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Reconsidering Pitch Centricity

STANLEY V. KLEPPINGER

Analysts commonly describe the musical focus upon a particular pitch class above all others as *pitch centricity*. But this seemingly simple concept is complicated by a range of factors. First, pitch centricity can be understood variously as a compositional feature, a perceptual effect arising from specific analytical or listening strategies, or some complex combination thereof. Second, the relation of pitch centricity to the theoretical construct of *tonality* (in any of its myriad conceptions) is often not consistently or robustly theorized. Finally, various musical contexts manifest or evoke pitch centricity in seemingly countless ways and to differing degrees. This essay examines a range of compositions by Ligeti, Carter, Copland, Bartók, and others to arrive at a more nuanced perspective of pitch centricity—one that takes fuller account of its perceptual foundations, recognizes its many forms and intensities, and addresses its significance to global tonal structure in a given composition.

A great quantity of music (Western and otherwise) leads its listeners to regard a particular pitch class as more important than others. This property is nearly omnipresent in Western music of the eighteenth and nineteenth centuries, and it has continued to thrive in the twentieth and twenty-first, even while contrasting compositional practices eschewing this characteristic have emerged. This musical focus upon a particular pitch class has gone by a number of names. This essay calls it *pitch centricity*, following recent pedagogical writings by Joseph Straus (2005) and Miguel Roig-Francolí (2008) (though with caveats to be explored below). Other authors have identified this phenomenon as *tonality* (Parks 1989, DeVoto 2004).¹ Brian Hyer's entry on "Tonality" for the *New Grove Dictionary of Music and Musicians*, revised as Hyer 2002, notes the common use of "tonal" as an antonym for "atonal" (among a plurality of other meanings) to distinguish music that focuses attention on a particular pitch class from that which does not. In contrast, Dmitri Tymoczko describes pitch centricity as one of five features that "jointly contribute to a sense of tonality" (Tymoczko 2011, 4). Neologisms such as *neotonicity* (used by, e.g., Silberman 2006 and Zimmerman 2002), *reduced tonality* (DeVoto 2004), and *neocentricity* (Wile 1995) have emerged in attempts to tease out the contrasting ways in which pitch centricity, large-scale tonal structure, or both are realized in twentieth- and twenty-first-century music without recourse to the harmonic, collectional, or voice-leading norms of the common-practice period.

This lexical briar patch has consequences for our understanding of pitch centricity and for analysis that involves it. The tangled connotations of the terms "pitch centricity" and "tonality" are especially problematic when used to place a composition in music-historical or stylistic context. Beethoven's Ninth and Shostakovich's Fifth Symphonies

¹ Richard Cohn, in seeking to describe late romantic music that "uses the harmonic structures and, often, the conventional cadences of diatonic tonality," explicitly avoids the term "chromatic tonality" because it "misleadingly points towards pitch-centricity" (1998, 168).

are both nominally “in D minor,” and the pitch class D is a perceptual focus in both works at structurally crucial junctures. Both symphonies thus might be labeled as pitch-centric. But the senses in which these works are “in D” differ significantly enough that, while few analysts would disagree that the Beethoven symphony embodies tonality, the description of Shostakovich’s symphony as “tonal” or “embodying tonality” depends to a great extent upon the specific meaning intended with these terms—and may even be redundant if “tonal” is conflated with “pitch-centric.”²

The problem of terminological inconsistency is clearly significant, and articulating musical analysis of works like Shostakovich’s symphony can hinge upon addressing this problem. Of greater interest, though, is the relationship between pitch centrality, however defined, and musical contexts that embody or push against it. By explicitly crafting a specific perspective of pitch centrality and its relationship with tonality—or, more specifically, “tonal structure”—and then measuring that conception’s degree of “fit” with varied musical practices, we can learn much about the music itself and about the phenomenon we are trying to pin down.

My goal is not to prescribe a universal meaning for pitch centrality. Such an enterprise would be simultaneously quixotic and Orwellian and rightly doomed to failure. Instead, my purpose here is to survey the intersections of this theoretical construct with varied musical manifestations of it. What do we learn by explicitly ascribing a meaning for pitch centrality and then investigating how particular musical contexts reflect—paradigmatically, imperfectly, or not at all—that meaning?

I begin by offering such a definition and exploring its connotations in relationship to tonal structure and to pedagogical presentations of pitch centrality by Straus and Roig-Francolí. That definition is problematized in works by Bartók and Ligeti, leading to a consideration of the criteria that contribute to a pitch class’s perceptual prominence. Detailed analyses of works by Carter and Copland illustrate how consideration of these criteria can give rise to multi-leveled perspectives of global tonal structure, though both works push against the starting definition of pitch centrality in different ways. Ultimately, I propose that pitch centrality might best be regarded as existing along a continuum, manifesting to greater or lesser extents in various musical contexts via a constellation of perceptual features and tonal approaches. In this more nuanced perspective, pitch centrality becomes a phenomenon with which a given composition or listener can engage to varied extents rather than a black-and-white property that a work either does or does not exhibit.

² David Fanning endeavors to treat Shostakovich’s symphony with an adaptation of Schenkerian analysis, arguing that it “is sufficiently grounded in the ‘Bach-to-Brahms’ tradition to justify the analytical application of what is—at least by more or less common consent in the West—the most powerful theoretical tool for explaining such works in musical terms” (2010, 78).

Definitions and Conceptions

To facilitate exploration of the theoretical and analytical issues surrounding pitch centricity, I offer a preliminary definition that reflects common parlance for many musicians: *pitch centricity* is the projection of one pitch class into perceptual prominence to a significantly greater extent than other pitch classes. Inasmuch as this conception of pitch centricity is grounded in aural perception of a pitch class's stress, it is somewhat more specific than that of recent textbooks (Straus 2005 and Roig-Francolí 2008, discussed below). It will nevertheless also prove to have difficulties. But regarding pitch centricity as a product of aural experience will allow, in the discussion and examples that follow, for teasing out significant distinctions among the myriad ways in which given pitch classes perceived as locally significant might be associated with one another and other musical phenomena, potentially giving rise to a global perspective of a work's tonal organization.

To maintain the integrity of this intellectual exercise, precise meanings for “tonal organization” and “tonal structure”—as well as “tonality”—are also required. When referring to “tonal organization” or “tonal structure,” I shall use the word “tonal” in the broadest, most catholic definition offered by Hyer—that is, to refer to “systematic arrangements of pitch phenomena and relations between them” (2002). Thus, to speak of the tonal structure of a composition, whether by Mozart or Bartók, is to describe how aspects of its pitch content link with one another and with other musical parameters to create a sense of large-scale cohesion. Of course, there are diverse ways in which a work can “be tonal” in this sense. Schenkerian theory demonstrates how a large swath of music across several generations and styles displays a certain homogeneity in its approach to tonal structure (i.e., the composing-out of the *Ursatz*), but Bartók's “tonal axes” (Lendvai 1971) or the interval-class cycles of George Perle also represent “tonal” structure in the sense of Hyer's definition.

In contrast, I shall reserve the noun form *tonality* as a shorthand for what might more exactly be termed “common-practice tonality” (hereafter *CP tonality*)—that is, in reference to the elements of functional harmony and traditional voice-leading characteristic of later baroque, classical, and romantic repertoire. I do this out of deference to the widespread (though hardly universal) convention by which analysts associate “tonality” with the harmonic and contrapuntal idioms of the common-practice era. That is to say, I believe it may push less against the connotations some musicians ascribe to “tonality” to speak of a Stravinsky's or a Hindemith's approach to “tonal structure” rather than their approach to “tonality.” As I will demonstrate, certain analytic needs can be satisfied only by distinguishing among the phenomena this paper calls pitch centricity, tonal structure, and CP tonality.

Straus implicitly equates “tonality” with CP tonality in order to draw a bright line between the conventions of common-practice music and other music that makes use of pitch centrality. After defining (CP) tonality through six characteristic features—key, key relations, diatonic scales, triads, functional harmony, and traditionally normative voice-leading—he compares it with “centricity”:³

All tonal music is centric, focused on specific pitch classes or triads, but not all centric music is tonal. Even without the resources of [CP] tonality, music can be organized around referential centers....In the absence of functional harmony and traditional voice leading, composers use a variety of contextual means of reinforcement. In the most general sense, notes that are stated frequently, sustained at length, placed in a registral extreme, played loudly, and rhythmically or metrically stressed tend to have priority over notes that don't have those attributes. (2005, 131)

Straus immediately provides as a first example of a “pitch center” the C# pedal that anchors the opening of Webern's Movement for String Quartet, op. 5 no. 3. His conception of tonality demonstrates the common association of this term with the conventions of common-practice music. While this is at odds with the broader meaning of “tonal” I am pulling from Hyer 2002 (“systematic arrangements of pitch phenomena and relations between them”), Straus's pedagogical goals in drawing a sharp contrast between tonality and centrality in an introductory textbook are laudable. Further, Straus's explanation of pitch centrality here squares with the tentative definition I offer above.

Roig-Francolí defines pitch centrality as “the organization of pitch structures around one or more pitch centers, although not necessarily through a system of pitch hierarchies around a tonic.” Absent the context of CP tonality, “a sense of pitch centrality...may result from the use of pedals or ostinatos.” A monophonic excerpt by Bartók (the opening of *Mikrokosmos* no. 77, “Little Study”) exhibits “a clear sense of pitch centrality on G because the passage is built on a diatonic collection centered on G (the passage begins and ends on G, the melody keeps returning to a lowest pitch G, and there is frequent motion between G and D, scale degrees $\hat{1}$ and $\hat{5}$ in a G scale)” (2008, 5–6).⁴ Thus, both Straus and Roig-Francolí introduce pitch centrality as grounded in the perceptual experience: listeners select pitch centers by virtue of their emphasis in the aural experience of the music. This framing of pitch centrality is consonant with my preliminary definition and with its common use in much theoretical discourse.

³ Straus here conflates the potential organization of a work around “specific pitches, pitch classes, or pitch-class sets” under the heading “Centricity.” Of these, this study is concerned chiefly with centric focus on particular pitch classes, though that phenomenon certainly interacts with perceptual emphasis of particular pitches (as is the case in music structured around an inversive axis) and of particular pitch-class sets.

