# FLATWARDS BOUND: DEFINING HARMONIC FLAVOUR IN LATE NIELSEN

By Robert Rival

Robert Simpson's *Carl Nielsen: Symphonist*, first published in 1952, spawned a considerable number of studies that focused on large-scale tonal design in Nielsen's music, especially in the symphonies, tracking the progression of key areas across large spans of time.[1] With this foundation in place attention has more recently turned to moment-to-moment qualities in Nielsen's harmony. The proliferation of methods deployed in these studies is impressive, symptomatic, no doubt, of the challenges posed by the subtlety of music that defies analysis even when aurally making intuitive sense.[2] David Fanning, after summing up the various approaches to large-scale tonal structure that have been applied to Nielsen's work, seems to have anticipated this trend:

> Just as important, 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.[3]

1 Robert Simpson, *Carl Nielsen: Symphonist*, 2nd edn, New York 1979. Later studies addressing similar topics include: Graham George, *Tonality and Musical Structure*, London 1970; Sarah J. Reid, *Tonality's Changing Role: A Survey of Non-Concentric Instrumental Works of the Nineteenth Century*, PhD diss., University of Texas at Austin, 1980; Tyler G. White, *'The Music's Proper Domain': Form, Motive and Tonality in Carl Nielsen's Symphony No. 4, Op. 29 (The Inextinguishable)*, PhD diss., Cornell University, 1991; Harold Krebs, 'Tonal structure in Nielsen's Symphonies: Some Addenda to Simpson's Analyses', in Mina Miller (ed), *The Nielsen Companion*, Portland 1995, 208-249; David Fanning, *Nielsen: Symphony No. 5*,Cambridge 1997; Thomas A. Pankhurst, *Desiring Closure, Yearning for Freedom: A Semiotic Study of Tonality in Three Symphonies by Carl Nielsen*, PhD diss., University of Manchester, 2004.

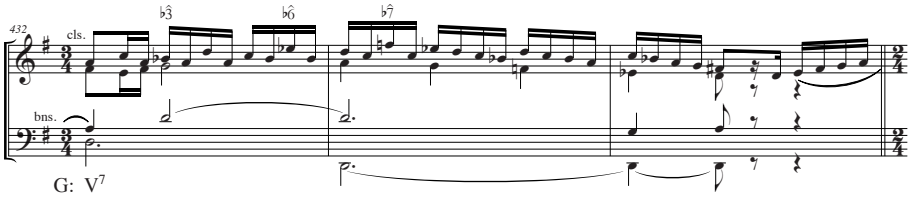
2 Among others, see Mark DeVoto, 'Non-classical Diatonicism and Polyfocal Tonality: The Case of Nielsen's Fifth Symphony, First Movement', in Miller, *op. cit.*, 257-288; Michael Fjeldsøe, 'Organicism and Construction in Nielsen's Symphony No. 5', in *Carl Nielsen Studies* 1 (2003), 18-26; Richard S. Parks, 'Pitch Structure in Carl Nielsen's Wind Quintet', in Miller, *op. cit.*, 541-596.

3 David Fanning, 'Carl Nielsen §9 Orchestral music', in *Grove Music Online. Oxford Music Online*, http://www.oxfordmusiconline.com (accessed February 20, 2012).

My goal here is to try to define this 'characteristic flavour' by identifying at least some of its ingredients. As the title of this paper reveals, I conclude that Nielsen has a tendency to modulate *flatwards* at the local level; along the way I identify and discuss the variety of ways and contexts in which these modulations unfold. My analytical angle is informed by the theoretical work of Dmitri Tymoczko, whose rigorous and sophisticated, yet flexible, approach sheds light on a wide range of music, from Debussy, Shostakovich and Stravinsky, to minimalism, pop and jazz.[4] Tymoczko views extended tonality as just that, an *extension* of functional harmony and late nineteenth-century chromaticism, a stance appropriate for the study of Nielsen in view of the origins of his style. Using Tymoczko's scalar approach as my starting point, I examine the interaction of chords, scales and voice leading in passages taken principally from the 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'. I shall elaborate upon Tymoczko's approach, as required, in the course of my ensuing analytical remarks.

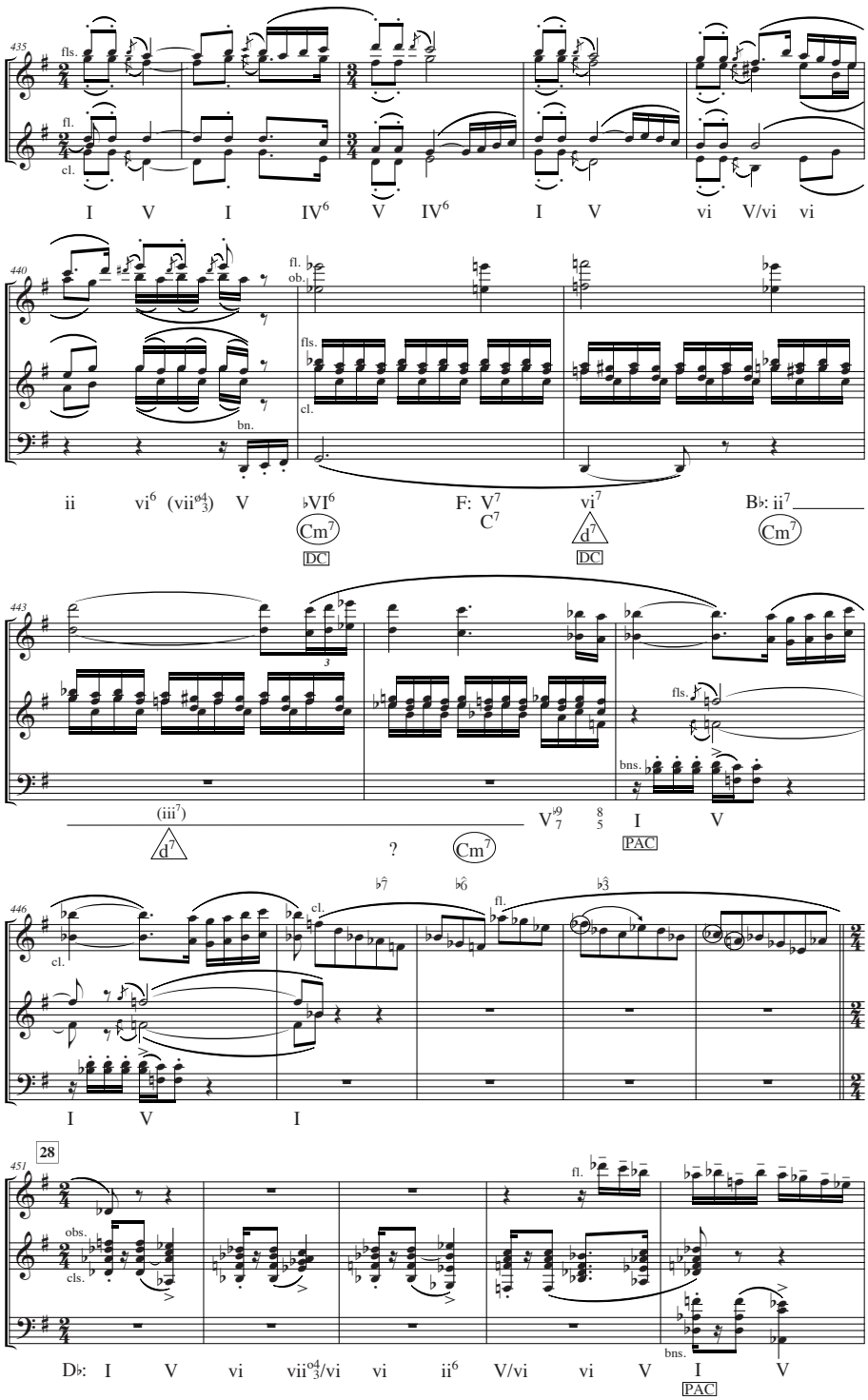
**I. Modulation to a Remote Key**

The second movement of Nielsen's Fourth Symphony, *The Inextinguishable*, opens with a charming tune for woodwinds accompanied by chords easily analyzable using functional harmonic analysis. The music unfolds with such grace, with such fluidity, that hearing the theme's third statement in D♭ major (b. 451) – the key furthest removed from G major – catches one by surprise and provides an example of a deftly-executed modulation to a remote key over a short time span (see *Ex. 1)*. As we shall see, Nielsen extends this modulatory impulse to non-functional chord progressions as well – and even to collections.




