

Tied Up With Strings: Untangling the Rhythmic Complexities of the Second Movement of Beethoven's String Quartet No. 16, Op. 135

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*"To cut the Gordian knot, is not to untie it.
Children and lunatics cut that which the poet
spends his life patiently trying to unravel."*

-Jean Cocteau¹

The second movement of Beethoven's final composition and sixteenth string quartet (opus 135) is rife with rhythmic complexities. It is arguably one of the most metrically dissonant movements included by Beethoven in any of his quartets. This saturation of dissonance is purposeful, as it is used as a principal instrument of organization. In order to highlight the idea of dissonance as an organizational tool, Beethoven takes three rhythmically dissonant ideas and ties them together in innovative and unusual ways. The melodic motives, dynamics, and musical form are thereby all encapsulated within the three central metrical dissonances of D3+1, D3-1 and G3/2, accord-

¹ "Couper le nœud Gordien n'est pas dénouer le nœud Gordien. Enfants et fous coupent ce que le poète met toute une vie de patience à dénouer." Jean Cocteau, *Le Secret professionnel* in *Le Rappel à l'ordre*. Quoted in Jennifer Hatte, *La langue secrète de Jean Cocteau: la mythologie personnelle du poète et l'histoire cachée des Enfants terribles* (Bern: Peter Lang AG, International Academic Publishers, 2007), 72.

ing to the notation and classification system of Harald Krebs.² With these dissonant ropes Beethoven ties the listener up into a situation as complicated as the fabled Gordian knot. This knot will only begin to be teased apart when an understanding of the metrical dissonances and rhythmic complexities of the movement is reached. It is the aim of this paper to help the listener become Cocteau's poet and begin unravelling the first few tangles.

Finding the Rope's End

With the initial strains of the movement, Beethoven throws his cords of dissonance around the listener. In a very efficient fashion, Beethoven takes three basic dissonance types and creates variety by differing the interactions and the intensities of these dissonances. Through the immediate saturation of dissonance Beethoven triggers an auditory clue for the audience to listen for the moments that are metrically consonant. The duality of extreme dissonance and consonance is characteristic of Beethoven's late period and the late string quartets in particular. Carl Dahlhaus encapsulates the inherent ambiguity of Beethoven's last period when he notes that when "some commentators on Beethoven speak of extreme subjectivity, and others of a retraction in objectivity, is not a chance differ-

² See Harald Krebs, *Fantasy Pieces: Metrical Dissonance in the Music of Robert Schumann* (New York: Oxford University Press, 1999). The designations of D3+1, D3-1 and G3/2 will be explained in text as they arise in the discussion. The designation of "suggested" is the author's own.

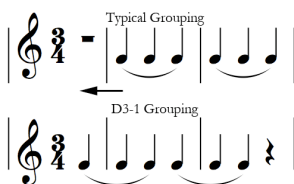
ence of opinion but the sign of an ambivalence inherent in the facts of the matter.”³ The division in the scholarship is symptomatic of the wider populace’s reaction to the late quartets throughout their history. A young Hector Berlioz wrote to his sister Nanci in 1829 of a performance he had attended of Opus 135 a few days prior, stating that “there were nearly 300 people there, and the six of us found ourselves half-dead at the truth of the emotion we felt were the only ones who did not find this composition absurd, incomprehensible and barbarous.”⁴ Only a handful of years after the quartet’s composition, it was already dividing its audience’s reaction, with (at least) six individuals being profoundly impacted while the majority of the audience simply could not untangle themselves enough from the quartet to make sense of it.

In order to begin the process of untangling ourselves, the three dissonant strands must be identified and subsequently followed through the work. The first dissonance that we, as listeners, experience is D3-1. A note here on Krebs’ nomenclature is needed. The “D” refers to displacement, the initial number refers to the basic grouping duration, the final number refers to the displacement index and the mathematical operator, in this case, the subtraction symbol indicates the direction of the displacement. So D3-1, in an in-

³ Carl Dalhaus, *Ludwig van Beethoven: Approaches to His Music*, trans. Mary Whittall (Oxford: Clarendon Press, 1991), 220.

⁴ Hector Berlioz, *Selected Letters*, ed. Hugh MacDonald, trans. Roger Nichols (London: Faber and Faber, 1995), 53.

stance where a quarter note equals one, indicates that a grouping of three quarter notes is displaced by one quarter note value in a backward direction from the established framework, as demonstrated in Example 1.



Example 1. Abstracted D3-1 in $\frac{3}{4}$ meter where the primary metrical unit is $\text{♩} = 1$.

Strictly speaking, the D3-1 demonstrated in Example 1 is an instance of subliminal dissonance as the notated meter of $\frac{3}{4}$ is only articulated visually in the score and the downbeat is not announced aurally for the listener. Such distinctions between subliminal and direct dissonance are manipulated by Beethoven throughout opus 135 as a way in which to confuse the listener's auditory experience and deepen the complexity.⁵ However, the first instance of D3-1 that is encountered by the listening audience is a direct dissonance occurring in measure 1. This first dissonance is articu-

⁵ Krebs distinguishes between direct and subliminal dissonance in his system of notation. Simply put subliminal dissonance occurs on the music's score and is primarily a visual occurrence for the performer; whereas direct dissonance is experience aurally by the performer and the audience alike. See Krebs, *Fantasy Pieces*, "Metrical Consonance and Dissonance: Definitions and Taxonomy" for more explicit discussion.

lated in the second violin line. It acts against the notated meter, as articulated in the viola and cello lines, until it is momentarily resolved in measure 7, see Example 2.

