

Book Review

Zohar Eitan. *Highpoints: A Study of Melodic Peaks*. Philadelphia: University of Pennsylvania Press, 1997.

Reviewed by Yayoi Uno Everett

I. Overview

In recent years, theorists and cognition specialists have made significant contributions to the study of melodic contour. Specific topics pertaining to contour research include, but are not limited to: 1) psychological studies and perception of contour;¹ 2) structural representations of melody based on psychological and linguistic models;² and 3) formalization and classification of contour and contour relationships.³

Emerging from the fertile soil of contour research, the study of melodic peaks presents an intriguing topic for a book. In *Highpoints: A Study of Melodic Peaks*, Eitan isolates and focuses on this important aspect of

¹ See Jay W. Dowling, "Melodic Information Processing and Its Development," in Diana Deutsch, ed., *The Psychology of Music* (New York: Academic Press, 1982), 413-30; Jay W. Dowling and D. S. Fujitani, "Contour, Interval, and Pitch Recognition in Memory of Melodies," *Journal of the Acoustical Society of America* 49 (1971): 524-31; and Mari R. Jones, "Dynamic Pattern Structure in Music: Recent Theory and Research," *Perception and Psychophysics* 41, no. 6 (1987): 631-34.

² See Leonard B. Meyer, *Explaining Music: Essays and Explorations* (Chicago: University of Chicago Press, 1973); Eugene Narmour, *Beyond Schenkerism: The Need for Alternatives in Musical Analysis* (Chicago: University of Chicago Press, 1977); *The Analysis and Cognition of Basic Melodic Structures: The Implication-Realization Model* (Chicago: University of Chicago Press, 1990); *The Analysis and Cognition of Melodic Complexity* (Chicago: University of Chicago Press, 1992); and Robert O. Gjerdingen, *A Classic Turn of Phrase: Music and the Psychology of Convention* (Philadelphia: University of Pennsylvania Press, 1988).

³ See Michael Friedmann, "A Methodology of the Discussion of Contour: Its Application to Schoenberg's Music," *Journal of Music Theory* 29 (1985): 223-48; Elizabeth W. Marvin and Paul A. LaPrade, "Relating Musical Contours: Extensions of a Theory for Contour," *Journal of Music Theory* 31 (1987): 225-67; Robert D. Morris, "New Directions in the Theory and Analysis of Musical Contour," *Music Theory Spectrum* 15, no. 2 (1993): 205-28; Larry Polansky and Richard Bassein, "Possible and Impossible Melody: Some Formal Aspects of Contour," *Journal of Music Theory* 36 (1992): 259-84; and Ian Quinn, "Fuzzy Extensions to the Theory of Contour," *Music Theory Spectrum* 19, no. 2 (1997): 232-63.

contour, melodic peaks, that has been previously marginalized. In the opening chapter entitled “Why Study Melodic Peaks?” Eitan describes melodic peaks as points of “expressive intensification”: they demarcate contoural “corners” and boundary points, marked by changes in direction and registral space (4-5). He refers to treatises by Mattheson, Jeppeson, and more recently by Agawu, Meyer and other theorists, to validate the function of melodic peaks as affective highpoints in Western art musics (3-4). This book is, in a nutshell, a study that investigates the emphatic qualities of melodic peaks in relation to the attributes of relevant musical parameters, i.e., meter, duration, pitch, harmony, and dynamics, that are associated with peaks. What are the features that distinguish Haydn’s treatment of melodic peaks from Chopin’s and Berg’s? Through his distinct brand of statistical analysis, Eitan tries to find an angle from which to explain the “signature” style of a given composer in his handling of melodic structures. He also explores broader, psychological implications of melodic peaks in relation to human communication involving speech; he draws, for instance, a parallel between the emphatic role of melodic peaks in music and in speech intonation such that “the emphasizing, affective, and tensional connotations of melodic peaks may represent basic, innate characteristics of human expression” (5).