⁴ Elsewhere, Roig-Francolí implicitly conflates “pitch center” with “tonal center.” For instance, with regard to the opening of Debussy's “La cathédrale engloutie”: “There is no question that this music features pitch centrality (that is, it has a tonal center)” (2008, 20). I eschew tonal *center* in this essay to keep distinct issues of perceptual focus (pitch centrality) and issues of global pitch-based cohesion (tonal structure).

After presenting examples of pitch centricity as a product of perceptual stress of particular pitch classes, both Straus and Roig-Francolí go on to describe inversional symmetry as a manifestation of pitch centricity:

In addition, centricity in post-tonal music can be based on inversional symmetry. An inversionally symmetrical set has an *axis of symmetry*, a midpoint around which all of the notes balance. An axis of symmetry may function as a pitch or pitch-class center. (Straus 2005, 133; italics in original)

We will now discuss the type of symmetrical structure that results from textural, spatial **symmetry around an axis**. In this type of musical structure, the axis is a pitch or pitch class at midpoint between all the notes in the texture, and all the intervals above and below this axis are the same, as if reflected in the mirror represented by the axis. In music arranged in a spatially symmetrical structure, we can say that the axis of symmetry functions as a pitch center (a literal, spatial pitch center around which all the notes are balanced). (Roig-Francolí 2008, 47; boldface in original)

While Roig-Francolí's translation of *centricity* into a literal sense is an attractive pedagogical device, pitch centricity based on position in pitch space is quite different from—and potentially independent of—pitch centricity based on perceptual emphasis. The former is a compositional technique that provides a sense of tonal logic; the latter is a product of the aural experience. An example cited by Straus from Bartók's Fifth String Quartet is illustrative. Straus's commentary follows:

A *contracting wedge*, where everything converges on the axis note, can have strong cadential force, as at the end of the first movement of Bartók's String Quartet No. 5. The lines begin on E in four different octaves, and then converge on the cadential B \flat . (2005, 135; italics in original)

Example 1a shows the convergence Straus is describing. Each pitch in violins 1 and 2 is reflected by simultaneous pitches in the viola and cello around an axial B \flat . The germane question for the present discussion is the source of this music's "centricity" on B \flat . Is this music's pitch center B \flat because of its axial status, because the movement cadences on this pitch class in isolation, or both? Examples 1b and 1c explore this question through re-composition of Bartók's cadence. In Example 1b, the upper voice (presented by the violins) has been transposed up a half step until the ultimate B \flat , preserving the axial symmetry but shifting the axis up a quarter tone to the crack between B \flat_3 and B \sharp_3 . This cadence still places perceptual prominence on B \flat —B \flat may still be regarded as a "pitch center" by my tentative definition above—but that pitch class's significance to the music's tonal structure (viewed only through the lens of axial symmetry) is gone. The parenthetical, alternate B \flat s at the end of Example 1b create an opposite situation: the axial symmetry around B "half flat" is preserved at the expense of B \flat 's perceptual prominence as a distinct cadential goal. In this context, the B-half-flat axis is strictly observed, raising the reasonable question of whether a "pitch center" in traditional equal temperament must itself be a member

Poco allarg. ♩ = 130

a)

b)

c)

EXAMPLE 1

Bartók, Fifth String Quartet (mvt. I), conclusion (and alternatives)
 String Quartet No. 5, SZ102 by Bela Bartok © Copyright 1936 Boosey & Hawkes, Inc.
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of that system. And Example 1c illustrates that the intensely chromatic contrary motion converging on $B\flat$ is possible without recourse to axial symmetry, yet the perceptual effect is similar. If we accept that pitch centricity is a perceptual rather than theoretical product, as Straus and Roig-Francolí seem to in their introductions of this topic, then we must conclude that axial symmetry is not a kind of approach to pitch centricity, but a kind of approach to tonal structure. Axial symmetry and pitch centricity may intersect, as they do in Bartók's cadence, but the former is not a "type" of the latter in the hermeneutic offered here.

Bartók's "From the Island of Bali," from the fourth volume of *Mikrokosmos*, provides a concrete example of this dichotomy between tonal structure (via axial symmetry) and pitch centricity.⁵ As the partial score of Example 2 illustrates, the music is fixated upon

⁵ Bernard 2003 explores other examples of pitch symmetry as a structural feature of Bartók's music.

a) Andante, ♩ = 134

7 *poco rit.*

b) Andante

31 *p. dolce*

36 *poco rit. - - a tempo*

pp

(*prol. 20*)- - - *

EXAMPLE 2

Bartók, “From the Island of Bali” (*Mikrokosmos*, Sz. 107, No. 109), opening and concluding sections

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set type (0167).⁶ Each of the many canons of “Bali” employ pitch symmetry around either G or its tritone partner C♯, depending upon the voices’ deployment into various octaves. Focus upon G₄ as an axis of symmetry sharpens in the conclusion through the

⁶ Cohn 1991 and Morris 1997 treat this piece using contrasting extensions of pitch-class set theory.

Sopr. Lit - tle Lamb, who_ made thee? Dost thou know_ who_ made thee?

Alto

Gave thee life, and bid thee feed By the strem and o'er the mead;

Gave thee cloth - ing of de - light, Soft - est cloth - ing, wool - ly bright;

EXAMPLE 3John Tavener, *The Lamb*, opening

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reshaping of the canonic (0167)s into pairs of dyads mirrored around this pitch. The final attack of the piece in m. 42 consists of a new dyad voiced across registral extremes yet still symmetrical around G_4 —the $F\sharp$ is a minor sixteenth below, the $A\flat$ a minor sixteenth above.

Symmetry across such a wide band of pitch space, without articulating the axis itself, is more a compositional than a perceptual phenomenon. An engaged listener will note the inversional relationships pervading “Bali,” but *aurally* identifying the pitch around which such inversions reflect is a monumental task. By way of comparison, the opening of John Tavener’s *The Lamb* also features symmetry around $G_{(4)}$, but does so in ways more palpable to the ear than “Bali.” Tavener’s two-part mirror counterpoint, shown in Example 3, never strays more than a major third above or below the axis, and cadences are created by convergences upon the G axis itself. “Bali,” in contrast, almost never sounds the G at all, and the band of active pitch space surrounding the axis often spans nearly an octave on either side (until the conclusion, which more than doubles the band’s width). Calling “Bali” a work centered on G requires a conception of pitch centricity not tethered to aural experience.

Perceptual Factors

From the listener's vantage point, the question "What pitch class is the perceptual focus of this music?" is the crucial issue for the conception of pitch centricity offered thus far. Bartók's "Bali" pushes against this question, not only by making it difficult or insoluble, but by making it irrelevant. It may be possible to describe how "Bali" places more stress on one pitch (class) than another—for example, the $G\flat_5$ of m. 6 is the highest, longest note of the first section—but this is true for nearly any music with pitched content. To be sure, musical perception is naturally subjective, so the claim that this Bartók work is not "about" pitch centricity can be verified only intersubjectively. But to the extent that analyzing specific pitch events' relative prominence prescribes rather than describes the aural experience, we can say that the music in question is not paradigmatically pitch-centric. Grounding a perspective of such music's approach to tonal structure upon a perceptual conception of pitch centricity is thus likely to prove intuitively unsatisfying.⁷

The first movement of Ligeti's *Musica ricercata*, completed in 1953, provides a different kind of abrasion with the definition of pitch centricity provided above ("the projection of one pitch class into perceptual prominence to a significantly greater extent than other pitch classes"). In contrast to "Bali," there seems no doubt that this work is engaged with pitch centricity, and in fact it provides an introduction to some of the perceptual criteria that allow for pitch centricity to emerge. This movement relies exclusively on a single pitch class, A, until its conclusion. Using only A, the movement builds up inexorable tension, increasing in tempo, volume, and rhythmic intensity until its climactic—and concluding—presentation of D, as shown in Example 4.

The music dramatically but simply juxtaposes A and D. Until the final four bars, there is no pitch-based evidence to regard any pitch class but A as this music's focus. But then D is struck in two octaves, in isolation, with as much force as the performer can muster in four fingers. D is the final sound of the movement, notwithstanding its subsequent combination with A in the sympathetic resonance indicated by the composer, which further contextualizes A as subservient to D as its fifth. D's intervallic relationship with A might privilege D in this context, as the preceding A can retrospectively be reconciled as D's "dominant."

⁷ David Lewin, in critiquing his own and Nicholas Cook's readings of Stockhausen's *Klavierstück III* (Lewin 1993, Cook 1987), articulates a dichotomy between musical analysis describing what is heard and analysis demonstrating what can be heard when the ear is guided in a specific way. The experiential descriptions in this essay certainly are situated in the former camp, inasmuch as they identify the ways pitch classes are cast into perceptual prominence prior to opus-specific analysis. This is not meant to discount the value of prescriptive analyses that may change the aural experience of the same repertoire to illuminate musical relationships that are not immediately conspicuous. But since such analytic approaches are not grounded in perceptual criteria such as those of Example 5 (below), their engagement with the perceptual phenomenon of pitch centricity as conceived here would seem to be more distant.

fff

8^{va}

8^{va}

fff

tutta la forza

8^{va}

8^{va}

(8)

(8)

(8)

3

3

(8)

(8)

5

6

5

6

ferocissimo

(8)

EXAMPLE 4

Ligeti, *Musica ricercata* (mvt. I), conclusion

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The image shows a musical score for Example 4, continuing from a previous page. It consists of two staves: a piano part and a violin part. The piano part is written in treble and bass clefs. The right hand plays a sequence of chords, each marked with a circled '8' and a '7' below it. The left hand plays a sequence of notes, also marked with a circled '8' and a '7' below it. The violin part is written in treble clef and features a sequence of notes marked with a circled '8' and a '*' above it. The score includes dynamic markings such as *ffff* and performance instructions like 'ca. 2'.

*) Tasten stumm niederdrücken / depress keys without sounding.