Vivace 5

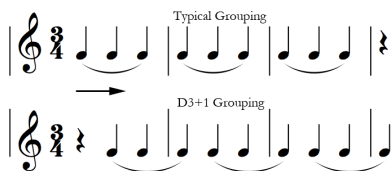
The musical score is for a string quartet, measures 1 through 7. The tempo is marked 'Vivace'. The key signature has one flat (F major or D minor), and the time signature is 3/4. The parts are Violin I, Violin II, Viola, and Cello. In measure 5, a dissonance (D3-1) is indicated in the Violin II part, circled. The score includes dynamics like *p* and *(p)*. A box with the number '5' is placed above the staff in measure 5. The text 'D3-1 Resolution' is written above the circled dissonance in measure 7.

Example 2. Initial D3-1 and first resolution of D3-1 in Beethoven, String Quartet No. 16, Opus 135, Movement 2, mm. 1-7.⁶

Within the first 16 measures of opus 135 Beethoven sets the intertwining of the dissonances in motion. Although D3-1 is the first dissonance to be heard, scarcely one quarter beat after it is established, its opposite, D3+1, is heard. Where D3-1 was a backwards hearing of the three layer, D3+1 is a forward hearing of it; see Example 3 for the rhythmic pattern in musi-

⁶ All musical examples have been created by the author using the software Finale in consultation with Ludwig van Beethoven, *String Quartet in F major op. 135*, (München: G. Henle Verlag, 2004).

cal notation. As with the preceding example it is a subliminal D3+1.



Example 3. Abstracted D3+1 in $\frac{3}{4}$ meter where the primary metrical layer is $\text{♩} = 1$.

The antimetrical layer of D3+1 is articulated on the second beat of the first measure in the first violin line. This offset grouping of three is determined by the tie pattern. The notated meter of the work in $\frac{3}{4}$ is indicated initially in the viola and cello through the use of durational accents. This forward dissonance continues to be apparent through to the end of measure 16. However, the dissonance of D3+1 does not remain the sole possession of the first violin. In measure 8 it becomes the second violinist's duty. This seemingly innocuous trading of lines is actually a method by which Beethoven adds an extra kink in the cord of dissonance. In the stage configuration of any string quartet, by trading the lines the dissonant part has been moved to another spatial location. Although not directly an issue, the fact that Beethoven has switched physical location while continuing to utilize the same timbre of instrument adds another dimension to the dissonance by manipulation of the listener's aural cues.

After confusing the listener's physical understanding of the location of the articulation of the dissonant line of D3+1, Beethoven adds another element to tighten the knot of metrical dissonance. Instead of both the cello and viola articulating the notated meter as previously, in measure 8 the viola switches to a supporting role for violin I now articulating D3-1. This leaves the cello alone in the attempt to anchor the quartet to the notated meter of $\frac{3}{4}$, weakening the supremacy of the notated meter slightly. By measure 15 and 16, the cello no longer maintains the notated meter and the D3+1 above it is no longer aurally dissonant. Although the D3+1 has not changed from the preceding measures, the cello's move away from the notated meter causes it to become a subliminal dissonance. D3-1 continues in the pattern it established earlier and resolves even if only temporarily at measure 7 before beginning a new in measure 9.

From the onset of the movement, Beethoven has directed his audience to listen for interchanging lines, and has focused on the dissonances of D3-1 and D3+1. Through this focus he references the idea of ambivalence. The concentration on D3-1 and D3+1 also suggests an interest in the idea of 3 working against 2. As Examples 1 and 3 demonstrate, in both D3-1 and D3+1, two beats of the $\frac{3}{4}$ measure are grouped together leaving a single beat orphaned to join another measure. This asymmetrical dichotomy is a way in which Beethoven prepares us for the third and final dissonance that runs through opus 135 movement 2, namely G3/2.

The yet un-experienced G3/2 dissonance is based on note grouping. Hence, the "G" refers to grouping,

and 3 and 2 indicate the layers that are being grouped simultaneously; see Example 4 for a graphical representation of the resulting pattern.

Metrical Layer:	X	X	X	X	X	X	X	X	X
3 Layer:	X		X		X		X		X
2 Layer:		X		X		X		X	

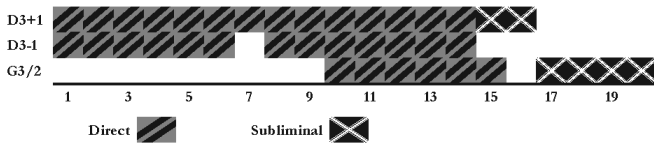
Example 4. Graphical representation of G3/2 where X is equal to one pulse on the primary metrical layer.

Beethoven's first expression of the G3/2 dissonance in the viola line during measures 10 to 15 is overshadowed by the overwhelming strength of the concurrent D3-1 dissonance obscuring the G3/2's initial appearance. The next utterance of a grouping dissonance is almost as concealed, beginning in measure 17 and lasting until measure 20, as in Example 5.

The musical score for Example 5 shows measures 17-20. The Vln. I and Vln. II parts feature triplets of eighth notes in measures 17-19 and measure 20. The Vla. and Vc. parts feature pairs of eighth notes in measures 17-19 and measure 20. The measure number 20 is boxed. Diminuendo markings (dim.) are present in measures 18, 19, and 20 for the Vln. I, Vln. II, and Vc. parts. Grouping brackets with numbers 3 and 2 are shown above and below the staves.

Example 5. G3/2 in Beethoven, String Quartet No. 16, Opus 135, Movement 2, mm. 17-20.

