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LIMITED TWO-DIMENSIONAL FORM AND ORBITAL TONALITY IN NIELSEN'S FOURTH SYMPHONY

By Julian Horton

The triumphant return of the first movement's second theme with which Nielsen concludes his Fourth Symphony raises analytical questions that are critical both for the understanding of Nielsen's symphonic style and for early twentieth-century symphonism in general. As the Symphony's most blatant cyclical event, the second theme's reprise at bar 1140 prompts consideration of overarching thematic and formal processes, and especially the crucial matter of how movement forms and cyclical techniques interact. The ecstatic confirmation of E major that the reprise articulates – a key not categorically secured earlier in the work – also invokes the various alternatives to monotonal organisation, which have come to be housed under the general rubric of a 'second tonal practice'.[1] And the ending's sheer rhetorical force has naturally prompted hermeneutic speculation, in light of Nielsen's subtitle 'Det Uudslukkelige' ('The Inextinguishable'), an allusion to the composer's vitalist philosophy, which construed music as an expression of the life force itself and the Fourth as its narrative instantiation.[2] Altogether, the Fourth Symphony offers a test case not only in those aspects of Nielsen's mature symphonic idiom that elude easy theoretical characterisation, but also in the challenges that early twentieth-century symphonic music committed to the expansion rather than the rejection of tonality pose for music theory and analysis.

In appraising these issues, the question of Nielsen's modernism looms large. For Robert Simpson, Nielsen's credentials as a progressive composer rested on his innovations in tonal planning, and specifically his experiments with directional tonality, which in Simpson's view evidence 'his greatest and most far-reaching mastery'.[3]

1 See William Kinderman and Harald Krebs, eds., *The Second Practice of Nineteenth-Century Tonality*, Lincoln, NB 1996.

2 Cited in Povl Hamburger, 'Orchestral Works and Chamber Music', in Jürgen Balzer, ed., *Carl Nielsen: Centenary Essays*, Copenhagen 1965, 19–46, at 37.

3 Robert Simpson, *Carl Nielsen: Symphonist*, rev. edn. London 1979, 20.

Although obvious comparison can be made with the directed tonal schemes of Mahler's Second, Fourth, Fifth, Seventh and Ninth symphonies, Simpson considered Nielsen to have surpassed Mahler in the 'cogency and concentration' of the technique's deployment. Whereas Mahler's progressive schemes ordinarily replace an initial with a final tonic across a symphony's span, Nielsen's schemes are, for Simpson, 'dynamic' and essentially organic: their goal tonalities seem inevitable and preordained by initial material, even though it orientates a different key. Simpson expressed this view in language redolent of Goethean biological organicism: the tonic's final attainment 'has all the organic inevitability and apparently miraculous beauty with which the flower appears at a plant's point of full growth'.[4] The Fourth Symphony's modernism consequently resides in its teleology: in the fact that it forms an organic totality because the second theme is 'bound together as an entity' at the end, once it has been definitively stated in E.

This view has recently come under critical scrutiny. For Daniel Grimley, Simpson failed to capture the modernism of Nielsen's later music, because he de-emphasised the roles played by discontinuity and formal failure. Contesting Simpson's reading of the Fifth Symphony, Grimley notes that its 'fragmented and unpredictable character ... points towards a modernist aesthetic premised on the conscious rejection of established compositional norms or procedures', rather than an organic symphonic process of the kind Simpson describes.[5] Adopting a distinction articulated by Roland Barthes, Grimley argues that 'much of [the Fifth Symphony] could be heard as the sonorous embodiment of a modernist paradigm shift, from [as Barthes describes it] "a view of history which is harsh, but coherent and certain of its principles, the triumph of an order" to one that "in order to escape its pangs of conscience either exaggerates conventions or frantically attempts to destroy them"'.[6] In Grimley's analysis, the Fifth is not an expression of 'totalizing organicism', but 'a testimony of aesthetic discontent, emblematic of a late-Romantic worldview shattered by the conclusion of World War I'.[7]

A third perspective on Nielsen's modernism is offered by James Hepokoski, for whom the Fourth Symphony's formal problems instantiate the dilemma of originality that constituted a central preoccupation of the 'modernist generation': those composers, born in the years centred on 1860, who were uniquely engaged with the question of how to innovate beyond reified forms of the classical tradition, in light

4 *Ibid.*, 21.

5 Daniel M. Grimley, 'Modernism and Closure: Nielsen's Fifth Symphony', *The Musical Quarterly* 86/1 (2002), 149–173, at 149.

6 *Ibid.*

7 *Ibid.*, 151.

both of the imperatives of musical progress and the demands of the musical marketplace. As Hepokoski explains:

> The 1889–1914 modernists sought to shape the earlier stages of their careers as individualistic seekers after the musically 'new', the bold, the controversial, and the idiosyncratic in structure and colour. But simultaneously, as sharp competitors in a limited marketplace, they were also eager to attract and then perpetuate the constituent parts of the delivery system. With few exceptions (the earlier Debussy may be one) their goal was to effect a relatively comfortable marriage between art and high-technology business. Within the *de facto* institution one strove to flourish as provocatively or enticingly as possible – to create an identifiable, personalized style that, while unmistakably emanating the aura, traditions, and high seriousness of 'art', also produced readily marketable commodities marked with an appropriately challenging, up-to-the-minute spice, boldness, or 'philosophical tone'. In short, one was encouraged to push the system to its socio-aesthetic limits, but not beyond them, as would be the case with the younger radicals.[8]

Understood in these terms, modernism emerges through the pursuit of *sui generis* particularity in music that nevertheless signals an overt debt to the symphonic tradition. The attempts of Nielsen, Sibelius, Strauss, Mahler, Glazunov, Elgar and others to balance these conflicting requirements resulted in a body of formal practice that exhibits both an unprecedented tendency towards formal individualisation and a palpable anxiety about its anchorage in the symphonic heritage, embodied above all in what Hepokoski calls 'deformations': 'post-sonata procedures' in which work-specific strategies occlude the vestiges of sonata form.[9]

As David Fanning has pointed out, Nielsen's position in Hepokoski's scheme is not unproblematic, because it takes for granted that European modernism writ large takes precedence over more regional considerations, and because it underplays the distinctiveness of Nielsen's voice in the wider European context. Fanning notes the conflicting tendency to understand Nielsen's music as representing 'a direction that history might have, even should have taken, and maybe still could take', rather than a broad trend drawing in Austro-German modernism.[10] As a problem for music analysis, the question of Nielsen's modernism turns on the tight entwinement of form,

8 James Hepokoski, *Sibelius: Symphony No. 5*, Cambridge 1993, 3.

9 On deformation, see for example Hepokoski, *Sibelius: Symphony No. 5*, 5–9 and Hepokoski and Warren Darcy, *Elements of Sonata Theory: Norms, Types, and Deformations in the Late-Eighteenth-Century Sonata*, New York and Oxford 2006, 614–621.

10 David Fanning, *Nielsen: Symphony No. 5*, Cambridge 1997, 12.

tonality and aesthetics. Whether the Fourth Symphony should be considered unified or disjunct, progressive or traditional, conventional or *sui generis*, expressive of organicism or critical of it, depends crucially on how we interpret the interplay of form and key. I respond to these issues by bringing Nielsen's Fourth into contact with two recent theoretical ideas. The first is Steven Vande Moortele's notion of two-dimensional form, which theorises works that merge sonata form and movement cycle.[11] The second is my concept of orbital tonality, devised to account for the tonal strategies of Bruckner's later symphonies, but relevant to Nielsen's case.[12] The interplay, if not synthesis, of these two ideas allows us to capture the ways in which Nielsen's Fourth coheres, whilst acknowledging the discontinuities that Grimley foregrounds.

