed in this chapter, the feelings of “establishment” and “inertia” arise from an attitude of entrainment, not projection.}

Context-sensitive meter is highly instructive. The projection of weight profiles helps to explain the function of post-cadential conventions in the classical and romantic periods, especially the repetition of cadential harmonies after important formal arrivals. The “hammer-blows” that announce the medial caesura and other rhetorical arrivals of a sonata form (Hepokoski and Darcy 2006) usually involve a slowing of surface rhythm and a complete removal of weight from all but the strongest metrical positions. For example, at the medial caesura of the exposition in the first movement from Mozart’s Symphony No. 40 in G Minor, K. 550 (figure 5.7), the continuous eighth notes of the strings in bars 40–41 give way to half-note event durations in bar 42.\footnote{I consider the downbeat of bar 43 to be a new event, a relatively mild example of a “loud rest” (London 1993, Cooper and Meyer 1960).} As a result, weight is projected only to the first and second half-note beats of bar 43, relatively strong metrical locations. The constant eighth notes of bars 40–41 engender expectations for the continued phenomenal accentuation of every eighth note—
continued eighth-note motion at the very least—but the slow rhythms and uneven weight
distribution in bar 42 deny most of these ‘phenomenal’ accents and eliminate further projection
(onto bar 43) of weight at the eighth-note and quarter-note levels. The projection of no
accentuation at these levels in bar 43 increases the rhetorical closure of the cadence by implying
that no new events will occur at these levels; because only half-note events occurred in bar 42,
only half-note events are projected into bar 43. Broadly, the rhetorical strength of a cadence is
bolstered by the dissolution of weight at lower levels of the beat hierarchy at the cadence and
during any ensuing postcadential material.¹⁸

¹⁸ I follow William Caplin’s (2004) distinctions between cadential and postcadential
function and between the syntactical and rhetorical strength of a cadential arrival (56).
Blom-Smith offers a related formulation, but he does not distinguish between cadential
and postcadential function, nor the syntactical and rhetorical strength of cadences: “cadentiality
with respect to metric structure is therefore not only a matter of the metric level at which the
cadence occurs but also a matter of what might be called the dissolution of lower-level
‘phenomenal’-metric accents” (113, emphasis in original).
The study of metrical weight can also help to illuminate style change: Blom-Smith asserts that baroque meters involve much more evenly distributed weight than classical meters (111). He extends the argument by suggesting that the even weighting of beats in baroque music gives

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19. Blom-Smith credits Charles Rosen (1998, 90) with the observation, but the idea can be traced back to Edward T. Cone (1968, 59–63 and 72), and it strongly resonates with Thrasybulos Georgiades’s (1951) claim that the inconsistency of classical-style rhythms enables a kind of “theater reality” (Theaterwirklichkeit) that greatly increases focus on the present by disconnecting it from the past and future. This inconsistency naturally results in uneven weight distribution.
rise to its continuous, overlapping phrasing (112): even weighting of beats suggests that events will continue forward with even pacing and weighting. Conversely, the uneven weighting of beats in classical meters gives rise to punctuated phrases and aids in creating closure (112–13). While one might argue with Blom-Smith’s reductive conception of “baroque”—which would seem to exclude the uneven weighting of beats in the sarabandes examined in this dissertation—the distinction between the effects of the motoric rhythms that drive many baroque concertos, allemandes, correntes, and fugues and the highly differentiated rhythms that generate the punctuated gestures and phrases of classical sonatas, chamber music, and symphonies is useful.20

Distinctions among weight profiles may also clarify the different energetic and expressive effects of passages within the same style. Blom-Smith discusses bars 1–8 and 101–8 of the first movement of Beethoven’s Piano Sonata in F Minor, op. 2, no. 1 (1994, 113–18) (figure 5.8). In bars 5–8, every quarter-note pulse receives significant weight, providing continuity and forward propulsion through the projection of that relatively even weight profile into the next bar; in bars 105–8, however, much of the weight in each bar falls on the downbeat, and the second and fourth pulses receive no weight at all.21 Blom-Smith demonstrates the relevance of projective weight for these passages by swapping bars 7–8 with 107–8 and noting the awkwardness that results from the accentual discontinuity. He argues that this discontinuity is evidence for different meters in bars 5–8 and 105–8.

20. The distinction also helps to explain the momentum and “energy gain” associated with sonata-form transitions and developments: these Gang (Marx 1837) passages characteristically return to the consistent, motoric rhythms of baroque Fortspinnung.

21. As in chapter 2, I use the term pulse to mean an equal rhythmic division; it does not necessarily indicate a beat on any metrical level.
We may further strengthen Blom-Smith’s argument by considering the expressive character of these two passages. While bars 5–8 are fluent, easily accelerating and intensifying, bars 105–8 are labored, reaching both a climax and a cadence awkwardly and with great effort, like a struggling runner whose muscles have locked up. The difference between these phrases relates to Blom-Smith’s aforementioned observation that continuity and drive emerge from a relatively even distribution of weight, and that closure results from the dissolution of weight at lower metrical levels. The relatively even distribution of weight in bars 5–8 generates propulsion and forward direction. The very uneven distribution of weight in bars 105–8, strongly favoring
the notated downbeats, especially in comparison to the more even distribution in bars 101–4, resists the propulsion and forward direction of the ascending melody and the fragmented melodic groups. The closural tendency produced by the dissolution of weight on the second, third, and fourth pulses requires significant effort to overcome; this effort is palpable as the phrase struggles to reach its climax and cadence in bars 107–8.

Blom-Smith also discusses metrical processes involving an accumulation or reduction in weight at a particular beat class over time. In an analysis of the opening of Beethoven’s Symphony No. 8 in F Major (figure 5.9), he shows that the hypermetrical change from “odd-strong” to “even-strong” in bar 12 is subtly prepared by an accumulation of weight on the even downbeats in bars 4–10: in bar 4, durational accents in all parts; in bar 6, durational accents and new-entrance accents for the oboes and horns; in bar 8, durational accents, suspensions, and two-note slurs; in bar 10, stress accents and new-entrance accents for the winds and timpani (123–27). While the phrase overlap and harmonic rhythm beginning in bar 12 are undoubtedly the clinching elements for the metrical shift, Blom-Smith demonstrates a subtle preparatory process that produces a hypermetrical transition.

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22. The concept of beat class recognizes the equivalence relation obtaining between, for example, the downbeats of measures that share the same beat hierarchy. The term was coined by Dan Warburton (1988) to address rhythm in Steve Reich’s Clapping Music and saw further development by Richard Cohn (1992b) and John Roeder (2003).

23. Blom-Smith’s discussion of metrical processes contradicts his earlier assertion that the ‘phenomenal’ component of meter projects the weight of a location in one measure to its equivalent in the next. In metrical processes, he considers the weight projected from a particular beat to be affected by both the weight on the beat in that measure and the weight on that beat in prior measures. This results in a questionable amalgam of projection and entrainment to weight and, in my opinion, weakens some of his analyses of metrical processes. For an example, see his analysis of Chopin’s Prelude in A Major, op. 28, no. 7 (118–23).

24. The term hypermetrical transition was coined by David Temperley (2008). It specifically refers to passages in which the listener’s downbeat location gradually changes during
Figure 5.9. Beethoven, Symphony No. 8 in F Major, I, bars 1–15.

a transitional passage. Whether or not one hears the passage in figure 5.9 as a sudden or gradual change, Blom-Smith’s analysis illuminates a likely mechanism behind many gradual metrical transitions.

