Hypermetrical Transitions

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Most hypermetrical shifts in common-practice music are shifts of "duple phase"— between "odd-strong" hypermeter (in which odd-numbered measures are strong) and "even-strong," or vice versa. I distinguish between *sudden* and *gradual* shifts, focusing on the latter type: A gradual hypermetrical shift is a situation in which the musical cues for hypermeter shift gradually from one structure to another. (This does not necessarily mean our *perception* of the shift is gradual, a separate and complex issue which I also address.) Drawing an analogy with transitions between keys, I call such shifts "hypermetrical transitions." I examine hypermetrical transitions in pieces by Mozart, Beethoven, Chopin, and Mendelssohn, considering the way the shift is carried out and its function within the passage and the piece as a whole.

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Hypermeter—meter above the level of the measure—has become a topic of great interest to music theorists in recent years.[1] There are several reasons for its appeal. Unlike meter at lower levels, hypermeter is not normally indicated in music notation; we must therefore trust our ears and our analytical judgment in determining the hypermeter of a piece. Hypermeter is affected by a variety of musical dimensions, including harmony, motive, phrase structure, and texture; consideration of hypermeter can therefore lead us into a far-reaching investigation of all of these dimensions and the complex interactions between them. Hypermeter is also of interest—and, again, unlike lower-level meter—in that it is frequently somewhat irregular in a piece. For example, a piece might begin with a regular pattern in which odd-numbered measures seem accented—what we will call an "odd-strong" pattern—followed by two strong measures in a row, leading to an even-strong pattern in the following passage; such hypermetrical shifts can often help to emphasize the formal division between one section and another. Or a section might contain numerous hypermetrical shifts, imparting a sense of heightened tension to the entire passage. In these ways, hypermeter can play an important role in articulating the form of a piece, and in conveying a trajectory of tension and stability.

In common-practice music (which will be our main concern in the current study), hypermeter is almost invariably duple, involving an alternation of strong and weak measures; extended passages of triple hypermeter are extremely rare.[2]

1 Studies of hypermeter within the last thirty years include Schachter 1980, 1987; Lerdahl and Jackendoff 1983; Lester 1986; Kramer 1988; Rothstein 1989, 1995; Cohn 1992a, 1992b; Kamien 1993; Roeder 1994; Krebs 1999; Samorotto 1999; and McKee 2004. This is far from an exhaustive list; it merely includes some studies that I have found especially valuable.

2 Two pieces in which triple hypermeter plays an important role are the minuet of Mozart's Symphony No. 40 and the scherzo of Beethoven's

Thus most hypermetrical shifts involve a shift from an odd-strong pattern to an even-strong one, or vice versa. (One might in some cases posit levels of hypermeter above the two-measure level, but I will not be much concerned with these higher hypermetrical levels here.) In such shifts, the period of the meter (the time interval between strong beats) remains the same while the phase (the placement of the strong beats) changes; we could thus characterize such shifts as moving from one "duple phase" to the other. At the broadest level, these shifts can be categorized into two types, which I will simply call *sudden* and *gradual* shifts. These terms refer, not to our perception of the hypermeter, but rather to the musical evidence on which those perceptions are based—the musical cues favoring one hearing or the other. (The distinction between musical evidence and our perception of that evidence may seem arcane if not incoherent; I discuss this further below.) A sudden shift is one where these musical cues abruptly "flip" or "switch" from one duple phase to the other; a gradual shift is one involving a smoother, more incremental realignment of the musical evidence, sometimes over quite a lengthy span of music.

My treatment of the musical cues giving rise to hypermeter follows the well-known theory of Lerdahl and Jackendoff (1983). The core of this theory is a set of "metrical preference rules" (MPRs), stating the criteria whereby a metrical structure is inferred from a pattern of notes. I will not list all of the preference rules here—a number of them will arise in the following discussion—but I will mention three that are especially important with regard to hypermeter. One rule concerns harmony (Lerdahl and Jackendoff's MPR 5f): There is a strong tendency to hear strong beats at changes in harmony. A second rule concerns the alignment of meter with *grouping structure*—Lerdahl and Jackendoff's general term for the hierarchical segmentation of a piece, from low-level motives and sub-phrases through phrases and periods to large-scale formal sections. Lerdahl and Jackendoff's MPR 2 states that we tend to hear the strongest beat in a group or phrase as being near the beginning; following Lerdahl and Jackendoff, we will call this the "strong beat early" rule.[3] A third rule concerns parallelism or repeated patterns (MPR 1): In cases where a pattern is repeated, we strongly prefer a metrical structure in which strong beats are similarly placed in each occurrence of the pattern. Elsewhere (Temperley 2001), I have suggested a second way in which parallelism affects meter: When a pattern is immediately repeated, with each instance of the pattern containing one beat at a certain metrical level, we tend to hear the first beat as stronger than the second (I call this the "first occurrence strong" rule). Each of these determinants of hypermeter—harmony, grouping, and parallelism—constitutes a rich and complex kind of musical structure in its own right: hierarchical, shaded with subtle distinctions, and frequently open to interpretation. Questions of whether a moment in a piece constitutes a change of harmony or a phrase boundary, or whether two segments are motivically parallel, are frequently matters of "more or less" rather than "all or nothing." Thus analysis of the hypermeter of a passage must begin with careful consideration of the structures that feed into it.

Returning to our distinction between sudden and gradual shifts, earlier theoretical treatments of hypermetrical shifts have focused on the sudden type. A particularly common kind of sudden shift is illustrated by Example 1, from the first movement of Haydn's Symphony no. 104. The *Allegro* begins with a 16-measure theme (the second half of which is shown in Example 1), in which odd-numbered measures are clearly strong. At measure 16, the last phrase of the opening theme overlaps with the first measure of a new section (clearly indicated by a change of texture and dynamic and the beginning of a new melody). This sectional beginning forces us to

Ninth Symphony; Cohn (1992a; 1992b) presents illuminating analyses of these pieces.

3 While not all theorists have embraced this view, it seems generally accepted in music theory today; see Temperley 2004 for discussion.