Form, Limited Two-Dimensionality and Functional Transformation

The central formal issue raised by the Fourth Symphony is the question of whether the work's ostensibly four-movement scheme is circumscribed by a larger formal action, which mimics, if not fully articulates, the behaviour of a single-movement form. The Fourth Symphony thereby engages the last of Hepokoski's five common post-sonata deformations – 'multimovement forms within a single movement' – which together define the modernist generation's dialogic relationship with tradition.[13]

The lineage of this idea is ordinarily traced to Liszt's B minor Sonata, which William S. Newman described as a 'double-function form': a single-movement sonata, which simultaneously auditions as a first movement-slow movement-scherzo-finale cycle.[14] Newman's idea is in several ways expanded and finessed in Vande Moortele's theory. First, Vande Moortele rejects 'double-function form' in favour of 'two-dimensional form', because most works exhibiting this property seldom do so consistently. More commonly, some aspects of the music operate at both the level of the form and the movement cycle, whilst others do not. Secondly, Vande Moortele converts Newman's concept into a matter of form-functional hierarchy, understood in the sense intended by William Caplin as the concatenation of functionally meaningfully units, ranging from those out of which themes are constructed to the largest subdivisions of a whole-movement form.[15] In Vande Moortele's theory, double-functionality arises

11 Steven Vande Moortele, *Two-Dimensional Sonata Form: Form and Cycle in Single-Movement Instrumental Works by Liszt, Strauss, Schoenberg, and Zemlinsky*, Leuven 2009.

12 Julian Horton, 'Form and Orbital Tonality in the Finale of Bruckner's Seventh Symphony', *Music Analysis* 37/3 (2018), 271–309.

13 Hepokoski, *Sibelius: Symphony No. 5*, 7.

14 William S. Newman, *The Sonata Since Beethoven*, Chapel Hill 1969, 134.

15 William Caplin, *Classical Form: A Theory of Formal Functions for the Music of Haydn, Mozart and Beethoven*, Oxford 1998, for example at 9.

from the mapping of 'complete' and 'incomplete' variants of Caplin's form-functional hierarchy, as adapted in Figure 1.[16] The complete hierarchy includes the level of the movement cycle, which is the highest level of subdivision that sonata-type works disclose. The incomplete hierarchy is missing the cyclical level and stops at the whole-movement form. For Vande Moortele, works like Liszt's Sonata operate by merging these two hierarchies: the form maps onto the cycle; the sections of the form map onto the forms of the cycle; the parts of the sections map onto the sections of the form; and so on. This effectively collapses cyclical form into sonata form: the movement cycle disappears as a distinct phenomenon, but its traces are preserved in the sonata's higher-level functions. In such music, we need to be alert to the possibility that formal regions may perform multiple formal functions. In principle, the functions comprising a theme might serve not only as the elements of a theme group but also as the content of an exposition; and an exposition might, in turn, convey the function of a first movement.

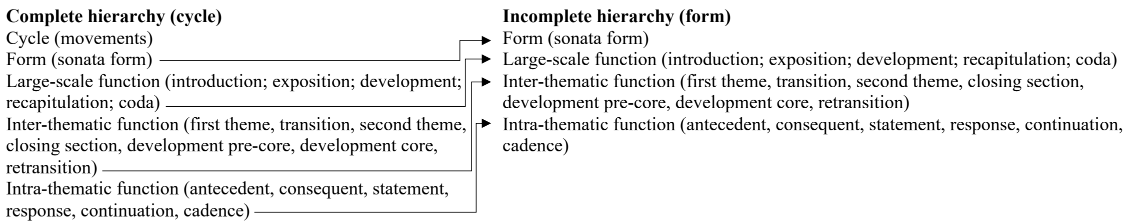

Fig. 1. Formal hierarchies in Vande Moortele's theory (adapted from Vande Moortele 2009).

A fully-fledged two-dimensional form preserves both variants of the hierarchy in all its material. More often, however, mapping occurs in some dimensions but not others. Vande Moortele offers three concepts to capture this variability: when a large-scale function also serves as a movement of the cycle (for example, a development section may also be a scherzo), the two levels *identify*; when a movement of the cycle does not serve as a formal function (for example, when a scherzo is not also a development), the movement is *interpolated* within the form; and when a formal function does not serve as a movement (for example, when a development is not also a scherzo), it is *exocyclic*. In many two-dimensional forms, some formal functions identify with movements, some movements are interpolated, and some formal functions are exocyclic.[17]

16 Vande Moortele, *Two-Dimensional Form*, 22.
17 *Ibid.*, 24–26.

Nielsen's Fourth Symphony resonates with Vande Moortele's theory, but not unproblematically. The work's overall scheme is described in Figure 2. *Pace* Christopher Tarrant's observation that the Fourth 'as a whole does not function meaningfully at the level of sonata form', I read the work as a single-movement design, for two reasons:[18] it is continuous; and more importantly, it is framed by one formal action, which I understand as the inception and completion of a sonata form, elaborating on Povl Hamburger's observation that 'having been left out in the recapitulation', the first movement's second theme 'provides the ultimate climax of the whole work'.[19] The Symphony is also cyclical – that is, possessed of multiple related movements – but Nielsen interpolates the scherzo, slow movement and finale in the aftermath of a formal absence that begs to be addressed: the first movement's recapitulation cuts from the transition to the codetta in bar 387 without reprising the second theme. The rectification of this omission frames the interior movements and finale: the scherzo, slow movement and finale intrude on the first movement's formal process before its premature ending has been corrected, warping the relationship between form and cycle in a way that obstructs the hierarchical primacy of the latter over the former. At the end, the completion of the first movement's form takes hierarchical priority over completion of the movement cycle.

1	51	96	153	341	387	416	451	513	544	584	603	651	681	860	1140
Exposition			Development	Recapitulation ...											... completed
A+TR	B	C +B-based codetta		A+TR	B-based codetta										B
						Scherzo			Adagio				Finale		
						A	B	A^1	A	B	Development	Coda	Exposition	Development	

Fig. 2. Nielsen, Symphony No. 4, form and cycle.

The fact that the finale is also formally incomplete is crucial in this respect. Figure 3 appraises its form. With some licence, it is possible to imagine that the climax and dissolution in A major from bar 859 delineates the end of what Hepokoski and Warren Darcy call a 'continuous' exposition: an exposition, which exhibits no distinct second theme and instead spins out its transition until structural closure is reached.[20] The music from bb. 859–1139 is, however, entirely developmental, in-

18 Christopher Tarrant, 'Structural Acceleration in Nielsen's *Sinfonia Espansiva*', *Music Analysis* 38/3 (2019), 358–386, at 361: 'In cases where individual movements are connected within a multi-movement work – as in the Fourth Symphony ... – the work as a whole does not function meaningfully at the level of sonata form.'

19 Hamburger, 'Orchestral Works and Chamber Music', 38.

20 Hepokoski and Darcy, *Elements of Sonata Theory*, 51–64.

corporating, from bar 996, echoes of the first movement's second theme.[21] In the language of sonata theory, we might instead perceive two 'rotations', the second of which is incomplete, since the development's goal is the first-movement second theme's full presentation, beginning at bar 1140, which signals the completion of the first movement's recapitulation, the second theme's apotheosis and the final stabilisation of E, but also the failure of the finale to attain formal integrity.[22] In effect, the overarching sonata form's closure compensates for the finale's failure: the finale is dependent for its formal integrity on the return of the first movement's second theme, an event that, strictly speaking, is exocyclic. Nielsen thereby inverts the ordinary hierarchy of form and cycle in the manner that Vande Moortele describes: the completion of the sonata form ultimately supersedes supervenes the interior movement cycle.