Unlike the first statement of G3/2 which is hidden by stronger dissonances, the second statement of the G3/2 is presented subliminally. In Krebs' nomenclature, a subliminal instance of metrical dissonance occurs when all the musical features present suggest a single interpretative layer, while the notated meter conveys a conflicting one.⁷ For Beethoven's knot of metrical dissonance this means that the 3-layer is absent from the aural experience and is only presented visually in the score's meter of $\frac{3}{4}$. This causes the G3/2 to be quite surprising when heard in context. Example 6 tracks the changes in the dissonance types within the first 20 measures.



Example 6. Metrical map showing variation in dissonance types within first 20 measures of Beethoven's String Quartet No. 16, Opus 135, Movement 2.

Within the first 20 measures of opus 135, movement 2 Beethoven has already introduced to the knot all of the main ropes of dissonance, in both direct and subliminal forms, and has started to constrict and weave them together. If we listen for what is not emphasized

⁷ Krebs, 46.

(in a manner similar to looking at an optical illusion to see the negative of the actual image) it is possible to grasp onto one of the dissonant ropes and track its use throughout the knot.

Beethoven's Three Ropes of Dissonance:

The First Rope: D3+1

Though not the initial dissonance experienced in the second movement of opus 135, D3+1 is the most persistent of the dissonances, and is constantly woven into (both direct and subliminal form) or suggested in 290 of the total 372 measures or roughly 78%.⁸ The distinction between direct and subliminal has already been discussed, but what is meant by “suggested”? This is the weakest form of dissonance. In the hierarchy of dissonance types, direct dissonance is the strongest and suggested dissonance is the weakest.⁹ The first instance classified as a suggested D3+1 occurs in measure 61 and again in measures 63 and 65 in the second violin line (see Example 7). Here the second violinist is playing two notes in repetition. The second note is articulated, so the dissonance cannot be a true durational accent; however, it implies the idea of a durational accent, therefore becoming a suggested D3+1. Another characteristic of the suggested

⁸ Although there are 274 printed measures (272 not including the second endings as separate), due to repetition and second endings the total sound measures equal 372.

⁹ The term “suggested dissonance” is the author’s own and does not appear in Krebs’ *Fantasy Pieces*.

dissonances is that they can occur over a segment of time that is not long enough to have any dissonance of significance presented (typically three iterations of the dissonance is enough to establish it) as long as the dissonance has been prepared for the listener by previous substantial exposure, which is the case in measure 61.

The musical score for Example 7 shows measures 59-63 of Beethoven's String Quartet No. 16, Opus 135, Movement 2. The score is for Violin I, Violin II, Viola, and Violoncello. Measure 60 is highlighted with a box. The score includes dynamic markings like 'dim.' and 'p (sempre più piano)', and a 'Suggested D3+1' annotation.

Example 7. Beethoven, String Quartet No. 16, Opus 135, Movement 2, mm. 59-63

Although the tempo indication given of *Vivace* is part of the drive ahead, it is not the only factor. The D3+1 creates a forward propulsion in the musical line and the very nature of the D3+1 is inherently progressive, tripping across measure lines and creating an overwhelming state of frenzy. The D3+1 leaves the audience grasping for a stability that never arrives and places us in a position of reaction. We do not understand what is occurring metrically and we are hurried through it rather than being permitted time to absorb and separate out the lines. Here Beethoven allows the

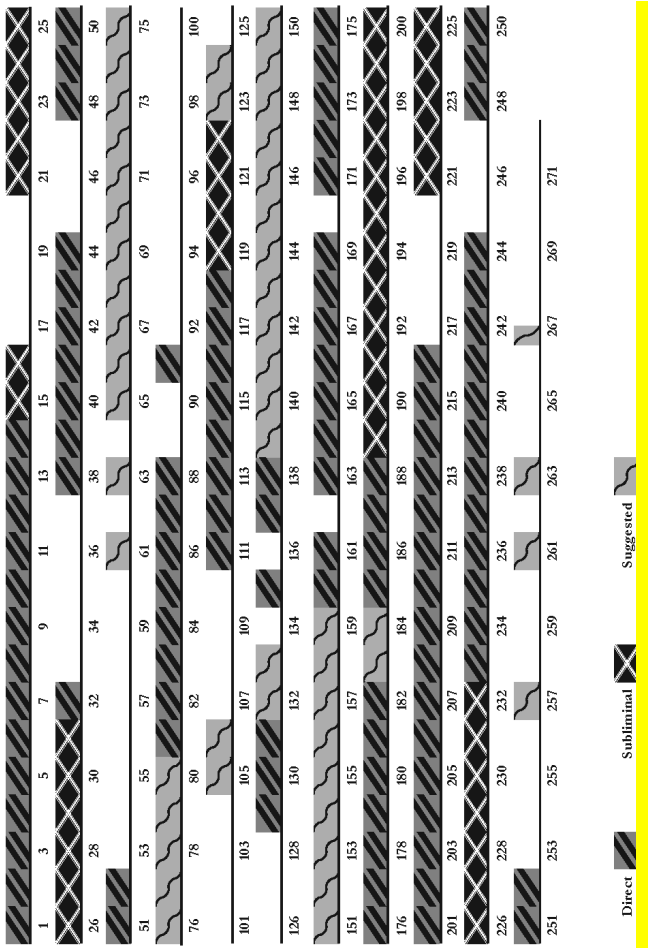
tension of the metrical knot to tighten with the insistent drive of the movement that is reflected and suggested in the D3+1 dissonance.

