

Chords, Scales and Voice Leading: Defining Harmonic Flavour in Late Nielsen

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Introduction

“Just as important, though hardly acknowledged in musicological studies,” writes David Fanning in his entry on Carl Nielsen in *Grove Music Online*, referring to the body of work devoted to the study of large-scale tonal structure spawned by Robert Simpson’s seminal work—“Just as important,” he says, “though hardly acknowledged in musicological studies, is the interpenetration of modal and tonal elements, which accounts for much of the characteristic flavour of Nielsen’s harmony and which reaches a peak of subtlety in the Fifth Symphony.”¹

In this paper I attempt to define this “characteristic flavour” by identifying at least some of its ingredients. I do so by augmenting observations already made by Fanning, Michael Fjeldsøe and others. My analytical approach is informed by Dmitri Tymoczko’s book, *A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice*, published earlier this year.² Using Tymoczko’s scalar approach as my starting point, I examine the interaction of chords, scales and voice leading in passages from Nielsen’s Fourth and Fifth Symphonies and from the Clarinet Concerto. I identify not only which scales seem to be operative at any given moment (sometimes more than one) but *how* Nielsen moves from one to the next via efficient chordal or scalar voice leading, and how these scales relate to one another in tonal space—what Tymoczko means by “geometry”.

¹ Grove article on Nielsen. [citations in this draft are incomplete]

² Tymoczko, Oxford 2011.

1. Modulation to a Remote Key (Symphony 4/II, opening)

The second movement of Nielsen's Fourth Symphony opens with a charming tune for woodwinds accompanied by chords easily analyzed using functional harmonic analysis. The music unfolds with such grace, with such fluidity, that hearing the theme's third statement in Db major (b. 451)—the key furthest removed from G major—catches one by surprise (**Figure 1a**).

[PLAY Fig. 1a]

How did we get from G to Db? And why does it matter?

It matters because it provides an example of a deftly-executed modulation to a remote key over a short time span. As we shall see, Nielsen extends this modulatory impulse to non-functional chord progressions as well—and even to collections.

In the theme's first statement (bb. 424-34, the last few bars of which are shown), Nielsen flattens the third, sixth and seventh scale degrees, turning the operative scale from G major to G natural minor. This is modal mixture—the borrowing of pitches from the parallel minor—pure and simple.

The theme's second statement (b. 445) cancels these alterations, returning to G major as if nothing happened.³ Five bars into this second statement (b. 439), however, Nielsen sends the theme into a new melodic direction that, as it turns out, also takes a new harmonic twist. The deceptive cadence at b. 441 abruptly reintroduces b3 and b6; b7 follows in the next bar. This time the lowered pitches initiate a process that dislodges the tonic.

The stop at Bb is brief: in bars 447-8, the clarinet introduces Ab and Gb. To this the flute adds a Db in b. 449, completing the transformation of the operative scale to Db major.⁴

Figure 1b summarizes the three-stage flatwards drift on a pitch clock.

³ The leading tone is restored one bar earlier.

⁴ An Fb and Cb are thrown in for good measure thereby flattening all seven diatonic pitches, though these last two functioning as mere chromatic tones.

2. Non-Functional Chord-First Modulation (Clarinet Concerto, b. 533ff)

This passage, while unremarkable in itself, provides a useful reference point to which may be compared more unconventional modulatory techniques. Consider the lovely Adagio at b. 533 in the Clarinet Concerto (**Figure 2a**). [PLAY Fig. 2a]

Though the harmonies consist of conventional triads and seventh chords, the music's chromatic nature resists functional harmonic analysis. Resembling free-flowing Renaissance polyphony, extended by nineteenth-century sonorities, the music seems to follow Max Reger's dictum that "any chord can follow another chord".⁵

Figure 2b shows that despite intense chromaticism the chordal voice leading is remarkably efficient, meaning that each voice, if not stationary, moves only by small distances.