<table>
<tr><td>681</td><td>723</td><td>781</td><td>797</td><td>827</td><td>860</td><td></td><td>1035</td><td>1110</td><td>1140</td></tr>
<tr><td colspan="9"></td><td>First-movement recapitulation of B+Coda</td></tr>
<tr><td colspan="9">Finale</td><td rowspan="3"></td></tr>
<tr><td colspan="5">Exposition</td><td colspan="4">Development</td></tr>
<tr><td>A</td><td>TR⇒ Fortspinnung 1</td><td>Fortspinnung 2</td><td>Fortspinnung 3</td><td>Codetta</td><td>Pre-core</td><td>Core 1 Finale A +first-movement B</td><td>Core 2 Finale A +first-movement A and B+ timpani 'battle'</td><td>Core 3 Fortspinnung 1 +first-movement B</td></tr>
</table>

Fig. 3. Nielsen, Symphony No. 4, finale, form.

What emerges is a strategy I call *limited two-dimensionality*.[23] Nielsen's Fourth Symphony is not two-dimensional in the sense of Liszt's B minor Sonata or Schoenberg's Chamber Symphony Op. 9, since at no point do the functions of the sonata form fully identify with the movements of the cycle. Nevertheless, the work cannot be explained by cleanly separating form and cycle, because the sonata initiated by the opening material remains to be completed once the Allegretto has commenced. The cycle's subordination to the sonata form is therefore crucial to the Symphony's comprehension:

21 I use 'development' in three senses in this essay: first, as a formal term to describe the central large-scale section of a sonata form; secondly, to describe thematic/motivic working, which is often associated with development sections but can occur in any formal section; and thirdly, to describe processes of harmonic intensification, especially the heightened polarisation of tonal contrast or dialectic.

22 On rotation, see *ibid.*, 611–614.

23 I have explored issues of localised two-dimensionality in the first and second movements of Brahms's Second Piano Concerto in Julian Horton, *Brahms' Piano Concerto No. 2, Op. 83: Analytical and Contextual Studies*, Leuven 2017, 186–195 and 220–229.

the second theme's conclusive return completes a single formal action, which the interior movements and finale interrupt. *The Inextinguishable* consequently occupies an intermediate position between works in which form and cycle are separate and fully two-dimensional compositions, which the concept of limited two-dimensionality seeks to explain. In multi-movement cycles, in which each movement has a complete and self-contained form – what I will call 'pure' cycles – whole-movement forms are subsets of the movement cycle, and the two dimensions do not interact. In fully two-dimensional forms, the converse is true: the movements of the cycle are subsets of the overarching sonata form and perform functions within it, which means that the sonata functions are forced *de facto* into an interactive relationship with the movement cycle, in whole or in part. In limited two-dimensional works, a formal region at a given hierarchical level overarches the levels it would normally sit beneath, or at least comes retrospectively to be interpreted in this way, but the result is not a complete subsumption of the cycle into the movement form. The separation of hierarchical levels evident in a pure cycle is nevertheless called into question.

Limited two-dimensionality has its origins in early nineteenth-century works, which deploy formal incompletion and the elision of movements as co-dependent strategies, without fundamentally endangering the independence of the cyclical level. The most well-known symphonic precedent is probably Schumann's Fourth Symphony, which is also cast in four incomplete, elided movements that cohere as a larger entity thanks to a network of compensatory cyclical thematic transformations.[24] Schumann, however, invokes practices that were, in his lifetime, more abundant in concerti than in symphonies. The pairing of incompletion and movement elision was, for example, a favoured tactic in piano concerti of the 1830s. Mendelssohn's First Piano Concerto, Op. 25 of 1831, a work that Schumann certainly knew, elides its movements, truncates its first-movement recapitulation and references aspects of sonata rondo in its finale, whilst omitting sections and undercutting a clear sense of tonal dialectic. Similar, but more extreme examples can be found in Moscheles's *Concerto fantastique*, Op. 90 of 1833 and Clara Wieck's Piano Concerto, Op. 7 of 1833–1835, both of which abandon their first movement after a sonata exposition and proceed directly into a slow movement. Other concertante precedents anticipate Nielsen's Fourth Symphony more explicitly by returning to an incomplete first-movement form following a cyclical interpolation. John Field's Seventh Piano Concerto of 1832, for example, incorporates its slow movement between the end of the first movement's second ritornello and the main business of the development, foreshadowing Schumann's identical tactic in the *Phantasie* of 1841, which later served as the first move-

24 The proximity of Schumann's Fourth to the two-dimensional idea is acknowledged by Vande Moortele; see *Two-Dimensional Form*, 35–37.

ment of his Piano Concerto Op. 54.[25] Field's idea was taken further by Xaver Scharwenka, whose First Piano Concerto, Op. 32 (1876) replaces its entire first-movement development with a slow movement. In his First Violin Concerto, Op. 20 of 1864, Saint-Saëns moved a further step closer to Nielsen, by writing a two-movement concerto, in which the slow movement is an interpolation within the first movement's development section.[26]

Nielsen's Fourth partners limited two-dimensionality with a second concept in the theory of Romantic form: Janet Schmalfeldt's notion of 'becoming', defined in her well-known formulation as 'the special case whereby the formal function initially suggested by a musical idea, phrase, or section invites retrospective reinterpretation within the larger formal context', which I have elsewhere termed 'functional transformation'.[27] Although the action of a single-movement form ultimately encompasses the whole work, Nielsen's interior movements for the most part behave as they do in a pure cycle: the Scherzo is a relatively uncomplicated ternary form; and the Adagio's tripartition into A and B themes and their subsequent development gives us no reason to suppose that its form requires subsequent completion, primarily because it grounds E major as a convincing tonic. We are only obliged to revisit the first movement's formal condition at the end, once we realise that the finale is destined to remain incomplete and the return of the first movement's second theme supplies what the first movement lacks. Nielsen consequently mobilises functional transformation on the largest scale; it is, in effect, the process that enables limited two-dimensionality. At the Symphony's conclusion, we re-evaluate the relationship between form and cycle, interpreting the former as overarching the latter. Retrospectively, the scherzo, adagio and finale lose their status as features at the formal hierarchy's highest level and become interpolations within a single-movement form.

Although Schmalfeldt theorises 'becoming' as a process acting at one functional level – a first theme might, for example, become a transition – functional transformation here operates *between* hierarchical levels, subordinating the move-

25 On the relationship between Field's Seventh and Schumann's Op. 54, see Julian Horton, 'John Field and the Alternative History of Concerto First-Movement Form', *Music & Letters* 92/1 (2011), 43–83.

26 On the formal organisation of this work, see Julian Horton and Peter H. Smith, 'Corpus Studies, Sonata Typology, and the Nineteenth-Century Violin Concerto: Viotti, Saint-Saëns, and the Challenge of Recapitulatory Compression', *Music Theory Spectrum* 47/2 (2025), 126–157, especially 151–155.

27 Janet Schmalfeldt, *In the Process of Becoming: Analytic and Philosophical Perspectives on Form in Early Nineteenth-Century Music*, New York and Oxford 2011, 9, italics in original, and Julian Horton, 'Rethinking Sonata Failure: Mendelssohn's Overture *Zum Märchen von der schönen Melusine*', *Music Theory Spectrum* 43/2 (2021), 299–319, at 305.

ment cycle to sonata form. Vande Moortele describes such transformations as instances of 'dimensional disconnection': moments at which 'the functions that one unit has to fulfil in the two dimensions start to differ', which consequently compels 'a retrospective reinterpretation of the preceding formal units'.[28] The end of Nielsen's Fourth projects a disconnection in precisely this sense: the finale's coda is also, in part, the first movement's recapitulation.