Blom-Smith also discusses a metrical process that involves the dissolution of metrical levels without metrical dissonance or a (hyper)metrical transition. See his analysis of the opening of Haydn’s String Quartet in C Major, op. 33, no. 3, in conjunction with Rosen’s observations on the same passage (Blom-Smith 1993, 128–31; Rosen 1998, 65–67).
Blom-Smith’s “context-sensitive” meter may appear nearly identical to what I called dual
entrainment in chapter 2, but there are several crucial differences. First, he considers weight a
synonym for the degree of phenomenal accentuation at a particular temporal location; as I
showed in chapter 4, however, weight includes aspects of musical mass in addition to emphasis:
the latter is a product of phenomenal accent, but the former is not. The duration and loudness of
an event inform its weight even when they do not contribute phenomenal accents. Blom-Smith
only recognizes the effects of duration and loudness when an event is longer or louder than its
immediate predecessor.

Second, he considers the weight of one location to be projected onto an equivalent
location in the following measure, which is to say that he projects the approximate amount of
weight at each beat from one measure to the next. I argue instead that the activity of projection

Figure 5.9. (continued)
involves the whole measure as a single, shaped unit, so listeners project a weight *profile*, rather than the specific weight at a particular location. For dual entrainment, it is the weight of one location relative to the rest of the measure that determines rhythmic consonance and dissonance, not the absolute weight of a particular location.

This difference between context-sensitive meter and dual entrainment may be clarified through the examination of figure 5.10. Within each bar, weight is relatively evenly distributed, though downbeats are heavier than the others because the second and third notes in each bar prolong the deeper-level event begun at the downbeat; however, bar 2 is significantly heavier throughout than bar 1, even if one overlooks the increased mass from the *forte* dynamic throughout the measure: the four-fold increase in density produces quadruple the weight from new-event accents in the second bar. If conformance is determined by absolute levels of weight, as in Blom-Smith’s context-sensitive meter, the contents of bar 2 must be interpreted as not conforming to the projected weight from bar 1; each beat is significantly heavier than its counterpart in the previous bar. If conformance is determined by relative weight, as in dual entrainment—through the comparison of weight at one location to the other locations in a measure—the contents of bar 2 do conform to the projected weight profile from bar 1. In this sense, bars 1 and 2 are nearly identical; they both exhibit the profile heavy–moderate–moderate.

![Figure 5.10](image)

Figure 5.10. The contents of bar 2 reproduce the relative weight profile of bar 1 but not its absolute levels of weight. Under dual-aspect meter, bar 2 is understood to confirm the projected weight profile from bar 1.
Third, dual entrainment involves the *entrainment* to a weight profile, while context-sensitive meter adopts an attitude of projection toward weight. The weight profiles of dual entrainment may weather rhythmic and metrical dissonances, allowing for senses of deviation and return to the consonance of the entrained weight profile. The phenomenal accentuality of context-sensitive meter is created anew in every measure, recognizing only rhythmic difference, not rhythmic dissonance.

The fourth and most vital difference relates to a broader definition of what meter is. For Blom-Smith, “context-sensitive” meter is meter and meter is context-sensitive meter—that is, meter always consists of two projections: a beat hierarchy and a weight profile on all metrical levels. I argue, however, that meter embraces a variety of temporal experiences, dependent upon the nature of the passage, the listener, and the listening context. Dual entrainment describes how meter manifests in some passages, or, more accurately, in some hearings of some passages, but meter frequently exists without entrained weight profiles. Moreover, when dual entrainment occurs, entrained weight profiles may occur on multiple levels, but there may only be one level; the weight profiles may be highly specific and precise, but they may also be very general and imprecise.

**Metrical Variety: A Disunified Theory**

My disagreements notwithstanding, Blom-Smith’s context-sensitive meter offers a crucial corrective to the theories of projection and entrainment. Meter involves attention to both durations and weight. The attitudes of entrainment and projection, therefore, apply not only to durations but also to weight profiles. In the activity of projection, common to entrainment and projection attitudes, the weight profile of a duration is also projected forward, serving as a
possible measurer of the weight profile of the next duration. While the skeptical attitude of
projection toward a weight profile means that an imperfect reproduction of a weight profile in
the next duration will not be felt as rhythmic dissonance, the weight profile helps a listener to
feel differences in weight—it sensitizes listening and enhances the experiences of both similarity
and novelty. Entrainment to weight profiles further intensifies similarity and novelty, producing
consonance and dissonance against the entrained weight profile.25

In chapter 2, I introduced the idea of dual-aspect meter to describe the experience when
meter orients to a weight profile in addition to durations (a beat hierarchy). With Blom-Smith’s
corrective, it becomes clear that meter always consists of these two aspects; meter is always
dual-aspect meter. It is also clear that the categories of entrainment and projection no longer
suffice as complete descriptions of metrical experience; meter involves the combination of two
attitudes toward periodicity, one toward durations and the other toward weight profiles (figure
5.11). There are three possibilities: a listener may adopt an attitude of projection toward both
durations and weight profiles (dual projection); a listener may adopt an attitude of entrainment
toward both durations and weight profiles (dual entrainment); or a listener may adopt an attitude
of entrainment toward durations and projection toward weight profiles (single entrainment).
Otherwise, meter ceases to exist. Since weight profiles are necessarily shaped in relation to
durations, it is not possible to entrain to a weight profile while simply projecting durations.

25. Because a metrical weight profile spans the duration of a measure (on some level), it
is necessarily subject to the same cognitive constraints as measure duration, namely the
“psychological present” (Temperley 2001, Mirka 2009), which has variously been called “echoic
storage” (Parncutt 1994), “working memory” (Brower 1993), and “short-term musical memory”
(Jackendoff 1987).
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<td>Weight Profile</td>
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Figure 5.11. Attitudes toward duration and weight profile in dual-aspect meter.

Meter embraces a variety of temporal experiences. It is not simply dual projection, single entrainment, or dual entrainment; it may manifest as any of these experiences, depending on three variables: the rhythmic consistency of a passage, the listener’s acculturation and dispositions, and the listening context. I will not address the second and third factors further in this chapter. Figure 5.12 presents a model of metrical variety influenced by the spectrum of perceived rhythmic consistency or inconsistency of a passage. The four broad categories dual entrainment, single entrainment, dual projection, and the absence of meter are shown. Dual entrainment is shown with two (entrained) components, one that remains consistent from left to right and another that tapers as rhythm becomes less consistent. The tapered component represents the precision of the entrained weight profile. In relatively inconsistent passages, the weight profile may be quite general and imprecise, tolerating significant variance of weight between consonant reproductions. In more consistent passages, weight profiles become more precise.

The model of metrical variety illustrated in figure 5.12 presumes that a passage is well-enough developed that a listener has a clear sense of the degree of rhythmic consistency in that passage. In the process of coming to that sense, a listener first experiences rhythmic inconsistency, treating perceived durations and weight profiles as possible for reproduction but

26. The exact location of the boundaries between these categories will necessarily differ among listeners, based on their dispositions and the contexts in which they are listening.
not having strong expectations that they will be. The confirmation of projections may encourage a listener to adopt an attitude of entrainment by fostering a sense of rhythmic consistency.\(^{27}\)

![Perceived Rhythmic Consistency Diagram](image)

**Metrical Expectations**

Figure 5.12. Meter as a range of temporal experiences influenced by perceived rhythmic consistency.