**) Mit beiden Fingern anschlagen, dann mit einem Finger halten. / Play with both fingers then hold with one.

EXAMPLE 4

(cont'd.)

The centric ambiguity of this movement is striking. Counterarguments are easy to come by: while the Ds are loud and conclusive, they seem hollow and weak in comparison to the enormous prominence of A preceding them. Are the Ds really strong enough to liquidate all that A-based emphasis? Is it so difficult to perceive this as an A-centered piece that ends unexpectedly “off-tonic?” (How would our perception of centricity change if Ligeti had ended this movement instead with E \flat ? With G \sharp ?) On the other hand, the conclusion upon D allows us to interpret the buildup of tension in other musical parameters as a reflection of A’s tonal frustration as it tries to progress as any dominant should. We come to realize A is functioning as dominant after it has been succeeded by its tonic, D. Such a tonal sleight-of-hand is as old as Beethoven. While retrospection is certainly typical in CP music (for instance, pivot-chord modulations are only heard as such after the fact), tonally reinterpreting an entire musical work because of the pitch content of its very last attack point seems analytically awkward, to say the least. (A related complication: does our perception change on a second hearing, once we know “the punch line,” so to speak?)

This analytic vignette illustrates how pitch centricity, as simply formulated above, might be flouted by musical contexts. Ligeti’s piece seems to demand that we attend to the *problem* of pitch centricity—as engaged listeners we are drawn inexorably into consideration of the relative perceptual priority of A and D. The exceptional limit on pitch-class content closes the distance between the act of identifying “tonic” at a given moment and describing the tonal principles that govern the entire work: this piece foregrounds the ambiguity between A and D to the extreme that the pitch-center ambiguity itself becomes the tonal focus of the music. Yet, by the strict definition of pitch centricity

<i>Salience Criteria</i>	<i>CP-Cueing Criteria</i>
<p>Lehrdahl's saliencence conditions grant structural weight to an event that is...</p> <p>(S1) begun in the span of music it is meant to represent;</p> <p>(S2) in a relatively strong metrical position;</p> <p>(S3) relatively loud;</p> <p>(S4) relatively prominent timbrally;</p> <p>(S5) in an extreme (high or low) registral position;</p> <p>(S6) relatively dense;</p> <p>(S7) relatively long in duration;</p> <p>(S8) relatively important melodically;</p> <p>(S9) next to a relatively large grouping boundary (such as the beginning or end of a phrase, section, movement, or work);</p> <p>(S10) paralleled by a similar event privileged elsewhere in the analysis.</p>	<p><i>primary:</i></p> <p>(CP1) stable (i.e., major and minor) triads</p> <p>(CP2) interval class 5</p> <p>(CP3) functional progressions (e.g., authentic cadences)</p> <p><i>secondary:</i></p> <p>(CP4) diatonic collection</p>

EXAMPLE 5

Perceptual criteria; "Saliencence Criteria" paraphrased from Lehrdahl 1989, 73–74

provided above, this movement is problematic. How can a work be pitch centric if we cannot identify with certitude its pitch center? To be dogmatic about that definition, we would have to conclude that Ligeti's piece is not (unambiguously) pitch centric, though it is certainly engaged with the perceptual concerns of this phenomenon.

Cataloguing those perceptual concerns—the characteristics that allow a pitch class to become a pitch center—will aid in tracking the applicability of pitch centricity to varied musical contexts. The competition between A and D in the *Musica ricercata* movement suggests two types of perceptual considerations that can cause listeners to regard a particular pitch class as more important than others. Example 5 identifies these factors as *saliencence criteria* and *CP-cueing criteria*.

Fred Lehrdahl posits a set of saliencence conditions that make explicit the myriad ways in which a pitch or pitch event can assert itself; these make up the left side of Example 5.⁸

⁸ Omitted from this list are numbers Lehrdahl uses to quantitatively distinguish the "relative strengths" by which each criterion is applied. Lehrdahl later concluded that "quantitative measures of saliencence are hard to establish because the perception of saliencence is so contextual" (1998, 306). Christopher Hasty agrees: "The relative importance of certain domains [musical properties such as pitch, register, timbre, etc.] is not universally fixed" (1981,

These criteria give priority to those events that are louder, higher, lower, longer, metrically stressed, emphasized timbrally or motivically, and so on. Lerdahl argues that classically atonal repertoire draws us to perceive a hierarchy of pitch content via salience conditions (1989, 67, 85). This tendency certainly exists in pitch-centric music, as the designation “pitch-centric” implies. This catalog of salience conditions therefore proves useful in demonstrating, assessing, explicating, and comparing the perceptual significance of particular pitch classes in such music.⁹ Allen Forte offers a comparable inventory of considerations that “may determine the value of a tone in relation to the other tones in a composition,” including octave doubling, successive repetition, recurrence over longer spans, duration, accent, volume, “order-position” (“Where does [the note] stand in a particular unit?”), timbre, and registral placement (1955, 17). Tymoczko provides a similar list (2011, 179), and Christopher Hasty explores the act of musical segmentation in atonal music by means of musical *domains*, each of which “is characterized by the range of different values which we hear in a particular quality of musical sound” (1981, 8). It is not difficult to correlate most elements of Lerdahl’s, Forte’s, and Tymoczko’s lists with one another and with Hasty’s domains, suggesting a long-standing (if implicit) consensus regarding the ways in which pitch elements can be saliently emphasized.

In the Ligeti movement, the salience criteria of Example 5 are at work in obvious ways. Pitch-class A is reinforced by every element of this list. Pitch-class D, on the other hand, is not “relatively” loud, dense, or long when compared to pitch-class A, though it receives unique emphasis via its placement at the end of the work. (Listeners’ selection of a pitch center is not the result of a simple tabulation of criteria from Example 5, with the pitch class supported by the most criteria emerging as the winner. Lerdahl 1998 and Hasty 1981 both warn that the relative importance of various salience criteria is critically dependent on musical context—and, I would argue, perceptual subjectivity). But D’s potential as a pitch center is also buttressed by the approach *from* A, which reflects a traditional dominant-to-tonic progression.

This invocation of a relic from CP tonality does not appear in Lerdahl’s list and represents the need for the second category of perceptual criteria shown in Example 5. While the principles of voice-leading and harmonic progression characterizing the common-practice era do not govern subsequent music to the same extent, the precedents

58). Given these reservations and the fact that additional criteria besides Lerdahl’s will be used in this approach, those strength factors are not invoked here.

⁹ In summarizing the state of research into tonality induction, Vos 2000, Auhagen and Vos 2000, and Matsunaga and Abe 2006 each note the relative lack of attention many of these criteria have received in the construction of perceptual experiments meant to probe the ways in which listeners identify tonic. This contrasts with the relatively large body of research regarding the impact of CP cueing upon listeners’ apprehension of pitch centers, as will be summarized below.

of its tonic-defining elements persist. Nicola Dibben found that “listeners hear atonal music in terms of the relative structural stability of events and that this mode of hearing is influenced by dissonance and horizontal motion as well as salience” (1999, 293). If this is the case even in non-centric contexts, then vestiges of CP tonality must be considered when describing the perception of pitch centers in later music.

The “CP-cueing” category of Example 5 includes triads, evocations of functional cadences, and emphasis of interval class 5. Perhaps the most crucial component of CP cueing is the triad. The perception of triadic stability causes triadic roots to become that much more prominent when they appear in music that lacks or minimizes the other stability conditions of earlier music (as suggested in experimental findings in Dibben 1999 and Povel and Jansen 2001). The E_b-major chord that brings Webern’s *Piece for Violin and Piano*, op. 7 no. 1, to a close is an example of this phenomenon: its surprising appearance at the end of an otherwise highly chromatic and perceptually non-centric piece serves to bring further emphasis to the chord’s identity as a triad. As a result Lerdaahl is led to state that “[a]ny convincing analysis must address the striking ending” on this triad (1997, 20–21). The appearance of triads is less atypical in pitch-centric music by, say, Britten, but the triad’s ability to draw attention to its own root still causes us to favor that root perceptually, all things being equal.

A related holdover from the common-practice era is the pitch-center-defining feature of the perfect fourth and its inversion to a perfect fifth. A century after this progression lost its status as the *sine qua non* of Western music, the higher note of a given (melodic) perfect fourth still tends to be apprehended as a pitch center, ornamented by its “dominant.” In CP music, the isolated perfect fourth implies either a motion between dominant and tonic or an arpeggiation inside a single triad. In either case, the emphasis of this interval inevitably grants structural importance to its upper note.¹⁰ Thus, when Copland’s *Third Symphony* opens monophonically with a slow descending fourth from E to B, the listener is irresistibly pulled to regard the E as a pitch center and B as its fifth. Because of the rich history surrounding this interval class’s structural importance in defining pitch centers, its appearance has inevitable perceptual implications for later music as well—as illustrated in the Ligeti. Additionally, the tonal connotations of a melodic instance of interval class 5 can be reinforced by setting its members as roots of triads—thus evoking the harmonic gesture of an authentic cadence. *Appalachian Spring* comes to mind as an example of a work that demonstrates this practice.

¹⁰ Vos concludes that “when a piece of music starts with an ascending fourth or a descending fifth, the second tone of the interval is the tonic of the piece’s key,” a claim “massively supported by the tests of this rule” performed on a collection of 2179 opening melodies from music by Bach, Mozart, and Brahms; hymn tunes; and national anthems (1999, 11).

The diatonic collection is listed as a secondary tonal-cueing criterion because in post-tonal contexts the diatonic scale does not point to one of its members as governing it with the certainty that a triad does. Given the right musical context, any member of a diatonic collection can emerge as a pitch center. Diatonic modes are the product of this phenomenon: the white-note collection, for example, can be made to suggest D dorian or G mixolydian as easily as C major. A composer may use the collection such that it is apprehended as a C-major scale, but that “major-ness” is a secondary result of other CP-cueing or salience criteria that select C as tonic.