*Ex. 1. Fourth Symphony, second movement, bb. 432-455*

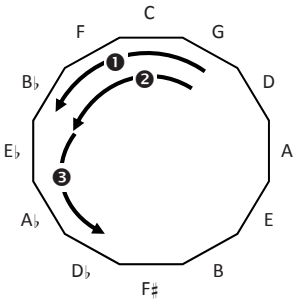
4 Dmitri Tymoczko, *A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice*, New York 2011.




*Ex. 1 continued*

In the theme's first statement (bb. 424-434, the last few bars of which are shown), Nielsen flattens $\hat{3}$, $\hat{6}$ and $\hat{7}$ ({B, E, F♯}→{B♭, E♭, F}), 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. 435) cancels these alterations, returning to G major, as if nothing happened.[5] In retrospect, then, we are likely to hear the alterations in the theme's first presentation as local colour and having no modulatory significance. Five bars into the restatement (b. 439), however, Nielsen sends the theme into another melodic direction – and, as it turns out, one with a harmonic twist. The deceptive cadence at b. 441 abruptly reintroduces $\flat\hat{3}$ and $\flat\hat{6}$; $\flat\hat{7}$ follows in the next bar. This time the lowered pitches initiate a process that dislodges the tonic. Another deceptive cadence, now in F, follows (b. 442). The harmonies then drift between Dm$^7$ and Cm$^7$ chords, with particular emphasis on the latter, which ultimately reveals itself as the supertonic in the new key of B♭. The stop at B♭ is brief: in bb. 447-448 the clarinet introduces A♭ and G♭. The flute adds a D♭ (b. 449), completing the transformation of the operative scale to D♭ major.[6] *Fig. 1* summarizes the three-stage flatwards drift on a pitch clock:




❶ modal mixture, no modulation (bb. 424-34)
❷ modulation (bb. 435-45)
❸ modulation (bb. 445-51)

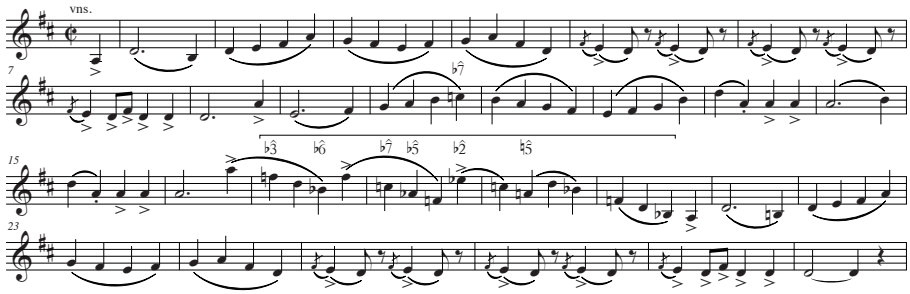
*Fig. 1. Fourth Symphony, second movement, bb. 432-455*

Nielsen uses a similar procedure in the finale of the Third Symphony, *Espansiva*, whose robust opening theme, firmly rooted in D major (D mixolydian, to be precise, in view of the C♮ (b. 10))[7] briefly drifts flatwards in its third phrase (bb. 17-20), the altered scale degrees evaporating in the subsequent reprise of the opening phrase (see *Ex. 2*). But the flatwards pull exerts itself again, and more forcefully: the introduction of a new theme at b. 62 (not shown) is in B♭ minor.

5 The leading tone is restored one bar earlier (b. 434).

6 An F♭ and C♭ are thrown in for good measure, thereby flattening all seven diatonic pitches, though these last two function as mere chromatic tones.

7 The flattened seventh is so common in Nielsen that Fanning has dubbed it the 'Nielsenesque mixolydian seventh'. See Fanning, *op. cit.*, 1997, 70.

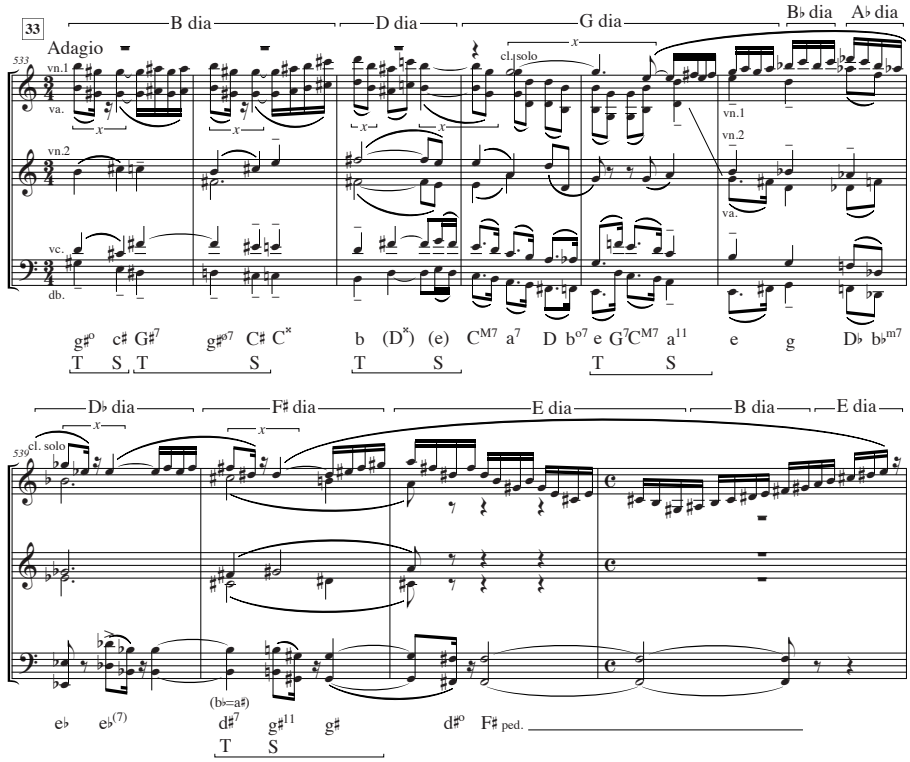



*Ex. 2. Third Symphony, fourth movement, bb. 1-28*

Like the passage from the Fourth Symphony (*Ex. 1*), modal mixture has a dual function: to provide local colour while foreshadowing an imminent flatwards modulation.

**II. Non-Functional Modulation**

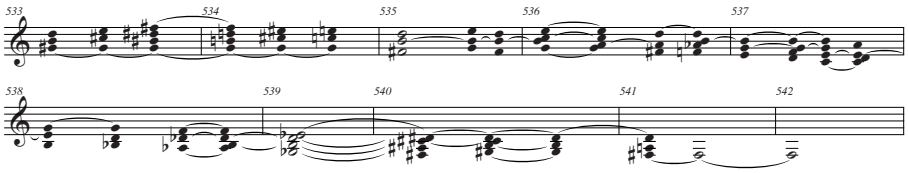
These passages from the Third and Fourth Symphonies, while unremarkable in themselves, provide useful reference points to which may be compared more unconventional modulatory techniques. Consider the lovely Adagio passage at b. 533ff from the Clarinet Concerto (see *Ex. 3*).




*Ex. 3. Clarinet Concerto, bb. 533-542*

Though the harmonies consist of 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'.[8]

*Ex. 4* shows that despite intense chromaticism – in just seven bars ten chromatic roots occur (all but F and F♯) – the chordal voice leading is remarkably efficient: each voice, if not stationary, only moves by small distances (usually a semitone or whole-tone).