EXAMPLE 1. *Haydn, Symphony no. 104,* Allegro, *measures 9–19*

hear measure 16 as strong; the initiation of a tonic harmony in measure 16 that persists for a number of measures reinforces the strength of this measure. This situation—in which a phrase overlap coincides with a hypermetrical shift—is known as "metrical reinterpretation" and has been discussed by a number of theorists.[4] What I wish to emphasize about this passage is the abruptness of the metrical change. There is nothing whatsoever in the measures preceding measure 16 to anticipate the move to even-strong hypermeter. Measure 14—the even-numbered measure immediately before the shift—seems a particularly poor candidate for a strong measure, as it continues a sequential pattern started in measure 13. This, then, is a sudden shift *par excellence*.

Example 2, the opening of Beethoven's Sonata op. 10, no. 1, offers an interesting comparison to Example 1. On the surface, the two passages might appear rather similar in hypermetrical terms. The very strong accents ("phenomenal accents" in Lerdahl and Jackendoff's terminology) on the downbeats of measures 1 and 5—thick, long, *forte* chords, initiating harmonies that endure for four measures—leave no doubt as to the odd-strong meter at the beginning of the piece.[5] It is possible to continue this odd-strong hearing through to

4 Rothstein (1989, 52–56) extensively discusses the idea and its historical background.

5 An interesting detail here is the anticipation of measure 5's downbeat harmony one beat earlier. This could be seen as adding a slight element

example 2. *Beethoven, Sonata op. 10, no. 2, first movement, measures 1–23*

measure 22; at this point, a sectional overlap occurs and the opening theme is restated starting on an even-numbered measure, forcing a shift to an even-strong hearing. Seen in this way, measure 22 could well be regarded as a straightforward metrical reinterpretation. Closer scrutiny reveals, however, that this shift to even-strong is not entirely "out of the blue" but has been rather carefully prepared. In measures 17–21, rests on the downbeats of odd measures favor even measures as strong. With regard to harmony, every measure from measure 17 to measure 22 carries a harmonic change (if we assume the harmonies of measures 17, 19, and 21 begin on their downbeats); but not all changes of harmony are equal. The change from measure 16 to measure 17 is merely from V^6 to vii^{o7}, maintaining the same dominant function and bass note. Even more significantly, the change from measure 20 to measure 21 is from a cadential $^6_4$ to V$^5_3$; by convention, a cadential $^6_4$ is almost always metrically stronger than its resolution (indeed, many would consider the cadential $^6_4$ and

of metrical conflict, but this relates to lower metrical levels rather than to the two-measure level of beats that concerns us here.

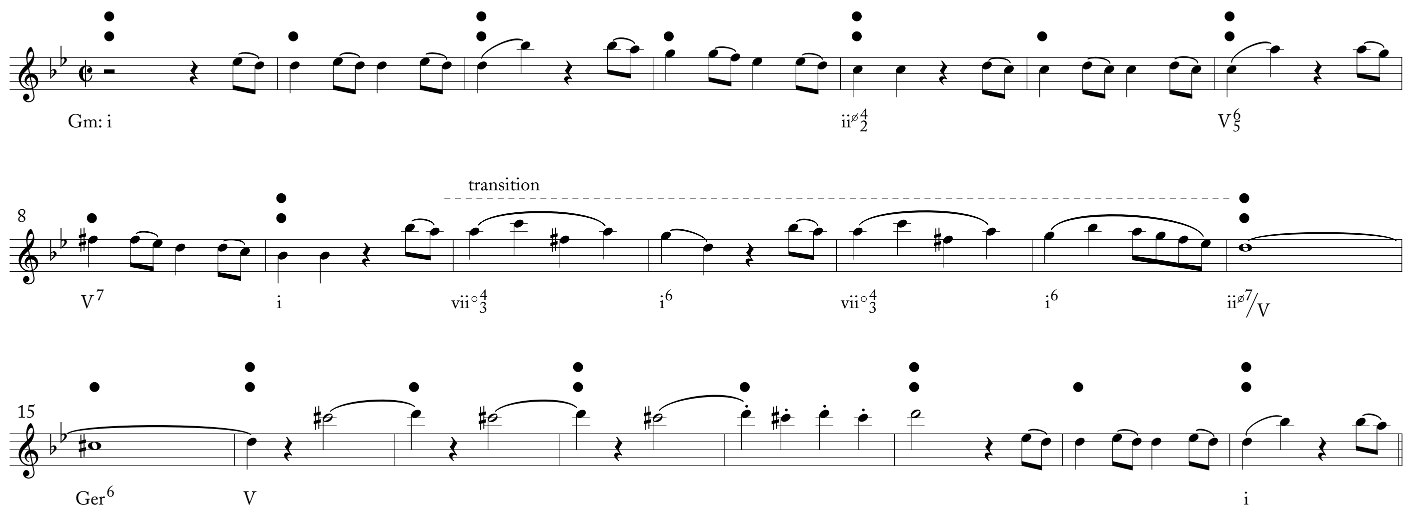
the V^5_3 to be part of a single dominant harmony). The relatively weak harmonic changes at measures 17 and 21—if they are changes at all—weaken these measures hypermetrically as well, and anticipate the shift to even-strong at measure 22. Indeed, the accentuation of even-strong measures could be traced back even further than measure 17; in measures 9–13, odd-numbered downbeats carry only melody notes (albeit somewhat emphasized by the arpeggios leading up to them) while the even-numbered ones have full left-hand chords. We could see the progression from the slight textural emphasis on even measures in measures 9–13, to the 2-measure dominant harmony starting at measure 16, to the pattern of empty odd-numbered downbeats in measures 17–21, to the cadential $^6_4$ at measure 20 as a gradual build-up of evidence for the even-strong hypermeter. This, then, is a clear example of a gradual hypermetrical shift.

The idea of a gradual shift from one underlying state to another is a familiar one in music theory, seen most clearly in the idea of a "transition" between two keys. The simplest and most prototypical case of this is the pivot chord—a chord that is included in the scales of two keys and is used to modulate between them. The logic of pivot chords is that, in order to move smoothly from one key to another, it is desirable to include a short segment of music that is compatible with both keys (and thus ambiguous between them). However, tonal transitions can be considerably longer than a single chord. In sonata movements, for example, the move from the tonic to the dominant (for example, C major to G major) often features an extended tonicization of the relative minor (A minor, in this case).[6] This could well be seen as a composing-out of the vi = ii pivot chord (a particularly common pivot in tonic-to-dominant modulations): a tonicization of A minor is quite compatible with a larger tonic of either C major or G major, and thus serves well as a bridge between the two keys. The parallel with gradual hypermetrical shifts should be apparent; for this reason it seems logical to call such shifts "hypermetrical transitions."