Although the melody's falling-third incipit (marked *x*) serves as a rough guide to the changing key areas, reinforced by plagal relationships, it seems more productive to describe the gradual and clearly perceptual flatwards shift as a modulation among *collections*. In other words, in the absence of functional harmonic reference points or other means to establish centricity, we ought to pay more attention to macroharmony, i.e. to the pitches emphasized in any given slice of music.

The chords in the first two bars (bb. 533-4) lean towards the B diatonic collection (its G# mode to be specific). I say "lean" because the D/D# is what Tymoczko calls a "mobile pitch", as is C#/C.⁶ Bar 535 leans towards D diatonic (B minor). Bar 536 moves to G diatonic, first centred on G, then on E. In bar 538, the journey flatwards continues with the introduction of Bb on the second beat and Db and Ab on the third. The downbeat of bar 7 is an Eb minor chord whose Eb and Gb complete the emerging Db diatonic collection.

⁵ Cited in Daniel Harrison's book on chromatic harmony.

⁶ Tymoczko, p.?

Figure 2c summarizes the flatwards trajectory of the macroharmony. Within seven bars, Nielsen comes two notches shy of completing a full circle. In the very next bar (b. 540), he inches closer: with Bb reinterpreted enharmonically as A# we find ourselves in the world of F# diatonic (D# minor). Bar 541 closes the loop, bypassing B diatonic and settling in E diatonic (with a brief allusion to B diatonic).⁷

One of the compositional challenges of hyperchromatic music based on tertian chords is negotiating harmonic tension and relaxation in a kaleidoscopic sound world. In this passage, Nielsen offers a solution to this problem: the gradual flattening of the macroharmony lends the passage a sense of *direction*.⁸

3. Modal Interchange & Polymodality (Clarinet Concerto, opening)

We now turn to the more linear-driven, fugato opening of the Clarinet Concerto. The cellos and basses introduce an eight-bar subject in F major, answered by the first bassoon and violas in the dominant. At bar 17 the clarinet enters with the subject back in F (**Figure 3a**).

[PLAY Fig. 3a]

Although the subject begins unambiguously in F, soon scale degrees 3, 2 and 5 are flattened, darkening the underlying scale to F locrian (bb. 3-4). The immediate restoration of C and A in the next two bars, however, tilts the scale back to major. But the pendulum swings back flatwards in the last two bars. The theme's modal shading therefore alternates between relative brightness (major) and two shades of darkness (locrian and phrygian).

The real answer, by definition a strict transposition, oscillates among the same modes. The counterpoint, while initially reinforcing the new key of C (bb. 9-11), fails to darken with the

⁷ The final oscillation between B diatonic and E diatonic could be described as an arc on the pitch clock. See Fanning's book on the Fifth Symphony.

⁸ Adagio in Symph 5/I (b. 290 ff) is another example: from G dia to B dia but flatwards!

subject at b. 12. The polymodal clash—one tonal centre, two or more superimposed modes—continues, though reversed, in bars 13-14. By phrase end, the two strands settle in darkened, though not exactly corresponding, modes.

The tension created by the sounding of two modes simultaneously takes on a harmonic, rather than linear, form in the course of the clarinet's presentation of the subject. **Figure 3b** shows the chord progression, built on an F pedal.

There are several ways to interpret the harmony in bar 20. Stacking all the principal pitches together produces an F7 chord with tertian extensions b9 and #11. Or one might hear a polychord formed by F major and B major (which is how Nielsen spells it)—and which happens to correspond to a transposition of Stravinsky's famous Petrushka chord. What's more important, however, is to appreciate that this sonority is the *verticalized* equivalent of the juxtaposition of the same two modes in the subject itself.

4. Mobile Pitches & Oscillating Macroharmony (Fifth Symphony, opening)

One of Nielsen's great achievements is to have refreshed tonality in such a natural way as to make the listener hardly notice its newness. Such is the case with the much-discussed opening section of the Fifth Symphony: our ears become mesmerized by the relentless pedal over which float clouds of undulating figures that come and go (**Figure 4a**). [PLAY Fig. 4a]

Pinning down the key of this passage has been the subject of much debate⁹ and is usually accompanied by the obligatory quoting of Nielsen's now-famous dictum that, "We should once and for all see about getting away from keys but still remain diatonically convincing".¹⁰

Well, why not take Nielsen literally and do away with keys in our *analysis* as well?