*Ex. 4. Clarinet Concerto, voice leading, bb. 533-542*

Although the melody's falling-third incipit (marked *x* in *Ex. 3*), reinforced by plagal relationships, serves as a rough guide to the changing key areas – G♯ minor, B minor, G major, E minor, E♭ minor and so on – it seems more productive to describe the gradual and clearly perceptual flatwards shift as a modulation among *collections*.[9] In other words, in the absence of functional harmonic reference points or other means of establishing centricity, we ought to pay more attention to *macroharmony*, i.e. to the pitches emphasized in articulated slices of music.

The chords in the first two bars (bb. 533-534) lean towards the B diatonic collection (its G♯ mode to be specific).[10] I say 'lean' because D/D♯ (and C/C♯) is what Tymoczko calls a 'mobile pitch.[11] In this way, b. 535 leans towards D diatonic

8 Max Reger, cited in Daniel Harrison, *Harmonic Function in Chromatic Music*, Chicago 1994, 1.

9 Tymoczko calls music that is readily analyzed this way 'scale-first' to distinguish it from the other type, 'chord-first', in which the vertical element is primary. See Tymoczko *op. cit.*, 307ff. In both types of music the principles of efficient voice leading apply. We can productively speak of voice leading between collections, a generalization of the process of modulation in common-practice tonality (e.g. modulating from C to G involves F→F♯).

10 Throughout this paper, following Tymoczko's practice, a collection labeled 'diatonic' does not usually imply a tonal centre. As far as the notes go, C diatonic is identical to G mixolydian, D diatonic identical to E dorian, and so on. To put it another way, the collection C diatonic can be described as D dorian, E phrygian etc. C diatonic thus refers to a non-hierarchical collection of notes; the tonal centre may not be C.

11 Tymoczko, *op. cit.*, 172ff.

(B minor). Bar 536 moves to G diatonic, first centred on G, then on E. In b. 538, the journey flatwards continues with the introduction of B♭ on the second beat, and D♭ and A♭, on the third. The downbeat of b. 539 is an E♭ minor chord, whose E♭ and G♭ complete the emerging D♭ diatonic collection. *Fig. 2* summarizes the flatwards trajectory of the macroharmony.

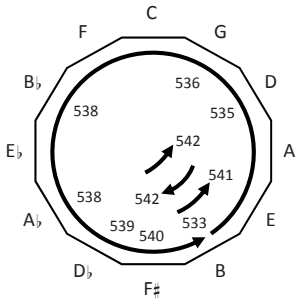
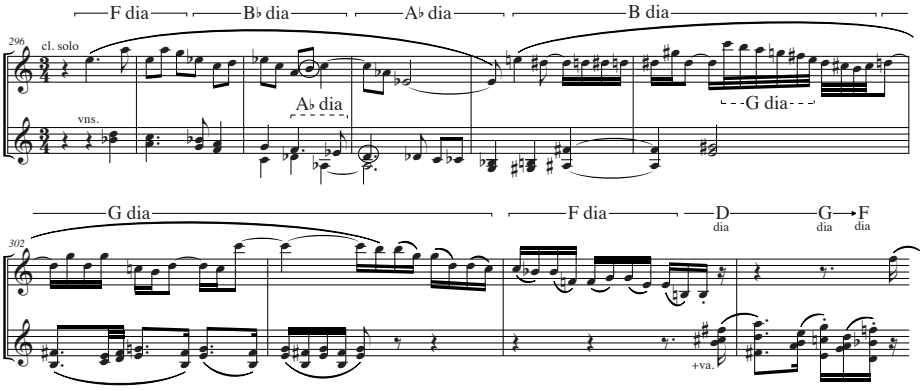



*Fig. 2. Clarinet Concerto, bb. 533-542*

Within seven bars (bb. 533-539) Nielsen comes two notches shy of completing a full circle. In the very next bar (b. 540) he inches closer: with B♭ 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).[12]

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 music a sense of *direction*.

A similar passage occurs earlier in the concerto at b. 296ff (see *Ex. 5*).




*Ex. 5. Clarinet Concerto, bb. 296-305*

12 Using Fanning's terminology, the final oscillation between B diatonic and E diatonic could be described as an 'arc' on the pitch clock. See Fanning, *op. cit.*, 1997, 48ff.

While the later passage (see *Ex. 3*) begins in four voices and blossoms to six, this one unfolds in just three. The harmonies, again, can for the most part be understood as non-functional progressions of simple triads (e.g. in bb. 297-299: a, E♭, F, c, D♭*, A♭). And again, real harmonic motion occurs at the level of *collection*, completing a full circle, in the flatwards direction, from and to F diatonic. On two occasions, one or more voices contradicts the governing macroharmony, anticipating the one that follows: 1) the violins shift to A♭ diatonic (b. 298), ahead of the clarinet (b. 299); and, 2) the clarinet hints at G diatonic in the middle of its rapid descent (b. 301), a bar before that new collection is established. Finally, harmonic change at the level of macroharmony, as measured on a pitch clock, 'accelerates' over the course of this passage due to the increasingly large diatonic skips (see *Fig. 3*). F to B♭ (b. 297) represents one notch on the pitch clock; B♭ to A♭ (bb. 298-299), two; A♭ to B (b. 300), three; B to G (b. 301), four; and, G to F (bb. 303-304), a slight 'ritardando', two notches. The rapid, flatwards shift from D to G to F (b. 305) echoes the preceding flattening process.

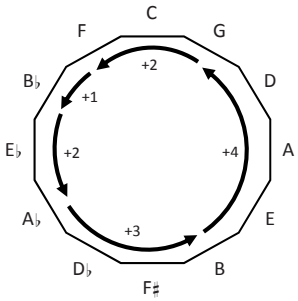
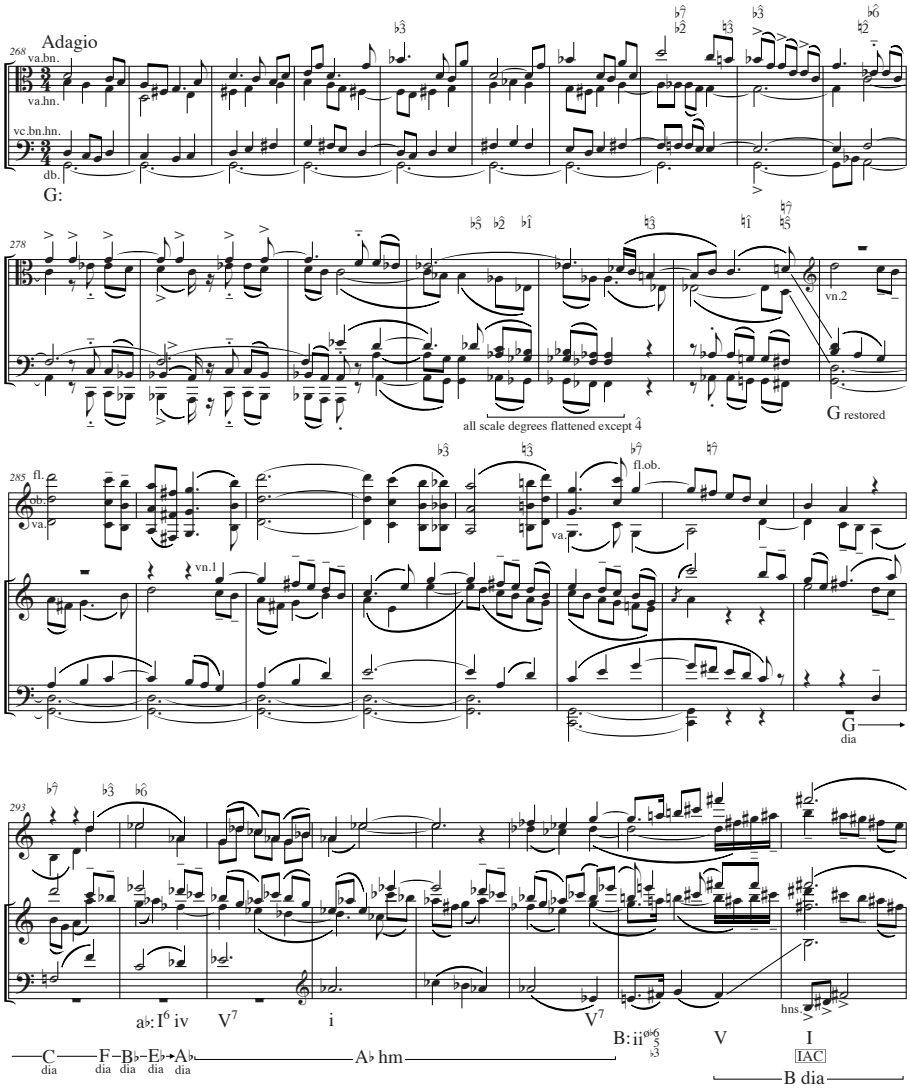