Gradual hypermetrical shifts have not, to my knowledge, received much attention in the literature on hypermeter. One widely discussed passage, shown in Example 3, deserves mention here, however: the opening of Mozart's Symphony no. 40. Measures 1–9 clearly feature an odd-strong hypermeter (conveyed most clearly by the harmonic changes on odd-numbered measures) while measure 14 onwards seems to demand an even-strong hearing; measures 10–13 are ambiguous between the two phases. Other authors have quite thoroughly discussed the hypermetrical ambiguity of this passage and the various metrical cues involved, and I have little to add to their treatments.[7] One interesting factor in this passage is the melodic grouping. The 2-measure subphrases of measures 9–13 are rhythmically parallel to those of the first 9 measures (though the end of the last group, in measures 11–13, diverges from the others); since those earlier groups were clearly "end-accented," with the second downbeat of each group stronger than the first, parallelism suggests

6 See, for example, Mozart's Piano Sonata K. 332, first movement, measures 23–28, and Beethoven's String Quartet op. 18, no. 3, first movement, measures 40–43. Also of interest in this connection is Aldwell and Schachter's concept of a "long-range pivot" (2003, 214–15).

7 See Epstein 1978, 68–70; Lerdahl & Jackendoff 1983, 22–25; Kramer 1988, 114–16. Kramer favors the even-strong hearing of measures 10–13; Epstein leans towards the even-strong hearing, but represents both hearings in his analysis (see his Example 10); and Lerdahl and Jackendoff find the passage truly ambiguous. I concur with Lerdahl and Jackendoff that measures 10–13 are ambiguous and that the even-strong hypermeter becomes definite at measure 14. It is not obvious why measure 14 has to be metrically strong; perhaps it is because a $ii^{\o 7}$ chord (even a secondary $ii^{\o 7}$ chord as in this case) is conventionally stronger than the following chord—especially when the following chord is not a dominant but an augmented sixth. Measure 14 also begins a melodic pattern of whole notes, making it strong by the "first-occurrence-strong" rule.



EXAMPLE 3. *Mozart, Symphony no. 40, first movement, measures 1–22*

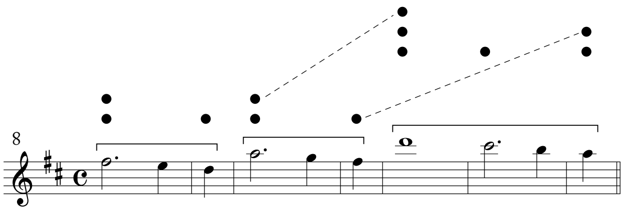
that those of measures 9–13 should be heard the same way. But this end-accented hearing is inherently unstable, due to the "strong beat early" rule; given that the harmony of measures 9–13 is neutral (with chord changes on every measure), we might well begin to gravitate towards an even-strong hearing, thus anticipating the decisive shift to even-strong at measure 14.

As with tonal transitions, passages of hypermetrical transition tend to be at least somewhat compatible with both duple phases, though they may slightly favor one or the other. In particular, because of the decisive importance of harmony as a hypermetrical cue, hypermetrical transitions usually feature harmonic changes on every downbeat, since a passage which only had harmonic changes on (say) odd measures would unambiguously favor odd-strong hypermeter. This is the case in Examples 2 and 3 above, as well as most of the other cases discussed below. Another possible scenario would be a passage which had no harmonic changes at all—that is, with a single harmony prolonged through the entire passage. An example of this is the opening of the overture to Mozart's *Le Nozze di Figaro,* shown in Example 4. Example 4 provides the score. The opening clearly projects an odd-strong hypermeter; starting at measure 12, the sudden fortissimo and entrance of the full orchestra forces a shift to even-strong.[8] Measures 7–11 simply prolong I of D major and could be heard either even-strong or odd-strong. Prior context favors an odd-strong hearing, but the melodic

8 An anonymous reader points out that measure 5 is motivically parallel to measure 4, which might make measure 4 seem strong by the first-occurrence-strong rule. To my mind, however, this is outweighed by harmonic considerations: measure 4 prolongs the opening I, whereas measure 5 introduces a change of harmony (to an implied ii), strongly confirming the odd-strong hypermeter.

EXAMPLE 4. *Mozart,* Le Nozze di Figaro*, Overture, measures 1–16*

gestures in measures 8–9 and 10–11 begin to suggest an even-strong pattern. (As already discussed with regard to Example 3, an "end-accented" hearing of melodic phrases is inherently unstable and tends to give way to a beginning-accented hearing.) The melody of measures 12–14 could be heard as continuing the sequential pattern of measures 8–9 and 10–11 (see Example 5); each of these three melodic gestures essentially connects two degrees of the tonic triad with descending stepwise motion (3-2-1, 5-4-3, 8-7-6-5). (That the third gesture is one measure longer than the first two is in a sense appropriate, as there is one more scale-step to be traversed.) The effect of this on the hypermeter of measures 8–11 is complex. Measure 12 is motivically parallel to measures 8 and 10, and measure 14 is parallel to measures 9 and 11; but both measures 12 and 14 are hypermetrically strong, so this motivic connection would seem



EXAMPLE 5. *The melody of the* Figaro *Overture, measures 8–14. The motivic connection between measures 12–14 and measures 8–11 suggests the "inter-level" metrical parallelism indicated by the dotted lines.*

neutral as to the hypermeter of measures 8–11. I would argue, however, that measure 12—with its emphatic change of texture and dynamic—is strong even at the 2-measure level, initiating a hypermeasure that lasts at least 4 (perhaps even 6) measures. We thus hear a sort of "inter-level" metrical parallelism between measures 8–11 and measures 12–14 (as shown in Example 5); since measure 12 is stronger than measure 14, this gives retrospective support to the even-strong hearing of measures 8–11.[9]