Experimental research into listeners’ induction of pitch centricity has concentrated upon the common-practice conception in which (with a few notable exceptions) a given diatonic collection invariably coalesces into a major scale, allowing only $\hat{1}$ in this particular rotation of the collection the possibility of serving as a pitch center. For instance, Browne 1981 notes that the diatonic set includes all interval classes and postulates that the set’s rarest interval classes (ic 6 and ic 1) aid listeners in tonal orientation.¹¹ Brown and Butler 1981 tests this hypothesis and finds that diatonic trichords containing ic 6 engender greater agreement among listeners as to the tonic pitch class than those that do not. Butler 1983, Brown 1988, Butler 1989, Vos 1999, and Matsunage and Abe 2006 show how diatonic pitch successions or harmonic successions that easily correspond with functional conventions further strengthen perception of the diatonic collection’s organization as a major scale. Given a diatonic, functional context, without other musical data (such as relative salience as enumerated in Lerdahl 1989), these findings are perfectly plausible. But, as Vos 2000 suggests, tonic-finding models appropriate to CP music might not apply so directly to more recent pitch-centric repertoire. A model that precludes the possibility of modal apprehension of a diatonic collection, for instance, is anachronistic for music following the common-practice era.

Consider the central chorale of Debussy’s “La cathédrale engloutie,” shown in Example 6. This music certainly centers on C at least to m. 34, even though the white-note collection is replaced by the one-flat collection at m. 33. The salience conditions emphasizing pitch-class C here—ending the phrase at m. 34 on a melodic C, the repeated pedal point, the sustaining of melodic Cs for relatively longer durations—overwhelm

¹¹ In fact, Browne offers the corollary observation that “a fifth, or fourth, by itself, cannot define a position in a tonal field because it can be interpreted in too many ways”; i.e., “to move by fifth from one note to another, and then by fifth again, is possible six times before a note appears which is not a member of the diatonic set” (1981, 8). While true when the “tonal field” is strictly defined as the diatonic collection arranged as a major scale, this fact hardly prevents listeners from using ic 5 to reach, or attempt to reach, conclusions about tonal focus before the collection is made explicit. Browne himself acknowledges this phenomenon, and the preceding analysis of the Ligeti *Musica ricercata* movement illustrates it. David Butler offers an amendment to Browne’s rare-interval theory: “When time orders of tones within a musical composition are such that tonally meaningful rare-interval patterns are not discernable, a best-evidence response seems to prevail” (1988, 239). See also Vos 1999.

28 *Sonore sans dureté*

32

37

EXAMPLE 6

Debussy, "La cathédrale engloutie" from *Préludes*, Book I, mm. 28–40

any CP cueing provided by the collectional shift, and the result is C mixolydian. The centricity of the next few bars is less certain. The sustained F-major triads of m. 38 may lead some listeners to posit a shift to F centricity at or near the crescendo's peak, while others may cling to C centricity in light of the continuing C pedal. The end of the chorale clearly centers on C, reinforced by a cadential arrival on C and the return of the

white-note collection. In sum, the interaction of diatonic collection and salience criteria gives rise to the mixolydian mode early in this passage, but salience conditions around m. 38 create the potential for centric ambiguity. (An analogous friction between diatonic collection and other perceptual criteria colors the perception of pitch centricity in the Copland song discussed below.)

This list of common CP-cueing manifestations is neither exhaustive nor particularly nuanced. The complexities of tonic induction in CP music alone are such that researchers have not yet reached consensus as to the most appropriate model for describing it (Auhagen and Vos 2000, Vos 2000, Krumhansl 2004). Creating a complete catalog of the manners in which CP cueing might interact with the innovations of later music to project (or obscure) pitch centers would thus be an enormous undertaking—if indeed it is possible at all, given the wide variety of musical contexts in which such interactions take place. The Ligeti movement suggests this issue: because a stand on the dominant is itself a later CP convention, a listener familiar with the convention may begin to suspect that A is functioning as the dominant as salience elements (growth in rhythmic and textural density, register, and dynamics) add emphasis, and thus, potentially, tension to that pitch class. (Does the increasing stress of A make it seem like a more certain pitch center, as demanded by the salience criteria considered alone, or more like a tonal anacrusis *to* a pitch center?¹²) Additional criteria might be added to Example 5 to account for phenomena like this (perhaps a “standing-on-V” amendment, for instance), but it may be more prudent to regard that list as a starting point in evaluating CP cueing’s role and adjudicating its further manifestations on a case-by-case basis. For our purposes, it suffices to recognize the crucial role played by CP conventions in creating a sense of pitch centricity and to be aware of some of the most common such conventions as described above.

The Ligeti work exemplifies a compositional style that draws attention to certain pitch classes so as to imply that they have consequence for the work’s large-scale tonal organization. Our definition of pitch centricity as “the projection of one pitch class into perceptual prominence to a significantly greater extent than other pitch classes” is clunky in this musical context in that two pitch classes use different perceptual criteria to vie for that centric role. But this issue itself leads to a plausible analytic view of the movement’s tonal structure as a unique—even jocular—ambiguity between A and D. An important question that arises from this observation is whether placing perceptual prominence on

¹² Compare this movement to the seventh of Carter’s *Eight Etudes and a Fantasy* for woodwind quartet. In that work, a single pitch undergoes a similar gradual increase in intensity over the first two-thirds of the composition but then gradually decreases in intensity to the end of the etude without ever “resolving” to another pitch. If the listener brings standing-on-the-dominant baggage to the aural experience of this movement, it is undermined by the last part of the etude (or the listener ends up positing an implied pitch center never sounded in the music).

particular pitch classes so as to elevate them in analytic perspectives of the given work's tonal structure is necessarily a manifestation of pitch centrality. In other words, can a pitch class seem important enough to become essential to large-scale tonal organization *without* becoming a pitch center?

We come to this same question by a different route when we consider the phenomenon of musical motion. Several authors have explained CP tonality as a vectored environment in which pitch classes that are selected as “stable” via CP-cueing conditions (often assisted by salience criteria) serve as virtual goals toward which other pitch classes are pointing. The dynamic experience of common-practice music is often—if not universally—described via the metaphor of musical “motion”: *movement* away from tonic, *arrival* at a cadence, interruption of *progress* toward a particular pitch, and so on. Steve Larson goes so far as to call motion an embodied metaphor in regards to CP tonality:

We not only think *about* music but also think *in* music in terms of the MUSIC IS MOTION metaphor. We not only talk about passing tones, we experience them as traversing a path that connects points of departure and arrival. We not only talk about melodic leaps, we experience them as gathering energy, skipping over a more connected path, and landing somewhere. (1997b, 57; emphasis in original)

Larson catalogs three “musical forces,” themselves metaphorical, that contribute to melodic motion: “‘gravity’ (the tendency of an unstable note to *descend*), ‘magnetism’ (the tendency of an unstable note to move to the *nearest* stable pitch, a tendency that grows stronger the closer we get to a goal), and ‘inertia’ (the tendency of a pattern of musical motion to continue in the *same* fashion” (1997a, 102; emphasis in original).¹³

Coupled with the metaphor of motion is one of intention, wherein dissonances and leading tones “want to” resolve to stable tones, or a long appoggiatura “resists” the pull of a nearby stable pitch before “giving in” to its magnetism. Schenker’s conception of *Tonwille*, Victor Zuckerkandl’s “dynamic quality of tone” (1956, 19–21), and Robert Hatten’s “gestural energy” (2004, 115–17) each assign a sense of agency to scale degrees in the CP-tonal field and/or the melodies assembled from them. Pitches and melodies operate in relief to musical forces, now striving against them (fighting gravity by stagnating or reversing course to abort a descent to a stable goal, e.g.), now yielding to their tendencies (coming to rest on $\hat{1}$ at the end of such a descent). This metaphor of intention is also an embodied metaphor inasmuch as we use it to think both *about* and *in* music (Larson 1997b, 57).

¹³ Lerdahl follows the gravitational metaphor further by positing a formula, based on inverse squares, to quantify the level of attraction any scale degree exerts on any other (2001, 163).

The role of the embodied metaphors of motion and intention in musical apprehension is dependent upon, but different from, the stability conditions described as CP-cueing above. If the elements of CP cueing are objective representatives of the sort of pitch-class focus needed for centricity to obtain, then musical motion to and from these foci forms the visceral, temporal experience of centricity. Put another way, the sense that any given music is “about” pitch centricity rests not simply in the relative perceptual emphasis of particular pitch classes via salience or CP-cueing criteria, but also in the experience of the music as movement toward and away from those pitch classes. This last observation would appear to damage the simplicity of the original definition for pitch centricity offered in this essay, in that it allows for a pitch class to be projected “into perceptual prominence to a significantly greater extent than other pitch classes” without becoming a pitch center. The $G\flat_5$ from the first section of “Bali” illustrates: it is favored by several salience criteria, but it is not made “stable” by CP cueing, and thus there is no sense that it is a target pitch to which other melodic tones are magnetically drawn. For the same reason, Webern’s op. 5 no. 3 (cited by Straus 2005 as a first example of pitch centricity) is unlikely to be summarized by a casual listener as a pitch-centric work, even though it starts and ends with salient emphasis of $C\sharp$. The marked, puzzling nature of the $E\flat$ triad at the end of Webern’s op. 7 no. 1 is a product of the music prior to it—there’s no palpable sense in which the rest of the movement is leading toward this (or any) stable event. Does this conclusion necessarily imply that the movement is pitch centric, or that $E\flat$ is its pitch center?

The question of whether a given emphasized pitch class meets the requirements of becoming a pitch center—in light of the musical-forces corollary described above—is different from the question of that pitch class’s significance to tonal structure. Intuitively and subjectively, the $G\flat_5$ does not strike me as especially crucial to a tonal perspective of “Bali.” On the other hand, the $C\sharp$ s of Webern’s op. 5 no. 3 and the $E\flat$ triad of his op. 7 no. 1 seem pregnant with potential tonal importance, perhaps because of their placements at the beginnings and ends of their respective movements. Other analysts or analytic approaches may disagree with these specific characterizations. The larger issue is that, when vectoring toward a pitch class is regarded as a necessary condition for pitch centricity to obtain, a potential distinction between “pitch centers” and “tonally significant pitch classes” emerges. The common casual dichotomy “tonal/atonal”—taken here specifically to mean “centric/non-centric”—rides roughshod over such musical contexts.