The work of Hasty, London, Blom-Smith, and Mirka has explored aspects of musical passages around the center and right side of figure 5.12; in the remainder of this chapter, I will explore the higher degrees of consistency on the left side of figure 5.12 and the corresponding degrees of precision in weight profiles within the same piece and among pieces of different styles.

**Dual Entrainment and the Spectrum of Rhythmic Consistency**

Let’s return to one of the weight profiles discussed in chapter 2. In the sarabande from Handel’s Keyboard Suite in D Minor, HWV 437, shown in figure 5.6, I claimed that bars 1–12

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\(^{27}\) Mirka (2009) offers a similar argument concerning the transition from “finding meter” to “sustaining meter.” She argues that the transition occurs after confirmed projections on two hierarchical levels (25). I do not argue for such a clear-cut transition among listeners, listenings, and musical contexts.
establish a weight profile of heavy–moderate–very light across the three pulses of the bar, a pattern that is very subtly contradicted in bar 13 with the change to the C dominant-seventh chord on the second pulse of the bar. This contradiction serves as the subtlest of preparations for the overt dissonance against the entrained weight profile in the cadential hemiola of bars 14–15. I also claimed that it was specifically in these moments of contradiction—especially at the second and third pulses of bar 14—that the prior entrainment to the heavy–moderate–very light weight profile surfaces most clearly for conscious awareness.

In the model of metrical possibilities I introduced in figure 5.12, dual entrainment necessarily occurs within a space close to the pole of complete rhythmic consistency. While Handel’s sarabande is rhythmically consistent, there are more consistent musical passages.

As a more extreme example, consider the opening of Steve Reich’s *Music for Pieces of Wood*, shown in figure 5.13. My interpretation of a metrical beat hierarchy changes a few times during the notated section of the piece, but it is stable from the start of module 2 through the end of module 5, shifting to during the second or third repetition of module 6.28 During modules 2–5, I hear oriented to the notated downbeat. The repetitive weight profile I follow, however, is less stable. With the passage to each new module, a host of changes occur in the weight profile: a new-event accent is added, the durations of clave 3’s notes are changed, intensifying, weakening, eliminating, or adding new durational accents, and either the composite rhythm is changed—affecting other durational accents—or the density of attacks at a particular location is increased.29 The progression from module 2 to 3, for instance, changes the composite

28. My perceived downbeat in module 6 aligns with Clave 3’s third note, which coincides with the heaviest durational accent in Clave 3 and a density accent, being one of only two locations in the module where three new events begin together.

29. I interpret duration in this passage as the interonset interval within each instrument.
rhythm of the pattern, eliminating the composite-durational accent on the third eighth-note, which had been created by the quarter-note interonset interval in the composite rhythm (the durational accent at this spot created by the events within clave 2 alone does remain, though). The progressions to modules 4 and 5 do not affect the composite rhythm but instead affect the density of event attacks at particular locations. Although I feel a very mild disorientation with the passage to each new module—a subtle form of Krebs’s *indirect metrical dissonance*—after a couple of passes through the module, I entrain to the new weight profile.

I find the change at module 5 to be more significant than the changes at modules 3 and 4, even though the change at module 3 affects the composite rhythm. Certainly it is significant that the new attack in module 5 results in the first simultaneous attack by all three sounding claves, resulting in a rather heavy density accent at the passage level. But I suspect that the stronger effect of this change also has to do with the greater salience of stronger metrical locations, or in the terms popularized by Justin London, the greater attentional energy directed toward stronger metrical locations. The change in modules 3 and 4 occurred on eighth-note subdivisions of the
measure, while the change in module 5 occurs on a quarter-note division. It may be generally true for dual-aspect meter that stronger metrical locations have more precise weight expectations than weaker locations.

In *Music for Pieces of Wood*, I entrain to an extremely detailed and precise weight profile; the addition of even a single attack to the pattern produces a dissonance. The weight profiles I experience in *Music for Pieces of Wood* are significantly more precise than the weight profile I experience in Handel’s sarabande. In the Reich, I develop expectations for a very precise amount of weight to occur at each eighth-note subdivision of the module; in Handel’s sarabande, my expectations only apply to the three half-note pulses in the bar, and my expectations for that weight are somewhat flexible: I expect the first pulse to be heavy, the second pulse to be moderate, and the third pulse to be extremely light.

The difference between the two weight profiles derives from the degree of rhythmic consistency in the passages. While the Reich is as perfectly consistent in each repeated module as the performers can play, Handel is more flexible in his treatment of the second and third half-note pulses of the bar. In odd bars, the second pulse includes an attack in the very salient bass voice; in even bars, the bass is held through the second pulse (except in bars 6 and 8). In odd bars, the third pulse almost never receives any weight, even by a single attack (exceptions occur in the bass voice in bars 5 and 13); in even bars, the third pulse is consistently articulated (except in bar 6), but only by a relatively inconsequential bass note during a passing motion. Because this rhythmic flexibility permeates the passage, it impacts the specificity of the weight profile. The profile I follow in Handel’s sarabande is much less precise than in the Reich. While I expect the second pulse to be moderately heavy, I am willing to tolerate the presence or absence of new-event and durational accents in one of the most salient voices; while I expect the third pulse to be
extremely light, I am willing to tolerate a light articulation of the pulse as roughly equivalent to a complete absence of weight. The distinctions permitted by these tolerances in the Handel would constitute rhythmic dissonances in the Reich.

In the model of metrical variety shown above in figure 5.12, the Reich approaches the extreme of complete rhythmic consistency, while the Handel is closer to the middle of dual-entrainment space. Let’s turn to the less consistent, right edge of dual-entrainment space now.

As shown in the comparison between weight profiles in the Handel and the Reich. As rhythmic consistency decreases, the precision and specificity of weight profiles also decrease. In Felix Mendelssohn’s Song without Words in F♯ Minor, op. 19, no. 5 (figure 5.14), I entrain to a subtle and imprecise weight profile at the dotted half-note level. In listening, I only become aware of my dual entrainment when I experience rhythmic dissonances against it. Accordingly, I will explore those dissonances first.

A dissonant heavy–heavy–light profile occurs in bars 15–16. In bar 15, the downbeat includes a change of harmony with attacks and changes of pitch in all four sounding voices, and the attacks of relatively deep-level events that are embellished in the second and third quarter-note pulses. The E-major harmony at the downbeat of bar 15 is the final ictus of the phrase begun at the anacrusis to bar 5; following Lussy’s (1883) group-hierarchical distinctions, the notes of this harmony remain in effect until the downbeat of bar 19, which is the initial ictus of the next phrase.30 Indeed, the rest of bars 15–18 prolong E major through the upper neighbors C

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30. As discussed in chapter 4, anacruses and group appendices are hierarchically lower than the body of a group, which is demarcated by initial and final icti. As a result, the events of a group’s final ictus remain in effect until the initial ictus of the next group on the same level. Since the remaining contents of bars 15–18 are phrase extensions, a variety of appendix at the phrase level, they are lower-level groups than the phrase that ends in bar 15 and the phrase that begins at the downbeat of bar 19.
and A (C is itself embellished with the incomplete neighbor D). The second quarter-note pulse includes attacks and changes of pitch in three voices, a heavy notated stress accent, a stress accent from the start of a slur (Bach 1753/1949, 154), a new-group accent, and a registral accent in the soprano. The weight of the second quarter-note pulse is nearly equal to that of the downbeat, but the third is much lighter. It includes attacks and changes of pitch in three voices and a low-level change of harmony. Taken together, these accents produce a heavy–heavy–light profile in bars 15–16.