Actual iterations of D3+1 are not the only ones that should be considered necessary in this unravelling. The first instance of a D3+1 occurring subliminally is in measure 15, where the cello is not able to maintain the notated meter alone. It is interesting to note that the subliminal D3+1 only ever occurs after moments of metrical resolution or moments of actual D3+1, and never after a suggested D3+1. This treatment could indicate that the instances of a suggested D3+1 act more like a fleeting auditory illusion or trick like a 'Tartini tone'¹⁰ than a functioning dissonance, because they are not strong enough to stand alone without the support of a fully articulated D3+1 dissonance. (See Example 8 for a metrical map of Beethoven's use of D3+1 in this movement and the conclusion of this paper for a complete metrical map of the interactions of all the active dissonances.)

As Example 8 demonstrates, the suggested D3+1 dissonance is significant in maintaining the level of tension in the middle of the movement, particularly in mm. 139 through 159.¹¹ As further discussion will demonstrate, the actual dissonances occurring in these measures add poignant dissonant colours that are underscored by this constantly shimmering idea of D3+1.

¹⁰ Also known as a difference of resultant tone.

¹¹ Further discussion of measures 139 through 159 will occur in the section, "The Third Rope: G3/2".



Example 8. Metrical Map of D3+1 usage in Beethoven's String Quartet No. 16, Opus 135,

The Second Rope: D3-1

The second rope of dissonance, D3-1, is used less ubiquitously than D3+1, although it is the first to become entwined with it. D3-1 occurs in only 100 of the 372 measures and as such is only active for approximately 27% of the playing time versus the overwhelming 78% presence of D3+1. There is no discernible pattern involving the dissonance of D3-1, with regards to instances of actual occurrence. However, it should be noted that subliminal forms of D3-1 only occur when a subliminal form of D3+1 is active at the same time - only twice (four times with repeats). The occurrences of a suggested D3-1 metric pattern are also very isolated, happening a total of six times within the movement for only one or two measures at time. See the conclusion of this paper for a complete metrical map that outlines these associations. These moments of a suggested D3-1 metric pattern serve as gap fillers. Measures 89 and 95-96 are instances when there are no other active metrical dissonances. By employing a suggestion of this metrical dissonance, Beethoven puts the listener off balance; the suggested dissonance occurs when the last dissonance heard was a forward D3+1. These moments of possible metric resolution that are haunted by suggested dissonances likely cause the listeners to pause in their struggle to unravel the ropes but not to stop outright.

Extrapolating from Beethoven's use of the suggested D3-1 dissonance, it is possible to understand the main usage of all the forms of the D3-1 as not creating an independent type of dissonance but rather as fraying the firm establishment of D3+1 dissonance. After all,

if the D3+1 dissonance were being used constantly without challenge, it would lose some of its power of disruption. By always interlacing the D3-1 with the D3+1 Beethoven creates what is essentially a saturated displacement dissonance that can almost be understood as a dissonance of its own, perhaps D3+1-1. This combination terminology is cumbersome and not at all helpful to the listener snared in Beethoven's metrical knot. Rather it is necessary to understand that the manner in which Beethoven treats an actual D3-1 indicates that he wants to throw the listener off of the scent of the established D3+1, and not that he is creating an innovation in metrical dissonance with a D3+1-1. With the idea of this unwieldy compound dissonance we are once again brought back to the conflicting character of Beethoven's late music that was brought to our attention by Dahlhaus when he stated that "it is characteristic of a late work, on the other hand, that already, while it is still new, it is inwardly alien to the age to which it outwardly belongs."¹²

The Third Rope: G3/2

The final and least employed of all the ropes of dissonances in Beethoven's collection is the G3/2, with both actual and subliminal instances amounting to only 16% of the movement's 372 total measures. In comparison with the 78% of the D3+1 and the 27% of the D3-1, the G3/2 hardly seems worth mentioning. However, the G3/2 is a distillation of the am-

¹² Dahlhaus, 219.

bivalent nature of late Beethoven. The conflict that is heard with the presentation of a grouping dissonance is not only seen and heard, but also felt. To the listener, the grouping dissonance is far more pronounced than the displacement dissonance as there are two incongruent ideas occurring simultaneously, unlike the displacement dissonance that acts more like a rhythm that just remains the same distance out of phase with itself. The G3/2 is also the most compact form of the grouping dissonance that Beethoven could use, making it all the more poignant.

Employed in its full form, the G3/2 appears only two times in the entire movement. Both instances are three measures in length with the 2-layer assigned to the first violin (as in Example 9), occur mere measures apart and appear at first glance to be identical; however, this is not the case. Their similarity is mirrored in the reduction and abstraction of the complete metrical map found at the conclusion of this paper. Nevertheless, this similarity is not the whole story of the G3/2, in which the differences are entirely encapsulated in the auditory dynamics as can be seen in Example 9.

Measures 143-147

Violin I: *ff*, *sf*, *sf*, *sf*

Violin II: *ff*

Viola: *ff*

Violoncello: *ff*

Measures 151-155

Violin I: *sf*

Violin II: *ff*

Viola: *ff*

Violoncello: *ff*

Example 9. Two instances of direct G3/2 in Beethoven's String Quartet No. 16, Opus 135, Movement 2, mm.143-147 and mm. 151-155.