I emphasized earlier that, in describing hypermetrical shifts as sudden or gradual, I was referring to the arrangement of musical evidence and not to our actual perception of the hypermeter. Example 2 illustrates the importance of this distinction. We can probably agree that the musical cues to hypermeter shift rather gradually from an odd-strong configuration in measure 1 to an even-strong one in measure 22; but that our *perception* of the hypermeter shifts gradually is much more debatable. Regarding our perception of hypermeter in the passage, two simple possibilities suggest themselves. One is that, at a certain point—let us say measure 21—our perception simply "flips" completely from odd-strong to even-strong. Another possibility is that a certain region of the piece is heard as ambiguous: perhaps up to measure 16 we hear odd-strong, then from measures 17–21 we are not sure, then from measure 22 onwards we hear even-strong. However, there are also other possibilities, more complex than these and also (I believe) truer to our actual experience. The point to emphasize here is that, in perceiving some dimension of musical structure as a piece unfolds in time, each moment involves not only a judgment of the structure at that moment, but also at previous moments as well. At measure *m*, we have an intuition about the metrical strength of measure *m* but also that of all previous measures (though these retrospective judgments may fade as the measures in question recede in memory). At measure *m*+1, we may then reevaluate our judgment of measure *m*, perhaps forming a different judgment of that measure than the one we originally chose. Thus each measure in the piece is experienced from the vantage points of all subsequent measures. Seen in this way, the experience of hypermeter is really a two-dimensional phenomenon: at each measure *m*, we have an understanding of the hypermeter of all previous measures.[10]

Example 6 shows a two-dimensional representation of the hypermeter of the passage in Example 2; three different analyses are shown. Example 6(a) shows the first of the two simple possibilities described earlier. Everything up to measure 20 is odd-strong, everything from measure 21 onwards is even-strong, and this holds true from all vantage points. Example 6(b) shows the second possibility: everything up to measure 16 is odd-strong, measures 17–21 are ambiguous,

9 The opening of Beethoven's Sonata op. 31, no. 1, first movement, is another example of a hypermetrical transition over a single prolonged harmony. Measures 1–3 are odd-strong; measures 8*ff.* are even-strong (perhaps this is debatable—but without question, measures 12*ff.* are even-strong, as they simply repeat the opening); measures 4–7 are the hypermetrical transition.

10 One could say that we reevaluate the strength of measure *m* not only at all subsequent measures, but at all subsequent points in time; thus the vertical axis of the analyses in Example 6 should really be continuous, not discrete. However, this would greatly complicate the analysis and I will not attempt it here.

a)

	15	16	17	18	19	20	21	22	23
15	:								
16	:	.							
17	:	.	:						
18	:	.	:	.					
19	:	.	:	.	:				
20	:	.	:	.	:	.			
21	:	.	:	.	:	.	.		
22	:	.	:	.	:	.	.	:	
23	:	.	:	.	:	.	.	:	.

b)

	15	16	17	18	19	20	21	22	23
15	:								
16	:	.							
17	:	.	?						
18	:	.	?	?					
19	:	.	?	?	?				
20	:	.	?	?	?	?			
21	:	.	?	?	?	?	?		
22	:	.	?	?	?	?	?	:	
23	:	.	?	?	?	?	?	:	.

c)

	15	16	17	18	19	20	21	22	23
15	:								
16	:	.							
17	:	.	:						
18	:	.	:	.					
19	:	.	:	.	:				
20	:	.	:	.	:	.			
21	:	.	:	.	:	.	:		
22	:	.	.	:	.	:	.	:	
23	:	.	.	:	.	:	.	:	.

EXAMPLE 6. *Three possible experiential analyses of the hypermeter in measures 15–23 of Example 2. Columns indicate the measure of the piece under consideration. Rows indicate the "vantage point"—the measure at which the analytical judgment is being made.*

and measure *22ff. is* even-strong; and again, the perception of each measure is constant across all vantage points. Example 6(c) shows a more complex possibility. Here, the perception of everything up to measure 21 is odd-strong—at least, until we get to measure 22. At measure 22, we infer an even-strong meter for measure 22, but this hearing also cascades back through the previous measures, as far back as measure 17. Out of these three possibilities, Example 6(c) is, I believe, the most faithful to my own perception of the passage. The unequivocal odd-strong feel of the opening has enough momentum to carry through measure 21, despite the weakening evidence for it. But the gesture in measures 21–22—a gesture that is unquestionably "weak-strong"—carries so much force that it causes me to reconsider the previous measures, especially given the very strong motivic parallelism between measures 21–22 and the previous two 2-measure groups, and also given the fact that the cadential $^6_4$–V in measures 20–21 makes a "even-strong" hearing inherently much more appropriate for this segment. (One could extend this revision back even further, but I find this doubtful. I do not deny that even-strong measures in measures 9–12 carry some accentuation, but I would treat this more as a metrical "displacement dissonance"—to use Krebs's [1999] term—that is not strong enough to overthrow the odd-strong meter, even when reinforced by the even-strong passage that follows.) One interesting thing about Example 6(c) is that, from each vantage point, no hypermetrical shift has occurred, at least not recently. Up to measure 22, no hypermetrical shift has occurred at all; at measure 22, the shift occurred 5 measures ago. One might then have the experience of shifting almost imperceptibly from one hypermeter to another, without ever feeling that the shift is happening "now."[11]

11 Metrical "revision"—reinterpreting the meter of a passage based on subsequent context—has been discussed by Jackendoff (1991) and Hasty (1997). A more general framework for capturing different interpretations of an event from different vantage points is suggested by Lewin (2006). I have also explored metrical revision from a preference-rule perspective (Temperley 2001). A hearing such as Example 6(c) can