Around bar 19, I experience a metrical shift, which includes a change to the metrical weight profile and the level of the tactus. My tactus switches from the dotted half note to the notated bar (the dotted whole note) because the material of bars 19–22 drastically reduces emphasis on the second, third, fifth, and sixth quarter-note pulses of the bar. Dotted-half-note and dotted-whole-note durations are heavily emphasized in bars 19–22 through changes of harmony, the right-hand accompanimental patterns, and the baritone melody.31 Throughout bars 1–18, however, weight tends to fall throughout the bar. In bars 7–10, for instance, nearly all of the first and third quarter-note pulses in each dotted-half-note measure are emphasized by stress accents, changes of harmony, and group beginnings. The essential motion of bars 19–22 occurs at the pace of the dotted half note, while it alternates between half note and quarter note in bars 1–18; my change of tactus reflects this difference.

31. Even when the baritone melody features quarter-note rhythms, pitch shapes emphasize dotted-half-note durations: lower neighbors embellish the notes on the second beats of bars 19 and 21, and registral accents mark the dotted-half-note beats of bar 21.
Figure 5.14. Mendelssohn, Song without Words in F♯ Minor, op. 19, no. 5, bars 1–22.
The metrical weight profile also changes at bar 19, though it remains at the dotted-half-note level. In bars 19–22, for instance, the vast majority of phenomenal accents occur on the dotted-half-note beats, including all changes of harmony, all durational accents, all bass notes, and nearly all registral accents. The second and third pulses are extremely light.

From the analysis of these passages, it is apparent that the weight profile I experience in bars 1–18 of the Mendelssohn will not tolerate two conditions: there must not be more weight on the second pulse than the third, and the third pulse must not be too light. It would also likely not tolerate more weight on the second or third pulse than the first, though this situation does not occur in the piece. The weight profile I entrain to in bars 1–18 is thus a flexible heavy–light–moderate pattern.\(^{32}\)

These requirements are very imprecise. I readily accept significant disparities among the specific weight profiles of bars 1–10, 13–14, and 17–18 as equivalent. Consider the first dotted-half-note measures of bars 1 and 7. In bar 1, the downbeat includes new-event accents in all three

\(^{32}\) Bars 11–12 are also dissonant against the weight profile of bars 1–10 because of the half-note grouping suggested by harmonic rhythm, which results in decreased emphasis on the downbeat of bar 12 and increased emphasis on the second quarter-note beat of this bar. The second dotted-half-note measure of bar 12 prepares a return to the consonant weight profile of bars 1–10 by contradicting the duple half-note grouping established in the second half of bar 11 and the first half of bar 12. It does so through a change-of-dynamic-level accent and a registral accent in the piano. For more on the use of rhythmic and metrical dissonance to prepare a return to consonance, see Chanan Willner 2013.
sounding voices (with an octave doubling), change-of-pitch accents in two voices, a durational accent on C♯4, and a change-of-harmony accent, while the third quarter-note pulse includes only new-event and change-of-pitch accents in the soprano and alto; in this weight profile, the first quarter-note pulse is much heavier than the third. In bar 7, the downbeat includes new-event and change-of-pitch accents in the three active voices (the alto doubles the tenor at the end of bar 6 and the beginning of bar 7), a change of harmony, durational accents in all three voices, and a durational accent for the half-note duration of the C♯-major harmony; the third quarter-note pulse includes new-event and change-of-pitch accents in the four active voices, a density accent, a change-of-harmony accent, and a stress accent in the soprano. Even though the first and third quarter-note pulses of bar 7 are much more even in weight than their counterparts in bar 1, I hear them both as consonant versions of the same weight profile.

In comparison to the weight profiles of Handel’s sarabande and Reich’s *Music for Pieces of Wood*, the entrained weight profile in bars 1–18 of Mendelssohn’s song without words is very imprecise. In fact, the rough profile heavy–very light–light is extremely common for triple meter in general. While it is always easiest to recognize entrained weight profiles aurally when they are contradicted, the rhythmic consistency of the Handel and the Reich are noticeable without rhythmic dissonance. In the Mendelssohn, however, I come to know the weight profile by what it cannot tolerate; it remains simpler to specify what does not fit within the weight profile than what does. The first quarter-note pulse may be much heavier than the third, but it need not be, as I showed in bars 1 and 7, respectively; the second quarter-note pulse may be only a bit lighter than the third—as in bar 4, where the repetition of F♯4 and A4 between the third and fourth quarter-note pulses produces the only extra emphasis on the third (because of the increased durations of those pitches)—but the second pulse is usually much lighter, as in bar 2, where it is
only articulated by an inner voice. The broad tolerance throughout this weight profile arises from a lesser degree of rhythmic consistency in a passage. It also shows how dual entrainment tapers into single entrainment: at a certain degree of rhythmic inconsistency, the entrainment to the metrical weight profile becomes so tolerant that rhythmic dissonances are all necessarily dissonances against the beat hierarchy. At this point, a weight profile is no longer discernable as an entrained aspect of meter, and an attitude of projection toward weight profiles ensues, recognizing rhythmic difference, but not dissonance.

So far I have discussed variability in rhythmic consistency as an inter-opus phenomenon—the weight profiles of certain pieces are more or less precise than others. Variability in rhythmic consistency is usually present within a single work as well. In most cases, composers treat relatively strong beats more consistently than weaker beats. For example, in the entrained bar-level weight profile in Handel’s sarabande (figure 5.6), I mentioned that the second pulse of the bar sometimes includes attacks and durational accents in the bass and sometimes not, while about half of the third pulses include attacks and the others are completely unmarked by new events. These inconsistencies entirely concern the second and third pulses, and they result in a degree of perceptual tolerance for the entrained weight profile at these locations. In contrast, the notated downbeats are more consistent, being marked by a change of harmony, changes of pitch in all or nearly all voices (the tenor sometimes repeats from an odd bar through the next), attacks in all active voices, and durational accents in one or two voices (soprano and alto, or else the bass alone). Again, there is some inconsistency at the downbeats, but the two points of flexibility involve relatively light phenomenal accents—the presence of a change-of-pitch accent in the tenor and a durational accent in the alto. The heavier and more salient phenomenal accents are all consistently applied. My perceptual tolerance for rhythmic flexibility on the second and
third pulses is significantly broader than on the downbeats. For this reason, I recognize that a
listener may not consider the change of harmony on the second pulse of bar 13 to be a positive
rhythmic dissonance.

**Conclusion**

In this chapter, I have introduced a disunified theory of dual-aspect meter—disunified by
recognizing that meter is a listener’s attitude toward the periodic repetition of musical material.
While a listener’s acculturation, personal dispositions, and listening circumstances may influence
this attitude, it arises especially in response to the perceived rhythmic consistency of a passage.
Unless a musical passage is perceived to be too inconsistent for meter, it necessarily involves
attention to both the durations of the passage and the weight profiles of those durations. Meter
always occurs with these two aspects, and a listener may adopt either of two attitudes toward
each of those aspects. The attitude of entrainment involves confidence that a particular duration
or weight profile will continue to measure events in a musical passage for some time, even in the
face of rhythmic contradictions. The attitude of projection is more skeptical, offering a duration
or weight profile as a measure of only the next measure (on the same level), to be replaced by the
duration or weight profile of the actual next measure. The experience of meter may occur as
either an attitude of projection toward both durations and weight profiles (dual projection), an
attitude of entrainment toward durations and projection toward weight profiles (single
entrainment), or an attitude of entrainment toward both durations and weight profiles (dual
entrainment).

