Metric Dissonance and Hypermeter in the Chamber Music of Gabriel Fauré

Richard Vonfoerster
University of Colorado Boulder, rvcello@gmail.com

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METRIC DISSONANCE AND HYPERMETER
IN THE CHAMBER MUSIC OF GABRIEL FAURÉ

by

RICHARD VONFOERSTER

A.B., University of Michigan, 1984
Psy.D., University of Denver, 1991
M.A., University of Denver, 2003

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This thesis entitled:
Metric Dissonance and Hypermeter in the Chamber Music of Gabriel Fauré
written by Richard vonFoerster
has been approved for the College of Music

_______________________________
Carlo Caballero, committee chair

_______________________________
Daphne Leong, committee member

_______________________________
Thomas Riis, committee member

_______________________________
Keith Waters, committee member

_______________________________
Antonia L. Banducci, committee member

_______________________________
Michael Lightner, committee member

Date: __________

The final copy of this thesis has been examined by the signatories, and we
Find that both the content and the form meet acceptable presentation standards
Of scholarly work in the above mentioned discipline.
ABSTRACT

vonFoerster, Richard (Ph.D., Music)

Metric Dissonance and Hypermeter in the Chamber Music of Gabriel Fauré

Dissertation directed by Associate Professor Carlo Caballero

Perhaps because of its elusive and enigmatic character, Gabriel Fauré’s music has received scant analytic attention. Most authors who have studied it analytically have examined Fauré’s harmonic language, and have de-emphasized the rhythmic and metric features that also play an important role in defining his style. While his piano and vocal music is best known, his instrumental chamber works represent a significant component of his oeuvre, and they are the focus of this study.

Building on the important work of Fred Lerdahl and Ray Jackendoff, Harald Krebs, and Richard Cohn, I present an analytic approach to Fauré’s rhythm and meter that involves identifying metric levels active within a given passage of music. My approach yields important insights about his treatment of rhythm and meter, particularly in the areas of metric dissonance and hypermeter. It modifies and expands on existing metric models and methodologies in the areas of lowest levels, highest levels, intermittent levels, non-isochronous levels, and adjacent levels, and introduces a new graphic representation of metric phenomena, the metric state graph, a modified version of Richard Cohn’s ski-hill graph.

My examination of three movements from Fauré’s chamber music (the final movement of his Piano Trio, the first movement of his First Violin Sonata, and the first movement of his First Cello Sonata) identifies several characteristic features of Fauré’s metric language, including
frequent metric dissonance, multiple simultaneous dissonances, non-duple hypermeter, and very large hypermetric structures. These metric devices help to define large-scale form, provide shape and direction, and set the music’s emotional tone.

This analytic model proves useful for music other than Fauré’s chamber works. By applying the model to vocal works of Fauré and works by contemporaneous composers (Camille Saint-Saëns and Maurice Ravel), as well as to works by late twentieth century composers (Philip Glass and Alfred Schnittke) I demonstrate its versatility, and suggest areas of future research such as the extent of stylistic influence between Fauré and other composers of the late nineteenth and early twentieth centuries.

Keywords: Fauré, Gabriel; Meter; Rhythm; Hypermeter; Metric Dissonance; Chamber Music
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CHAPTER 1

FAURÉ’S ENIGMATIC STYLE

The music of Gabriel Fauré has a peculiarly enigmatic quality. Vladimir Jankélévich calls it “inexpressible” (inexprimable), Jessica Duchen refers to its “ineffable beauty,” Aaron Copland finds an “ungetatable quality,” Anne Murphy celebrates its “mysterious chemistry,” Wesley True notes “a charm of ambiguities,” Roger Nichols describes a “multiplicity of meanings [that] renders any one interpretation incomplete,” and Carlo Caballero observes that it “cannily resists exact determinations and categories.”

One result of the Fauré enigma, to judge from the assertions of his champions, is that while he wrote works of genius, his music is undervalued. Writing in 1924 and fresh from his study with Nadia Boulanger (a former student of Fauré), Aaron Copland declares Fauré to be France’s greatest living composer and bemoans the neglect of his music outside of France. More recently, Jean-Michel Nectoux begins the preface to his seminal Fauré biography by discussing why he would bother with a subject “often considered as a marginal or minor

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2 Copland, 573.
composer.”  The first sentence of Robin Tait’s masterful study of Fauré’s musical language is “Fauré is most often seen as a composer of secondary importance.”

Fauré’s marginal status may be related to the difficulty his researchers have in adequately describing the “ungetatable quality” of his music. We are reluctant to proclaim music great unless we can explain how and why it is great. Some writers on Fauré seem to revel in the mystique and to want to preserve the rarefied atmosphere that surrounds the music. Jankélévich discusses the impossibility of truly understanding it:

Of course, it is easy to note the decorative, distinctive marks that are supposedly characteristic of Fauré’s language. But someone who enumerates the marks has still said nothing. Someone who knows all the marks knows nothing if he or she does not know the exact manner and occasion. It is Fauré’s manner that would need to be defined, and the grammarian has not gotten any farther than he or she was at the outset. The problem of the inexpressible remains unsolved, eternally problematic; it imposes a regression to the infinite.

I take exception to two points in Jankélévich’s remarkable assertion. First, I believe that it is not easy to note the “distinctive marks” that characterize Fauré’s style, and second, I believe that doing so does not say nothing. While analysis may not fully capture the magical, transcendent quality so many find in Fauré’s music, it does take us some distance down the path of enlightenment. In order to yield significant insights, analysis requires sophisticated tools, and as the field of music theory develops, so does our understanding of Fauré’s style. In fact, the process of grappling with the enigmatic aspects of Fauré’s music may help to advance the field of music theory by refining the tools at theorists’ disposal. That is my hope for the present study.

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I am not the first to attempt to describe Fauré’s style. Both Tait and Robert Orledge have provided outstanding explorations. Their descriptions are quite similar, and I summarize them below. Both devote the majority of their attention to Fauré’s distinctive harmonic and tonal language, but they also examine Fauré’s rhythm and meter. Orledge considers rhythm to be of secondary importance, and he notes that “consistency and continuity” are Fauré’s chief rhythmic concerns. Tait places more importance on rhythm in defining Fauré’s style: “It scarcely requires repetition that Fauré’s rhythms…seem four-square and conservative…. This apparent conservatism…hides a flexible rhythmic technique which constitutes a prime element of his musical language.” Tait describes the interaction of Fauré’s rhythmic, melodic, and harmonic techniques, and Tait’s intriguing description takes a definite step toward explicating Fauré’s “manner,” as Jankélévich terms it:

Harmonic and melodic subtleties go hand in hand with these rhythmic developments, and Fauré’s instinctive avoidance of the obvious through variants of common chords, enharmonic changes and harmonic “side-steps” combine with harmonic rhythm and the rhythmic versatility of many of his themes to create a unique continuity of movement. Especially in his chamber music, Fauré seems to be reaching towards an expression of pure time, where questions of tonality become peripheral, so often does he seek to avoid tonal centres; where melody tends towards a state of rhythmic equivocacy…; and where the conflict of metric and harmonic considerations gives a ‘double interpretation’ of time, leaving us with a pure notion of time itself.

Like Tait, I believe that rhythmic features are central to Fauré’s style, and they are nowhere more striking than in his chamber music. Other theorists have focused on Fauré’s better-known vocal

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7 Orledge, 256.


9 Ibid., 205-6.
and piano music, but his large-scale instrumental chamber music represents a substantial body of work. Florent Schmitt argues that the chamber works are more significant within Fauré’s oeuvre than his piano or vocal music. Harry Halbreich claims not only that they provide the best way to understand Fauré’s language and aesthetic, but also that they occupy a central place in the history of French chamber music. Marie-Maud Thomas asserts that in his chamber music, Fauré reached his pinnacle of artistic expression. Figure 1.1 lists Fauré’s ten multi-movement chamber works, with their opus numbers and the years they were completed.

<table>
<thead>
<tr>
<th>Op.</th>
<th>Title</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Violin Sonata No. 1</td>
<td>1876</td>
</tr>
<tr>
<td>15</td>
<td>Piano Quartet No. 1</td>
<td>1883</td>
</tr>
<tr>
<td>45</td>
<td>Piano Quartet No. 2</td>
<td>1886</td>
</tr>
<tr>
<td>89</td>
<td>Piano Quintet No. 1</td>
<td>1906</td>
</tr>
<tr>
<td>108</td>
<td>Violin Sonata No. 2</td>
<td>1917</td>
</tr>
<tr>
<td>109</td>
<td>Cello Sonata No. 1</td>
<td>1917</td>
</tr>
<tr>
<td>115</td>
<td>Piano Quintet No. 2</td>
<td>1921</td>
</tr>
<tr>
<td>117</td>
<td>Cello Sonata No. 2</td>
<td>1921</td>
</tr>
<tr>
<td>120</td>
<td>Piano Trio</td>
<td>1923</td>
</tr>
<tr>
<td>121</td>
<td>String Quartet</td>
<td>1924</td>
</tr>
</tbody>
</table>

Figure 1.1. Fauré’s multi-movement chamber works.

With recent advances in the study of rhythm and meter, the time is ripe for a more incisive analysis of Fauré’s music than was possible for Orledge and Tait. I will examine rhythm and meter in Fauré’s ten large-scale chamber works, focusing on hypermeter and metric dissonance. Specifically, I will show that in Fauré’s chamber music non-duple hypermeter and

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very large hypermetric structures often appear. Metric dissonance also occurs frequently, often involving multiple simultaneous dissonances. These metric features are important aspects of Fauré’s style, and they contribute greatly to the “unique continuity of movement” that Tait describes. They help to set the music’s emotional tone, provide shape and direction, and articulate formal sections. My analytic approach is a synthesis of recent innovations in the field of rhythm and meter with my own original contributions, and includes a graphic representation of metric phenomena, the metric state graph, which is an original adaptation of graphic representations used by other theorists.

The remainder of this chapter provides an overview of writings on Fauré’s music and lays the groundwork for my examination of his chamber music. First I summarize general observations about Fauré’s style, primarily by Orledge and Tait. Next, I review analytic writings. Third, I address two potentially contentious issues: the appropriateness of standard formal labels and the presence of ambiguity in music. Then I provide a brief musical example that gives a glimpse of the rhythmic and metric ambiguities and complexities found in Fauré’s music. Finally, I describe the organization of this dissertation.

General Stylistic Features of Fauré’s Music

Orledge and Tait have provided detailed descriptions of Fauré’s style, and they agree on most points.11 Regarding harmony and tonality, they find that Fauré’s tonal plans involve one clear overarching tonality, which is enriched by modal inflections, chromatic alterations, and

transient tonicizations.\textsuperscript{12} Ambiguity of harmony, tonality, rhythm, meter, and form are pervasive. Modulations often result from changing a tonal center within a single scale. The ambiguity inherent in half-diminished and augmented chords is also used for modulations. Sequences, including circle-of-fifths progressions, are common and usually have a clear tonal goal.

Plagal and modal cadences outnumber standard authentic cadences, and authentic cadences are often altered, as when the dominant chord is replaced by a mediant chord, subtonic chord, or dominant chord with unresolved suspended fourth.\textsuperscript{13} Linear motion in all voices creates unusual chord progressions. On the one hand, non-functional chords result, so that it is difficult to distinguish chord tones from non-chord tones, and Roman numerals are difficult to apply. On the other hand, functional chords appear in unusual guises, such as the functional tonic or dominant chord in second inversion. At times, this linear motion results in the erosion of the distinction between dissonance and consonance.


\textsuperscript{13} For more on Fauré’s treatment of cadential harmony, see Clare Sher Ling Eng, “‘Writ in remembrance more than things long past’: Cadential Relationships in Fauré’s \textit{Mirages}, op. 113,” \textit{Journal of Music Theory Pedagogy} 23 (2009): 135-152.
Orledge and Tait also describe Fauré’s treatment of melody.\textsuperscript{14} Orledge finds that it emerges from Fauré’s harmonic language: “If Debussy’s music ‘did not aspire to be other than melody’, melody for Fauré was more the surface of harmony, growing from it but without a separate life of its own.”\textsuperscript{15} Nectoux disagrees, however. He argues that “Fauré’s musical language was essentially melodic rather than harmonic. Where Debussy invents new successions of chords, Fauré is thinking horizontally.”\textsuperscript{16} Regarding melodic construction, Orledge observes that Fauré often abstracts motives from melodies for developmental treatment, and notes frequent ascending sequences. Also common are scalar and arpeggio passages. Tait also notes frequent scalar passages, which are often modally inflected. He attempts a semiotic reading of Fauré’s melodies using an approach developed by Deryck Cooke.\textsuperscript{17} Cooke asserts that throughout the history of tonal music, each scale degree and many short melodic patterns consistently convey a particular emotional meaning. For instance, the rising melody from the second movement of Fauré’s Second Cello Sonata shown in figure 1.2 consists of the major scale degrees 1-3-4-5, and according to Cooke, conveys “an outgoing, active, assertive emotion of

\textsuperscript{14} For an empirical examination of melodic characteristics of Fauré’s late songs, see Robin Bowman, “Eight Late Songs of Fauré: An Approach to Analysis,” \textit{Musical Analysis} 1, no. 1 (Winter 1972): 3-5.

\textsuperscript{15} Orledge, 252.

\textsuperscript{16} Nectoux, \textit{Gabriel Fauré}, 231. These two opposite points of view reflect the Fauréan enigma.

Tait finds that this model often yields useful insights into the music’s emotional content, but that owing to the modal context of much of Fauré’s music, Cooke’s approach sometimes fails to capture the music’s complexity and nuance. Tait also finds meaning in Fauré’s frequent self-borrowing, which “adds to his entire oeuvre a powerful yet subtle strand of unification.”

Rhythmic and metric aspects of Fauré’s language have also received attention from Orledge, Tait, and others. Orledge finds rhythm to be less important than other factors in defining Fauré’s style. It tends to be characterized by continuity, although variety increases in his late works, which include frequent hemiolas, avoidance of stress on strong beats, and flexible rhythmic patterns in compound meters. Nectoux discusses the relationship between repetition and variety in Fauré’s music:

It is worth stressing that the regularity in Fauré’s music is one of pulse—this provides the strict framework for his diversification of rhythms and accents. The Fauréan cantabile is in no sense amorphous repetition; it is constantly alive with shifting accents and competing

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rhythms and we might reasonably describe the composer’s practice as the art of displacement.”  

Tait notes that while individual melodic lines are often rhythmically unremarkable, their interplay with each other and with the underlying metric pulse is often very intricate. Orledge and Tait both find Fauré’s treatment of harmonic rhythm unusual, especially his tendency to prolong chords over barlines. Tait also notes a tendency for Fauré to combine measures into larger metric units, especially in his scherzos in ¾ time. All authors find frequent triple and compound meters.

Other aspects of Fauré’s music described by Orledge and Tait include texture and form. Regarding texture, they note the importance of polyphony, with multiple independent voices, step-wise bass lines and frequent canonic passages. When homophonic textures occur, standard accompanimental patterns predominate, including block chords and arpeggiated figures.

Regarding form, Orledge and Tait find that Fauré uses traditional models in his earlier works. In later works he modifies those forms, as in his Exposition-Development-Recapitulation-Development-Coda design. Many of his late works do not fit easily into a standard mold, as he adopted a process of continuous development. Contrasts of mood and texture are as important as tonal and thematic contrasts in articulating sections.

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23 This process of combining measures creates *hypermeter*, which I discuss at length in chapter 2.

24 For analyses of form in Fauré’s chamber music, see Claudia Breitfeld, *Form und Struktur in der Kammermusik von Gabriel Fauré* (Kassel: Bärenreiter, 1992) and Max Favre, *Gabriel Fauré’s Kammermusik* (Zurich: Max Niehans Verlag, 1948).
In general, Orledge and Tait find that distinctive harmonic, melodic, and rhythmic features combine to create Fauré’s unique musical language. While a stylistic evolution over the course of his career is discernable, most of his music’s defining characteristics are present to some degree throughout his entire lifespan. His harmonic language has assumed primary importance in defining his style, but distinctive rhythmic and metric elements are also present.

Analytic Writings on Fauré’s Music

Tonal and Harmonic Analysis

The majority of analytic writings on Fauré’s music address his tonal and harmonic language. Some authors study his incorporation of modality. Cathé’s comparison of Fauré’s modal language to that of Charles Koechlin tallies the number of chord progressions suggestive of traditional tonality (such as those that involve root motion by ascending fourth) and those that are suggestive of modality (such as those with root motion by descending fourth or third). He finds that both composers incorporate modality into their tonal languages, and that modality is even more prevalent in Koechlin’s music than in that of Fauré.

Ken Johansen studies ambiguity related to Fauré’s tonal and modal language in his piano works. For Johansen, ambiguity occurs when a listener’s expectations are thwarted. In such situations, “a double meaning is created between what we hear (what is) and what we expected to hear (what might have been).” This process occurs in modal music when vertical sonorities

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have strong tonal associations. For instance, a chord with a dominant seventh quality may occur due to linear motion in a modal passage. The double function of the chord—the linear, modal function in the chord’s actual musical context plus the tonal function supplied by the listener’s imagination—creates ambiguity. Johansen cites many examples of this “double function” in Fauré’s music, and concludes that

by pushing tonality toward greater and greater ambiguity, Fauré sometimes reaches a point where the harmony is no longer ambiguous but rather vague and unclear. Indeed, if it were not for the clear assertion of tonality at the beginnings and ends of all Fauré’s works and for the fact that the chords themselves are traditional third-based harmonies—were it not for these vestiges of tonality, we would be hard pressed to say that some of his late works are tonal at all…. Thus, while other composers were abandoning tonality in search of new means of tonal organization, Fauré was expanding it from within, stretching it to the brink of atonality.27

Several theorists have adopted a Schenkerian perspective on Fauré’s tonal language. Taylor Greer uses Schenker’s model to examine modality in three songs by Fauré.28 He finds that in Fauré’s unique harmonic and melodic language, modally inflected chords result from both surface voice leading and deeper structural motion, and help to provide cohesion and overall shape. This is especially important in Fauré’s music because traditional dominant-tonic motion is often absent. In his study of Fauré’s String Quartet, Roger Knox finds that Schenker’s model works well to describe foreground and middleground structures, but not background structures.29 Knox concludes that although tonal ambiguity and rhythmic displacement make analysis

27 Johansen, 41.
29 Roger Martin Knox, “Counterpoint in Gabriel Fauré’s String Quartet Op. 121,” (MM thesis, Indiana University, 1978), 13. In contrast, Johansen claims that Schenker’s model may be applied to background but not foreground structures. This disagreement about appropriate models for Fauré’s music is another aspect of the Fauré enigma. See Johansen, 8.
difficult, Schenkerian analysis reveals important facets of Fauré’s style, including his innovative contrapuntal prolongational procedures.

James Sobaskie’s Schenkerian analyses serve as a backdrop for his description of Fauré’s processes of allusion. For Sobaskie, an allusion is a musical gesture of nuance, an indirect reference that “expresses more than its intrinsic identity or meaning, and alludes to something outside its immediate context.” Sobaskie identifies three forms of allusion: tonal implication, transient tonicization, and modal suggestion. Tonal implication is “the allusion to elements of tonal voice-leading structure, either absent, forthcoming, or already past.” For instance, Fauré’s First Violin Sonata and First Piano Quintet both begin with tonic chords in first inversion; the expected first scale degree in the bass is absent. Transient tonicizations are understood as allusions to other keys that do not weaken the principal tonality. Likewise, modal suggestions allude to modes without calling into question the essentially tonal structure of the music. These three processes constitute a distinguishing feature of Fauré’s style, and contribute to the music’s “ethereal qualities of seductiveness and transcendence.”

Edward Phillips identifies a process of “tonal contradiction,” in which underlying tonal processes (such as the arrival of a main melodic note of the Urlinie or the prolongation of a structural dominant chord) are obscured by such techniques as smoke-screens, mirrors, and

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31 Ibid., 169.
32 Ibid., 171.
33 Ibid., 195.
These terms are examples of Johansen’s “double function”: they refer to foreground progressions in which sonorities with standard functions actually serve other purposes, as when “false dominant harmonies...place a smoke-screen about underlying, middleground structures.” In Phillips’s view, Schenker’s principles are at times not just obscured or distorted, but actually violated in Fauré’s music. According to Phillips’s background-level analysis of the first movement of Fauré’s Second Violin Sonata, the *Urlinie* does not consist of descending steps, but rather a descending arpeggio:

the fourth and second scale degrees in both exposition and recapitulation (and, to some extent, the “recovering” fourth degree at the end of the development—the seventh of the dominant seventh) are all compromised, leaving the fundamental structure more a double arpeggiation of E minor than the expected stepwise fundamental structure.

Phillips concludes that the transition from tonality to atonality around the turn of the last century was accomplished by the erosion of tonal processes at deep structural levels as well as by ever-increasing foreground chromaticism.

In spite of some differences, these writings on Fauré’s harmonic, modal, and tonal language agree that, in general, Fauré’s music can be understood in the context of traditional functional tonality. Standard tonal structure is modified, sometimes almost beyond recognition, by modal inflections and linear processes. These features result in the ambiguous and elusive character of Fauré’s music.

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Rhythmic and Metric Analysis

Several authors on Fauré have considered aspects of rhythm and meter in their analyses. Carlo Caballero examines three of Fauré’s songs, adopting a definition of meter from Virgil Thomson: “Meter is a pattern of quantities, of note lengths. Its minimum unit of execution is the phrase.” Caballero identifies multiple simultaneous layers of meter based on features of harmony, melody, and text. The resulting metrical ambiguity often coincides with harmonic ambiguity to produce the elusive quality of Fauré’s music.

Pierre Fortassier considers rhythm in Fauré’s text setting. He notes that Fauré often chose poems that are less than inspired so that his musical setting would transform them. Through the use of various durational values and melismas, Fauré corrects the banality of too much ascendant rhythm (upbeat patterns) and symmetry in the poems. James Sobaskie also examines Fauré’s vocal music. Sobaskie considers songs from various points in Fauré’s career to identify characteristics of his late style. He identifies metric texturation—the use of multiple simultaneous accentual groupings—as a defining feature of Fauré’s late works.

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38 I discuss Caballero’s analysis in more detail in Chapter 8.


41 Other defining characteristics, according to Sobaskie, include textural minimalism, diffused tonality, and progressive development.
Timothy Jackson examines hypermeter in Fauré’s song “La fleur qui va sur l’eau,” Op. 85, No. 2. He finds a normative five-bar hypermeter, from which Fauré deviates for expressive reasons based on the text. Hypermeter is also a focus in James McKay’s comparison of manuscript and published versions of the third movement of Fauré’s Piano Trio. He finds a consistent three-bar hypermeter in both, and describes the combination of three-bar hypermeasures into larger hypermetric units. He notes that Fauré’s addition of three bars near the end of the movement in the published version destroys the symmetry of the final section, but this observation is marred by an apparent mistake in counting measures.

Annie Labussière’s analysis of Fauré’s Second Cello Sonata primarily concerns thematic and formal structure, but it does include some observations about rhythm and meter. Labussière notes that a general feature of Fauré’s style is a subtle play of rhythmic superpositions and juxtapositions that obscures the listener’s sense of metric hierarchy. In the sonata’s first movement’s first theme, she finds that the conflict between rhythmic structure and underlying metric structure gives the movement its “imponderable kinetic quality.”


44 This mistake is also noted in Denise Boneau, “Genesis of a Trio: The Chicago Manuscript of Fauré’s opus 120,” Current Musicology, 35 (1983): 19-33. In chapter 5 I provide a detailed analysis of this movement, including a new explanation of the three added bars.


46 “Tout l'impondérable de sa cinétique intérieure reposent sur cet écart,” Labussière, 117.
These studies of Fauré’s rhythm and meter highlight three issues that inform my own analyses. First, it is important to distinguish *rhythmic* features, which are defined by durations of varying length, from *metric* features, which involve regular accentual patterns. Caballero and Fortassier primarily address the former, while Sobaskie, Jackson, and McKay consider the latter. Labussière examines both, but does not develop her observations about the interaction between the two. I primarily examine meter, rather than rhythm. The second issue of importance is that hypermeter contributes to large-scale formal structure. Third, metric ambiguity is pervasive. In the section that follows, I more closely examine the latter two points, which are potentially contentious.

Two Potentially Contentious Issues

Large-scale Structure and Formal Labels

The interaction between hypermeter and formal structure figures prominently in my analyses. Terms for large sections, such as *exposition* and *coda*, as well as complete forms, such as *sonata form* and *rondo form* are frequently found in writings on Fauré. The use of these formal labels can be hazardous, however. In his study of Sibelius’s Fifth Symphony, James Hepokoski situates Sibelius among a group of composers born around 1860 (including Elgar, Mahler, Puccini, Debussy, and others) who shared a perspective on musical “modernism” around the turn of the last century. Though a bit older than the composers listed here, Fauré was their

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47 I discuss definitions of the terms *rhythm* and *meter* in chapter 2.

contemporary and belongs among this group. Hepokoski warns us about applying standard
terminology to the music of Fauré’s contemporaries:

To perceive many modern works appropriately we should not try to take their measure with
the obsolete ‘sonata’ gauge, as is often attempted, but rather to understand that they invoke
familiar, ‘post-sonata’ generic subtypes that have undergone, in various combinations, the
effects of differing deformational procedures. These structures cannot be said to ‘be’ sonatas
in any strict sense: this would be grossly reductive, and in the consideration of any such work
nuances are everything. Still, as part of the perceptual framework within which they ask to
be understood, they do depend on the listener’s prior knowledge of the Formenlehre ‘sonata’.
A significant part of their content, that is, is in dialogue with the generic expectations of the
sonata, even when some of the most important features of those expectations are not
realized.\footnote{Hepokoski, 5.}

While Hepokoski refers specifically to sonata form, I take his warning to apply more generally to
Formenlehre terminology. Many of Fauré’s formal structures can be understood as referring to
standard forms while not actually exemplifying them. I do not attempt to identify Fauré’s
specific deformational procedures, or to identify specific “‘post-sonata’ generic subtypes” in
Fauré’s works. I do not force the movements into molds they clearly do not fit, but neither do I
shy away from using standard terminology when it applies in a general way. I use this
terminology with the acknowledgement that others may hold to stricter definitions, and therefore
disagree about the appropriateness of my labels.

Ambiguity in Music

The theme of ambiguity figures prominently in writings on Fauré’s music, but the term is
ambiguity as “giv[ing] rise to two or more meanings” and states that “a musical situation is ambiguous if and only if its … meanings are comparably or equally plausible.” He claims that a performance or analysis always makes one meaning most plausible, thereby resolving ambiguity. He leaves no room for doubt about his position: “while ambiguity may exist as an abstract phenomenon, it does not exist in concrete musical situations.”

Many theorists disagree with Agawu, among them William Rothstein, who observes wryly that “there is nothing in music about which it is more important to be precise than ambiguity.” Ken Johansen posits an important role ambiguity plays in Fauré’s music: “For composers, the creation of ambiguity is a way of interacting with their listeners. By playing on our musical experiences and expectations, they can draw us into the musical discourse as active participants.” In his study of rhythm and meter in electronic dance music, Mark Butler suggests that Agawu’s definition of ambiguity is unnecessarily narrow, and argues for the existence of ambiguity in music. He states that:

The second edition of the Oxford English Dictionary gives the following “objective” senses of the word:

1. Doubtful, questionable; indistinct, obscure, not clearly defined.
2. Of words or other significant indications: Admitting more than one interpretation, or explanation; of double meaning, or of several possible meanings; equivocal. (The commonest use.)
3. Of doubtful position or classification, as partaking of two characters or being on the boundary line between.

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51 Agawu, 89.
52 Ibid., 107.
54 Johansen, 10.
… Each of these three meanings is relevant in various ways to experiences of rhythm and meter in electronic dance music.\textsuperscript{55}

According to the first definition, music is ambiguous if it is indistinct, obscure, or unclearly defined in some parameter. The enigmatic quality of Fauré’s music certainly fits that definition, though Agawu might argue that the ambiguity is an artifact of our inadequate analytic tools, rather than an aspect of the music itself. Agawu favors the second definition above, and he claims that according to that definition, ambiguity does not exist in actual music. In the chapters that follow, I identify many instances in which more than one interpretation applies to some aspect of Fauré’s music. The third definition above, “of doubtful classification or partaking of two characters” also applies frequently. I follow Butler in admitting all three definitions, and find ambiguity to be a pervasive, defining characteristic of Fauré’s style.

A Brief Musical Example

Figure 1.3 shows a passage from the opening of Fauré’s Second Violin Sonata that illustrates Fauré’s ambiguous language in both tonal and metric realms. I have renotated it to eliminate cues as to its key and meter. In terms of key, the passage contains notes of the G major collection. However, the pitch G is not emphasized in any way. Given that Fauré frequently uses modal scales, we might consider the possibility that the movement begins in C Lydian. This supposition is supported by the fact that the first two notes—B and C—would be the leading tone and tonic. In the passage as a whole, though, the note B is much more prominent than the note C, which suggests that C is not the tonic after all. Another modal possibility is E Aeolian (or E natural minor). The prominent note B would be the dominant in that key, but the tonic note E

\textsuperscript{55} Mark J. Butler, \textit{Unlocking the Groove: Rhythm, Meter, and Musical Design in Electronic Dance Music} (Bloomington: Indiana University Press, 2006), 121.
does not appear at all. In fact, it is the only note from this diatonic collection that does not appear. The movement is indeed in E minor, but a listener is unlikely to discern this fact from this passage.

Figure 1.3. Second Violin Sonata I, opening, renotated.

This excerpt’s rhythms are not especially remarkable: it consists entirely of eighth notes, quarter notes, and half notes. However, the meter is ambiguous. The passage’s frequent quarter notes and the fact that eighth notes occur in multiples of two suggest that the quarter note may serve as the beat. Figures 1.4a and b show two renotated versions of the passage, beamed to imply a quarter note beat. In figure 1.4a, the accented Bs fall on the beat, but notes with tenuto marks occur off the beat, and the quarter notes and half note are syncopated. In figure 1.4b, the half notes and quarter notes (including the notes with tenuto marks) fall on the beat, but the accented notes are all syncopated. Neither interpretation seems particularly compelling.

Figure 1.4a. Second Violin Sonata I, opening, first interpretation with quarter note beat.
Another possibility is that the dotted quarter note, rather than the quarter note, serves as the beat. Figures 1.5a and b show two more rennotated versions, beamed to imply a dotted quarter note beat. In figure 1.5a, the accented Bs occur on the beat, but the notes with tenuto marks fall off the beat, and in figure 1.5b, the situation is reversed. Again, neither interpretation seems particularly compelling. Figure 1.6 shows the actual notation of the opening. The location of beats corresponds to those of figure 1.5a. The accents on the downbeats of measures 1 and 3 help the listener to hear them as downbeats, but the tenuto marks at the end of those measures, as well as the absence of any such marking on the downbeat of measure 2, make it more difficult to perceive the second downbeat as a downbeat.
The first three bars of this piece leave the listener uncertain as to both key and meter. Starting in measure four, the piano plays constant dotted quarter notes, which finally establish a pulse, but the violin plays irregular syncopations against the piano’s rhythms. It is not until measure eight that pulse and meter are definitely established. This very brief example gives a hint of the metric complexities and ambiguities found in Fauré’s rhythmic patterns. In the remainder of this dissertation I examine the subject in depth and provide a thorough account of Fauré’s rhythmic and metric style, to complement the descriptions of Fauré’s harmonic and tonal language reviewed above.

Organization of Dissertation

In chapter 2, I establish my theoretical foundation by summarizing the three sources that have most influenced my approach to Fauré’s rhythm and meter: works by Fred Lerdahl and Ray
Jackendoff, Harald Krebs, and Richard Cohn. I review terms and concepts from each source, identify areas of divergence between them, and finally present my own definitions. I describe my analytic methodology in chapter 3 and my metric state graphs in chapter 4. The three chapters that follow contain analyses of movements from Fauré’s chamber music. They substantiate my claim about the importance of hypermeter and metric dissonance in defining Fauré’s style, and demonstrate the importance of metric processes in defining large-scale form, providing shape and direction, and setting the music’s emotional tone. Finally, I demonstrate the application of my model to other works by Fauré and to works by other composers and suggest areas for future research in chapter 8.

I do not include detailed biographical information or attempt to situate Fauré’s music in its historical context. Excellent work has already been done in these areas. While some scholars view all analysis that is not explicitly tied to the composer’s life and cultural milieu as necessarily incomplete, I consider my examination of Fauré’s scores in themselves to be an important contribution, and I leave for future writers the task of historically contextualizing Fauré’s rhythm and meter. Given his position at the boundary between nineteenth-century late Romanticism and twentieth-century Modernism, this is a worthy goal, but it is beyond the scope of this study.

CHAPTER 2

THEORETICAL FOUNDATIONS

The three theoretical sources that form the foundation of my approach to Fauré’s music are Fred Lerdahl and Ray Jackendoff’s *A Generative Theory of Tonal Music*, Harald Krebs’s *Fantasy Pieces: Metrical Dissonance in the Music of Robert Schumann*, and three articles by Richard Cohn: “The Dramatization of Hypermetric Conflicts in the Scherzo of Beethoven’s Ninth Symphony,” “Metric and Hypermetric Dissonance in the Menuetto of Mozart’s Symphony in G minor, K. 550,” and “Complex Hemiolas, Ski-Hill Graphs and Metric Spaces.”1 All three sources have contributed important insights to the study of meter. Lerdahl and Jackendoff develop a formal system for metrical analysis with clearly defined terms and a set of rules for their application. Krebs codifies terms, concepts, and categories of metrical dissonance. Cohn studies metric dissonance in hypermetric contexts and introduces a graphic model for metric phenomena, the “ski-hill graph.”

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The three sources complement each other, but they also differ in their use of terminology. I first describe each theorist’s key terms and concepts, with special attention to areas of disagreement. I then discuss these points of divergence, and finally present the terminology and concepts I will use in this study. My decisions are pragmatic: I choose a particular definition or concept if it helps to illuminate aspects of Fauré’s music, and the main justification for my terminology comes in the analytic chapters that follow. My lengthy and detailed discussion of the three sources clarifies the terminological and methodological differences between them and provides a theoretical framework for my own approach, which involves significant modifications of and additions to that framework.

Lerdahl and Jackendoff’s Model

Lerdahl and Jackendoff draw from the field of linguistics to create a “musical grammar,” which consists of four hierarchical components: grouping structure, metrical structure, time-span reduction, and prolongational reduction. Two types of rules describe each component. Obligatory well-formedness rules (WFRs) specify possible structures, and preference rules (PRs) designate preferred interpretations based on hypothetical listener’s judgments. The model, then, includes grouping well-formedness rules (GWFRs), grouping preference rules (GPRs), metrical well-formedness rules (MWFRs), and so on.

Grouping structure concerns the hierarchical arrangement of motives, phrases, and sections. Analysis of grouping structure consists of locating group boundaries, which are

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2 A third type, transformational rules, addresses exceptions to well-formedness rules.
identified according to principles of Gestalt psychology. Essentially, a boundary occurs at a point of change or discontinuity, or between parallel structures. In the series of figures □ □ □ □ □ □ a grouping boundary occurs between the third and fourth figures because of the greater distance. In the series □ □ □ △ △ a boundary occurs between the third and fourth figures because of the change in shape. In the series □ △ □ △ □ △ □ △ △ □ △ □ △ □ △ □ △ △ □ △ □ △ □ △ □ the figures group in twos because of the repeating pattern (or parallelism). The figures’ shapes and the distances between them have obvious musical analogs: a greater distance corresponds to a greater temporal span or pitch interval, and a change in shape corresponds to a change in pitch, dynamics, texture, or any other musical parameter.

Lerdahl and Jackendoff’s grouping rules establish a methodology for the partitioning of passages into hierarchically organized groups. For instance, GWFR 5 states: “if a group G_1 contains a smaller group G_2, then G_1 must be exhaustively partitioned into smaller groups,” and GPR 6 states: “where two or more segments of the music can be construed as parallel, they preferably form parallel parts of groups.” Because the various preference rules do not always

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3 For Lerdahl and Jackendoff, large group boundaries are defined by tonal and formal events such as cadences and the start of a new theme group or a recapitulation, but the authors’ grouping rules do not directly address these larger groups. For a more complete description of perceptual principles of Gestalt psychology, see Max Wertheimer, “Laws of Organization in Perceptual Forms,” in *A Source Book of Gestalt Psychology*, ed. Willis D. Ellis (London: Routledge & Kegan Paul, 1938), 71-88.

4 As David Temperley points out, parallelism defines a period (duration) but not a phase (starting point). In other words, the pattern might group as □ △ □ △ □ △ or as (△) □ △ □ △ □ △ □ △ □ △ □ △ □ △ □ △ □ △ □ △ □. Factors other than parallelism would determine whether each group begins with a square or a triangle. David Temperley, *The Cognition of Basic Musical Structures* (Cambridge, MA: The MIT Press, 2001), 49-50.

5 Lerdahl and Jackendoff, 38, 51.
agree in locating group boundaries, different interpretations of the same passage are possible, but a given analysis will select from those possibilities a single partitioning scheme.

For Lerdahl and Jackendoff, *metrical structure* concerns the regular alternation of strong and weak *beats* on various hierarchical *levels*. Beats are “the elements that make up a metrical pattern.” They are durationless abstractions, and they are equally spaced, so they mark off constant durations, like points on a ruler. Levels are labeled according to the durational values defined by the beats, such as a quarter-note level. More quickly moving levels are described as *faster* or *smaller*, while less quickly moving levels are *slower* or *larger*. One level, the *tactus*, corresponds to the rate at which a conductor beats and a listener taps along. Its rate is between 40 and 160 beats per minute, and is most commonly around 70 beats per minute. Subtactus levels may be intermittent rather than continuous; they may “drop out when unnecessary,” and some very rapid notes are *extrametrical events*, which are not part of metrical structure. Levels larger than the notated measure are *hypermetrical* levels.

Analysis of metrical structure consists of locating *metrical accents*, defined as “any beat that is relatively strong in its metrical context.” The raw material from which a listener perceives beats is the *phenomenal accent*: “any event at the musical surface that gives emphasis

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6 Lerdahl and Jackendoff, 18.


8 Lerdahl and Jackendoff, 71-72.

9 The word hypermeter derives from *hypermeasure*, a term coined by Edward T. Cone in *Musical Form and Musical Performance* (New York: W. W. Norton, 1968), 79.

10 Lerdahl and Jackendoff, 17.
or stress to a moment in the musical flow,” such as the onset of a note, a sforzando, a sudden change in dynamics, a leap to a relatively high or low note, or a harmonic change. Metrical accents arise when phenomenal accents occur in regular patterns, creating a hierarchy of levels. A third type of accent, the *structural accent*, is defined by “melodic/harmonic points of gravity,” such as cadences, and is most relevant for time-span reduction. The structural accent is unrelated to the other two types. At a given level, a strong beat is defined as a beat that also appears on the next larger level, while a weak beat is one that does not. Metrical structure is a “relatively local phenomenon,” and at large levels it is “perceptually irrelevant.” Grouping structure assumes more importance as the salience of metrical structure wanes.

Lerdahl and Jackendoff’s metrical rules establish a methodology for identifying beats and hierarchically organized levels. For example, MWFR 3 states: “at each metrical level, strong beats are spaced either two or three beats apart,” and MPR 10 states: “prefer metrical structure in which at every level every other beat is strong.” As with grouping structure, the various metrical preference rules may not agree in locating beats and strong beats, but a given analysis will select from the possibilities a single set of beat levels.

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11 Lerdahl and Jackendoff 17. Some accents are therefore features of the written score, while others, such as a slight dynamic intensification on downbeats, are entirely due to the performer’s actions. Alan Dodson discusses the performer’s role at length. See Alan Dodson, “Performance and Hypermetric Transformation: An Extension of the Lerdahl-Jackendoff Theory.” *Music Theory Online* 8, no. 1 (February 2002), [http://mto.societymusictheory.org/issues/mto.02.8.1/mto.02.8.1.dodson_frames.html](http://mto.societymusictheory.org/issues/mto.02.8.1/mto.02.8.1.dodson_frames.html).

12 Lerdahl and Jackendoff, 17.

13 Ibid., 21.

14 Ibid., 69, 90.
Metrical structure is represented with a dot grid, where each dot represents a beat on a given level, a horizontal series of dots represents a level, and the vertical alignment of dots indicates the hierarchical structure. In Lerdahl and Jackendoff’s dot grids, levels are arranged in order of their durational values, with the fastest level at the top. Figure 2.1 shows a dot grid for one measure in $\frac{4}{4}$ meter, with four levels.\(^\text{15}\)

![Figure 2.1. Dot grid for four levels in one measure of $\frac{4}{4}$ meter.](image)

Metrical structure is comprised of beats on various levels, while grouping structure consists of groups that are defined by their boundaries. The interaction between grouping and metrical structures occurs in the realm of time-span structure.\(^\text{16}\) A *time-span* is the distance from any beat up to but not including any subsequent beat. Time-spans relevant for metrical analysis occur between successive beats on the same level, and therefore have equal durations. Group boundaries also articulate time-spans, and when time-spans defined by group boundaries coincide with metrical time-spans, grouping and metrical structure are *in phase*. When metrical time-spans do not coincide with grouping time-spans, the two structures are *out of phase*.