*Fig. 3. Clarinet Concerto, bb. 296-305*

The opening of the Adagio in the Fifth Symphony's first movement (see *Ex. 6*) combines the modulatory approaches observed in the preceding examples: a tonal melody coloured by modal mixture that anticipates a later modulation (see *Ex. 1* and *Ex. 2*); and, non-functional collection modulation (see *Ex. 3* and *Ex. 5)*.

The first four bars unfold in pure G major over a tonic pedal (bb. 268-271). In b. 272, however, Nielsen introduces $\flat\hat{3}$ prominently into the melody. Modal mixture continues with the lowering of other scale degrees: $\flat\hat{2}$ and $\flat\hat{7}$ (b. 275), and $\flat\hat{6}$ (b. 277). While not all of the lowered scales degrees stick, the tendency is clear, culminating in the flattening of *all* diatonic scale degrees, with the exception of $\hat{4}$ (bb. 281-282), and coinciding with the end of the first long phrase. In the ensuing bar and a half, most of the flattened pitches are raised; the second statement of the theme returns in pure G major (b. 284).



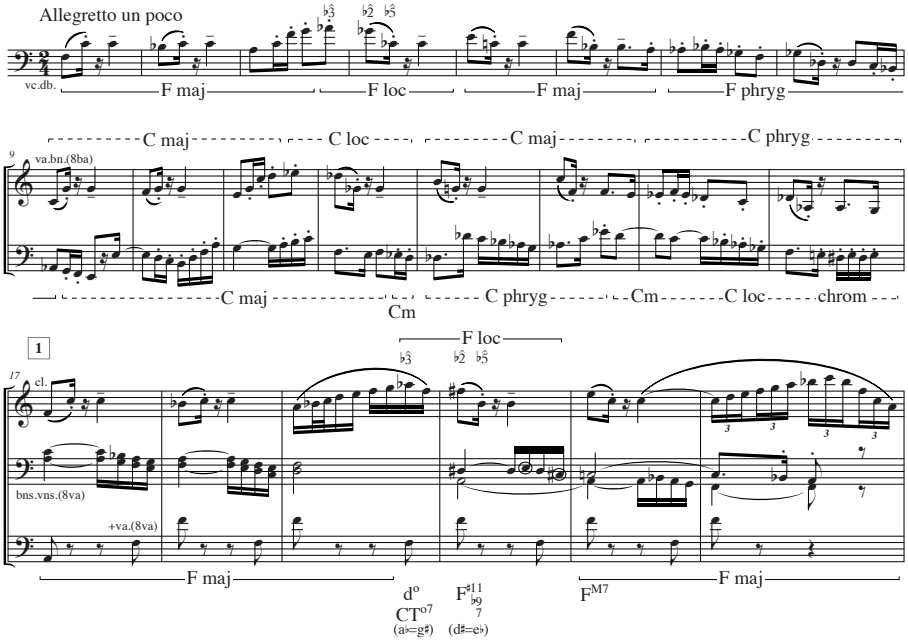

*Ex. 6. Fifth Symphony, first movement, bb. 268-300*

The theme's reprise, now more polyphonic and lusciously scored, repeats the same process: nearly four bars of unadorned G major before ♭3̂, once again, is introduced. This time, however, the flattening of additional scale degrees leads to a modulation. The flattening occurs rapidly along the circle of fifths: over the course of just two bars (bb. 293-294), all diatonic pitches are flattened (7̂ doubly so) with the exception of G, whose function as tonic becomes that of leading tone in the new key of A♭ minor (confirmed by the dominant-tonic relationship in bb. 295-296). The music

coasts in A♭ harmonic minor (bb. 295-298) before abruptly sinking further flatwards with an authentic cadence in B major. Taking the long view, the passage shifts sharpwards, from G major (b. 268) to B major (b. 300). But Nielsen chooses the scenic route by approaching B from the flatside.

**III. Modal Interchange & Polymodality**

In the previous examples I have examined voice leading and modulation in textures that privilege chords, whether through the flattening of pitches that result in modulation to other keys or by a gradual lowering of scale degrees that move the macroharmony flatwards around the circle of fifths. I now turn to the more linear-driven, fugato opening of the Clarinet Concerto.[13] The cellos and basses introduce an eight-bar subject in F major, answered by the first bassoon and viola in the dominant. At b. 17 the clarinet enters with the subject back in F (see *Ex. 7*).




*Ex. 7. Clarinet Concerto, bb. 1-22*

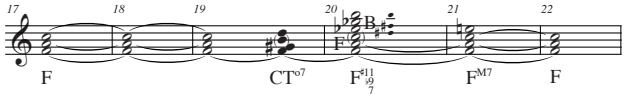
Although the subject begins unambiguously in F, soon scale degrees $\hat{3}$, $\hat{2}$ and $\hat{5}$ are flattened, darkening the underlying scale to F locrian (bb. 3-4). The immediate resto-

13 For a very different analysis of this passage, see David Grimley, 'Analytical and Aesthetic Issues in Carl Nielsen's Concerto for Clarinet and Orchestra', in *Carl Nielsen Studies* 1 (2003), 29-31.

ration of C♮ and A♮ in the next two bars, however, tilts the scale back to major. But the pendulum swings flatwards again in bb. 7-8, the A♭, G♭ and D♭ implying F phrygian (C is not flattened). The theme's modal shading therefore alternates between relative brightness (major) and two shades of darkness (locrian and phrygian), an example of what Vincent Persichetti calls 'modal interchange': changing modes over a static tonal centre.[14]

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 subject at b. 12. The polymodal clash – one tonal centre, two or more superimposed modes – continues, though reversed, in bb. 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 a linear, form in the course of the clarinet's presentation of the subject. Like the previous entries, the first three bars (bb. 17-19) remain in the tonic major. For the first time we hear a complete triad (F major). The clash occurs in bb. 19-20 as the clarinet outlines the subject's locrian segment. *Ex. 8* isolates the chord progression, built on an F pedal.




*Ex. 8. Clarinet Concerto, bb. 17-22, reduction*

There are several ways to interpret the harmony in b. 20. Stacking all the principal pitches together produces an F7 chord with tertian extensions ♭9 and ♯11. Or one might hear a polychord formed by F major and B major, which is how Nielsen spells it.[15] More interesting, however, is that this sonority, which combines pitches from two modes – major and locrian – that share the same tonic, is the *verticalized* equivalent of the juxtaposition of the same two modes in the subject itself. Nielsen thereby momentarily increases harmonic tension while preserving harmonic consistency, an economic handling of his basic materials.