While I have tried to avoid the illustration of meter as a monolithic phenomenon, I am
guilty of doing so in at least one way. In figure 5.12 and all of the analyses in this chapter, I have
categorized meter as one of the three processes outlined above. Perhaps these processes more accurately describe not the experience of meter as a whole but the experience of the individual metrical level. Might a listener entrain to weight profiles on one or more levels while projecting weight profiles on other levels? In all of the analyses of dual entrainment in this chapter, entrained weight profiles occur on some levels and not on others. In Mendelssohn’s song without words (figure 5.14), for instance, an entrained weight profile in bars 1–18 occurs at the half-bar level, the duration of the dotted half note, but not at the quarter-note level. In Handel’s sarabande (figure 5.6), an entrained weight profile occurs at the bar level, the duration of the dotted whole note, but not at the half-note level. In Reich’s *Music for Pieces of Wood* (figure 5.13), the entrained weight profile occurs at the level of the bar but not any level below. As Blom-Smith has shown, the weight profiles of these other levels help to inform our experiences of novelty and similarity, continuity and punctuation, drive and closure—I continue to project those weight profiles even if I do not entrain to them. Therefore, in each of these pieces, I simultaneously experience dual and single entrainment.33

Might a listener entrain to the duration of one or metrical levels while projecting the duration of another? At the most mundane level, this must be the case in the establishment of meter at the beginning of the piece. Distinguishing between dotted and solid brackets as emerging (or latent) metrical levels and established metrical levels, respectively, London (2004) shows the establishment of the two- and four-bar metrical levels in the opening of Beethoven’s

33. In fact, it is unlikely that an experience of “pure” dual entrainment may yet exist in artistic repertoire. Such an experience would require a musical passage with perfect consistency in weight from the lowest subdivision to the highest metrical level. The simplest form of this would be an extended passage of repeated notes with no perceptible changes in duration or stress. One could perhaps devise a passage that perfectly balances aspects of change among all subdivisions, but I have not yet found such a passage.
Symphony No. 5 in C Minor (figure 5.15). While the two-bar level is established in bars 9–10, the four-bar level is not established until bars 11–15. If we consider the attitude of projection to be a necessary precursor to entrainment, as I claimed above, then the four-bar duration of bars 7–10 is necessarily projected forward to bars 11–15 after a listener entrains to the two-bar level in bars 9–10. The establishment of metrical levels may seem to be an edge case, but London (2004) reminds us that metrical consonance involves the frequent establishment and dissolution of metrical levels above and below the bar line (98).

![Beethoven Symphony No. 5 in C Minor](image)

Figure 5.15. London’s (2004) hypermetrical analysis of Beethoven, Symphony No. 5 in C Minor, I, bars 1–21 (91). Dashed brackets indicate emerging metrical levels, solid brackets indicate established metrical levels, and arrows indicate anacruses.

All three metrical processes may occur together. I have already demonstrated that dual and single entrainment coexist in Handel’s sarabande (figure 5.6). In this passage, the establishment of the heavy–moderate–light weight profile at the bar level likely occurs by the end of bar 3, if not sooner. A two-bar hypermeter—reasonable given the clear two-bar
construction of sarabandes as well as contemporary dancers’ two-bar hypermetric counting of
minuets—cannot be established for entrainment before the downbeat of bar 5 at the earliest. At
the very least, dual entrainment, single entrainment, and dual projection coexist for one full bar.

In chapter 1, I presented a meta-analysis of metrical theory as divided regarding the roles
of phenomenal accents and equal durations, “landmarks” and “yardsticks.” Dual-aspect meter
unites many of these observations, showing how landmarks are relevant for meter even when
they do not affect the placement of its yardsticks. Dual-aspect meter also breathes new life into
Imbrie’s (1973) famous characterization of meter as a “conservative force” (54), showing that
meter seeks to preserve as much of the musical fabric as the broader perceived rhythmic
consistency of a passage allows.
Appendix 1

TRAGEDY IN BEETHOVEN’S PIANO SONATA IN E MINOR, OP. 90, I

The first movement of Beethoven’s Piano Sonata in E Minor, op. 90, tells a story of resistance. Although Anton Schindler’s claim that the movement was to be titled “a contest between head and heart” has been discredited (Clive 2001, 207), the movement nonetheless portrays a conflict between an antagonist authority and a protagonist transgressor. The transgressor proposes an alternative to the hegemonic authority, involving contrast in several musical domains. Within this narrative, weight profiles and their effects on meter are of the utmost importance.

The movement begins with eight rhythmically consistent bars, establishing a precise weight profile and a clear beat hierarchy up to the four-bar hypermeasure. Nearly all weight falls on the first and third beats of each bar—primarily because of durational accents, change-of-harmony accents, and increased mass (density and duration)—though a small amount of weight falls on the second half of beat 2 in odd bars, owing to a passing tone in bars 1 and 5 and a three-voice passing harmony in bars 3 and 7. With the clear two- and four-bar grouping and tonal rhythms, these subtle distinctions among weight profiles aid in the establishment of the larger two- and four-bar hypermeter, but they do not prevent entrainment to a slightly abstracted one-bar profile with heavy downbeat, empty second beat, empty or very light “and” of the second beat, and moderately heavy third beat.

1. “Mass” represents the contributions to weight from absolute duration and loudness (through dynamics and density, the combined loudness of all events at one moment). Emphasis (phenomenal accent) and mass are the two components of weight. I discuss mass further in chapter 4, pages 152–57. Emphasis is discussed extensively throughout chapters 3 and 4.

In this appendix, I will refer to weight profiles that emphasize beats 1 and 3 as “1–3” weight profiles and those that emphasize beats 1 and 2 as “1–2” weight profiles.
The small rhythmic inconsistencies of the first eight bars connect to an expressive opposition introduced in this passage. Resolute forte statements (bars 1–2 and 5–6) alternate with meek piano statements (bars 3–4 and 7–8), suggesting two opposed agents of unequal status, the former superseding the latter (figure A.1). Further evidence for their inequality arises from their harmonic characteristics. The resolute statements effect key changes, reinterpreting a tonic chord as predominant and moving forcefully to the dominant, issuing an implicit directive to the meeker statements to resolve to the local tonic. In bars 1–2, the opening statement reinterprets the global tonic of E minor as submediant of G major and moves to the dominant, D major. After the meek response resolves to G, a second powerful statement in bars 5–6 reinterprets G major as submediant of B minor and moves to its dominant, F♯ major, again leaving the meek response with the task of resolution. In both cases, the meek agent offers unsure acceptance, proceeding through inverted dominants to a contrapuntal resolution of the dominant, in contrast to the resolute agent’s strong, root-position triads. Likewise, the resolute statements place only the slightest weight on anything other than the first and third beats of the bar, while the meeker contrapuntal statements place significantly more weight on the second half of beat 2.

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2. One might also compare the opposition to Schumann’s opposition of the impassioned Florestan and pensive Eusebius.
Figure A.1. Beethoven, Piano Sonata in E Minor, op. 90, I. Bars 1–8 establish a 1–3 weight profile and duple hypermeter at the two- and four-bar levels.