\(^{15}\) This dot grid represents a single measure, but the downbeat of the next measure is shown. The final dot is necessary to mark off the final time-span in each level. I include these ending dots in all subsequent dot grids.

\(^{16}\) Lerdahl and Jackendoff, 28-29.
Time-spans are used analytically in *time-span reduction*, which begins with *time-span segmentation*.\(^{17}\) Metrically-defined time spans are identified according to metrical structure. They are then adjusted as necessary so that upbeats are included in the time-spans that follow them. These adjusted time-spans coincide with groups. At the level of the phrase, time-spans are defined by structural accents (phrase beginnings and cadences), and at still larger levels time-spans correspond to larger structural units, such as periods, theme groups, exposition, and so on.

Time-span reduction identifies within each time-span segment the event of greatest structural importance, or *head*, based on melodic and harmonic features. Time-span reduction rules include TSRWFR 1: “for every time-span \(T\) there is an event \(e\) (or a sequence of events \(e_1e_2\)) that is the *head* of \(T\),” and TSRPR 5: “in choosing the head of a time-span \(T\), prefer a choice that results in more stable choice of metrical structure.”\(^{18}\)

Prolongational reduction segments a piece into *prolongational regions* defined by melodic and harmonic processes of tension and relaxation, and then identifies the *prolongational head* of each region. Of the four components of Lerdahl and Jackendoff’s theory, prolongational reduction is least relevant for my approach, since it primarily concerns tonal, rather than metrical, processes.

Lerdahl and Jackendoff posit two “idealizations” that underlie their model. The first is that their theory describes the musical intuitions of an “experienced listener.”\(^{19}\) In other words, the analytic approach assumes a shared understanding of stylistic and generic norms. The

\[^{17}\text{Lerdahl and Jackendoff, 124-128.}\]

\[^{18}\text{Ibid., 158, 165.}\]

\[^{19}\text{Ibid., 3.}\]
second idealization is that analysis provides a “final state of understanding.” Some analytic systems take a “real-time” approach, in which a hypothetical listener’s moment-by-moment impressions develop as a piece unfolds. Lerdahl and Jackendoff’s analyses are the result of reasoned consideration of many variables, rather than instantaneous judgments, and they allow for hindsight. Interpretation of a given passage may take into account events that occur later, as well as features not immediately apparent on first hearing.

Krebs’s Model

Krebs studies metric phenomena in Robert Schumann’s music. His analytic approach involves identifying layers of motion, which consist of equally-spaced pulses. He does not explicitly define these terms, but they are similar to Lerdahl and Jackendoff’s levels and beats. The meter of a work is the “union of all layers of motion…active within it.” The fastest pervasive layer is the pulse layer. It serves as a reference point for all other layers. Slower layers are interpretive layers of a cardinality defined by the number of pulse-layer attacks they subsume, and micropulses generate even faster-moving layers that are intermittent, rather than pervasive. If the pulse layer is an eighth-note layer, occasional sixteenth notes would be micropulses. A quarter-note layer would have cardinality of two and would be labeled a 2-layer,

20 Lerdahl and Jackendoff, 4.


22 Krebs, Fantasy Pieces, 22-23.

23 Ibid., 22.
a half-note layer would be a 4-layer, and so on. Krebs represents these layers with numerals above and below the notes in a score. A series of 3s under every third eighth note indicates a 3-layer. Krebs refers to layers with lesser cardinalities (more quickly moving layers) as faster or lower-level layers, while those with greater cardinalities are slower or higher-level. Layers often arise from phenomenal accents, but they may also be established by grouping techniques. Krebs uses the word *group* as a verb to refer to interactions between layers, as in “a layer that groups those pulses into twos.”

When each pulse of an interpretive layer coincides with a pulse of a faster-moving layer, the layers are aligned, or in a state of metrical consonance. One layer, the primary metrical layer, assumes significance for the listener as a reference point for all rhythmic activity. The consonance that results from the interaction between the primary metrical layer and the pulse layer is the primary consonance of the work.

When two or more interpretive layers do not align with each other, a state of metrical dissonance exists, and layers that are dissonant in relation to a work’s normative consonances are

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24 Krebs, *Fantasy Pieces*, 26: “…accentuation is not the only factor that can gather pulses together to form interpretive layers: a variety of musical grouping techniques independent of accentuation may be active as well.” In endnote 9, which ends this quotation, Krebs cites the section of Lerdahl and Jackendoff’s book that defines grouping structure (p. 260).

25 Ibid., 22.

26 Ibid., 30. While Krebs defines the primary consonance as the interaction between the pulse layer and the primary metrical layer, his examples indicate that he sometimes conceives of the primary consonance as an interaction between two interpretive layers: the notated beat and the notated measure. For instance, he refers to a 6/2 primary consonance in a passage in $\frac{3}{4}$ time. The pulse layer is eighth notes; the 6/2 consonance indicates 6 eighth notes per measure and 2 eighth notes per beat (p. 30).
antimetrical layers. Figures 2.2a-c show dot grids for several examples of dissonance.\textsuperscript{27} If the pulse layer is eighth notes, a 2-layer and 4-layer (quarter notes and half notes) would ordinarily align. (Figure 2.1 above shows a dot grid for this situation.) It is possible that a second, non-aligned 2-layer might also exist, shown in figure 2.2a. When two non-aligned layers with the same cardinality occur, a displacement dissonance exists.\textsuperscript{28} Krebs labels displacement dissonances with a D followed by a formula that shows the shared cardinality of the dissonant layers and the degree of displacement. He also indicates in parentheses the pulse layer. The dissonance in figure 2.2a would be D2+1 (1=8\textsuperscript{th}): the displacement dissonance consists of two 2-layers displaced by one eighth note.

A grouping dissonance occurs with the combination of non-aligned layers of different cardinalities.\textsuperscript{29} For instance, figure 2.2b shows a 3-layer (dotted-quarter-notes) along with a 2-layer, 4-layer, and 8-layer; some of the 3-layer pulses do not align with those of the other layers. Krebs labels grouping dissonances with a G followed by the two cardinalities separated by slash. The dissonance between the 2-layer and the 3-layer in figure 2.2b would be G3/2 (1=8\textsuperscript{th}).

\textsuperscript{27} Krebs does not use dot grids in his analyses, but they are useful in describing his approach. To illustrate his concepts, Krebs uses rows of coffee beans arranged as Lerdahl and Jackendoff’s dot grids. See for instance his figure 2.3 (Fantasy Pieces, pp. 40-41).


\textsuperscript{29} Krebs borrows the terms displacement dissonance and grouping dissonance from Peter Kaminsky’s “Aspects of Harmony, Rhythm and Form in Schumann’s Papillons, Carnaval and Davidsbündlertänze” (Ph.D. diss., University of Rochester, 1989).
Simultaneous occurrence of non-aligned layers is *direct* dissonance, while their successive occurrence is *indirect* dissonance, as in figure 2.2c. Indirect dissonance occurs because listeners maintain an established pulse for a time after it is discontinued in the music. With successive non-aligned layers, the perception of the first layer will persist into the presentation of the second layer. Therefore, all direct dissonance also contains indirect dissonance, because at the start of a direct dissonance, the new antimetrical layer clashes with the metrical layer that precedes the onset of the dissonance. When the notated meter signature and
barlines indicate a primary consonance but all musical features define antimetrical layers, a subliminal dissonance exists.  

Cohn’s Model

Cohn studies metric and hypermetric dissonance, and his terminology evolves during the course of the three articles. In the first article, metric entities are units that occur at a particular rate, measured in beats or downbeats. The total span of music under consideration is a metric complex, which is defined by its length L (“the total number of units that recur at the lowest constant rate considered relevant to the analysis”) and a set of levels and factors. Levels are “distinct constant rates of motion within the complex,” and a factor is “used as in number theory and refers only to nontrivial prime factors.” In the music Cohn studies, 2 and 3 are the only factors. Complexes that contain one distinct factor are pure, while those that contain both are mixed. An 8-unit complex is pure: the only factor is 2, because $8 = 2 \times 2 \times 2$, while a 12-unit complex is mixed: the factors are 2 and 3, because $12 = 2 \times 2 \times 3$. In each case, there are three levels (one for each instance of each factor). Faster-moving levels are lower levels, slower-

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30 Other terms for subliminal dissonance have been proposed. Reed Hoyt uses the terms latent meter and perceived meter to distinguish between the meter implied by notational features and the meter that arises from the actual musical features. The shifting barline studied by Walter Frisch and Joseph Kraus is another example of subliminal dissonance. See Reed J. Hoyt, “Rhythmic Process in the Scherzo of Beethoven’s Sonata Op. 110: Analysis As a Basis for Interpretation and Criticism,” Indiana Theory Review 9, no. 2 (Fall 1988): 99-133; Walter Frisch, “The Shifting Bar Line: Metrical Displacement in Brahms,” in Brahms Studies: Analytical and Historical Perspectives, edited by George S. Bozarth (New York: Clarendon Press, 1990), 139-164; and Joseph C. Kraus, “Analysis and Influence: A Comparison of Rhythmic Structures in the Instrumental Music of Schumann and Tchaikovsky,” in Tchaikovsky and His Contemporaries, ed. Alexander Mihailovic (Westport, CT: Greenwood Press, 1999), 117-127.

31 Cohn, “The Dramatization of Hypermetric Conflicts,” 194. The following quotations appear on the same page.
moving levels are *higher* levels, and the factors that define relationships between levels describe *groups, groupings, or divisions*, as in “the final twelve measures of the section suggest a division into two groups of six.”

The interpretation of a complex matches factors to levels with an ordered set of integers indicating metric relations between levels, starting with the highest levels. In two measures of $\frac{6}{8}$ meter with eighth notes as the fastest level, the length is twelve (there are twelve eighth notes within two measures in $\frac{6}{8}$ meter). The other levels are dotted-quarter notes and measures, and the interpretation is [2 2 3]. These three factors represent (1) the duple relationship of measures and the 2-bar complex; (2) the duple relationship of dotted-quarter notes and measures; and (3) the triple relationship of eighth notes and dotted-quarter notes. *Metric conflict* occurs in mixed complexes when more than one interpretation is suggested by musical features such as fugal entries, registral accents, harmonic factors, and parallelisms.

Two additional terms of importance in Cohn’s first article concern oscillating patterns, represented as ababab etc. The letters stand for any type of events with the same duration. Ordinarily, a listener would organize such a pattern duply, as ab ab ab etc., in a *parallel scheme*. If accents articulate every third event, the pattern would be organized aba bab etc., in a *switchback scheme*.

Using these tools, Cohn traces the dramatic trajectory of pure and mixed complexes as well as hypermetric conflicts in the Scherzo of Beethoven’s Ninth Symphony, and he identifies as the movement’s central issue “the tendency of the forces of closure and symmetry, identified

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with triple meter and switchback schemes, to be overcome by the ‘stream of yet again,’ identified with duple/quadruple meter and parallel schemes.”

In his second article, Cohn refines his theoretical framework and mathematically formalizes his terminology. He discards the term *metric complex*, which he views as superfluous, instead simply using the term *time-span*. A time-span XY “initiates at time X, terminates at time Y, and includes all time-points between X and Y.” He retains the term *length*, but defines it not as a number of smaller units but rather as the difference between starting and ending times, although he continues to express lengths as numbers of units. Because of musical features, the listener perceives a time-span to be partitioned into equal *subspans*, and a *P-set* is an ordered list of partitionings or divisions of the time-span, beginning with 1 and ending with the total duration. For instance, a time-span of length 6 might have a P-set of <1,3,6>, indicating that the total duration is partitioned into subspans of length 1, 3, and 6. This is the case in one measure of \(\frac{6}{8}\) meter, which is perceived as partitioned into eighth notes, dotted-quarter notes, and the entire dotted-half note. The note values defined by the divisions are *pulse-levels*, whereas the word *beat* refers to the specific pulse indicated by the notated meter signature, as in “the…six-beat unit of measures 1-2.”

Each P-set is an *interpretation* of a length L. In the first article, Cohn defines interpretation as a set of factors from highest to lowest level, but here it is a list of pulse-levels, from lowest to highest. The <1,3,6> interpretation of one measure in \(\frac{6}{8}\) meter would be represented as [2 3] in the previous system: the factor 2 stands for the duple relationship between

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33 Cohn, “The Dramatization of Hypermetric Conflicts,” 206.

34 Cohn, “Metric and Hypermetric Dissonance,” 5.

dotted quarter-notes and dotted half-notes, while the factor 3 stands for the triple relationship between eighth-notes and dotted quarter-notes.

When all members of a P-set (that is, all pulse-levels that appear in an interpretation) are whole-number multiples of each other, the interpretation is consonant. <1,3,12> and <1,3,9,18> are both consonant, because the ratio of each pair of numbers in each interpretation is an integer. The latter interpretation, <1,3,9,18>, is fully consonant, because the ratios of all consecutive pairs are prime numbers (these are the factors 2 and 3 from the previous article). The interpretation <1,3,12> is not fully consonant; the ratio 12:3 equals 4, a non-prime number. This lack of full consonance occurs because there is a potential intervening pulse-level: 6. Inserting the 6 into this P-set to form <1,3,6,12> makes it fully consonant. An interpretation is dissonant when the ratio of any pair of pulse-levels is not an integer, and the degree of dissonance equals the number of pairs of pulse-levels in non-integer ratios. <1,2,3,6> has one degree of dissonance (the ratio 3:2) while <1,2,3,6,9,18> has three (3:2, 9:2, and 9:6). The 3:2 ratio represents a hemiola, and when an interpretation contains two pairs of pulse levels in this ratio, a double hemiola exists. Because 9:6 is mathematically equivalent to 3:2, the previous example contains a double hemiola: both 3:2 and 9:6 are present. In Cohn’s first article, such dissonant interpretations are not possible, because an interpretation consists of a single set of factors, although metric conflict might exist if a single interpretation is not clearly identifiable. Cohn uses these tools to investigate parallels between tonal and metric processes in the Menuetto of Mozart’s Symphony in G Minor, K. 550. He finds that the movement may be heard in three different ways: either duple or triple hypermeter may be considered a “tonic state,” or the tension between the two may be the norm.\(^{36}\)

\(^{36}\) Cohn, “Metric and Hypermetric Dissonance,” 31.
Cohn’s Brahms article retains the term *time-span* for durational units as well as the processes of *division* and *grouping* for relationships between pulse-levels (or simply *levels*). Cohn terms the largest analytic unit (previously labeled a metric complex, then simply a time-span) the *span pulse*, while the fastest pulse is the *unit pulse*. He discards the term *length*, instead using the term time-span for both the unit itself and its length. *Consonance* and *dissonance* retain their previous definitions, and Cohn introduces the term *complex hemiola* for the simultaneous expression of a 3:2 pulse ratio “at three or more distinct levels.”

Cohn’s change in terminology for the largest unit (from metric complex to time-span to span pulse) reflects a change in perspective. The earlier terms simply refer to sections of music, such as the 48-bar first theme described in Cohn’s Beethoven article. The third term, span pulse, refers to a repeating unit, such as the pulse Cohn studies in Brahms’s *Capriccio*, Op. 76, No. 8. Cohn no longer concerns himself with the upper limits of hypermeter; instead he studies various groupings of quarter note pulses within 2-bar hypermeasures.

The term *metric state* replaces Cohn’s earlier *interpretation* as the specific configuration of duple and triple groupings at all levels from the span pulse to the unit pulse, and Cohn uses the term *metric space* for the collection of all possible configurations. Instead of the earlier numerical representations (such as [2 3] and <1,3,6>), metric states and spaces are represented graphically with *ski-hill paths* and *ski-hill graphs*. I discuss these graphic representations of metric phenomena in detail in chapter 4.

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37 Cohn, “Complex Hemiolas,” 295.

38 Cohn’s comments on this Capriccio are a response to David Lewin’s investigation of the piece. See David Lewin, “On Harmony and Meter in Brahms’s Op. 76, no. 8,” *19th-Century Music* 4, no. 3 (Spring 1981): 261-265.
Summary of Three Models and Areas of Divergence

While the approaches of my three sources overlap considerably, there are also significant differences, both conceptually and terminologically. For basic elements of metrical patterns, Lerdahl and Jackendoff’s “beats” correspond roughly to the “pulses” of Krebs and Cohn. For all three sources, these events occur in equally-spaced series, which Lerdahl and Jackendoff and Cohn term “levels,” but which Krebs terms “layers.” Lerdahl and Jackendoff’s referential level is the “tactus,” while Krebs’s is the “pulse layer.” For both sources, faster moving levels ("micropulses" for Krebs) may be intermittent rather than continuous. Lerdahl and Jackendoff consider large hypermetric structures “largely irrelevant,” Krebs finds them infrequently in Schumann’s music but theoretically possible, and Cohn identifies very large hypermetric structures, especially in his second article.

Lerdahl and Jackendoff explicitly differentiate between beats—which have no duration—and the time-spans that they articulate. Krebs does not make this distinction. When he says that an interpretive-layer pulse subsumes pulse-layer attack points, he gives it a duration (a single time-point cannot subsume a series of events). Cohn does differentiate between time-points and time-spans, especially in his second article, but the metric units he studies are “spans,” “subspans,” and “units”: entities with durations. They correspond to Lerdahl and Jackendoff’s “metrical time-spans.”

The distinction between time-points and time-spans affects the way that metric phenomena are described. For Lerdahl and Jackendoff, “beats do not possess any inherent

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39 This is not a deficiency of Krebs’s model, because he does not define a layer as a series of either time-points or time-spans. In context, his meaning is always clear.
They are simply spaced a certain distance apart, and their combination forms a static metrical grid. For Cohn, the equal time-spans marked off by pulses are the essential metric units, and they are described in dynamic terms, with verbs such as “group,” “divide,” and “partition.” The use of these verbs does not in itself reflect a significant conceptual difference from Lerdahl and Jackendoff’s approach. Cohn’s observation that “the unit pulse is *duppy* grouped,” is, in Lerdahl and Jackendoff’s terms, essentially equivalent to “at the fastest beat level, strong beats occur at every second beat.”

Krebs’s use of the verb “group” may reflect a deeper discrepancy between his model and that of Lerdahl and Jackendoff. As noted above, Krebs asserts that Lerdahl and Jackendoff’s determinants of grouping structure define pulse layers, but Lerdahl and Jackendoff explicitly differentiate grouping structure from metrical structure. For Lerdahl and Jackendoff, phenomenal accents are the raw materials for the perception of metrical accents (strong beats), while groups are articulated by Gestalt psychology principles as well as tonal and formal

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40 Lerdahl and Jackendoff, 26.


42 Many other theorists also consider metric units to be time-spans in dynamic relationships. See, for instance, Edward T. Cone’s description of hypermeasures: “… the measures combine into phrases that are themselves metrically conceived…” and William Rothstein’s description of upbeat bars in Strauss’s “Blue Danube” Waltz: “… the first measure of the waltz proper adds itself metrically to the three preceding bars…” (Cone, *Musical Form*, 79; Rothstein, *Phrase Rhythm in Tonal Music* (New York: Schirmer, 1989), 20 [emphases added]).

43 Cohn, “Complex Hemiolas,” 302, emphasis in original.
features. In Krebs’s model, layers of motion may be articulated either by accents or by Lerdahl and Jackendoff’s grouping techniques or other features of notation.44

In my three sources, the conceptions of relationships between levels differ in several ways. For Lerdahl and Jackendoff, faster-moving levels are “smaller” or “faster” while slower-moving levels are “larger” or “slower.” Krebs and Cohn use the terms “lower” and “higher.” Regarding durational ratios between levels, Cohn’s pulses always group duply or triply, and Lerdahl and Jackendoff’s strong beats always occur every second or third beat. In both cases, adjacent levels exhibit duple or triple relationships. Krebs has no such requirement, and in fact the concept of “adjacent layers” is not defined in Krebs’s system; all interpretive layers are understood in relation to the pulse layer.

The three sources differ in their visual representation of metric phenomena as well. Lerdahl and Jackendoff use dot grids, Krebs shows layers with numerals above and below notes in the score, and Cohn uses (in his third article) ski-hill graphs.

Perhaps the most significant difference between the three sources’ conception of relationships between levels concerns dissonance. Both types of Krebs’s metrical dissonance violate Lerdahl and Jackendoff’s well-formedness rules and therefore have no place in their model. Their analyses ignore dissonant levels; they instead choose a single, non-dissonant interpretation of a given passage. Krebs allows many conflicting levels, with no mandate to choose one set of consonant levels and ignore the rest. In Cohn’s model, grouping dissonances appear but displacement dissonances do not. In his first article, metric conflict (grouping dissonance) occurs when a clear interpretation of a metric complex is not possible. In his second

44 Many phenomenal accents occur because of the same Gestalt principles that define groups, but Krebs does not make this point. He considers grouping and accentuation to be two different processes, both of which may define pulse layers. See Krebs, *Fantasy Pieces*, 26.
article, grouping dissonances may occur within one interpretation. In his third article, grouping dissonances do not occur within a given metric state, but rather between different states in the same metric space.

My Model

Overview

While the three sources provide a valuable theoretical foundation, my model includes significant modifications and additions to that foundation. My analytic approach to Fauré’s music involves identifying all active levels within a passage, from the lowest level to the highest hypermetric level, frequently including multiple dissonances. This comprehensive inclusion of levels requires modifications to the theoretical framework in five areas: (1) more precise definitions of lowest and highest levels, (2) new terms for relationships between levels, (3) amplification of two important issues related to dissonance: non-isochronous levels and metrical vs. antimetrical levels, (4) specific criteria for establishing the viability of intermittent levels, and (5) new graphic representations of metric phenomena. I describe the first three categories below. The fourth category, criteria for establishing the viability of intermittent levels, is addressed in chapter 3, while the fifth, graphic representation of metric phenomena, is the topic of chapter 4.

Informed by the work of many other theorists, I expand and refine definitions and introduce new terms and concepts, resulting in a model robust and flexible enough to describe Fauré’s unique rhythmic and metric language.

I borrow many basic terms and concepts from my sources without significant modification, and I list them here, before describing my new contributions. I use the word pulse to refer to one of a series of time-points that establish temporal regularity and predictability.
Pulses are usually, but not always, equally-spaced, or *isochronous*. I use the word *beat* for the time-span between consecutive pulses and the events that occur during it. This corresponds to standard informal usage, in phrases such as “the end of the third beat” and “there are four sixteenth notes in the beat.” It also allows for more technical terms like “expanded upbeat,” which would be confusing if a beat were defined as a time-point. The phrase “on the beat,” which implies that a beat is a time-point, therefore actually means “at the start of the beat.” I also use the term beat in the non-technical sense, as in “the fourth beat of the measure.” Context will make my usage clear.

It is important to note that my use of the word *beat* is not limited to any particular level. For some theorists, *beat* refers only to the tactus, but here it may refer to any durational value, though for higher hypermetric levels I use the term *unit*.\(^45\) This second term is necessary because at higher hypermetric levels the term *beat* seems inappropriate: we are not accustomed to thinking of an eight-bar passage as a single beat, for instance. My use of the term *unit* corresponds both to Cohn’s usage in his first article and to Lerdahl and Jackendoff’s *metrical time-span*, except that it may include non-isochronous subordinate beats under conditions I describe below. I use the term *span* for a passage of any length without regard to metric structure. *Span* is therefore a more general term; it corresponds to Lerdahl and Jackenoff’s *time-span*. I use the word *level* (rather than Krebs’s *layer*) for a regular series of pulses or beats, labeled according to the recurring duration, such as a ♩ level. For clarity, I will occasionally specify the type of level: a *pulse level* is a series of time-points, while a *beat level* is a series of durational units. Every *beat* or *unit*, except those at the lowest level, has a clearly defined metric

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\(^{45}\) In practice, my *units* are always defined by pulses of metrical, as opposed to antimetrical, levels. I discuss more fully definitions of metrical versus antimetrical levels below.
state, consisting of all of the levels below it. My use of the term metric state is broader than that of Cohn, because it may include dissonance. It corresponds to Krebs’s definition of meter.

While I maintain the distinction between metrical and grouping structures that Lerdahl and Jackendoff posit, I describe relationships between metric levels with the dynamic terms “group” and “divide,” following Cohn’s usage. Unless I specify that I refer to Lerdahl and Jackendoff’s “grouping structure,” my use of the verb “group” refers to relationships between metric levels. I also adopt Cohn’s higher/lower terminology to describe slower- and faster-moving levels. Because I consider faster levels to be “lower” and slower levels to be “higher,” I reverse the order of levels in dot grids from this point on. Lerdahl and Jackendoff place faster levels above slower levels, but I place higher levels above lower levels.

Lowest and Highest Levels

Among the more significant modifications to my sources’ models are my explicit criteria for determining lowest and highest levels. Lowest levels are potentially difficult to define for several reasons. First, they may be very rapid. Lerdahl and Jackendoff consider notes too fast to be counted as extrametrical events, and therefore not part of metrical structure. Justin London approaches the question of metric perceptibility with a survey of research on limitations of perception. He summarizes these findings:

Musicians can play rapid trills or chromatic cascades faster than we can count or even discern them. Likewise in some music, notes or chords may be so widely spaced that we have no sense of a beat or pulse….

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46 Benjamin distinguishes his own definition of the word “group” from that of Lerdahl and Jackendoff by using single quotation marks (‘group’ as opposed to group) but this distinction is unnecessary here. William E. Benjamin, “A Theory of Musical Meter,” Music Perception 1, no. 4 (Summer 1984): 360-362.
The lower limit for meter, that is, the shortest interval that we can hear or perform as an element of rhythmic figure, is about 100 milliseconds (ms). Conversely, the upper limit is around 5 or 6 seconds, a limit set by our capacities to hierarchically integrate successive events into a stable pattern.47

For London, as for Lerdahl and Jackendoff, metric phenomena must be perceptible, but in my model, it is not necessary that the notes of a level be clearly perceived. Figure 2.3 shows the first measure of the piano part of Fauré’s Second Piano Quartet. At the indicated tempo, thirty-second notes last 89 msec.: too fast to be perceived as individual notes. My analytic approach does identify that level, even though a listener would not clearly perceive the thirty-second notes as a duple division of sixteenth notes. The passage would convey a very different metric impression without thirty-second notes.

Figure 2.3. Second Piano Quartet I, m. 1, piano part.

The identification of a lowest level may also be difficult if it is intermittently expressed. Intermittent fast levels “drop out when unnecessary” for Lerdahl and Jackendoff, but they provide no criteria for determining when a level is unnecessary. Likewise, for Krebs the pulse layer is the fastest pervasive layer, but he does not define pervasive. Figure 2.4 illustrates the difficulty in determining the lowest level. It shows the opening of the second movement of

47 London, Hearing in Time, 27-28. London adds the caveat that most of this research “lacks ecological validity relative to real-life listening situations.”
Fauré’s Piano Trio.\textsuperscript{48} In measure one, the \( \frac{1}{4} \) level is fastest. Within the first two beats of measure two, the \( \frac{1}{4} \) level is the fastest pervasive level; there is only one sixteenth note, and note onsets articulate three of the four eighth notes within that unit. Similarly, within the last beat of measure two the \( \frac{1}{4} \) level is fastest; three of the beat’s four sixteenth notes coincide with attack points. In the span of measures 2-3, the lowest level is less certain. In chapter 3 I describe my methodology for determining the viability of an intermittent lowest level. Here I merely recognize the potential difficulty in doing so, and point out the importance of having a method.

![Figure 2.4. Piano Trio II, mm. 1-3.](image)

Occasionally, in a passage with a grouping dissonance the lowest level eludes easy identification for a different reason. Consider figure 2.5, which shows measure 26 of the first movement of Fauré’s First Piano Quartet. The viola plays sixteenth notes while the piano plays sextuplets. In other words, eighth notes divide both duply and triply. Lerdahl and Jackendoff’s model cannot accommodate this grouping dissonance. They acknowledge that their system

\textsuperscript{48} Gabriel Fauré, Trio op. 120. Copyright © 1923 Éditions Durand - Paris, France (DF 10347). This and all subsequent excerpts are reproduced by kind permission of MGB Hal Leonard, Italy.
applies only to music that is essentially homophonic so that a single analysis can suffice for all voices.  

Krebs would identify a micropulse “not even notationally present” that would group both duply and triply to create the $\frac{3}{6}$ and $\frac{6}{6}$ levels. Krebs also addresses this type of submetric dissonance when he uses fractional groupings. Figure 2.6 shows his analysis of a passage from Schumann’s Op. 10, no. 2. It contains a G1.5/1 grouping dissonance. This label indicates that the pulse layer (the sixteenth-note triplet) groups into both single groupings and one-and-one-half groupings. The same ratio also appears in the Fauré passage of figure 2.5 above: the duration of each of the viola’s sixteenth notes equals one-and-one-half piano sextuplets.

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49 Lerdahl and Jackendoff, 37.


51 Ibid., example 4.11B, 100-101.
Like Krebs, Cohn posits a hypothetical pulse not articulated explicitly, but…nonetheless inter-subjectively present as a kind of ‘lowest common denominator.’ This claim is difficult to substantiate in objective terms, but is such a commonplace of musicianship pedagogy that it is unlikely to evoke controversy. I shall refer to such phenomena as ‘subjective pulses.’

I find the term “subjective pulse” misleading, since the listener does not actually perceive it. I instead refer to such levels as lowest common denominator levels. In figures 2.5 and 2.6 above, the lowest common denominator level would be the sextuple division of the eighth note. While not wishing to evoke controversy, I suggest that lowest common denominator levels are unnecessary. In passages that include both duple and triple divisions with no subordinate level, I simply admit two lowest levels, and define “lowest level” as a level that does not divide into a smaller level. My discussion of intermittently expressed levels in chapter 3 will provide a formal justification for this approach. Likewise, I do not use fractional groupings.

The existence of higher hypermetric levels is controversial. Theorists who dispute the viability of hypermeter above a certain point raise two main objections: that at higher levels (1) pulses are infrequently isochronous; and (2) listeners do not perceive hypermeasures beyond a certain duration. Regarding the first objection, in Fauré’s music isochronous hypermetric levels

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52 Cohn, “Complex Hemiolas,” 302-303.
do frequently occur, often quite a few levels above the measure. Chapters 5-7 identify many examples of this. Additionally, in my model non-isochronous levels do contribute to metric structure, under conditions I describe below.

The second objection to higher-level hypermeter concerns the perception of hypermetric structures. As noted above, Lerdahl and Jackendoff find higher hypermetric structures “perceptually irrelevant,” and London sets the upper limit to hypermeter at units of around 6 seconds. This limit derives from two types of studies. In the first, subjects heard a series of isochronous stimuli. At around the two-second threshold, subjects no longer perceived those stimuli as continuous or connected. In the second type of study, subjects were to tap along or otherwise synchronize with a series of isochronous stimuli. Beyond two seconds, subjects were unable to do so accurately. Since pulses always group either duply or triply, the longest possible duration of a metric unit is six seconds (i.e., 2 x 3).

Research on memory mechanisms provides a challenge to this argument. Candace Brower considers research on three types of memory: sensory (echoic for auditory stimuli), working (short-term), and long-term.\textsuperscript{53} Echoic memory lasts only around two seconds, as London asserts. However, with working memory the psychological process known as \textit{chunking} occurs.\textsuperscript{54} Units of information are chunked into larger units, and these units may themselves also


be chunked, thereby greatly enhancing memory capacity. In actual music, the metric hierarchy
chunks pulses into increasingly higher levels.

Figure 2.7 shows the opening melody of Fauré’s First Piano Quintet and its dot grid.\textsuperscript{55} Measures group into two-bar units based on repeating rhythmic figures, and two-bar units group into four-bar units due to melodic repetition. At the indicated tempo, one measure lasts around \(3\frac{1}{2}\) seconds, and the four-bar unit lasts almost 14 seconds. If the four-bar units consisted of single continuous tones, we would certainly have difficulty perceiving them as a continuous, isochronous level, but because we chunk the lower-level pulses, we easily hear the 4\textsuperscript{1} level. No doubt there is an upper limit to our ability to perceive metric structures, but it is well beyond London’s six seconds. In my model, a passage of any length that consists of allowable levels is a hypermeasure. Higher hypermetric levels are frequently perceiveable due to chunking, but perceptibility is not required.\textsuperscript{56} My discussion of non-isochronous levels below and my methodological description in chapter 3 provide precise explanations of “allowable levels.”

I refer to the units at the upper limit of hypermeter as \textit{modules}. I adapt this term from Mark Butler’s description of electronic dance music as \textit{modular}.\textsuperscript{57} In that genre, rhythmic patterns form loops (often of hypermetric length and structure) that are combined and juxtaposed in various ways. That process is similar to my conception of hypermeter. In Fauré’s chamber music, any piece or any section of a piece may be partitioned exhaustively into the modules that

\textsuperscript{55} In this example and those that follow I do not attempt to align the dot grid with notes in the musical excerpt.

\textsuperscript{56} London himself emphasizes that hypermeter is not intrinsically different than meter: “there is no essential distinction to be made between meter and…hypermeter…. [H]aving several levels of metric structure present above the perceived beat is no more extraordinary than having several levels of subdivision below it.” See London, \textit{Hearing in Time}, 19.

\textsuperscript{57} Mark Butler, \textit{Unlocking the Groove}, 166.
comprise it. Partitioning a piece into its modules gives a “big picture” or “background” view of metric structure. Each module has a clearly defined metric state consisting of all levels active within it. Alternately, a piece’s modules may themselves be partitioned exhaustively into smaller units, each with its own metric state. This gives a more detailed, “middleground” view of metric structure. In my analytic approach, I partition a passage into modules when I wish to identify higher hypermetric structures and I partition into smaller units in order to make observations about local metric phenomena, such as dissonances that come and go.

One more point regarding hypermeter requires clarification. Many theorists, including Cohn, distinguish between surface hypermeter and underlying hypermeter. William Rothstein discusses these two concepts at length.\(^{58}\) For Rothstein, underlying hypermeter refers to a regular prototypical model, which may give rise through various modifications to an irregular surface hypermeter. In a passage with a regular four-bar hypermeter, measures would be counted 1, 2, 3, 4; 1, 2, 3, 4; and so on. If the first hypermeasure is expanded by one bar, by extending the cadential harmony for instance, Rothstein would count 1, 2, 3, 4, (4); 1, 2, 3, 4. For him, the expansion does not change the underlying four-bar regularity. Similarly, through

\[^{58}\text{Rothstein, Phrase Rhythm in Tonal Music, 97-99.}\]
metrical reinterpretation, the final measure in a hypermeasure may be reinterpreted as the first
measure of a new group.⁵⁹ In both cases, the actual irregular hypermetric structure is seen as a
modification of the underlying regular structure. Many other theorists have adopted this
approach in examining hypermeter, but I will not. In Fauré’s music, surface hypermeter
frequently cannot be understood as an alteration of a more regular underlying hypermeter, and
even when a case could be made for such an analysis, I am more interested in surface metric
phenomena themselves, since examining the configuration of actual hypermeasures, as opposed
to their deviation from a hypothetical underlying regularity, is more revealing of Fauré’s
distinctive style.⁶⁰

Relationships between Levels

I introduce several new terms to describe relationships between levels. Like Cohn and
Lerdahl and Jackendoff, I maintain the requirement of duple or triple organization between
adjacent levels. Figure 2.8 contains a brief passage from the first movement of Fauré’s First
Violin Sonata that shows a consequence of this requirement. Note values establish the ₈ and ₄
levels, while slurs and melodic repetition establish the ₁ and ₁ levels. However, there are no

⁵⁹ This is Lerdahl and Jackendoff’s “metrical deletion.”

⁶⁰ Other theorists who argue for the greater importance of surface rhythms than an
underlying prototype include John Roeder and Mark Anson-Cartwright. See John Roeder,
“Formal Functions of Hypermeter in the Dies Irae of Verdi’s Messa da Requiem,” Theory and
114-125.
obvious musical features that define the \( d \) level. In cases like this, I infer an *implied* intermediary level between the \( d \)-level and the \( o \)-level.\(^{61}\)

Figure 2.8. First Violin Sonata I, mm. 49-52, with dot grid.

My adoption of the concept of *implied intermediary levels* rests on the belief that quadruple groupings are always perceived as resulting from two duple adjacencies. In a series of notes with equal durations, if every fourth note is accented, I hear not only \( 1 \ 2 \ 3 \ 4 \ 1 \ 2 \ 3 \ 4 \), but also \( 1 \ 2 \ 3 \ 4 \ 1 \ 2 \ 3 \ 4 \). The rhythmic pattern \( \ddot{\ldots} \ddot{\ldots} \ddot{\ldots} \ddot{\ldots} \ddot{\ldots} \ddot{\ldots} \ddot{\ldots} \ddot{\ldots} \) also implies an intermediary level. That rhythm conveys a \( d \) level and a \( o \) level. I infer an intervening \( d \) level. Implied intermediary levels occur most often with quadruple relationships, but they may also occur with sextuple

relationships. With sextuple groupings, the context will indicate whether 1 2 3 4 5 6 or 1 2 3 4 5 6 is the preferred intermediary grouping.

Figure 2.9 shows a different, hypothetical situation in which an implied intermediary level is inferred. Rows a, c, and d are defined by some musical feature(s). Rows a and d are in a consonant sextuple relationship. An intermediary level must exist between the two, since adjacent levels are always duply or triply related; the eighth notes in row d either group duply into quarter notes, or triply into dotted quarter notes. Row c contains quarter notes but is not consonant with row a. Because the antimetrical row c results from duple groupings of row a’s eighth notes, I infer a metrical row b, also containing quarter notes.

![Figure 2.9. Implied intermediary level in sextuple relationship.](image)

Likewise, between levels of cardinality one and nine, I infer an intermediary level of cardinality three. In rare cases, between levels of cardinality one and eight I infer two implied levels, of cardinalities two and four.

In passages without dissonance, adjacent levels will always exhibit duple or triple relationships. When dissonant levels are present, a refinement of the term “adjacent levels” is

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necessary. Figure 2.10 shows a hypothetical dot grid that includes both grouping and displacement dissonances. Rows b and d form a G6/4 (1=8\textsuperscript{th}) grouping dissonance and rows c and d form a D4+2 (1=8\textsuperscript{th}) displacement dissonance. Rows b and c are not allowed in Lerdahl and Jackendoff’s system; Krebs would call them antimetrical layers. The pairs of rows a/d, d/e, and e/f would be adjacent for Lerdahl and Jackendoff, and I will refer to the metric relationships within such pairs as \textit{consonant adjacencies}: pulses occur in a duple or triple relationship, and every higher-level pulse coincides with a lower-level pulse.\textsuperscript{63} The pairs c/e and b/e also form consonant adjacencies. I label consonant adjacencies with the two durational values separated by a dash. For instance, the a/d pair forms a \textit{2-1} adjacency. I also use the word adjacency to measure distances between levels, as in “whole notes are two consonant adjacencies above quarter notes.”

\begin{verbatim}
a \hspace{3cm} \hspace{3cm} \hspace{3cm} \hspace{3cm}
b \hspace{2cm} \hspace{2cm} \hspace{2cm} \hspace{2cm}
c \hspace{2cm} \hspace{2cm} \hspace{2cm} \hspace{2cm}
d \hspace{2cm} \hspace{2cm} \hspace{2cm} \hspace{2cm}
e \hspace{2cm} \hspace{2cm} \hspace{2cm} \hspace{2cm}
f \\
\end{verbatim}

Figure 2.10. Hypothetical dot grid with grouping and displacement dissonances.

In figure 2.10 above, the pairs b/c, b/d and c/d form \textit{dissonant adjacencies}: their pulses do not align as in consonant adjacencies. Pulse rate ratios for dissonant adjacencies are 3:2 for

\textsuperscript{63} Joel Lester refers to such adjacencies as \textit{interactions}, such as a quarter-half interaction. See Joel Lester, \textit{The Rhythms of Tonal Music} (Carbondale IL: Southern Illinois University Press, 1986), 47-49.
grouping dissonances and 1:1 for displacement dissonances. I label dissonant adjacencies with note values separated by a slash: $d/d$ for the b/c and b/d pairs, and $d/d$ for the c/d pair. It is frequently useful to consider a dissonant adjacency as resulting from the combination of two consonant adjacencies. The b/d dissonant adjacency comes about from the combination of $\downarrow-d$ and $\downarrow-d$. (the b/e and d/e pairs): quarter notes group both duply and triply. I therefore label this type of dissonance as $\downarrow-d/d$, showing that the two dissonant levels result from duple and triple grouping of the common subordinate $\downarrow$ level. The c/d pair forms a dissonant adjacency of the displacement type. Because the dissonance arises from the combination of two consonant adjacencies (c/e and d/e), I use the label $\downarrow-d/d$, showing that the two $\downarrow$ levels result from two different duple groupings of the subordinate $\downarrow$ level.