As previously noted, the main source of divergence between these measures is the dynamic markings or,

in the second excerpt, the lack thereof. Concerning the dynamic variation, it should be noted that these *sforzandos* (in violin I) are the only instances in the movement where all the members of the chamber ensemble do not possess the same dynamic level. The first iteration of the G3/2, articulated in measures 143-147, appears on the top portion of Example 9. With the *sforzandos* articulating the downbeat of the measure, the presentation of the notated meter is aided by the first violin line. Then the articulation accent on beat two of measure 145 confirms what has already been heard by the audience as a 2-layer in the register accents of the melodic line from measure 143 on to measure 146. By including the *sforzando* articulations only in the first violin, Beethoven for the first time in the whole movement shifts away from having the string quartet play as one dynamic force. The dynamic articulations also allow Beethoven the ability to include both layers necessary for an actual G3/2 to occur in one melodic line, in this case the violin I. No other instrument within the quartet needs to sound any other note for the G3/2 to occur. This strong G3/2 is weakened in its parallel passage (mm. 151-155), shown on the bottom portion of Example 9, by a removal of these accents. Suddenly the first violin is only articulating the duple layer, and the triple layer is left to the rest of the quartet. It is, however, still a direct G3/2 because of the emphasis on the downbeat lies in the *ostinato* line articulated by the second violin, viola and cello. In this second form of the G3/2 Beethoven twists the same music to allow for a more organic interpretation of it. With the removal of the *sforzando* accents the bowing decisions that can be made by the first violin are much less forced.

The $G3/2$ dissonance is employed most often as a subliminal dissonance, not its strongest form, but still particularly abrasive. In the introduction and the recapitulation, $G3/2$ is presented three times subliminally. Typically the dissonance lasts about four measures, long enough to be heard and picked out by unaided listening but not long enough for tedium to set in. This medium length of dissonance is discarded by Beethoven in the final iteration which begins in measure 263. The second time through this music, from mm. 263b¹³ onwards, this dissonance lasts an incredible 9 measures. No longer concerned about overuse of the $G3/2$, Beethoven utilizes it to bring the movement to a screeching halt. This dissonance, in conjunction with a suggested $D3+1$ fragment with which it is interspersed, is the final dissonant image that the audience hears. As it is in its subliminal form, it is as if the ropes of dissonance are falling away from us as the final *forte* rings out.

Beginnings, Endings and Snarled In-betweens

As previously noted, Beethoven begins the second movement of opus 135 with the dissonance $D3-1$ and ends with $G3/2$. This might lead some to believe that one of these dissonances is the most central dissonance of the movement. This would be a fallacy. Although not involved in either the very beginning or

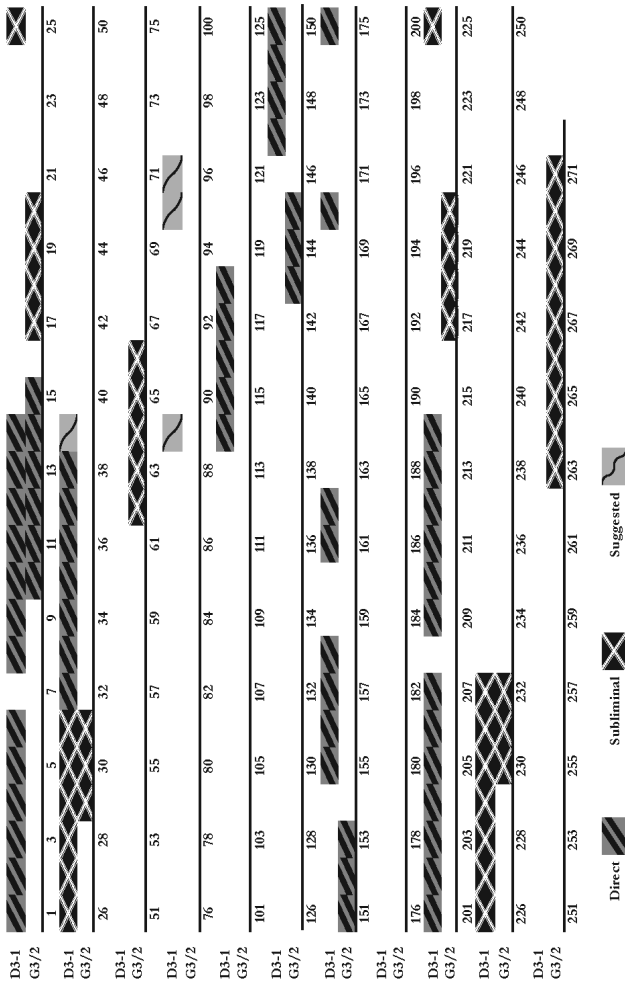
¹³ First and second endings will be identified as “a” for the first time and “b” for the second.

the very end, D3+1 is the dissonance that acts most centrally. See Example 10 for a metrical map that hypothesizes what opus 135 movement 2 would sound like without D3+1.

The D3+1 adds a supplementary dimension to the dissonance. Without it, there is little direct interaction between D3-1 and G3/2. In fact there are only two points where D3-1 and G3/2 interact, measures 29-31 and measures 230-232. These instances are additionally interactions between subliminal forms of both varieties of dissonance, making them less audible for a listening audience. Therefore, for Beethoven, the layering and saturation of dissonance that is so characteristic of this movement all lies in the action of the D3+1.

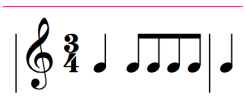
The Materials of the Rope

The materials that form the ropes of dissonance are in themselves knotted together in the same way that Beethoven formed the larger knot. Details of these dissonance types are reflected within the note's duration and the pitch material of smaller musical segments. Within the second movement of opus 135, the note durations are typically quarter and half notes. These are tied together and grouped in a variety of ways, but we are never given any smaller divisions of the primary metrical layer i.e. where the quarter note is equal to one, that is until measure 66b. It is at this point that we encounter the first instance of the rhythmic *ostinato* pattern (see Example 11). This first instance (measure 66b) does not actually appear as



Example 10. Metrical Map of Beethoven's String Quartet No. 16, Opus 135, Movement 2 with-out .D3+1.

part of the *ostinato* pattern; but rather comprises the decorative flourish of a turn motive.