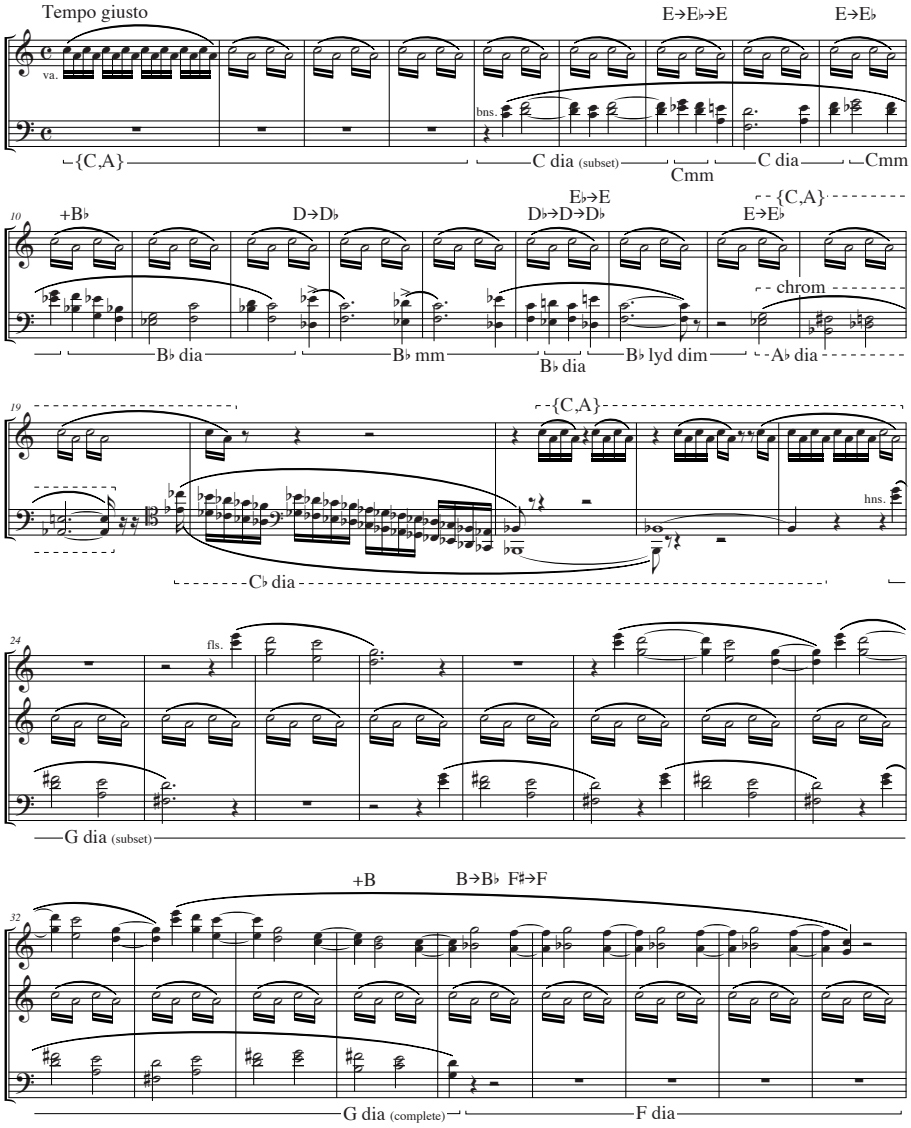
**IV. Mobile Pitches & Oscillating Macroharmony**

One of Nielsen's great achievements is to have refreshed tonality in such a natural way that the listener hardly notices its newness. Such is the case with the much-discussed

14 Vincent Persichetti, *Twentieth-Century Harmony*, New York 1961, 40.

15 And which happens to correspond to a transposition of Stravinsky's famous Petrushka chord.

opening segment of the Fifth Symphony: our ears become mesmerized by the relentless pedal over which float clouds of undulating figures that come and go (see *Ex. 9*).




*Ex. 9. Fifth Symphony, first movement, bb. 1-40*

The movement begins with a {C, A} dyad in the violas, a pedal which pervades the greater part of the symphony's first 94 bars. The minor third suggests A minor, confirmed by the bassoons' entry (b. 5), but before long the introduction of flats – and

their cancellation – complicates matters. The key of this passage has thus been the subject of much debate.[16]

Enigmatic harmony of this kind often prompts the analyst to quote Nielsen's now-famous dictum: 'we should for once see about getting away from keys and yet still having a diatonically convincing effect'.[17] Why not take the composer literally and do away with keys in our *analysis* as well? By focusing on intervallic structures, Fjeldsøe, for one, has done so.[18] For my part I will attempt to describe the perceived tonal ambiguity by identifying the (mostly) diatonic collections at play and, more importantly, the voice leading *between* them.

| **Bar** | | | | | | | | | | | | | **Collection** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | C | | | | | | | | | A | | | |
| 5 | C | | D | | E | F | | | | A | | | C diatonic (subset) |
| 7 | C | | D | E♭ | | F | | G | | A | | | C melodic minor |
| | C | | D | | E | F | | G | | A | | | C diatonic |
| 9 | C | | D | E♭ | | F | | G | | A | | | C melodic minor |
| 10 | C | | D | E♭ | | F | | G | | A | B♭ | | B♭ diatonic |
| 12 | C | D♭ | | E♭ | | F | | G | | A | B♭ | | B♭ melodic minor |
| 15 | C | | D | E♭ | | F | | G | | A | B♭ | | B♭ diatonic |
| | C | D♭ | | | E | F | | G | | A | B♭ | | B♭ lydian dim |
| | C | | | | | | | | | A | | | |
| 17-19 | | | | | E | F | F♯ | G | | | B♭ | | chromatic |
| | | D♭ | | E♭ | | | | | A♭ | | B♭ | | A♭ diatonic (subset) |
| 20 | | D♭ | | E♭ | F♭ | | G♭ | | A♭ | | B♭ | C♭ | C♭ diatonic |
| 21 | C | | | | | | | | | A | B♭ | | |
| 23 | C | | D | | E | | F♯ | G | | A | | | G diatonic (subset) |
| 35 | C | | D | | E | | F♯ | G | | A | | B | G diatonic |
| 36 | C | | D | | E | F | | G | | A | B♭ | | F diatonic |

*Fig. 4. Fifth Symphony, first movement, bb. 1-40*

*Fig. 4* summarizes the changing macroharmony in this opening passage. Each row lists the pitch classes present starting at the corresponding bar and identifies the implied collection. 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 bb. 5-9, E is flattened then raised, then flattened again.[19] D/D♭ is another

16 Compare, for instance, Simpson, *op. cit.*, 95-96; DeVoto, *op. cit.*, 261-263; and, Fanning, *op. cit.*, 1997, 18-19.

17 From a letter of 13.8.1931 to Henrik Knudsen, cited in Fanning, *op. cit.*, 1997, 20-21. (*Vi skulde paa engang se at komme bort fra Tonearterne og alligevel virke diatonisk overbevisende*).

18 Fjeldsøe, *op. cit.*, 18-26.

19 DeVoto aptly refers to the succession of harmonic intervals – third, fifth, sixth – as the 'horn fifths' motif, one that actually sounds in the horns in bb. 23-25. See DeVoto, *op. cit.*, 274-275.

such mobile pitch (bb. 12-16).[20] In both cases, the flattening of a pitch class temporarily and gently slides the macroharmony 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 neighbouring 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.[21]

Bars 17-19 have a transitional character. The introduction of F♯ (=G♭) and A♭ creates a *pivot* collection that smoothes the way to C♭ diatonic, that blustery *fortissimo* descent in b. 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.

20 In passages that gently fluctuate among different diatonic collections, the mobile pitch serves as the agent for change. The flattening or sharpening of a pitch class shifts the macroharmony from one collection to another. By the very nature of diatonic harmony this usually means that only one 'instance' of a given letter-name pitch is in use at any time, e.g. E or E♭, but not both. A useful analogy might be the approach to writing for harp, a diatonic instrument adapted to play chromatic music: any diatonic collection is possible on the harp (and many non-diatonic collections, too) but shifting from one to another requires at least one pedal change.