The analyses below of movements by Carter and Copland explore the conceptual space surrounding pitch centricity from the two directions suggested respectively by Webern and Ligeti. The first movement of Carter’s Woodwind Quintet, like the Webern

works cited above, creates a non-vectorized environment in which stable pitch events, when they appear, are surprises rather than anticipated goals. Those pitch classes that are favored through perceptual criteria, though, lead to a cogent perspective of the work's form and its tonal structure when considered in relation to one another. The first song of Copland's *Twelve Poems of Emily Dickinson*, "Nature, the gentlest mother," reflects aspects of the centric ambiguity put forth by Ligeti's *Musica ricercata* movement. This piece constitutes a more developed example of the sort of duality suggested by the Ligeti, giving rise to a complex tonal design while still pushing against the notion of a single perceptually dominant pitch center. Considered alongside the briefer analytic vignettes above, these analyses demonstrate the value and shortcomings in affixing the label *pitch-centric*—as defined above in reflection of its common use—to varied musical and analytical contexts, thus illustrating the diversity of practices it subsumes in its common application.

Pitch-class Emphases and Tonal Structure in Carter's *Woodwind Quintet*, mvt. I

David Schiff (1983, 112) describes the two movements of Carter's 1948 *Woodwind Quintet* as "contrasting B minor and B \flat major."¹⁴ This view of the first movement as representing B minor is certainly derived in part from the opening flute melody, which emphasizes B and its dominant; the clarinet's closing of the movement with a solo that ends on B; and the notated key signature of two sharps. Even so, the quintet abounds with dissonant counterpoint, more often suppressing the tendency for any particular pitch class to become perceptually prominent. It is perhaps a result of this pervasive dissonant polyphony that the moments when a particular pitch class is emphasized or dwelt upon become all the more striking to us as listeners. This analysis begins with a catalog of such pitch classes that perceptually pop out of this musical fabric via perceptual criteria, thus marking themselves in the experience of the music. This inventory of stressed pitch classes—whether "pitch centric" is ultimately an appropriate label for this movement—and other pitch events will lead to a perspective of the entire movement's tonal organization.

¹⁴ Schiff's commentary is all but explicitly designed to link the quintet to another composer more typically affiliated with pitch centrality: Copland. Schiff points out that the work is dedicated to Nadia Boulanger, the teacher he and Copland (and many other American composers of pitch-centric music) shared. He paraphrases Carter as saying that "he wrote the quintet deliberately to be the kind of music Nadia Boulanger always wanted him to compose." Schiff further describes the quintet's mode of expression as "a last backward glance—and a distant, even ironic one—at the mild melancholy and witty good cheer of the early 40s" (1983, 112). This reference can be read as referring to some of Copland's best-known work (*Appalachian Spring*, the Third Symphony, *Rodeo*, and *Lincoln Portrait*, all from 1942–46) at least as easily as to Carter's own output from this period.

Example 7 compiles an ordered list of passages emphasizing particular pitch classes in summary notation. They are outlined here with annotations indicating the perceptual criteria from Example 5 providing focus to the indicated pitch classes or events—criteria are identified using letters (“S” for salience criteria, “CP” for CP-cueing criteria) and numbers.

- a) The opening flute melody that subtly favors B (S1, S2, S4, S5, S9, CP2) in a four-sharp diatonic context (CP4) until the D[♯] of m. 6 adds a bimodal flavor
- b) A horn melody, focusing on C and its fifth (S8, CP2), featuring D[♭] (S5, S7) as an upper neighbor before concluding with a further push upward to D[♯] (S5, S7, S9)
- c) A repeating-note motive in the flute that reinforces B further (S2, S3, S4, S5, S7, S8, CP2)
- d) A forte, accented, descending C[♯]-minor triad (S2, S3, S4, S5, S6, CP1) sounded monophonically by the entire quintet
- e) An extended section of pandiatonic play in the five-flat collection (CP4—the indirect relationship with a focal pitch class is discussed below)
- f) A return of the repeating-note motive, this time on C[♯] (S2, S3, S4, S5, S8, S10) followed by a transposition of the secondary horn melody on B (S2, S3, S4, S5, S8, S10) now in the oboe, a repetition of the repeating C[♯]s (S2, S3, S4, S5, S8, S10) in bassoon, and a palpable sinking to a sustained C (S2, S7, S9) in the horn; this leads directly to the recapitulation of the opening flute melody, still centered on B (S1, S2, S3, S4, S5, S8, S9, S10, CP2).
- g) Two recapitulations of the horn melody, first on A and its fifth and then on D and its fifth (S8, S10, CP2); the second statement of this melody is preceded by an extended passage in which the horn meditates on G and F[♯]. The final statement on D, shown in Example 7g, is allowed at last to proceed up a whole step to E[♭] (S5, S7, S9, S10), just as the original melody was allowed to progress upward a whole step to D; this final statement appears below several of the repeating-note motives from the flute, tapping on B but falling twice to A[♯] (S4, S5, S7, S8, S10).
- h) A languid clarinet melody, answered by a series of half-step motives in other instruments before concluding the movement by ascending quietly to B through an E major triad (S3, S4, S7, S9, CP1, CP4)

a) *fl.*
mf cantando

b) *hn.*
mf espr. *p*

c) *fl.*
p *f* *p > pp*

d) *tutti*
f

e) *fl.* *ob.* *etc.*
espr. *bsn.* *mf* *p* *mf*

f) [Pandiatonic play using five-flat collection: mm. 48ff., not shown here]

g) *fl.*
pp
hn. *mf espr.*

EXAMPLE 7

Perceptual highlights from Carter, Woodwind Quintet (mvt. I)

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100

ppp

molto espr.

110

cl.

p espr.

p marc. espr. dim.

rit. poco

EXAMPLE 7

(cont'd.)

From these observations, some of the movement's main tonal preoccupations become apparent. The movement is framed by emphasis on B, and B is granted salient weight several other times through the course of the movement. As is the case with so many pitch-centric and common-practice works (and reflected in criterion S9), this one is organized around the principle of departure from and return to a particular pitch class.

In addition, half-step relationships dominate many of the motives in Example 7. The horn melodies' many pushes upward by half steps, the G/F# horn motive, and the last statements of the repeating-note melody are all examples of this focus upon half-step relationships. Example 7e weaves a descending half-step motion from C# to C to B by juxtaposing motivic materials emphasizing these pitch classes. Another passage merits mention in this regard: while mm. 35–40, shown in Example 8, do not prioritize any particular pitch class, this music—from what will be recognized shortly as the movement's development—distills the half-step preoccupation into a motivic obsession.

Example 9 uses these preliminary observations regarding stressed pitch classes and half-step relationships to build a representation of the movement's global tonal structure. It assembles elements of Example 7 chronologically, using beams to show how these most salient pitch events manifest a motion in pitch-class space by half-step from B to D and then back to B. (Note that these beams are meant only to illustrate the associational half-step connections between these events and should not be regarded as implying any sort of prolongational structure.) Formal designations in this example show how the movement can be regarded in relief to sonata form: the opening flute melody becomes the primary theme; the horn melody, the secondary theme. The recapitulation is easily located at the

The image shows a musical score for four instruments: Flute (Fl.), Oboe (Ob.), Clarinet (Cl.), and Bassoon (Bsn.). The score is written in 3/4 time with a key signature of two sharps (F# and C#). The Flute part begins with a dynamic marking of *p* and features a melodic line with various ornaments and slurs. The Oboe part starts with a dynamic marking of *f* and includes a *cresc.* marking. The Clarinet part begins with a dynamic marking of *p* and has a *cresc.* marking. The Bassoon part starts with a dynamic marking of *mp*. The score is divided into four systems, each containing staves for all four instruments. The dynamics *f* and *f* *intenso* are used in the later systems. The notation includes various note values, rests, slurs, and dynamic markings.

EXAMPLE 8

Carter, Woodwind Quintet (mvt. I), mm. 35–39 (horn tacit)
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The musical score is presented in three systems, each with a grand staff (treble and bass clefs) and a tonal line above the treble clef staff. The first system, labeled 'Primary theme', covers measures 1 to 27. The tonal line above it shows a sequence of chords: B, C#, D \flat , D, and C#. The second system, labeled 'Development', covers measures 40 to 43. The tonal line above it shows a single chord: C#. A text box in the first staff of this system reads 'unpredictable triads (m. 31), then half-step play (m. 35)'. The third system, labeled 'Retransition' and 'Recapitulation (Primary theme)', covers measures 62 to 67. The tonal line above it shows a sequence of chords: C#, C#, C#, and B. A text box in the first staff of this system reads '5-flat pandiatonicism (m. 45)'. Measure numbers 1, 13, 17, 27, 40, 43, 62, 64, and 67 are indicated at the beginning of their respective staves.

EXAMPLE 9

A perspective of tonal structure in Carter's Woodwind Quintet (mvt. I)

return of the primary theme at the original pitch-class level.¹⁵ The movement's pitch focus begins at B, ascending in the secondary theme from C to D \flat and then to D \natural , giving this theme a sense of tonal propulsion as it pushes upward. The exposition ends with a cadential gesture in which the flute steps from B to C \sharp , and the arrival on C \sharp is stressed by an isolated gesture in bassoon that encapsulates the beginning of the descent from D.

This figure may be misleading inasmuch as it suggests that the entire development is focused upon C \sharp . The elements of this section that most saliently project any particular pitch class do stress C \sharp , but these moments are buttressed by other passages that reinforce the overall tonal concerns of the movement. Measures 31–34 feature a showering of unpredictable triadic gestures, succeeded at m. 35 by the half-step play already seen in

¹⁵ The primary theme is internally expanded in the recapitulation. Measures 70–73, which constitute an insertion into the original theme, provide (via triadic references in the flute/bassoon melody) brief stresses of D and then C \sharp —thus creating a reminiscence upon the first half-step descent of the movement's large-scale tonal structure.

a) *p* *mf* *f* (*non troppo*), *leggiero*

b) *p* *mf*

EXAMPLE 10

Carter, Woodwind Quintet (mvt. 1), showing clarinet's transition melody from exposition (mm. 6–9) and recapitulation (mm. 76–79)
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Example 8. The powerful forte C#-minor unison triad (mm. 41–42) is actually preceded by a similar descending D-minor triad in the bassoon and followed by a similar descending C-major triad in the bassoon. This series of triads can be viewed as paralleling the descent from D that has already begun. The final portion of the development is the pandiatonic five-flat section; D \flat is never clearly stressed via perceptual criteria, but this collection's close tie to the development's preoccupation with C#/D \flat is obvious.