Example 11. Rhythmic pattern first experienced in Beethoven's String Quartet No. 16, Opus 135, Movement 2, mm. 66b.

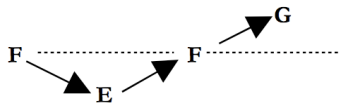
The interesting aspect of this turn motive is that it could be considered as emphasizing either beat 2 in the first measure or beat 1 in the second measure. Beethoven in no way aids this confusion, instead employing both parsings throughout the movement (see Example 12).

	Emphasis	
	Beat 1	Beat 2
Measures	66b	74
	67	83-88
	123	91-92
	143-188	97
		105
		119-123
		129-133
		139-142
		189-192
Total Number of Measures	48	29

Example 12. Beethoven's parsing of the turn motive in String Quartet No. 16, Opus 135, Movement 2.

As Example 12 demonstrates, through the beat 2 emphasis parsing apparently occurs more often, the beat 1 emphasis grouping is more prevalent. In a similar manner Beethoven utilizes the disjunction between D3+1 and D3-1 to exploit the difference between a beginning-accented measure and an end-accented measure. A beginning-accented measure would be a measure in which the emphasis occurs in the first half of the measure whereas an end-accented measure would place the emphasis in the second half of the measure. As the piece is in $\frac{3}{4}$, an end-accented measure could be anything that is emphasized on beat 2 or 3. Therefore the hearings of the turn figure also embody the same disjointed idea of two versus three that Beethoven employs throughout his metrical dissonance schema.

Outside of, but linked to, the pure rhythm of this figure are the pitches associated with it. These pitches can have an influence on how the rhythm is interpreted, from registral accents suggesting a particular parsing (either 2 or 1 as discussed above) to the repetition of pitches suggesting an accent of duration. This motive in the second movement of opus 135 can be understood as a written out turn. The motive typically involves a step down, a step up, followed by an additional step up (see Example 13).



Example 13. Example of pitch formation in eighth notes of turn figure, mm. 66b, violin I of Beethoven, String Quartet No. 16, Opus 135, Movement 2.

By returning to the first pitch in the third beat, the pitch “F” in the case of Example 13, Beethoven links the motive to that of a turn which decorates the main pitch by upper and lower auxiliary notes. The connection of the eighth-note rhythm to that of a turn means that the central pitch, “F” in Example 13, is theoretically sounding for two quarter notes. This is indicated by the dotted line in the example. This theoretically sounding pitch creates a durational weighting of the eighth note figure that metrically now acts as a half note that is seen in the beat 2 emphasis as discussed above. The turn figure is easily audible for the listener, even when it is slotted into an *ostinato* pattern, because there are only three other measures that include a variation from the quarter note and half note oppression. Measures 166, 174, and 179 are the only measures that incorporate a dotted quarter followed by an eighth into any of the lines. In all of these instances, the dotted pattern occurs in the first violin while the second violin, viola, and cello articulate the turn pattern in an *ostinato* repetition underneath. The repetitive rumblings of the turn are very different from the dotted pattern soaring above and as such are very easy to identify.

It is interesting to note that Beethoven takes this pitch based idea of a turn and amplifies it metrically in measures 193-207. This segment of music directly follows the climax of the turn figure being articulated in all the lines of the quartet at the quietest volume indicated in the movement, *ppp*. In measures 193 through to 207, D3+1 is articulated either subliminally as in mm. 193 to 200 or directly as in mm. 201 to 207, as the return of the opening. The motion of these groupings of three follows the same basic pitch trajec-

tory of the turn, utilizing the auxiliary stepwise motion (see Example 14).

The musical score for Example 14 consists of two systems of four staves each, representing Violin I, Violin II, Viola, and Violoncello. The key signature is one flat (B-flat) and the time signature is 4/4. The first system, starting at measure 192, shows a melodic line in Violin I with a box labeled '195' above it. The second system, starting at measure 200, shows a melodic line in Violin I with a box labeled '200' above it. Dynamics markings include 'meno' (meno) and 'p' (piano) in the Violin I and Violoncello parts. The score illustrates the auxiliary stepwise motion used in the turn.

Example 14: Beethoven, String Quartet No. 16, Opus 135, Movement 2, mm. 192-204.

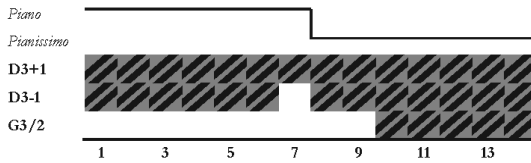
This argument illustrates how the ropes from which Beethoven builds the greater knot are also formed

from threads of twined together dissonances for our unravelling.

Loosening the Knot

The preceding discussion has dealt with Beethoven's entwining of the ropes of dissonance and the tightening of the ropes around the listener. In fact, the intricacy of the knot becomes more and more apparent during the discussion of the details of each twist and loop. By the employment of the three types of dissonance in conjunction with the motivic features of the turn, which in itself is a microcosm of the larger dissonance, Beethoven weaves all the ropes around us. We need only to begin to loosen them. Beethoven allows us to achieve this by providing an auditory clue to the dissonance pattern: he links the dissonances to dynamics. Major and minor distinctions in the pattern of dissonance are heralded by changes in the overall dynamic level of the quartet.