Form and Orbital Tonality

These formal complexities work closely with the Symphony's tonal scheme, the progression of which from tonal indecision to the confirmation of E major I hear as exemplifying *orbital tonality*.[29] This idea extends the family of terms usually housed under the rubric of 'tonal pairing', an idea seminally theorised in Robert Bailey's work on Wagner's tonal practice. Bailey differentiates two kinds of tonal pairing that emerge in Romantic tonal practice: 'progressive' or 'directional' tonality, which obtains when a piece or movement begins in one key and ends in another; and the 'double-tonic complex', which is the situation prevailing in Wagner's *Tristan und Isolde*, whereby tonics are not successive, but *substitutive* (that is, they are continually interchanged, without either one gaining precedence, and both have a local tonic function).[30] These practices have been cited as evidence for the emergence of a tonal 'second practice' in the nineteenth century, which differs from eighteenth-century practice in its emphasis on some form of tonal dualism over the assumption of a universal governing tonic.[31]

More recently, Peter H. Smith has refined Bailey's ideas by differentiating situations in which 'two tonics intertwine throughout a movement or movements but in which the pairing develops within a framework that is nevertheless traceable to a Schenkerian *Ursatz*' from the 'more intense manifestations' of tonal pairing evident in directional or double-tonic scenarios, which operate deep enough in the tonal hierarchy to threaten the Schenkerian concept of monotonality.[32] Smith thereby admits works including Beethoven's 'Appassionata' Sonata and Ninth Symphony, Schubert's 'Rosamunde' Quartet, Schumann's violin sonatas and Brahms's F minor Clarinet

28 Vande Moortele, *Two-Dimensional Sonata Form*, 27.

29 Julian Horton, 'Form and Orbital Tonality in the Finale of Bruckner's Seventh Symphony', 280–294.

30 Robert Bailey, 'An Analytical Study of the Sketches and Drafts', in Bailey (ed.), *Wagner: Prelude and Transfiguration from 'Tristan und Isolde'*, New York 1985, 113–148.

31 William Kinderman and Harald Krebs, eds, *The Second Practice of Nineteenth-Century Tonality*.

32 Peter H. Smith, 'Tonal Pairing and Monotonality in Instrumental Forms of Beethoven, Schubert, Schumann and Brahms', *Music Theory Spectrum* 35/1 (2013), 77–102.

Sonata to the list of compositions that express tonal pairing, on the grounds that they merge tonal orientations within their initial premise, even though they do not treat tonality either directionally or substitutively in Bailey's terms.

In later Bruckner, a further situation emerges, in which two or more possible tonics (often three) are simultaneously present but are not integrated under a single governing key, and are typically *disjunct* rather than *substitutive*, even though one key might frame the formal action. The Seventh Symphony's finale, for example, is organised around three hexatonically related tonal centres – E, C and A flat – each of which orientates its own modally mixed system of relations, between which the music continuously intercuts. Bruckner's closing assertion of E does not confirm a global tonic but terminally privileges one system over the others. I call this practice *orbital tonality*: the technique of holding in tension disjunct tonal orbits, which are not successive or substitutive tonics, but competing diatonic tonal systems in themselves. This idea inverts Richard Cohn's characterisation of the relationship between hexatonicism and diatonicism in the first movement of Schubert's Piano Sonata D. 960.[33] Cohn posits Schubert's hexatonic tonal relations – chiefly B flat, G flat/F sharp and D, but also A and C sharp – on diatonic foundations: G flat/F sharp and D constitute a 'tonic-hexatonic' system, constructed above the diatonic tonic of B flat; A and C sharp are a 'dominant-hexatonic' system built above the diatonic dominant, F. Bruckner's finale, by contrast, makes diatonic relations subordinate to an underpinning hexatonicism: the mixed modal systems of E major/minor, C major/minor and A flat major/minor form the superstructure, for which the Northern hexatonic cycle E major/minor–C major/minor–A flat major/minor supplies the base. In Cohn's model, a diatonic tonal centre still orientates the harmonic action. Orbital tonality, by contrast, precludes tonal unity: no single key governs the design, and occurrences of any one orbit are related by association, not prolongation.

Unlike Bruckner, whose later music is often fully explicable in orbital terms, the orbital system in Nielsen's Fourth serves as a framework, around which post-tonal harmonic and linear-contrapuntal features are woven. Nielsen employs a threefold orbital system, orientated around the whole-tone-related centres C, D and E, mapped in the manner of a *Tonnetz* in Figure 4. Each triad in the system is allocated a box and is described using neo-Riemannian conventions (+ signifies a major triad; – signifies a minor triad).[34] The orbital centres are represented by parallel triads (C+/C–; D+/D–; E+/E–), around which are arranged the five modally appropriate local diatonic rela-

33 Richard Cohn, 'As Wonderful as Star Clusters: Instruments for Gazing at Tonality in Schubert', *19th-Century Music* 22/3 (1999), 213–32, at 218–225.

34 As, for example, in Bryan Hyer, 'Reimag(in)ing Riemann', *Journal of Music Theory* 39/1 (1995), 101–138.

tions: the dominant, subdominant, relative, *Leittonwechsel* and subtonic or supertonic relations generated from the major and minor orbital centres. Read from left to right, each row descends through fifth relations; read from bottom to top, each column descends through minor-third relations, mediated by modal parallelisms. The orbits naturally overlap; triads shared between orbits I call *mediating keys*, which generate harmonic uncertainty, because their tonal affiliation is plural and may be unclear at a given point.

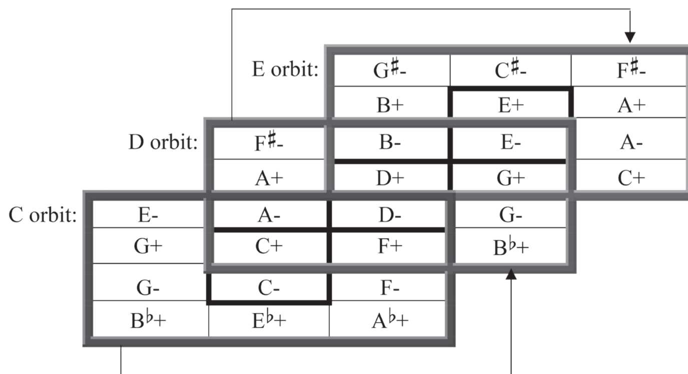

Fig. 4. Nielsen, Symphony No. 4, orbital system.

The triads shared between orbits are collated in Figure 5. For any two adjacent orbits, functional overlaps can be identified for modally similar and modally parallel variants. Adjacent major-mode variants share two triads, with ambiguities of function around IV and V, and ii and iii. Adjacent minor-mode orbits share two triads, which generate functional ambiguity around iv and v, and VI and VII. Where the upper orbit is major and the lower minor (for example, E major and D minor), there are no overlaps; where the upper orbit is minor and the lower major, three triads are shared, creating ambiguity around v and vi, iii and IV, and VII and I respectively. As we shall see, mediating keys, and especially ambiguities of dominant and subdominant functions, play a central role in the Symphony's unfolding narrative. Only three triads, D flat+, B flat– and E flat–, remain completely outside the orbital system. Nielsen mobilises these 'outsider' triads at the first movement's recapitulation to generate a moment of profound structural crisis, and they take on a cyclical function in the Scherzo.