As the premise of this book, Eitan establishes two hypotheses concerning the distinctiveness of melodic peaks as follows: 1) peaks are associated in a statistically significant way with specific features or configurations in musical dimensions other than contour; and 2) peaks are significantly related to emphatic, intensifying elements in musical domains other than contour (6). Eitan then proceeds to itemize the emphatic conditions more specifically with regard to durational, metric, temporal, melodic, harmonic, and dynamic attributes. These are presented as a set of specific conditions: “a note longer than those surrounding it is durationally emphasized” (9), “a relatively large leap that separates a note from preceding pitches significantly emphasizes that note” (10), “a pitch that appears only once within a segment is emphasized” (11), and so forth. He attempts to corroborate each condition with results drawn from previous research conducted in the fields of music perception and cognition.⁴

⁴ “Perceptually, durational emphasis may be accounted for by a combination of two tendencies: the inclination to perceive rhythmic closure when a short note moves to a longer one (cf. Cooper and Meyer 1960, Lerdahl and Jackendoff 1983, Narmour 1990,

In addition, he sets two distinct categories for “emphatic” events: grammatically emphasized points (any element that provides stability to the musical flow, e.g., metric downbeat) and rhetorically emphasized events that are striking or exceptional, e.g., a dynamic sforzando or a wide melodic leap. In dealing with harmonies, he postulates the distinctiveness of peaks according to chordal quality, type, and scale degree represented in the soprano voice. He then discusses the dichotomy between grammatical and rhetorical emphases in the harmonic dimension. With reference to example 1 (Eitan, ex. 1.2A), he comments on the function of the appoggiatura (B₄) as providing a rhetorical point of emphasis, while the soprano scale degree $\hat{1}$ that accompanies a tonic triad presents a grammatical point of emphasis. One of the purposes of his present investigation, he claims, is to determine how these points of emphases compete with one another in any given musical context.

Example 1.

a) “Grammatical and “rhetorical”
harmonic emphases

b) A linear analysis of example 1a

The repertoires examined in the course of *Highpoints* are: early keyboard sonatas and dramatic works by Haydn, waltzes and mazurkas by Chopin, and post-tonal compositions, i.e., *Four Pieces for Clarinet and Piano*, op. 5, *Lyric Suite*, *Der Wein*, and excerpts from *Lulu* by Alban Berg. Eitan’s attempt to investigate melodic peaks in music from such diverse style periods raises an important question regarding the treatment of contour as a dimension of melodic style that operates independently of tonal syntax

for music-theoretical accounts; Deliège 1987, Garner and Gottwald 1986, Woodrow 1990, for empirical corroboration), and the tendency to perceive the last event of a group as accented (Jones 1987, Wright et al. 1985)” (9, footnote 16).

and other factors that distinguishes the three repertoires stylistically: confirmation of his hypotheses would “support the view that the ‘natural’ psychological basis of contour can surpass the limits of a specific period style or the constraints of a particular pitch grammar” (14).

In the second chapter, Eitan describes the statistical methods he employs to test the hypotheses. First, he discusses the methods used to select peak and control notes. To select peaks, he manually segmented a given piece into parts or sections, following the music’s conventional formal scheme, and extracted the highest pitch of the main melodic parts.⁵ To select controls, he employed a computer-generated sequence of random numbers to choose particular works from a composer’s genre, and then to assign these numbers to notes within the upper line of these pieces to extract control pitches.⁶ For the three repertoires, the average of one hundred peaks and control notes were extracted following this procedure. Second, he employed two statistical tests, i.e., the *chi-square* test of homogeneity and the *standard score* test, to determine the extent to which the differences in the peaks and controls are statistically significant. With respect to the Chopin sample, for example, a *chi-square* test determines the extent to which the peaks differ from the controls with respect to the distribution of intervals as a whole, while a standard score test determines whether the proportions of a specific interval are different in the two groups.

Lastly, Eitan introduces a method for summarizing the cumulative emphases given to a note by tallying up its “score”—a measure of the relative strength of the peak note based on the combined actions of durations, meter, harmony, and dynamic emphases. The score for each examined note is calculated simply by adding one point if the note is emphasized more than one of its immediate neighbors metrically, durationally, or melodically; if its neighbor is emphasized, one point is subtracted from the score. Based on this procedure, he draws four categories of cumulative emphasis: high emphasis (4 to 6 points), medium-high (1 to 3 points), medium-low (-2 to 0 points) and low (-6 to -3 points). As shown in

⁵ Eitan further comments that “where neither conventional form nor the composer’s indications provide a clear basis for segmentation, I used cadential articulation (in the two tonal samples) and Gestalt-parallelism of segments as the basis for segmentation” (17).

⁶ “For instance, I assigned the first 50 numbers in the Chopin sequence to waltzes, in opus-number order, and the following 50 numbers to mazurkas (again, in opus-number order). To determine the control notes, I used the random numbers as order numbers of notes in the upper lines of these pieces” (19).

example 2, he illustrates this procedure by applying it to the first sixteen measures of Chopin's Mazurka, op. 67 no. 2 (Eitan, ex. 2.8).