Measures 63–68, shown in Example 7e above, constitute the movement's retransition. They spin out a half-step descent from C# through C \natural to B; we see now in the context of the entire movement up to this point that such a descent makes perfect tonal sense as we arrive at the recapitulation.

Other aspects of the work also snap into place given this perspective of its overall tonal structure. The transition separating the primary and secondary themes features the clarinet, as shown in Example 10. The apex of this virtuosic display is C \natural (highlighted with S3, S4, S5, and S7) approached from B, thus heralding the half-step ascent to C represented by the secondary theme. The other striking feature of the clarinet's transition music is the syncopated accent pattern lending weight to E (S3). This E does not figure into the half-step pattern spanning the entire movement, but its presence here sets up another tonal drama to be played out when this music returns in the recapitulation.

Example 10 also shows the clarinet part from the opening of the recapitulation's transition. This music is varied such that the syncopated accents, which have themselves been shifted rhythmically, now outline a chromatic scale starting from F and ascending to G—the accented E was overshoot (by a half step, of course), and the clarinet soars further into registral space seeking it in vain. This divergence from the exposition creates a tonal impetus for the secondary theme to achieve, after an extended effort, the E emphasis that is “missing” from the clarinet's transition music.

Example 11 is a synopsis of some of the salient pitch events from this secondary theme of the recapitulation. Beginning at m. 81, the horn (echoed once by the bassoon) seeks to attain the E that the clarinet “missed” in the transition. The horn's first manifestation of the secondary theme is transposed so as merely to graze E as its lowest note. The flute's countermelody introduces a new motive bracketed in Example 11 (see mm. 83, 88 and 89). This motive seems at first simply to reflect the G that ended the clarinet's half-step ascent at m. 79 (shown in Example 10). Beginning at m. 91, the horn becomes preoccupied with G as well, pitted against its half-step neighbor F#. Finally, the horn reorients itself—using in mm. 95–97 that motive suggested by the flute—so that, when it completes its own half-step progression at m. 105, it attains the previously missing emphasis of E. The flute thus forecasts in its motive the method for linking G

81

fl.

hn. SOLO

f

bsn.

f cantabile, espr.

f cantabile

hn. SOLO

f cantabile, espr.

87

fl.

mp

cresc.

mp

92

fl.

pp

accompanando

SOLO

mf

espr.

99

ppp

molto espr.

EXAMPLE 11

Some salient pitch events form the recapitulation's secondary theme in
Carter, Woodwind Quintet (mvt. I)

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EXAMPLE 12

Another perspective of Carter, *Woodwind Quintet* (mvt. I), with consideration of E

back to the long-awaited E.¹⁶ The linkage of E to the main pitch center of the movement is suggested by the flute's pulsations on B beginning in m. 96. This connection of E with B is subsequently reaffirmed in the movement's final measure *by the clarinet* (shown in Example 7h) with a solo ascent through an E-major triad to its fifth, B—the main pitch center of the entire movement.

Example 12 summarizes the entire movement's tonal structure, taking into account the clarinet's introduction of E in the exposition and the horn's subsequent "rediscovery" of E in the recapitulation. As has been noted all along, this movement's main intervallic preoccupation is the half step. In addition to providing a cohesive perspective of the movement's large-scale tonal organization, this analysis places additional significance on the many surface events that focus upon half-step relationships. The half-step play of Example 8 (near the beginning of the development) is but one instance of the stress placed upon half steps to create the characteristic flavor of this musical surface. Similarly, the framing of the quintet's other movement with B \flat allows for the entire work also to be organized around a half-step relationship at the largest level (B/B \flat).¹⁷ Apprehension of local pitch events as privileging either specific pitch classes or specific intervallic relationships thus gives rise to a multi-leveled, unified perspective of the movement's tonal organization.

Considered strictly by the definition offered near the beginning of this essay, the pitch classes highlighted in the discussion of Example 7 are pitch centers. In addition to being perceptually prominent, as demanded by that definition, they contribute to the sense of global tonal coherence described above. In contrast to these rarer moments of focus on particular pitch classes, however, the movement is typified by angular and quick-moving lines cast in complex, dissonant counterpoint, minimizing the potential

¹⁶ The flute further foreshadows the ultimate motion from E back to B when, in m. 89, it presents on the second beat a transposition of the same motive fusing E with a B triad.

¹⁷ The flute's repeating-note motive of m. 96–102 foreshadows the structural importance of this very half-step relationship by prominently juxtaposing B with A \sharp (i.e., B \flat).

for any pitch class to obtain perceptual priority. The principles by which particular pitch classes emerge in perceptual, and thus analytical, profiles of a work apply to a wide variety of music, some of which ironically might not be readily characterized as pitch-centric. Ultimately, whether a particular listener or analyst chooses to call this movement by Carter “pitch-centric” (or “tonal” in the vernacular tonal/atonal dichotomous sense) is less important than recognizing the myriad of musical and analytical riches that exists by skirting the connotations we often assign to that phenomenon. In this light it might be profitable to conceive of pitch centrality along a continuum rather than as a binary condition, as I will suggest at the end of this essay.

Centric Ambiguity and Tonal Structure in Copland's “Nature, the gentlest mother”

The particular structural ambiguity of the opening movement from Ligeti's *Musica ricercata* is not unique to compositions that are so severely limited in their gamuts of pitch classes. Many of Copland's works create similar dualities between pitch classes related by interval class 5 by stressing them concurrently via salience and CP-cueing factors.¹⁸ One such example is “Nature, the gentlest mother,” the first song from his *Twelve Poems of Emily Dickinson*.¹⁹

This song suggests, both poetically and musically, a pastorella, and in fact Copland includes the instruction “pastoral-like” in the piano part near the beginning of its second section. Dickinson's poem depicts the interactions between the personified Nature and her “children,” i.e., the flora and fauna of an idyllic outdoor setting. Formally, the song can be construed as an eight-measure introduction followed by an A–B–A' design with sections beginning at m. 9, m. 27, and m. 44 respectively. Each section sets two of Dickinson's six stanzas. Example 13 shows the piano's introduction.

This music places much emphasis upon B \flat . The opening “bird call,” repeated once, lands on B \flat as the root of a major triad (invoking criterion CP1). A two-voiced chorale featuring double-dotted rhythms begins in m. 2. While the bass's leaps down to the thirty-second-note G $_4$ s are admittedly not typical in CP harmony, this chorale's opening gestures otherwise suggest a V 7 –I progression in B-flat (CP3). The chorale ends at m. 5 with an open fifth on B \flat (CP2), and the bird call immediately returns at transposition levels emphasizing the pitch classes of this fifth (B \flat and F) (CP2). An incongruous chirping on

¹⁸ In this regard see Kleppinger 2010 and 2011.

¹⁹ The song cycle was completed in 1950; manuscript evidence (Copland 1950) suggests that this song was finished in October 1949.

Quite slow ($\text{♩} = \text{circa } 60$)

mf (crystalline) *p* *espress. mp* *poco rit. mp*

p *a tempo p*

mp *mf* *pp* *p*

sust. Ped.

EXAMPLE 13

Copland, "Nature, the gentlest mother," mm. 1–8

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C_6 interrupts at m. 6 (stressed via S3 and S5). The thirty-second-note twitters of mm. 6–7 abruptly stop on A_5 , suggesting a delayed leading-tone resolution in light of the previous B_b emphasis and the still-ringing F_4/B_b_4 below (S5, CP2, and CP3; the lack of any other event after the A in m. 7 and the inevitable ringing of the A also suggest S7 might apply). This impression is confirmed as the introduction concludes with sustained B_b s (S2, S5, S9), suggesting Nature's expansiveness in the four empty octaves separating them.

The foregoing perspective on this passage certainly leans on the raw perceptual prominence of B_b , while also pointing out vestiges of functional harmony that support B_b centricity—the opening of the two-part chorale and the “hanging” A_b s of mm. 6–7 evoke

traditional tonal practices (criterion CP3) to reinforce B \flat . However, listeners experienced with CP tonality may aurally reconcile this entire introduction as a “prolongation” of the dominant of E \flat , thanks in no small part to the frequent (though inconsistent) appearance of A \flat , the seventh of V 7 in E-flat major. (Indeed, when all this phenomenal emphasis of B \flat finally gives way at m. 12, it is to a first-inversion E \flat major-seventh chord.) Such conflicting conclusions about the centrality of this passage result from the favoring of different musical features. The latter perspective hinges upon criterion CP4, considering the appearances of A \flat as cues to expect that B \flat is acting as a dominant and will eventually give way to the “real” pitch center, E \flat .²⁰ To a given listener, the introduction may be centered on E \flat (with lots of attention to its dominant), centered on B \flat (in an inconsistently modal way), or ambiguously wavering between the two, but the element with the greatest consequence for the tonal structure of the entire song is this dual emphasis of E \flat and B \flat .

This song’s conclusion, shown in Example 14, more directly projects E \flat using salience criteria, though even here it is colored by B \flat emphasis. Measure 51 begins with deep, sustained B \flat s in the piano’s left hand (S2, S5, S7, S9), reinforced momentarily by another B \flat and its third in the right hand’s prominent register (S4, S5, CP1). Simultaneously, however, the vocal melody descends through $\hat{1}-\hat{5}-\hat{1}$ in E-flat (S3, S4, CP2), thus reflecting its text, “bending from the sky.” The piano’s left hand reinforces this attention to E \flat with wide leaps between the members of the E \flat -major triad (CP1), and the right hand’s chain of diatonic fifths and thirds also moves through this chord (S5, CP1 reinforced by T4). After some intermediary diatonic collections in mm. 53–56 (to be explored below), focus settles on B \flat at m. 57 (CP1 reinforced by S7). The tempo slows, and the vocalist deliberates on members of the B \flat triad before ascending to F $_5$. At “Her golden finger on her lip,” Nature is about to hush the chatter of her children, represented in the gradually slackening rhythmic figuration of the piano part. The G $_5$ at “silence,” which constitutes the apex of the song’s vocal line, ushers in two measures of stasis on pure E \flat -major harmony (CP1 reinforced by S7; the vocal zenith also invokes S5). E \flat thus symbolizes the great tenderness of this powerful yet “gentlest” mother as she causes silence to descend upon her creation.