Orbits:	**Mediating keys:**			
E and D	*E major/D major* shared triads: A+, F#- competing functions: A+: IV and V F#-: ii and iii	*E major/D minor* shared triads: n/a competing functions: n/a	*E minor/D major* shared triads: B-, G+, D+ competing functions: B-: v and vi G+: iii and IV D+: VII and I	*E minor/D minor* shared triads: A-, C+ competing functions: A-: iv and v C+: VI and VII
D and C	*D major/C major* shared triads: G+, E- competing functions: G+: IV and V E-: ii and iii	*D major/C minor* shared triads: n/a competing functions: n/a	*D minor/C major* shared triads: A-, F+, C+ competing functions: A-: v and vi F+: iii and IV C+: VII and I	*D minor/C minor* shared triads: G-, Bb+ competing functions: G-: iv and v Bb+: VI and VII
C and E	*C major/E major* shared triads: n/a competing functions: n/a	*C major/E minor* shared triads: C+, A-, E- competing functions: C+: I and VI A-: vi and iv E-: iii and i	*C minor/E major* shared triads: n/a competing functions: n/a	*C minor/E minor* shared triads: n/a competing functions: n/a

Fig. 5. Nielsen, Symphony No. 4, orbits and mediating keys.

Adapting the technique deployed in Úna-Frances Clarke's graphic analysis of the first movement and in my analysis of the Finale of Bruckner's Seventh Symphony, I sketch the orbital design of the first-theme group in Figure 6, by distributing a linear reduction of the material across the three orbits, which are arranged in ascending pitch order.[35] The reduction operates the conventions of a Schenkerian foreground graph, in the sense that it deploys stem-and-slur methods in conventional ways, stemming pitches that have linear-structural priority, beaming linear patterns where appropriate, and allocating open noteheads and thick beams to structural bass pitches underpinning significant tonal relations. *Pace* Clarke and Pankhurst, I don't speculate about large-scale *Urlinie*-type progressions, but confine my annotations to short- and mid-range progressions and melodic dependencies.[36] Open noteheads are allocated to soprano pitches that have putative structural significance in an orbit and orientate the melodic action within a given functional span, without implying that they

35 Úna-Frances Clarke, 'Nielsen and Sibelius "Between Temperament and Tradition"', in Gareth Cox and Julian Horton, eds., *Irish Musical Studies 11: Irish Musical Analysis*, Dublin 2014), 127–148, at 130–134; Tom Pankhurst, 'Different Names for the Same Thing? Nielsen's Forces, Schenker's Striving, Tarasti's Modalities and Simpson's Narratives', *Carl Nielsen Studies* 1 (2003), 124–136.

36 In this regard I agree with Daniel M. Grimley, who argues, in relation to the Third Symphony, that 'Nielsen's music is not prolongational in any orthodox Schenkerian sense. The chromatic progressions in the first movement [of the Third Symphony] cannot ultimately be heard as diminutions of underlying diatonic structures.' *Carl Nielsen and the Idea of Modernism*, Woodbridge 2010, 101.

contribute to any deep structure in the manner of an *Ursatz*. The analysis is also register-sensitive, employing Helmholtz designations for pitch register where necessary. Important tonal functions within orbits are described using Roman numerals, which assume the orbital centre as a tonic, and figured bass, applied in the normal way to capture voice leading and chord inversion. Areas of mediation between orbits are represented simultaneously on the germane orbital levels, which means that the harmony in these passages is allocated two possible functional labels (A+, for example, is represented in the D orbit as V and the E orbit as IV). The representation of mediating keys is not comprehensive but contextually sensitive: in some situations, ambiguity between orbits is tangible; in others, affiliation to one orbit is clear, even though the harmony in question technically belongs to more than one orbit. In bar 12 of the first movement, for example, the C+ harmony clearly grounds the C orbit alone, even though C+ could also be represented as VII of D minor. In situations where linear patterns span shifts between orbits, the pertinent slurs and beams cross between the orbits. Since motion between orbits is disjunct rather than continuous, any beamed relations or melodic patterns in one orbit that resume after the intervention of another are considered *associative* rather than *prolongational*. The music that intervenes between the projection of one orbit and its recurrence is not prolongational in the Schenkerian sense, because music in one orbit does not prolong that of another by diminution. Rather, we associate recurrences of an orbit as disjunct but related events.[37] Properly speaking, there are no prolongational relations beyond the immediate vicinity of one orbitally unitary segment: as soon as the music jumps orbit, prolongational continuity is abandoned.

Figure 6 makes clear that the two 'conflicting streams of fire' that Simpson describes in the opening twelve bars are formed from the presentation of music projecting the C and D orbits simultaneously, the latter rendered more complex by its immediate modal mixture (D major follows D minor in short order).[38] The orbits converge on G+ at bar 12, which mediates between C and D, as V of the former or IV of the latter. The remainder of the theme group plays out the temporary consolidation of the C orbit (from bar 13) and the progression to a functionally clouded E at bar 28, which is the group's termination point, a trajectory that prefigures that of the entire work *in nuce*. The preponderance of the C orbit in bars 12–22 is disturbed by one event, which is the apparent chord of B flat minor in bars 15–16, a triad that falls outside the orbital system. Rather than allocate this harmony to a separate level in the

37 On associative linear connections in post-tonal music, see Joseph N. Straus, 'The Problem of Prolongation in Post-Tonal Music', *Journal of Music Theory* 31/1 (1987), 1–21.

38 Simpson, *Carl Nielsen: Symphonist*, 77.

Fig. 6. Nielsen, Symphony No. 4, first movement, first theme, orbital reduction.

graph, I have interpreted it as a neighbouring chromatic alteration of the diminished seventh that follows in bars 17–18, which in turn resolves as vii° of C.

As a contrapuntal structure, the first theme discloses several significant features. The simultaneous presence of D and C at the start engenders the competition between two linear frameworks, which vie for primacy. The intercutting between orbits means that we don't experience this competition as a conflict between prolon-

gational spans, but rather as the inception and recovery of structurally significant pitches, which are related associatively across intervening music that projects a different orbit. The c^3 introduced in the violins in bar 1 is, for example, recovered in bar 19, demarcating an associative relationship between these two events in the C orbit, signified by the discontinued dotted beams in Figure 6. This span competes for structural priority with two other melodic features. First, the winds juxtapose a^2 against the violins' c^3 in bar 1, setting up an immediate conflict between $\hat{8}$ of C and $\hat{5}$ of D, although a^2 is abandoned after this point and is not revisited until the second-theme group. Second, the g^3 attained in bar 12 recurs in bar 22, overlaying an associative connection, which dovetails with the projection of c^3. The competition between c^3 and g^3 is also a contest between two kinds of orbital affiliation: c^3 is associated with the C orbit alone; but g^3 belongs to G+ and as such affiliates with both the C and D orbits, as a harmony tone of both V of C and IV of G. Once recovered in bar 22, g^3 initiates a linear descent through a diminished octave, which traverses the three orbits before terminating at the $g\sharp^2$ in bar 27 with the climactic attainment of E+. The motion from g^3 through $f\sharp^3$ to e^3 in bars 23–24 passes from the C to the E orbit, but the music then diverts towards D minor, and the linear progression is interrupted and only resumed on d^3 in bar 26, passing through a G– harmony that affiliates with both the C and D orbits and finally alighting on E+ in bar 28 via a putative half cadence in A, indicated by the boxed HC in the graph.