Example 2. Chopin, Mazurka in G minor, op. 67 no. 2, mm. 1-16

The peak note, B_{b5} , at m.14 is melodically emphasized (+2), but metrically de-emphasized (-2) and durationally equal to its neighbors (0); it therefore receives a cumulative *parametric emphasis* of "0" based on the addition of three subscores.

Example 3.

a) Congruence of emphasis at the peak



b) Congruent attenuation of the peak



c) Parametric noncongruence at the peak



With reference to example 3, Eitan introduces the terms *interparametric congruence* and *noncongruence* to illustrate the interaction of two given parameters in emphasizing a peak note (Eitan, ex. 2.6A, B, and C); example 3a shows the congruence between meter and duration in emphasizing the peak; example 3b shows how the peak is de-emphasized both with respect to meter and duration; and example 3c shows how the peak is emphasized metrically but de-emphasized durationally. Following his logic, the three contexts would be ranked from A (+6), C (+4), and B (+2) on their cumulative parametric emphases based on the method outlined in the preceding paragraph.

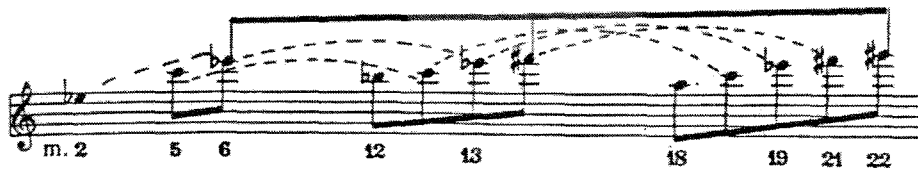
Chapters 3-5 are devoted to the application of these procedures to the selected works by Haydn, Chopin, and Berg. With Haydn's repertory (chapter 3), Eitan concludes that peaks are generally attenuated by lack of metric and durational emphases and undifferentiated from their neighboring notes with respect to duration. Melodically, peaks in Haydn's repertory are emphasized by wide leaps and their association with scale degree $\hat{6}$ (frequently accompanied by a submediant sonority). With respect to cumulative emphasis, 77.7% of the peaks fall within the range of "medium

emphasis” categories, and peaks and controls show no significant difference in *interparametric congruence*.

Chapter 4 examines Chopin’s mazurkas and waltzes. Eitan concludes that melodic peaks are associated with harmonic tension and are emphasized through specific durational, metric, intervallic and dynamic means. There is a highly significant difference between peaks and controls in the distribution of combined emphasis, as most of the peak tones belong to the “high emphasis” category and controls to the “medium-low” and “low emphasis” categories. With respect to temporal location, “specifically, peaks tend to be located in the second half and in the last quarter of a musical segment” and “frequently occur as the terminal notes of lower-level segments (mostly, eight-measure segments) as well” (58).

For Berg’s compositions (chapter 5), Eitan remarks that melodic peaks form points of intense climactic moments that follow gestures and strategies prevalent in the nineteenth century, i.e., series of progressive “stretched” peaks that form a long-range motivic connection, exaggerated gap-fill gestures, and “terminal fall” gesture—a huge fall from a peak that is prevalent at the end of sections. In general, peaks correlate with metric and melodic emphases, as larger skips that accompany peaks fall on points of metric accent. Example 4 presents Eitan’s voice-leading chart of progressively expanding series of peaks found in the fourth movement of the *Lyric Suite* (Eitan, ex. 5.17B). In such contexts, Berg does not treat peaks as isolated phenomena, but rather fixes them strategically in a given register to demarcate long-range pitch connections that unfold over time.

Example 4.



In the final chapter, Eitan summarizes the statistical results in the three repertoires by comparing the levels of significance (p) of peak-control distinction with respect to durational, metric, melodic, temporal, and dynamic criteria presented. Example 5 replicates the first page of Eitan’s

table that shows these results (Eitan, table 6.1). In examining this table, for instance, the fact that $p > .05$ for metric location in Haydn indicates that peaks are strongly distinguished from controls with respect to meter. Eitan explores the level of significance further with respect to melodic criteria, harmonic criteria, dynamics, and parametric interaction in the subsequent tables he includes for comparison. Eitan remarks upon the striking similarity between Chopin's and Berg's repertoires in their treatment of melodic and dynamic emphases. With respect to temporal location of peaks, Eitan observes that "the tendency to place peaks late in a segment is absent in the Haydn sample, in Chopin it applies to one level of segmentation, and in Berg it is exhibited at all level of segmentation, up to entire pieces" (148).