It is important to note that the $\downarrow$ level has not entered in my discussion of the dissonances of figure 2.10 above. In my model, dissonances always involve adjacencies, whereas Krebs relates all levels (his “layers”) to the pulse layer. Krebs would label the b/d pair as a G6/4 grouping dissonance: they have cardinalities 6 and 4 respectively. He would label the c/d pair a D4+2 ($1=^{8\text{th}}$) displacement dissonance: they both have cardinality 4 and are displaced by two eighth notes. In my conception, the $\downarrow$ level is not relevant for these dissonances; they result from

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64 Krebs’s fractional groupings shown in figure 2.6 above also represent a dissonant adjacency.

65 In my conception of meter, a simultaneous duple and triple grouping constitutes ambiguity, a topic I discuss in chapter 1. The second definition Butler cites: “admitting more than one interpretation, or explanation; of double meaning…” applies.

66 Occasionally, there is no common subordinate level, as when there are two lowest levels. I discuss that situation in more detail in chapter 3.
the duple and triple grouping of the \( \bullet \) level. The quadruple and sextuple grouping of eighth notes is incidental.\(^{67}\)

Non-isochronous Beats and Metrical vs. Antimetrical Levels

In describing differences between my approach and those of my sources, I have so far discussed dissonance in two contexts: where there are two lowest levels, and with dissonant adjacencies. There are two other significant areas of difference. They concern non-isochronous beats and metrical vs. antimetrical levels. There are two senses in which beats may be interpreted as unequal. First, fluctuations in tempo may cause times between pulses to vary. This occurs both with indications in the score such as *ritardando* and *accelerando*, and with the subtle alterations during performance known as “expressive variation.”\(^{68}\) In these situations, musical notation (when it exists) makes clear the functional equality of the beats. For instance, quarter notes with a *rallentando* are written with equal durations, even though they actually grow longer and longer. The listener adjusts his or her understanding of the pulse: it may slow down, but it is still the pulse, and it still marks off a constant durational unit. The functional or

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conceptual equality of the beats makes them isochronous, in spite of the different actual
durations. Expressive variation does not imply non-isochrony.

The second sense in which beats may be seen as unequal occurs when durational values
actually differ conceptually or notationally. In this situation, pulses are truly non-isochronous,
and many theorists, including Krebs and Cohn, do not include them in their models of meter.
Lerdahl and Jackendoff do admit some exceptions to isochrony. Their revised fourth metrical
well-formedness rule allows non-isochrony at levels faster than the tactus. The rule “permits the
tactus to be subdivided into threes at one point and twos at another, as long as particular beats of
the tactus are evenly subdivided.” They acknowledge that this rule is idiom-specific; in some
musical styles, such as Balkan folk music and the music of Stravinsky, a metrical structure that
violates their well-formedness rules might be considered regular. They do maintain, however,
that in most Western art music, isochrony is required at the level of the tactus and above for
metrical structure, except in the specific case of metrical deletion, in which the irregular structure
is conceived as resulting from overlapping or elided regular structures.

Several authors do admit non-isochronous beats in their conception of meter. Kanovsky
reviews research on perception and concludes that durations with a ratio of 1.55:1 or less fall into
an “equality category.” Beats with durational ratios of 3:2 (or 1.5:1) are perceived as regular,

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69 Lester explains that “beats mark off functionally equivalent spans of time.” (Emphasis
in original.) In contrast, for London, different patterns of expressive variation within the same
notated meter signature actually create different meters. He proposes his “Many Meters
Hypothesis” to account for them. See Lester, 46; and London, Hearing in Time, 142-160.

70 Lerdahl and Jackendoff, 72.

71 Ibid., 97-99 and 279.

72 Ibid., 101-104.
and establish a “flexible beat,” which then creates an “X-beat meter,” related to a regular prototype by a “transformation scheme.” Kanovsky uses these concepts to analyze early 20th-century music by Bartók, Copland, and Stravinsky.

London argues for the viability of non-isochronous beats in music of various styles, including Leonard Bernstein’s song “America” from *West Side Story* and the main theme from the second movement of Tchaikovsky’s Sixth Symphony. Figure 2.11 shows the rhythm and dot grid for “America.” The repeating two-bar unit contains isochronous and levels, but the intervening level is not isochronous: one bar of dotted quarter note beats alternates with one bar of quarter note beats, for a repeating rhythmic pattern of \((3 + 3 + 2 + 2 + 2)\). The tilde between and in the dot grid indicates that these note values alternate. London argues that because of the subordinate and superordinate isochronous levels, the passage is metrically regular in spite of the non-isochrony of the intervening level. To consider this song metric, Lerdahl and Jackendoff would identify the level as the tactus, since subtactus levels need not be isochronous.

This tactic would allow Lerdahl and Jackendoff to apply their model to “America,” but it would not help with the Tchaikovsky melody shown in figure 2.12. In this melody, the

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73 Kanovsky, “Metric Hierarchy” 42. See also 27-31, 37-44, 50-55.


75 London uses a variation of Lerdahl and Jackendoff’s dot grids, but does not include the specific note values as labels for levels. The labeling system I use here is my own, not that of London, although it conveys essentially the same information London shows in his Figure 7 on page 66 of “Some Examples of Complex Meters.”

76 These numbers represent multiples of the subordinate isochronous beats, in this case, eighth notes.
isochronous \( \dot{\text{d}} \) and \( \underline{\text{d}}-\underline{\text{d}} \) levels surround the intervening \( \underline{\text{d}}-\text{d} \) non-isochronous level, which expresses a repeating \((2 + 3)\) rhythmic pattern. The \( \underline{\text{d}}-\underline{\text{d}} \) level cannot serve as the tactus; it is too slow (M.M. = 28.8 at the indicated tempo). Either of the two lower levels might be interpreted as the tactus. In both cases, the passage is not well-formed in Lerdahl and Jackendoff’s system (only subtactus levels may be non-isochronous), yet we experience metric regularity. The existence of isochronous levels above and below the non-isochronous level allows us to do so.
Figure 2.13 shows a passage from the third movement of Fauré’s First Violin Sonata with the same repeating (2 + 3) rhythmic pattern, at the level of the measure. Because one quarter note occupies an entire measure in this excerpt, I label levels higher than the quarter note level as multiples of quarter notes: (2, 3, and 5, rather than \( \frac{1}{4}, \frac{3}{4}, \) and \( \frac{5}{4}, \) as in the Tchaikovsky example), to clearly indicate the hypermetric structure. In my labels for levels, I will always show hypermetric levels as multiples of measures. In the Fauré example, isochronous 4 and 5 levels surround a non-isochronous 2~3 level, which arises from the return in measures 15, 18, and 20 of the sixteenth-note motive first introduced in measure 13.

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77 Fauré’s unusual meter signature indicates that he thought of the measure as the tactus: each measure contains a single beat.


79 This is also the approach Caballero adopts from Thomson, described in chapter 1.
phenomena, except in situations such as those described above, where a non-isochronous level is surrounded by isochronous ones, and where the non-isochrony involves ratios between 1:1 and 3:2.\textsuperscript{80}

Each of the three examples above contains a non-isochronous level, which is labeled according to its two durational values (\textdegree\textdegree, for instance). The presence of two alternating durational values suggests a similarity to Krebs’s indirect grouping dissonance. In “America,” eighth notes group triply in the first measure and duply in the second. Krebs’s model does not allow for non-isochronous pulse layers, but it does allow for intermittently expressed layers. Figure 2.14 shows a new dot grid for “America,” with the \textdegree\textdegree level split into two levels, and these two levels constitute an indirect G3/2 (1=8\textsuperscript{th}) dissonance.

\begin{figure}
\centering
\begin{tabular}{cccccccccccc}
\hline
\textdegree & . & . & . & . & . & . & . & . & . & . & . \\
\hline
\textdegree & . & . & . & . & . & . & . & . & . & . & . \\
\hline
\textdegree & . & . & . & . & . & . & . & . & . & . & . \\
\hline
\end{tabular}
\caption{“America” rhythm as indirect grouping dissonance.}
\end{figure}

According to Krebs’s model, this splitting is not possible in the Tchaikovsky and Fauré examples. In both, single instances of \textdegree and \textdegree beats alternate, and only one iteration of a duration does not create a layer. Therefore, Krebs’s indirect dissonance may occur with the alternation of duple and triple \textit{divisions} of an isochronous level, but not with the alternation of

\textsuperscript{80}Most often in Fauré’s music, non-isochronous levels result in 5-unit spans, with rhythmic patterns of (2 + 3) or (3 + 2). 7-unit spans occur occasionally: (2 + 2 + 3) or some permutation of these numbers, and 11-unit spans may also be found: (2 + 3 + 3 + 3) or (2 + 2 + 2 + 2 + 3) or some permutation. Because adjacent levels always involve duple or triple grouping of beats, the 11-unit spans actually contain two non-isochronous levels: (2 + 3 + 3 + 3) or (2 + 2 + 2 + 2 + 3) \textit{and} (5 + 6) or (6 + 5). In each of these cases, the durational ratio falls below Kanovsky’s limit of 1.55:1.
duple and triple groupings of an isochronous level. Figures 2.15a and b clarify this point. Figure 2.15a shows a dot grid for a hypothetical musical passage in which a $\downarrow$ level alternately divides duply and triply, into a $\downarrow^{\sim} \uparrow$ level. (The isochronous subordinate level, not shown, would contain sextuplets.) In the non-isochronous level of figure 2.15a, two eighth notes alternate with three triplets, and we may therefore split that level into two intermittent isochronous levels, as in figure 2.14 above. In contrast, figure 2.15b shows a dot grid for another hypothetical passage in which a $\downarrow$ level alternately groups duply and triply, into a $\downarrow \sim \downarrow$ level, as in the Tchaikovsky example. (The isochronous superordinate level, not shown, would be a $\downarrow \overline{\downarrow}$ level.) In the non-isochronous level of figure 2.15b, single half notes alternate with single dotted half notes, and those single iterations of a note value do not create intermittent isochronous levels. The two situations are conceptually very similar, but Krebs considers only the first to be an instance of indirect grouping dissonance. I expand Krebs’s definition of indirect dissonance to include the second situation. A level that consists of alternating iterations of two note values in a 3:2 ratio is considered an instance of indirect grouping dissonance. The dissonance in figure 2.15b would be labeled $\downarrow \sim \overline{\downarrow} \sim \downarrow$, showing the alternating duple and triple grouping of the subordinate $\downarrow$ level.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure2.15a.png}
\caption{Figure 2.15a. Dot grid for alternating duple and triple divisions of $\downarrow$ beats.}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure2.15b.png}
\caption{Figure 2.15b. Dot grid for alternating duple and triple groupings of $\downarrow$ beats.}
\end{figure}
Non-isochronous levels may create a number of different rhythmic patterns, depending on the way duple and triple units fluctuate. Fauré’s music contains groupings of five \((2 + 3)\), seven \((2 + 2 + 3)\), eight \((2 + 3 + 3)\), nine \((2 + 2 + 2 + 3)\), and eleven \((2 + 3 + 3 + 3)\) or \((2 + 2 + 2 + 2 + 3)\).\(^{81}\) Four of these patterns have prime-number cardinalities: \((2 + 3) = 5\); \((2 + 2 + 3) = 7\); and \((2 + 2 + 2 + 2 + 3) = (2 + 3 + 3 + 3) = 11\). I refer to the rhythms of the \(5\)-, \(7\)-, and \(11\)-unit spans that result from these groupings as **prime rhythms**: they result from fluctuating duple and triple groupings that sum to prime numbers. Figures 2.16a-d show dot grids for these four patterns, with the eighth note as the lowest level. Both of the \(11\)-unit groupings contain two non-isochronous levels. Because in my model each beat must contain two or three beats at the next lowest level, the \(\dd\dd\dd\dd\dd\) level \((5\dd\dd\dd\dd)\) is necessary between the \(\dd\dd\dd\dd\dd\) level \((2\dd\dd\dd\dd)\) and the \(\dd\dd\dd\dd\dd\dd\dd\dd\dd\) level \((11\dd)\).

**Figure 2.16a.** Dot grid with \((2 + 3)\) rhythmic pattern.

**Figure 2.16b.** Dot grid with \((2 + 2 + 3)\) rhythmic pattern.

\(^{81}\) For the purposes of this discussion, permutations of these numbers result in equivalent groupings. For instance, I consider \((2 + 2 + 3)\) equivalent to \((2 + 3 + 2)\) and \((3 + 2 + 2)\).
The other two non-isochronous patterns listed above result in groupings with non-prime number cardinalities: (2 + 3 + 3) = 8; and (2 + 2 + 2 + 3) = 9. I refer to these groupings as cross rhythms, because in Fauré’s music they occur as antimetrical levels in the context of an otherwise regular, isochronous grid. Figures 2.17a-b show these two rhythmic patterns, with the eighth note as the lowest level. The (2 + 3 + 3) pattern appears in an otherwise pure duple metric state, with \( \cdot \), \( \cdot \), and \( \cdot \) levels. The (2 + 2 + 2 + 3) pattern appears in an otherwise pure triple metric state, with \( \cdot \) and \( \cdot \) levels.\(^{82}\) As with the prime rhythms that sum to 11, the (2 + 2 + 2 + 3) cross rhythm involves two non-isochronous levels: (2 + 2) + (2 + 3) and (4 + 5).

\(^{82}\)Maury Yeston considers the 3 + 3 + 2 pattern to result from a truncated superposition of a 3-level and an 8-level rather than an additive combination of duple and triple groupings of the 1-level, but I believe that the additive model better describes Fauré’s music. (He also uses the term layer instead of level). See Maury Yeston, *The Stratification of Musical Rhythm* (New Haven: Yale University Press, 1976), 141.
When a metric state includes prime rhythms or cross rhythms, the adjacencies that involve non-isochronous levels are neither consonant nor dissonant, according to my definitions. I refer to such adjacencies as non-isochronous adjacencies.

Another difference between my model and those of my sources concerns metrical vs. antimetrical levels. Krebs labels displacement dissonances by situating the antimetrical layer in relation to the metrical layer: how far it is displaced, and in what direction. With displaced layers in duple relationships, there are two possibilities: D2+1 and D2-1, depending on whether the antimetrical layer is displaced forward or backward. With triple relationships, there are four possibilities: D3+1, D3+2, D3-1, and D3-2. In my labels (such as \( \cdot / \cdot \)) and in my metric state graphs I do not indicate the direction and magnitude of displacement from a referential level.\(^{83}\)

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\(^{83}\) In this regard, my conception of levels is similar to John Roeder’s pulse streams. See John Roeder, “Interacting Pulse Streams in Schoenberg’s Atonal Polyphony,” *Music Theory Spectrum* 16, no. 2 (August 1994): 231-249.
In my approach to Fauré’s music, it is sufficient to note that a displacement dissonance occurs. All possible displacement dissonances involve displacement by one unit.

The dot grids in figures 2.18a-e show the essential equivalence of Krebs’s four types of triply-related displacement dissonances: in all four, the two ✿. levels are displaced from each other by one eighth note. Dot grids for D3+1 and D3-2 are identical (except for the order of levels) as are dot grids for D3-1 and D3+2. There are only three possible positions for the ✿. level, corresponding to the three ✿.-level pulses within each ✿. beat. Occasionally, with a triple adjacency, two displaced antimetrical levels will occur (D3+1 and D3+2, for instance). In these cases, the lower level groups triply in three ways: one metrical level and two antimetrical levels. My label for these dissonances shows the three triple groupings ( ✿.- ✿.- ✿., for instance).

Figure 2.18a. Dot grid for D3+1 displacement dissonance ( ✿.- ✿.- ✿.).

Figure 2.18b. Dot grid for D3+2 displacement dissonance ( ✿.- ✿.- ✿.).

Figure 2.18c. Dot grid for D3-1 displacement dissonance ( ✿.- ✿.- ✿.).
Figure 2.18d. Dot grid for D3-2 displacement dissonance (\d\d/\d/\d).

Figure 2.18e. Dot grid for D3-1 and D3-2 displacement dissonances (\d\d/\d/\d/\d).

The lack of designation of a referential level in the labels for dissonances is not the only difference between my conception of antimetrical levels and that of my sources. In fact, the definitions of metrical and antimetrical themselves must be refined. For Krebs, antimetrical levels (“layers” in his terminology) are those that do not align with metrical levels, and metrical levels are those that relate to the meter signature. He explains:

What is usually termed “the meter” of a work is in fact a particular consonance that functions as the normative metrical state of that work. Three-four meter, for instance, is a consonance consisting of a nested 6-layer and a 2-layer \(1 = 8\text{th}\) imposed on an eighth-note pulse…. I refer to the nested layers that form the normative metrical consonance of a work as “metrical layers.”\(^84\)

According to this definition, a passage will contain two metrical layers: one at the level of the measure and one at the level of the division of the measure or tactus. This is sufficient for Krebs because he considers hypermetric phenomena infrequently. My approach to Fauré’s music, which includes the study of large hypermetric structures, requires a refinement and expansion of this definition.

\(^{84}\) Krebs, *Fantasy Pieces*, 30.
Krebs’s use of the word “normative” in his definition of metrical layers implies that antimetrical levels deviate from an established norm. Figures 2.19a-c illustrate the role notation plays in establishing that norm. They show dot grids for three hypothetical passages in $\frac{3}{4}$ meter. Figure 2.19a contains no dissonance and therefore no antimetrical levels. Its two rows correspond to the notated beat and measure. Figure 2.19b contains a $\ddash-\ddash/\ddash$ displacement dissonance. Row b represents the notated measure, and is therefore a metrical level. Row a is an antimetrical $\ddash$ level because of its lack of alignment with notated barlines. Figure 2.19c contains a $\ddash-\ddash/\ddash$ grouping dissonance. Row a represents the notated measure and row b is an antimetrical level. In figures 2.19b and c, the dots themselves do not distinguish metrical levels from antimetrical levels; only our knowledge of the notated meter signature and the position of barlines allows us to identify them. If the passages in figures 2.19b and c had been notated in $\frac{9}{8}$ time, the dissonances would involve hypermetric structures, and we would not be able to distinguish metrical from antimetrical levels based on notation.

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85 In this section the word “notation” refers to notated meter signatures, barlines, beaming, and the use of note values that imply particular metrical patterns (such as $\ddash-\ddash$ rather than $\circ-\circ$ for one measure in $\frac{9}{8}$ time).
In my approach, other factors in addition to notation help to identify metrical and antime-trical levels. In the case of displacement dissonance, a superordinate level will distinguish the two, regardless of notational features. Figures 2.20a and b illustrate this point. Figure 2.20a includes a \(\dot{\ldots}\)-\(\ddot{\ldots}\) displacement dissonance. Here, the presence of a superordinate \(\dddot{\ldots}\) level suggests that row b is antime-trical, since it does not align with row a. Figure 2.20b shows the same dissonance *replicated at a higher level*: eighth notes group triply in two ways (rows d and e) and the \(\dot{\ldots}\) levels of rows d and e each group duply to form two \(\dddot{\ldots}\) levels (rows b and c). The higher \(2\dddot{\ldots}\) level (row a) establishes the metric norm, and rows b and d are antime-trical because they do not align with row a. I consider rows a, c, e, and f to be metrical levels, because they align with each other. Without the superordinate row a, however, it would be impossible to designate any level (except row f) as metrical or antime-trical.

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**Figure 2.19c.** Dot grid with \(\dot{\ldots}\)-\(\ddot{\ldots}\) grouping dissonance.

**Figure 2.20a.** Metrical \(\dot{\ldots}\) level determined by superordinate level.
Figure 2.20b. Displacement dissonance replicated at higher levels.

With grouping dissonances, superordinate levels may or may not distinguish metrical from antimetrical levels. Figure 2.21 contains a $\frac{3}{4}/\frac{4}{4}$ grouping dissonance. Here, the superordinate row a has cardinality 6 while the levels of the dissonant adjacency $\frac{3}{4}/\frac{4}{4}$ have cardinalities 2 and 3. Because both 2 and 3 evenly divide 6, both row b and row c align with row a. Without additional information such as a meter signature, it is impossible to determine whether row b or row c is antimetrical.

Figure 2.21. With grouping dissonance, metrical levels are not determined by superordinate level when it has cardinality 6.

Figures 2.22a and b contain a particular type of indirect dissonance: cross rhythms. Here, superordinate levels do distinguish metrical from antimetrical levels. In figure 2.22a, rows a, c, and d align and are therefore metrical. Row b represents the non-isochronous cross rhythm $\frac{4}{4}$ $\frac{3}{4}$. It does not align with row a and is therefore antimetrical. Figure 2.22b shows a
similar situation. Rows a, b, and d align and are therefore metrical. Row c represents the antimetrical non-isochronous cross rhythm ¾ ¾ ¾ ¾. | ¾ ¾ ¾ ¾. |

Figure 2.22a. With cross rhythm ¾ ¾ ¾ ¾, metrical levels are determined by superordinate level.

Figure 2.22b. With cross rhythm ¾ ¾ ¾ ¾, metrical levels are determined by superordinate level.

Figure 2.23 shows a ¾-¾/¾ grouping dissonance replicated at higher levels: eighth notes group both duply and triply to form ¾ and ¾ levels (rows b and d). The duple ¾ level itself groups duply (shown with the adjacency of rows c and d) while the triple ¾ level groups triply (rows a and b). Here the superordinate ¾ and ¾ levels do not establish a metrical norm.

---

In this dot grid, I show the ¾ level (row b) above the ¾ level (row c) even though it is the faster of the two, so that the consonant adjacencies ¾-¾ and ¾-¾ are adjacent on the grid (rows c/d and a/b). In this dot grid and some below, higher levels are not always above lower levels, in order to show consonant relationships between levels more clearly.

Both Mark Butler’s “embedded grouping dissonance” and Samuel Ng’s “hemiolic cycle” involve grouping dissonances replicated at higher levels, but these two concepts differ fundamentally from my notion of higher-level replication of grouping dissonance. My notion involves duple and triple adjacencies on multiple levels: durational ratios of 1:2:4 and 1:3:9, and it is an example of Yonatin Malin’s deep dissonance. See Mark Butler, “Hearing Kaleidoscopes”; Samuel Ng, “The Hemiolic Cycle and Metric Dissonance in the First Movement of Brahms’s Cello Sonata in F Major, Op. 99,” Theory and Practice 31 (2006): 65-95; and
because they do not align with each other. In this example, it is not possible to determine metrical or antimetrical levels without additional information.

\[
\begin{align*}
\text{a} &: \quad \text{\underline{\}}}, \quad \text{. . . . . . . . . . . . .} \\
\text{b} &: \quad \text{\underline{\}}}, \quad \text{. . . . . . . . . . . . .} \\
\text{c} &: \quad \text{\underline{\}}}, \quad \text{. . . . . . . . . . . . .} \\
\text{d} &: \quad \text{\underline{\}}}, \quad \text{. . . . . . . . . . . . .} \\
\text{e} &: \quad \text{\underline{\}}}, \quad \text{. . . . . . . . . . . . .} \\
\end{align*}
\]

Figure 2.23. With grouping dissonance replicated at higher levels, metrical levels are \textit{not} determined by superordinate levels.

Metrical norms may also be established simply by precedent: through the weight of repetition, a particular level is perceived as metrical, while levels dissonant to that level are perceived as antimetrical if they do not last as long. In figure 2.24, a $\underline{\}}$ level (row b) is briefly replaced by a displaced $\underline{\}}$ level (row a). Because row b’s half notes establish a precedent, row c’s quarter notes group duply, with strong beats on the first, third, fifth, and all odd-numbered beats. Row c contains half notes that are displaced from those of row b: they create strong beats on even-numbered quarter notes. In the absence of relevant notational information such as barlines, I would consider the briefer $\underline{\}}$ level (row a) to be antimetrical.

\[
\begin{align*}
\text{a} &: \quad \text{\underline{\}}}, \quad \text{. . . . . . . . . . . . .} \\
\text{b} &: \quad \text{\underline{\}}}, \quad \text{. . . . . . . . . . . . .} \\
\text{c} &: \quad \text{\underline{\}}}, \quad \text{. . . . . . . . . . . . .} \\
\end{align*}
\]

Figure 2.24. Metrical level established by precedent.

Yonatin Malin, “Metric Dissonance and Music-Text Relations in the German Lied” (Ph.D. diss., University of Chicago, 2003), 213.
I have discussed three factors that contribute to the classification of a level as metrical or antimetrical: notation, superordinate levels, and precedent. When the three agree, there is no ambiguity. In many circumstances however, metrical and antimetrical levels are not easily distinguished. With hypermetric structures, notation is usually irrelevant. Superordinate levels may or may not clarify metrical levels. With subliminal dissonance, notational features are the only factors that establish metrical levels: all musical features apparent to the listener define antimetrical levels. In this case, it is actually antimetrical levels that are established by precedent. I use the terms metrical level and antimetrical level where the three factors that define them agree. When notational features do not agree with the other factors, as with subliminal dissonance, I use the term notationally metrical level for a level specified by notational features, and notationally antimetrical level for a level that is dissonant in relation to a notationally metrical level. When notational features do not establish which levels are metrical, as with hypermetric structures, I will not designate any level as metrical or antimetrical, unless precedent or superordinate levels allow me to do so.

Summary

I have described terms and concepts from my three theoretical sources and presented my own definitions. Here, I provide a summary of the most important concepts in my model. The basic metric unit is the pulse. Pulses are durationless, usually isochronous, and established through regularly occurring phenomenal accents. They mark off durational units called beats or units. I use the latter term for larger hypermetric structures, where the term beat might be misleading. A regular series of pulses or beats is a level, labeled according to duration, such as a level. Non-isochronous levels are allowed when they involve ratios between 3:2 and 1:1, and
when isochronous subordinate and superordinate levels are present. They are labeled with two
durational values separated by a tilde, such as a \texttt{\textbf{\dowtia-thin\textbf{\dowt}}} level. Non-isochronous groupings that sum
to prime numbers such as five: \( 2 + 3 \), seven: \( 2 + 2 + 3 \), and eleven: \( 2 + 2 + 2 + 2 + 3 \) or \( 2 + 3 + 3 + 3 + 3 \) are \textit{prime rhythms}. Non-isochronous groupings that sum to non-prime numbers such
as eight: \( 2 + 3 + 3 \) and nine: \( 2 + 2 + 2 + 3 \) are \textit{cross rhythms}. A \textit{span} is any section of music,
regardless of metric structure. A \textit{module} is the upper limit to hypermeter: the largest unit with an
allowable metric structure. A \textit{metric state} is the combination of all levels active within a unit or
module.

When all pulses of a level coincide with pulses of a faster moving level, the two are
aligned, or \textit{consonant}. A \textit{consonant adjacency} is a pair of aligned levels with a durational ratio
of 2:1 or 3:1, and it is labeled with its two durational values separated by a dash, such as a \( \dowtia-thin\textbf{\dowt} \)
adjacency. When two levels show a quadruple, sextuple, octuple, or nonuple relationship with
no level in between, I infer one or two \textit{implied intermediary levels}. Non-aligned levels are
\textit{dissonant}, and there are two types of dissonance. When two levels with the same durational
value occur, and one is displaced from the other by some shorter duration, a \textit{displacement
dissonance} exists. When two levels with durations that are not whole-number multiples of each
other occur, a \textit{grouping dissonance} exists. \textit{Dissonant adjacencies} are pairs of dissonant levels
with durational ratios of 1:1 (for displacement dissonances) or 3:2 (for grouping dissonances),
labeled with their durational values separated by a slash, such as a \( \dowtia-thin\textbf{\dowt}/\dowtia-thin\textbf{\dowt} \)
displacement dissonance or a \( \dowtia-thin\textbf{\dowt}/\dowtia-thin\textbf{\dowt} \) grouping dissonance. Dissonances arise from the combination of two consonant
adjacencies, and their labels may show the relationships between the three relevant levels. For
instance, the label \( \dowtia-thin\textbf{\dowt}-\dowtia-thin\textbf{\dowt}/\dowtia-thin\textbf{\dowt} \) shows the dissonance that results from the duple \textit{and} triple grouping of
eighth notes.
Metrical levels are determined by three factors: notation, superordinate levels, and precedent. When the three factors agree in establishing certain levels as normative, those levels are *metrical*, and levels that are dissonant to metrical levels are *antimetrical*. When the three factors do not agree, *notationally metrical levels* are those that are established by notational features such as barlines and beaming patterns.

With these definitions and concepts in place, I now turn to a description of my analytic approach. Chapter 3 describes my methodology for the identification of levels and metric states, and chapter 4 describes my metric state graphs.
CHAPTER 3

ANALYTIC METHODOLOGY

My analytic approach to Fauré’s music involves partitioning music into metric modules or units and determining the metric state of each of those spans. In order to identify the levels that define a metric state, it is necessary to know what musical factors create pulses and beats, and also to account for levels that are expressed intermittently. In this chapter I describe my identification of levels and provide a formal method for determining whether to include an intermittent level as part of a unit’s metric state.

Identification of Levels

For Lerdahl and Jackendoff, beats arise from phenomenal accents: “any event…that gives emphasis or stress to a moment in the musical flow.”¹ Many musical factors may provide emphasis. Some appear in Lerdahl and Jackendoff’s MPRs, including note onset, duration, stress (“extra intensity on the attack of a pitch-event”), onset of a dynamic, slur, harmony, or pattern of articulation.² Krebs’s similar list of accent types includes dynamic accents, durational accents, density accents, registral accents, and new event accents.³ In short, any factor that attracts a listener’s attention may provide a phenomenal accent, and I refer to such factors as

¹ Lerdahl and Jackendoff, 17.
² Ibid., 76-85.
³ Krebs, Fantasy Pieces, 23.
determinants of accents. All require a certain amount of time to be perceived, so they are actually features of beats rather than pulses, but they are understood to impart the accent at the time-point where the event begins.

The various determinants of accents do not operate equally at all levels. Some are most significant at lower levels, while others are irrelevant except at higher levels. I will identify which determinants are most relevant in three categories: the lowest level, intermediate levels (levels around the tactus), and higher hypermetric levels. The process of examining these three categories will uncover important aspects of metric structure, which I address in turn. Although I organize the discussion into three categories, they are not mutually exclusive. Some lower-level determinants apply at higher levels and vice versa. Because of this, I do not specify the point at which intermediate levels end and higher hypermetric levels begin.

Lowest Levels

At the lowest level, there is only one determinant: the onset of a note. All other determinants relate strong beats to weak beats and therefore define intermediate or higher levels. The analytic challenge is to identify which durational value represents the lowest level, and in order to do so, the span of interest must be specified. Figure 3.1 reproduces figure 2.4, from the second movement of Fauré’s Piano Trio. In measure 1, quarter notes are clearly the lowest level, but in measure 2, are sixteenth notes pervasive enough? My discussion of the viability of intermittent levels below will answer this question. For now, I provide a reminder that a span must be specified in order to determine which level is lowest, and that the lowest level will not always be obvious.
Intermediate Levels

Note onset may be a determinant at intermediate levels as well, depending on the structure of the various musical lines. In figure 3.1 above, for instance, the violin part establishes  and  levels, while note onsets in the piano’s right hand define a  level. Several other determinants also come into play at intermediate levels. The most important of these is *note duration*. Notes of relatively greater duration convey accents. Consider figure 3.2, which reproduces figure 2.5. The viola’s rhythm contributes to the  level, because the eighth notes’ longer durations provide an accent on each quarter-note beat.

Durational accents may establish antimetrical levels as well. For instance, with the rhythm , the quarter notes’ durational accents define a  level. In the absence of evidence to the contrary, a listener would infer a triple grouping of eighth notes with strong beats on quarter notes: ≮ | ≮ | ≮ | . Figure 3.3 shows this rhythm in a passage with a different

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metric structure, from the start of the second movement of Fauré’s First Violin Sonata, with its dot grid. Here the notationally defined \( \cdot \) beats begin with eighth notes. The quarter notes’ longer durations define an antimetrical \( \cdot \) level, beginning on the second eighth note of each \( \cdot \) beat. The performer will likely clarify the notational \( \cdot \) level by adding a dynamic accent to each eighth note, but both levels will remain viable. The fact that one level is perceived as metrical and the other as antimetrical does not negate the fact that both are present. In my model, a repeating short-long division of a beat always indicates a displacement dissonance.  

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5 As noted in chapter 2, the final dot in each row of a dot grid does not belong to the span under consideration. It is necessary to mark off the duration of the final beat in the row.

6 In asserting that the rhythm of figure 3.3 involves a dissonance, I do not mean to imply that the rhythm is somehow atypical or exceptional. The short-long pattern figures prominently in many styles of music across many centuries, including mode 2 of medieval mensural music and the “Scotch snap” of British folk music. For more on the importance of this rhythmic pattern, see Anna Maria Busse Berger, “The Evolution of Rhythmic Notation,” in The Cambridge History of Western Music Theory, ed. Thomas Christensen (Cambridge: Cambridge University Press, 2002), 629-635; and Nicholas Temperley and David Temperley, “Music-Language Correlation and the ‘Scotch Snap’,” Music Perception 29, no. 1 (September 2011): 51-63.
It is important to remember that a series of accents must be regular in order to establish a pulse level. Consider again the melody of figure 3.1, reproduced in figure 3.4. Accent marks (not in the score) show notes with durations longer than an eighth note, and numbers in parentheses indicate the distance between accents, measured in eighth notes. These durational accents occur at a distance of two, three, three, and two eighth notes. The first, second, fourth, and fifth accents (those that occur on the beat) help to define a \( \frac{4}{4} \) level, but the third accent (midway through beat four) is metrically irrelevant. It is a syncopation, but it is not a dissonance, because there is no established off-the-beat pulse level, only a single syncopated event.

Figure 3.4. Piano Trio II, mm. 2-3, with durational accents.
Durational accents may also occur with notes of equal values, when rests intervene. The time-span from one note onset to the next (the \textit{attack point interval}) constitutes a duration, whether that span contains a sustained note or a note plus a rest. Figure 3.5 shows such a circumstance, from the opening of the third movement of Fauré’s First Cello Sonata. The piano right hand plays sixteenth notes with intervening sixteenth rests. The attack points define this rhythm: \texttt{\^{\southernupbow}}\texttt{\^{\southernupbow}}\texttt{\^{\southernupbow}}\texttt{\^{\southernupbow}} etc., and therefore the highest note in each group of sixteenth notes receives a durational accent.

![Figure 3.5. First Cello Sonata III, m. 1.](image)

At intermediate levels, \textit{dynamic accents} also play an important role.\footnote{Lerdahl and Jackendoff refer to dynamic accents as \textit{stresses}. See Lerdahl and Jackendoff, 7, 76-79.} Dynamic accents include the “accent” articulation (>) as well as $f\text{ subito}$, $fp$, $sfz$ and similar indications and articulations. In the passage shown in figure 3.6 from the first movement of Fauré’s First Cello Sonata, accent marks (in the score) support the notated meter by placing accents on downbeats. Off-beat durational accents in the cello and piano left hand provide a dissonant $\downarrow$. level: in each measure of the cello part, the longest attack point interval begins on the second half of the first beat, while the piano left hand’s longest durations occur at the same point in measures 33 and 34.
This antimetrical level requires the inference of an implied intermediary level between the ♬ and ♬. levels as well.\(^8\) I examine this highly dissonant movement in detail in chapter 7.

Figure 3.6 illustrates two more important determinants that often coincide: harmonic change and bass line onset or change.\(^9\) In this excerpt, harmonies change each measure, contributing to the metrical ♬. level.\(^10\) Additionally, the piano’s lowest notes occur on downbeats, further reinforcing the one-measure level. Contrast figure 3.6 with figure 3.7, the piano part from the opening of the same sonata. The lowest level is a ♬ level. Dynamic accents

\(^8\) As noted above, I sometimes reorder the levels to show more clearly the relationships between them. Higher levels are not always above lower levels. Here, the two antimetrical levels are adjacent, to show the relationship between the implied ♬ level and the ♬. level that implies it.

\(^9\) Bass line refers to the lowest line in a texture, regardless of its register.

\(^10\) For Lester, harmonic change is the most important determinant at the level of the measure. See Lester, 26-28, 66-67.
(in the score) create a $\frac{3}{8}$ level. At the same time, off-beat bass notes create another $\frac{3}{8}$ level displaced by one eighth note. Between each of these $\frac{3}{8}$ levels and the $\frac{1}{2}$ level is an implied $\frac{3}{8}$ level. In measures 1-4, harmonies change every two bars, but starting in measure 5, they change every two beats, coinciding with the right hand’s dynamic accents. The notationally metrical $\frac{1}{2}$ level is not shown in the dot grid.

![Figure 3.7. First Cello Sonata I, mm. 1-8, dynamic, bass line, and harmonic change accents.](image)

There are several more determinants that sometimes aid in establishing pulse levels at intermediate levels. It will suffice to mention them briefly. One occurs in figure 3.7: density accents. The off-the-beat four-note piano chords are denser than the single on-the-beat notes, and are therefore accented. Accents may also be determined by registral high and low points, the starts of a slur or articulation, changes in harmony or dynamics, and suspensions. Finally, Krebs’s new event accent serves as a catch-all term for a variety of other accents defined

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11 Changes in harmony and dynamics are more likely to impart strong accents when their duration is greater. See Lerdahl and Jackendoff’s MPR5, pp. 80-84.
by the onset of a new musical feature, including a new texture or instrumentation, a new theme or motive, and the initiation or cessation of a lowest level or antimetrical level.

Parallelism plays a significant role in the understanding of intermediate levels, although by itself it does not define accents or beats.\textsuperscript{12} Lerdahl and Jackendoff’s first MPR states that passages that may be construed as parallel preferably receive parallel metrical structure. Because Lerdahl and Jackendoff always select one non-dissonant metrical interpretation of a passage, a given preference rule may be overridden by other preference rules. This means that parallel passages do not always receive parallel metrical structure in their approach. In my model, dissonant levels are possible. It is not necessary to ignore antimetrical levels, and parallelism always informs metric structure. In a given passage, a set of determinants will establish levels and therefore a metric context. If another passage is construed as parallel, then the same set of determinants is likely to be present, so the same metric context will be implied.\textsuperscript{13} The frequent occurrences of sequences, canons, and other forms of imitation in Fauré’s music are all examples of parallelism.

It is important to distinguish parallel structures that overlap from those that occur successively. Overlapping parallelism creates displacement dissonance, while successive parallelism does not. Some examples will illustrate this point. Figure 3.8 shows a passage from

\textsuperscript{12} It bears repeating that parallelism defines a period (duration of a unit) but not a phase (starting point). The rule of parallelism merely states that the metric pattern of the first iteration of a parallel passage will usually be repeated in subsequent iterations. It does not determine the metric structure itself.

\textsuperscript{13} The determinants of parallel passages will not always be identical. For instance, if two passages are rhythmically parallel but have different pitch contours and harmonic structures, the determinants may be different. In Fauré’s music, parallel passages are almost always very similar in rhythm, pitch contour, harmony, and every other musical element, and they therefore receive parallel metric structure.
the slow movement of Fauré’s First Cello Sonata with overlapping parallelism. The cello’s melody is echoed at the pitch interval of two octaves and the time interval of one eighth note: the parallel melodic statements overlap temporally. While the imitation is not exact, it is clearly recognizable. Here, the rule of parallelism states that the metric structure of the cello and piano melodies must be the same. If the D that begins the cello’s melody occurs on a strong beat, then the piano’s first D must also occur on a strong beat. This creates a \( \frac{8}{4} - \frac{4}{4} \) displacement dissonance (levels b, d, and e).

Figure 3.8. First Cello Sonata II, mm. 11-12, overlapping parallelism.

In some passages it may not be clear whether overlapping parallelism exists. In figure 3.9, from the last movement of Fauré’s First Piano Quintet, the piano plays broken octaves in the right hand. This standard piano figuration serves to activate the texture with eighth notes, but I do not view it as establishing two separate levels displaced by one eighth note. Rather, it is a single line doubled at the octave. A seemingly similar passage appears in figure 3.10, from the
first movement of Fauré’s Second Violin Sonata. The piano plays octaves as in figure 3.9, but here the note values of the left hand’s downward stems indicate that the notes of the lower octave sustain through the upper octave’s notes. In figure 3.9, the notes from the two registers alternate but do not actually overlap: when a note appears in one octave, the other octave is silent. In the passage shown in figure 3.10, if Fauré had intended simple octave figuration, the left hand’s longer note values with downward stems would be unnecessary. This suggests that Fauré conceived of the passage as consisting of two overlapping melodic lines, displaced by one sixteenth note.\textsuperscript{14} The accent marks that appear in both piano staves reinforce this notion; they signal the start of a three-beat metric unit. In the left hand, that unit begins on the downbeat; in the right hand it begins one sixteenth note later. This creates a $\frac{6}{8}/\frac{3}{8}$ displacement dissonance. The violin’s imitation contributes a displacement dissonance at the dotted-quarter note as well.