⁹ Fanning, Simpson?, Ottaway?, Devoto? et. al.

¹⁰ Cited in Fanning (S5 book).

Figure 4b summarizes the changing macroharmony. Each row lists the pitch classes present starting at the corresponding bar and identifies the implied collection. Collection does not imply tonic, so C diatonic could just as well be described as A natural minor.

Arrows indicate voice leading, not necessarily between notes in the same voice, but more generally between the collections in relatively small chunks of music. In bars 5-9, E is flattened then raised, then flattened again. D/Db is another such mobile pitch (bb. 12-16). In both cases, the flattening of a pitch class temporarily moves the macroharmony gently out of diatonic space. In other words, tension and release—or at least, harmonic contrast—is taking place at the level of macroharmony.

At just a semitone apart these collections could not be nearer to one another, making for exceptionally efficient voice leading. The pattern of arrows in the table also makes plain the quasi-sequential effect: a tugging downwards on E, echoed by the same on D; then, in both cases, the flattening sticks.

Bars 17-19 have a transitional character. The introduction of F# (=Gb) and Ab creates a *pivot* collection that smoothes the way to Cb diatonic, that blustery *fortissimo* descent in bar 20.

The violas, abruptly swept away by the bassoons, surface almost immediately, sputtering, before resuming their quiet bobbing on C-A. Two new strands now enter, first in dialog, then superimposed. While the horns imply D diatonic {D,E,F#,G,A} (b. 23) and the flutes, C diatonic {C,D,E,G} (b. 25), the two strands combine, with the viola pedal, into a macroharmony one pitch shy of the complete G diatonic collection (the B arrives at b. 35). While the bassoons shifted the initial macroharmony flatwards, the horns and flutes not only restore C diatonic neutrality but shift it slightly sharpside. By b. 36, however, the flutes' resolve weakens: the macroharmony slides flatwards again, now to F diatonic.

5. Superimposed Scales (Fifth Symphony, First Movement, bb. 145-63)

[skipped Figure. 5a in this presentation]

The tail end of the D-F pedal section in the Fifth Symphony (bb. 145-63) features a melody in the violins that clashes with the background harmony creating a polytonal effect (**Figure. 5b**). **[PLAY Fig. 5b]**

Initially the violins are restricted to five notes {G,A,Bb,C,Db} (b. 145 until midway through b. 151), a subset of the octatonic collection. Meanwhile, swirling figures in the clarinet and flute augment the F-D bass pedal, combining to form the complete C diatonic collection.

At b. 151 the violins introduce Eb and Fb, extending the octatonic scale to one note shy of complete. We never get the Gb, however, so we might instead hear the seven-note scale as G aeolian with a b5 and b7.

Figure 5c shows the two scales at the core of this passage (enclosed pitches indicate tonics). Taken together they form a dissonant 10-note macroharmony. But the dissonance, while contributing to the music's drama and tension, is mitigated by the segregation of the two governing scales into clearly perceptible layers by register, timbre and texture. The two scales share five pitches: while very different in character, they retain much in common.

The chromatic dissolution of the violins' melody provides additional insight into the relationship between the two harmonic planes. With the arrival of B at b. 158 the G/A octatonic scale is completely dissolved into C diatonic thereby resolving the polytonal tension.¹¹

¹¹ Even the C diatonic collection is rendered more consonant when the flutes drop the B (b. 160) as the resulting six-note subset {C,D,E,F,G,A} lacks the tritone. The D-F itself evaporates (b. 163), replaced by a new pedal on C. By b. 166 the macroharmony has been thinned down to four pitches {C,D,G,A}.