²⁰ These contrasting perspectives are encapsulated in the literature. Larry Starr says “we may meaningfully call ‘Nature, the gentlest mother’ a song ‘in’ E-flat and pinpoint the manner in which its music establishes, moves away from, and returns to this E-flat pitch center” (2002, 35) while Robert Daugherty suggests that “although the key signature fits E-flat major, the consistent emphasis on B-flat makes it more likely that the introduction and A sections of the piece are in a transposed mixolydian [i.e., centered on B \flat]” (1980, 35). Wilfrid Mellers hears the work as “ambiguously between E flat major and the Mixolydian mode on B flat” (2000, 8). While composer intent is beyond the reach of this study, Copland’s sketches for this song cycle include a page on which he catalogs what appear to be his own conceptions as to the pitch centers of all twelve songs. For “Nature,” his indication is neither “B \flat ” nor “E \flat ,” but “E \flat -B \flat ” (1950, 139), suggesting that these pitch classes’ duality, described in the present discussion, reflects the composer’s own notions.

50 *mp* *moving forward* - - - - - ($\text{♩} = 69$)

Then, bend - ing from the sky, With in - fi - nite af -

mp

Ped * Ped *

54

fec - tion And in - - fi - ni - ter care Her

Ped * Ped * Ped *

57 *gradually slower*, *p a tempo* ($\text{♩} = 69$)

gold - en fin - ger on her lip — Wills si - lence ev - 'ry - where, —

Ped * Ped * Ped (no Ped.)

EXAMPLE 14

Copland, "Nature, the gentlest mother," mm. 51–67 (cont'd. on next page)

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63

pp

Wills si - lence ev - 'ry - where.

pp *p* *ppp*

pp *p* *ppp*

pp *p* *ppp*

EXAMPLE 14
(cont'd.)

The final measures fuse previous E_b and B_b references into a single entity. The singer's "Wills silence" of mm. 63–64 oscillates between $\hat{3}$ and $\hat{1}$ in B-flat major, recalling the song's very first vocal line at m. 9 (S8, CP1). This is accompanied by the widely-spaced, sustained B_b s that also ended the work's introduction and heralded that opening vocal line (S2, S5, S7, S10). Even as those B_b s ring out, the E-flat piano music from mm. 60–61 is repeated more deliberately in mm. 65–66 (S7, S8, S10, CP1). Capping off this simultaneous assertion of B_b 's and E_b 's importance is the singer's ultimate B_b_3 (which, of course, appears in both triads) and a final reminiscence of the opening bird call focusing on B_b in the piano's highest register (S9, S5, CP1).²¹ The B_b focus of m. 57 is thus blanketed with the overwhelming "silence" represented by E_b at mm. 60–61. This E_b silence then permeates the rest of the song's conclusion, reflecting its universality ("silence *everywhere*"). The poetic introduction of the natural world, and Nature herself, coincided with B_b focus earlier in the song, but that " B_b -ness" is muted at the song's (and poem's) conclusion by the "silence" of E_b . Whether one apprehends this conclusion as focused on B_b , E_b , or both (and there are compelling reasons for each perspective), the superimposition of B_b and E_b via various salience and CP-cueing criteria weaves a compelling connection to the song's text.

This B_b/E_b duality frames "Nature" in a global way, flirting with the notions of pitch centricity without definitively projecting a single pitch class above all others. Like Ligeti's *Musica ricercata* movement, this music invokes perceptual criteria so as to foreground issues of centricity without epitomizing the definition provided for it above. Whether

²¹ Starr aptly points out that this may be the "too impetuous bird" referenced earlier in the poem, here still playfully resisting Nature's call for silence (2002, 57).

EXAMPLE 15

Downbeats in “Nature, the gentlest mother,” mm. 51–57, creating chain of sixths

we describe the role of $B\flat$ and $E\flat$ in this song as “pitch centers,” “pitch-class emphases,” or with some other label, it seems essential to take these pitch classes’ prominence into account in an analytic perspective of the entire song’s tonal organization. In this case, a linear connection between $B\flat$ and $E\flat$ in the song’s conclusion suggests a harmonic pattern that further unifies the work’s three sections with one another and with the poem they set.

When the pitches sung on each downbeat of mm. 53–57 are joined with the piano’s bass notes, a series of descending harmonic sixths results. Example 15 illustrates this series and joins to it the preceding $E\flat$ emphasis suggested in mm. 51–52. Following the lowest $B\flat$ s struck in m. 51,²² the piano then twice arpeggiates a first-inversion $E\flat$ -major triad by the end of m. 52, suggesting the potential for linking these two measures with the descending-sixths series that follows. The entire series, $E\flat$ – $D\flat$ – $C\flat$ – $B\flat$, connects the elements of the work’s dual pitch-class focus with the ordered half-step pattern $\langle -2 -2 -1 \rangle$.

This $\langle -2 -2 -1 \rangle$ series is in fact a varied repetition of mm. 19–24 from the end of the first A section, shown in Example 16. Measures 19–20 parallel the presentation in mm. 51–52 of a first-inversion $E\flat$ arpeggio over $B\flat$ octaves. This $E\flat$ triad is again followed by two measures of $D\flat$ emphasis (mm. 21–22) and two measures of $C\flat$ emphasis (mm. 23–24). But at m. 25 $C\flat$ yields not to $B\flat$ but to the one-sharp diatonic collection. Via manifestations of the bird-call motive and the left-hand first-inversion figure (S8, CP1), this measure points vaguely to C even as the singer emphasizes a dissonant D (S2, S4, S7). In m. 26 the bird call shifts to a focus on G, suggesting that these two bars together constitute a hazy amalgamation of ambiguity between C and its fifth. Example 17 summarizes this passage.

²² The piano’s $B\flat_1$ is represented in the orchestral version by a contrabass pizzicato, doubled by the harp, which will decay as mm. 51–52 continue just as it does in the piano. (The $B\flat_2$, though not as prominent as that an octave lower, is sustained by cellos into m. 52.)

18 *mf* *moving forward*
In for - est and the hill By trav - ell - er is

22
heard Re - strain - ing ramp - ant squirrel or

25
too im - pet - u - ous bird.

EXAMPLE 16

Copland, "Nature, the gentlest mother," mm. 19–26

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The musical score for Example 17 consists of two staves, Treble and Bass, in a key signature of two flats (B♭ and E♭). The measures shown are 19, 21, 23, and 25. In measure 19, the Treble staff has a whole note G4 and the Bass staff has a whole note E3. In measure 21, the Treble staff has a whole note F4 and the Bass staff has a whole note D3. In measure 23, the Treble staff has a whole note E4 and the Bass staff has a whole note C3. In measure 25, the Treble staff has a whole note D4 and the Bass staff has a whole note B2. The bass line is labeled with (E♭), (D♭), (C), (C... G). The notes in the Treble staff are connected by a dashed line, and the notes in the Bass staff are also connected by a dashed line.

EXAMPLE 17

Chain of sixths thwarted in "Nature, the gentlest mother," mm. 19–26

The sequence of mm. 19–26, $E_b-D_b-C-C_b$, manifests the half-step motion $\langle -2 -2 +1 \rangle$. As described above, the reprise of the A section reverses the direction of the last interval ($\langle -2 -2 -1 \rangle$), leading to the final arrival on B_b (and its ultimate confluence with E_b). In this light, the harmonic motion of the intervening B section, given in Example 18, is remarkable. The vocalist's entrance at m. 30 momentarily continues the emphasis on F begun by the piano three measures earlier (not shown) (S2, S5, S9, CP2). Then, the left-hand accompaniment, which since m. 21 has focused on the first-inversion triadic figure, drops to outline an E_b -major chord at m. 31. The bird-call motive brings further attention to E_b and its fifth, B_b , while the singer adds a mixolydian-tinged D_b before settling on B_b herself in m. 32.

Starting from the G emphasis of m. 26, the whole-step shifts downward generate the series of triadic roots $G-F-E_b$. This series thus far parallels the whole-step descent $E_b-D_b-C_b$ ($\langle -2 -2 \rangle$) seen in both A sections. Example 19 illustrates that, if the B section were to continue to descend by half step, creating the series $G-F-E_b-D$ ($\langle -2 -2 -1 \rangle$), it would replicate at a different transposition level the final A section's descent $E_b-D_b-C_b-B_b$. On the other hand, if the B section moved *up* a half step from E_b to E_b^\sharp , the resulting series $G-F-E_b-E$ ($\langle -2 -2 +1 \rangle$) would reflect the intervals created by the first A section's $E_b-D_b-C_b-C$.