This discussion brings us to the verge of some very fundamental and difficult issues about meter perception and indeed music perception in general. One might argue, first of all, that the analysis in Example 6(c) is only plausible for a listener who is hearing the piece for the first time. In our initial hearing of measure *m*, we are not aware of its subsequent context; hearing that subsequent context may cause us to revise our initial analysis of the measure. But if we were already familiar with the piece, we would essentially be hearing each measure from the vantage point of knowing the entire piece; thus there would never be any reason for "revision" effects such as that in Example 6(c). (We would know in advance that our ultimate analysis was going to involve an even-strong hearing of measures 17–21, so we would impose this hearing as soon as these measures were heard.) On the other hand, one might assume a "modular" model of music perception in which our "music processor" is *always* in a sense hearing a piece for the first time, even when we also have the entire piece stored in long-term memory (Jackendoff 1991; Temperley 2001). For me, the experiential "rightness" of Example 6(c) is strong evidence for such a model. Another interesting issue here concerns the whole question of ambiguity. Both Examples 6(a) and 6(c) assume that, from a particular vantage point, a given measure is either strong or weak. But one might argue that a passage can also be heard as hypermetrically ambiguous—a mixture between odd-strong and even-strong, as suggested by Example 6(b). I have argued elsewhere (Temperley 2001) that, in general, the perception of meter is rather resistant to ambiguity: We may be able to impose two different metrical structures on a passage (for example, hearing an isochronous note pattern in duple or triple meter) but it is usually impossible to impose both of them at once. In the case of hypermeter, however, where the two structures at issue differ only with regard to the highest metrical level, the possibility of entertaining both hearings simultaneously does not seem so far-fetched, though I still find it doubtful. I will not consider these difficult issues further here, but it is important to acknowledge some of the complexities that confront us in seeking to model our experience of hypermeter.

An interesting discussion of gradual hypermetrical shifts is found in an essay by Imbrie (1973). He discusses several sections in Beethoven pieces which are essentially similar to those at issue here: one passage features a clear hypermeter, a later passage features a conflicting one, and an intervening passage is ambiguous between them. Imbrie suggests that, in such cases, our perception of the ambiguous passage may either be "conservative" (maintaining the previous meter) or "radical" (anticipating the following one).[12] One of Imbrie's examples is of particular interest, from the development section of the first movement of Beethoven's Fifth Symphony, given in Example 7. It seems clear that a hypermetrical shift happens somewhere between even-strong

actually be modeled quite nicely from such a perspective, if we allow that at each moment, the listener is considering all possible analyses of the portion of the piece heard so far, giving each possible analysis a "score" according to how well it is favored by the preference rules, and choosing the highest-scoring analysis. (Here, one must of course allow for irregularities in hypermeter, though they are presumably penalized in some way: regularity of hypermeter is therefore a preference rule rather than a hard-and-fast "well-formedness rule".) Based on everything up to measure 21, perhaps, the best analysis overall is a completely odd-strong analysis; there is some accentual evidence against this hearing but it is not enough to outweigh the penalty for a hypermetrical shift. But at measure 22, the evidence for a shift becomes overwhelming; and given that a shift must take place, it is best to locate it at the point that best aligns the strong downbeats with the phenomenal accents, namely at measure 17 (or thereabouts).

12 As I read Imbrie, he does not consider the possibility of perceiving a single moment differently from different vantage points. Thus, his analyses are all essentially similar to Example 6(a); the question is only where exactly the shift occurs. (In Example 6[a], the shift occurs "conservatively" at measure 21; a radical hearing would be one in which the shift occurred earlier, perhaps at measure 17.)

EXAMPLE 7. *Beethoven, Symphony no. 5, first movement, measures 174–218*

hypermeter at measure 188 (or so) and odd-strong at measure 215. Schenker's analysis in *Der Tonwille* (1921/2004) locates the shift at measure 209, calling this an "extra measure" which is first heard as weak and then reinterpreted as strong. While not discounting this possibility, Imbrie also suggests an alternative analysis in which the shift to odd-strong occurs much earlier—at measure 179. This is a "radical" hearing indeed, as it forces a metrical construal of the second-theme motive in measures 179–182 which (even under Imbrie's analysis) does not arise anywhere else in the movement. London (2004) argues that measures 196–208 are truly ambiguous, and I would concur. An even-strong hearing of these two-chord gestures is favored by the timbral grouping and the "strong beat early" rule; an odd-strong hearing is favored by the fact that the second chord of each gesture is not closely followed in register and thus seems "long." With regard to harmony, measures 196–204 contain some harmonic changes on both even and odd measures; while there are more changes on odd measures, the i–ii°–vii°–i gestures in measures 196–199 and 200–203 rather suggest self-contained, miniature "phrases" and therefore seem beginning-accented. From measure 203 onwards, *all* of the harmonic changes fall on odd measures; this gives a new reinforcement to the odd-strong hearing. Still, the registral and timbral parallelism between measures 204–207 and the previous four-measure groups (which, as noted above, seem beginning-accented because of their phrase-like harmonic structure) might make one hang on to an even-strong hearing. Once this parallelism is broken at measure 209, there is no longer any reason to deny the odd-strong hearing favored by the harmony.[13]

Thus, I would say that Schenker is partly right: measure 209 is where the metrical shift is *completed*, but the groundwork for it has been carefully laid in the preceding measures. As London (2004) observes, this hypermetrical shift also plays an important role in the drama of the piece as a whole. If we regard this passage—as many have done—as the "liquidation" of the second-theme motive into two-note and then one-note fragments, it is appropriate that the hypermeter is, in a sense, liquidated as well: the regular 4- and 8-measure metrical structures that characterize so much of the movement break down to the point that even the two-measure metrical level is in doubt.

An exquisitely crafted hypermetrical transition is seen in Example 8, the first section of Chopin's Etude Op. 10, no. 3. At issue here is the one-measure level of meter, or in other words, whether odd-numbered or even-numbered quarter-note beats are strong; in this case, odd-strong and even-strong will refer to these two possibilities, respectively. (Strictly speaking, then, this might be regarded as an issue of meter rather than hypermeter.) The notated meter indicates an odd-strong hearing; Rothstein, while acknowledging the high degree of metrical conflict in the passage, argues that the odd-strong hearing is preferable (1989, 221). I would argue, however, that the case for an even-strong hearing of measures 1–13 is simply overwhelming; virtually all of the musical evidence is in its favor. Long melodic notes fall on even-numbered beats throughout; every even beat carries a change of harmony, and most decisively, numerous measures (for instance, measures 1, 2, 4, and 5) feature a harmonic change on the second beat but not on the following notated downbeat. There are a few small hints of support for odd-strong meter. The first beat of the piece is of course odd (favoring odd-strong by the "strong beat early" rule), as is the first beat of the second large phrase starting in measure 9; and a melodic pattern begun on the first beat of measure 6 is repeated on the second beat, making the first (odd) beat seem strong. But these are merely subtle syncopations against the dominant even-strong meter.[14]

In subsequent measures, there is an unmistakable metrical shift. Most obviously, the climax of the passage—a *fortissimo* $^6_4$ chord on the downbeat of measure 17 (I will call this beat 17.1), which lasts for a full measure—lands on an odd-numbered beat; after that, long notes of the melody are generally on odd rather than even beats, and the section ends with an extended I harmony arriving on the notated

13 Strictly speaking, one does not know that the registral pattern is broken until measure 211. But in retrospect, measure 209 seems like the beginning of a new registral pattern.