\textsuperscript{14} The distinction between alternating and overlapping parallelism is a subtle one, which may not even be aurally discernable. Some readers may question whether passages like that shown in figure 3.10 involve displacement dissonance. After examining many similar passages in Fauré’s chamber music, I conclude that Fauré uses overlap (which often requires more complicated notation) when he intends to imply imitation in two voices, and he uses alternation for figuration within a single voice.
In contrast to overlapping parallelism, successive parallelism does not create displacement dissonance. Figure 3.11 shows an example of successive parallelism from the opening of Fauré’s String Trio. The notes A and F oscillate, and the eighth notes group duple based on parallel pitch structure: AF AF AF AF AF AF. The statements of the AF figure do not overlap, so there is no displacement dissonance.

The second movement of Fauré’s Second Piano Quartet begins in a very similar way, shown in figure 3.12. The piano oscillates between E flat and G, though the final E flat in each measure appears in a higher octave. Eighth notes group duple based on parallel pitch structure, but the meter signature suggests a triple grouping. The combination of duple and triple grouping
Figure 3.11. Piano Trio I, mm. 1-2.

is a $\frac{3}{8}$- $\frac{4}{8}$ grouping dissonance. This is an example of Cohn’s switchback scheme, and it is important to note that switchback schemes always involve grouping dissonances: the determinants that define the triple (switchback) grouping do not negate the parallelism that establishes duple grouping. Both groupings are in play. Again, there is no displacement dissonance because the parallel passages do not overlap.

Figure 3.12. Second Piano Quartet II, mm. 1-2.
The previous example highlights the importance of notation in establishing levels. In my approach, the $\frac{6}{8}$ meter signature in figure 3.12 does define a $\dfrac{1}{4}$ level, even though no phenomenal accents support it.\textsuperscript{15} The rewriting of music to “correct” notation has a long and dubious history extending back at least to Riemann, but such rewriting implies that there is a single “true” meter signature, whereas I am interested in interactions between multiple dissonant levels. I will occasionally rebar music to show metric features not immediately apparent, but I will respect the composer’s notation as well. In my model, notational features such as barlines and meter signatures always indicate groupings, whether or not other determinants confirm them.

Figures 3.13 and 3.14 illustrate the relevance of notation in establishing levels as well as my use of rebarring to clarify them. Figure 3.13 shows the opening of the third movement of Fauré’s Second Piano Quartet. The meter signature, barlines, and triple beaming of eighth notes indicate compound triple meter (rows f, g, and h). However, all phenomenal accents suggest notationally antimetrical levels. Note onsets in the piano’s left hand and parallelism establish duple organization in $\dfrac{1}{2}$, $\dfrac{3}{4}$, and $\dfrac{5}{8}$ levels (rows c, d, and e). Dissonant $\dfrac{1}{2}$ and $\dfrac{3}{4}$ levels appear with the syncopations in the piano’s right hand (rows a and b). The antimetrical levels are difficult to see because of the notated meter, but are very clear when the passage is rebarred, as in figure 3.14.

\textsuperscript{15} The performer may choose to emphasize the notated meter, by playing notes on notated beats louder, thereby providing dynamic accents not indicated in the score.
Intermediate-level determinants may act at higher levels as well, when they have longer durations. For instance, when harmony or dynamics change every four measures, they establish four-bar hypermeasures. The initiation of a new texture, instrumentation, theme or motive may
also signal the start of a hypermeasure. Figure 3.15 shows a passage from the second movement of Fauré’s First Piano Quartet. The melody alternates between the piano and the upper strings every six bars, and this change in instrumentation helps to articulate the six-bar level. Note also the indirect grouping dissonance created by the changing meter signature: the tactus (♩ or ♩) alternately divides duply and triply every six bars.

In his investigation of hypermetric ambiguity in Beethoven, William Rothstein asserts that the two most important factors in establishing hypermeter are harmonic rhythm and phrase structure. He posits two rules for locating strong hyperdownbeats. The first, which he terms the rule of harmonic rhythm, derives from Lerdahl and Jackendoff’s MPR 5f: “Prefer a metrical structure in which a relatively strong beat occurs at the inception of a relatively long duration of a harmony in the relevant levels of the time-span reduction.” In Rothstein’s words, “strong beats of the meter should, where possible, coincide with changes of harmony.”

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16 In fact, Ellwood Colahan (following Lester) proposes an addition to Lerdahl and Jackendoff’s MPR 5: prefer a structure in which relatively strong beats occur at the inception of a relatively long duration of a texture. See Ellwood P. Colahan, “Metric Conflict in the Brandenburg Concertos of J. S. Bach” (MA thesis, University of Denver, 2008) and Lester, The Rhythms of Tonal Music, 28-33.


18 Lerdahl and Jackendoff, 84.

Figure 3.15. First Piano Quartet II, mm. 13-36.
The second of Rothstein’s rules for locating hyperdownbeats, which he terms the rule of congruence, coincides roughly with Lerdahl and Jackendoff’s MPR 9: “Prefer a metrical analysis that minimizes conflict in the time-span reduction.”\textsuperscript{20} Rothstein describes its application:

If a four-measure phrase is subdivided, melodically, either as $2 + 2$ or as $1 + 1 + 2$, a listener should infer a metrical pattern in which the first downbeat in each two-measure group is also the downbeat of a two-bar hypermeasure. The first downbeat in the first two-measure group will be the downbeat of a four-bar hypermeasure. In plain English, a four-measure phrase is, generally, also a four-bar hypermeasure, especially if it can be subdivided into two equal parts…. The same applies to phrases of two, eight, or sixteen measures: just multiply or divide the numbers proportionally.\textsuperscript{21}

When Fauré’s harmonies involve traditional functional tonality, Rothstein’s two rules often allow for identification of large-scale hypermeter. Figure 3.16 shows the opening of Fauré’s First Piano Quartet, a passage with a very traditional tonal plan. Measures 2-5 (with the anacrusis in measure 1) constitute a four-bar phrase ending with a half-cadence. That phrase (minus the anacrusis) corresponds to a four-bar hypermeasure, according to the rule of congruence.\textsuperscript{22} The rule of congruence applies on a larger scale as well: the entire 16-bar passage is also a single phrase and a hypermeasure.\textsuperscript{23} Four-bar hypermeasures are established by several features in addition to phrase structure. Tonally, the first four-bars establish the tonic C minor harmony, the second four-bar unit tonicizes the mediant with some chromatic inflections, the third modulates back to C minor with a chromatically rising bass line, and the fourth prolongs the dominant chord that confirms the tonic key. Changes in dynamics and texture occur at

\textsuperscript{20} Lerdahl and Jackendoff, 90.

\textsuperscript{21} Rothstein, “Beethoven mit und ohne Kunstgepräg,” 173.

\textsuperscript{22} Because of my practice of inferring implied intermediary levels, it is not necessary to demonstrate that the four-bar phrase divides as $2 + 2$; all four-bar hypermeasures divide duply.

\textsuperscript{23} According to Rothstein’s model, a phrase may contain smaller phrases. See Rothstein, \textit{Phrase Rhythm in Tonal Music}, 3-10.
measures 6 and 14. The initiation in measure 10 of a new motive, as well as dynamic accents in the piano left hand, provide a phenomenal accent there.

Even when phrase structure is unclear, harmonic features contribute to hypermeter, according to Rothstein’s rule of harmonic rhythm. Figure 3.17 shows a tonally ambiguous passage from the second movement of Fauré’s Second Violin Sonata. While there is no functional harmony, bars 46-47 contain a modally inflected E major collection and bars 48-49 contain a similar F major collection. This harmonic shift articulates the 2:\2 level.

Rothstein’s rule of congruence is inadequate to address much of Fauré’s music for two reasons. First, triply-grouped hypermetric structures and those with non-isochronous beats are common, but Rothstein’s rule mentions only phrases of 2, 4, 8, or 16 bars: he considers only pure duple hypermetric organization. Second, Fauré’s elusive harmonic language precludes easy identification of phrases; his music contains very long passages with no clear tonal motion. In place of phrases, Fauré uses spans of two, three, four, or more measures that can be identified with Lerdahl and Jackendoff’s rules for grouping structure. These spans that function as phrases in the construction of a passage are difficult to define precisely, but they are easy to identify in practice. They correspond to Lerdahl and Jackendoff’s groups, and they should nearly coincide with metric units according to MPR 9. I therefore modify Rothstein’s rule of congruence as follows: the first downbeat of a phrase, semi-phrase, or other melodically, thematically, or motivically defined multimeasure span is usually a strong hyperdownbeat. The duple or triple divisions of that span are also hypermeasures at a lower level.

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24 For Rothstein and many other theorists, a phrase is defined by tonal/harmonic function: it is a span with directed harmonic motion ending with a cadence. I adopt this definition in my analyses as well. See William Rothstein, *Phrase Rhythm in Tonal Music*, 3-11.
Figure 3.16. First Piano Quartet I, mm. 1-17, with dot grid.
It is important to note that Rothstein’s rule of congruence does not imply that hypermeasures coincide exactly with phrases. Instead, it says that the first \textit{downbeat} in a phrase is usually a hyperdownbeat. When a phrase begins with an upbeat, phrase structure and hypermeter are “out of phase,” in Lerdahl and Jackendoff’s terminology, but the phrase’s initial downbeat will ordinarily be a hyperdownbeat. Likewise, phrase endings may not coincide with the ends of hypermeasures, in the case of \textit{phrase overlap}. Rothstein explains: “two phrases may be said to overlap when the last note (or chord) of the first phrase acts simultaneously as the first note (or chord) of the second phrase.”

Rothstein’s rule, like my own broader formulation, does not account for what Rothstein elsewhere terms \textit{afterbeat patterns}: “in which the phrase…begins shortly after a metrical or

\begin{footnote}
Rothstein, \textit{Phrase Rhythm in Tonal Music}, 44. On page 45 he describes the relationship between phrase overlap and hypermeter: “the point of overlap between the two periods coincides with a hypermetrical downbeat. This is the typical situation where phrase overlap is concerned.”
\end{footnote}
When afterbeat patterns are involved, the first downbeat in a phrase will not be a hyperdownbeat. Afterbeat patterns are rare in Fauré’s music, and the potential difficulty they pose for my formulation of the rule of congruence is easily handled: the intermediate-level determinants discussed above will establish the strongest downbeat in the vicinity of the start of a phrase or other relevant span. That strongest downbeat in the vicinity will be the hyperdownbeat, whether it occurs before, after, or at the start of the span.\(^{27}\)

Figure 3.18 shows the application of my version of the rule of congruence. It contains a passage from the opening of the last movement of Fauré’s Second Cello Sonata. It consists of two nine-bar spans with non-functional harmonies and no clear tonal motion. While the two nine-bar spans are not phrases, they function like phrases in their melodic shape and in the way they combine in antecedent-consequent fashion to build the movement’s first theme. My modification of the rule of congruence dictates that the first downbeat in the vicinity of the start of each nine-bar span is a hyperdownbeat. The phenomenal accent on the downbeat of measure 1 (established by duration and dynamic accent) confirms that that downbeat is indeed the strongest downbeat in the vicinity. Those determinants also define the three-bar hypermeasures that triply divide the nine-bar units.

Figure 3.19, containing the last nine measures of Fauré’s Second Piano Quintet, illustrates another important issue related to hypermetric structure: the problem of classifying the

\(^{26}\) Rothstein, *Phrase Rhythm in Tonal Music*, 29. The rule also does not account for “elongated upbeats” (see *Phrase Rhythm in Tonal Music*, 39), but these are rare in Fauré’s music.

\(^{27}\) This approach also accounts for David Temperley’s end-accented phrases, which are similar to Rothstein’s afterbeat patterns in that the strongest beat in the phrase does not occur near the start of the hypermetric unit that nearly coincides with it. See David Temperley, “End-accented Phrases: An Analytical Exploration,” *Journal of Music Theory* 47, no. 1 (2003): 125-154.
Figure 3.18. Second Cello Sonata III, mm. 1-18, with dot grid.

final measure of a movement when it occurs on a strong hyperdownbeat. In this movement, eight-bar hypermeasures have been established for at least 112 bars before this excerpt begins. Hyperdownbeats fall on measures 532 and 540. But can we consider measure 540 a hyperdownbeat when no measures follow it? In Edward T. Cone’s discussion of the first movement of Beethoven’s Fifth Symphony, he observes, “at the end of the movement, however, the four-measure pattern has been so firmly established that one is forced to add a silent measure
after the last one notated—a measure that is as essentially a part of the composition as those actually written.” In Fauré’s music, the last measure of a movement often coincides with a hyperdownbeat. When hypermetric structure is clearly established, I follow Cone’s lead and add empty bars to finish a hypermeasure at the end of a movement. In the case shown in figure 3.19, many eight-bar hypermeasures precede the final measure, so I would add seven empty bars, and consider the downbeat of measure 540 to be the downbeat of an 8-bar hypermeasure. This addition is necessary when the final hypermeasure groups with earlier hypermeasures to create a larger unit. In this case, the final (incomplete) hypermeasure groups with the previous two eight-bar hypermeasures to create an incomplete 24-bar unit. My metric state graph for this final unit would show the movement’s final unit (which consists of seventeen bars) as a 24-bar module.

![Figure 3.19. Second Piano Quintet IV, mm. 532-540.](image)

In determining the hypermetric structure of a passage, locating accents according to determinants is insufficient when accents occur too frequently to define larger metric structures. In these situations, it is necessary to identify relatively stronger accents. For example, consider a

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hypothetical twelve-bar passage in which two-bar units are articulated by some determinant. If
that passage has a design of aabcde, where each letter represents a two-bar unit, the change to b
after two iterations of a suggests a duple grouping of those units, for a structure of aa bc de.
However, if the accent on the hyperdownbeat at c is stronger than that at b, triple grouping is
suggested, for a structure of aab cde. Only by comparing the accents on the hyperdownbeats at b
and c is it possible to determine whether the two-bar units group duply or triply. In such
circumstances, my decisions about the relative strength of accents are subjective, and justified
with factors that vary from case to case.29

At hypermetric levels, as with intermediate levels, parallelism plays a very powerful role
in defining metric structure. Overlapping parallelism creates displacement dissonance, and
successive parallelism often creates larger hypermetric structures, as in the excerpt from the first
movement of Fauré’s Second Violin Sonata in figure 3.20. In bar 15, the violin introduces a
two-bar melodic idea (labeled a), and then presents it twice more in sequence, modified
somewhat the third time. Then in bar 21, a new melodic idea appears, of three bars in length
(labeled b). It too is sequenced. In bar 27 (not shown) a third melodic idea begins (c). The
overall structure is aaa’bb(c). The parallelism of the two-bar sequence in bars 15-20 creates a
six-bar hypermeasure (aaa’): the initiation of the new b melody in measure 21 after three
iterations of the a melody signals a strong hyperdownbeat, due to a new event accent.30

29 Some theorists have attempted to develop systems for ranking or numerically weighing
various accents, but I prefer to judge each case individually. See, for instance, William E.

30 In his discussion of the relationship between parallelism and hypermetric structure,
David Temperley posits a “first occurrence strong” rule: “when a pattern is immediately
repeated, with each instance of the pattern containing one beat at a certain metrical level, we tend
Similarly, the parallelism of the three-bar sequence in bars 21-26 creates another six-bar hypermeasure (bb), which ends at the initiation of the c melody.

![Musical notation](image)

Figure 3.20. Second Violin Sonata I, mm. 15-26, violin part, successive parallelism creating larger hypermetric structure.

Figure 3.21, from the first movement of Fauré’s Second Cello Sonata, contains both successive and overlapping parallelism in a hypermetric context. The piano melody consists of two parallel, non-overlapping four-bar units. This parallelism defines the four-bar hypermeasure and creates an eight-bar hypermeasure (confirmed by a strong hyperdownbeat on measure 9, not shown). Starting in bar three, the cello echoes the piano’s rhythm and melodic shape at the interval of two measures, so the cello’s parallel statement does overlap with the piano melody. The piano’s four-bar hypermeasures start on bars one and five, while the cello’s hypermeasures to hear the first beat as stronger than the second.” See David Temperley, “Hypermetrical Transitions,” 306.
start on bars three and seven. This overlap creates a $2\cdot 4/4\cdot$ hypermetric displacement dissonance. Note also the $\updownarrow \updownarrow \updownarrow\updownarrow_4$ dissonance of the piano’s left hand with the melody’s $\updownarrow$ level.

While parallelism usually makes hypermetric structure obvious, it occasionally obscures it. Figure 3.22, from the second movement of Fauré’s Piano Trio, contains several instances of parallelism. The initial four-bar unit (measures 108-111) contains two 2-bar melodic ideas: a syncopated figure (labeled a) and a dotted figure (labeled b). $ab$ is stated, then presented up a fifth (112-115). Then b alone is repeated and sequenced inexacty (116-121). The overall structure of the 14-bar span is $ababbb$. In this passage, the material first sequenced is $ab$, but b later splits off for its own sequences. I refer to this process, in which a portion of the originally sequenced material is itself treated in sequence, as a nested sequence. In any nested sequence, the originally sequenced material may be designated $ab$, where b represents the portion that splits

![Musical notation](image-url)
off for its own sequences. Therefore, all nested sequences have the form ababbbb (where the number of iterations of both ab and b alone may vary).

Figure 3.22. Piano Trio II, mm. 108-121, nested sequence.
Nested sequences often create hypermetric ambiguity. The four-bar ab sequence of measures 108-115 in figure 3.22 contains a successive parallelism: ab repeats. If the downbeat of measure 108 is strong, then the downbeat of measure 112 must also be strong. Also, if measure 111 ends a hypermeasure, then measure 115 must also end a hypermeasure; therefore the downbeat of measure 116 is also strong. Hyperdownbeats occur on measures 108, 112, and 116, for a design of ab  ab  bbb. By adopting this interpretation, four-bar hypermeter (which had been clearly established in the previous 24 measures) is maintained for as long as possible. This is shown in the grid’s row c.

There is another possible interpretation of this passage. The four b repetitions in measures 114-121 suggest that an eight-bar hypermeasure begins in measure 114, with strong hyperdownbeats on measures 114, 118, and 122, for a design of aba bb bb. The first approach (hyperdownbeats on measures 112, 116, and 120) is an example of what Andrew Imbrie calls a conservative interpretation of ambiguous hypermeter: the prevailing metric scheme is maintained for as long as possible. The second approach (hyperdownbeats on measures 114, 118, and 122) is Imbrie’s radical interpretation: the switch to a new hypermetric interpretation occurs as early as possible. With nested sequences, the larger context usually determines whether I choose a radical or conservative approach. In this case, four-bar hypermeter has been established before this excerpt, and a six-bar hypermeasure occurs just after it, so I adopt a conservative interpretation. According to this conservative interpretation, the excerpt contains two metric

modules, of eight and six measures respectively. The dot grid’s row a, which is not a level because of its non-isochrony, shows the boundaries of the two modules.

Summary of identification of levels

Before moving to a discussion of intermittently expressed levels, I summarize my comments on the determinants of lowest, intermediate, and higher hypermetric levels. The lowest level in a given span is defined by note onsets. Intermediate levels are established by a variety of determinants, including note onset, note duration, dynamic accent, bass note change, and new events. At higher hypermetric levels, Rothstein’s rules of harmonic rhythm and congruence are most significant in establishing levels. I expand Rothstein’s rule of congruence so that it applies to spans that are not 2-, 4-, 8-, or 16-bar phrases. When the final measure of a movement contains a strong hyperdownbeat, I add empty measures at the end to complete the hypermeasure.

Parallelism plays a very important role in defining metric structure at intermediate and higher levels. Overlapping parallelism creates displacement dissonance while successive parallelism often creates larger hypermetric structures. When parallel structures involve switchback schemes, they always contain displacement dissonance. Nested sequences, in which a portion of a sequenced passage splits off for its own sequences, often create metric ambiguity.

Intermittently Expressed Levels

While Fauré’s music contains much metric ambiguity, it is essentially metric, just as it is essentially tonal in spite of frequent tonal ambiguity. Within a given span, most levels are obvious, and they create a metric state that serves as a context within which the listener
understands specific rhythms, motives, and phrases. When levels are expressed intermittently, the metric state is more difficult to define. Because the only determinant of a lowest level is note onset, the process of determining the viability of an intermittently expressed lowest level is different, and I describe it first.

Intermittently Expressed Lowest Levels

In my approach, it is not necessary that a lowest level be perceived continuously by the listener in order for that level to be present. My approach is generous in including lowest levels that are expressed relatively infrequently. It was developed through trial and error, by searching for a system that consistently included levels that seemed important to my ear while ignoring those that did not. It consists of three steps: first I identify the fastest note value in a given span. Second, I determine the viability of that level in units two consonant adjacencies higher. Third, I continue considering units two adjacencies higher until the entire span is encompassed. I demonstrate my method with the opening melody from the second movement of Fauré’s Piano Trio, shown in figure 3.23 with its dot grid. Row g shows the attack points of the actual melody.

First, it is necessary to determine two things: the note value in question and the span under consideration. Here, the fastest note value in the excerpt is sixteenth notes, so the ❧ level (row f) is the potential lowest level.\(^\text{32}\) The span under consideration is the entire six-bar passage. The second step is to partition the span into units that are two consonant adjacencies higher than the potential lowest level and determine if the potential lowest level is active within each of those units. In this case, the quarter notes of row d are two adjacencies above sixteenth notes, and I

\(^{32}\text{In my discussion of intermittent levels, dot grids show continuous levels; there are no missing dots. Here, row f shows continuous sixteenth notes even though I have yet to determine whether that level is viable.}\)
therefore must determine whether sixteenth notes are active within each quarter note beat. One way to do this is simply to count the possible attack points within each span and set a threshold number. Because both adjacencies between the \( \text{ upbeat} \) level and the \( \text{ downbeat} \) level show duple organization, there are four possible attack points: four sixteenth notes in each quarter note beat. Setting the threshold at three out of four is unsatisfactory. It would exclude all beats with the rhythm \( \text{m} \), which to my ear does define a \( \text{ upbeat} \) level. Setting the threshold at two of four is also unsatisfactory. It would include all beats with the rhythm \( \text{h} \), which merely defines the \( \text{ downbeat} \) level.

Instead of setting a threshold at a fraction of the total possible attack points, I consider only those attack points that are unique to the level in question. Two of every four possible \( \text{ upbeat} \)-level attack points define the \( \text{ downbeat} \) level, so they are irrelevant; only the off-the-beat sixteenth notes uniquely define that level.\(^{33}\) My rule is that whenever an attack point occurs at one or more unique time points within the unit two adjacencies larger, the lowest level is active within that

\(^{33}\) Whenever both adjacencies are duple, two of four attack points will be unique. When one adjacency is triple, three or four of six attack points will be unique, and when both adjacencies are triple six of nine attack points will be unique.
unit. In measure 2 of figure 3.23 (the excerpt’s first measure) and all even-numbered measures, beats two, three, and four contain off-the-beat sixteenth note attack points, so I consider the ♦ level to be active through all of those beats. Likewise, the ♦ level is active in beats two and four of all odd-numbered measures.

The third step is to continue the process of determining the viability of the potential lowest level in units that are again two adjacencies higher, until the entire span is encompassed. Here, the ♦ level of row b is two adjacencies higher than the ♦ level I have just considered. Both adjacencies between these two levels are duple, so there is a quadruple relationship between the ♦ and ♦ levels, and I require at least one half of the ♦ units to contain active sixteenth notes in order to consider sixteenth notes to be active within the entire whole note unit. (When one or more adjacency between two levels is triple, I require that at least one third of the units contain active lowest-level notes in order to consider that lowest level active within the entire span.) In figure 3.23, even-numbered measures have active sixteenth notes in three of four quarter note beats, while odd-numbered measures have active sixteenth notes in two of the four quarter note beats, so all measures contain an active ♦ level.

In this passage, there is no level two adjacencies higher than whole notes, so I next consider the entire six-bar span. If, among those six-bars, at least half of all ♦ level units contain an active ♦ level, the entire span contains that level. Since all six measures include at least two beats with sixteenth notes, the ♦ level is active through the entire passage.

Figure 3.24 summarizes this process, in a representation I call a dash graph. Vertical lines indicate pulses, and dashes signify the presence of the ♦ level within a given unit. Row c shows the presence or absence of active ♦s within each ♦ unit. Dashes fill in beats two, three, and four of all odd-numbered measures and beats two and four of all even-numbered measures.
because those beats contain unique $\bullet$-level attack points. Row b shows the presence or absence of $\bullet$s in $\circ$ beats. Because all measures contain at least two beats with active $\bullet$s, dashes fill in all measures. Row a shows the entire span with active $\bullet$s.

\begin{verbatim}
a $\bullet$ in $6\circ$ span
b $\bullet$ in $\circ$ units
c $\bullet$ in $\circ$ units
\end{verbatim}

Figure 3.24. Dash graph showing viability of $\bullet$ level in figure 3.23.

Some more examples will illustrate the application of my method. Figure 3.25 shows the melody from the start of the last movement of Fauré’s Piano Trio, and it includes a dash graph for the $\bullet$ level, the shortest note value to appear in the excerpt.\textsuperscript{34} $\bullet$ units are two adjacencies higher than the $\circ$ level. Only one of these units contains unique $\bullet$-level attack points: sixteenth notes are active only in measure 3. There is no level two adjacencies higher than dotted quarter notes, so I next consider the entire $6\circ$ span. Only one of the six measures contains active sixteenth, so the $\bullet$ level is not active within the six-bar span.

In the melody shown in figure 3.25, the $\bullet$ level is not the lowest level—it is not active during the entire six-bar span—so I must look to larger note values to find the lowest active level. I next consider the $\bullet$ level in the context of $3\circ$ units. The passage contains no unique $\bullet$ level attack points, so that level is not viable. I then consider the $\circ$ level in the context of the $6\circ$ span. Because two of the four unique pulses at the $\circ$ level correspond to attack points (the

\textsuperscript{34} I discuss this movement at length in chapter 5.
Figure 3.25. Piano Trio III, mm. 1-6, melody and dash graph.

downbeats of measures two and six), the $\frac{3}{4}$ level is viable through the $\frac{6}{4}$ span, and it is therefore the lowest level.

Figure 3.26 shows the first melody from the finale of Fauré’s String Quartet. With both triplets and eighth notes, it is possible that there are two lowest levels, so I include dash graphs for both. I begin with the $\frac{3}{4}$ level; its dash graph appears in rows h-j. The $\frac{1}{4}$ unit is two adjacencies higher than the $\frac{3}{4}$ level. Unique triplet attack points occur in the first half of measures three and four but nowhere else. Triplets are active within those two half-note spans. Two adjacencies higher than the $\frac{1}{4}$ level is the $2\alpha$ level. The excerpt’s first $2\alpha$ unit contains no triplets, but in the second $2\alpha$ unit, triplets are active in two of the four half-note spans, so they are active within the entire span of mm. 3-4. There is no adjacency two levels higher than the $2\alpha$ level, so I consider the $2\alpha$ units in the context of the entire passage. One 2-bar unit within the passage contains active triplets. Since that single 2-bar unit constitutes half of the 4-bar span, I conclude that the entire passage contains active triplets.
Figure 3.26. String Quartet III, mm. 1-4, melody, dot grid, and dash graph for 2\(\frac{1}{8}\) and 3\(\frac{1}{8}\) levels.

I follow the same procedure for the eighth note level; its dash graph appears in rows k-m.

The \(\frac{1}{8}\) level is two adjacencies higher than \(\frac{3}{8}\)s. Unique eighth note attack points are found in the first \(\frac{1}{8}\) beat of measures 1 and 2, and in all four \(\frac{1}{8}\) beats of measures 3-4. Therefore, eighth notes are active in both 2\(\frac{1}{8}\) units and in the entire passage.

The presence of both \(\frac{1}{8}\) and 3\(\frac{1}{8}\) levels in figure 3.26 recalls the assertions of Cohn and Krebs that in such situations there is an even lower level that is not actually present, which I label the *lowest common denominator level*. Figure 3.27 shows a hypothetical dot grid. It contains eighth notes and triplets, as well as the sextuplets which would be subordinate to both.

According to my model, in order for the 6\(\frac{1}{6}\) level to be active within the \(\frac{1}{6}\) beat, at least one of its *unique* pulses must coincide with an attack point. Within the \(\frac{1}{6}\) unit, there are six 6\(\frac{1}{6}\) pulses. The
first, third, and fifth define the \(3\) level, so they are not unique to the \(6\) level. Likewise, the first and fourth define the \(\text{\textbullet}\) level, so they are not unique. Only the second and sixth \(6\) pulses are unique to the \(6\) level: neither of those two pulses coincides with an eighth note or triplet attack point. Since no unique \(6\) pulses coincide with attack points, the \(6\) level is not active.

\[
\begin{array}{cccc}
\text{\textbullet} & . & . & . \\
3 & . & . & . \\
6 & . & . & . & . & . & . & . & . \\
\end{array}
\]

Figure 3.27. Hypothetical dot grid with duple and triple divisions.

Before discussing intermittent intermediate and higher levels, I summarize my approach to intermittent lowest levels. My first step is to identify as a potential lowest level the fastest note value in a given span. Second, I consider the viability of that level in units two consonant adjacencies higher. The potential lowest level is active in a unit two adjacencies higher when at least one of the pulses unique to the lowest level coincides with a note onset. Third, I continue the process of looking at units two adjacencies higher until the entire span of interest is encompassed. If at least half of the intermediate-level units contain an active lowest level (at least one third when one or both of the adjacencies is triple), then that lowest level is also active within the larger unit. If I determine that a potential lowest level is not viable during the entire span, I use the same process with longer note values until I find a level that is active within the span. When the level just above the potential lowest level divides both duply and triply, there are two potential lowest levels, and both may be viable within a given span.
Intermittently Expressed Intermediate and Higher Levels

I take a similar approach to determining the viability of intermittent intermediate and higher levels. I determine the level in question and the span under consideration. I partition that span into units two adjacencies higher than the level in question, and determine whether accents occur at that level’s unique attack points. At intermediate and higher levels, those accents may result from any of the determinants listed above, not only note onsets. By unique attack points, I mean those that are not shared by any superordinate levels. I progressively consider units two adjacencies higher until the entire span is encompassed.

When intermittent levels are metrical, they are almost always viable, due to my practice of inferring implied intermediary levels described in chapter 2. In figure 3.16 above, for instance, the presence of clearly established four-bar hypermeasures implies two-bar hypermeasures as well, even though some even-numbered downbeats do not contain clear determinants of phenomenal accents. To establish the viability of intermittent antimetrical levels, I follow the steps outlined above. Figure 3.28 shows the melody from the opening of the second movement of Fauré’s First Piano Quintet. Nearly constant eighth notes in the piano (not shown) establish the \( \cdot \) level (row g), and the meter signature defines the \( \cdot \), \( \cdot \cdot \), and \( \cdot \cdot \cdot \) levels (rows c, d, and e). However, the melody’s note values do not support the notational \( \cdot \) level. Instead, the quarter notes at the end of each measure suggest that there may be an intermittent \( \cdot \) level as well (row f). I consider the \( \cdot \) level within units two adjacencies higher (\( \cdot \cdot \cdot \) units) and conclude that since measures 1-3 each include an attack point on at least one unique \( \cdot \) level pulse, that level is active within those measures. There is no level two adjacencies higher than the measure, so I next consider the entire four-bar span. Since three of the four measures contain
active $\downarrow$s, that level is active through the entire passage. Rows h and i show the dash graph for the $\downarrow$ level.

Figure 3.28. First Piano Quintet II, mm. 1-4, melody, dot grid, and dash graph.

Figure 3.29 shows the melody from the opening of Fauré’s Piano Trio. Two-bar hypermeasures are established by melodic parallelism: measures 3-4 and 5-6 have very similar rhythms, and measures 7-8 and 9-10 have identical rhythms. Those two-bar hypermeasures impart strong accents on each odd-numbered downbeat. Additionally, durational accents occur on the second beats of measures 4, 8, 10, 12, and 14, marked with an X in the score. The combination of metrical strong beats on odd-numbered downbeats with durational accents on some second beats gives the rhythm $| \od | \od | \od | \od |$, where vertical lines mark off two-bar hypermeasures. In three of the four hypermeasures, the durational accents suggest an antimetrical $\downarrow$ level (row d) that creates a hemiola with the notated measure. In order to determine if this $\downarrow$ level is viable, we must consider the spans two adjacencies higher: the $4\downarrow$. 
level. Each 4\(\frac{1}{4}\) unit contains six \(\frac{1}{4}\)-level pulses, and in each unit, a durational accent occurs on at least one unique attack point, so the \(\frac{1}{4}\) level is active through the entire passage.

Figure 3.29. Piano Trio I, mm 3-14, with dot grid and dash graph.

Figure 3.30 reproduces the opening theme from the last movement of Fauré’s Second Cello Sonata, which also appears in figure 3.18 above. Rows a, b, d, and e represent metrical levels. Durational accents (syncopations) occur on the second eighth notes of measures 2, 3, 5, and 6, suggesting that there may be an antimetrical \(\frac{1}{4}\) level (row c). However there is no adjacency two levels higher than row c: the displacement dissonance it implies is not replicated at higher levels. I consider intermittent levels that involve displacement dissonances in the context of units two metrical adjacencies higher. Two adjacencies higher than the metrical \(\frac{1}{4}\) level (row d) is the 3\(\frac{1}{4}\) level, and each three-bar unit contains six attack points of the antimetrical \(\frac{1}{4}\) level: there are six row-c dots between every consecutive pair of row-a dots. In each of the excerpt’s first two hypermeasures (measures 1-3 and 4-6), two of those attack points coincide with syncopated durational accents: the quarter notes in measures 2, 3, 5, and 6. Since one third
of the attack points within each three-bar unit contain antimetrical ♣-level accents, that level is active throughout. The final three-bar unit in the excerpt (mm. 7-9) does not contain syncopations, so the antimetrical ♣ level is not active there. It is active in the entire nine-bar span, however, because two thirds of the three-bar units contain active antimetrical ♣s. Rows f and g show the dash graph for this antimetrical level.

![Allegro vivo ♦ = 152](image)

Figure 3.30. Second Cello Sonata III, mm. 1-9, melody, dot grid, and dash graph.

Figure 3.31 shows a final excerpt with an intermittent antimetrical level, from Fauré's First Violin Sonata.\(^{35}\) The dot grid and dash graph show the span of measures 2-13. Similar to the previous example, the syncopations in measures 3, 4, 7, 8, 11, and 13 suggest that an intermittent antimetrical ♣ level (row f) may be viable. Two metrical adjacencies above the ♣ level is the 2♣ level, and each two-bar unit contains four possible syncopated ♣-level attack points: the second and fourth beats of each measure. Because the melody begins with an

\(^{35}\) I examine this movement in detail in chapter 5.
anacrusis, the two-bar units begin with even-numbered measures. Figure 3.31 contains horizontal brackets to show the two-bar units. In the first two-bar unit (measures 2-3), only one of the possible \( \mathfrak{j} \)-level attack points coincides with a durational accent: the second beat of measure 3. Likewise, the passage’s second two-bar unit, measures 4-5, contains only one durational accent at one of the syncopated \( \mathfrak{j} \)-level’s pulses (the second beat of measure 4). In fact, in each of the passage’s two-bar units, only one of the syncopated \( \mathfrak{j} \)-level’s possible attack points coincides with a durational accent. Because less than half of the attack points coincide with accents, the antime\( \mathfrak{t} \)trical \( \mathfrak{j} \) level is not active. Rows i and j show the dash grid for the viability of the antime\( \mathfrak{t} \)trical \( \mathfrak{j} \) level.

Figure 3.31. First Violin Sonata I, mm. 1-13, melody, dot grid, and dash graph.
There is another aspect of this passage to consider, however. The $\downarrow^{-\downarrow}/\downarrow$ displacement dissonance of rows f, g and h is replicated at a higher level. The syncopations on the second beats of many measures suggest an antimetrical $\sigma$ level: a D4+1 (1=quarter) dissonance in Krebs’s terminology, shown in row d. In other words, the half notes in measures 3-4, 7-8, 11, and 13 may define a whole note level, because the durational accents they create occur four beats apart (in measures 3-4 and 7-8) or eight beats apart (in measures 11-13) or twelve beats apart (in measures 4-7). To consider the viability of that antimetrical level, I look two metrical adjacencies higher than the $\sigma$ level, to four-bar units. Within each four-bar unit, syncopations on beat two occur in two bars, and since half of all measures include accented notes on beat two, the antimetrical $\sigma$ level is active throughout. Since the $\sigma$ level of row d is active, I now infer an intermediary $\sigma$ level (row f). Rows i and j show the dash graph for the antimetrical $\sigma$ level.

Using dot grids and dash graphs, I have presented my method for determining whether or not to include intermittent levels in a passage’s overall metric state. While dot grids and dash graphs are useful tools for representing metric phenomena, the analyses that follow use an additional graphic representation: the metric state graph. It is a modification of Cohn’s ski hill path, and I describe it in chapter 4.
CHAPTER 4

METRIC STATE GRAPHS

Graphic Representations of Metric Phenomena

My metric state graphs are modified versions of the graphic representations Cohn introduces in his third article. He uses both ski-hill graphs and ski-hill paths to model metric phenomena. Ski-hill graphs show all potential sets of consonant adjacencies within a particular metric unit given a lowest level. (In Cohn’s terminology, they show all possible metric states within a span pulse given a unit pulse, or all possible interpretations of a complex of length L.)

Figure 4.1 reproduces a ski-hill graph from Cohn’s Brahms article.¹ Note values appear at nodes, and represent levels. Diagonal line segments represent duply or triply related consonant adjacencies. Line segments in the NE/SW direction always show duple relationships, while line segments in the NW/SE direction show triple relationships. Reading the figure from the top down, the dotted-whole note span may divide duply into dotted-half notes (the diagonal line down to the left); or it may divide triply into half notes (the diagonal line down to the right). Likewise, dotted-half notes may divide duply or triply (the two diagonal lines down from the dotted-half note). Given the eighth-note unit pulse, dotted-quarter notes must divide triply and half notes must divide duply (the two lowest diagonal lines).

¹ Cohn, “Complex Hemiolas,” 303, Ex. 6.
Figure 4.1. Ski-hill graph with double hemiola.

The diagram’s diamond shapes contain hemiolas: note values at the West and East points of a diamond always have durational ratios of 3:2. The note values at the North and South points of a diamond represent the superordinate and subordinate levels within which the hemiola is perceived. The lower diamond in figure 4.1 would model the rhythm of Bernstein’s song “America” discussed in chapter 2, for instance. The four corners of a diamond that contains a hemiola always have durational ratios of 6:3:2:1. Figure 4.1 contains two diamonds, so it includes a double hemiola.

Cohn’s ski-hill paths represent specific metric states within a given ski-hill graph. In figure 4.1 above, there are three ways of connecting the dotted-whole note span pulse to the eighth note unit pulse. Imagine a skier at the top of a hill (at the dotted-whole note node) skiing down to the bottom (the eighth note node). From the skier’s perspective, there are three possible paths: first to the right as far as possible (through the dotted-half note and dotted-quarter note nodes) and then to the left; first to the left (through the half note) and then to the right (through the quarter note node); or in a zig-zag path, through the dotted-half note and quarter note nodes. These three paths represent the three possible consonant interpretations of the dotted-whole note span, given the eighth note pulse. The first two paths coincide only at their starting and ending nodes, while the zig-zag path shares three nodes with each of the other paths.
Cohn shows networks of relationships between all paths in a given metric state as \textit{metric spaces}. Figure 4.2 shows the three paths contained in figure 4.1, with their metric space. The three rectangles in the metric space represent the three possible paths, arranged so that paths that share more nodes are closer together. Directly adjacent paths share all nodes but one. For instance, paths A and B share the dotted-whole note, dotted-half note, and eighth note nodes; they differ only at the quarter note/dotted-quarter note nodes. Likewise, paths B and C share all but one node; they differ only at the half note/dotted-half nodes.

![Figure 4.2. Three ski-hill paths and metric space.](image)

Like Cohn’s ski-hill paths and graphs, my metric state graphs provide visual representations of metric phenomena, but they differ from Cohn’s graphs in five ways. I list these differences briefly here, and provide a fuller explanation with graphic examples later.

First, I do not define formal relationships between metric state graphs. I do not construct a metric space that models relative closeness and distance between various metric states. Similarities between my metric state graphs are visually apparent, but the graphs are not
presented within a formal mathematical structure. Because my metric states do not all have the same number of levels, and because they may include both displacement and grouping dissonances, an all-encompassing mathematical model is impractical. The value of my graphs lies in their capacity for concisely and clearly representing complex metric states.