Based on these findings, Eitan concludes "yes" to the first hypothesis (peaks are associated in a statistically significant way with configurations of musical dimensions other than contour) and "no" to the second one (peaks are significantly related to emphatic elements in musical domain other than contour). Eitan argues that peaks are distinguished from controls in some sense within each style investigated, but their association with other emphatic or intensifying features can only be corroborated for Chopin's and Berg's repertoires, and not for Haydn's. His statistical results allow him to hierarchize the strength of such correlations, as he states that the tendency to emphasize peaks durationally is very weak in Haydn, stronger in Chopin, and strongest in Berg. He maintains the view that "these results show at the very least that musics of diverse syntactical and expressive inclinations treat a conspicuous natural auditory phenomenon in a special manner (though not necessarily in the same way), and thus that an aspect of 'nature' has an effect on musical structure across styles" (149).

Example 5. Differences peaks/control: summary of statistical results

<i>Aspect</i>	<i>Haydn</i>	<i>Chopin</i>	<i>Berg</i>
DURATION AND METER			
Durational emphasis			
Relation with earlier neighbor	$p > .05$	$p < .01$ ($p < .001$)*	$p < .001$
Relation with later neighbor	$p > .05$ ($p < .05$)*	$p < .01$ ($p < .001$)*	$p < .001$
Metric location			
1 st beat (frequent at peaks)	$p > .05$	$p < .01$	$p < .001$
Offbeats (infrequent at peaks)	$p > .05$	$p < .01$	$p < .0001$
Metric emphasis			
Relation with earlier neighbor	$p > .05$	$p < .001$	$p < .01$
Relation with later neighbor	$p > .05$ ($p < .05$)*	$p > .05$ ($p < .05$)*	$p < .05$
Syncopation			
	$p > .05$	$p > .05$	$p > .05$
Temporal Location			
Lower level	$p > .05$	$p > .05$	$p < .01$
3 rd quarter	$p < .05$	$p > .05$	$p > .05$
4 th quarter	$p > .05$	$p > .05$	$p < .01$
2 nd half	$p > .05$	$p > .05$	$p < .0001$
Last note	$p > .05$	$p < .002$	$p < .001$
Middle level	$p > .05$ †	$p < .01$	$p < .001$
1 st quarter	$p > .05$	$p < .05$	$p < .001$ ‡
4 th quarter	$p > .05$	$p < .01$	$p < .001$
2 nd half	$p > .05$	$p < .01$	$p < .001$
Last note	$p > .05$	$p < .002$	$p < .001$
Higher level	$p > .05$	$p > .05$	$p < .01$
1 st quarter	$p > .05$	$p > .05$	$p < .01$ ‡
4 th quarter	$p > .05$	$p > .05$	$p < .01$
2 nd half	$p > .05$	$p > .05$	$p < .005$

II. Evaluation

As a reader, I welcome Eitan's endeavor to take on a topic that has been relegated to secondary concern in the past and to develop an objective set of criteria for assessing the emphatic qualities of melodic peaks in distinct repertoires across historical periods. He carries out his statistical methods judiciously, presents an exhaustive comparison of statistical results from the three repertoires in the concluding chapter, and attaches the complete input data (selection of peaks and controls) for verification in an appendix.

In the ensuing critique of *Highpoints*, however, I challenge the basic tenets that underlie Eitan's hypotheses and his analytical methods for measuring the relative strength of peaks. Issues relevant to my critique are outlined as follows: a) statistical vs. structural approach to analyzing contour, b) note-to-note comparison, c) grammatical vs. rhetorical emphasis, d) combined parametric interactions, e) size of samples and stylistic generalizations.

Statistical vs. structural approach to analyzing contour. Eitan's book raises the following question: is contour primarily a statistical phenomenon, a syntactical one, or both? Following Leonard Meyer, Eitan regards contour or melodic shape as belonging to a gestural dimension that operates *independently* of the syntactical organizations of pitch and rhythm: "the gestural dimension concerns mainly those aspects of musical style centered on the 'natural,' statistical parameters, such as melodic shape, attack rate, textural density, and dynamics" (152). Eitan's first hypothesis ("melodic peaks are associated in a statistically significant way with specific features or configurations in musical dimensions other than contour") also suggests that a statistical analysis provides a necessary tool for making a quantitative assessment of correlation (what qualifies as a "hard" analysis) between peaks and controls with respect to the attributes of the musical parameters that define them.⁷

In actuality, Eitan espouses a dualistic approach to the study of contour as he relies on qualitative, syntactically-based observations to buttress his statistical findings. That is, he interprets the raw, quantitative data to