In bars 9–16, the pensive, meek agent speaks up, introducing an important departure from the weight profile of the opening. A small degree of weight consistently falls on the second beat in bars 9–15 through new-event and change-of-pitch accents, as well as registral accents in bars 9 and 11. The passage still places foremost emphasis on beats 1 and 3, as the weight on beat 2 arises through the resolution of attack embellishments (figure A.2); nevertheless, any weight on beat 2 stands in marked contrast to bars 1–8. That this weight arises from attack embellishments and upward leaps connects the emphasis on beat 2 with energetic expense and resistance: it arises as surface resistance against the underlying continuation of the 1–3 weight profile (figure

3. An attack embellishment is a musical event whose onset is simultaneously the onset of a different deeper-level event, the surface manifestation of which it delays. The category of attack embellishments includes accented passing tones, accented neighboring tones, slides (Schleifern), acciaccaturas, appoggiaturas, suspensions, appoggiatura chords (such as the cadential 6/4), and other less formulaic gestures. Attack embellishments need not be dissonant with the underlying harmony, though they usually are. I discuss the significance of attack embellishments further in chapter 4, pages 171–72.

4. A preference-rule system for comparing the weight of one musical moment relative to another is developed in chapter 4, pages 196–206.
A.2B). Indeed, the G5 on beat 2 of bar 9 is first processed as being “too heavy” for a beat 2, creating a positive rhythmic dissonance against the weight profile of bars 1–8, before the continued emphasis on beat 2 in bars 10–14 suggests a heavy–light–moderate weight profile for entrainment.

![Figure A.2](image)

Figure A.2. Beethoven, Piano Sonata in E Minor, op. 90, I, (A) bars 9–16 and (B) reduction of attack embellishments.

The resistance is short-lived. While beat 2 begins to lighten in bar 15 because of the change of pitch on the third beat (in contrast with bars 10 and 12–14, in which the third beat repeats the pitch of the second beat), bars 16–24 return decisively to the opening weight profile, eliminating even the articulation of beat 2. In defiance of the more wayward exploration of bars 9–16, bars 17–24 move unwaveringly toward cadential closure in E minor. The first attempt to

5. Deeper-level events contribute emphasis (phenomenal-accentual weight) to the moment that they implicitly begin. The impact of musical hierarchy on weight is discussed further in chapter 4, pages 166–80.

6. Positive and negative dissonances against an entrained weight profile are discussed in chapter 2, pages 72–73. The distinction between entrainment and projection attitudes toward beat hierarchy and weight profile is discussed in chapter 5, pages 212–20.
cadence is thwarted in bar 20, however, through further resistance. The bass moves to the
submediant rather than the tonic, necessitating another pass through the cadential progression,
and an attack embellishment in the soprano results in the only articulation of beat 2 in the
passage. The connection between resistance and weight on beat 2 is cemented, and the
uncompromising 1–3 profile of bars 1–8 and 16–24 emerges as hegemonic antagonist, the
resistant transgressor the protagonist.\footnote{My terms for the opposing agents—transgressor and hegemonist—largely follow
semiotic theory of transvaluation in myth. I substitute hegemonist to emphasize that the “order”
(their term for the superior agent in a narrative’s initial hierarchy) serves as antagonist. That I
align with the transgressor implies the possibility for a comedic narrative, involving the
overthrow of the hegemonist, or a tragedy, involving the defeat of the transgressor.}

The conflict intensifies in the transition, bars 25–54. The passage begins with a reduction
to the core of the hegemonic 1–3 profile in bars 25–28, articulating only the first and third beats
of each bar. In opposition, the descending scale of bar 29 is extended an extra bar, producing a
three-bar rhythmic group (figure A.3) and flattening the weight profile of bar 30.\footnote{In bar 32, a one-bar group compensates for the extended duration of the scale,
maintaining the established four-bar hypermeter.} The two
alternate until the hegemonist regains control, asserting its essential 1–3 profile with increasing
force in bars 39–44. The completion of its statement, the arrival on B minor at bar 45, provides
an opportunity for rebuttal, and bars 47–54 unleash a savage response from the emboldened
transgressor, asserting a defiant 1–2 weight profile through a displacement of the motive that
first created the 1–3 profile (figure A.4).
Figure A.3. The 3+1 subphrase grouping of bars 29–32 resists the 2+2 grouping that dominates bars 1–28.

Figure A.4. The motivic content of bars 1–8 is displaced one beat forward in bars 47–54.

The displaced opening motive may initially appear to signal a shifted downbeat, or at the very least a metrical displacement dissonance (D3+1), but I believe the passage is better interpreted without any dissonance in the beat hierarchy; instead, I interpret the chords on the downbeats of bars 47–50 as attack embellishments, primarily because of the continuity I perceive between bars 47–50 and 51–54. The downbeats of bars 51 and 53 support attack embellishments in the soprano above the two-bar C♯ and F♯ dominant-seventh chords. An interpretation of metrical dissonance in bars 47–50 would necessarily find discontinuity in bars 51–54, where the second beat receives only a small amount more weight than the third and the downbeat is
expressed unambiguously. Such an analysis would argue that bars 47–50 attempt to shift the downbeat to beat 2, bars 51–54 resolve the dissonance, and the dissonance reappears at bar 55. I find this discontinuity unconvincing, especially when one may regard the entire passage as repeating the same gesture of attack embellishment on the downbeat and resolution on beat 2. So the rebellion in bars 47–54 arises by shifting the opening motive forward one quarter note and turning the first event into an attack embellishment. The passage is thus an intensified version of the resistance in bars 9–16, transforming the mild emphasis on beat 2 from the former passage into a defiant 1–2 weight profile in the latter.

The internal structure of the opposing weight profiles foreshadows the inevitable tragic conclusion of the movement. From the early sixteenth century to the end of the seventeenth century, triple meter was ubiquitously considered a duple meter with unequal beats, the first beat twice as long as the second. In this era, normative rhythms and weight profiles reflected this division—at the very least, they did not contradict it. Thus, the rhythm $\frac{3}{4} \updownarrow\updownarrow\updownarrow$ was considered.

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9. In bars 51 and 53, I interpret the first instances of E\#5 and G6 as anticipations of the resolutions, which implicitly occur on beat 2. The anticipations are prepared in bar 50 by the tenor motion to D4 on the second half of beat 1, which receives a new-pitch accent and a registral accent. In the recapitulation, the anticipation is made even clearer by the bass motion from C4 to C\#4 in bar 193. In bars 52 and 54, the second beat receives no special emphasis.

10. The distinction between metrical dissonance and attack embellishment is crucial for performance of the passage. Attack embellishments are usually performed more loudly than their resolutions, so an interpretation of attack embellishments in bars 47–54 implies a receding dynamic contour from beat 1 to beat 2. The interpretation of displacement dissonance, on the other hand, encourages a stress accent on beat 2 to emphasize the challenging metrical layer. The performer may thus determine which interpretation a listener is likely to make.