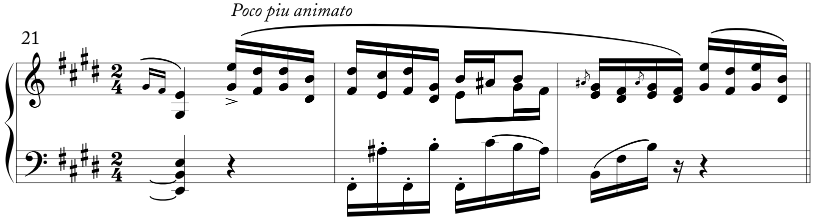
14 Another subtle factor in favor of the notated meter concerns the chord on the second beat of measure 7. This is a passing chord between ii^6_5 and V^4_3 of V (part of a chromatic voice-exchange), and would normally be metrically weak.

EXAMPLE 8. *Chopin, Etude op. 10, no. 3, measures 1–18*

downbeat of measure 20.[15] What is of interest is the measures immediately preceding the climactic $^6_4$, measures 14–16. Here we have harmonic changes on every beat, as is typical for a hypermetrical transition; but again, not all harmonic changes are equal. The change from 13.2 to 14.1 is I–V^7/IV, preserving the same root and simply turning a major triad into a dominant seventh; this reinforces the previous even-strong meter. The next four beats, 14.2 through 16.1, all feature clear changes of harmony (though from 15.2 to 16.1 the bass note is retained) and seem quite compatible with either meter. (One might say the local tonics on 14.2 and 15.2 seem inherently a bit stronger than their preceding dominants, but one might also say that the applied dominants group with their following tonics which makes them seem strong by the "strong beat early" rule.) From 16.1 to 17.1 the harmony moves from V^4_3 of V to Fr^{+6} to cadential $^6_4$, a common harmonic gesture in which the Fr^{+6} functions as a linear connective between the applied V^4_3 and the $^6_4$; seen in this way, the Fr^{+6} is clearly subordinate to the V^4_3 and thus seems metrically weaker. The change of texture in the left-hand at 16.1 also favors this beat as strong. Also of interest is the melodic structure of the passage. Beats 14.1 and 15.1 clearly initiate one-measure melodic groups, giving support for the odd-strong meter; this hearing is then further bolstered by the fact that in measure 16, the melodic pattern of the first beat is repeated (up a step) on the second beat, thus favoring 16.1 as strong by the "first-occurrence-strong" rule. (The melody here is similar to that in measure 6, which I suggested was understood simply as a subtle syncopation; but now, reinforced by the parallel melodic grouping of the previous two measures and by the harmony of measure 16, its effect is entirely different.) Both in harmony and in melodic structure, then, the passage from measure 14 to measure 16 reflects a careful and elegant transition from even-strong to odd-strong meter.

The conflict between duple phases (at the one-measure level) is reflected elsewhere in the piece as well, and in ways that connect nicely with the opening section. Example 9 shows the opening of the middle section; while the notated (odd-strong) meter is dominant, the melody begins with a 4-sixteenth-note anacrusis figure, stated on an even quarter-note beat and then repeated on the following odd beat, giving a slight suggestion of even-strong accentuation. This is similar to the situation in measure 6, where a motivic parallelism suggests an odd-strong pulse against the prevailing even-strong meter. It also brings to mind the very beginning of the piece; under my interpretation, we find a half-measure anacrusis there as well (expanded by a further eight-note anacrusis in the melody). These connections could be taken as corroborative evidence for my even-strong reading of the opening; under an odd-strong hearing, neither connection would arise. Also of interest is the return of the main theme at measure 62, shown in Example 10. Overall, odd-strong meter seems predominant in the measures preceding the thematic return, reinforced by the changes in melodic pattern on the downbeats of measure 58 and 60 and the long B in the bass at measure 61. But even here, there are subtle elements of metrical conflict. In measures 55–59, odd quarter-note beats tend to be deemphasized by tied notes either in the melody or in the bass, whereas even beats are always articulated in both voices; the long bass note B in measure 59 also supports even-strong meter. Also noteworthy are the appoggiatura E's in the melody on every quarter-note beat from measure 58 onwards; in a sense the E at measure 62, despite its very different harmonic function, simply continues this pattern, and it is the F♯ on the second beat that finally breaks it. Thus, while the return of the theme undeniably forces a shift from odd-strong to even-strong meter, it is—again—a shift that has been subtly prepared.

15 The function of the $^6_4$ chord in measure 17 is an interesting issue in itself; Rothstein (1989, 224–25) argues that, while it may initially seem like a straightforward cadential $^6_4$ (elaborating an expected following V), it in fact is tonic-functioning—hence the question-mark in Example 8. This issue is not of central importance for us here, however.