21 Perhaps what motivated Nielsen to introduce the E/E♭ mobile pitch class was a desire to keep the bassoons' intervals consonant. Here Nielsen's own words provide some context. Writing in 1922 in a critique of Wagner, Nielsen proposed that, 'The only cure for this sort of taste lies in studying the basic intervals. The glutted must be taught to regard a melodic third as a gift of God, a fourth as an experience, and a fifth as the supreme bliss. Reckless gorging undermines the health. We thus see how necessary it is to preserve contact with the simple original'. See Nielsen, *Living Music*, trans. Reginald Spink, London 1953, 42. (*Mod denne Smagsretning i Musik er der ingen anden Medicin end Dyrkelsen af de første grundlæggende Intervaller. Man maa vise de overmætte, at et melodisk Terzspring bør betragtes som en Guds Gave, en Kvart som en Oplevelse og en Kvint som den højeste Lykke. Tankeløst Fraadseri undergraver Sundheden. Vi ser altså, at det er er Nødvendigt at vedligeholde Forbindelsen med det oprindelige.* Quoted in John Fellow (ed.), *Carl Nielsen til sin samtid*, Copenhagen 1999, 265). An E♮ (instead of an E♭) in bb. 7-8 avoids a diminished fifth with the A. Likewise, the B♭ in b. 10 avoids the tritone – in both instances – with the F. The D♭ in bb. 12-14, forming major ninth and minor seventh intervals with the E♭, avoids the harsher intervals that would result from a D♮ – which Nielsen saves for b. 15 near the phrase's culmination.

A parallel passage occurs at b. 168ff, the bassoons replaying – at exact pitch, though with some variation in rhythm and phrasing – their initial entry (c.f. b. 5ff). The harmonic context, however, is altered: the violas' pedal has been augmented by one pitch class, the new {D, C, A} pedal echoed by the flute and clarinet. *Fig. 5* summarizes the fluctuating macroharmony by identifying the pitch classes present and voice leading.[22]

| **Bar** | | | | | | | | | | | | | **Collection (tonic=C)** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 168-9 | C | | D | | E | F | | G | | A | | | major (no $\hat{7}$) |
| 170 | C | | D | E♭ | | F | | G | | A | | | melodic minor (no $\hat{7}$) |
| 171-6 | C | | D | E♭ | | F | | G | | A | B♭ | | dorian |
| 177 | C | | D | | E | | F♯ | G | | A | B♭ | | acoustic |
| 178 | C | | D | E♭ | E | | (F♯) | G | | A | | B | lydian diminished / lydian |
| 179 | C | | D | E♭ | | F | | G | | A | | B | melodic minor |
| 180 | C | | D | (E♭) | | | F♯ | G | | A | | B | lydian diminished |
| 181 | C | D♭ | D | E♭ | | F | G♭ | | | A | | (B) | locrian (bns.) + dia |
| 182-3 | C | | D | | E | | F♯ | G | | A | | (B) | lydian |
| 184 | C | | D | E♭ | | F | | | G♯ | A | | (B) | mel minor? (G♯ passing?) |
| 185 | C | | D | E♭ | | | F♯ | G | | A | | (B) | lydian diminished |
| 186 | C | C♯ | D | (E♭) | | E♯ | F♯ | G | | A | | (B) | ? |
| 187 | C | | D | E♭ | | | (F♯) | G | | A | | B | lydian diminished |
| 188 | C | | D | E♭ | | | (F♯) | G | | A | B♭ | | dorian ♯$\hat{4}$ |

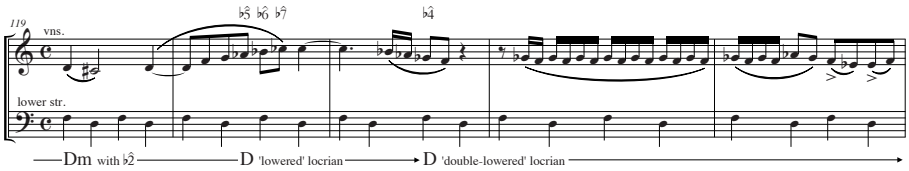
*Fig. 5. Fifth Symphony, first movement, bb. 168-188*

The table reveals that throughout this passage there are three fixed pitches {C, D, A} distributed as follows: a low C bass pedal (cellos); and a {D, C, A} wash in the violas, flutes and clarinets (the pitches change in the last two bars). The persistent low C strongly suggests C as tonic. Meanwhile there are three principal vacillating pitch classes: $\hat{3}$, $\hat{4}$ and $\hat{7}$. The voice leading is efficient throughout. The macroharmonies change by one, two or three pitches at a time. In a few instances there is an added pitch (spelled C♯ or D♭) that does not result from *collection* voice leading; this pitch clashes with the prevailing macroharmony. What we have here is a remarkable and rapid oscillation among a range of macroharmonies all centred on C. Many of these are diatonic collections. But some are not, namely the melodic minor, acoustic, lydian diminished and dorian ♯$\hat{4}$.

22 There are several challenges in trying to label collections in such contexts. For how long do we retain a pitch class in our memory once it no longer regularly sounds? In the table I have marked implied pitches in parentheses. Another problem is that of segmentation. I have used the bar unit as a matter of convenience. One could quibble with this choice but I do not think, in this case at least, that modifying the boundaries somewhat would substantially alter the analysis.

**V. Superimposed Scales**

Beginning in the 1940s Soviet musicologists Lev Mazel' and Alexander Dolzhansky began to catalogue the modes used by Shostakovich, including the 'lowered' or 'intensified' phrygian, a phrygian scale with $\flat\hat{4}$,[23] later identified as a source of the composer's musical signature, DSCH.[24] Shostakovich was not the only composer of the period who incorporated such 'lowered' scales, however. Consider the first part of Nielsen's Fifth Symphony. In bb. 120-123, for instance, immediately after the violins initiate a D minor melody with a strongly-accented leading tone, the scale modulates to {D, E$^\flat$, F, G$^\flat$, A$^\flat$, B$^\flat$, C$^\flat$}: D locrian with $\flat\hat{4}$ and $\flat\hat{7}$ (see *Ex. 10*).




*Ex. 10. Fifth Symphony, first movement, bb. 119-123*

Another such moment occurs at the tail end of the {F, D} pedal section: a melody in the violins clashes with the background harmony creating a polytonal effect (see *Ex. 11*). Initially the violins are restricted to five notes {G, A, B$^\flat$, C, D$^\flat$} (b. 145 until midway through b. 151), a subset of the G/A 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 E$^\flat$ and F$^\flat$, extending the octatonic scale to one note shy of complete. We never get the G$^\flat$, however, so we might instead hear the seven-note scale as G aeolian with $\flat\hat{5}$ and $\flat\hat{7}$.

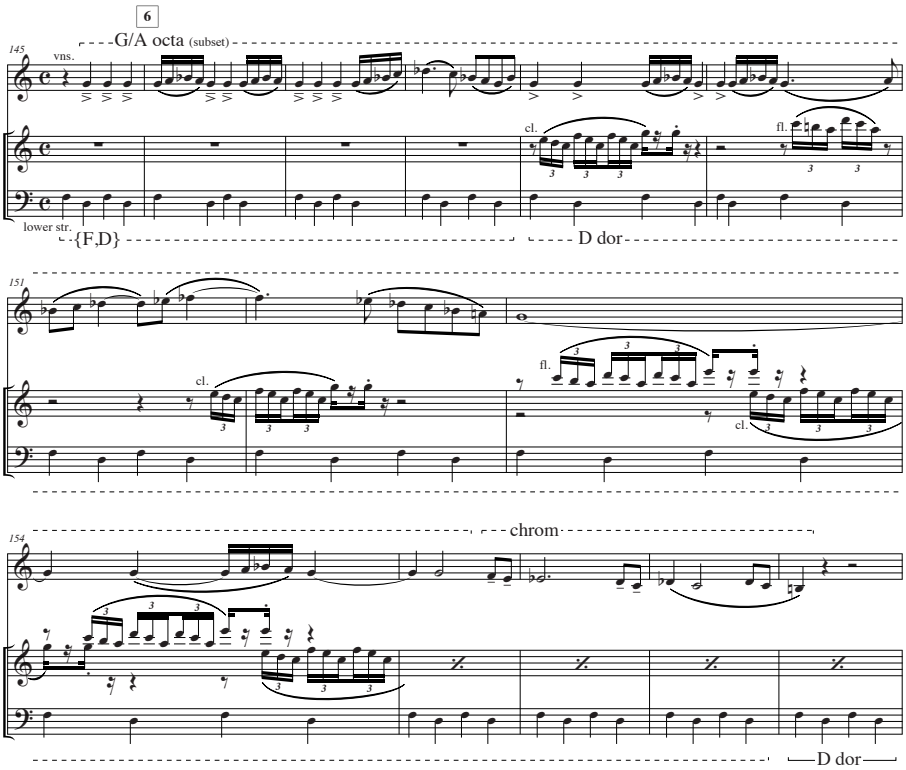
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| violins: | C | D♭ | | E♭ | F♭ | | G | | A | B♭ | |
| orchestra: | C | | D | | E | F | G | | A | | B |

*Fig. 6. Fifth Symphony, first movement, bb. 149-155*

*Fig. 6* 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

23 See Ellon Carpenter, 'Russian Theorists on Modality in Shostakovich's Music', in David Fanning (ed.) *Shostakovich Studies*, Cambridge 1995, 76-112.