⁷ This attitude is reflected in his criteria for testing the two hypotheses statistically: "Second, to minimize the possibility that my initial hypothesis would grossly determine the raw data, I chose features whose presence in a particular musical sample could be rigorously and mechanically determined" (8).

correspond with his qualitative observations of how the melodic peaks behave at the musical foreground (what qualifies as a “soft” analysis) in the pieces that he chooses to highlight. The validity of his analysis seems, therefore, to depend on the strength of correlation between the quantitative and the qualitative (“hard” vs. “soft”). For instance, Eitan points out the differences in the distribution of melodic peaks and controls with respect to scale degrees in Haydn’s and Chopin’s works, but this information carries little intrinsic meaning until Eitan supports it with qualitative observations: e.g., the way in which Haydn tends to privilege particular scale degree such as 6 at melodic peaks and the intervals and directions by which they are approached and left. In his analysis of Berg’s music, Eitan explains how the gross disparity between peaks and controls in the congruence between various parameters (“hard” analysis) results from Berg’s idiosyncratic handling of melodic peaks: here he relies heavily on Meyer’s terminology, such as gap-fill formation, “terminal” fall, and durational “stretching” to describe Berg’s distinctive treatment of melodic peaks (136).

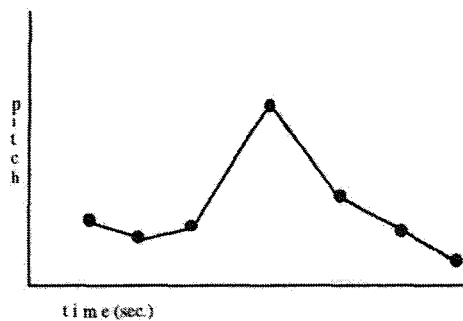
In summarizing the correlation between peaks and controls in the final chapter, Eitan introduces a significance rating that ranges from $p > .05$ to $p < .0001$, in increasing order of strength. Yet the term “significance” carries little or no intrinsic musical meaning unless anchored to contextual and syntactical characteristics that define peaks and controls.

To press this issue further, one begins to question whether Eitan’s analytical procedure corroborates his initial premise that contour belongs to the gestural, nonsyntactical aspects of music: “because they [non-syntactic aspects of music] are not dependent on a specific musical syntax, their study may shed light on commonalities between musical repertoires that are remote in time and place” (153). In employing Meyer’s and Narmour’s techniques such as gap-fill and peak prolongation to explain the surface characteristics of melodic peaks in Berg’s music, Eitan acknowledges the syntactical basic for Berg’s treatment of melodic peaks in combination with other musical parameters. Seeing the structural features that distinguish Berg’s treatment of melodic peaks from Chopin’s and Haydn’s, it is obvious that the former’s treatment is far from arbitrary (non-syntactical) as the registral placement and temporal allocation of peaks are carefully synchronized with his syntactical structuring of pitch.

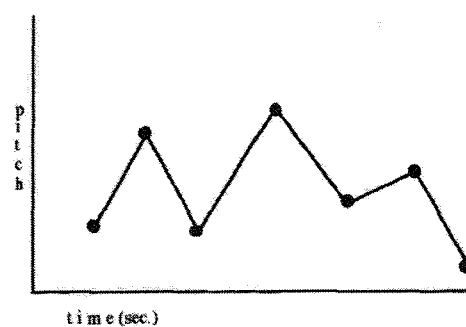
Note-to-note comparison. Eitan’s statistical procedure is limited in its capacity to model the salience of peaks: this is especially true in the sense that it reveals distributional characteristics of melodic tones that are

primarily atemporal (does not reflect how we perceive the salience of melodic peaks in linear time). Following Eitan's method, the selected features in a group of peaks and controls are compared only with respect to their immediate neighbors. In perceptual terms, this would be equivalent to having a listener with short-term memory who can discriminate the emphatic quality of the peak tone through a shifting "window" of three notes at a time. His statistical analysis, therefore, cannot distinguish or discriminate between peaks and controls as functions within a linear sequence of events beyond three notes. So, to take a hypothetical set of melodic peaks, his analytical procedure will yield the same measure of parametric emphasis for the highest peaks shown under example 6a and 6b. It is, however, generally assumed that the perceptual salience of the peak in 6a will exceed that of 6b since the surrounding peaks in 6b tends to attenuate the effect of the largest peak in the middle. Since the assessment of "emphasis" is restricted to this window of immediate adjacencies, his analytical procedure and observations cannot be taken as a general measure of perceptual salience of peaks: in actual listening experience, the listener is capable of assessing the emphasis given to a peak note in relation to surrounding musical events that extend far beyond its immediate neighbors.