The second-theme group and closing section, graphed in the same way in Figure 7, contrast the first theme not only in the music's topical character, but also in that they are ultimately orientated around one framing key, A+, creating a region of comparative stability. The orbital context, however, complicates A+'s formal role because, as a mediating key, it has two possible functions, as V of D+ and IV of E+. The point of repose in A+ reached by bar 71 and the strong assertion of A+ that closes the exposition in bars 129–141 are consequently not simply confirmations of a non-tonic pole contrasting a unitary governing tonic, but rather articulations of a tonality that is in itself ambiguous, since we don't know at this point with which orbit A+ will ultimately affiliate. The closing section introduces an additional strategic feature, because it begins in E in bar 97, disclosing the first clear assertion of E as tonic and the first structural anticipation of E's deeper significance. Moreover, although E seems by the end of the exposition to be decisively subordinate to A – in a less complex tonal environment, we might hear a middleground dominant to A at this point – there is an important sense in which E conveys a structural clarity, which is denied to A, because as we have seen, A brings with it a degree of orbital ambiguity, whereas E does not.

Fig. 7. Nielsen, Symphony No. 4, first movement, second theme and closing section, orbital reduction.

Figure 7 shows that the second group and closing section convey their own distinctive linear framework. On the largest scale, the A bass attained by bar 56 and the counterpointing soprano e^2 with which the second theme is initiated in bar 51 are recovered in bars 67–71 and, ultimately, at the exposition's end from bar 121, create an overarching associative span encompassing bars 51–141. The interjections of the C orbit in bars 57 and 63 insert a bass C within the first A major span and thereby reinterpret e^2 as $\hat{3}$. The beginning of the closing section at bar 97 brings with it a temporary stabilisation around E and its soprano $\hat{5}$ (b^2), which is regained in bar 110. But this is in dialogue with two abrupt interventions of the C orbit: the first is the digression through E flat+ and F– in bars 101–103, which is constructed around a descending linear seventh in

Fig. 7. (continued).

the soprano and counterpointing 6-progression in the bass, as the beams in Figure 7 clarify; the second is the equally curt intervention of F– and its neighbouring iv from bar 111, which discharges onto V of C in bar 113, articulated by the stretto on the second theme's head motif initiated by the trombones. The second group discloses further, notably complex voice-leading details. The transition towards the closing section in bars 77–96 is essentially an ascending model-sequence-fragmentation progression, in the sense described by Caplin, but again the orbital context complicates interpretation.[39] Bars 77–81 are reducible to an ascending bass step progression, indicated by

39 Caplin, *Classical Form*, 11.

Fig. 7. (continued).

the beam in Figure 7, which enfolds successive V–i progressions in B minor and C sharp minor. This material traverses two orbits, beginning in the D orbit and shifting, with the arrival on C sharp–, to the E orbit, but is nevertheless constructed around a single soprano diminution, which is the double turn figure around a^2. The fragmentation process ensuing from bar 83 descends to the C orbit, coming to rest on vii° of F minor by bar 87, which in turn clarifies to the linear projection of E flat+ in bars 89–94. Looking back, we can also posit an ascending bass pattern in the C orbit, which departs from the bass C in bar 57 and moves by step through D flat in bar 87 to E flat in 93. The E major harmony that begins the closing section is secured by enharmonic reinterpretation of E flat as D sharp, which after bar 95 becomes the bass of G sharp–.

Fig. 7. (continued).

The exposition's construction clarifies a further strategy, which Nielsen shares with Bruckner. Theme groups exhibiting orbital tonality do not simply prolong a tonic or non-tonic key in the manner of classical sonata forms. Rather, a theme group is defined by two features: its orientation within the orbital system, that is, whether it gives salience to one or more orbits and where in the group this salience is articulated; and the pathway through the orbital system that the theme group follows. I define the latter as *harmonic fields*: each theme group is typified by a harmonic field, which is the group's characteristic progression around the orbital system. It is this feature rather than the prolongation of a key that defines themes and articulates contrast, and which underpins the structures mapped in figures 6

and 7. The sonata dynamic arises from the polarisation and mediation of dichotomous harmonic fields: in this environment, sonata form is consequently about *progression*, not *prolongation*.

This perception nuances Tom Pankhurst's observation that the Fourth Symphony plays out 'an apparent struggle for sharpwards rather than flatwards modulation', which Pankhurst relates to Nielsen's own observation that music embodies the opposition of 'resting' and 'active forces', and his construal of the Fourth Symphony as a narrative grounded in this polarisation, which the work's title – *The Inextinguishable* – epigrammatically captures.[40] The pull from D towards E, as the Symphony's ultimate goal, and the countervailing motion to C, are modes of navigating the orbital system, which generate harmonic fields. In this respect, the Symphony's narrative is not simply about teleologically attaining E by engineering the appropriate modulation, which steers the music away from C. More properly, it addresses the question of how a field might be constructed, the endpoint of which is a confirmation of E major that is secure enough to conclude the piece. The work's drama arguably owes more to the nature of the pathways Nielsen forges around the orbital environment than it does to the tonal goals that are their ultimate destinations.

Figures 8a, b and c depict the first and second groups and the closing section as harmonic fields, allocating a different shade of grey to each orbit and graphically tracking the shifts between them. These figures clarify two points. First, the exposition's tonal poles are demarcated by moments of ambiguity, which themselves are of two kinds. The opening material is ambiguous because two orbits are simultaneously embedded in the material: C in the strings; D in the winds. The second group and closing section, by contrast, generate ambiguity because their focal key belongs to two orbits, D and E. This shift of emphasis – from the overlaying of orbits to a focus on one mediating key – is itself a sonata-formal strategy: the antithesis of first and second themes is *an antithesis of modes of ambiguity*. Second, each formal section discloses a clear pattern of progression through the orbital system. Having established its initial conflict, the first group latches onto C, before moving downwards systematically through the three orbits and returning to E, in preparation for the second theme's A major. Both the second group and closing section reverse this tendency. Having established their opening premise (A+ and E+ respectively), they climb through the orbits from C to E in successive waves. To put all this more succinctly, the exposition establishes three interacting principles of tonal construction: a tonally *directed* first group contrasts with a tonally *framed* second group and closing section; a bi-orbital first-group premise contrasts with an orbitally ambiguous second group; and a first-

40 Pankhurst, 'Different Names for the Same Thing?', 131.

group field characterised by descending motion through the orbits contrasts with second-group and closing-section fields characterised by ascending orbital motion.

First-theme group						
Bars:	1	12	23	25	26	27
E:	-	-		-	-	
D:		-	-		-	-
C:			-	-		-

Fig 8a. Nielsen, Symphony No. 4, first movement, first-theme harmonic field.

Second-theme group												
Bars:	51	57	59	60	61	62	63	67	77	81	84	95
E:		-	-		-		-		-		-	
D:		-		-		-	-			-	-	-
C:	-		-	-	-	-		-	-	-		-

Fig. 8b. Nielsen, Symphony No. 4, first movement, second-theme harmonic field.

Closing section							
Bars:	97	101	103	105	111	113	121
E:		-	-			-	
D:	-	-			-	-	
C:	-		-	-	-		-

Fig. 8c. Nielsen, Symphony No. 4, first movement, closing section harmonic field.

The recapitulation, analysed in Figure 9, clarifies one ambiguity but sustains another. At the first theme's return in bar 341, C is removed; the bass now projects D alone, and as such is now consonant with the theme's modally mixed harmony. Nielsen also dispenses with the C major music first established at bar 12; an allusion to it appears around B flat in bar 349, but this associates more readily with the D orbit. In general, the recapitulation is assiduous in its avoidance of the C orbit, until bars 380–386, where, in the climactic approach to the return of the exposition's second theme-based codetta, now categorically in E, from bar 387, Nielsen intercuts rapidly between the three orbits. The fledgling bitonality of the work's opening is consequently dispelled, but the recapitulation remains tonally directed, progressing from D to E, and as such closing without any integration of first and second themes under one tonal premise in the manner expected of a common-practice sonata form.