EXAMPLE 9. *Chopin, Etude op. 10, no. 3, measures 21–23*

The analogy between hypermetrical and tonal transitions—discussed earlier—takes on particular significance in our next example, Example 11, from the first movement of Mozart's Symphony no. 36. Here, the hypermetrical transition coincides with the tonal shift from the tonic to the dominant key. The passage follows a perfect cadence (in measure 42) which ends the opening theme; while the cadential tonic was set up as weak by the previous context, the change of texture and sudden forte dynamic at measure 42 suggests a metrical shift to an even-strong pattern. The phrase in measures 43–46 might well be seen as a "first-group closing theme," a category that I have explored elsewhere

EXAMPLE 10. *Chopin, Etude op. 10, no. 3, measures 54–62*

EXAMPLE 11. *Mozart, Symphony no. 36, first movement, measures 42–55*

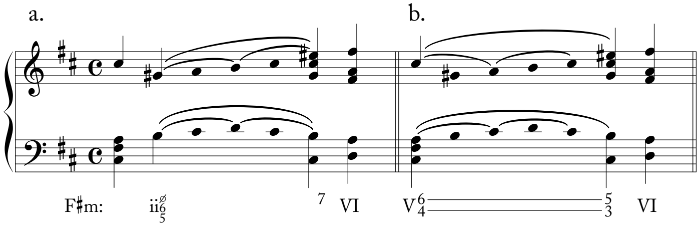
(Temperley 2004). The end-accented hypermeter of the theme is typical; as I argued in that article, closing themes, both of the first-group and second-group type, are normally end-accented. However, rather than repeating this phrase—as would normally occur in a closing theme—Mozart takes the next phrase in a different direction. Tonally, we move towards the dominant key, and this has consequences for the hypermeter as well; once we realize that this is *not* a closing theme, our expectation for end-accented phrases no longer seems appropriate, and the two-measure gestures of measures 49–52 begin to seem more beginning-accented than end-accented. Measure 49 is the first measure of the second phrase to deviate melodically from the first, making it in a sense "new information" and giving it added metrical strength (thus contributing to the rise of odd-strong hypermeter); this measure also initiates the move away from the tonic key. The hypermetrical transition, measures 49–52, coincides exactly with the passage of tonal instability between tonic and dominant (the tonal transition employs the common strategy, discussed earlier, of tonicizing the vi = ii pivot chord in measures 50–51); the new melodic pattern and strong harmonic arrival on I of G at measure 53 clinches the metrical shift and also completes the transition to the dominant key.

In our next example, Example 12, from Mendelssohn's Song without Words op. 30, no. 4, hypermeter is just one interesting aspect of an extraordinary passage. The piece begins (after a two-measure introduction) with an 8-measure theme ending on a half-cadence in the tonic key of B minor; the theme then repeats in a varied form (measures 11–18), moving to the minor dominant key and cadencing with a strange half-cadence at measure 18. The harmony at measure

EXAMPLE 12. *Mendelssohn, Song without Words op. 30, no. 4, measures 11–25*

18 is in fact a $^6_4$ chord; I call it a half-cadence because it seems so clear that a half-cadential V (V of F♯ minor) is the expected chord there and that the $^6_4$ is in some way substituting for it. A dominant pedal follows in measures 18–23, with changing harmonies above it (we return to this passage in greater detail below), leading to an emphatic VI chord in measure 24; this VI chord is first thought to be a deceptive cadence, which we expect to be followed by a full cadence in F♯ minor, but it turns out—astonishingly—to be V of G major, leading to a cadence in that key which ends the first half of the piece.

Hypermetrically, it seems clear that the piece opens with an odd-strong meter, and one could easily continue this through the strange half-cadence in measure 18; this half-cadence then falls on a weak measure, as half-cadences often do. But the climactic VI chord in measure 24 is unquestionably strong; thus, there must be a metrical shift somewhere between measure 18 and measure 24. To understand the hypermeter of this passage we must examine its harmony, which is complex and ambiguous. If the $^6_4$ in measure 18 is understood as a half-cadence, closing off the opening theme, measure 19 could then be seen as initiating an expanded predominant harmony (albeit over a dominant pedal) which extends up to the V in measure 23; this favors measure 19 as strong, and suggests that the shift to even-strong only occurs at measure 24. (This analysis is represented in the reduction in Example 13[a].) The change in dynamic and the introduction of a new melodic idea in the pick-up to measure 19 could be seen to support this hearing. On the other hand, one could also construe the $^6_4$ in measure 18 as a cadential $^6_4$ which is extended



EXAMPLE 13. *Two voice-leading analyses of Mendelssohn's Song without Words op. 30 no. 4, measures 18–24*

for five measures and resolves to V in measure 23 (see Example 13[b]); this hearing is supported by the new accompaniment texture at measure 18. By this view, measure 18 is surely metrically strong, and the shift to even-strong meter occurs suddenly at that point. Each of these harmonic-hypermetrical hearings offers a convincing and coherent account of the passage: the harmonic progression in measures 19–22, $\text{ii}^{ø6}_{5}$–i–iv–i (over a dominant pedal), makes sense either as a prolonged predominant with passing i chords, or as a prolonged cadential $^{6}_{4}$ with passing predominants. Of particular significance is the $^{6}_{4}$ chord in measure 22: as this is almost identical to that of measure 18 (only the inner voices are different), it seems to connect strongly with that chord and perhaps tips us towards the prolonged–$^{6}_{4}$ (even-strong) interpretation of the passage, thus preparing for the decisive shift to even-strong in measure 24.

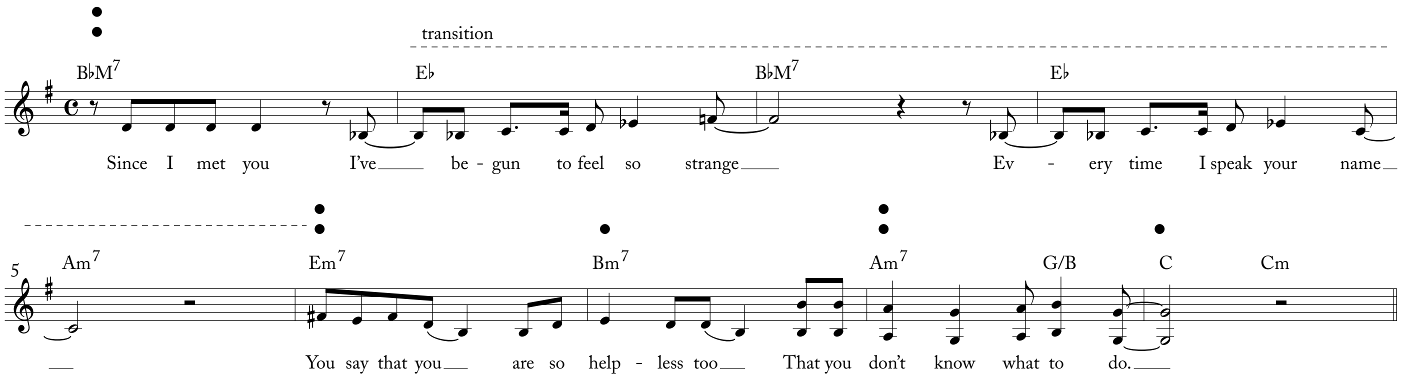
I mentioned at the outset of this paper that hypermeter could serve a variety of important musical functions. Consider a simple case such as the metrical reinterpretation in Example 1. The shift of hypermeter here serves at least two purposes. First, it helps to differentiate the big theme in measure 16 from the opening theme of measures 1–15; along with the change in texture and dynamic, it conveys an underlying "change of state" and accentuates the contrast between the two themes. The hypermetrical shift also (at least in retrospect) makes the cadential tonic in measure 16 metrically strong rather than weak, and thus gives it added emphasis. (One might also say that the metrical reinterpretation serves an additional function of cohesion by linking one phrase to the next, but this is more an effect of the phrase overlap than of the metrical reinterpretation itself.)