The second difference between Cohn’s graphs and mine is that for a given analysis, all of Cohn’s ski-hill paths exist within one metric space, with a particular span pulse, unit pulse, and number of levels. The specific note values for the various levels define the metric space. In my graphs, note values are less important than the overall shape. Third, my graphs sometimes model very large hypermetric structures. Fourth, they may contain grouping and displacement dissonances. Finally, my graphs may accommodate non-isochronous levels.

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3 Leong and Malin have each developed at length the idea that a graph’s shape is more important than specific note values in their different but complementary modifications of Cohn’s model. For Chung, specific note values are crucial. See Leong, “Humperdinck and Wagner” Malin, “Metric Dissonance and Music-Text Relations,” and Chung, “A Theory of Metric Transformations.”

4 Leong’s ski-paths may also contain grouping dissonances. Chung’s semimeters may include displacement dissonances and hypermetric structures, but his graphic representations (“transformation networks”) occur within a different mathematical structure. No theorist to my knowledge has incorporated non-isochronous levels in this type of graph.
Mathematical Structure of Graphs

Cohn’s Graphs

In order to explain my modifications of Cohn’s graphs and paths, it is useful to discuss their mathematical structure. They derive from a two-dimensional numerical lattice, whose members represent durational values. London calls this lattice a \textit{Zeitnetz}, since it is structurally analogous to the \textit{Tonnetz}.\textsuperscript{5} As mentioned above, for Cohn duple relationships occur in the NE/SW direction and triple relationships occur in the NW/SE direction. In London’s version, the orientation is reversed, but this does not alter the basic mathematical structure. Theoretically, the \textit{Zeitnetz} extends infinitely in all directions. Figure 4.3 shows a portion of the \textit{Zeitnetz}, arranged with duple relationships in the NE/SW direction, as in Cohn’s graphs.

\begin{figure}[h]
\centering
\begin{tabular}{cccccc}
81 & 54 & 36 & 24 & 16 \\
27 & 18 & 12 & 8 \\
9 & 6 & 4 \\
3 & 2 \\
1 \\
\end{tabular}
\caption{Portion of \textit{Zeitnetz}.}
\end{figure}

Rotating the figure 45 degrees in the clockwise direction so that duple relationships are horizontal and triple relationships are vertical, as in figure 4.4, does not alter the basic mathematical structure, but it does make it easier to grasp, because in this orientation the Zeitnetz may be viewed in the context of a standard Cartesian plane, with powers of two along the $x$-axis, powers of three along the $y$-axis, and the integer one at the origin. The northeast quadrant of the plane contains whole numbers and the other three quadrants contain fractional values, some of which have been included in figure 4.4.

![Figure 4.4. Rotated Zeitnetz.](image)

Each numerical value in figure 4.4 derives from the formula $2^x3^y$, where $x$ and $y$ are the Cartesian coordinates of that number’s location (shown in figure 4.5). The numerals 2 and 3 in the formula are Cohn’s factors, the $x$ and $y$ in the formula show the number of times each factor

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6 After I have fully explained the structure of my metric state graphs, I will return to the diagonal orientation, which I use in my actual analyses.
occurs in an interpretation, and the value of the formula $2^x3^y$ for a given point $(x, y)$ represents Cohn’s length. For instance, the point $(2, 1)$ in the Cartesian plane corresponds to the numeral 12. That point contains the coordinates $x = 2$ and $y = 1$, and the formula $2^x3^y$ therefore corresponds to $2^2 \times 3^1$, which is $2 \times 2 \times 3$, or 12. A complex with a length of 12 would therefore have an interpretation of $[2 2 3]$ (or some permutation of these three factors). The points $(x, y)$ are nodes, and in this chapter I label nodes according to their numerical value. For example, in figure 4.4, the 1-node is at the origin, the 2-node is one place to the right of the origin, etc. I refer to the specific duration represented by a node in a given diagram as a 1-span, a 2-span, etc.

![Figure 4.5. Cartesian coordinates of Zeitnetz nodes.](image)

Cohn’s ski-hill paths consist of nodes and connecting line segments. Figure 4.6 shows the three possible ski-hill paths of figure 4.1, in the rotated orientation. Cohn’s ski-hill paths incorporate note values, but I replace Cohn’s note values with the nodes’ numerical values.

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7 This version of the interpretation—[2 2 3]—is from Cohn’s first article.
Because all three paths contain both duple and triple relationships, they are *mixed*, in Cohn’s terminology. A *pure duple* path would have only horizontal lines, while a *pure triple* path would have only vertical lines. The 1-node represents the unit pulse (the eighth note in the examples). The other nodes stand for multiples of the unit pulse, and therefore correspond to Krebs’s *cardinalities*. Reading the numerals along the paths from the 1-node to the 12-node gives the three fully consonant *interpretations* of the time-span of length 12: $<1,3,6,12>$, $<1,2,4,12>$, and $<1,2,6,12>$.\(^8\) This assignment of the unit pulse to the 1-node is arbitrary in my model, because it is the shape of a graph that conveys metric information, not its specific location in the plane. In fact, in later graphs I will omit the numerals, instead showing only the shape.

![Figure 4.6. Three ski-hill paths of figure 4.2 in rotated orientation.](image)

**Figure 4.6.** Three ski-hill paths of figure 4.2 in rotated orientation.

**Modifications to Cohn’s Graphs for Dissonances**

Each graph in figure 4.6 traces a unique, continuous path connecting the 1-node to the 12-node, and therefore represents a single, non-dissonant interpretation of the length 12. With grouping dissonances, metric state graphs are not so simple. Figures 4.7-4.9 show some musical excerpts introduced in chapter 3, with their dot grids and metric state graphs. In each case, the top row in the dot grid represents not a level but the entire span. Figure 4.7 reproduces figure 3.12, from Fauré’s Second Piano Quartet, and includes a dot grid and metric state graph with the

\(^8\) These versions of the *interpretations* come from Cohn’s second article.
eighth note at the 1-node. Eighth notes group duply based on pitch parallelism, but they group triply based on the notated time signature, so a 2-node and a 3-node are both necessary. The 6-node represents the measure, and the 12-node represents the entire 2-bar span. The square in the graph includes a hemiola; it contains the durational ratio 3:2, and its four corners show durational ratios of 6:3:2:1.

Figure 4.7. Second Piano Quartet II, mm. 1-2, with dot grid and metric state graph.

Figure 4.8 reproduces Figure 2.5, from Fauré’s First Piano Quartet, with its dot grid and metric state graph. Again, the eighth note is at the 1-node. The 2-node represents the quarter note and the 6-node represents the entire measure. This excerpt contains two lowest levels: eighth notes divide both duply and triply (shown with the 1/2-node and the 1/3-node), defining a hemiola. In this graph, the hemiola is not represented within a square. The fourth corner of the square includes the durational ratio 3:2, and its four corners show durational ratios of 6:3:2:1.

Figure 4.8 reproduces Figure 2.5, from Fauré’s First Piano Quartet, with its dot grid and metric state graph. Again, the eighth note is at the 1-node. The 2-node represents the quarter note and the 6-node represents the entire measure. This excerpt contains two lowest levels: eighth notes divide both duply and triply (shown with the 1/2-node and the 1/3-node), defining a hemiola. In this graph, the hemiola is not represented within a square. The fourth corner of the square includes the durational ratio 3:2, and its four corners show durational ratios of 6:3:2:1.

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9 Here and in all metric state graphs, the assignment of a note value to a particular node is based solely on notational convenience, and is therefore somewhat arbitrary. In figure 4.7, I could have assigned the eighth note to the ½ node, in which case all node values would be halved, but this would not change the shape of the graph.
square (the 1/6 node directly below the 1/2 node) would represent the lowest common
denominator level of sextuplets. Because I do not admit lowest common denominator levels,
that node is absent. In all graphs with two lowest levels, the hemiola is not represented within a
square, but rather with two segments extending downward and to the left from the same node.

Figure 4.8. First Piano Quartet I, m. 26, with dot grid and metric state graph.

In figures 4.7 and 4.8, the inclusion of grouping dissonances necessitates only a minor
graphic modification of Cohn’s ski-hill paths: line segments extend either from a node both
upward and to the right, or from a node both downward and to the left. With displacement
dissonances on the other hand, a more significant alteration is necessary. Figure 4.9 reproduces
figure 3.3, from Fauré’s First Violin Sonata. It includes a \( \text{\textfrac{8}{4}} \) displacement dissonance:
eighth notes group triply in two ways. I show this type of dissonance with a slash through the
line segment that connects the two nodes of the consonant adjacency.\[^{10}\] The 1-node represents eighth notes, and the segment connecting the 1-node to the 3-node shows that eighth notes group triply. The slash through that segment indicates that eighth notes group triply in two ways. The entire measure occupies the 9-node.

Figure 4.9. First Violin Sonata II, m. 1, with dot grid and metric state graph.

Figure 4.10 illustrates the capacity of metric state graphs to represent clearly even very complex passages. It shows an excerpt from Fauré’s Second Cello Sonata with multiple dissonances. The lowest level is eighth notes (row k, assigned to the $\frac{1}{2}$-node), which persist through the entire span (the 24-node). The time signature indicates metrical $\frac{3}{4}$ and $\frac{2}{4}$ levels (rows g and j, 1- and 3-nodes). Metrical $2\,\d$ and $4\,\d$ levels are readily apparent from the cello’s

\[^{10}\] As discussed in chapter 3, my model does not indicate the direction or magnitude of displacement; I do not distinguish between D3+1, D3+2, D3-1, and D3-2 dissonances in my metric state graphs. When a passage contains two different displacement dissonances at the same level, as with both D3+1 and D3+2, I will include two slashes through the appropriate segment.
slurs and parallelism (rows e and f, 6- and 12-nodes). The piano’s right-hand note onsets contribute an antimetrical 1/2 level (row i, shown with the 1/2 -1 slash), for a 1/2 -1 displacement dissonance. The piano’s left hand echoes the cello line for a 1/2 -2/2 1/2 displacement dissonance, the result of overlapping parallelism (row c, the 3-6 slash). This displacement dissonance is replicated at a higher level, as the piano’s antimetrical 2/2 level groups duply to form an antimetrical 4/2 level (row b). Finally, the melodic lines in the cello and piano left hand contain ties over barlines that articulate a hemiola: quarter notes group duply according to note onsets (rows d and h). According to my rules for the viability of an intermittent level discussed in chapter 3, both 1/2 levels persist through the entire excerpt, and they define a 1/2 -1/2 displacement dissonance because they do not align with each other (1-2 slash).

Because this graphic notation is unfamiliar, it may be useful to review the above analysis by starting with the graph itself rather than with the musical excerpt. Reading the graph from left to right: the 1/2-node connects to the 1-node with a slash, showing that eighth notes group duply in two ways for a 1/2 -1/2 displacement dissonance (the melody’s quarter notes and the piano’s syncopations). From the 1-node, segments extend both upward and to the right, showing that quarter notes group both duply and triply for a 1/2 -1/2 grouping dissonance (notated measures and melody’s hemiola). The slash on the segment between the 1- and 2-nodes indicates that quarter notes group duply in two ways for a 1/2 -1/2 displacement dissonance (cello’s hemiola and piano’s hemiola). The horizontal segments connecting the 3-, 6-, 12- and 24-nodes show that at the

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11 The level represented in the dot graph’s row b does not appear in my metric state graph. As discussed in chapter 2, I view the D4+1 dissonance created by rows b, e, and g as resulting from the replication at a higher level of the D2+1 (or 1/2 -2/2 1/2) dissonance of rows c, f, and g. In my model, all dissonances involve adjacencies in duple or triple relationships. My metric state graphs do not show replication of displacement dissonance at higher levels.
measure level and higher, all consonant adjacencies are duple up to the entire eight-bar span.

Finally, the slash on the segment between the 3- and 6-nodes indicates that measures group duple in two ways, for a $\frac{1}{2} - 2\frac{1}{2} / 2\frac{1}{2}$ displacement dissonance (cello melody starts in odd-numbered measure, piano melody starts in even-numbered measure).

Modifications to Cohn’s Graphs for Non-isochronous Levels

So far, I have considered passages that contain only isochronous levels, but non-isochronous levels appear frequently in Fauré’s music, and they necessitate significant
modifications to the graphs. As discussed in chapter 2, non-isochronous levels result from the regular fluctuation between duple and triple groupings of a subordinate level, and they therefore involve indirect grouping dissonance. They may occur as either prime rhythms, which involve groupings of five (2 + 3), seven (2 + 2 + 3), and eleven (2 + 2 + 2 + 2 + 3) or (2 + 3 + 3 + 3); or cross rhythms, which involve antimetrical groupings of eight (2 + 3 + 3) and nine (2 + 2 + 2 + 3) in the context of otherwise pure duple or triple organization. My graphs for the two types of non-isochronous levels reflect their different rhythmic configurations.

Figures 4.11a-d reproduce figures 2.16a-d; they show dot grids that include the four prime rhythms. Their metric states cannot be represented on the Zeitnetz as described above, for two reasons. First, row a in each of the four dot grids does not appear; the Zeitnetz has no nodes for 5-, 7-, or 11-units. Second, because the value represented by a node indicates the duration of that level’s repeating unit, a non-isochronous level cannot appear as a single node. For instance, if the \( \bullet \) level occupies the 1-node, then the \( \bullet \) level will occupy the 2-node and the \( \bullet \) level will occupy the 3-node, but no single location can represent the fluctuating durational values of a \( \bullet \sim \bullet \) level. Therefore, row b of figures 4.11a and b and rows b and c of figures 4.11c and d have no place on the Zeitnetz as yet.

\[
\begin{array}{cccc}
\text{a} & \bullet \bullet \bullet \ (5\bullet) & \ldots \ . \\
\text{b} & \bullet \sim \bullet \ (2\bullet \sim 3\bullet) & \ldots \ . \\
\text{c} & \bullet & \ldots \ . \ . \\
\end{array}
\]

Figure 4.11a. Dot grid with (2 + 3) rhythmic pattern.

\[
\begin{array}{cccc}
\text{a} & \bullet \bullet \bullet \ (7\bullet) & \ldots \ . \\
\text{b} & \bullet \sim \bullet \ (2\bullet \sim 3\bullet) & \ldots \ . \ . \\
\text{c} & \bullet & \ldots \ . \ . \\
\end{array}
\]

Figure 4.11b. Dot grid with (2 + 2 + 3) rhythmic pattern.
Figures 4.11a and b reproduce figures 2.17a and b; they show dot grids that include the two cross rhythms. Unlike patterns with prime rhythms, the isochronous superordinate levels represented in row a (with cardinalities eight and nine) do appear on the Zeitnetz as described above; it does contain 8- and 9-nodes. This is because of the otherwise pure duple or triple organization of the metric state. Like patterns with prime rhythms however, the alternating durational values of the non-isochronous levels (row b of figure 4.11a and rows b and c of figure 4.11b) cannot occupy a single node on the Zeitnetz.

Figure 4.11c. Dot grid with (2 + 2 + 2 + 2 + 3) rhythmic pattern.

Figure 4.11d. Dot grid with (2 + 3 + 3 + 3) rhythmic pattern.

Figures 4.12a and b reproduce figures 2.17a and b; they show dot grids that include the two cross rhythms. Unlike patterns with prime rhythms, the isochronous superordinate levels represented in row a (with cardinalities eight and nine) do appear on the Zeitnetz as described above; it does contain 8- and 9-nodes. This is because of the otherwise pure duple or triple organization of the metric state. Like patterns with prime rhythms however, the alternating durational values of the non-isochronous levels (row b of figure 4.12a and rows b and c of figure 4.12b) cannot occupy a single node on the Zeitnetz.

Figure 4.12a. Dot grid with (3 + 3 + 2) rhythmic pattern.
There are therefore two obstacles to using the *Zeitnetz* to represent non-isochronous levels: (1) it does not contain nodes for the superordinate 5-, 7-, and 11-units of the prime rhythms, and (2) it cannot represent the fluctuating durational values of non-isochronous levels (such as \( \ddots \) . levels) as single points.

The reason that 5-, 7-, and 11-nodes do not appear on the *Zeitnetz* is that we have until now considered only discrete points on the *Zeitnetz* that represent units with factors of 2 and 3. In other words, the Cartesian coordinates \( x \) and \( y \) are integers. I refer to the nodes defined by integer values for \( x \) and \( y \) as integer nodes. These are sufficient for Cohn, because he only considers lengths (or span pulses) with factors of 2 and 3, and he does not include non-isochronous levels. With these constraints, the exponents \( x \) and \( y \) have a specific meaning: they show the number of times that each of the factors 2 and 3 appear in an interpretation. In order to include non-isochronous levels in my graphs, it is necessary to view the *Zeitnetz* not as a set of discrete points, but as a continuous space, so that \( x \) and \( y \) need not be integers. When \( x \) and \( y \) are not integers, they cannot represent the number of times each factor occurs in an interpretation. I give up the significance of \( x \) and \( y \) as indicating the number of occurrences of factors so that I may include these non-isochronous groupings.

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12 As defined in Cohn’s first article.
Viewed in a continuous way, every point in the Cartesian plane has a durational value \( d \) according to the formula \( d = 2^x3^y \), and each value \( d \) corresponds not to a specific point on the plane, but to a line. Solving the equation \( d = 2^x3^y \) for \( y \) gives \( y = -\log_3 2 x + \log_3 d \). This equation represents the line containing all points with durational value \( d \). Therefore any point on a given durational line \( d \) may serve as a \( d \)-node. The slope of the line is \(-\log_3 2\), or roughly \(-0.63\), regardless of the value of \( d \). The \( y \)-intercept of the line is \( \log_3 d \). Thus, all durational values may be represented by parallel lines with the same downward slope.

Each durational line crosses each axis at a point relative to the integer nodes on that axis. Figure 4.13 shows some examples. The \( d = 1 \) line contains the origin (the integer 1-node). The \( d = 3 \) line includes the integer 3-node and crosses the \( x \)-axis between the 2- and 4-nodes. The \( d = 6 \) line crosses the \( y \)-axis between the 3-node and the 9-node (at approximately 1.6 units from the origin), and it crosses the \( x \)-axis between the 4-node and the 8-node (at approximately 2.6 units from the origin). It also contains the integer 6-node of course. The line for \( d = 5 \) (not shown) would be just below the \( d = 6 \) line and parallel to it, while the \( d = 7 \) line would be just above it. The duple horizontal and triple vertical relationships hold, so that for instance, the \( d = 3 \) line is exactly one unit to the left of the \( d = 6 \) line, and it is also exactly one unit above the \( d = 1 \) line. I define points of interest on the graph that are not integer nodes as non-integer \( d \)-nodes. The points where the \( d = 6 \) line crosses the two axes are therefore non-integer 6-nodes. They appear in my graphs for cross rhythms, described below. I locate 5-, 7-, and 11-nodes at points on the \( d = 5 \), \( d = 7 \), and \( d = 11 \) lines respectively.

To summarize: every point \((x, y)\) on the continuous Cartesian plane corresponds to a durational value \( d \) according to the formula \( d = 2^x3^y \). Each line parallel to those in figure 4.13 has the formula \( y = -\log_3 2 x + \log_3 d \), and it contains all points with the durational value \( d \). Any
point on a given durational line (a $d$-line) may serve as a $d$-node. From a given point, moving one unit to the right results in doubling the durational value, and moving one unit upward results in tripling the durational value. Points with integer values for $x$ and $y$ are integer nodes; all other identified points are non-integer nodes.

![Diagram of Continuous Zeitnetz with durational lines for $d = 1, 3, 6$.](image)

Figure 4.13. Continuous Zeitnetz with durational lines for $d = 1, 3, 6$.

In order to model prime rhythms, it is necessary to locate non-integer 5-, 7-, and 11-nodes. To do so, I find a point on the proper durational line that allows me to create graphs with shapes that convey the metric properties of the passage. The shapes of these graphs are different from those that use integer nodes (in order to differentiate them from graphs without non-isochronous levels), and they reflect the additive nature of the non-isochronous groupings: groupings of 5 arise from $(2 + 3)$ rhythmic patterns, 7 from $(2 + 2 + 3)$, and 11 from $(2 + 3 + 3 + 3)$ or $(2 + 2 + 2 + 2 + 3)$. Any permutation of these numbers yields the same total, of course. My
metric state graphs themselves do not differentiate between rhythmic patterns of \((2 + 2 + 3)\) and \((3 + 2 + 2)\), for instance, because they are designed to show larger metric units, rather than local details, though as I explain below, I will occasionally specify the rhythmic pattern on the graph.

Figure 4.14 shows the melody of a passage from the third movement of Fauré’s First Piano Quintet. The dot grid and metric state graph show only the \(\omega \) level and higher, and the \(\omega \) level occupies the 1-node. Measure groupings alternate between duple and triple to create two 5-bar units. The metric state graph includes segments connecting the 1-node with both the 2-node and the 3-node, showing that both duple and triple groupings exist in the excerpt. The diagonal segment that connects the 2-node to the 3-node is a significant modification to the graph. It shows the non-isochronous \(2\omega \sim 3\omega \) level. In my graphs, diagonal lines represent non-isochronous levels, and their endpoints on the \(x\)- and \(y\)-axes indicate the number of 2-units and 3-units that occur within the non-isochronous rhythmic pattern.\(^\text{13}\) The nodes at the segment’s endpoints are open (rather than solid) because this passage’s metric state does not include isochronous \(2\omega \) or \(3\omega \) levels. I parenthesize those nodes’ numerical labels as a reminder that they do not represent levels.

The diagonal segment in the metric state graph in figure 4.14 forms the hypotenuse of a right triangle, which I call a 2/3 triangle, because it meets the \(x\)-axis at the 2-node and the \(y\)-axis at the 3-node. From the midpoint of the hypotenuse, a second line segment extends to the point where it would intersect the \(d = 5\) durational line, at a non-integer 5-node.\(^\text{14}\) The \(d = 5\) line is just

\(^{13}\) When I rotate these graphs to their original \textit{Zeitnetz} orientation, most lines will be diagonal, of course. The lines that show these additive relationships will be those that are not at a 45 degree angle in the NW/SE or NE/SW directions.

\(^{14}\) This second segment, like those in the graphs that follow, is at a 45-degree angle, so that when it is rotated to the original \textit{Zeitnetz} orientation it will be vertical.
below the $d = 6$ line, so this 5-node is just below and to the left of the integer 6-node. Finally, a horizontal segment extending one unit to the right from the 5-node ends at the 10-node. That segment shows the duple relationship between 5-units and the entire 10-bar span.

In all, this passage contains two isochronous levels ($\omega$ and $5\omega$), one non-isochronous level ($2\omega - 3\omega$), and the entire 10-bar span ($10\omega$). Isochronous levels and the entire span are represented on the graph as solid nodes (the 1-, 5-, and 10-nodes), while the non-isochronous level is represented as a diagonal line that connects the open 2- and 3-nodes, indicating that it results from the additive combination of one 2-unit and one 3-unit.

In my model, the 5-node is very close to the integer 6-node, but this is not problematic for my system, since I do not ordinarily use the 5-node and the integer 6-node in the same graph,
and the shapes for graphs with a 5-node are quite different from those with an integer 6-node.\textsuperscript{15}

Graphs that include the 5-node contain a triangle that shows the additive relationship between the 2-unit and 3-unit. Graphs that contain the integer 6-node show the standard multiplicative relationship of either duple grouping of 3-units or triple grouping of 2-units (or both): only horizontal and vertical lines.

I graph seven-beat patterns similarly. Figure 4.15 shows the graph for the $(2 + 2 + 3)$ rhythmic pattern, which includes a $4/3$ triangle. Its diagonal line meets the $y$-axis at the 3-node, indicating that the rhythmic pattern contains one 3-unit, and it meets the $x$-axis at the 4-node, indicating that the rhythmic pattern contains two 2-units. As with the graph for the $(2 + 3)$ pattern, a segment extends from the hypotenuse’s midpoint to the point where it would meet the $d = 7$ durational line, at a non-integer 7-node. The graph contains no node at the location of the 2-node (on the horizontal line between the 1-node and 4-node) because a seven-beat pattern does not contain an isochronous 2-level. The non-isochronous $(2 + 2 + 3)$ level appears in the graph as the diagonal line between the 3-node and the 4-node.

![Figure 4.15. Metric state graph for seven-beat grouping.](image)

\textsuperscript{15} In Chapter 8 I consider music by composers other than Fauré, and one of my graphs there does include both a 5-node and an integer 6-node. I have never found it necessary to include both nodes in graphs that represent Fauré’s music.
Figure 4.16 shows metric state graphs for the two 11-beat patterns. The graphs contain a 2/9 triangle and an 8/3 triangle respectively. As discussed above, 11-beat groupings involve two non-isochronous levels: the lower of the two is (2 + 3 + 3 + 3) or (2 + 2 + 2 + 2 + 3), and the higher is (5 + 6). The points at which the hypotenuses meet the x- and y-axes reflect the relative preponderance of duple and triple groupings within the lower non-isochronous level: the 2/9 triangle on the left points upward, showing that triple groupings predominate in the (2 + 3 + 3 + 3) pattern, while the 8/3 triangle on the right points rightward, showing that duple groupings predominate in the (2 + 2 + 2 + 2 + 3) pattern. As with the other graphs for prime rhythmic patterns, a segment connects the midpoint of each hypotenuse to the point where it would meet the $d = 11$ durational line.

Figure 4.16. Metric state graphs for eleven-beat groupings.

The higher non-isochronous level (5 + 6) is not reflected in the shapes of these triangles. While it is possible to locate non-integer 5- and 6-nodes on the graphs and connect them with another segment to represent the (5 + 6) pattern of the higher non-isochronous level, I find that this makes the graphs unnecessarily busy. Instead, I show both non-isochronous levels with a double line for the hypotenuse. While this shape fails to convey the specific (5 + 6) pattern of
the higher non-isochronous level, it does indicate that the rhythmic patterns \((2 + 2 + 2 + 2 + 3)\) and \((2 + 3 + 3 + 3)\) result in two non-isochronous levels.

The triangular shapes shown in Figures 4.14, 4.15, and 4.16, which model prime non-isochronous rhythmic patterns, indicate the number of 2-units within their rhythmic patterns on the x-axis and the number of 3-units on the y-axis. In all graphs with prime rhythms, the triangle’s vertices occur at integer nodes (the 2-, 4-, or 8-node on the x-axis and the 3- or 9- node on the y-axis). Each triangle’s hypotenuse, which connects the vertices on the x- and y-axes, represents a non-isochronous level (or two non-isochronous levels, when it is a double line). Another segment extends from the midpoint of the hypotenuse to the non-integer node that represents the duration of the superordinate isochronous level (the 5-unit, 7-unit, or 11-unit).

The triangles’ labels \((2/3, 4/3, 8/3, \text{and} 2/9)\) are not meant to convey the way that the superordinate level actually divides. For instance, an 11-unit does not ordinarily divide into a 2-unit plus a 9-unit or an 8-unit plus a 3-unit, it divides into a \((5 + 6)\) pattern. The labels merely indicate the relative preponderance of 2-units and 3-units in the lower non-isochronous level.

The groupings shown in figures 4.15, and 4.16 above are by themselves not necessarily metric units at all, as I have defined the term. Metric units may contain non-isochronous levels only when there is an isochronous superordinate level. In figures 4.15 and 4.16 above, the highest levels would have rhythmic patterns of \((2 + 2 + 3)\) and \((5 + 6)\) respectively. When these spans themselves group duply or triply (as in the 10-unit span shown in figure 4.14 above), they combine to form modules. When they do not, their modular construction consists of smaller spans with isochronous organization at the highest level. For instance, in a \((2 + 2 + 2 + 2 + 3)\) pattern, the next higher level would have a \((6 + 5)\) structure. The six-unit span is isochronous \((2 + 2 + 2)\) but the five-unit span is not \((2 + 3)\). Therefore the entire eleven-unit span would contain
three modules, of 6, 2, and 3 units. Even when such irregular groupings do not repeat to form isochronous higher levels, I use these shapes in my metric state graphs, because they aptly capture the metric characteristics of 5-, 7-, and 11-spans.

Metric state graphs that model non-isochronous patterns with *cross rhythms* (those that sum to eight or nine) have somewhat different shapes. Figure 4.17 shows a brief passage from the second movement of Fauré’s Second Cello Sonata, with its dot grid and metric state graph. The quarter note occupies the 1-node in the metric state graph. Notational features establish _d_ and _o_ levels, but durational accents in the cello part provide a cross rhythm: those accents occur on the downbeat and fourth beat of measure 2 and on the second beat of measure 3, for a (3 + 2 + 3) pattern. Changes in the piano’s harmony on the fourth beat of measure 2 and the second beat of measure 3 reinforce these accents. The metric state graph shows the three metrical levels and the entire two-bar span with integer nodes; the dot grid’s rows a, c, and d occupy the 1-, 2-, and 4-nodes on the graph. The graph shows the non-isochronous _d~d_. level of row b with a diagonal segment that connects the 2-node on the x-axis with the non-integer 6-node on the y-axis. These vertices indicate that the cross rhythm contains one 2-unit and two 3-units (because 2 x 3 = 6). They create a 2/6 triangle. The non-integer 6-node is open, because there is no _o_. level, but the integer 2-node is solid, because the passage does contain an isochronous _d_. level (row c).

The triangle in figure 4.17 indicates the presence of a non-isochronous level. Its upward point reflects the predominantly triple groupings within the non-isochronous level. The horizontal line connecting the 1-, 2-, 4-, and 8-nodes shows the otherwise pure duple

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16 This non-integer 6-node is between the integer 3- and 9-nodes on the y-axis, at a point approximately 1.6 units from the origin. See figure 4.13 above for a graphic representation of the location of this non-integer 6-node.
organization of the passage. There is no segment from the midpoint of the hypotenuse to a non-integer node, because the superordinate level is already represented by the integer 8-node.

Figure 4.18 reproduces a portion of figure 3.20, from Fauré’s Second Violin Sonata, and shows its dot grid and metric state graph. The dotted quarter note occupies the 1-node on the metric state graph. The dot grid’s rows a, b, d, and e are metrical levels. They have a pure triple organization, represented on the graph as vertical line segments connecting the 1/3-, 1-, 3-, and 9-nodes. The segment connecting the 9-node to the 18-node represents the duple grouping of 3-bar units within the entire 6-bar span. The dot grid’s row c shows a (2+ 2 + 2 + 3) rhythmic pattern, the result of the hemiola in mm. 21-22 and 24-25. The graph shows this non-isochronous level as a segment connecting the 3-node on the y-axis with the non-integer 6-node
on the \(x\)-axis.\(^{17}\) These vertices indicate that the cross rhythm consists of one 3-unit and three 2-units (because \(3 \times 2 = 6\)). They create a 6/3 triangle. Like the prime rhythms that sum to 11, this cross rhythm involves two non-isochronous levels: \((2 + 2 + 2 + 3)\) and \((4 + 5)\). The hypotenuse therefore consists of a double line. The 6-node is open, because there is no 6\(\frac{2}{4}\) level, but the 3-node is solid, because of the isochronous \(\frac{2}{4}\) level. The rightward point of the triangle reflects the predominantly duple groupings within the lower non-isochronous level.\(^{18}\)

\(^{17}\) This non-integer 6-node is between the integer 4- and 8-nodes on the \(x\)-axis, at a point approximately 2.6 units from the origin. See figure 4.13 above for a graphic representation of the location of this non-integer 6-node.

\(^{18}\) In his Brahms article, Cohn finds an example of this \((2 + 2 + 2 + 3)\) pattern in the first movement of Brahms’s Violin Sonata, Op. 78. He notes that “my analysis does not adequately account for bars 11-13, a span whose bisection in the violin is subject to an asymmetric (but maximally even) \(2 + 2 + 2 + 3\) partitioning that adumbrates but does not yet establish the minim pulse. The theory of complex hemiolas has, at present, no means for accounting for the insertion of a hypermeasure of irregular length, nor for the asymmetrical partitioning of a time-span.” My model does account for this type of pattern. See Cohn, “Complex Hemiolas,” 304-307.
Figure 4.19 shows some simple metric states, reoriented and without node labels. The leftmost shape represents a pure duple passage with two levels below the complete span. Lines in the NE/SW direction always represent duple relationships. The center shape in figure 4.19 shows a pure triple passage, again with two levels below the entire span. Lines in the NW/SE direction represent triple relationships. The rightmost diamond shape in figure 4.19 contains a hemiola. Whenever two segments project from a node upward to the right and
upward to the left (or downward in both directions), this indicates that a particular level groups or divides both duply and triply, creating a hemiola.

Figure 4.19. Some familiar metric states: pure duple, pure triple, and metric state with hemiola.

Figure 4.20 shows reoriented graphs for 5-, 7-, and 11-beat spans. Each graph contains a triangle with a unique shape. From the lowest point in each graph, the two upward segments reflect the indirect grouping dissonance inherent in combining 2-units with 3-units. In the graph for the 5-beat span (the 2/3 triangle), rightward and leftward diagonal lines are equal, indicating that duple and triple groupings are also equal in number. The 7-beat shape’s rightward point indicates that duple groupings predominate in the (2 + 2 + 3) rhythmic pattern of the 4/3 triangle.

The two 11-beat shapes also point in the appropriate direction to show whether duple or triple groupings predominate: the 2/9 triangle points to the left while the 8/3 triangle points to the right. In all of these graphs, solid nodes represent isochronous levels and hypotenuses represent non-isochronous levels. The double lines in the triangles for the two 11-beat patterns indicate that two non-isochronous levels are present. These graphs also contain an extra segment from the midpoint of each triangle’s hypotenuse to the non-integer node (5, 7, or 11).

Figure 4.21 shows reoriented graphs for cross rhythms. The figure on the left represents the (2 + 3 + 3) pattern. The triangle’s leftward point indicates that in the non-isochronous level, triple groupings predominate. The rightward segment that connects the 1- and 8-nodes indicates
that the non-isochronous pattern sums to eight and occurs as an antimetrical level in an otherwise pure duple configuration. The figure on the right represents the \((2 + 2 + 2 + 3)\) pattern. The triangle’s rightward point indicates that in the non-isochronous level, duple groupings predominate. The leftward segment that connects the 1- and 9-nodes indicates that the non-isochronous pattern sums to nine and occurs as an antimetrical level in an otherwise pure triple configuration. One vertex of each triangle is at a non-integer 6-node. The hypotenuses represent non-isochronous levels, and the double line in the 2/9 triangle indicates that two non-isochronous levels are present.

I have so far described modifications to Cohn’s graphs necessary to include grouping dissonances, displacement dissonances, and non-isochronous levels. My graphs are different from those of Cohn in several other ways. Figure 4.22 reproduces figure 4.10 from Fauré’s Second Cello Sonata, with a reoriented metric state graph. It introduces several new features that I will include from this point. The node for the lowest level is labeled with its note value. The node that represents the measure has a horizontal slash, and a numeral in parentheses above a graph shows the total number of measures in the span. With these three indications, the other nodes may be easily identified. For instance, if the lowest node represents the eighth note, then
the node up and to the right represents the quarter note (duple grouping of eighth notes). If the highest node represents an eight-bar span, then the node downward and to the left is the four-bar node (duple division of the eight-bar unit).

Figure 4.22. Second Cello Sonata I, mm. 41-48, with metric state graph.
Figure 4.23 shows two other features that I sometimes include. It shows a passage from the third movement of Fauré’s First Violin Sonata with its metric state graph. First, [2, 2, 2~3] appears below the graph, indicating that the passage’s three adjacencies are (from the bottom up) duple, duple, and non-isochronous.19 This numerical reminder is occasionally useful when comparing graphs. Second, when non-isochronous levels are present, I sometimes indicate the specific rhythmic pattern of that level. For instance, a 5-unit span may arise from a (2 + 3) pattern or from a (3 + 2) pattern. In the passage shown in figure 4.23, the 2-unit comes before the 3-unit, so I include (2 + 3) next to the 5-node in the graph.

Figure 4.23. First Violin Sonata III, mm. 13-17, with metric state graph.

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19 This notation is similar to Cohn’s interpretation (from his first article) except that my numerals are ordered from the bottom up, rather than the top down.
In chapter 3 I pointed out that my metric state graphs may either model entire metric modules, for a “background” view of hypermeter, or they may model smaller units, for a “middleground” view of meter. When I use a series of graphs for smaller units that make up modules, I will connect their graphs with a thin horizontal line through the nodes that represent the measure. The horizontal line connecting graphs indicates that those units combine to form a larger hypermetric unit. Figure 4.24 shows a passage from the second movement of Fauré’s First Piano Quartet. Its two 6-bar units group to form a 12-bar unit, but individually they have different metric states. I show each 6-bar unit with its own metric state graph, and show their combination with the thin horizontal line.

A final point about my metric state graphs concerns the addition of extra bars at the end of a movement to complete a hypermeasure, a process I describe in chapter 3. Under this circumstance, the numerals above the graph represent the duration (in measures) of both the actual span and the complete hypermeasure, separated with a double vertical line (||). For instance, if the final measure of a movement is understood as the start of an eight-bar hypermeasure, I show the measure count as 1||8, and I graph it as in Figure 4.25.
Figure 4.24. First Piano Quartet II, mm. 19-30, with metric state graph.
Figure 4.25. Hypothetical metric state graph for final (hyper)measure in a movement.

Summary

The modifications I have made to Cohn’s ski-hill paths enable me to model Fauré’s distinctive metric style, with its large hypermetric structures and multiple dissonances. Figure 4.26 lists the main elements of the graphs. My graphs clearly represent a variety of metric phenomena, in a way that visually captures the degree of complexity of a passage. Nodes represent isochronous levels. Graphs for pure duple passages contain only diagonal line segments in a NE/SW direction. Graphs for pure triple passages contain only diagonal line segments in a NW/SE direction. Graphs for mixed states include zig-zags. With displacement dissonance, slashes through the segments are added. Grouping dissonance involves segments upward (or downward) to the right and left from a node, and hemiolas are ordinarily found within diamond shapes. Non-isochronous levels occur as either prime rhythms or cross rhythms, and graphs that include them contain triangles with distinctive shapes and open nodes.

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20 As discussed above, when a hemiola results from the presence of two lowest levels (duple and triple division of the next-lowest level) without a lowest common denominator level, the hemiola appears as two segments extending downward to the left and downward to the right from a node, rather than as a complete diamond.
on one or two vertices. Graphs that include prime rhythms have segments from the midpoint of the triangle’s hypotenuse to non-integer nodes. Graphs that include cross rhythms have one vertex on a non-integer node. Graphs with many levels are taller than those with only a few.

Hypermetric structures may be shown as a series of smaller units connected with a thin line, or they may be shown as a larger single graph, depending on the desired point of view.

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node = isochronous level
with horizontal slash = the level of the notated measure

NE/SW segment = duple adjacency (except when in a triangle, see below)
with slash through segment = displacement dissonance
(lower level groups duply in two ways)

NW/SE segment = triple adjacency (except when in a triangle, see below)
with two slashes = two displacement dissonances
(lower level groups triply in three ways)

segments up or down to the right and left of a node =
grouping dissonance (central level groups or divides both duply and triply)

Triangle = non-isochronous pattern. Here, $2 + 3 + 3 + 3$.
NE/SW and NW/SE segments in a triangle = show the preponderance of duple and triple rhythms in a non-isochronous pattern. Here, triangle has a leftward point because of $2 + 3 + 3 + 3$ pattern.
hypotenuse of triangle = non-isochronous level
double line in hypotenuse = two non-isochronous levels. Here, double line indicates $2 + 3 + 3 + 3$ and $5 + 6$ levels.
open node = place holder for hypotenuse; open because there is no isochronous level that corresponds to that node.

Figure 4.26. Main elements of metric state graphs.
Having fully described my metric state graphs, my theoretical foundation is complete. I now turn to analyses of complete movements from Fauré’s chamber music, which further demonstrate my model’s capacity for describing Fauré’s metric style.
CHAPTER 5

FAURÉ’S PIANO TRIO, THIRD MOVEMENT

Overview

The finale of Fauré’s Piano Trio exemplifies many aspects of his rhythmic and metric language. It contains non-duple hypermeter, non-isochronous levels, very large hypermetric structures, and multiple simultaneous dissonances. An examination of two metric features—hypermetric organization and use of dissonance—generates insights into the movement’s design. Analysis of hypermeter also provides an explanation for the three bars Fauré added to the published edition that were absent from his manuscript, discussed by McKay and Boneau.¹

The movement is marked Allegro vivo in $\frac{3}{8}$ meter. Measures group triply throughout, so the smallest hypermetric unit is the three-bar hypermeasure. At various points these units group duply, triply, and non-isochronously, and the next higher adjacency also shows duple, triple, and non-isochronous organization. The size of the metric modules varies considerably: the smallest contains only three measures, while the largest contains 72. These two aspects of hypermeter—the size of the modules and the grouping strategies at the two adjacencies above the three-bar hypermeasure—contribute to the movement’s large-scale design. Additionally, the structure of the movement’s final module explains the three added measures. In my discussion of

¹ I mention the three added bars in Chapter 2. See McKay, “Le Trio op. 120 de Fauré,” and Boneau, “Genesis of a Trio.”
hypermeter, my metric state graphs show only the three-bar level and higher. Most dissonances are omitted from these graphs.