Example 6a.



Example 6b.



My discomfort with Eitan's note-to-note comparison is particularly felt in his analysis of the opening passage of Chopin's Mazurka, op. 24 no. 1 (ex. 2.5). This example is replicated under example 7a. Here, the peak note appears in m. 4 as an eighth-note figure, G₅. While it falls on the metric downbeat, its duration is shorter than that of the preceding and following notes. Eitan describes how meter and duration create a noncongruent interparametric relation, as the former emphasizes the peaks and the latter de-emphasizes them (26). In tallying up the combined parametric emphasis

of this peak tone, his system would allow for the duration (-2) to cancel out the effect of meter (+2).

Example 7a. Chopin, Mazurka in G minor, op. 24 no. 1, mm. 1-8

The image shows a musical score for Chopin's Mazurka in G minor, op. 24 no. 1, measures 1-8. The score is in 3/4 time, marked 'Lento' with a tempo of 108. It features a melodic line in the right hand and a harmonic accompaniment in the left hand. The word 'rubato' is written above the first measure. The score is divided into two systems, with the second system starting at measure 6. The left hand accompaniment has a rhythmic pattern of quarter notes and eighth notes, with some measures marked with 'rto.' and asterisks.

Nonetheless, one can defend the strength of this peak note in another way by taking the rhythmic pattern and its implicit accentuation scheme as perceptual criteria for emphasis. In such musical contexts, one assumes that listeners generally apprehend rhythmic relationships in *units*, rather than as a series of individualized durations. Example 7b shows the accentual scheme suggested by the rhythmic pattern within each measure, following Leonard Meyer's procedure outlined in *Explaining Music*.⁸ Notice how the first three measures present a *trochaic* rhythmic pattern (long-short), a beginning-accented unit. The pattern presented on the downbeat of m. 4 reverses this accentuation scheme, as its *iambic* rhythmic pattern (short-long) introduces an end-accented unit. Chopin has deliberately shifted the accentuation scheme at the end to make the effect of the peak more poignant as it disrupts the conformity of the previous rhythmic patterns.

⁸ See Meyer, *Explaining Music*, chapter 2: "Critical Analysis & Performance," and chapter 3: "Conformant Relationships."

Example 7b.

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As an experiment, I have transformed the same melody so that the rhythm of the peak notes conforms to the patterns of the previous measure. See example 7c. Following Eitan's method, the duration of the peak in this transformed version is made longer than its neighbors, thus adding to the emphatic quality of the peak. I would argue, on the contrary, that this normalization of rhythm and the accentuation scheme "flattens" the perceptual effect of the peak. One is, therefore, led to question Eitan's basic tenet regarding the duration of the peak note having to be longer than its immediate neighbors in order to be emphatic. While there may be certain contexts that support Eitan's condition unequivocally, there may be other musical contexts—as illustrated above—where surface characteristics of rhythmic pattern and accentuation scheme override the general criterion Eitan stipulates. Such considerations also point to the necessity of acknowledging the role of rhythmic syntax, not individual duration, in determining the degree of emphasis given to melodic peaks in tonal musical contexts.

Example 7c.

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Grammatical vs. rhetorical emphases. Another way in which to explore the surface tension between rhythm and meter is to interpret them as

attributes of rhetorical vs. grammatical points of emphasis. Eitan introduces these concepts as a critical issue to explore at the onset of the book, but fails to provide a concrete solution to the question he initially poses: are peaks associated more closely with rhetorical or grammatical points of emphasis? (13) In the case of example 7, I argue that it is the friction caused by the metric alignment of the peak (grammatical) and end-accented rhythmic accentuation scheme (rhetorical) that heightens the effect of the melodic peak. It should be possible to stipulate context-specific conditions whereby *parametric noncongruence* actually heightens the emphatic quality of a melodic peak rather than hindering it.⁹ In hindsight, the issue is not so much about whether one factor overrides the other, but about the kind of tension (kinesthetic or otherwise) generated by the parametric forces that “collide” at the point surrounding the peak. Eitan seems to view *parametric noncongruence* as a factor that de-emphasizes melodic peaks unconditionally. In my opinion, it should be possible to stipulate context-specific conditions under which the perceptual salience of peaks becomes heightened by the collision between rhetorical and grammatical points of emphasis.¹⁰