6. Collection Modulation along the Circle of Fifths (Symphony No. 5/I, bb. 44-69)

The entry of the first violins in bar 44 of the Fifth Symphony has been much discussed and from a variety of angles. At the heart of the controversy is the conflicting harmonic signals created by the various layers, especially between the melody (first violins) and bass (cellos). Simpson claims that the V-I quality of the C-F in the bass clearly places the music in F.¹² Fanning, on the other hand, maintains that the music actually *sounds* like it is in C, a position supported unanimously by three Manchester student referendums, and one with which I tend to agree—at least at the start of the passage (**Figure 6a**).¹³ [PLAY Fig. 6a]

But what to make of the melody in the violins that seems centred on E and whose diminished fifth (b. 47) suggests E locrian? The matter is only complicated by the alteration of certain pitches as the melody rises above the confines of a single octave: E4 becomes Eb5 (b. 49); A4 becomes Ab5 (b. 54); D5 becomes Db6 (b. 62). If we consider the melody as a whole (bb. 44-69), we cannot say that it defines any one scale—or, if we do, it would be a non-octave-repeating scale.

Perhaps none of C, F or E can claim tonic status because of too many competing interests. Or, to put it another way, centricity may be weak at best. Fjeldsøe seems to acknowledge as much by persuasively describing the melody as an interval network, a linear-intervallic process that may also be expressed in terms of shifting macroharmonies (**Figure 6b**).¹⁴

As the melody in the first violins *rises*, the operative collection is gradually flattened, proceeding flatwards on the circle of fifths. Unlike previous examples of flattening, however, the process is mirrored in reverse: as the melody *descends*, the flattened pitches are restored to their

¹² Simpson, CN: Symphonist, p. 96.

¹³ Fanning, CN S5.

¹⁴ Fjeldsøe, “Organicism”, CN Studies.

natural states. Because we tend to associate flattening with falling, the counterintuitive flattening-while-rising in this passage is perhaps what gives it its unique flavour.

Figure 6c charts the progression in graph form. Because the flattening occurs in diatonic space and along the circle of fifths, the change in pitch content from one collection to the next results in efficient voice leading.

A few remarks now about the bass and inner voices. The {C,F} in the bass (bb. 44-55) belong to *all* the collections outlined in the melody (F, Bb, Eb diatonic). Meanwhile, the shift to {Eb,Bb} / {G,C} (bb. 57-69), echoes, on the one hand, the flatwards direction of collection modulation, yet, on the other hand, introduces a clash between the bass Eb and melody E when F diatonic is at play.

As for the inner voices, the violas' C-A pedal is augmented by G-E in the second violins forming an Am7 chord (or, in bb. 44-55, an Fmaj7/9 chord). While the {C,G} belong to *all* the collections outlined in the first violins, the E and A occasionally clash with the Eb and Ab when the latter are present in the melody.

Conclusion

You have no doubt noted that all the examples I have discussed involve flattening, or lowering, although in a variety of contexts. I assure you that I came to this realization rather late. I admit that I was looking for modulatory processes but I did not go hunting for those of the flatwards kind. But once I spotted the trend I went back into the woods and found it teeming with game.¹⁵

¹⁵ I intend to include other examples in the revised paper, not just from the three works discussed here but also from some others.

While at the large-scale level Nielsen frequently modulates sharpwards, one would assume, intuitively, that the same applies at the *local* level. After all, what goes down must eventually come back up, right?

Or must it?

The example from the Clarinet Concerto (Fig. 2a) shows that one can start in sharp territory, and return there, by only traveling flatwards: it's a circle after all. So, in principle, it is possible to achieve long-term sharpwards motion with flatwards-only local motion.

So does Nielsen favour flatwards modulation?

By calling it a Nielsen “fingerprint”, Fanning, for one, seems to think so.¹⁶

To broaden the question, I wonder if flattening is more prevalent in twentieth-century extended tonality. Besides all the lowered modes in Shostakovich, consider one of the simplest examples, that of the flatwards drift—and back again—in Peter's theme from Prokofiev's *Peter and the Wolf*.

I conclude with an even broader question that places Nielsen's practice in a historical context: did composers of the common-practice period favour borrowing minor elements into major, which leads to lowering, over the reverse?

¹⁶ Fanning, CN5 book.

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