Example 20 summarizes what does happen in the B section. The top staff collects the singer's pitches; open noteheads highlight triadic roots in that stratum. At m. 33 the left-hand first-inversion figure moves down by half step to outline a D-major triad (with the typical appoggiatura figure that has characterized this accompaniment throughout). Simultaneously, the piano's right hand and the vocal part confine themselves entirely to two pitch classes, B and E, which readily manifest a focus on E via the perfect fourth they outline. The move away from E_b at m. 33 thus embodies half-step motion in *both*

29 *Faster* (♩ = 92)

mp

How fair her con-ver-sa-tion _____ A sum-mer af-ter-noon _____

p *mp* *p* *mp* *p*

33 *more brightly* *mf*

Her house-hold, her as-sem-bly _____ And when the sun goes

mf

36

down _____ Her voice a-mong the aisles In -

EXAMPLE 18

Copland, "Nature, the gentlest mother," mm. 30–37

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A: (mm. 19–25)	E \flat – D \flat – C \flat – C < -2 -2 +1 >		
B: (mm. 26–34)	G – F – E \flat – <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>– E (...+1>)</td> </tr> <tr> <td>– D (...-1>)</td> </tr> </table> (< -2 -2...)	– E (...+1>)	– D (...-1>)
– E (...+1>)			
– D (...-1>)			
A': (mm. 51–59)	E \flat – D \flat – C \flat – B \flat < -2 -2 -1 >		

EXAMPLE 19

Sizes and directions of tonal shifts in each section of Copland, “Nature, the gentlest mother”

(bird-call motives)

measure: 26 27–30 31–32 33–34 35–36 37 38 39 40–43 44

(G) F E $\left\{ \begin{array}{l} E \quad A\flat \quad A\flat \quad A\flat \quad (G\flat) \quad A\flat \quad A\flat \\ D \quad D\flat \quad C\flat \quad B\flat \quad B\flat \quad A\flat \quad (C\flat) \quad B\flat \end{array} \right.$

EXAMPLE 20

Pitch events in Copland, “Nature, the gentlest mother,” mm. 26–44

directions, reflecting the < -2 -2 +1 > of A and the < -2 -2 -1 > of A \flat concomitantly.²³ The contrasting pitch series of the surrounding A sections are here balanced in the song’s middle section²⁴ by its inclusion of both series.

²³ The *perception* at m. 33 of two simultaneously emphasized pitch classes through conflicting triadic references is problematic. As already shown in the opening and closing measures of this song, ambiguity can result when perceptual principles stressing multiple pitches manifest simultaneously. To this listener, the relative prominence of the voice and the piano’s upper register lend more weight to perception of E as locally significant, shaded by the incongruous left-hand figure. This view is reinforced in subsequent measures as the voice maintains focus on a single pitch for some time, thus drawing greater attention to itself, while the left-hand figure continues to descend through a series of triads.

²⁴ In fact, m. 33 is very nearly the midpoint of the song’s 67 measures.

A poetic association can be made with this treatment of the sixth sequences. The final descent $E\flat-D\flat-C\flat-B\flat$ in A' comes to represent Nature and her gentle but firm governance as she silences her children. In the first A section, by contrast, the “too impetuous bird” is responsible for the upward inflection of $C\flat$ to $C\sharp$. As Nature converses with her “household” and “assembly” in the B section, it is only fitting that her half-step descent and the half-step ascent of her creatures (represented by that outspoken bird) appear together. The B section’s faster tempo and increased rhythmic activity reflect this aspect of the text directly; the conversation is lively with chatter. The song’s treatment of tonal shifts through m. 33 symbolizes that same facet of the poem in a deeper, if more abstract, manner. In any event, the lower staff of Example 20 shows the parallel sixths permeating the B section, creating a smooth tonal link with the $B\flat$ octaves that begin the reprise of A at m. 44. The descending harmonic sixths that we first observed linking $E\flat$ with a first-inversion $B\flat$ -major harmony in A' are here extended via repeating half steps to arrive at the “root-position” $B\flat$ that begins A'.

In the case of this Copland song, the duality of $E\flat$ and $B\flat$ in the framing measures provides an analytic seam by which to explore the music’s harmonic processes, its formal organization, and its reflection of the poetic text. Whether “pitch center” is the best epithet to attach to either $E\flat$ or $B\flat$, salience conditions and CP cueing mark these pitch classes and thus suggest contextual tonal concerns for the piece—realized by the repeated attempts to link $B\flat$ and $E\flat$ via a specific pattern of harmonic sixths and the invocation of that pattern to spin out the harmonies of the central B section.

Conclusions

The initial definition offered for pitch centrality in this essay—“the projection of one pitch class into perceptual prominence to a significantly greater extent than other pitch classes”—was selected both for its seeming simplicity and because of its congruence with its common use in analytic discourse, whether in casual discussion or in recent pedagogical writings such as Straus 2005 and Roig-Francolí 2008. But the above analyses highlight potential gaps between this definition of pitch centrality and what we might intend for the term to connote. The pieces by Ligeti and Copland each foreground a pair of pitch classes, and the musical relationships between them, via the perceptual processes that our definition implies should privilege only one pitch class. Carter’s quintet movement is typified by non-centric polyphony, minimizing any sense of musical motion to or from some point of stability, yet is studded here and there with perceptually emphasized pitch classes. And Bartók’s “Bali” demonstrates a conceptual tonal focus on a particular pitch class that has virtually no role in the listener’s apprehension of the music.

Is it reasonable to call a work “pitch centric” if we cannot identify a single, supreme pitch center with certainty? Does pitch centricity obtain if the work only occasionally thrusts a particular pitch class into our consciousness as we listen? Are we justified in referring to an axis of symmetry as a pitch center if that axis figures not at all in our aural experience of the work? Is the perception of “musical forces” such as gravity and magnetism a necessary condition for pitch centricity to exist? Finally, should the various roles of these pitch classes in the respective works’ global tonal structures factor into the use of the epithet “pitch center?” I readily admit that the premise of strict adherence to my starting definition is something of a straw man and that it is patently wrong to suggest that music analysis typically is ill-equipped to address unique tonal contexts like these. But this discussion draws attention to the ways in which the pieces considered here, like so many others, generate significant aesthetic interest by playing near the boundaries marked out by the theoretical construct of pitch centricity.

It may be helpful to conceive of a set of musical characteristics that allows us to place a given work toward the middle or the periphery of a pitch-centric style. Leonard Meyer provides a context for describing such a style. Meyer tracks, in romantic-era music and then in non-centric music, the increasing reliance upon what he calls secondary parameters (non-syntactic musical factors such as dynamics and relative note lengths, roughly corresponding to Lerdahl’s salience criteria): “The nontonal [read non-centric] music of the twentieth century provided no criteria for syntactic closure....As a result, the importance of secondary parameters in shaping musical relationships increased very significantly” (1989, 340).²⁵ The approaches to pitch centricity surveyed in the analyses above also depend a great deal upon secondary parameters—perhaps more so than the functional, historically-established relationships Meyer identifies as primary parameters (described above as CP cueing, reinforced by the vectoring of musical space through what Larson calls “musical forces”). In contrast to perceptually non-centric music, however, pitch centricity after the common-practice era does not discard the primary parameters of CP music entirely. While the listener can no longer assume that these primary parameters are always in force, their function as signposts pointing to particular pitch classes remains a characteristic feature in the twentieth-century music studied here.

More broadly, Meyer’s primary parameters seem to serve as perceptual indicators that a given post-CP piece is “about” pitch centricity in the first place. Ligeti’s juxtaposition of A with D in the *Musica ricercata* movement is perceptually enriched

²⁵ Lerdahl suggests that we experience atonal music through direct engagement with the secondary parameters, and that “the absence of stability conditions [primary or syntactical parameters] makes salience cognitively all the more important. I argue that listeners organize atonal surfaces by means of it. As a result, atonal music collapses the distinction between salience and structural importance” (1989, 73).

because of the historical context surrounding ic 5—we might still wonder about the main tonal focus of this music if the concluding Ds were replaced by Cs, but ending the movement with D foregrounds the issue of pitch centrality. Carter’s use of triads and ic 5 amid the dissonant, bustling landscape of his quintet also leads us to consider this music’s organization around specific pitch classes. On the other hand, the absence of CP cueing from the first section of “Bali” severs a tie with this crucial aspect of historical practice and thus contributes to the suspicion that this music is simply not concerned with pitch centrality in the same way. CP cueing is not needed for pitch centrality to emerge, but the common-practice era’s primary parameters have a unique power to privilege centrality as a perceptual—and thus analytical and stylistic—concern in a post-common-practice-era context.

Inasmuch as it is possible to generalize about a “pitch-centric style” from this small sample, we might say that the works surveyed by Ligeti, Carter, and Copland are more representative of that style, while “Bali” falls at its edge. It is interesting to note that these first three works were completed within five years of one another (1948–53; “Bali” is from 1937²⁶). Thinking about similar works from the 1930s and 1940s by Bartók, Copland, Hindemith, Stravinsky, and others suggests that this style reached an apex in the years surrounding World War II. The present sample comes from the end of this period. If early non-centric music (such as Schoenberg’s Third String Quartet, cited by Meyer) follows the trend of romanticism in leaning more and more upon secondary parameters for “shaping musical relationships” (Meyer 1989, 340), then this later repertoire welds these non-syntactical criteria back to residual elements of CP syntax, allowing for expression of a historical component of CP tonal structure (the pitch center) without adhering to its other conventions.

This essay has explored some ways in which music of the last century engages the perceptual and analytical issues surrounding pitch centrality without fully embodying them. Such friction between musical practice and theoretical construct is, of course, a failing of neither. But to the extent that we think of the taxonomic umbrella of pitch centrality as extending over compositions like those discussed above, we must recognize the potential distance between this term’s common meaning in its simplest applications and what we intend it to mean—what we *want* it to mean. The definition invoked early in this essay might provide a crude benchmark against which to measure specific musical circumstances. When viewed in relief to the diverse spectrum of compositional approaches following the common-practice period, however, the advantages of a more nuanced conception of pitch centrality become clear. Depending upon the understanding of this phenomenon held by a particular musician or analyst, the relevance of “pitch

²⁶ This date of composition is ascribed by Vinton 1966.

centricity” to a given musical context is a product of several perceptual and theoretical factors, including relative salient emphasis of pitch classes, the favoring of particular pitch classes via CP-cueing criteria, the sense of musical motion to and from particular pitch classes, and the roles of particular pitches or pitch classes in perspectives of global tonal structure. As the music considered here illustrates, these factors intersect with one another to greater or lesser degrees in various musical contexts, suggesting that it may be more fruitful to conceive of pitch centricity as existing along a continuum from more- to less-involved with these factors, rather than a black-and-white, “is-or-is-not” phenomenon. My goal here has not been to prescribe an inevitably subjective threshold below which pitch centricity does not obtain, but rather to encourage greater clarity in analytic discourse about the symbiotic relationships among this phenomenon, tonal structure, and aural experience.

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