Combined parametric interaction. Given the problems and limitations in Eitan’s statistical analysis addressed so far, it is difficult to take his method for calculating the cumulative score of parametric interaction at its face value. He refers to the additive method of deriving the cumulative score based on the comparison of melodic peaks with adjacent notes as “a summarizing aspect, a rather crude yet useful way of estimating the combined weight of durational, metric, and melodic emphases” (25). According to his current method of tabulating the cumulative score, the Chopin mazurka (example 2) will yield a higher score for local peaks G₅ (m. 4, m. 11) than the peak of the whole section, B_{b5}, found at m.14. His method detects the octave leap as a distinguishing feature for the main peak, but offers no intrinsic criteria for weighting the size of this leap against other

⁹ This view resonates with Kofi Agawu’s statement that “parametric noncongruence appears to be the inescapable condition of any expressive art.” See Kofi Agawu, “Ambiguity in Tonal Music: A Preliminary Study,” in *Theory, Analysis and Meaning in Music*, ed. Anthony Pople (Cambridge: Cambridge University Press, 1994), 100-101.

¹⁰ While Eitan acknowledges such conditions by commenting that “often the very feature that generates rhetorical emphasis (for instance, sharp harmonic dissonance) would hinder grammatical emphasis,” he fails to provide specific examples in his analyses of the repertoires by Haydn, Chopin, and Berg.

leaps found within this context. Had the local peak, G₅, been chosen as a control, it would have affected the significance level of the peaks and controls to undermine the salience of the sectional peak, B_{b5}. The same is true for the *Lyric Suite* passage, marked by a succession of peaks forming a progressively larger peak (example 4). Eitan's method does not offer a mechanism for weighting the strength of peaks relative to other peaks over time.¹¹

Sample population and generalizations. Lastly, in applying his study of melodic peaks to three repertoires that represent distinct historical styles and genres, Eitan repeatedly claims that melodic peaks are associated with innate psychological constraints and tendencies that transcend stylistic norms and practices. His analyses of the selected works by the three composers, however, do not provide an adequate basis for which to make such a sweeping generalization. An informed reader may call into question the size of population and sample (peaks and controls) Eitan employs to conduct his research: does the selection of approximately 100 peaks and controls for each composer's repertory present a sufficient sample to make stylistic generalizations about the composer's treatment of melodic peaks given the size of the population (composer's musical output in its entirety)?¹² Eitan's claim necessitates a much more comprehensive examination of the treatment of melodic peaks within each historical period and with respect to specific genres: for instance, a survey of melodic peaks in the piano sonata or symphonic works by Mozart, Haydn, and Beethoven in the late eighteenth century.¹³ Even in order to generalize upon a specific composer's style, it is necessary to trace the compositional evolution in his or her treatment of contour across a complete range of *oeuvres*. While such investigations lie far

¹¹ One solution to this problem of weighting is offered by John Roeder in "A Calculus of Accent," where accent given to a particular note is treated as a weighted attribute function of parametric intervals between given timepoints. His model offers a method for calculating the cumulative weight of a given accent over time in monophonic musical segments. See John Roeder, "A Calculus of Accent," *Journal of Music Theory* 39, no. 1 (1995): 1-46.

¹² Attention to the size of samples and population in conducting a statistical survey of musical data is given by John Snyder in "Entropy as a Measure of Musical Style: The Influence of a Prior Assumptions," *Music Theory Spectrum* 12, no. 1 (1990): 121-60.

¹³ In *A Classic Turn of Phrase*, Gjerdingen investigates the existence of the 1-7..4-3 schema across a body of musical literature spanning the specific time periods of 1720-54 (chapter 7), 1755-69 (chapter 8), and 1770-79 (chapter 9), etc., in documenting the change in the frequency distribution of the schema.

beyond the scope of Eitan's aim in *Highpoints*, he would have made a more convincing argument by addressing the limitations of his present investigation: stylistic generalizations about the role of melodic peaks may only be inferred, not validated by his present study.

One also wonders the extent to which his conscious selection of peaks and choice of genres affected the results of his study. Are there works by the same composers that feature troughs (low points) rather than peaks? In other words, how does the distribution of works that feature melodic peaks compare to those works that feature troughs as much as peaks? Alban Berg's music in particular poses such a question, since his use of the extremity of registers, high and low, is an important factor that shapes his musical rhetoric.¹⁴ However trivial this question may appear to be, I consider investigating the relationship between high and low points a necessary component in conducting a comparative stylistic examination of melodic peaks across a survey of musical literature.