11. Étienne Loulié (1696) and Wolfgang Caspar Printz (1696) were the first to advocate a conception of triple meter as comprising three equal beats, though proponents of unequal meter continued well into the eighteenth century (see especially Mattheson 1739). The significance of unequal triple meter for baroque rhythm and the difficulty of distinguishing unequal and equal triple meters in the early eighteenth century are discussed further in chapter 2, pages 48–64.
natural and consonant because it outlines the metrical division of the bar, while $\frac{3}{4} \, \text{I} \, \text{I}$ was often considered rhythmically dissonant because it contradicts the division of the bar, overlapping the beginning of the unequal second beat. Wolfgang Caspar Printz (1696), for instance, calls the rhythmic patterns $\frac{3}{4} \, \text{I} \, \text{I}$ and $\frac{3}{4} \, \text{I} \, \text{I} \, \text{I} \, \text{I}$ the contrarius or enantius rhythmic foot, emphasizing their aberrance (he considers them variants of each other), even if he does not consider them rhythmically dissonant outright.\textsuperscript{12} The theory of unequal meter was replaced by equal triple meter over the course of the eighteenth century, but its implications for normative rhythm and weight profiles continue to be relevant, even today. Thus, the hegemonist seeks to enforce the “natural” order of triple meter with its 1–3 weight profile, and the transgressor’s 1–2 weight profile is “unnatural” and ill-fated.\textsuperscript{13}

For a moment the transgressive protagonist has the advantage, and it establishes a stable foothold in B minor at the start of the secondary theme, bar 55. This stability is fleeting, however, and the attempt to cadence in B minor meets with a return to the 1–3 weight profile in bar 60 (figure A.5). Denying the slippage back to 1–3, the transgressor cries out, proclaiming the

\textsuperscript{12} This rhythmic coordination derives from the concept of quantitas intrinsea, which considers notes on metrical accents to have greater intrinsic or internal length than those in weaker metrical positions. Proper rhythmic-metrical alignment requires the coordination of internal and external (durational) length.

\textsuperscript{13} Johann Philipp Kirnberger (1776) considers the second beat in triple meter to be stronger than the third, but his reasoning derives primarily from an attempt to accommodate the practice of writing strong-beat gestures, especially suspensions and caesura notes, on the second beat and not the third (131). As Danuta Mirka (2009) explains, this practice likely derives from factors other than the strength of the second beat: the distance from the second beat to the following downbeat allows a suspension to resolve on the equally weak third beat (138). Furthermore, a caesura on the second beat allows a denial of continuation on the third beat, strengthening the sense of closure before the following downbeat ensues. A caesura on the third beat does not effect immediate rhythmic closure (though it may still create immediate and effective tonal closure). The relationship between rhythmic patterns, projection, rhythmic continuity, and rhythmic closure is discussed further in chapter 5, pages 220–31.
1–2 weight profile much more vehemently in bars 61–64 than before. But this second attempt gives way to a 1–3 profile, too, reaching a cadence in bar 67, and the hegemonist’s 1–3 profile dominates bars 66–78.\textsuperscript{14}

Figure A.5. 1–2 profiles in bars 55–58 and 61–64 yield to 1–3 profiles in bars 60 and 66–67.

\textsuperscript{14} Bars 59 and 65 transition between the opposing profiles, being more even in weight profile than the surrounding bars.
Figure A.6. Hypermetrical inconsistency in bars 67–84 betrays the protagonist’s influence beneath the hegemonist’s control of the rhythmic surface.

The re-establishment of the 1–3 profile at the end of the secondary theme is a qualified success for the hegemonist. The protagonist’s effects are revealed in the absence of third-beat articulations in bars 68, 72, and 79–84, the lack of downbeat articulations in bars 75 and 77, and the unstable hypermeter of the passage (figure A.6). The six-bar hypermeasures of bars 55–66 (in three groups of two-bar measures) are followed by a four-bar hypermeasure in bars 67–70, a four-bar hypermeasure in bars 71–74, a six-bar hypermeasure in bars 74–79 (in three groups of two-bar measures), and a six-bar hypermeasure in bars 79–84 (in two groups of three-bar measures, recalling the implications of bars 29–31). Metrical reinterpretations occur at bars 74 and 79, making the hypermetrical surface less stable yet. At the former, the fourth bar of a four-bar hypermeasure becomes the first bar of a six-bar hypermeasure. At the latter, the sixth bar of a six-bar hypermeasure becomes the first bar of a differently constructed six-bar hypermeasure.
While the hegemonist largely controls the weight profile of the bar, it cannot completely eradicate the protagonist.

Figure A.7. Durational accents in the bass in bars 100–2 undercut the 1–3 weight profile of bars 85–99, nearly flattening the profiles of bars 103–7.

Though it is nearly eliminated at the end of the exposition, the protagonist mounts its strongest opposition to the hegemonist in the development, bars 85–143. The section begins with a return to the motive of bars 1–8, its concomitant 1–3 weight profile, and consistent duple hypermeter, portraying the antagonist firmly in control. Constant pulsing eighth notes in the accompaniment intensify the forward momentum of the passage and create a sense of urgency, and the hegemonist asserts itself with increasing intensity throughout bars 85–99. The transgressor appears subtly in the bass at bar 100, increasing the emphasis on beat 2 in the subsequent passage through durational accents (figure A.7). The transgressor’s efforts break the hegemonist’s momentum, leading to a nearly flat weight profile in bars 103–7. The transgressor assumes control of the musical surface in bars 108–17, revisiting the site of its first resistance,
bars 8–15. This time, however, the transgressor does not acquiesce; instead, it vehemently asserts itself through intense repeated statements of the 1–2 weight profile throughout bars 120–30.

The clash between the two agents reaches its peak in bar 130, creating a rupture that brings harmony, texture, and meter to the brink of destruction (figure A.8). A dissonant cadential six-four resounds throughout bars 130–43, halting the harmonic progression entirely. A resolution never occurs; bar 144 simply asserts the tonic and continues forward. Texture breaks down as well: for the first time in the piece, homophony is abandoned for imitative polyphony. The melodic gesture G–F♯–E–D♯–E is repeated and fragmented in displaced versions by two independent voices, the only simultaneous manifestation of the two opposing agents in the movement. The conflict has shifted to a primal level. The protagonist asserts its weight profile on the downbeat of bar 132 and the antagonist viciously retaliates one beat later. The force of the retaliation severely disorients and weakens both agents, who gesture with failing energy and focus in bars 133, 134, and 136: rhythms slow and dynamics recede with each statement, and neither agent is able to articulate a clear beat hierarchy. Even the clarity of weight profiles dwindles, becoming flatter with each statement until the two agents simply articulate conflicting divisions of the two-bar hypermeasure in bars 136–37. With one brief but futile attempt to return to the order of the notated triple meter in bars 138–40, the graceless struggle continues with renewed energy until the hegemonist emerges victorious in bar 144 with a firm and immediate re-establishment of tonic harmony, 1–3 triple meter, and homophony.16

15. Wayne Petty (2012) refers to the progression of a cadential six-four chord directly to its tonic as a “dissolving six-four,” and he draws a connection between the first movement of Beethoven’s Piano Sonata in E Minor, op. 90; the first movement of the “Hammerklavier,” op. 106; and Chopin’s Prelude in E♭ Minor, op. 28, no. 14.

16. An interpretation of the end of the development as abnegation is possible, though my experience of the passage is more immediate and more tragic than resigned acceptance. For more
Figure A.8. The conflict reaches a climax in bars 130–43, temporarily disrupting meter, harmonic continuity, and homophony until their sudden return at bar 144.