The narrative of resolution is further compromised by the fact that the recapitulation is markedly more unstable than the exposition in its harmonic detail and linear structure. The most striking evidence of this appears in bars 360–372, shown

Fig. 9. Nielsen, Symphony No. 4, first movement, recapitulation, orbital reduction.

Fig. 9. (continued).

Fig. 9. (continued).

Fig. 10. Nielsen, Symphony No. 4, recapitulation, bb. 360–372.

in Figure 10. This passage is distinctive because, as Figure 9 makes clear, it steps categorically outside the orbital system, highlighting D flat+ and E flat–, which are two of the triads that fall entirely beyond the grid of relations illustrated in Figure 1. Tellingly, Nielsen marks this digression, both motivically and rhetorically, as notably disruptive to the music's continuity. The arrival at D flat in bar 363 follows perhaps the movement's most unsettling gesture. In bars 360–361, the texture breaks into abrupt fragments of F sharp– and C sharp– harmony, which struggle to maintain a grip on the E orbit. The D orbit is then briefly, if forcefully, insinuated by the timpani's D–A

interjection, but when the orchestra rallies, this gesture is answered, without mediation, by a semitonal slippage to A flat and D flat, initiating a nine-bar region of harmony beyond the orbital system's purview. Nielsen departs from this harmonic *terra incognita* as abruptly as he enters it. The fragmentary gestures of bars 360–361 return in bars 370–371, now centred on E flat–, and the music jumps rapidly through D major into B at bar 372, restoring the orbital system's hold on the music and initiating the progression that produces the climactic confirmation of E in bar 387.

Figure 11 contextualises all of this activity within a summary of the recapitulation's harmonic field. Nielsen's abandonment of the exposition's field structures is graphically illustrated. The recapitulation's drama arises predominantly from the interplay of the D and E orbits, with a belated reintroduction of the C orbit as the final attainment of E+ approaches. This initial narrowing of orbital focus is offset by the crisis engendered in bars 360–371, which calls the entire system into question, provoking a panicked acceleration of orbital interactions (we pass through the D and E orbits and into D flat in the span of two bars), articulated by material and gestural fragmentation, which underscores the provisionality of the first movement's end and points towards a cyclical solution to the problems it bequeaths.

Recapitulation														
Bars:	341	353	357	361	362		363	371	372	379	380		382	386
E:	-				-	-	-	-		-	-	-	-	
D:		-		-		-	-		-		-		-	-
C:	-	-	-	-	-	-	-	-	-	-		-		-
No orbital relation:	-	-	-	-	-			-	-	-	-	-	-	-

Fig. 11. Nielsen, Symphony No. 4, first movement, recapitulation harmonic field.

The recapitulation is also developmental in its linear structure, spinning out two of the first theme's linear-motivic features, represented in Figure 12: the counterpointed ideas in bars 19–21, labelled as a2 and a3; and the figure introduced in bars 23–24, labelled a4. As Figure 9 clarifies, motifs a2 and a3 form the substance of bars 349–359; their treatment is characterised by the exploitation of the invertibility of a2 and a3 and the gradual extension of the interlocked linear progressions embedded in a3, also identified in Figure 9. Initially, these appear as dovetailed 3-progressions. From bar 363, Nielsen treats a3 in stretto, extending the linear progression in the soprano, so that it encompasses a fourth, and in the bass, so that it traverses a fifth, creating a dense motivic counterpoint. The termination point of this process is the fragmentation of a2 in bar 360, which is also – surely not coincidentally – the point at which the orbital system breaks down and yields to the intrusion of D flat+. Motif a4, by contrast, is deployed in order to recover from the 'crisis' experienced in bars 360–371, combined

in bars 379–386 with the B theme's head motif 'b1', also labelled in Figure 9, in preparation for the exposition codetta's return at bar 387. Again, this motivic counterpoint generates linear progressions. When a4 takes over from a2 in bar 374 in the violins, it is immediately spun out into a 5-progression, spanning from f$\sharp^3$ to b^2, dovetailed with a 4-progression in the bass, which connects c$\sharp^1$ to g$\sharp$. Working together from bar 379, a4 and b1 produce an ascending 3-progression from a^1 to c^3 via an octave registral transfer, which spans the three orbits. This progression's terminal c^3 is then reinterpreted as an upper neighbour note to $\hat{5}$ in E, and the whole passage culminates in a $\hat{5}$–$\hat{1}$ descent in E, which forms the soprano of the perfect authentic cadence (PAC, adopting Caplin's and Hepokoski and Darcy's acronym) that finally secures E in bars 386–387.

Fig. 12. Nielsen, Symphony No. 4, first movement, motifs a2, a3 and a4 in exposition.

All of this elaborates a deeper process, central to which is the contest between two conflicting structural harmony tones: the D-orbit $\hat{5}$ with which the recapitulation begins, which is recovered in bar 357 and tracks back to the work's opening; and the E-orbit $\hat{5}$, which re-emerges from bar 372 and is picked up at the start of the linear descent approaching bar 387. As Figure 9 clarifies, the ascending 3-progression in bars 379–385 is embedded within a larger associative relation between the b^2 in bar 372 and the b^2 in bar 385. The submission of the D orbit to the E orbit at the first movement's end is encapsulated in the voice-leading structure of this passage, which reinterprets $\hat{5}$ of D within $\hat{5}$ of E's frame and enacts a linear progression, the outcome of which is an E major PAC.

The interplay of the three orbits remains critical across the Symphony's formal and cyclical design, as the bass diagram in Figure 13 captures. With the closure

of the first movement in E and its ultimate installation at the Symphony's end, the A major with which the exposition concludes has to be freshly reinterpreted, now decisively as a subdominant. Nielsen exploits A's functional ambiguity to engender a bifocal cyclical relationship: looking back to the start, A is a dominant; looking forward to the end, A is a subdominant. The interior movements in effect compose out the orbital relations engendered in the first-theme group, in the sense that they are projected at a deeper structural level. In the Poco allegretto, the mediating key of G becomes the tonic, flanking a contrasting middle, which foregrounds D flat and C. By tonicising G at this point, Nielsen now explores the problem of dominant/subdominant ambiguity in relation to the D and C orbits, since G+ is IV of D and V of C. D flat is external to the orbital system; its presence here recalls its disruptive influence in the first movement. The slow movement for the first time tonicises E at the level of the movement cycle, albeit with heavy chromatic distortions, and moreover culminates, at bar 642, in a radiant affirmation of E major, which for the first time suggests that E can function as a framing tonality as well a goal.

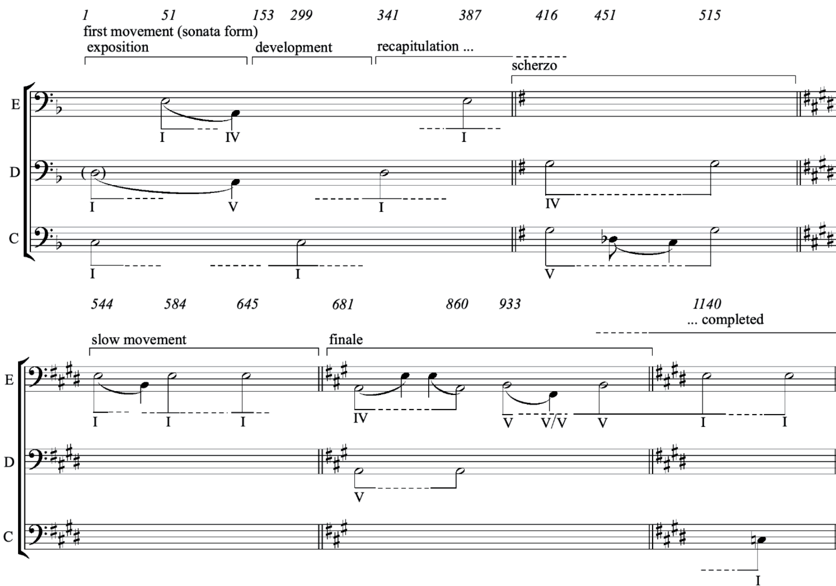

Fig. 13. Nielsen, Symphony No. 4, cyclical projection of the orbital system.