24 Stephen C. Brown, 'Tracing the Origins of Shostakovich's Musical Motto', *Intégral* 20 (2006), 69-103.




*Ex. 11. Fifth Symphony, first movement, bb. 145-158*

and texture. The two scales share five pitches: while very different in character, they retain much in common.[25]

The chromatic dissolution of the violins' melody provides additional insight into the relationship between the two harmonic planes. The tune in the violins spirals downwards, sounding all chromatic pitches between F (b. 155) and the melody's arrival point, B (b. 158). The infiltration of {F, D, B} – contained in C diatonic but not in G/A octatonic – begins to erase the tension between the two scales. The B at b. 158

25 Can any further relationship between the scales be ascertained? Perhaps, if we draw on the perspective of 'multifaceted diatonicism', a theoretical approach developed by the Soviet musicologist Valentin Sereda in the 1970s to address the music of Shostakovich. Sereda contends that certain analytically challenging passages can be explained as the superimposition of two scales, one of which is derived from the tertian, quartal or quintal 'support' of another. If we consider the C diatonic collection – D dorian – as the primary one due to the relentlessness of the {F, D} pedal, then the G, acting as quartal 'support' of D, underpins the G-centred mode of the violins. For a summary of Sereda's approach see Carpenter, *op. cit.*, 104-105.

completely dissolves the G/A octatonic scale into C diatonic, thereby resolving the polytonal tension.[26]

**VI. Fluctuating Collection Modulation**

The entry of the first violins in b. 44 of the Fifth Symphony has been widely discussed and from a variety of angles. At the heart of the controversy is the conflicting harmonic signals suggested by the various layers, especially between the melody (first violins) and bass (cellos). Simpson claims that the V-I quality of {C, F} in the bass clearly places the music in F.[27] Fanning, on the other hand, maintains that the music actually *sounds* like it is in C, an assessment with which I tend to agree – at least at the start of the passage (see *Ex. 12*).[28]

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 further complicated by the alteration of certain pitches as the melody rises above the confines of a single octave: E4 becomes E♭5 (b. 49); A4 becomes A♭5 (b. 54); D5 becomes D♭6 (b. 62). If we consider the melody as a whole (bb. 44-69), we cannot say that it defines any one scale – unless we are prepared to label it as a non-octave-repeating scale.

I wonder, however, if the attempt to fix a tonic on a passage such as this one is a vestige of the thinking associated with common-practice tonality. As Tymoczko observes, 'it is entirely possible [...] to write diatonic music in which no note is heard as a tonal centre, just as one can write chromatic music with a very clear centre'.[29] 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 I here express in terms of shifting macroharmonies (see *Fig. 7*).[30]

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

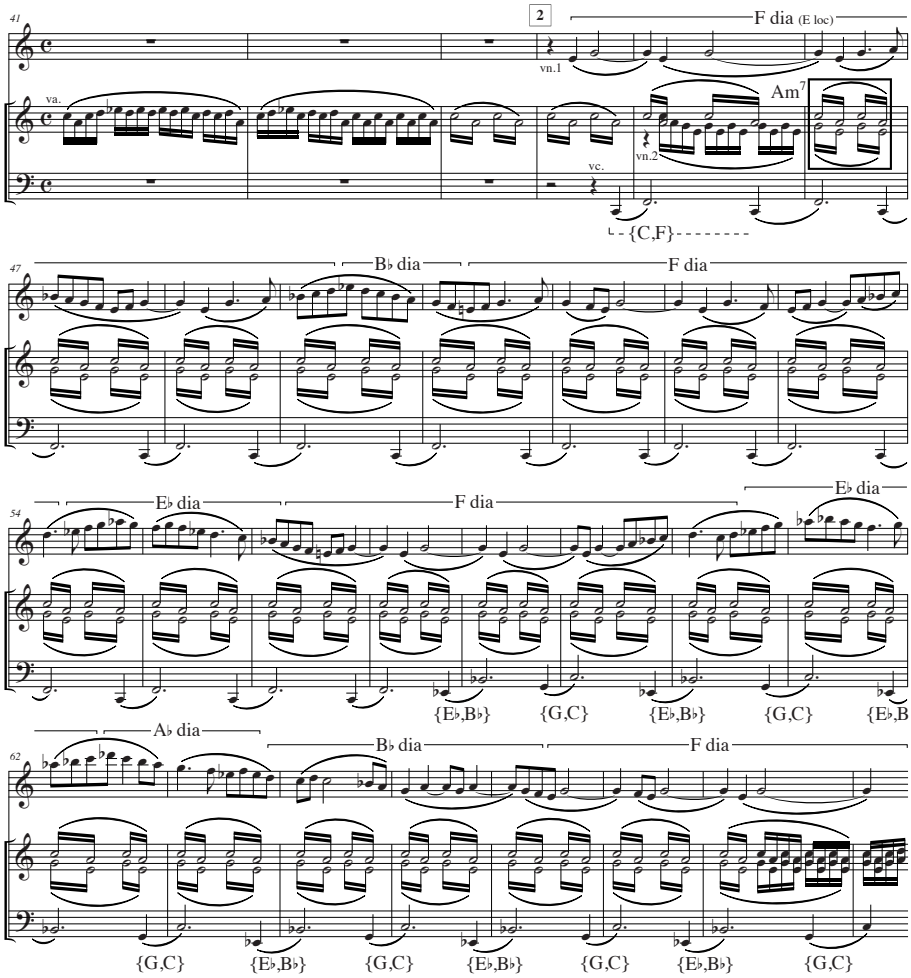
26 Even the C diatonic collection is rendered more consonant when the flutes drop the B (b. 160, not shown): the resulting six-note subset {C, D, E, F, G, A} lacks the tritone. The {F, D} ostinato itself evaporates (b. 163), replaced by a new pedal on C. By b. 166 the macroharmony is thinned down to four pitches {C, D, G, A}.

27 Simpson, *op. cit.*, 96.

28 Fanning, *op. cit.*, 1997, 24. Fanning amusingly reports that three informal Manchester student referendums 'unanimously' determined that the passage is indeed in C (see footnote 14, 110).

29 Tymoczko, *op. cit.*, 16.

30 Fjeldsøe, *op. cit.*, 23-25.




*Ex. 12. Fifth Symphony, first movement, bb. 41-68*

| Bar | Collection (Vns. I) | Cellos | Vns. II / Vas. | Clashing Pitches |
|---|---|---|---|---|
| 44-48 | F diatonic | {C,F} | {A,C,E,G} | |
| 49 | B♭ diatonic | | | E♭ / E |
| 50-53 | F diatonic | | | |
| 54-55 | E♭ diatonic | | | E♭ / E, A♭ / A |
| 56-59 | F diatonic | {E♭,B♭} / {G,C} | | E♭ / E |
| 60-61 | E♭ diatonic | | | E♭ / E, A♭ / A |
| 62 | A♭ diatonic | | | E♭ / E, A♭ / A |
| 63-65 | B♭ diatonic | | | E♭ / E |
| 66-69 | F diatonic | | | E♭ / E |

*Fig. 7. Fifth Symphony, first movement, bb. 44-69*

flattened pitches are restored to their original states. Because we tend to associate flattening with falling, this counterintuitive flattening-while-rising is perhaps what gives the passage its unique flavour. *Fig. 8* charts the progression in graph form making apparent the wave-like progression. 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.