Fauré’s treatment of dissonance also provides shape and direction to the movement. At the start, simultaneous grouping and displacement dissonances occur, but over the course of the movement displacement dissonances gradually increase while grouping dissonances disappear. In contrast to my discussion of hypermeter, when I examine dissonance my metric state graphs show all levels, including submetric levels and dissonant ones.

In order to understand the movement’s hypermetric structure, it is important to consider its formal design, and theorists have not agreed on this point. Tait simply notes that “formally the movement is loosely constructed.” Orledge identifies features of sonata form and rondo form, Favre finds a modified rondo form ABCACBCA, McKay notes a palindromic design ABCACBCACBA, and Breitfeld categorizes it as a movement with three themes and describes a three-part design: ABC A’C’B’A+C A’C’A’. While Orledge, McKay, and Breitfeld agree that the movement contains three main themes, they disagree on both the order of their presentation and the location of the large sectional divisions.

It is easy to see why the form of the movement eludes categorization. Fauré presents a number of small thematic cells, many of which share motivic features. The lack of functional harmony makes any overarching tonal plan obscure, although there are sections that are clearly in the tonic key of D. My own formal outline identifies ten thematic cells of six or nine bars each that combine to form ten sections. I partition the movement into these ten sections based on

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thematic design: each of the sections begins with a new statement of theme A, B, C, or D.

Figure 5.1 shows this outline, and figure 5.2 lists the ten thematic cells.

<table>
<thead>
<tr>
<th>mm.</th>
<th>detailed thematic design</th>
<th>abbreviated design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-72</td>
<td>$A_1X_1A_1X_2$, $A_1YA_1Y$, $A_2A_2X_1X_2$</td>
<td>A</td>
</tr>
<tr>
<td>73-99</td>
<td>BBB</td>
<td>B</td>
</tr>
<tr>
<td>100-165</td>
<td>$C_1ZC_1X_1X_2$, $C_1ZC_1X_1X_2$</td>
<td>C</td>
</tr>
<tr>
<td>166-195</td>
<td>$(A_1+Y)(A_1+Y)$, $A_2A_2$</td>
<td>A</td>
</tr>
<tr>
<td>196-219</td>
<td>NZ', NZ'</td>
<td>D</td>
</tr>
<tr>
<td>220-228</td>
<td>$C_2$</td>
<td>C</td>
</tr>
<tr>
<td>229-267</td>
<td>BBB', $X_2$</td>
<td>B</td>
</tr>
<tr>
<td>268-312</td>
<td>$C_1ZC_1$, $X_2X_1X_1X_1$</td>
<td>C</td>
</tr>
<tr>
<td>313-366</td>
<td>(intro) $A_1A_1A_2A_2$, $Y(A_2+Y)$, $X_1X_2$</td>
<td>A</td>
</tr>
<tr>
<td>367-417</td>
<td>$C_1C_1C_1'$, $A_2A_2A_2'$, $A_2'A_2'A_2'$</td>
<td>$(C+A)$</td>
</tr>
</tbody>
</table>

Figure 5.1. Formal structure of Piano Trio III.

I divide the movement into three large sections. The first (mm. 1-165) presents the movement’s essential thematic material; it contains the initial statements of the A, B, and C themes, each consisting of a single large hypermetric module. I consider this first section to be the movement’s exposition. The second large section (mm. 166-366) develops material from the exposition, and I consider it to be a development. It contains many smaller modules. The final section (mm. 367-417) consists of a single module. It begins with a clear return to the tonic harmony and it presents a new hypermetric grouping strategy. I consider it to be a coda. I do not offer a label for the structure of the movement as a whole.

The three large sections result from combinations of the ten small thematic cells. The A, B, C and D cells contain the most clearly articulated themes. $A_1$ is important as the movement’s first thematic idea, although it is tonally ambiguous and fades in prominence as the movement
Figure 5.2. Piano Trio III, ten thematic cells.
progresses. The sequential construction of B gives it a transitional quality. C₁ is tonally unambiguous; each time it occurs, the harmonic context makes clear that it begins with scale degrees 3-4-5. It appears twice in the key of D major. To my ear, it has acquired the status of a main theme by the end of the movement, although it does not appear until measure 100. The A, B, and C cells correspond to the three themes identified by Breitfeld, Favre, and McKay. Those authors consider the D cell to be a development of the C theme, but I consider it important enough to warrant a separate label, though its first appearance occurs late in the movement (measure 196). X, Y, and Z are less independent, as they usually serve as answering passages to A, B, or C. They are distinctive enough to be considered themes, but I view them as secondary in importance to A, B, C and D, so I have excluded them from the abbreviated structure shown in figure 5.1 above.

All of the cells have characteristic metric states, and most contain dissonances. While some cells maintain the same metric state throughout the movement, others change states in later appearances. I view the cells as thematic units analogous to phrases, and in accordance with my adaptation of Rothstein’s rule of congruence described in chapter 3, these thematic cells define hypermetric units. The first downbeat of each cell is a strong hyperdownbeat. With the exception of one three-bar unit (mm. 313-315, labeled as “intro” in figure 5.1 above), the movement consists entirely of six- and nine-bar cells (duple and triple grouping of the three-bar basic hypermeasure). The cells themselves usually combine to form larger modules, defined by parallelism and other factors. They also combine additively to form non-isochronous spans.
Hypermetric Organization

Figure 5.3 shows a dot grid and metric state graph for the first of the exposition’s modules, mm. 1-72. It has a thematic design of $A_1X_1A_1X_2 \ A_1YA_1Y \ A_2A_2X_1X_2$. The module begins with a declamatory gesture in the strings ($A_1$), and the piano answers with a six-bar reply ($X_1$). This call-and-response alternation defines a twelve-bar hypermeasure, which occurs three more times, for a total of four twelve-bar hypermeasures. In the third and fourth of these, the piano’s response states a new thematic cell (Y) with a different texture, and this difference articulates two 24-bar hypermeasures. Starting in bar 49, two more twelve-bar hypermeasures occur ($A_2A_2$ and $X_1X_2$, the latter stated by the strings with piano accompaniment), to finish the first large module. In all, there are twelve six-bar thematic cells. They group duply into six twelve-bar units, and the twelve-bar units also group duply into 24-bar units. The 24-bar units group triply to form the entire span. The hypermetric organization of the three-bar units is pure duple except at the highest level. This is the largest module in the movement, and it ends with the initiation of theme B in m. 73. The duple organization at the two adjacencies above the three-bar unit begins the movement and sets a norm of twelve-bar units. Fauré returns to this hypermetric strategy frequently.

Figure 5.4 shows the dot grid and metric state graph for the exposition’s second module, mm. 73-99. It consists of three statements of the nine-bar B cell, presented in sequence in the strings. This successive parallelism creates a 27-bar module, for a pure triple hypermetric

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3 Several writers have noted the similarity of the opening gesture to the famous aria “Ridi Pagliaccio” from Leoncavallo’s 1892 opera *I Pagliacci*, which is apparently coincidental. See for instance Orledge, *Gabriel Fauré*, 187.
organization to contrast with the mainly duple structure of the A theme. The entry in measure 100 of the C₁ theme marks the end of the second module.

Figure 5.3. Piano Trio III, mm. 1-72, dot grid and metric state graph.

Figure 5.4. Piano Trio III, mm. 73-99, dot grid and metric state graph.
The exposition’s third module, measures 100-165, has the most complex thematic design of three: $C_1ZC_1X_1X_2$ $C_1ZC_1X_1X_2$. Figure 5.5 shows its dot grid and metric state graph. It begins with the six-bar $C_1$ cell in the strings, followed by the nine-bar Z cell in the piano and another iteration of $C_1$ in the strings. At measure 121, the statement of different thematic material ($X_1X_2$) in the piano (echoed canonically in the violin) might indicate the end of this module, which so far has a design of $C_1ZC_1$. However, after $X_1X_2$ appears, the entire 33-bar passage repeats, down a fifth and with the roles reversed: the piano states $C_1$, while the strings state the Z and X themes. This large-scale successive parallelism creates a 66-bar module. It has a repeated rhythmic pattern of $(6 + 9 + 6 + 6 + 6)$ measures, or expressed in terms of the three-bar unit, $(2 + 3 + 2 + 2 + 2)$, for a total of eleven three-bar units. The metric state graph shows this eleven-unit grouping as an 8/3 triangle. The dot grid’s rows a and d show the isochronous $3\ddot{4}$ and $33\ddot{4}$ levels. Row c shows the non-isochronous level that results from duple and triple grouping of the 3-bar units $(2 + 3 + 2 + 2 + 2)$, while row b shows the non-isochronous quintuple and sextuple grouping of 3-bar units $(5 + 6)$. In this excerpt, both adjacencies above the three-bar level are non-isochronous.

Figure 5.6 reproduces the metric state graphs for the exposition’s three modules. Below the graphs, numerals in brackets represent the grouping strategies for the two adjacencies above the three-bar hypermeasure. In the first module, the two adjacencies above the three-bar unit are duple. In the second module, they are both triple, and in the third, they are both non-isochronous. These three modules correspond to the A, B, and C sections of the movement.

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4 As noted in chapter 4, my bracketed numerals are similar to Cohn’s interpretations (in his first article) except that I show the lower adjacency first. For instance, when I write [2, 3] in this chapter, I refer to duple grouping of three-bar units into six-bar units, and triple grouping of the six-bar units into an eighteen-bar span.
identified by Favre, Breitfeld, and McKay and to the first three sections in my formal outline, listed in figure 5.1 above. The exposition’s design is therefore defined by the interaction of thematic and modular structure: each large module has a distinct hypermetric grouping strategy and corresponds to one of the three main themes.

Figure 5.6. Piano Trio III, metric state graphs for exposition’s three modules
In the development, hypermetric organization continues to fluctuate between duple, triple, and irregular, but in smaller modules and with more rapid cycling through different thematic cells. Figure 5.7 shows dot grids and metric state graphs for the development’s first two modules, measures 166-196. The first begins with the return of the A\(_1\) cell in the strings, but before the end of its six measures, the piano begins Y. The combination (A\(_1\)+Y) lasts nine bars and repeats, for an 18-bar module. Next, the six-bar A\(_2\) cell is stated twice in the strings starting in measure 184, for a 12-bar module. The initiation of a new theme D in measure 196 signals the end of this fifth module. The two adjacencies above the three-bar hypermeasure are [3, 2] and [2, 2] respectively.

Figure 5.7. Piano Trio III, mm. 166-195, dot grids and metric state graphs.

Figure 5.8 shows metric state graphs for measures 196-261. A comparison to figure 5.6 above reveals that Fauré has begun again in a sense: the hypermetric organization of this section is duple, then triple, then non-isochronous. Starting in measure 196, the alternation of six-bar D and Z cells creates two twelve-bar units and one 24-bar module: three duple adjacencies above
the three-bar hypermeasure. This is followed in measure 220 by the nine-bar $C_2$ cell, which consists of a three-bar motive treated sequentially. The remainder of this passage, measures 229-261, has a more complex hypermetric structure. It does not represent a module; the 33-bar passage contains a non-isochronous pattern of eleven three-bar units.\footnote{As discussed in chapter 2, non-isochronous levels are permitted only when there is an isochronous superordinate level.} Figure 5.9 shows this passage’s melody and dot grid. In measure 229, the B theme returns in the strings. In its initial presentation (mm. 73-99), B consisted of the rhythm $\frac{4}{4} \frac{4}{4} \frac{48}{48}$ stated three times, for a nine-bar unit. That nine-bar unit was then repeated twice in sequence for a 27-bar module ($9 + 9 + 9$). Here, it begins the same way, but the third iteration is extended. The first iteration of the $\frac{4}{4} \frac{4}{4} \frac{48}{48}$ rhythm begins with a descending step, and it is labeled $a_1$. The second and third iterations begin with ascending steps, and they are labeled $a_2$. The nine-bar unit therefore has a motivic design of $a_1 a_2 a_2$. In measure 247 the nine-bar unit begins for the third time, but here $a_2$ is repeated twice more, for a design of $a_1 a_2 a_2 a_2 a_2$. This is a nested sequence. The entire passage has a design of $a_1 a_2 a_2 a_1 a_2 a_2 a_2 a_2 a_2$, and a rhythmic pattern of $(9 + 9 + 9 + 6)$, or in terms of the 3-bar hypermeasures, $(3 + 3 + 3 + 2)$. The metric state graph shows this eleven-unit grouping as a 2/9 triangle.

Figure 5.8. Trio III, mm. 196-261, metric state graphs.
Figure 5.9. Piano Trio III, mm. 229-261, melody and dot grid.

The remainder of the development consists of modules of varying sizes and metric states. Figure 5.10 shows their metric state graphs. Duply organized 6-, 12-, and 24-bar units alternate with irregular groupings, including the movement’s only 3-bar unit that is not part of a larger module. It occurs at mm. 313-315, and serves as an accompanimental introduction to the final statement of A₁. The irregular 21- and 15-bar spans are not modules, since their top level consists of non-isochronous duple and triple groupings of the 3-bar unit. The development is therefore defined not only by the revisiting of themes A, B, and C, but also the fragmentation of their modules. The development’s largest modules are smaller than any in the exposition. The
largest are also hypermetrically pure duple. The others show triple and non-isochronous organization.

Figure 5.10. Piano Trio III, mm. 262-366, metric state graphs.

After a lengthy tonally ambiguous passage (measures 295-366), the arrival on a second-inversion D major chord at measure 367 heralds the start of the coda. In contrast to the development’s relatively small modules, the coda contains of a single large module: measures 367-417. Its dot grid and metric state graph appear in figure 5.11. The X above the dot grid marks the location of the three added bars. The coda contains three 18-bar hypermeasures, for a 54-bar module. (The final 18-bar hypermeasure is incomplete; I add three empty bars at the end, as I explain below.) This represents a new hypermetric strategy. Three-bar units group duply, and the resulting six-bar units group triply. Until now, every time three-bar units have grouped duply, the next higher adjacency (if there is one) has also been duple.

Figure 5.12 shows the violin part for the coda’s first 18-bar unit. The violin states the \( C_1 \) cell, then repeats it with some modified pitches, then fragments it. Beginning at measure 379, the first three bars of \( C_1 \) appear and then repeat (the fragmented version appears as \( C_1^{'} \) in the dot grid and in the musical example). The violin’s \( \{\} \) motive starts each of these spans (mm. 367, 373, 379, and 382), which define a rhythm of \( 6 + 6 + 3 + 3 \), in measures. A durational reduction,
in which three-bar units become eighth notes, would represent these 18 bars as one measure in 3\(\frac{2}{4}\) meter with the rhythm \(\text{\textit{44h}}\): two six-bar spans followed by two three-bar spans.

With the arrival on a first-inversion tonic chord in measure 385, the coda’s second 18-bar hypermeasure begins. It has the same motivic design as the previous passage: the violin states the six-bar \(A_2\) cell twice (reharmonized the second time), then states a shortened version twice,
for a rhythm of $\{4\}^h$ in reduced form. The coda’s final 18-bar unit begins at measure 403, with the *fortissimo* arrival of a root-position tonic triad—a rare occurrence in this movement. The violin part for this unit appears in figure 5.13. A three-bar $A_2$ fragment is stated four times with a leap of a descending sixth. A final statement of the motive, this time with a two-octave leap, brings the movement to a close. The durational reduction of this passage is $e^8$: four identical three-bar statements and one modified version. This sums to fifteen bars, and because of the precedent of two earlier 18-bar hypermeasures, I add three empty bars at the end to complete the final hypermeasure, for a reduced rhythmic pattern of $\{4\}^h_4|\{4\}^h_4|hh^8*$.

Figure 5.13. Piano Trio III, mm. 403-417, violin part.

I now address the issue of the three bars Fauré added: measures 412-414. Without those three bars, the final large hypermeasure would consist of three (not four) identical three-bar motives with descending sixth leaps followed by one motive with a two-octave leap. The durational reduction of this is $e^2^2^2$. This rhythm is not easily reconciled with the prevailing 18-bar hypermeasures, which in reduced form have a $\{4\}^h_4$ rhythm. In the manuscript version, the change to an octave leap at the fourth (reduced) eighth note contributes a new event accent that suggests a (reduced) $\frac{3}{8}$ meter instead of $\frac{3}{4}$ meter. Fauré’s addition of three bars places the new event accent on the third beat of a $\frac{3}{4}$ measure instead of on an off-beat. With the added bars, the durational reduction of the entire coda becomes $\{\frac{3}{4}\}^h_4|\{\frac{3}{4}\}^h_4|\{\frac{3}{4}\}^h_4|\{\frac{3}{4}\}^h_4|$. 
The coda is defined by several elements: the return of the $C_1$ theme in the tonic key, the large hypermetric module after many smaller ones, and a new hypermetric grouping strategy ([2, 3]). This new strategy creates a sense of acceleration. Previously, six-bar units had always grouped duply into twelve-bar units (or combined non-isochronously with nine-bar units). A listener attentive to the normative twelve-bar unit would notice the six-bar $C_1$ cell at the coda’s start and its reiteration six bars later, and would posit a twelve-bar unit. When $C_1$ begins for a third time at measure 379, the listener would expect a second twelve-bar unit to follow, but because of the cell’s fragmentation, the fourth iteration of $C_1$ occurs three bars early. The expected rhythm in reduced form, would be \(\frac{4}{4}\) (four iterations of $C_1$), but instead the listener hears \(\frac{4}{4} h\) (two full statements and two fragmented versions). The expected twenty four-bar unit actually contains only eighteen bars: at the nineteenth bar a strong hyperdownbeat created by different thematic material ($A_2$) and the return to tonic harmony starts the new hypermeasure. When this design repeats to form another eighteen-bar unit in measures 385-402, the sense of acceleration continues, and with the five iterations of the $A_2$ fragment in the final eighteen-bar unit, the movement rushes headlong into its conclusion.

It is interesting to note that the coda’s [2, 3] hypermetric organization reproduces the movement’s submetric structure. The movement’s lowest level is sixteenth notes, which group duply into eighth notes. Eighth notes group triply into measures: a [2, 3] submetric organization. Similarly, just as measures group triply into three-bar hypermeasures, the coda’s eighteen-bar units group triply into the entire 54-bar module. Figure 5.14 shows a metric state graph for the coda, including submetric levels. The adjacencies are [2, 3, 3, 2, 3, 3]; the lowest three adjacencies repeat at the module’s highest levels.
Metric Dissonance

While hypermeter plays an important role in shaping the movement, Fauré’s use of dissonances also contributes to its design. Each of the ten thematic cells has a characteristic metric state. Most include dissonances, and most remain the same each time they are stated. When a given cell’s metric state does change, that change usually involves either the addition of a new displacement dissonance or the subtraction of a grouping dissonance. The cells that change metric states are A₁, A₂, C₁, X₁, and X₂.

I describe C₁ first, because its motivic content affects the way I understand the changes in A₂. Its alteration involves the addition of a displacement dissonance. Figure 5.15 shows its initial and later occurrences, with their metric state graphs. The cell contains a distinctive F♯-G-A ♪ ♪ motive, which provides a durational accent on the second beat of the first two measures. Since two of the cell’s six measures contain this accent, a displaced ♪ level is viable through the cell. This creates a ♪-♪/♪ displacement dissonance, shown in the graph with a slash through the segment connecting the eighth note and measure nodes. Additionally, the cello echoes the violin
at the interval of one measure, for a $\frac{1}{4}-\frac{3}{4}/\frac{3}{4}$ displacement dissonance, the result of overlapping parallelism. This is shown with a slash through the segment connecting the measure and 3-bar nodes. Both versions of C1 contain these two displacement dissonances.

![Musical notation](image)

**Figure 5.15.** Piano Trio III, two C1 cells (m. 100, m. 367) with metric state graphs

In the later statement of C1, another displacement is added. The F#-G-A motive in the violin and cello signals the start of a six-bar hypermeasure, so when the piano echoes that motive in measure 369, it creates another instance of overlapping parallelism, for a $\frac{1}{4}-\frac{3}{4}/\frac{3}{4}/\frac{3}{4}$. 
dissonance, shown with a double slash. It also reinforces the lower-level \( \frac{3}{8} \)-\( \frac{1}{4} \) dissonance, by placing a durational accent on the second beat of the measure three times in a row.

Another excerpt containing \( C_1 \) demonstrates the increasing prominence of the \( F#-G-A \) \( \frac{3}{8} \) motive and the \( \frac{3}{8} \)-\( \frac{1}{4} \) dissonance it creates. Figure 5.16 shows mm. 379-390, soon after the passage in figure 5.15. The motive occurs (in transposed form) five times in succession. Then, at measure 384 it stops temporarily, but starting at measure 388 it occurs three more times. Each time it appears, it emphasizes the \( \frac{3}{8} \)-\( \frac{1}{4} \) dissonance, and this contributes to the coda’s build to the final climax, the *fortissimo* at measure 403. A recognition of the importance of this motive is important in understanding the alterations in the \( A_2 \) cell, which I describe below.

Figure 5.16. Piano Trio III, mm. 379-390
The two A cells also change their metric states. Cell A₁ appears at three different points: at the beginning, at measure 166, and at measure 316. The first two appearances contain the same dissonances, but in the third, a grouping dissonance disappears while a new displacement dissonance appears. Figure 5.17 shows cell A₁ in its first and third appearances. In its initial occurrence, durational accents occur on the downbeats of measures 2 and 4. A durational reduction of this cell, in which eighth notes represent measures, results in a rhythmic pattern of \(\frac{\text{4}}{\text{4}}\). The quarter notes in the reduced rhythm suggest a duple grouping of eighth notes, but they are syncopated, which creates a \(\frac{\text{8}}{\text{4}}\) displacement dissonance with an implied metrical \(\frac{\text{4}}{\text{4}}\) level. The original (unreduced) rhythms therefore involve a \(\frac{\text{1}}{\text{2}}\)-\(\frac{\text{2}}{\text{4}}\) dissonance: measures group duply in two ways. This displacement dissonance appears in the metric state graph as a slash between the measure and 2-bar nodes.

We know from examining the movement as a whole that measures group triply throughout, with hyperdownbeats on measures 1 and 4. (The parallelism of the repeating pitch pattern B₃-A helps to establish the triple hypermeter, because the B₃s begin on the downbeats of measures 1 and 4.) This means that the first cell A₁ contains a \(\frac{\text{4}}{\text{2}}\)-\(\frac{\text{4}}{\text{3}}\) grouping dissonance: measures group triply based on precedent, but duply based on durational accents. The grouping dissonance appears as a diamond shape in the metric state graph.

In the final A₁ cell (beginning in measure 316), there is a subtle alteration in rhythm. Durational accents in the string parts occur on the second and fifth downbeats, rather than on the second and fourth, defining a three-bar hypermeasure. The reduced rhythm would be \(\frac{\text{4}}{\text{4}}\) instead of \(\frac{\text{4}}{\text{2}}\). Here, the short-long pattern suggests a displaced triple grouping of measures: a \(\frac{\text{4}}{\text{3}}\)-\(\frac{\text{4}}{3}\) displacement dissonance, rather than the \(\frac{\text{1}}{\text{2}}\)-\(\frac{\text{2}}{\text{4}}\) grouping dissonance found in measures 1-6. Because measures no longer group duply in A₁’s final appearance, there is no
Figure 5.17. Piano Trio III, two A₁ cells (m. 1, m. 316) with metric state graphs.

grouping dissonance; the graph contains no diamond shape. Additionally, the piano left hand’s note onsets on the second beat of each measure create a displaced \( \cdot \) level. Eighth notes group triply in two ways (notational accents on downbeats and note onsets on second beats), for a \( \cdot \)-\( \cdot \)/\( \cdot \). displacement dissonance, shown in the graph as a slash between the \( \cdot \) node and the
measure node. The cell now has two displacement dissonances, rather than one displacement
dissonance and one grouping dissonance.

Cell A<sub>2</sub> appears in four different guises: in the exposition starting at measure 49, twice in
the development (measure 184 and measure 328), and in the coda, where its most emphatic
statement begins at measure 403, at the start of the movement’s final 18-bar hypermeasure.
Figure 5.18 shows these four versions, with their metric state graphs. The first version is quite
similar to the initial presentation of A<sub>1</sub>. Its reduced rhythm would be \( \frac{8}{4} \), which suggests an
antimetrical \( \frac{4}{4} \) level. As with the first statement of A<sub>1</sub>, durational accents in measures two and
four suggest a (reduced) \( \frac{4}{4} \) level, and according to my rules for the viability of an intermittent
level described in chapter 3, this level is active within the 6-bar span, because there is an accent
on one of the level’s unique attack points (measure two). Also like the initial presentation of A<sub>1</sub>,
it contains both a \( \frac{6}{2} \) displacement dissonance (shown in the graph as a slash through the
segment between the measure and 2-bar nodes) and a \( \frac{6}{3} \) grouping dissonance (shown as
the upper diamond). Additionally, the piano contributes another grouping dissonance. The
pitches F - E<sub>5</sub>/G<sup>##</sup> - A-E<sub>5</sub>/G<sup>##</sup> - A - E<sub>5</sub>/G<sup>##</sup> and so on suggest that sixteenth notes group triply, due
to parallelism: in each measure the second and third pitch classes are the same as the fifth and
sixth. Since notational features, as well as the strings’ eighth notes, support duple grouping of
sixteenth notes, a \( \frac{6}{8} \) grouping dissonance exists (shown in the graph as the lower diamond).

When A<sub>2</sub> returns in mm. 184-189, the piano no longer provides a grouping dissonance; its
sixteenth notes do not group triply. Otherwise, the metric state of the second version of A<sub>2</sub> is
identical with that of the first, so its graph is identical, except that it does not contain a lower
diamond. The third version of A<sub>2</sub>, in mm. 328-333, has a metric state identical with that of the
Figure 5.18. Piano Trio III, four A₂ cells (m. 49, m. 184, m. 328, m. 4-3), with metric state graphs.
second, except that the piano’s off-beat sixteenth note entrances provide a \( \cdot - \cdot - \cdot - \cdot \). displacement dissonance, shown in the graph with a slash through the \( \cdot \) and \( \cdot \) nodes.

The final version of \( A_2 \) is not a complete statement of the cell. Instead, the initial 3-bar motive is repeated, for a reduced rhythm of \( \cdot - \cdot - \cdot - \cdot \). As with the altered version of \( A_1 \), this short-long pattern suggests a displacement dissonance. Measures no longer group duply; instead they group triply in two ways, for a \( \cdot - \cdot - \cdot - \cdot \). displacement dissonance. This is shown with a slash through the segment connecting the measure and 3-bar nodes in the metric state graph, which no longer includes the upper diamond.

The graph shows one more dissonance: a slash through the segment connecting the \( \cdot \) and \( \cdot \) nodes. This derives from the \( F^\#-G-A \) \( \cdot \cdot \cdot \) motive in measures 406 and 409. Since two of the six measures in this cell contain a durational accent on the second beat of the measure, the displaced \( \cdot \) level is viable through the span.

The four metric state graphs in figure 5.18 clearly show the process of deemphasis of grouping dissonances with intensification of displacement dissonances through the movement. Reading from left to right, a grouping dissonance is eliminated (diamond disappears), then a displacement dissonance is added (slash), then the other grouping dissonance is eliminated.

Cells \( X_1 \) and \( X_2 \) occur several times throughout the movement, usually with the same metric states. There are some altered versions, however. Figure 5.19 shows an early version and a contrasting later version of both, in which \( X_2 \) appears immediately after \( X_1 \). For each version, I provide one metric state graph for the twelve-bar unit \( X_1 + X_2 \). In each case, \( X_1 \) and \( X_2 \) have the same metric states.
In the first version of $X_1$, the cello’s melody in measures 61-62 and 64-65 has the rhythm $\frac{3}{4} \frac{1}{4} \frac{1}{4} \frac{1}{4}$, which contains a hemiola: because of the durational accent on the quarter note, the rhythm suggests a metric interpretation of $\frac{3}{4} \frac{1}{4} \frac{1}{4} \frac{1}{4}$. This hemiola is more obvious in the statement of $X_2$, due to Fauré’s beaming across the barlines in measures 67-68 and 70-71, but it is implied in the $X_1$ statements as well, due to Fauré’s decision not to beam the cell’s first three notes together ($\frac{3}{4} \frac{1}{4} \frac{1}{4}$ rather than $\frac{3}{4} \frac{1}{4} \frac{1}{4}$). Because of the hemiola, the three-bar hypermeasures have
a rhythmic pattern of \((2 + 2 + 2 + 3)\), a cross rhythm within the otherwise pure triple organization of nine eighth notes. Dynamic and durational accents on the downbeats of measures 63, 66, 69, and 72 contribute an antimetrical \(\frac{3}{4}\) level, for a \(\frac{1}{4}\)-\(\frac{3}{4}\)/\(\frac{3}{4}\). displacement dissonance: measures group triply in two ways. Within the prevailing three-bar hypermeasures, hyperdownbeats occur on the first measure due to precedent and on the third measure due to dynamic and durational accents. These dissonances also appear in the second version of \(X_1 + X_2\), in measures 154-165. Both metric state graphs therefore include a \(\frac{6}{3}\) triangle, for the \((2 + 2 + 2 + 3)\) cross rhythm, and a slash through the segment connecting the measure and 3-bar nodes, for the \(\frac{1}{4}\)-\(\frac{3}{4}\)/\(\frac{3}{4}\). displacement dissonance.

In the earlier version of \(X_1 + X_2\), the piano also contributes a grouping dissonance. Note onsets in six of the twelve measures occur on the fourth sixteenth note of the measure. This suggests a \(\frac{8}{8}\) level: sixteenth notes group triply, and since the metrical grouping of sixteenth notes is duple, a \(\frac{6}{8}\)-\(\frac{8}{8}\). grouping dissonance exists, shown in the metric state graph with a diamond shape.\(^6\) This dissonance is absent from the second version, so its graph does not contain a diamond.

As with the changes in \(A_1\) and \(A_2\), the later version of \(X_1 + X_2\) contains another displacement dissonance. In the first version, a \(\downarrow\)-\(\frac{3}{4}\)/\(\frac{3}{4}\). displacement dissonance results from dynamic accents in the melody. Strong hyperdownbeats occur on the first and third downbeats of each three-bar hypermeasure. In measures 154-165, the piano right hand echoes the cello melody at a time interval of one measure. This overlapping parallelism creates another \(\downarrow\)-\(\frac{3}{4}\)/\(\frac{3}{4}\). displacement dissonance. The cello melody provides hyperdownbeats on the first

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\(^6\) This \(\downarrow\)-\(\frac{3}{4}\)/\(\frac{3}{4}\). grouping dissonance was established in the previous twelve-bar unit, mm. 49-60, as described above in the section on the \(A_2\) cell.
measure of each hypermeasure, while the piano melody’s hyperdownbeats occur on the second measure. Measures now group triply in three ways for a $\frac{1}{4}$-$\frac{3}{4}$-$\frac{3}{4}$-$\frac{3}{4}$ dissonance, shown in the graph with two slashes through the segment connecting the measure node to the three-bar node.

My analysis of the third movement of Fauré’s Piano Trio sheds light on the movement’s design, a topic of disagreement among others who have written about it. While I do not provide a label for the movement’s overall form, I identify an Exposition-Development-Coda structure from examining the interaction of thematic design and hypermetric grouping strategy. The exposition states the movement’s three main themes, each in a large module with a distinctive hypermetric grouping strategy at the two adjacencies above the three-bar hypermeasure: in the first, both adjacencies are duple, in the second both are triple, and in the third both are non-isochronous. The development presents smaller modules and faster cycling through themes. The coda, marked by the return to tonic harmony and a restatement of the C1 theme, consists of a single module with a new hypermetric grouping strategy: [2, 3]. This duple-then-triple organization reproduces the movement’s submetric organization (defined by sixteenth notes, eighth notes, and the dotted quarter note), and, with the fragmentation of melodic cells, creates a sense of acceleration through the coda. The coda’s hypermetric organization also explains the three bars not present in the manuscript that Fauré added for the published version.

Fauré’s use of dissonance also contributes to the movement’s large-scale shape and direction, as he systematically reduces the incidence of grouping dissonance while increasing displacement dissonance. These two metric features, hypermetric structure and use of dissonance, create a compelling sense of urgency and inevitability.
CHAPTER 6

FAURÉ’S FIRST VIOLIN SONATA, FIRST MOVEMENT

Overview

The First Violin Sonata is deservedly Fauré’s best-known chamber work.¹ Nectoux identifies it as Fauré’s “first great masterpiece,” Schmitt hails the occasion of its composition as a “red letter day in the history of chamber music,” and J. Barrie Jones remarks that “its freshness and spontaneity…are akin to the coming of Spring after Winter.”² Some authors have noted specifically Fauré’s use of rhythm. Abram Loft identifies an “insistent rhythmic wash,” William Rorick finds a “dynamic structural rhythm,” and Patrick Devine praises the movement’s “energetic sweep.”³

I will discuss four aspects of Fauré’s rhythm and meter that generate the movement’s propulsive force and give it rhythmic vitality: accelerating hypermetric organization, pervasive displacement dissonance, grouping dissonances at key points in the movement, and differing

¹ As of this writing, the website www.arkivmusic.com lists 54 available recordings of the First Violin Sonata. The multi-movement chamber work by Fauré with the next most recordings is the First Piano Quartet, with 31. All others have fewer than 25.


lowest levels. In addition to providing rhythmic impetus, these features also help to articulate
the movement’s large-scale structure, which follows a standard sonata form plan.\footnote{Copland describes Fauré’s rigid adherence to that model as stilted, but most writers have appreciated the movement’s structure. Compare Schmitt, 387 to Copland, “Gabriel Fauré, a Neglected Master,” 582.}

Accelerating Hypermetric Organization

The first rhythmic feature I examine in the movement is accelerating hypermetric
organization, which occurs in the main theme and coda. Figure 6.1 shows the movement’s main
theme, which the piano states alone; the violin enters in measure 23 at the start of the transition
section. Its melody consists mainly of half notes and quarter notes, accompanied by figuration in
constant eighth notes. In order to understand the theme’s hypermetric structure, it is useful to
consider its tonal structure.\footnote{Edward Phillips examines this movement’s tonal structure in detail, from a Schenkerian perspective. See Edward R. Phillips, “The Organic Nature of Sonata Form in Fauré,” 145-161.} The movement’s A major tonality is introduced with a first
inversion tonic triad. The bass line moves slowly: scale degree 3 for four bars, scale degree 4 for
four bars (supporting a first inversion supertonic triad), then two bars of each, reharmonized.

In measure 14, several important events occur. The crescendo of the previous two bars
culminates in a dynamic of forte. While the eighth note accompaniment continues, here constant
quarter notes make up the melody. The bass line moves to D\(_\flat\), supporting a d\(_\flat\) half-diminished
seventh chord and initiating a modulation to the mediant key of c\(_\flat\) minor. These factors create a
phenomenal accent on the downbeat of measure 14, which I consider to be a strong
hyperdownbeat. During this passage, the d\(_\flat\) half-diminished chord (the supertonic in the key of
c\(_\flat\) minor) alternates with a second inversion c\(_\flat\) minor triad. The bass line’s arrival in measure 16
on G\(_\flat\) might signal the structural dominant in the key of c\(_\flat\), but I view that note instead as a
neighbor to the bass line’s \( F_\natural \), prolonging the predominant function. It is harmonized with a second inversion tonic triad that does not resolve to the dominant, but rather returns to the supertonic chord.

Finally, at the downbeat of measure 20, with a *fortissimo* crash of a five-note chord (by far the densest texture so far), the structural dominant (in \( c_\sharp \) minor) occurs: a cadential 6/4 that resolves two bars later to a root position dominant chord. These factors create a strong hyperdownbeat at measure 20. Constant eighth notes no longer simply provide textural arpeggiation, instead they have moved into the melodic foreground.

This main theme consists of three hypermetric modules. The first, characterized by the melody in half notes and quarter notes, the bass line’s oscillation between \( C_\sharp \) and \( D \), and the \( A \) major tonality, lasts for twelve bars: three four-bar units. The second module, defined by the prolongation of the \( d_\sharp \) half-diminished predominant chord, the move to a \( c_\sharp \) minor local tonality,
and the melody in constant quarter notes, lasts six bars: three two-bar units. The final module consists of three bars of the structural dominant chord and constant eighth notes in the melody. The significant difference in length between these three modules (12, 6, and 3 bars) is somewhat unusual, but the very strong accents on the downbeats of measures 14 and 20 allow no other equally feasible metric interpretation. A durational reduction of this passage appears in figure 6.2. Eighth notes represent reduced measures, measure numbers appear as circled numbers, and barlines show boundaries of hypermetric modules. Notes in the treble clef staff show chords, notes in the bass clef staff show the bass line, and Roman numerals show essential harmonies.

Figure 6.2. First Violin Sonata I, mm. 1-22, reduction.

The sense of acceleration that occurs during the main theme arises from the progressive shortening of both the note values in the melody (quarter notes and half notes in the first module, only quarter notes in the second, and only eighth notes in the third) and the length of the modules themselves (12 bars, then 6, then 3). The systematic way that Fauré shortens the modules warrants further investigation. The first module results from triple grouping of four-bar units,

6 The up-and-down sweep of the melodic line and the goal-directed harmonic motion contribute to the forward momentum as well, of course.
the second from triple grouping of two-bar units, and the third from triple grouping of one-bar units. In each case, the metric state is pure duple except at the highest adjacency. In fact, with a few notable exceptions, in the entire movement triple groupings occur only at the highest or lowest adjacencies. This creates a distinctive hook shape in the metric state graphs, shown in figure 6.3. Their rightward slope and similarity in shape to arrows seem an apt visual representation of the movement’s forward momentum.

Figure 6.3. First Violin Sonata I, mm. 1-22, metric state graphs.

The main theme appears three more times in the movement: in the exposition’s repeat, in the recapitulation, and in the coda. Its final appearance, shown in figure 6.4, contains significant modifications. The theme begins with a tonic A major chord in root position, rather than in first inversion. Also, the theme remains in the tonic key (with some modal inflections and temporary tonicizations), rather than modulating to the mediant.

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7 These metric state graphs do not include any dissonances, because my focus here is on hypermetric structure. When I consider dissonances below, my metric state graphs will show them.
There are also changes in the design of the melody. Figure 6.5 shows the melody alone in the exposition and coda. The excerpts are arranged so that the three modules of the exposition’s main theme each occupy one line of music. Several differences are apparent. First, the exposition’s first two four-bar hypermeasures have been compressed to three bars each in the coda (compare for instance mm. 2-5 and 385-387). Second, durational accents occur in measures 397 and 399. Third, the final module has been expanded from three bars to eight bars, due to the repetition of some melodic figures. These repeated figures have been bracketed, and I discuss them in more detail below.

All of these changes have implications for hypermetric organization. Because the section does not modulate, tonal function does not articulate the same hypermetric units as in the exposition. In the exposition, the bass line’s move to D♭, the modulation to c♯ minor, and the
prolongation of that key’s predominant provide a strong accent at measure 14 and help to define the second module (mm. 14-19). Because the coda does not modulate, the strong hyperdownbeat does not occur at the corresponding point (measure 395); it occurs two bars later, with the durational accent in the melody and the bass line arrival on the dominant of A major. The coda’s first module, which essentially prolongs tonic harmony, consists of twelve measures (mm. 385-396). The strong hyperdownbeat at measure 397 begins another twelve-bar hypermeasure, which prolongs dominant harmony. The final tonic chord, at measure 409, also occurs on a strong hyperdownbeat. It corresponds to the exposition’s measure 23, the beginning of the transition section.
The coda’s twelve-bar hypermeasures do not tell the whole story, however. The first module has a rhythmic pattern of \((3 + 3) + (2 + 2 + 2)\): two three-bar hypermeasures followed by three two-bar hypermeasures. This is an indirect grouping dissonance. The second twelve-bar hypermeasure (mm. 397-408) consists of three four-bar hypermeasures, but starting in measure 401 there is also an antimetrical \(\frac{1}{4}\) level: half notes group triply based on the successive parallelism of the repeating pitch classes (shown with brackets in figure 6.5 above). After three \(\frac{1}{4}\) beats, quarter notes group triply for six beats. From the start of measure 401 through measure 408, the rhythmic pattern (in quarter notes) is \((6 + 6 + 6) + (3 + 3) + (4 + 4)\): three six-beat units, two three-beat units, and two measures.

Figure 6.6 shows a durational reduction of the coda with metric state graphs.\(^8\) The eighth note represents the measure, so the dotted-quarter note represents a three-bar unit, sixteenth notes represent half notes, thirty-second notes represent quarter notes, and dotted-sixteenth notes represent three-quarter-note units. As in figure 6.2 above, the upper staff shows chords, the lower staff shows the bass line, Roman numerals show essential harmonies, and circled numbers show measure numbers. Here, barlines show divisions between lower-level units with different metric states, rather than the larger twelve-bar modules, so the two three-bar hypermeasures that begin the coda appear as one measure in \(\frac{9}{8}\) and the three two-bar hypermeasures that follow appear as one measure in \(\frac{3}{4}\). The bass line’s sixteenth notes in the fourth reduced measures below represent notes that occur on half-note beats in the original (every second quarter note).