III. Conclusion: Integrating Other Avenues for Contour Research

The contributions to contour research that Eitan makes in *Highpoints* would have been strengthened, in my opinion, had he addressed the limitations of his current analytical constructs and offered considerations for expanding and/or supplementing them with concepts and techniques that have been introduced by other scholars. In the concluding chapter, Eitan staunchly holds onto the view that contour belongs to a non-syntactic, gestural dimension: it can operate similarly in works whose syntactic principles differ, as in the case of Chopin and Berg. Berg's music is distinct from Schoenberg's and Webern's on the basis of his treatment of gesture, which shows "greater kinship with nineteenth-century Romanticism" (152).

¹⁴ For instance, the *Five Pieces for Clarinet and Piano*, op. 5, feature just as many low points (troughs) as high points (peaks) to demarcate structural junctures. The ending of the first piece relies on reaching the extreme ends of the register to create its distinct, eerie effect (thus its texture employs both a trough and a peak). The famous passage from the second movement of Berg's *Altenberglieder* features an "inverted" climax (mm.7-8): where the orchestral passage builds up in momentum toward a chord that is struck at *pp>ppp*, at which point the voice enters in the *pp* range. Such contexts demand a far greater refinement in analytical criteria for assessing the emphatic quality of a peak or climactic moment.

My impression, however, is that Eitan weakens his claim by relegating the function of contour and melodic peaks exclusively to the “statistical” domain. I offer, in conclusion, a few avenues to explore in the hope that closer links will be established between Eitan’s contributions in *Highpoints* and other structurally oriented methods in this area of contour research.

Since Eitan takes concepts introduced by Leonard B. Meyer and Eugene Narmour as points of departure in building his analytical model, it would be useful to connect Eitan’s insights and analytical findings more specifically to the tools and techniques introduced by his predecessors’ works. My counteranalysis of the Chopin example (example 7c), for instance, is modeled after the theory of rhythmic accentuation that Meyer introduces in *Explaining Music*. Additionally, a conceptual link exists between Eitan’s contributions and Narmour’s threefold categorization of style analysis: *style forms* (time-independent, constructed classes, e.g., melodic triads), *style structures* (time-dependent, context-specific patterns), and *idiostructures* (network of relationships created by the interaction of the closural properties of one or more *style structures*).¹⁵ It is conceivable, in my opinion, to interpret a composer’s treatment of melodic peaks—e.g. Haydn’s consistent attenuation of melodic peaks (metrically and durationally)—as an attribute of style structure, and tendency to highlight scale degree $\hat{6}$ as a melodic peak. Narmour’s theoretical framework may be used to explore further stylistic generalities; for instance, gap-fill patterns in Berg can be seen as a *style structure* that cuts across stylistic conventions associated with eighteenth- and nineteenth-century musical genres.

In addition, it would be useful to explore the links between Eitan’s statistically based approach and syntax-oriented methods for formalizing and classifying contour and contour relationships developed by other scholars, e.g., Morris, Marvin and LaPrade, Polansky, Quinn, and others. Eitan pays lip service to the contribution these scholars have made in advancing contour research, but makes no attempt to relate their syntax-oriented and/or statistically based methods to his own. Morris presents a contour-reduction algorithm that can systematically “prune” pitches to arrive at a prime contour that takes into account the highest and lowest points within any

¹⁵ Narmour, *Beyond Schenkerism*, chapter 11, “Idiostructure, Style Form, and Style Structures.” Also summarized in Gjerdingen, *A Classic Turn of Phase*, chapter 3, “Style Structures and Musical Archetypes.”

given melodic context.¹⁶ Polansky and Quinn have developed models for measuring the degree of similarities among contours of varying length or size. The inclusion of other suitable methods for analyzing contoural peaks may potentially augment and supplement Eitan's statistically driven study of melodic peaks in *Highpoints*. It is hoped that further consideration will be given to acknowledging and fostering a plurality of approaches to the study of contour in considering issues pertaining to the study of melodic peaks across musical repertoires.

¹⁶ Morris, "New Directions," 212-13. "The *max-list* of a contour is the set of *maxima* and the *min-list* is the set of *minima*. Pruning involves the deletion of pitches from the contour according to the following rule: if a pitch *p* is immediately preceded by a lower or equal pitch and immediately succeeded by higher or equal pitch, or vice versa, *p* is pruned. . . . The pruning rule is applied to the *max-list* and *min-list* of a contour; the process is akin to the deletion of passing tones in reductive analysis. . . . The algorithm is recursive, producing a series of intermediate, increasingly pruned contours until the prime results."