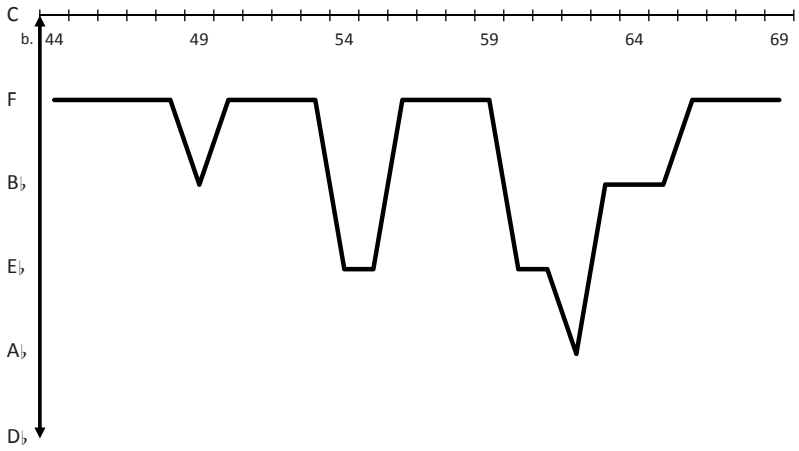


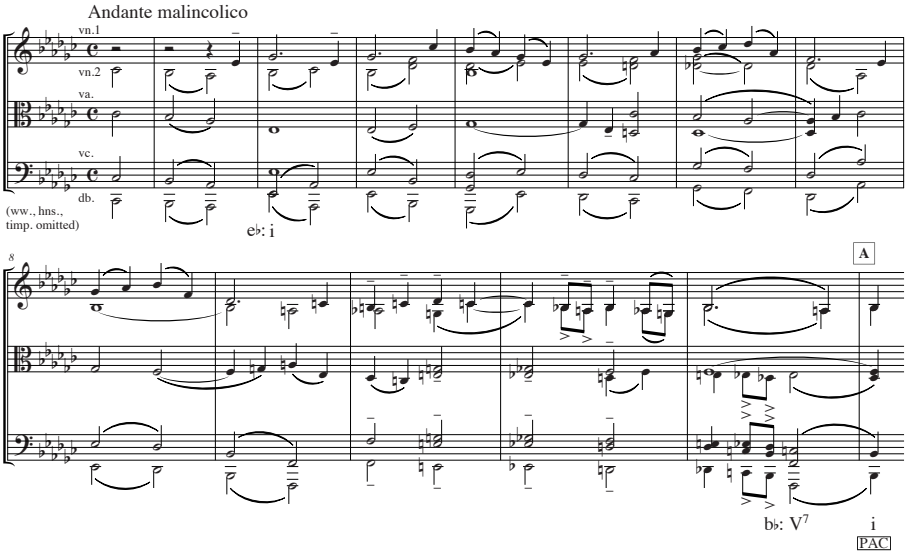

*Fig. 8. Fifth Symphony, first movement, bb. 44-69*

A few remarks now about the bass and inner voices. The {C, F} in the bass (bb. 44-57) belongs to *all* collections outlined in the melody (F, $B^{\flat}$, $E^{\flat}$ diatonic). Meanwhile, the shift to {$E^{\flat}$, $B^{\flat}$} / {G, C} (bb. 57-69), echoes, on the one hand, the flatwards direction of collection modulation, while, on the other hand, introduces a clash between the bass $E^{\flat}$ 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 $Am^{7}$ chord (or, in bb. 44-57, an $F^{M7/9}$ chord). While {G, C} belongs to *all* collections outlined in the first violins, the E and A occasionally clash with the $E^{\flat}$ and $A^{\flat}$ when the latter are present in the melody.

**VII. Flatwards Bound**

By now it will be obvious that all the examples I have discussed involve flattening, or lowering, in a variety of contexts. I undertook this study with the view of examining modulatory processes at the local level. 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.

I am not suggesting, however, that Nielsen exclusively modulates flatwards. An example of a sharpwards modulation occurs in the Second Symphony, *The Four Temperaments*, at the beginning of the third movement, *Andante malincolico* (see *Ex. 13*).




*Ex. 13. Second Symphony, third movement, bb. 1-12*

The movement opens in E♭ minor, deep in flat territory, and coasts there for some time. But rather than confirming the tonic, the first cadence is in the dominant minor key of B♭ (b. 13), gently shifting the macroharmony sharpwards. The effect is striking: by substituting a cadence in the dominant for one in the tonic, the sombre mood is lightened.[31] Another example of sharpwards modulation, this time over a longer span of music, unfolds in the second movement of the Fifth Symphony, from the *Andante poco tranquillo* fugue in the strings (b. 679) until the *Allegro* (b. 731), the macroharmony ascending the circle of fifths from F to E. At the large-scale level, in particular, Nielsen frequently modulates sharpwards.[32]

Intuitively, one might assume, then, that sharpwards modulation would also dominate at the *local* level. But as many passages in this paper have shown, one can start anywhere, including in sharp territory, and return there, by only traveling *flat-*

31 A more dramatic sharpwards modulation involves moving to the major mediant, as in Beethoven's 'Waldstein' sonata, first movement, in which the first group is in C major while the second, in E.

32 The first movement of the First Symphony dwells in G minor but the finale ends in C major. The outer movements of the Third Symphony both rise a perfect fifth in tonality.

*wards*: it's a circle after all. So, in principle, it is possible to achieve long-term sharpwards motion with flatwards-only local motion.

A more thorough and systematic investigation would be required in order to determine whether flatwards modulation at the local level is indeed the norm in Nielsen.[33] Fanning, for one, in calling it a 'fingerprint', would seem to think so, as do I.[34]

Broadening the discussion beyond the scope of Nielsen's work, I wonder if flattening is generally more prevalent in twentieth-century extended tonality. Consider one of the simplest examples, that of the flatwards shift – and back again – of Peter's theme in Prokofiev's *Peter and the Wolf*. Lowered modes are well-documented in Shostakovich. Modal flattening is common in Vaughan Williams. Taking an even broader view, is it fair to say that composers of the common-practice period favoured borrowing minor elements into major, which leads to lowering, over the reverse? If so, then Nielsen's practice may be viewed as a further development and extension of this important feature of common-practice tonality and a significant contributing factor in defining that 'characteristic flavour' of his harmony.

**A B S T R A C T**

Early studies of Nielsen's harmony focused on large-scale tonal design, tracking the progression of key areas across large spans of time. With this foundation in place attention has increasingly turned to moment-to-moment qualities in Nielsen's harmony. Fanning, for instance, attributes its 'characteristic flavour' to the 'interpenetration of modal and tonal elements'. I attempt to define this 'flavour' by identifying at least some of its ingredients in passages taken principally from the Fourth and Fifth Symphonies and from the Clarinet Concerto. After discussing the variety of ways and contexts in which these modulations unfold – modulation to a remote key; non-functional modulation; modal interchange and polymodality; mobile pitches and oscillating macroharmony; superimposed scales; and, fluctuating collection modulation – I conclude that Nielsen has a tendency to modulate *flatwards* at the local level. My approach is informed by Dmitri Tymoczko's *A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice* (2011).

33 Throughout his dissertation, Pankhurst discusses flatwards and sharpwards progressions in Nielsen using phrases like 'flatwards slippage' and 'flatwards drift'. See Pankhurst, *op. cit.*, 222-223 and 310-315, for instance.

34 Fanning, *op. cit.*, 1997, 36.