The six metric state graphs that appear in figure 6.6 warrant further explanation. In the first graph, measures group triply but all other adjacencies are duple. This is because of the

\(^8\) The last measure of the movement, which begins a new hypermeasure, is omitted from the reduction and the graphs.
Figure 6.6. First Violin Sonata I, mm. 385-408, reduction and metric state graphs.

compression of the main theme’s first two four-bar hypermeasures, shown in figure 6.5 above. The second metric state graph shows the three two-bar hypermeasures that follow. Together, these two units comprise the first twelve-bar hypermeasure, which prolongs the tonic harmony. The thin segment that connects their measure nodes in the metric state graphs indicates that they combine to form a larger module. In the reduction, these first two graphs appear as one measure in $\frac{6}{8}$ meter and one measure in $\frac{3}{4}$ meter.

The next four graphs are also connected with a thin segment, showing that they combine to form another twelve-bar module. The first of these shows the normative four-bar hypermeasure that begins the second twelve-bar module; the reduction shows it as one measure in $\frac{3}{2}$. The next two graphs represent units defined by antimeirical groupings (bracketed in figure 6.5 above). The four and one-half bar span of the fourth metric state graph represents a triple grouping of one and one-half bar units, which themselves result from the triply grouped half note
units. The one and one-half bar span of the fifth metric state graph results from triply grouped quarter notes. Because these graphs represent spans that are not whole-number multiples of measures, the segments that connect to their measure nodes are thinner. This indicates that the $\circ$ level does not participate in the lower-level metric structure, which is instead defined by antimetrical groupings. The final metric state graph represents measures 407-408. The two chords in these measures signal a return to the metrical $\circ$ level.

By reading the metric state graphs and the durational reduction from left to right, we may understand the coda’s acceleration of metric organization. The relevant unit in the first graph is the three-bar hypermeasure (a dotted quarter note in the reduction). The second and third graphs have two-bar units (reduced quarter notes), grouped triply and duply respectively. The acceleration continues as the next two graphs contain units of six quarter notes and three quarter notes: $1 \frac{1}{2}$ measures and $\frac{3}{4}$ measures (reduced dotted eighths and dotted sixteenths). The final graph represents a reversal of the acceleration, since its relevant units are measures (reduced eighth notes). These two measures, along with the movement’s final bar (omitted from the graphs and reduction) contain only chords on the downbeats, providing an emphatic conclusion.

Pervasive Displacement Dissonances

The hypermetric acceleration of the main theme and coda contributes greatly to the movement’s “energetic sweep.” Dissonances also contribute to rhythmic vitality. The primary dissonance in the movement is a $\downarrow-\uparrow$ displacement dissonance, found in the main theme, the second theme, and frequently throughout the development and coda. It serves to enliven the rhythmic texture and relieve the monotony of the constant piano figuration. Figure 6.7 shows the movement’s first nine measures, with the metric state graph for mm. 2-9. As discussed in
chapter three, the $\text{\textbf{\textdagger}}\text{\textbullet}\text{\textdagger}$ rhythm creates an antimetrical $\text{\textbullet}$ level and an implied antimetrical $\text{\textbullet}$ level, for a $\text{\textbullet}-\text{\textbullet}/\text{\textdagger}$ displacement dissonance. The metric state graph shows pure duple organization and a single displacement dissonance.

![Figure 6.7. First Violin Sonata I, mm. 1-9, with metric state graph.](image)

The same dissonance is present in the movement’s second theme, the first four bars of which appear in figure 6.8. The piano’s triplets enter after quarter rests, creating note onset accents on the second beat of each measure. As with the dissonance of the first theme, this defines a displaced $\text{\textbullet}$ level and an implied $\text{\textbullet}$ level, for another $\text{\textbullet}-\text{\textbullet}/\text{\textdagger}$ displacement dissonance. The metric state graph shows pure duple organization except for the lowest adjacency (because of the accompanimental triplets), and a single displacement dissonance.
In the development section, Fauré explores several other displacement dissonances. Figure 6.9 shows the first phrase of the development. As in the exposition, the syncopated notes in the melody establish a $1-\frac{3}{4}$ displacement dissonance. In addition, the piano echoes the violin melody at the time interval of two measures, creating a $2\omega-4\omega/4\omega$ displacement dissonance, the result of overlapping parallelism: the violin’s four-bar hypermeasures begin on bars 106, 110, 114, and 118, while those of the piano begin on bars 108, 113, 116, and 120. The bass line and harmonic changes define yet another dissonance. Starting in measure 109, chords in the piano change every two bars, on odd-numbered measures. The melody’s two-bar hypermeasures begin on even-numbered measures, and this creates a $\omega-2\omega/2\omega$ displacement dissonance, which according to my rules for the viability of an intermittent level, persists through the entire 16-bar
unit. This seemingly simple passage contains three different displacement dissonances, as the metric state graph shows with three slashes.

Figure 6.9. First Violin Sonata I, mm. 106-121, with metric state graph.

Figure 6.10 shows one more passage from the development, also with three simultaneous displacement dissonances. This passage (measures 138-153) contains two motivic ideas: syncopated octaves (bracketed and labeled a), and an eighth note figure in canon (b). In the first four bars of the passage, the violin states motive a while the piano plays b. The fourth iteration
of b (the piano’s top line in measure 141) is incomplete, so it is labeled b’. In measure 142, the piano right hand presents motive a while the violin and piano left hand share the four canonic statements of b. Starting in measure 146, the violin plays an embellished version of the syncopated octaves (a’) along with the piano’s b statements, and then the roles again reverse for the final four bars of the passage. This four-bar alternation of motivic ideas establishes four- and eight-bar hypermeasures.

The syncopated octaves provide an antimetrical o level, for a o-2/2 o dissonance. The canonic presentation of b contributes a o-2 o/2 o dissonance, because of overlapping parallelism: the first and third iterations of b in each four-bar hypermeasure imply hyperdownbeats on even-numbered measures, while the second and fourth imply hyperdownbeats on odd-numbered measures. Finally, the alternation of motives a and b in four-bar units establishes a 4 o-8 o/8 o dissonance, again due to overlapping parallelism: the violin’s eight-bar hypermeasures begin with syncopated octaves at measures 138 and 146, while those of the piano begin at measures 142 and 150.
Figure 6.10. First Violin Sonata I, mm. 138-153, with metric state graph.
Displacement dissonances contribute to the movement’s rhythmic vitality and, because of their pervasiveness, they contribute to its cohesion as well. Fauré also uses grouping dissonances, but much more sparingly. They occur at four key points in the movement: the end of the main theme, the end of the exposition, the end of the development, and the coda. Figure 6.11 shows measures 20-22, the last three bars of the main theme. Notationally, eighth notes group duply into quarter notes, but they group quintuply based on pitch parallelism: from the high E the pitch pattern E-D♯-C♯-E-C♯ repeats (bracketed in the example). This creates a non-isochronous (3 + 2) pattern, shown in the metric state graph as a 2/3 triangle.

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9 Devine also notes most of these grouping dissonances. See Devine, 267-270.
The second occurrence of grouping dissonance occurs near the end of the exposition. Figure 6.12 shows measures 86-89, in which quarter notes divide both duply and triply, for an indirect grouping dissonance. The third instance of grouping dissonance in the movement occurs at the end of the development section. Quarter notes group duply based on notation, but they group triply based on parallel pitch contour. Figure 6.13 shows this passage, with the rising sequence of three-beat spans bracketed.

![Figure 6.12. First Violin Sonata I, mm. 86-89, with metric state graph.](image)

I have already discussed grouping dissonance in the coda at length. An indirect grouping dissonance occurs in the coda’s first twelve-bar module, as measures group triply, then duply. Its final module also includes sextuple and triple grouping of quarter notes (see figures 6.4, 6.5, and 6.6 above).
Lowest Levels

Fauré’s grouping dissonances add a degree of complexity to structurally important points in the movement, helping to articulate large-scale sections. Another rhythmic feature that defines large sections is the lowest level present in a passage. Within a given span, the lowest level usually results from constant piano figuration, the “insistent rhythmic wash” noted by Loft. These accompanimental figures usually continue for many measures, providing cohesion. Changes in lowest levels are therefore notable events. Figure 6.14 shows four 4-bar excerpts from the exposition. In the first, from the opening of the main theme, eighth notes are the lowest level. The second excerpt, beginning at measure 57, shows the start of the second theme. Triplets have replaced eighth notes as the lowest level. The third excerpt appears just before the
closing theme, and its lowest level is quarter notes. The fourth excerpt shows the start of the closing theme at measure 86. It has two lowest levels: eighth notes and triplet eighth notes. The relaxation in the third excerpt provides a startling contrast to the frenetic activity of the rest of the movement.

Figure 6.14. First Violin Sonata I exposition, four different lowest levels.

The development also contains several different lowest levels, and an even more dramatic relaxation near its end. Figure 6.15 shows four excerpts from the development. The first three have the same lowest levels as the excerpts from the exposition: eighth notes, then triplets, then quarter notes. In the fourth, which occurs soon after the third, near the end of the development, half notes are the lowest level. This ethereal passage suspends time momentarily before a gradual acceleration that rushes headlong into the recapitulation.
In this chapter, I have examined four factors that provide the First Violin Sonata’s first movement with rhythmic impetus and articulate large-scale sections. First, accelerating hypermetric organization generates an “energetic sweep,” by progressively shortening metric units in the exposition and coda. My metric state graphs of the exposition’s main theme (figure 6.3) provide a striking visual representation of the forward momentum, with their rightward slope and arrow-like shape. Second, pervasive displacement dissonances provide rhythmic vitality and cohesion. The movement’s main displacement dissonance (\(4-2\)) is found in all sections, and the development contains passages with as many as three simultaneous displacement dissonances. Third, grouping dissonances occur at significant structural points: the end of the main theme, the end of the exposition, the end of the development, and the coda. Fourth, the lowest active level provides an “insistent rhythmic wash” through much of the movement, and brief passages of slower motion provide contrast, signal structurally important points, and emphasize the rhythmic intensity of the rest of the movement. Together, these four
metric features give the movement a vibrant and vivacious tone, and help to make the sonata Fauré’s most popular chamber work.
CHAPTER 7

FAURÉ’S FIRST CELLO SONATA, FIRST MOVEMENT

Overview

Writers describing the first movement of Fauré’s First Cello Sonata (1917) emphasize its harshness and intensity. Duchen deems it “possibly Fauré’s most ascerbic work,” for Orledge it “reflect[s] the atrocities and upheaval of war,” Jones describes it as “one of the toughest and most intractable that Fauré ever wrote,” and Nectoux finds “a concentrated force unique in Fauré’s output.”¹ Nectoux summarizes the musical features responsible for the movement’s harsh character: “the first theme is written for the solo instrument in a very unusual manner, with furious accents and down bows disturbed by violent cross-rhythms and syncopations, against a biting piano accompaniment.”² Figure 7.1 shows the movement’s main theme.

Contrasting with the movement’s vehemence, however, is a feeling of unsettledness. Duchen’s description continues: “it seems to have absorbed all the tension, stress and anxiety which the war was inducing.” Orledge notes that “the hemiola is also principally what makes the opening movement of the First Cello Sonata seem so aggressive and insecure.” Tait observes that “rhythmic ambiguity in the melodic line leads to intentional confusion.”³ It is this second


² Nectoux, Gabriel Fauré: A Musical Life, 413.

³ Duchen, 192-193; Robert Orledge, Gabriel Fauré, 256; Robin Tait, The Musical Language of Gabriel Fauré, 198 [all emphases added].
family of characteristics—anxiety, insecurity, and confusion—that is the subject of my investigation of the movement. Orledge attributes it mainly to the use of hemiola and Tait finds it in the rhythmically ambiguous melody. Both of these factors play a part, but I situate it more
broadly in the metric ambiguity that permeates the movement on various levels. Metric ambiguity may result from either displacement dissonance or grouping dissonance, and in this movement both types are present, often at the same time.

Metric ambiguity is most pronounced in the main theme, where it exists on four metric levels: the tactus (the grouping of eighth notes into quarter notes or dotted quarter notes, as well as the location of strong eighth-note beats), the grouping of the tactus into the measure (the half note vs. dotted half note level); the lowest hypermetric level (the location of hyperdownbeats on odd-numbered or even-numbered downbeats), and the next higher hypermetric level (the duple vs. triple grouping of two-bar units). Outside of the main theme, hypermetric ambiguity also occurs frequently: in the exposition’s transition section, the recapitulation’s second theme, and the coda. In all of these passages, the duple vs. triple grouping of measures, as well as the location of strong hyperdownbeats, are in question. This ambiguity creates a sense of metric disorientation that contributes greatly to the movement’s unsettled and anxious character.

Because the movement contains so many levels and simultaneous dissonances, my analyses first examine the various lines separately (cello, piano right hand, piano left hand), and then consider them in combination.

Before presenting my analysis, I digress briefly to discuss the movement’s form in order to clarify my use of terminology. As my labels for formal sections suggest, I consider the movement to be in sonata form. Orledge agrees, but for Tait, it is “hardly recognizable as being in sonata form.” Favre finds a sonata form modified by the addition of an afterdevelopment (Schlußdurchführung), but Breitfeld rejects any implication of sonata form, noting instead a

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strophic two-part form: ABA’:A’B’A’’. In my view, the standard sonata-form sections are apparent due to both thematic design and tonal plan, though they are sometimes separated by lengthy transitions. Orledge, Favre, and Breitfeld agree in locating the start of the movement’s final large section (labeled respectively coda, afterdevelopment, and A’’) at measure 194, but I find the coda sixteen bars later, at measure 210. This discrepancy warrants an explanation.

James Hepokoski and Warren Darcy distinguish between rhetorical and tonal conceptions of the coda, the former defined thematically and the latter by tonal plan. They prefer the rhetorical approach, in which the coda begins “once the recapitulation has reached the point at which the exposition’s closing materials…have been revisited in full.” They go on to explain that “it might happen that as the recapitulation comes to its expected close one finds a last-instant deviation from a strict correspondence with the end of the exposition… This recomposed recapitulatory conclusion might…merge into a transitional passage preparing for the coda proper.” This is what occurs in the cello sonata’s first movement. The recapitulation revisits the exposition’s closing material until measure 194, but the passage in measures 194-209 is sequential and tonally ambiguous, giving it a transitional quality. Breitfeld notes a return to d minor in measure 194, but in fact that tonality, like several others in the passage, is hinted at only very briefly, with a first-inversion triad and without its dominant. The arrival on a root-position tonic chord in measure 210 with a perfect authentic cadence signals the start of the coda proper.

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5 Favre, Gabriel Fauré’s Kammermusik, 225-6; and Breitfeld, Form und Struktur, 142-143.


7 Hepokoski and Darcy, 281.

8 Ibid., 282.
If we consider the passage from measure 194 through measure 209 to be a transition section, then the rhetorical and tonal conceptions agree in locating the start of the coda proper at measure 210.

Metric Ambiguity in the Main Theme

As discussed in Chapter 2, Lerdahl and Jackendoff describe the tactus as the level at which listeners tap their feet. It is between 40 and 160 beats per minute, and often around 70. At this movement’s indicated tempo (♩=138), the quarter note would be quite a rapid tactus, and a listener might prefer to tap at a slower level (♩=69 and ♩=46 both fall within Lerdahl and Jackendoff’s limits for the tactus), but for the purpose of my discussion, I will define the tactus as the ♩ level, because it is the division of the notated measure and Fauré has privileged it with his metronome marking. Although the tactus and measure are notationally clear due to the meter signature, the music contains conflicting levels, and none is obviously normative or referential. The listener is left wondering where “the beat” is, on both the tactus and the measure levels.

The main theme’s meter signature defines the ♩ and ♩ levels. Figure 7.2 shows a dot grid and metric state graph for these notational levels, with the dot grid’s rows labeled as a and g. (They are labeled nonconsecutively because they are a subset of the passage’s complete dot grid, which appears in figure 7.5 below.) These levels are consonant with a triple adjacency, reflecting the ¾ meter signature.

The piano right hand’s lowest level is the ♩ level. Dynamic accents (shown with accent marks) occur every fourth eighth note, for a ♩ level. Between the ♩ level and the ♩ level is an implied intermediary ♩ level, which coincides with the notationally defined quarter note level of the meter signature (row g in figure 7.2). Changes in harmony in measures 3 and 5
articulate a $2\frac{1}{2}$ level. Figure 7.3 shows a dot grid and metric state graph for these levels. They are consonant, though the $\frac{3}{4}$ level of row f is dissonant in relation to the $\frac{1}{2}$ level of figure 7.2’s row a, creating the hemiola that Orledge notes. All adjacencies except one are duple. In figure 7.3 there is no measure node indicated with a horizontal line segment. This is because the piano part does not articulate the level of the notated measure. Based on the piano right hand alone, a listener would identify the tactus as the notated quarter note, but would misidentify the measure as a duple grouping of quarter notes.

The piano left hand contributes more levels. It provides bass accents every fourth eighth note, starting at the second eighth note of measure 1. Density accents in the right hand coincide with and reinforce the bass accents. They create the same set of consonant adjacencies found in figure 7.3 above: the $\frac{3}{4}$ level defined by the bass notes divides duply into an implied intermediary $\frac{1}{2}$ level and groups triply into a $2\frac{1}{2}$ level based on harmonic changes. The bass accents are displaced by one eighth note from the dynamic accents of the right hand, however. Figure 7.4 shows a dot grid and a metric state graph for these levels. The metric state graph is identical to

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9 I label the two-bar level as $2\frac{1}{2}$, even though it is perceived as a triple grouping of half notes rather than a duple grouping of notated measures. While the level may be perceived as $3\frac{1}{2}$, as discussed in Chapter 2, in my labels for levels, arabic numerals show multiples of notated measures. Maintaining the one-bar unit for counting purposes has a theoretical as well as a practical basis, as I discuss below.
that in figure 7.3, and the dot grid is also identical except that the first pulse of the three highest levels coincides with the second eighth note pulse. The upper three levels are therefore dissonant in relation to those of figure 7.3. Based on the piano left hand alone, a listener would misidentify the tactus as a displaced quarter note, and would misidentify the measure as a duple grouping of those quarter notes.

Figure 7.4. First Cello Sonata I, main theme, dot grid and metric state graph for piano left hand.

Figure 7.5 contains a dot grid and metric state graph that include all levels discussed so far. The metric state graph shows two duple adjacencies: \(\dot{\text{d}}-\dot{\text{d}}\) and \(\dot{\text{d}}-\text{d}\) (rows f, g, and h). The slash between the \(\dot{\text{d}}\) and \(\text{d}\) nodes indicates that eighth notes group duply in two ways for a \(\dot{\text{d}}-\dot{\text{d}}/\text{d}\)
displacement dissonance: strong pulses occur at both on-the-beat quarter note pulses (row g) and at off-beat pulses (row d). As noted in chapter 4, the metric state graph does not show the replication of this displacement dissonance at higher levels (rows b and c). There is no segment connecting the \( \text{\textfrac{2}{2}} \) and \( \text{\textfrac{2}{2}} \) nodes. This is because the measure level is defined only by the meter signature; the \( \text{\textfrac{2}{2}} \) levels arise from the triple grouping of the \( \text{\textfrac{2}{2}} \) level, not the duple grouping of the \( \text{\textfrac{2}{2}} \) level.

\[
\begin{array}{cccccccc}
\text{a} & \text{\textfrac{2}{2}} & (\text{notated measures}) & . & . & . & . & . \\
\text{b} & \text{\textfrac{2}{2}} & (\text{piano lh}) & . & . & . & . & . \\
\text{c} & \text{\textfrac{2}{2}} & (\text{piano lh}) & . & . & . & . & . \\
\text{d} & \text{\textfrac{2}{2}} & (\text{piano lh}) & . & . & . & . & . & . & . & . & . & . & . & . \\
\text{e} & \text{\textfrac{2}{2}} & (\text{piano rh}) & . & . & . & . \\
\text{f} & \text{\textfrac{2}{2}} & (\text{piano rh}) & . & . & . & . & . \\
\text{g} & \text{\textfrac{2}{2}} & (\text{piano rh}) & . & . & . & . & . & . & . & . & . & . & . & . & . & . & . & . & . & . \\
\end{array}
\]

Figure 7.5. First Cello Sonata I, main theme, dot grid and metric state graph, without cello.

Because of the passage’s \( \text{\textfrac{2}{2}}-\text{\textfrac{2}{2}}/\text{\textfrac{2}{2}} \) displacement dissonance, the listener searching for the tactus has two options: the right hand’s on-the-beat quarter notes, or the left hand’s off-the-beat quarter notes (rows d and g). Both are implied intermediary levels defined by the two \( \text{\textfrac{2}{2}} \) levels (rows c and f). The off-the-beat \( \text{\textfrac{2}{2}} \) level might seem to contain stronger accents: it is defined by
both bass line and density accents compared to only dynamic accents in the right hand. However, in actual performance the on-the-beat \( \downarrow \) level is usually at least equally prominent, thanks to the performer’s practice of very heavily accentuating the dynamic accents, well beyond the notated \textit{piano} dynamic indication. Neither \( \downarrow \) level emerges as clearly referential.

A listener might not be certain which quarter note pulse represents the tactus, but s/he would believe that quarter notes group duply. Therefore, the perceived measure would be one of the \( \downarrow \) levels. The \( \downarrow \) level would not be considered, even though it is actually the notated measure. In summary, the tactus might be row d or row g. The measure might be row b, c, e, or f, but not row a.

We have not yet considered the cello part, which, according to Tait, provides “intentional confusion.” This confusion results from the fact that the melody’s rhythms are not regular enough to define clearly any level. Consider as a contrasting example the beginning of the main theme of this sonata’s third movement, which appears in figure 7.6. With the exception of two syncopated notes, durational accents always fall on strong beats. This regularity—longer durations on most measures’ first and third beats—grounds the melody in its metric context, and makes it easily comprehensible. The slurs also contribute to metric regularity and comprehensibility.

![Figure 7.6. First Cello Sonata III, mm. 2-5, cello part.](image)
In the first movement’s main theme, the cello melody is not grounded in any metric context. Figure 7.7 shows six versions of the melody’s first four measures. Version 1 contains the actual notation, and the other five are rebarred. Each of the first three versions has a different meter signature, and the cello begins on the downbeat. Versions 4 through 6 have the same three meter signatures and the cello begins with an anacrusis. None of the six versions is particularly compelling as a preferred metrical reading. In the first three versions the accent mark on the A3 occurs on a downbeat, but durational accents occur mainly on weak beats. In versions 4 through 6, durational accents occur more often on strong beats, but the accent mark occurs on a weak beat. Versions 2 and 6 are most convincing to my ear, although neither corresponds to the actual notation. In version 2, eighth notes group duply, and the melody’s initial note, the durational accent on F3, and the dynamic accent on A3 all occur on downbeats. In version 6, eighth notes group triply, and all of the notes with relatively longer duration occur on relatively strong beats.

The cello part does not exist in isolation, however. It begins in measure two, after the piano has already begun establishing the quadruple grouping of eighth notes, and the cello’s rhythms seem completely unrelated to the piano’s two $\frac{3}{4}$ levels. Figures 7.8a-d show four possible interpretations of the measure level. In figures 7.8a and b, barlines mark off respectively the on-the-beat $\frac{3}{4}$ level and off-the-beat $\frac{1}{4}$ level of figure 7.5’s rows f and c. They show the cello part in the metric contexts most clearly suggested by the piano. The cello’s ties across barlines and durational accents on weak beats make both metric interpretations unconvincing. Figure 7.8b seems particularly unlikely, since many of the cello’s accents occur on off-beats. In figures 7.8c and d, barlines appear as in figure 7.7, versions 2 and 6. They show the piano part in the cello’s preferred metric contexts. In figure 7.8c, none of the piano’s
Figure 7.7. First Cello Sonata I, mm. 2-5, cello part barred six different ways.

phenomenal accents (from either \( \text{\textdagger} \) level) occur on downbeats, though the dynamic accents all occur on quarter note beats. The cello’s first note, the durational accent on F3, and the dynamic accent on A3 do occur on downbeats. In figure 7.8d, the shifting location of the piano’s accents make this metric interpretation unconvincing.

Overall, figure 7.8c seems most likely, even though it does not correspond to the actual notation. In this version, the cello’s melody begins on a downbeat. Additionally, the cello’s first note, the piano’s dynamic accents, and the cello’s durational accent on F3 combine to give five \( \text{\textdagger} \)-level accents in a row (marked with Xs above the score in figure 7.8c). The alternation of \( \text{\textdagger} \)-
Figure 7.8a. First Cello Sonata I, mm. 1-5, rebarred in the right hand’s 2/4.

Figure 7.8b. First Cello Sonata I, mm. 1-5, rebarred in the left hand’s 2/4.

Figure 7.8c. First Cello Sonata I, mm. 1-5, rebarred in the cello’s 2/4.
level accents in the two instruments helps to identify a preferred tactus level, when none of the parts could establish it individually.\textsuperscript{10}

Although considering the cello and piano parts together does lead to a tentative answer to the question of where the tactus is, doubt remains, due to the prominent antimetrical levels. The listener cannot be sure where “the beat” is. Likewise, the grouping of the tactus into the measure is uncertain. The two perceived $\downarrow$ levels constitute a $\downarrow-\downarrow/\downarrow$ displacement dissonance, creating ambiguity: what is the location of the strong $\downarrow$ beat? The combination of the perceived $\downarrow$ levels with the notated $\downarrow$. level creates a $\downarrow-\downarrow/\downarrow$. grouping dissonance that further complicates matters: does the quarter-note tactus group duply or triply? The $\downarrow$ level seems more likely than the notational $\downarrow$. level (which is not established by any determinants), and the question of which $\downarrow$ level is primary remains. The measure is no clearer to the listener than the tactus. As I will show, a consideration of hypermetric structure helps to define the notated measure level, just as considering possible $\downarrow$ levels helps to locate the tactus (shown in figure 7.8c above).

\textsuperscript{10} This series of accents appearing in different voices creates a pulse stream, in Roeder’s terminology. See Roeder, “Interacting Pulse Streams in Schoenberg’s Atonal Polyphony,” 232-235.
Hypermetric Ambiguity

While metric ambiguity at the levels of the tactus and measure occurs primarily in the movement’s main theme, hypermetric ambiguity occurs throughout the movement. I examine hypermetric ambiguity in four sections: the exposition’s main theme, the exposition’s transition section, the recapitulation’s second theme, and the coda. My hypermetric analysis considers mainly the lowest hypermetric level: duple or triple grouping of notated measures. I count measures as 1 2 or 1 2 3, showing the hyperbeats that make up each low-level hypermeasure, and when the cello and piano imply different hyperbeats for a given measure, ambiguity exists. This occurs, for instance, at the start of the movement, where the piano’s first two-bar hypermeasure begins on measure 1, while that of the cello begins on measure 2. In some sections of the movement (such as the main theme) the hyperbeats which correspond to the notated measure are not actually articulated with accents; a two-bar hypermeasure consists of three \( \frac{3}{4} \) beats, not two \( \frac{2}{4} \) beats. Nevertheless, as noted in chapter 2, I show hypermeasures as multiples of notated measures. I return to this issue below.

In the exposition’s main theme, I also consider higher-level hypermeter. When lower-level hypermeter is ambiguous, it is difficult to identify larger hypermetric units. That is, if it is not clear whether the first two-bar hypermeasure begins at measure 1 or measure 2, it is equally unclear where the first four-bar hypermeasure begins. In my examination of higher-level hypermeter, I follow the cello part, since it seems to convey the primary meter.\(^\text{11}\)

In the exposition’s main theme, while the measure level is ambiguous, hypermetric levels within each line (the cello, piano right hand, and piano left hand) are usually clear. I have

\(^{11}\text{In this movement, when the cello and piano do not align hypermetrically, the piano often seems to convey a “shadow meter,” to use Samarotto’s term. See Samarotto, 235.}\)
already mentioned the two-bar hypermeasures in the piano part. Harmonic changes in measures 3 and 5 establish the $2_d$. level, and rhythmic parallelism in subsequent measures maintains that scheme. Figure 7.9 shows a durational reduction of the piano’s first eight bars. In the reduction, quarter notes represent the piano’s on-the-beat $d$ level, measures represents the $2_d$. level that results from the triple grouping of the $d$ level, and sixteenth notes represent notated eighth notes.

![Piano reduction](image)

Figure 7.9. First Cello Sonata I, mm. 1-8, piano part, durational reduction.

In the cello part, note onsets in measures 2 and 6 after rests and dynamic accents on the downbeats of measures 4, 8, 10, and 12 suggest a $2_d$. level with hyperdownbeats on even-numbered measures. Figure 7.10 shows the cello’s first eight bars (measures 2-9) in the same durational reduction used in figure 7.9.

![Cello reduction](image)

Figure 7.10. First Cello Sonata I, mm. 2-9, cello part, durational reduction.

The piano contributes accents on odd-numbered measures while the cello provides accents on even-numbered measures, and the combination results in an accent on every notated
downbeat. Even though the individual lines do not support a \( \dot{\text{d}} \) level, the alternating accents provide a rationale for defining hypermeasures as multiples of notated measures, just as the alternating accents in figure 7.8c above help to define the \( \dot{\text{d}} \) tactus level.

Figure 7.11 shows the entire main theme with a low-level hypermetric analysis. Numerals above the three lines (cello, piano right hand, and piano left hand) show hyperbeats. At the start, piano hyperdownbeats occur on odd-numbered measures, while those of the cello occur on even-numbered measures. At measure 14, a change occurs in the piano: the odd-numbered hyperdownbeats that had been established by the right hand’s dynamic accents shift to the left hand (articulated with durational accents). Meanwhile the right hand plays syncopated eighth notes with no clear larger grouping pattern. The abrupt change in texture and mood, from harshly accented chords to more gentle syncopations, sets apart the four-bar unit of measures 14-17 and provides a strong hyperdownbeat at measure 14. This shifts the right hand’s hyperdownbeats to even-numbered measures, so that it now aligns with the cello’s hypermeter. The change in texture and mood occurs in the left hand as well, but there a clear hemiola pattern continues with accents on odd-numbered measures. The right hand’s change to even-numbered hyperdownbeats is confirmed in measures 18-22 with dynamic accents.

Then in measure 23, a momentary increase in confusion about hypermeter occurs. At that point, the piano’s two hands reverse roles. The downbeat accent occurs in the right hand rather than in the left hand as expected, while the left hand’s second-beat accent implies a weak hyperbeat (compare measures 18, 20, 22, and 23). This results in the impression that Fauré has foreshortened the hypermetric unit from two bars to one, as the piano right hand expresses
Figure 7.11. First Cello Sonata I, mm. 1-24, with hypermetric analysis.
the notated $\frac{3}{4}$ meter for the first time in the movement.\textsuperscript{12} The arrival in measure 24 on a root position tonic chord, with a dynamic accent in the left hand and a textural accent in the right hand, signals a strong hyperdownbeat and the start of the transition section. The three successive hyperdownbeats in measures 22, 23, and 24 provide an emphatic conclusion to the main theme.

While the cello’s two-bar hypermeasures are clear throughout the main theme’s 22 bars (measures 2-23), higher-level hypermeter is ambiguous. Figure 7.12 shows a dot grid and metric state graphs for this passage. At the start, rhythmic parallelism in the cello part establishes four-bar hypermeasures (compare measures 2, 6, and 10). The first three four-bar hypermeasures form a twelve-bar module, defined by the piano’s rhythmic ostinato and the cello’s thematic material. The next four bars (measures 13-17) form another module, defined by the piano’s gentle syncopations and the cello’s new melodic material. The final six bars (measures 18-23) form a third module, defined by a return to the initial thematic material in the piano, with its harsh accents. The dot grid’s row d shows the consistent two-bar hypermeasure. Row c shows the four-bar hypermeasures of measures 2-21. Row a is not a level; it shows the boundaries of the passage’s three modules. Row b I explain below.

So far, no higher-level ambiguity is evident. In measure 8, the sudden dynamic change from piano to forte and the cello’s durational accent on its highest pitch so far create an emphatic accent that divides the twelve-bar module (measures 2-13) into two equal halves. This suggests that two-bar units group triply, into six-bar units, shown in the dot grid’s row b. Rows b and c create a grouping dissonance: two-bar units group both duply and triply, shown in the left metric

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\textsuperscript{12} This process results in a \textit{nested sequence}: the piano presents measures 18-19, then repeats them in sequence in measures 20-21, then measure 20 alone splits off for its own sequence, in measures 22 and 23. In the nested sequence described in chapter 3, the latter part of the sequenced material split off (ababbb), whereas here the first part splits off (ababaa).
state graph as a diamond. After the first module, Fauré continues to play out the ambiguity of duple vs. triple grouping of two-bar units by presenting one module with each scheme: the middle graph shows duple grouping while the right graph shows triple grouping. In summary, the main theme ambiguity is present in the two lowest hypermetric levels: the location of two-bar hyperdownbeats on odd-numbered or even-numbered measures (due to displacement dissonance), and the duple vs. grouping of two-bar units (due to grouping dissonance).

The transition section (measures 24-35) appears in figure 7.13 with its lower-level hypermetric analysis. Because the two hands of the piano align in this excerpt, I do not show hyperbeats for each hand separately. Starting at measure 24, the piano plays a sequentially repeating three-bar gesture with accented bass notes on every third downbeat, defining three-bar hypermeasures. Then, beginning at measure 33, three consecutive downbeats receive accents, as at the end of the main theme. This obscures hypermetric structure. Meanwhile, the cello

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13 I believe that the absence of an accent mark on the downbeat of measure 30 in the piano left hand is an oversight by Fauré, given the otherwise parallel structure.
begins in measure 25 with main theme material, in sequentially repeating three-bar units, defining three-bar hypermeasures that are displaced by one bar from those in the piano. This displacement dissonance creates metric ambiguity. The pattern changes in measures 33 and 34. The cello’s statement of the main theme’s short-long rhythmic motive on the downbeats of those two measures suggests a hyperdownbeat at measure 33. Then in measure 35 an accented descending arpeggio occurs, on a dominant seventh chord in the key of F major. This is the relative major of the movement’s main key (d minor), and it signals the start of the second theme with a strong hyperdownbeat.  

**Figure 7.13. First Cello Sonata I, mm. 24-35, with hypermetric analysis.**

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14 Tait and Breitfeld do not consider the second theme to be in the key of F major, but I believe that the presence of dominant seventh chords at measures 35, 39, and 42, as well as the prominent notes C and F in the bass, (C in the cello part, F in the piano) establish that key, even in the absence of clear tonic triads. See Tait, 262, and Breitfeld Band 2, p. 20.
My next example of hypermetric ambiguity appears in the recapitulation’s second theme. In order to understand its structure, it is useful to compare it to the analogous passage in the exposition. Figure 7.14 shows the melody, bass line, harmonies, and hypermetric structure of the beginning of the exposition’s second theme. The piano begins the melody in measure 36 with an extended upbeat. The cello takes over at the end of bar 42. Durational accents on the downbeats of measures 38 and 41 in the piano and at measure 44 in the cello establish triple hypermetric structure. The reiteration in the piano left hand of the pitch F in those measures reinforces the hyperdownbeats. This passage contains no hypermetric ambiguity.

![Figure 7.14. First Cello Sonata I, mm. 35-46, melody, bass line, harmonies, and hypermetric structure.](image)

In the recapitulation, the second theme contains a hypermetrically ambiguous passage. Figure 7.15 shows the melody, bass line, harmonies, and hypermetric structure at the start of the recapitulation’s second theme. It contains eighteen bars rather than the exposition’s twelve; the expansion allows for a modulation. In the exposition, the passage establishes F major tonality, the relative major of the home key, d minor. In the recapitulation, the passage begins a fourth
higher, in the key of B♭ major, but then moves to D major, the major tonic key, which is the expected tonality of the recapitulation’s second theme.\textsuperscript{15}

Figure 7.15. First Cello Sonata I, mm. 158-179, melody, bass line, harmonies, and hypermeter.

As in the exposition, the melody’s durational accents define hyperdownbeats, but here they do not maintain three-bar regularity as in the exposition. At the point of modulation, they become displaced by one measure. Because three-bar hypermeasures are clear in measures 158-166 and in measures 176-187 (not shown), I consider an underlying regular three-bar hypermeasure to persist through the intervening nine measures. In figure 7.15, the measure

\textsuperscript{15} As noted above, these tonal centers are established with dominant seventh chords, not with tonic chords. Measures 162 and 165 present the dominant seventh chord of B flat major, and measures 172 and 175 present the dominant seventh chord of D major. The presence of the pitches F sharp and B natural in measures 170-175 suggests the key of D major rather than d minor.
count for the hypermeter suggested by the durational accents appears above the measure count for the underlying regular hypermeter.

The movement contains one more episode of hypermetric ambiguity, in the coda.\(^{16}\) Lower-level displacement and grouping dissonances also occur in this passage, which appears as figure 7.16. The cello plays a one-bar rhythmic ostinato seventeen times (measures 210–226). The first four bars are identical, and the fifth and sixth move to a new harmony. Those six bars then repeat. The coda’s first twelve bars show a 4 + 2 + 4 + 2 pattern, clearly establishing two-bar hypermeasures in the cello part. The next five measures (222–226) include three identical bars and then two bars of the same material with octave displacement, for a 3 + 2 pattern. From measure 227 until the end, two-bar hypermeasures are again clearly articulated, with a hemiola in measures 227-230. The movement’s final hyperdownbeat occurs on the last measure.

The piano part has a different hypermetric structure. Its first four bars contain accented eighth notes derived from the main theme accompaniment, and the next three bars present dotted half note chords from the second theme, for a 4 + 3 pattern. The alternation of main theme and second theme material repeats in measures 217–222, but this time in three-bar units. From measure 223 until the end of the movement, duple hypermeter returns in the piano, aligning with the cello part at measure 225. The crescendo at this point of alignment signals the movement’s final dramatic sweep, as the cello soars upward after fifteen measures in its lowest register. The piano part’s accents create a \(\downarrow-\ \downarrow.\) displacement dissonance (present through most of the coda), but this does not affect hypermetric structure. The displacement dissonance follows the cello’s hemiola in measures 227-230.

\(^{16}\) I discuss disagreements about the location of the coda above.
To summarize: in the coda the cello’s hypermeter is duple except for one three-bar hypermeasure (measures 222-224). The piano part contains three triple hypermeasures.
(measures 214-222). This causes a misalignment from measures 216 through 224. Measures 223-230 contain a displacement dissonance (first as \( \text{\#} \)-\( \text{\#} \), later in the context of a hemiola), and the two instruments come together for the final three chords.

This movement’s metric ambiguity contributes greatly to its unsettled character. In the main theme, displacement and grouping dissonances create metric ambiguity at four metric levels: the tactus (dule or triple grouping of the eighth note and location of strong eighth-notes beats), the measure (dule or triple grouping of the tactus and location of strong quarter-note beats), lower-level hypermeter (location of strong one-measure beats), and higher-level hypermeter (dule or triple grouping of two-bar units). Throughout the main theme, the listener cannot be sure where “the beat” is, on any level. The remainder of the movement contains three more substantial passages with hypermetric ambiguity; in the exposition’s transition section, the recapitulation’s second theme, and the coda, the location of strong hyperbeats is uncertain. This ambiguity creates a pervasive sense of metric disorientation, which sets an anxious, insecure, and confused tone that contrasts with the movement’s more immediately apparent harsh and aggressive character. The combination of the two results in a movement of startling impact.
CHAPTER 8

BEYOND FAURÉ’S CHAMBER MUSIC

In my examination of Fauré’s chamber music, I have identified several metric features that characterize his style, including the frequent occurrence of non-duple hypermeter, large hypermetric structures, and multiple simultaneous dissonances. I have developed an analytic method capable of describing these metric features and, with detailed analyses of three movements, I have demonstrated that my approach yields important insights about the ways that Fauré’s metric language helps to define large-scale form, provide shape and direction, and set the music’s emotional tone. I now broaden my scope beyond Fauré’s chamber music.

In this chapter I apply my analytic method to six other works. I first examine two songs by Fauré: “Après un rêve” (1878), and “Eau vivante” from the song cycle La chanson d’Éve (1909). Both have received attention from other scholars, and the addition of my perspective provides a richer understanding of these songs. Second, I consider passages from two chamber works by composers known to Fauré: Camille Saint-Saëns’s Piano Trio No. 1 (1864) and Maurice Ravel’s String Quartet in F major (1902-3). Saint-Saëns wrote his Trio while he was Fauré’s teacher at the École Niedermeyer, and Ravel wrote his Quartet while he was Fauré’s student at the Paris Conservatoire. In fact, Ravel dedicated his quartet to Fauré. In my discussion of these two works, I do not attempt to prove any direct influence from teacher to student. In order to convincingly argue for such influence, it would be necessary to study the music of Saint-Saëns and Ravel much more thoroughly, and to tease out general stylistic norms of the late 19th and early 20th centuries. Instead, I merely intend my comments as evidence that the study of metric devices is a fruitful avenue of research into the question of stylistic influence
among these composers. Finally, in order to demonstrate the applicability of my model to music outside of Fauré’s era, I examine passages from two chamber works by composers of the late 20th century: Philip Glass’s String Quartet No. 5 (1991) and Alfred Schnittke’s Piano Quintet (1972-1976).