The recapitulation retraces the steps of the exposition, the hegemonist meeting similar strategies of resistance from the transgressor. After the primal struggle of the development, though, the transgressor’s attempts carry an air of futility; despite its strongest efforts, the hegemonist will not be overthrown. The latter asserts its final victory in the coda by revisiting bars 16–24. This passage depicts the hegemonist at its strongest, the transgressor reduced to a single moment—the evaded cadence at bar 241 (bar 20 in the exposition)—before being eliminated entirely in the final cadence at bar 245.

on Beethoven’s use of abnegation and its connection to literary developments of the era, see Robert Hatten 1994, especially pages 281–86.
Beethoven’s portrayal of this tragic narrative involves many musical domains, including tonal stability, dynamics, gesture, key, cadence, phrase structure, hypermeter, and texture, but weight profiles are instrumental. The hegemonist is articulated through unceasing 1–3 weight profiles, while the transgressor resists this profile, at first simply displacing a degree of weight onto the second beat (bars 8–16) but eventually proposing a divergent 1–2 weight profile (bars 47–63). More traditional metrical analyses, whether employing metrical dissonance theory (e.g. Yeston 1976, Krebs 1999) or poetic feet (e.g. Printz 1696, Mattheson 1739, Cooper and Meyer 1960), would likely interpret the transgressive protagonist as a disturbance within the metrical beat hierarchy, a challenge to the notated downbeat by the second beat of the bar. Closer examination of the sites of resistance shows that it is the weight profile, not the location of the downbeat, that is in question during the transgressor’s offensives. In fact, the notated downbeat is only challenged at the movement’s climax, bars 130–43, where the hegemonist attempts to regain control from the transgressor, which has dominated bars 108–29.

Metrical-dissonance narratives would also likely interpret the climactic passage, bars 130–43, as a natural outgrowth (albeit an intensification) of a metrical dissonance first encountered in bar 9. I argue that the passage instead demonstrates a marked change in the nature of the conflict: whereas prior stages have operated through attempts to assert a particular weight profile—1–3 triple meter versus 1–2 triple meter—in bars 130–43, the struggle devolves, both agents weakened and disoriented. Neither agent is able to take control and issue a coherent statement, resulting in disruptions to harmony, meter (beat hierarchy and weight profile), and texture.

More orthodox metrical narratives would likely not interpret metrical dissonance in bars 1–8, even though the passage consistently accents beats 1 and 3; instead, the passage would
likely be considered metrically consonant because weight on beats 1 and 3 is stylistically unmarked for triple meter in the classical period: the passage articulates consistent iambic gestures. The inconsistency of dissonant interpretation of 1–2 profiles and consonant interpretation of 1–3 profiles clarifies that the condition of metrical dissonance is first and foremost an expressive one, defined by markedness in the weight profile of a measure on one or more levels of the beat hierarchy, not simply the consistent nonalignment of phenomenal accents.  

Weight profiles offer crucial evidence for the interpretation of many passages in this movement, and they also help to shape larger processes. In all three major sections of the sonata form—the exposition, development, and recapitulation—a mild emphasis on beat 2 initiates a larger process of resistance and attempted overthrow in which a 1–2 profile emerges in opposition to the hegemonic 1–3.

Finally, a metrically consonant interpretation of the 1–2 weight profile is necessary to make sense of the movement’s tragic expressive trajectory. Interpretation of metrical dissonance in bars 9–15, 47–67, and 100–30 would encourage the analyst to identify conservatively with the hegemonist, interpreting the resistance of the transgressor—the emphasis on beat 2—as an irritant to be eliminated through a restoration of the stylistically unmarked 1–3 weight profile. Under that more traditional analysis, the movement might even be understood as a triumph: the offending dissonance is categorically eliminated from the piece by the end of the coda. As Owen Jander (1985) demonstrated in another of Beethoven’s tragic E-minor movements, the *andante can moto* of the Fourth Piano Concerto, op. 58, interpretation of the work’s structure must

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17. Chapter 2 explores the distinction between metrical consonance and metrical dissonance further and recognizes metrically consonant passages with marked weight profiles.
proceed from an understanding of the movement’s expressive design. The darkness of the movement’s ending, beginning, and the first half of the development makes much more sense as the depiction of an authoritative antagonist than an authoritative hero. The resistance mounted in bars 3–4, 7–16, 29–31, 47–67, and 100–30 thus depicts the ill-fated attempts of a tragic, transgressive hero.
Appendix 2

HAUPTMANN’S COMBINED POSITIVE AND NEGATIVE METRICAL FORMULATIONS (1853, 277–82)

Duple

Twice-Duple
Triple

\[
\begin{align*}
&4 - 2 \\
&1 - 2 \\
&4 - 2 \\
\end{align*}
\]

\[
\begin{align*}
&1 - 2 \\
&2 - 1 \\
&2 - 1 \\
\end{align*}
\]

\[
\begin{align*}
&2 - 1 \\
&4 - 2 \\
&1 - 2 \\
&2 - 1 \\
\end{align*}
\]

\[
\begin{align*}
&1 - 2 \\
&4 - 2 - 1 \\
&1 - 2 - 1 \\
\end{align*}
\]

\[
\begin{align*}
&2 - 1 \\
&4 - 2 - 1 \\
&1 - 2 - 1 \\
\end{align*}
\]

\[
\begin{align*}
&1 - 2 \\
&2 - 1 - 2 \\
&1 - 2 - 1 \\
\end{align*}
\]

\[
\begin{align*}
&2 - 1 \\
&4 - 2 - 1 \\
&2 - 1 - 2 \\
\end{align*}
\]

\[
\begin{align*}
&1 - 2 \\
&4 - 2 - 1 \\
&1 - 2 - 1 \\
\end{align*}
\]
Quadruple

\[
\begin{align*}
\text{4} & - \text{2} \\
1 & \hspace{1em} 2 & \hspace{1em} 1 & \hspace{1em} 2 \\
4 & - \text{2} - \text{1} - \text{4} & & \\
\end{align*}
\]

\[
\begin{align*}
\text{1} & - \text{2} \\
2 & \hspace{1em} 1 & \hspace{1em} 2 & \hspace{1em} 1 \\
1 & - \text{2} - \text{1} - \text{2} & & \\
\end{align*}
\]

\[
\begin{align*}
\text{1} & - \text{2} \\
2 & \hspace{1em} 1 & \hspace{1em} 2 & \hspace{1em} 1 \\
2 & - \text{1} - \text{2} - \text{1} & & \\
\end{align*}
\]

\[
\begin{align*}
\text{4} & - \text{2} \\
2 & \hspace{1em} 1 & \hspace{1em} 2 & \hspace{1em} 1 \\
2 & - \text{1} - \text{2} - \text{1} & & \\
\end{align*}
\]

\[
\begin{align*}
\text{2} & - \text{1} \\
1 & \hspace{1em} 2 & \hspace{1em} 1 & \hspace{1em} 2 \\
4 & - \text{2} - \text{1} - \text{4} & & \\
\end{align*}
\]

\[
\begin{align*}
\text{2} & - \text{1} \\
2 & \hspace{1em} 1 & \hspace{1em} 2 & \hspace{1em} 1 \\
2 & - \text{1} - \text{2} - \text{1} & & \\
\end{align*}
\]

\[
\begin{align*}
\text{2} & - \text{1} \\
1 & \hspace{1em} 2 & \hspace{1em} 1 & \hspace{1em} 2 \\
2 & - \text{1} - \text{2} - \text{1} & & \\
\end{align*}
\]

\[
\begin{align*}
\text{2} & - \text{1} \\
2 & \hspace{1em} 1 & \hspace{1em} 2 & \hspace{1em} 1 \\
2 & - \text{1} - \text{2} - \text{1} & & \\
\end{align*}
\]
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