This lifeline of the dynamics is immediately offered to us by Beethoven. The very first moment with dynamic variation occurs in measure 8. The dynamic level has shifted from *p* to *pp* and the dissonance of D3-1 is articulated again after a momentary resolution in measure 7. The nature of the D3+1 articulated throughout this section also changes at the dynamic shift. The first violin is playing the D3+1 rhythm for the first seven measures, but at the dynamic change the D3+1 shifts to the second violin. The viola also adds to the dissonance at this point, moving to an articulation of D3-1 leaving the cello to present the notated meter alone (see Example 15).



Example 15. Metrical map including the dynamic levels of Beethoven, String Quartet No.16, Opus 135, Movement 2, mm. 1-14.

Having been trained by Beethoven to hear inflections in dissonance as linked to shifts in dynamics through the opening of the movement, we can now utilize this link as a tool to pry the ropes of metrical dissonance apart. No longer is measure 1 through 14 an iron block of D3+1, but the dissonance is physically shifted within the ensemble at the precise moment that the dynamic level changes.¹⁴ Such intricacies are lost in the reductive abstract nature of a metrical map, but with the addition of the dynamic mapping we can find a correlation of interest.

The first iteration of G3/2 is, as previously discussed, in a subliminal form, in mm. 10-15. In fact, the G3/2 dissonance begins in the subliminal and eventually surfaces in the direct form before submerging once again into a subliminal form. If we track the occurrences of G3/2 throughout the movement, we see this trend of transition. This trend is also mirrored in

¹⁴ This shift in dissonance texture is repeated in measures 200 to 214.

the dynamic levels of the G3/2 moments, as is shown in Example 16.

Measures	G3/2		Dynamic Marking
	Subliminal	Direct	
10-15		■	<i>pp</i>
17-20	■		<i>dim. p</i>
29-31	■		<i>cresc. f</i>
62-66	■		<i>p sempre più piano > pp - f</i>
143-145		■	<i>ff - sf - sf</i>
151-153		■	<i>ff</i>
217-220	■		<i>dim. p</i>
229-232	■		<i>cresc. f</i>

Example 16. Occurrences of G3/2 in Beethoven, String Quartet No.16, Opus 135, Movement 2.

As the table in Example 16 demonstrates, when Beethoven employs a subliminal G3/2, the dynamics are in transition, moving from one extreme to another. In contrast when Beethoven uses a full G3/2 the dynamic level remains at a constant level and these levels occupy the movement's dynamic extremes.

The dynamic changes do not correspond as simply with D3+1 and D3-1 as they do with G3/2. This is likely due to the higher prevalence of their usage. The shifts however do usually correspond to the entrance or exit of a dissonance. These entrances and exits, however, do not account for all of the dynamic changes, as that would take away from the unpredictable and exciting nature of this movement. Those dynamics that cannot be explained by the entrance or exit of a dissonance could, as in the movement's in-

troduction, point the listener towards shifts within the dissonance itself,¹⁵ such as a re-instrumentation or register change in one of the dissonance.

Beethoven draws attention to metrical dissonance through the use of changing dynamic levels. As the dynamics guide the listener to look and listen more closely to certain moments. They provide a particularly useful tool for the listener to loosen the grips of the movement's dissonant ropes and begin the process of patiently unravelling Beethoven's knot.

Not Alexander's Solution

Through the course of this paper, rather than slicing through the knot like Alexander the Great, we have picked at and diligently tugged on the strings of dissonance that Beethoven has looped around us as listeners. We might ask why Beethoven would have put us in the situation of having to unravel our understanding of this movement. It is after all, a mere 372 sounding measures that fly past at an astonishing clip, commercial recordings average between 3 to 4 minutes. Yet Beethoven throws his listeners into a dizzying flurry of dissonances that will continue to bind us until we come to understand. Some scholars have accused the music of Beethoven's late period as obscuring ideas, which might be our initial reaction to this tangle of dissonance. This statement, however, is

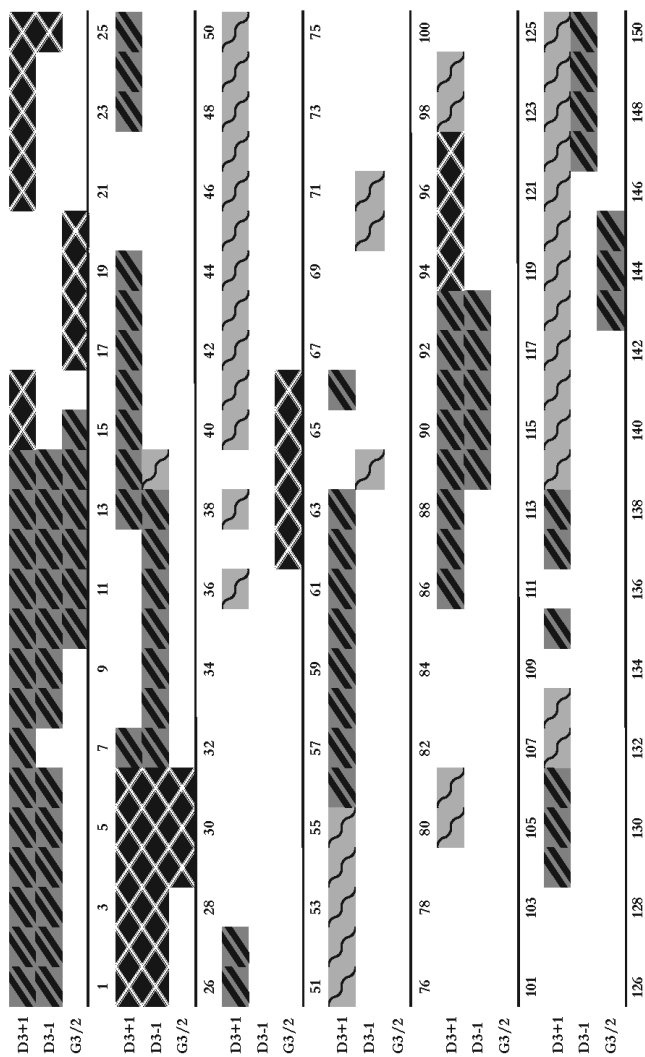
¹⁵ The twelve dynamics shifts that cannot be explained in this manner include the ones present in the following measures: 23, 37, 56-59, 66, 83-88, 144, 145, 148, 186, 237-238, 256-261, 269-272.