We might ask the same question about the gradual hypermetrical shifts discussed in this paper: What functions do they serve? This is a difficult question; the answer seems to depend very much on the individual case. In the Beethoven sonata (Example 2), the hypermetrical shift could be seen as part of a large-scale progression from a purely odd-strong state in measures 1–8, through a period of mild metrical dissonance in measures 9–16, through a truly transitional passage in measures 17–21, to a purely even-strong state starting in measure 22: this creates a satisfying journey from stability to instability to stability again. In Beethoven's Fifth Symphony (Example 7), as mentioned earlier, the shift represents a kind of hypermetrical analogue to the liquidation taking place in the motivic domain. In the Chopin Etude (Example 8), the hypermetrical shift is part of a larger issue of metrical conflict that plays out throughout the piece, particularly with regard to the half-measure anacrusis pattern discussed earlier. In Mozart's Symphony no. 36 (Example 11), the hypermetrical shift highlights the simultaneous tonal transition and also engages in an interesting way with the "end-accented closing-theme" schema. And in Example 13, the shift complements the harmonic tension and ambiguity of the passage—reflecting the general confusion and disarray created by the extraordinary $\frac{6}{4}$ chord in measure 18.

In considering the functions of hypermetrical transitions, we should bear in mind an important aspect of such transitions that sets them apart from their tonal analogues. When we hear a tonal transition—a large-scale modulation—the two states at issue are inherently and perceptibly different; though we probably cannot identify the two states in absolute terms (unless we have absolute pitch), we can at least maintain them in memory (or maintain one in memory while hearing the other), juxtaposing them in our minds and comprehending their relationship. When we move to the dominant key, we can remember what the tonic sounded like; we feel the distinct and conflicting (even "dissonant") nature of the dominant in relation to the tonic; and we feel the restoration of stability and the "return home" when the tonic key is regained. By contrast, the experiential difference between odd-strong and even-strong hypemeter is much more tenuous. Suppose a piece begins with a passage of odd-strong hypermeter, and then—perhaps after a passage containing several shifts—another passage of stable hypermeter occurs; can we really say whether the current hypermeter is odd-strong or even-strong? To do so would require not just a good musical memory, but rather some kind of meticulous metrical bookkeeping—literally counting measures (or at least counting hypermetrical shifts).[16] This does not mean that hypermetrical transitions are perceptually irrelevant or unimportant, but it means that their importance is primarily *local*. I would be wary of constructing large-scale analytical narratives involving odd-strong and even-strong hypermetrical states—for example, viewing a large-scale shift from odd-strong to even-strong and then back to odd-strong as a perceptible "departure-and-return," analogous to that in the tonal realm.

I have tried to show that hypermetrical transitions are an interesting and important device in common-practice music. They may also play a role in some other musical styles, notably rock and other kinds of recent popular music. I will offer just one example, from the song "Could it Be I'm Falling in Love" by the early-1970s soul group the Spinners; the first verse of the song is shown in Example 14. In fact, this example resembles several of our earlier examples in some ways. As usual, the first measure of the verse is clearly strong. (The verse begins in B♭ major, though the main tonality of the song is G major.) A very short, one-measure, sub-phrase is followed by two 2-measure sub-phrases. These sub-phrases at first seem "end-accented," given the odd-strong meter established by measure 1. But at the third phrase—in measures 6–7—the odd-strong, end-accented hearing becomes untenable. Harmonically, the surprising and emphatic move to Em7 (vi^7 of G major) in measure 6 confers a considerable accent on that measure. The melody of measure 7 is then a varied repeat of measure 6 (and the two lines also rhyme lyrically), adding strength to measure 6 by the "first-occurrence-strong" rule. Once this shift is

16 Even if one could keep track of metrical states in this way, the very idea of hearing a passage in one metrical state X, while experiencing this state as being dissonant against another metrical state Y, seems very doubtful to me. Certainly we can hear a rhythmic pattern as metrically dissonant against state Y—a pattern of syncopations, for example—but then we are hearing the passage as being in Y. Most discussions of metrical dissonance seem to accord with this view, notably that of Krebs (1999)—though Krebs's concept of *subliminal dissonance*, if I read it correctly, seems to refer to a situation in which a listener hears a passage in one meter yet (ideally at least) experiences that meter as dissonant against another underlying meter. As I have indicated, I find this idea quite problematic, at least with regard to my own perceptual capacities.



EXAMPLE 14. *The Spinners, "Could it Be I'm Falling in Love" (music and lyrics by Melvin Steals and Mervin Steals), first verse. (Measure numbers related to the first verse only.)*

heard, one tends to retrospectively reconsider measures 2–5 as even-strong as well. A parallel with Example 2 is apparent here; the retrospective revision that accompanies the shift almost makes it seem that no shift has actually occurred. There is a parallel with Example 11 as well; as in that case, the hypermetrical shift coincides almost perfectly with the tonal shift (from B♭ major to G major), and adds another dimension of contrast between the second part of the phrase and the first. (One might argue that the harmony is retrospectively revised as well: what was first heard as IV/B♭ in measure 4 is later understood to be ♭VI/G.) It appears, then, that the idea of hypermetrical transitions may have interesting applications outside the realm of common-practice music.

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