Two Vocal Works by Fauré

Fauré’s song “Après un rêve” is a setting of Romain Bussine’s adaptation of the anonymous Italian poem “Levati sol che la luna é levata.” Bussine’s poem, with an English translation by David Smythe, appears in Figure 8.1. In the first two stanzas, the narrator describes her dreams of her beloved. In the third stanza she awakens to her sad reality and beseeches the night to give back her happy dreams.

Après un rêve

Dans un sommeil que charmait ton image
Je rêvais le bonheur, ardent mirage;
Tes yeux étaient plus doux, ta voix pure et sonore,
Tu rayonnais comme un ciel éclairé par l’aurore.

Tu m'appelais et je quittais la terre
Pour m’enfuir avec toi vers la lumière;
Les cieux pour nous, entrouvraient leurs nues,
Splendeurs inconnues, lueurs divines entrevues…

Hélas! Hélas! triste réveil des songes!
Je t'appelle, ô nuit, rends moi tes mensonges;
Reviens, reviens radieuse,
Reviens, ô nuit mystérieuse!

After a dream

In a slumber which held your image spellbound
I dreamt of happiness, passionate mirage,
Your eyes were softer, your voice pure and sonorous,
You shone like a sky lit up by the dawn;

You called me and I left the earth
To run away with you towards the light,
The skies opened their clouds for us,
Unknown splendours, divine flashes glimpsed,

Alas! Alas! sad awakening from dreams
I call you, O night, give me back your lies,
Return, return radiant,
Return, O mysterious night.

Figure 8.1. “Après un rêve” text and translation.

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1 From The Lied, Art Song, and Choral Texts Archive (http://www.recmusic.org/lieder/get_text.html?TextId=18170). Reprinted with the permission of the translator.
Eero Tarasti provides a semiotic analysis of both the song itself and several recorded performances of it.² His analysis considers three levels: tonal-spatial (harmonic tension and relaxation), temporal (rhythm and meter), and actorial (figures, melodies, and themes). He finds, for instance, that the start of the third stanza is a “decisive peripety, a turning point.”³ On the tonal-spatial level, this turning point involves the tonicization of the subdominant and the song’s highest pitch, and on the actorial level it emphasizes ascending fourth leaps, which are “internal indexes in the music, a sort of ‘call’ topoi.”⁴ He summarizes: “the most important topos of the entire poem is formed, as the title also indicates, by the state that comes after the dream: the awakening, the ‘après un rêve.’”⁵ He quickly passes over the temporal level: “[t]he analysis of the temporal level of the song is not so rewarding, since its basic unit is the eighth-note figuration recurring throughout the piece.”⁶

It is true that compared to other works by Fauré, this song’s rhythm and meter are not complex, but a consideration of the song’s hypermeter does complement and support Tarasti’s observations. Figure 8.2 shows the song’s vocal line and metric state graphs. The poem’s first

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³ Tarasti, “‘Après un rêve’: A Semiotic Analysis,” 440.

⁴ Ibid., 443.

⁵ Ibid., 444.

⁶ Ibid., 442.
stanza is set with two musical phrases. After a one-bar introduction the vocal line begins with a seven-bar phrase that ends with a half cadence. A second seven-bar phrase follows, ending with an authentic cadence in the key of the mediant. Measure 16 is an accompanimental measure, after which the second stanza is set similarly. It consists of two seven-bar phrases, with half cadences in the tonic and subdominant keys. Because of the rule of congruence described in chapter 3, these phrases coincide with seven-bar hypermeasures, shown in the metric state graphs as 4/3 triangles. The rhythm \( \overbrace{\underline{\mid \mid \mid \mid}} \) appears in the penultimate measure of each hypermeasure. Fauré has established a seven-bar norm, with a distinctive rhythm near the end of each hypermeasure. The seven-bar hypermeasures group duply to set complete stanzas.

Fauré begins the third stanza without an intervening accompanimental measure, perhaps because the poem’s second stanza ends with an ellipsis rather than a period. This stanza is also set as two phrases, both with the characteristic rhythm in the penultimate measure, but here the phrases consist of eight-bar hypermeasures; the hypermetric structure is pure duple, rather than non-isochronous. The change from seven-bar to eighth-bar hypermeasures occurs at the poem’s turning point: the narrator’s awakening. The metric state graphs in figure 8.1 above show the

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7 As noted in chapter 3, a “phrase” is a span with directed harmonic motion, ending with a cadence. Many writers on vocal music, including Tarasti, use the term differently: for a vocal passage that is sung in one breath, or that sets a meaningful unit of text such as a sentence, clause, or line of poetry, or that is set apart by rests. I will refer to such vocal passages that are not defined by tonal or harmonic function as “vocal phrases.”

8 Measure 16 is not a part of any hypermeasure. Some might prefer to consider measure 16 to be part of an eight-bar hypermeasure (mm. 9-16), but to my ear it functions exactly as measure one does: as an introduction to the phrase that follows.

stanzas as fourteen- or sixteen-bar modules, each consisting of two seven- or eight-bar hypermeasures. They also show all viable levels, down to the two lowest levels: eighth notes in the piano accompaniment and triplets in the vocal line.
The last phrase ends with the song’s only perfect authentic cadence in the home key, and the final tonic chord occurs at the ninth full bar of the phrase, at measure 47. Because of the characteristic rhythm in measure 45, I consider the last bar of the hypermeasure to be measure 46 and I hear the arrival in measure 47 on the tonic chord as a strong hyperdownbeat. It begins the song’s two-bar final module, which pairs with the one-bar introduction to frame the song. The cadence at measure 47 therefore occurs after the end of the hypermeasure. This situation is similar to phrase overlap: the phrase extends into the hyperdownbeat that follows it. This passage is not a case of phrase overlap (because measure 47 does not begin a phrase), but it has the same effect of providing continuity between the two units.

In Tarasti’s analysis, elements of the tonal-spatial and actorial levels emphasize the narrator’s awakening as a dramatic turning point. My analysis shows the importance of meter at that point. The narrator’s dream state involves a non-isochronous seven-bar hypermeter, and when the narrator awakens, hypermeter becomes pure duple; eight-bar hypermeasures underscore her sad reality.

Unlike “Après un rêve,” the relationship between text and hypermeter in “Eau vivante” is anything but straightforward. The text, by Charles Van Lerberghe, appears in figure 8.3 with a translation by Carlo Caballero, and the song appears in figure 8.4. The poem’s irregular number of syllables per line, lines per stanza, and rhyme scheme reflects its imagery of water flowing and surging, and Fauré’s vocal line complements the poem’s fluid character. The piano accompaniment creates a more regular metric structure independent of the vocal declamation.

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10 I discuss phrase overlap in chapter 3.

11 The translation appears with the permission of the translator.
Carlo Caballero’s analysis of “Eau vivante” identifies three metrical layers, created by (1) the vocal line, (2) the piano’s sixteenth notes, and (3) the “verticals” of the piano’s slower-moving outer voices. The rhythms of the three layers at times contradict both the notated meter signature and each other, in a way that serves to “neutralize the metrical organization altogether.” In my analysis, I consider the three layers separately, and I find that although they do add an element of ambiguity, the underlying meter and hypermeter are clear through most of the song.

Of the three layers, the vocal line is most irregular. Robin Tait describes it as “faithful to the poetry, not to a musical metre.” Melodic determinants that might contribute to a sense of meter in the vocal line such as duration, dynamics, and changes in pitch or contour do not create

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12 Caballero, 232-238.

13 Ibid., 233.

Eau vivante

Allegretto moderato (♩=76)

Figure 8.4. “Eau vivante.”
Figure 8.4, continued. “Eau Vivante.”
regular accents. Caballero argues that the song’s metric ambiguity compels the listener to attend to the vocal phrase rather than to metric structure for a durational frame of reference, but the vocal phrases too are irregular. Their shifting accentual patterns contribute much to the free-flowing character of the piece, but they are not aspects of meter in my model. I discuss the one vocal passage that does contain regular rhythms below.

In contrast, the piano’s sixteenth notes contribute much regularity. Not only are they nearly constant from beginning to end, but they also occur in repeating patterns, and the changes in pattern at measures 13, 21, and 29 articulate strong hyperdownbeats that do not align with poem’s stanzas. In measures 1-12, eight-note ascending scales represent water, flowing and leaping, described in the poem’s first stanza. They define a \( \frac{2}{4} \) level, and therefore imply intermediary \( \frac{2}{4} \) and \( \frac{4}{8} \) levels. The \( \frac{2}{4} \) level creates a hemiola with the notated measure, contributing to metric ambiguity. In measures 13-20, the pattern changes to a twelve-note arch shape, defining another hypermeasure. The melodic contour resonates with the description in the poem’s second stanza of plants sucking in water, but it begins on the second syllable of the word clarté (clearness), midway through the stanza. A more literal approach to tone painting would have aligned the change in melodic contour with the word aspirent (suck in), while a metrically predictable approach would have aligned it with the start of the second stanza (as in “Après un rêve”). The twelve-note arch-shaped pattern defines a \( \frac{2}{4} \) level, which continues through the end

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15 As discussed in Chapter 2, in my model meter consists only of isochronous and allowable non-isochronous levels. The irregular accents defined by the vocal line’s rhythms do not define allowable non-isochronous levels.

16 While there some variations in the specific contour of this arch shape from measure to measure, the melodic shapes are similar enough to each other—and different enough from what comes before and after—that I group these eight measures together into one unit.
of the piece. The notated measure is now explicitly articulated by the sixteenth notes, and the hemiola disappears.

The next significant change occurs at measure 21. Instead of ascending and descending scales, Fauré uses arpeggios that plunge downward for five or six notes before turning around, reflecting the third stanza’s description of the water’s descent, but they occur on the word mousse (mosses), at the end of that stanza’s second line. These changes in pattern—melodic leaps rather than steps, inverted basic contour, and greater pitch range spanned—create a strong accent and provide a strong hyperdownbeat at measure 21.

The location of the next hyperdownbeat is more difficult to specify. Measure 27 begins as expected with a descending arpeggio, but the third beat’s descent diverges from the pattern established in measures 21-26. Similarly, measure 28 begins as expected, but ends with an ascending arpeggio that we have not seen so far in a third beat. Three- and four-note ascending arpeggios persist from the second beat of measure 29 until the end of the song, musically depicting water’s ascent from sea to sky. Somewhere within the span of measures 27-29 the pattern changes. Because measures 27 and 28 mainly conform to the previous pattern (the U-shaped arpeggio) and measure 29 mainly conforms to the new pattern (three- and four-note ascending arpeggios within each quarter note beat), I locate a strong hyperdownbeat at measure 29, just after the start of the word terre (earth). The arrival at a forte dynamic supports this hyperdownbeat.

The strong hyperdownbeats at measures 13, 21, and 29 partition the song into spans of 12, 8, 8, and 5 measures. An examination of the slower moving verticals in the piano’s outer voices allows a further refinement of hypermetric structure, mainly due to successive parallelism. Figure 8.5 shows the entire song without the vocal line or the sixteenth notes, only the piano’s
outer voices. Slurs in the example are not in Fauré’s score; they show units that are subject to sequential or parallel treatment (also set apart by double barlines). The horizontal brackets above the score identify pairs of parallel units, and pitch relationships between the two appear above the brackets. For instance, + ½ indicates that the passage has been transposed up by one semitone. Dotted brackets identify passages that might or might not be construed as parallel: they show similarities, but the second is not an exact transposition of the first. Noteheads in parentheses are pitches from the piano’s sixteenth notes, and are included to clarify harmonies. Some harmonic events have also been labeled with Roman numerals or chord symbols. The measures are laid out so that each system contains one module.17

In measures 1-4, the outer voices prolong the C major tonic harmony by oscillating between tonic and submedian seventh chords.18 The chords’ irregular rhythms do not contribute to meter, although the consistent sounding of the submedian chord on the third beats of measures 1-3 defines an antimemetrical ū \( \bar{\bar{\text{d}}}. \) level, for a ū \( \bar{\bar{\text{d}}}/\bar{\text{d}}. \) displacement dissonance. At measure 5, three important things happen: the harmony changes, the rhythms become regular, and a sequence begins. These three changes provide a strong hyperdownbeat at measure 5. Harmonically, the fifth scale degree in the bass suggests a move from the realm of the tonic to the dominant, but the pitch E\( \flat \) in the piano creates an ambiguous augmented triad, rather than the dominant chord implied by the outer voices alone. Instead of the irregularly timed chords, the

17 Because of the precedent of eight-bar hypermeasures, I add three empty bars at the end and consider the final module to contain eight measures.

18 Caballero finds that the opening tonality is ambiguous, suggesting both C major and E Phrygian (Caballero, p. 233). In the context of root position C major chords, the sixteenth note scales beginning and ending on E sound to me like C major scales starting on the third degree. If there is tonal ambiguity, it is between C major and A Aeolian, since C major and A minor chords alternate. Because the song ends with an authentic cadence in C major, I retrospectively consider the opening to prolong C major.
Figure 8.5. “Eau vivante,” piano’s outer voices.
piano’s two hands play different lines with repeating rhythms. The right hand’s \( \frac{4}{4} \) rhythm supports the notated measure (the \( \frac{4}{4} \) level), while the left hand’s \( \frac{4}{4} \) rhythm aligns with the hemiola of the sixteenth notes. Measures 7-8 are an exact transposition of measures 5-6, up a semitone. At measure 9, the rhythms and pitch patterns change somewhat, but the underlying harmonic structure is the same: each two-bar unit prolongs an augmented triad, with some intervening passing and neighbor chords. Measures 11-12 are again an exact transposition of measures 9-10, this time up a whole tone. In the eight-bar module of measures 5-12, parallel structures clearly articulate two- and four-bar hypermeasures.

The next eight-bar module, measures 13-20, contains two four-bar units that might be considered parallel. There are differences in rhythm and harmony, but the upper voice’s melody in measures 13-16 is quite similar to that of measures 17-20, transposed up a perfect fourth. Figure 8.6 shows this passage’s melody. The box in the example shows the portion of the melody that is strictly related by transposition.

![Figure 8.6](image)

Figure 8.6. “Eau vivante” mm. 13-20, parallelism in piano melody.

The next module begins in measure 21, but its duration is not clear. Above I present some reasons for locating the next strong hyperdownbeat at measure 29, but there are other possibilities. At the start of this module, the bass line clearly defines three parallel two-bar units
related by transposition by a semitone (measures 21-26). During this span, the piano’s top line contributes to the parallel structure of two-bar units by emphasizing the pitches B, C, and C♯, each for two bars. In measures 27-28, the bass line’s rhythm changes, and the top line ascends quickly by semi-tone, spanning the interval of a diminished fourth without emphasizing any one pitch. Measures 27-28 do not obviously group with the preceding six bars, and the changes at measure 27 might suggest a strong hyperdownbeat there. Or, the next hyperdownbeat might occur at measure 31, where the passage’s harmonic ambiguity finally resolves at the arrival on the tonic chord.

Although measures 27 and 31 are candidates for strong hyperdownbeats, I locate the actual hyperdownbeat at measure 29. Figure 8.7, a reduction of the passage, shows the reason for this. Note values have been reduced so that the quarter notes and note heads represent measures and barlines show boundaries of four-bar hypermeasures. Stemless noteheads show pitches that are less important structurally; they are slurred to the more important pitches that they embellish in the manner of a Schenker graph. Here it is easy to see four iterations of a two-bar pattern of descending thirds in the bass, as well as the bass line’s essential stepwise ascent from tonic to dominant. Even though the arrival at the dominant occurs at measure 30 and the final tonic chord begins at measure 31, I locate the strong hyperdownbeat at measure 29, the bass line’s arrival on scale degree four (hinting at a structural pre-dominant). The cessation of the bass pattern of descending thirds and the implication of a tonal cadential pattern, along with the forte dynamic on the downbeat of measure 29 and the changing sixteenth note pattern discussed above, support my decision.

Because Caballero hears in the song’s opening a possible E Phrygian modality, he finds E major chord in measure 21 to be a significant event in the song’s tonal plan. For me, it simply embellishes the next measure’s C major chord. (Caballero, personal communication.)
In spite of the ambiguity provided by the vocal line, “Eau vivante” has a rather clear metric and hypermetric structure. Figure 8.8 shows its metric state graphs, with the location of the start of each stanza shown below the graphs. Except for the triple grouping of quarter notes (and the triple grouping of the $\text{d}$ level during the hemiola), all adjacencies are duple, with four-bar hypermeasures throughout. The song contains little dissonance by Fauré’s standards. A hemiola occurs in the first twelve bars but does not appear later. The first four-bar unit also contains a displacement dissonance. Measures 29-32 contain another displacement dissonance, that I have not yet discussed. In the vocal line’s only passage of metric regularity, durational accents occur on the last quarter notes of measures 28-31, for a displaced $\text{d}$. level (on the syllables ter-, mer, mer, and ciel). This creates a $\text{d} \rightarrow \text{d}$. displacement dissonance, shown in the graph with a slash through the segment between the $\text{d}$ and $\text{d}$. nodes. As noted above, I add three empty measures to the final module because of the strong precedent of eight-bar hypermeasures.
Two Contemporaneous Chamber Works

My examination of Fauré’s vocal works has involved hypermetric analysis of entire songs. With the much longer chamber works of Saint-Saëns and Ravel, I confine my observations to small sections. From Saint-Saëns’s Piano Trio in F, I select the first movement’s main theme, measures 1-40, which contains several examples of dissonance. It may be divided into three smaller sections: a four bar introduction (mm. 1-4); an eight-bar main melody stated in turn by the cello, violin and piano (mm. 5-28); and a build-up to an emphatic cadence (mm. 29-40). The introduction and first statement of the eight-bar melody, with their metric state graphs, appear as figure 8.9.

In the introduction, the violin and cello establish a $\frac{3}{4}$ level while the piano plays an oscillating hemiola figure that defines a $\frac{3}{4}$ level. This creates a $\frac{3}{4}-\frac{3}{4}$ grouping dissonance. The $\frac{3}{4}$ level continues through the first four bars of the cello’s melody. Then in measure 9 a displacement dissonance replaces the hemiola: the onsets of the bass note in the piano on the
Figure 8.9. Saint-Saëns Piano Trio I, mm. 1-12, with metric state graph.

third beat, along with the slurs in the right hand, define a displaced $d$. level. The eight-bar melody therefore consists of four bars of grouping dissonance and four bars of displacement dissonance. When the violin and piano repeat the eight-bar melody in measures 13-28 (not shown), this alternation between grouping and displacement dissonances continues. While this passage does not contain multiple simultaneous dissonances, it does show Saint-Saëns’s willingness to use different dissonances in close proximity.

The build-up to the cadence (measures 29-40) contains a sweeping arch-shaped gesture in constant eighth notes in the piano and an arpeggio in slower note values in the strings. Figure 8.10 shows the final eight bars of this section, measures 33 through 40. This passage contains grouping dissonances that may not be immediately apparent. Figure 8.11 shows the piano line alone. It begins with a five-note arch-shaped gesture $a$ starting on the dominant (C-D-E-D-C),
followed by a similar six-note gesture \( a' \) on the tonic (F-G-A-G-F-A). The two gestures alternate so that the 5\( \text{\textbullet} \) and 6\( \text{\textbullet} \) spans combine to form a repeated 11\( \text{\textbullet} \) span. The pattern begins for a third time at the end of measure 36, but at this point a different repeated five-note gesture \( b \) (A-F-E-D-C) appears.

![Figure 8.10. Saint-Saëns Piano Trio I, mm. 33-40.](image)

![Figure 8.11. Saint-Saëns Trio I, mm. 33-39, piano right hand.](image)

It would be difficult to create a metric state graph that showed these 5\( \text{\textbullet} \), 6\( \text{\textbullet} \), and 11\( \text{\textbullet} \) spans in the context of an eight-bar hypermeasure, and I will not attempt it. The important point is that these irregular spans create grouping dissonances with the notationally metrical sextuple grouping of eighth notes. Similarities between this section and the analogous passage from Fauré’s First Violin Sonata are intriguing: in both, the piano plays constant eighth notes in
irregular groupings with prime rhythms, followed by emphatic cadential chords that end the main theme.  

In his String Quartet, Ravel uses dissonance prominently, particularly in the second movement. I examine the first 29 measures divided into six spans: measures 1-7, 8-12, 13-20, 21-25, and 26-27, 28-29. Three of these spans—the first, second, and fourth—are not units; they contain seven, five, and five measures respectively. They therefore have non-isochronous measure groupings, and appear in metric state graphs as triangles. Nevertheless, musical features such as dynamics, texture, harmony, tonality, thematic material, and changing dissonances justify this partitioning as a meaningful division of the passage.

Figure 8.12 shows the first two spans, measures 1-12, with their metric state graphs. Perhaps the most obvious manifestation of Ravel’s use of dissonance is his meter signature: $\text{\textcopyright} (\frac{3}{4})$. Each measure contains the equivalent of six eighth notes, sometimes grouped triply, sometimes duply. In the first seven bars, quarter notes in the first violin and cello articulate a $\frac{3}{4}$ level for a $\frac{3}{4}$ meter. Dynamic accents in the second violin and viola in measures 1, 3, and 5 articulate a $\frac{3}{4}$ level for a $\frac{6}{8}$ meter. The combination of these two meters creates a hemiola, which appears in the metric state graphs as a diamond shape. The hemiola continues through the next span, where an additional dissonance appears in the first violin: note onsets on the second beats of measures 9-

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20 I analyze Fauré’s First Violin Sonata in chapter 5 above.

21 As discussed in Chapter 2, a span is any passage of music, regardless of meter, a unit is a passage consisting of isochronous and allowable non-isochronous levels, and a module is the upper limit to hypermeter: a unit that is not part of a larger unit. Non-isochronous levels are allowed only when there is a superordinate isochronous level. The lack of superordinate levels in this movement means that it consists largely of modules of only two or three measures. Ravel does not use hypermetric structures as Fauré does, in this movement at least.
provide an antimetrical $d$. level for a $\ddot{d}-\ddot{d}$, displacement dissonance, shown in the metric state graph with a slash through the segment connecting the $\dot{d}$ and $\ddot{d}$ nodes.

Figure 8.12. Ravel String Quartet I, mm. 1-12 with metric state graphs.
The remaining four spans appear in Figure 8.13 with their metric state graphs. In the next two (measures 13-22), Ravel adds a new lowest level: sixteenth notes in second violin and viola, shown with an additional segment at the lower end of the metric state graph. He also adds another grouping dissonance: the first violin plays triplets, so that quarter notes now divide both duply and triply for another hemiola, shown in the graph with the two downward segments from the $\downarrow$ node.

The final two spans, measures 26-29, contain multiple simultaneous dissonances reminiscent of Fauré’s music at its most complex. The violins’ repeating $\downarrow\downarrow\downarrow$ rhythms articulate $\downarrow$ levels: for the first time in the movement quarter notes group duply as well as triply, shown in the metric state graphs in the upper diamond. Durational accents on the quarter notes of the repeating rhythm provide another dissonance. The first violin’s quarter notes occur every two $\downarrow$ beats starting at the downbeat of measure 26, but in the second violin they are displaced by one quarter note. Quarter notes group duply in two ways, for a $\downarrow_{\text{d}}/\downarrow_{\text{d}}$ displacement dissonance, shown in the graph with a slash through the segment between the $\downarrow_{\text{d}}$ and $\downarrow_{\text{d}}$ nodes. One final dissonance occurs in measures 28-29. The viola’s repeating eighth note pattern D-C♯-C♯-B supports the $\downarrow_{\text{d}}$ level established by the violins’ hemiola, but the longer duration of C♯ places a displaced durational accent one eighth note after the first violin’s $\downarrow$ pulses. The viola’s displaced $\downarrow$ level implies a displaced intermediary $\downarrow$ level, shown in the graph with a slash between the $\downarrow_{\text{d}}$ and $\downarrow$ nodes.

My brief exploration of these two pieces, written during Fauré’s lifetime by composers with whom Fauré worked closely, shows that the metric devices that characterize his style are not his uniquely. A more comprehensive study of rhythm and meter in works by Saint-Saëns and Ravel might demonstrate both the degree of direct influence from teacher to student (or vice
Figure 8.13. Ravel String Quartet II, mm. 13-29, with metric state graphs.
versa) and trace the evolution of these metric devices generally in the late nineteenth and early twentieth centuries.

Two Late Twentieth Century Chamber Works

The last two works that I consider are by late twentieth century composers with no links to Fauré. My brief analyses of these works demonstrate the applicability of my model to music of strikingly different styles. I first discuss the fourth movement of Philip Glass’s Fifth String Quartet. Its rhythmic and metric features are highly repetitive, and it consists almost entirely of eight-bar hypermeasures set apart in the score with both double bars and rehearsal figures. The main body of the movement, from rehearsal figure 5 until rehearsal figure 18, is framed by shorter introductory and closing sections at a slower tempo. Dynamics also contribute to large-scale shape. The movement begins piano, gradually grows to fortissimo in the middle section, then gradually decreases to piano at the end. Metric complexity roughly follows these dynamics: the movement begins and ends with less dissonance, and the point of maximal dissonance occurs near the middle of the central section.

Figure 8.14 shows the movement’s first eight-bar unit with its metric state graph. The levels $3\cdot, 1\cdot, 2\cdot, 2\cdot$, and $4\cdot$ are readily apparent from meter signature, note onsets, changes in harmony, and parallelisms. All submetric adjacencies are triple and all hypermetric adjacencies are duple. Durational accents on the second beat of every measure provide a displaced $\cdot$ level for a $\cdot-\cdot/\cdot\cdot$ displacement dissonance, shown in the metric state graph with a slash through the

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22 Philip Glass studied with Nadia Boulanger in the 1960s, and Boulanger studied with Fauré in the early 1900s, but I consider it very unlikely that Glass’s rhythmic and metric language owes anything to whatever exposure he had to Fauré’s music during his time in Paris.
segment between the \( \uparrow \) and \( \downarrow \) nodes. This dissonance persists throughout the movement’s introductory section.

![Sheet music](image)

Figure 8.14. Glass Fifth String Quartet IV, rehearsal figures 1-2, with metric state graph.

Figure 8.15 shows the first two eight-bar hypermeasures of the movement’s main section, from rehearsal figure 5 until rehearsal figure 7, with their metric state graphs. These two hypermeasures contain grouping dissonances but no displacement dissonances. Triple and duple grouping of eighth notes alternate, for an indirect \( 8/4 \)-\( 8/4 \) grouping dissonance, shown in the metric state graph with a diamond shape. The duple grouping of eighth notes occurs even where eighth notes are beamed triply, due to the violins’ pitch parallelism: the alternating low-high contour defines a \( \uparrow \) level regardless of beaming. In the passage’s second eight-bar
hypermeasure, the violins’ triplets contribute another dissonance: quarter notes divide both duply and triply to create another hemiola, shown with an additional segment jutting downward and to the right from the node.

Figure 8.15. Glass Fifth String Quartet IV, rehearsal figures 5-7, with metric state graphs.
The two metric states that appear in figure 8.15 alternate through most of the movement’s main section. In the hypermeasure that begins at rehearsal figure 14, Glass introduces an additional dissonance. Figure 8.16 shows this hypermeasure with its metric state graph. In the fifth and sixth bars of the unit, the violins’ eighth notes group quadruply to form a $\frac{2}{3}$ level. This creates another hemiola, shown in the graph as the upper diamond.

![Figure 8.16. Glass Fifth String Quartet IV, rehearsal figure 15-16, with metric state graph.](image)

This more complex metric state with its three hemiolas continues through the next two eight-bar hypermeasures. From that point until the end of the movement grouping dissonances gradually disappear as the dynamic returns to *piano* and the tempo slows to the movement’s
opening tempo at rehearsal figure 18. Glass has used metric complexity along with dynamics and tempo to give the movement a large-scale arch shape.

Alfred Schnittke’s Piano Quintet contains passages of much more metric complexity than we have encountered thus far. It is a five-movement cyclic work, and I will examine a brief passage from the opening of the first movement and the final appearance of the same material in the fifth movement. Figure 8.17 shows the first movement’s first four bars, with a metric state graph. In measures 1 and 3, \( \cdot \), \( \cdot \), and \( \cdot \) levels are clearly established, but the fermatas in measures 2 and 4 as well as the change in meter at measure 4 make the one-measure level non-isochronous. The metric organization of the first four bars may be represented as \( \begin{array}{c|c} \cdot & ? \\ \cdot & ? \end{array} \). My metric state graph therefore shows only the one-measure span that represents measures 1 and 3 (they have identical metric states). It contains \( \cdot \), \( \cdot \), \( \cdot \) and \( ? \) nodes, all adjacencies are duple, and there is no dissonance.\(^{23}\)

The final appearance of the opening melody occurs near the end of the fifth movement, beginning at measure 128. Figure 8.18 shows this passage. Each string instrument states an augmented version of the opening melody (the second violin and cello versions are inverted) while the piano plays a different melody. Individually, the five instruments’ metric states are simple, but their relationships to each other and to the notated meter signature are complex. First I discuss the five lines individually with metric state graphs, then I explain how they relate to each other and show a complete metric state graph for the entire ensemble. In each metric state graph, the segments and nodes are differentiated by shape, in order to make the complete graph more easily comprehensible.

\(^{23}\) The melody’s syncopated half note is a single event, so it does not establish an antimetrical \( \cdot \) level.
The piano plays a melody in $\frac{3}{4}$ meter, with no regular hypermetric structure. It contains just two levels, quarter notes and dotted half notes. Figure 8.19 shows its metric state graph. The nodes are star-shaped, and the segment is a dotted line. The slash through the $\frac{3}{4}$ node indicates the notated measure.

Figure 8.20 contains a durational reduction of the first violin part, in which the quarter note represents the notated dotted half note, shown with the indication $\frac{3}{4} = \frac{\text{dotted}}{\text{quarter}}$. In this reduction and the three that follow, the note values in the second and fourth measures represent actual reduced durations, which in most cases do not add up to one reduced whole note. This is to be expected, since in the first movement’s melody, the second and fourth measures are of indeterminate duration. As with the original statement of this melody, these metric state graphs represents the span of one reduced measure (the $\frac{3}{4}$ rhythm). Nodes in the graphs are labeled with their actual note values. The first violin’s nodes are square, and segments are closely
Figure 8.18. Schnittke Piano Quintet V, mm. 128-144.

 spaced dotted lines. The \textit{j}. node has a horizontal slash, indicating that it represents the notated measure.
The other string parts contain inexact augmented versions of the original melody; in each case the rhythm diverges at one point from that of the original, but it is similar enough to consider it parallel in structure. Figure 8.21 shows a durational reduction of the second violin part, in which the quarter note represents the duration $\frac{3}{4}$, (or $\frac{5}{8}$), along with a metric state graph. Nodes are diamonds, and segments are dashed lines. Because the quarter note

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24 The reduced durations are difficult to calculate, due to the duplet bracket notation. A quarter note under a duplet bracket represents one half of a measure, which could be notated as a dotted quarter note with no duplet bracket. An eighth note under a duplet bracket represents one half of the dotted quarter note, or a dotted eighth note with no bracket. Each measure contains the equivalent of four dotted eighth notes. The second violin’s first note (a dotted half note tied
represents the duration $\frac{2}{8}$, the reduced $\frac{4}{4}$ measure represents $4 \cdot \frac{2}{8}$, or 5 notated $\frac{2}{8}$ measures.

Unlike the original melody, the second violin’s reduced version does not contain eighth notes.

The melody’s third and fourth notes are of unequal duration. In the unreduced version they have durations of $2 \cdot \frac{2}{8}$ and $3 \cdot \frac{2}{8}$, respectively, splitting the $5 \cdot \frac{2}{8}$ beat unequally. In the reduction they are notated with a quintuplet bracket showing their durations as $\frac{2}{5}$ and $\frac{3}{5}$ of the beat. The subordinate $\frac{2}{8}$ level (the quintuplet in the reduction) is not expressed frequently enough to be viable through this span, so the lowest level in the metric state graph is the $5 \cdot \frac{2}{8}$ level that reduces to a quarter note.

![Figure 8.21. Schnittke Piano Quintet V, mm. 128-144, second violin, durational reduction, with metric state graph.](image)

Figure 8.22 shows a reduced version of the viola’s melody, in which the quarter note represents a whole note in the actual notation. Its first two reduced notes are not a quarter note and a half note as in the original melody in the first movement. In the unreduced version, they to an eighth note under a duplet bracket) therefore equals five dotted eighth notes. Similarly, the second note equals ten dotted eighth notes.
contain five and seven quarter notes respectively rather than four and eight, so their reduced
durations contain the equivalent of five and seven sixteenth notes. Because of this rhythmic
alteration, the first two reduced notes do not establish a quarter note level. However, since
eighth notes are viable through the measure (established by the melody’s third and fourth notes),
the quarter note and half note levels are implied. The metric state graph shows nodes for reduced
\( \frac{1}{8}, \frac{1}{4}, \frac{1}{2}, \) and \( \frac{7}{8} \) levels, (or levels \( \frac{7}{8} \) through \( 3 \frac{7}{8} \) in unreduced durations). Nodes are upward-
pointing triangles, and segments are large dashed lines.

![Diagram](image)

Figure 8.22. Schnittke Piano Quintet V, mm. 1 128-144, viola, durational reduction, with metric
state graph.

Example 8.23 shows a reduced version of the cello part, in which the quarter note
represents one and one-half measures (3\( \frac{7}{8} \) or \( 2\frac{1}{8} \)). Reduced whole notes therefore represent
the equivalent of 4\( \frac{7}{8} \), or six notated measures. As in the viola part, the first two reduced notes
are not a quarter note and a half note. If they were, they would contain nine and eighteen eighth
notes respectively. Instead, they contain fifteen and twelve, so the reduced version alters those rhythms accordingly. As with the viola melody, the first two notes do not establish a reduced quarter note level, but because of the reduced eighth notes at the end of the measure, quarter notes and half notes are implied. The metric state graph shows nodes as downward-pointing triangles, and segments as alternating dotted and dashed lines.

Figure 8.23. Schnittke Piano Quintet V, mm. 128-144, cello, durational reduction, with metric state graph.

Before showing a complete metric state graph for this passage, I discuss the relationships between the piano’s quarter note and the four string instruments’ reduced quarter notes (\( \dd \) for the first violin, \( 5\dd \) for the second violin, \( \circ \) for the viola, and \( 3\dd \) for the cello). Figure 8.24 shows these relationships. The piano’s quarter note node appears as a star. The first violin’s square \( \dd \) node is a triple adjacency above the pianos’ \( \dd \) node. It contains a horizontal slash because it represents the notated measure. The viola’s \( \circ \) node (an upward-pointing triangle) is two duple adjacencies above the \( \dd \) node. The cello’s \( 3\dd \) node (a downward-pointing triangle) represents a
triple grouping of a \( \dot{.} \) node, which is itself a duple division of the first violin’s \( \ddot{.} \) node. Finally, the second violin’s diamond-shaped 5\( \cdot \) node results from the quintuple grouping of dotted eighth notes, and dotted eighth notes result from duple division of the dotted quarter note. This quintuple grouping appears as a 3/2 triangle. Because dotted eighth notes are not actually a viable level, the \( \dddot{.} \) node is open.

Figure 8.24. Schnittke Piano Quintet V, mm. 128-144, relationships between five parts’ “quarter notes.”

Combining figure 8.24 with the five individual metric state graphs produces a complete metric state graph for the passage; it appears as figure 8.25. This graph aptly represents the high degree of complexity of this passage. The four parallel NE/SW lines show the pure duple metric states of the four string parts, which are differentiated by the shapes of their nodes and segments. The NW/SE segment shows the piano’s triple meter, and the zig-zags and triangle within the graph show the complicated relationships between the five parts. The graph as a whole does not represent a span of a specific duration, because it has four highest levels: each of the four string parts has a reduced measure of a different duration.
Final Thoughts

In this chapter, I have demonstrated that my analytic model is robust and flexible enough to apply to works other than Fauré’s chamber music. I have shown that in two of his vocal works, a consideration of hypermeter and metric dissonance provides important insights into the songs’ architecture and their text-music relationships, and complements existing studies of those works. My consideration of two pieces by composers personally known to Fauré (Saint-Saëns and Ravel) reveals intriguing similarities between the composers’ styles, and suggests that the study of hypermeter and metric dissonance could be used both to assess stylistic influences between composers and to track the evolution of metric devices more generally. The application of my model to two works by late 20th-century composers (Glass and Schnittke) highlights the important role rhythm and meter play in contributing to those composers’ languages, and demonstrates the model’s utility for works of radically different styles.
My approach might also add new perspectives to the excellent work being done by many
other theorists on rhythm and meter in music of all eras and styles.\textsuperscript{25} The mensural music of the
late medieval and Renaissance periods seems particularly suited to this approach.\textsuperscript{26} The
application of my model might also inform an examination of the relationship between metric
analysis and performance.\textsuperscript{27} How might a metric analysis inform a performer’s interpretation?
Could a performer emphasize certain dissonances or bring out hypermetric structure in a way
that changes the listener’s understanding of the music? Might a performer’s use of \textit{rubato} or

\textsuperscript{25} An incomplete but representatively broad sampling of this literature includes Mauro
Botelho on Bach, Ryan McClelland on the Classical minuet, David Code on Stravinsky, Keith
Waters on jazz, John Brackett on the music of Led Zeppelin, and Mark Butler on electronic
dance music. See Mauro Botelho, “Meter and the Play of Ambiguity in the Third Brandenburg
Concerto,” \textit{In Theory Only} 11, no. 4 (February 1990): 1-35; Ryan McClelland, “Extended
Upbeats in the Classical Minuet: Interactions with Hypermeter and Phrase Structure,” \textit{Music
Form, Ideology, and The ‘Augurs of Spring’,” \textit{Journal of Musicology} 24, no. 1 (2007): 112-166;
Keith Waters, “Blurring the Barline: Metric Displacement in the Piano Solos of Herbie
53-76; and Mark J. Butler, \textit{Unlocking the Groove: Rhythm, Meter, and Musical Design in

\textsuperscript{26} See Graeme M. Boone, “Marking Mensural Time,” \textit{Music Theory Spectrum} 22, no. 1
(Spring 2000): 1-43 for a discussion of metric issues in mensural music from the 13\textsuperscript{th} through
17\textsuperscript{th} centuries.

\textsuperscript{27} Several authors have made a start in this area. See, for instance, Alan Dodson,
“Performance and Hypermetric Transformation: An Extension of the Lerdahl-Jackendoff
Theory,” \textit{Music Theory Online} 8, no. 1 (February 2002); Leon W. Couch III, “Hypermeter and
Performers’ Choices in Recordings of J. S. Bach’s \textit{Toccata in F}, BWV 540,” in \textit{Musical
Currents from the Left Coast}, ed. Jack Boss and Bruce Quaglia, 20-60 (Newcastle: Cambridge
Scholars Publishing), 2008; Daphne Leong, Daniel Silver, and Jennifer John, “Rhythm in the
First Movement of Bartok’s \textit{Contrasts}: Performance and Analysis,” \textit{Gamut} 1, no. 1 (2008); Ryan
Time: Rhythm, Metre and Tempo in Brahms’s \textit{Fantasien Op. 116},” in \textit{The Practice of
Performance: Studies in Musical Interpretation}, 254-282 (Cambridge: Cambridge University
Press, 1995).
dynamic shading actually change a work’s metric state? Questions like these hint at the vast potential of emerging models of meter to advance our understanding of music.

Until a few years ago, I had only a passing knowledge of only a few of Fauré’s chamber works, and I had no particular interest in developing a more intimate acquaintanceship. I started listening to recordings of them after being introduced to the First Piano Quintet in a seminar taught by Carlo Caballero. I was surprised and delighted to notice that in most of Fauré’s chamber works, I was uncertain at times about the location of the beat and barline. This uncertainty contributed greatly to my enjoyment of the pieces, to my sense that there was something mysterious and special about them. Having already discovered in myself an enduring interest in rhythm and meter, I became determined to “get to the bottom of” Fauré’s metric language. I studied his scores and read voraciously on theories of meter. In the process, I learned that there is no “bottom” to get to; instead there is a multiplicity of perspectives on Fauré’s music. They reflect off of each other, the way that light reflects off of multiple mirrors in a kaleidoscope, creating beautiful and ever-changing patterns. I believe that the perspective I offer here enriches the view, making it more intricate and variegated.
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