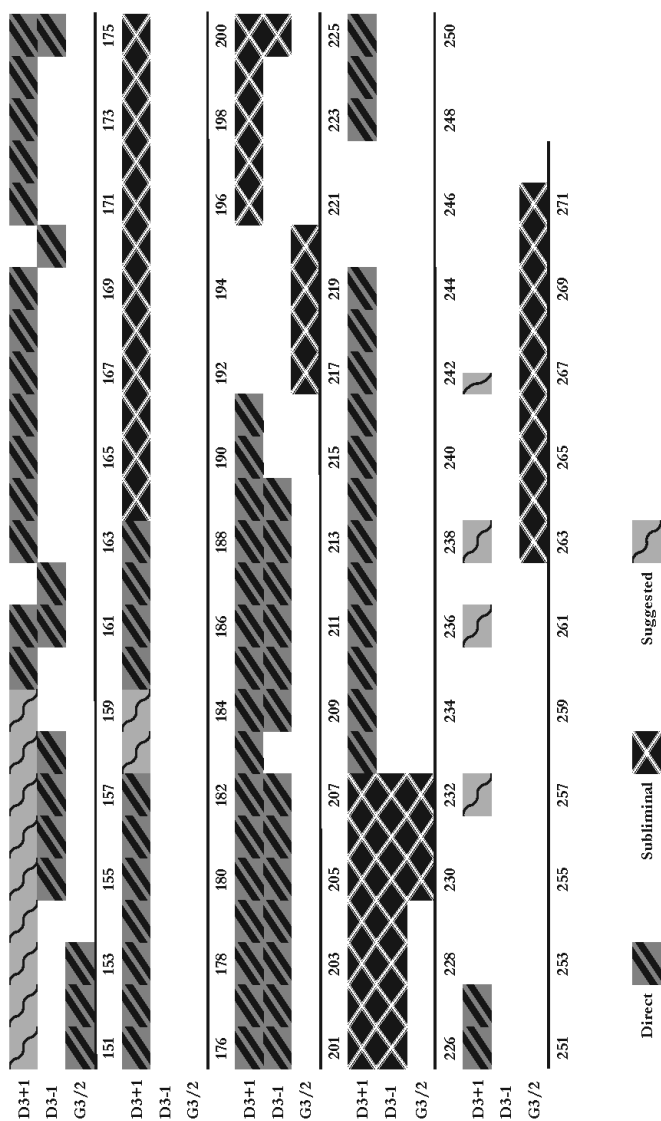
perhaps an oversimplification of what Beethoven was attempting. Maynard Solomon, in his biography of Beethoven, approaches this issue differently when he states that “the task he [Beethoven] would set himself in his late music would be the portrayal of heroism without heroics, without heroes.”¹⁶ Accordingly Beethoven is endeavouring with this knot of dissonance to portray the idea of capturing us, but there is also the hope of escape when we use the tools and hints that he provides. Therefore, we have capture without captivity, in much the same way that Solomon finds heroism without heroics or heroes in late Beethoven.

If we believe that Beethoven wanted to obscure his music to the point of unintelligibility, then we can choose to understand him as a maniacal genius who purposefully destroyed his audience's ability to distinguish between layers of dissonance and moments of consonance. However, over the course of untangling these metrical complexities it seems that instead of torturing his audience, Beethoven was inviting them to take on the role of the patient poet, to relentlessly follow the cords of dissonance to their moments of resolution, and then to separate them out from one another, until the legendary Gordian knot lies unravelled in its component parts, for us to see and understand.

¹⁶ Maynard Solomon, *Beethoven 2nd Revised Edition* (New York: Schirmer Trade Books, 2001), 295.

Metrical Map of Beethoven's *String Quartet No. 16, Opus 135, Movement 2, Vivace*





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Abstract

The complexities of Ludwig van Beethoven's late string quartets have from their inception confounded audiences. These complexities are often incredibly intertwined, at times as tightly wound as the fabled Gordian knot. Therefore, the complexities require extra attention to unravel and understand. Through the lens of metrical dissonance, as pioneered by Harald Krebs in *Fantasy Pieces*, this article aids the listener and performer in unwinding some of the rhythmic complexities of the second movement of Beethoven's String Quartet No. 16, Op. 135. With three central dissonances ($D3+1$, $D3-1$, and $G3/2$), Beethoven ties melodic motives, dynamics, and musical form together thereby utilizing the dissonances as organizational tools of composition. This article explores each dissonance in turn and offers one explanation for the ambiguity that has often arisen from performances of Beethoven's late works.