The finale initially centres on A, if not unequivocally; and A is secured with reasonable certainty at the exposition's end in bars 827–859. The tonal trajectory from the slow movement into the finale decisively shifts the tonal discourse. By the end of the finale's exposition, the critical question has become whether the slow movement's E is V of the Finale's A, or whether the Finale's A is IV of the slow movement's E. One

late intrusion of the D and C orbits occurs in bars 811–827, in the approach to the exposition's end, quoted in Figure 14. The passage begins in B flat+, in the territory of the D orbit, but from bar 819 shifts abruptly towards A– and subsequently C+, before A+ is secured with a hastily marshalled authentic progression. By way of counterbalance, the development's second part, bars 933 to 1034, orientates substantially around B. For the first time, the possibility that E might serve as a tonal goal is underwritten by a sustained region of dominant harmony; this, indeed, is critical to the process of revivification, to which Nielsen's title alludes. Altogether, the Finale's form pivots on a fine balance between regression to the D orbit, which is a real possibility at the first part's end, and compensation by motion towards the dominant side of E. The recapitulation of the first movement's second theme and coda installs E with confidence, notwithstanding interior digressions to C in bars 1146–1155, because the finale has supplied what the first-movement recapitulation lacked: a significant dominant corrective to the influence of the C orbit, which forces the tonal discourse to operate primarily between the D and E orbits.

Fig. 14. Nielsen, Symphony No. 4, finale, bars 811–827.

Conclusions

Surveying the wide domain of twentieth-century symphonic composition, David Fanning argues that Nielsen and Sibelius were able to reinvent and revivify the symphony because they reimagined its generative dualisms in ways that worked 'with the inherited assumptions of large-scale symphonic forms, but not within them'.[41] Fanning's perception amplifies Nielsen's own comment, made to Ludvig Dolleris shortly after completing the Fifth Symphony, that the Fifth's second movement offered a 'counterpole' to the first, contrasting the latter's 'vegetative' nature music with a call to action.[42] For Fanning, the notion of polarisation to which Nielsen refers is, in different ways, the key to estimating the success or failure of symphonic compositions in the Mahlerian aftermath. As Fanning explains:

> If we take a step further and relate the community-forming dimension [of the symphony] to the notion of positive and negative poles, we acquire a useful tool for discussing the relative status of individual symphonies and symphonists after Mahler ... . Those symphonies in which one or other pole is only weakly defined are unlikely to find more than local or ephemeral resonance, since the lack of strong dualisms in effect precludes engagement with existential issues and hence the ability to speak to large audiences.[43]

Assessed in these terms, Nielsen's modernist credentials are guaranteed by his ability to conceive vital dualities, which can generate convincing symphonic narratives without lapsing into epigonism.

The reading proposed in this article puts analytical flesh on Fanning's idea, whilst also allowing us to relate the Fourth Symphony to Grimley's reading of the Fifth as exhibiting a kind of 'negative' modernism, which foregrounds the irresolution of duality rather than its synthesis. Nielsen's limited two-dimensionality produces a work, which adapts, but does not fully inhabit, the post-Beethovenian paradigm in precisely Fanning's sense. None of the formal models with which Nielsen works lies entirely beyond Beethovenian precedent; and yet they are energised and assembled in ways that stand conspicuously outside habits traceable in the symphonic tradition from Beethoven to Mahler. Similarly, the treatment of tonality sketched here builds on the late-nineteenth-century 'second' practice, whilst producing a concept of tonal pro-

41 David Fanning, 'The Symphony since Mahler: National and International Trends', in Julian Horton, ed., *The Cambridge Companion to the Symphony*, Cambridge 2013, 96–129.

42 Fanning, *Nielsen; Symphony No. 5*, 13.

43 Fanning, 'The Symphony since Mahler', 97–98.

cess that appears highly original. The genius of Nielsen's Fourth is that these principles appear at once continuous with, and radically disruptive of, symphonic traditions.

The orbital discontinuities I have mapped substantiate Grimley's notion of discontinuity by indicating that, in the Fourth at least, it is a feature of the tonal system as well as the musical material. *Pace* Simpson, there is no encompassing tonal unity in this work. Even though they share triads, the orbits are nevertheless disconnected, in the sense that they are never subsumed into each other but simply coexist as parallel tonal worlds. Each orbit is, moreover, diachronically discontinuous within itself, since music projecting a given orbit only ever stands in an associative relationship with its earlier and subsequent manifestations. The material centred on D in the exposition's first theme and its recurrence at the start of the recapitulation, for example, has no prolongational connection: the intervening music centred on C and E does nothing to underwrite D's structural primacy. Consequently, the orbits are in a sense doubly alienated: from each other, since no two orbits join to form any kind of wider unity; and from themselves, since instances of a given orbit are irremediably discontinuous. The end of Nielsen's Fourth Symphony emphasises one, ultimate key; but this event does not even synthesise all the prior music falling within that orbit, let alone unify E, D and C into a structural totality. Nielsen's trick, at the work's end, is to convince us by rhetorical means of the fulfilment of a struggle-to-victory trajectory, which has no unequivocal tonal foundation.

Finally, the approach adopted here raises the broader question of how limited two-dimensionality and orbital tonality interact. Tempting as it is to argue that the former is the formal principle that necessarily articulates the latter, the reality of their interaction is more complex. Ambiguity of tonal orientation is an inevitable consequence of the collapse of prolongation into progression: any form in which inter-thematic units are constituted as fields that are not governed by a single tonic will promote tonal uncertainty and imply teleology. The work's two-dimensional design is, to be sure, founded on a teleological concept as well, to the extent that its narrative idea is the end-weighted rectification of an absence. But at the Symphony's end, E major does not function as a tonal goal in direct analogy with the material's formal function, because at no point in the first movement is E major posited as a global tonic, the absence of which demands restitution. The conclusive attainment of E signals the cessation of a movement around the orbital system, which could terminate in D or C without structural detriment. The form, in short, resolves, to the extent that an omission is belatedly made good, whereas the tonal process simply stops. At the most fundamental level, this is the basis of Nielsen's modernism: the discontinuities that make Nielsen's Fourth Symphony 'modern' arise because, at the end, tonal stability is dissociated from formal resolution.

ABSTRACT

This article applies two concepts in recent music theory – Steven Vande Moortele's notion of 'two-dimensional form' and my notion of 'orbital' tonality – to explicate the relationship between form, movement cycle and progressive tonal planning in Nielsen's Fourth Symphony. It pays special attention to the relocation of the first movement's second-theme recapitulation as the coda of the entire work and the resulting embedding of the symphonic movement cycle within an overarching sonata form. In tandem, it explains the Symphony's directed tonal scheme in terms of the interplay of three tonal 'orbits' – C, D and E – the conflict between which underpins the work's formal drama. The analysis is framed by a consideration of how these practices evidence Nielsen's modernism, couched in dialogue with the views of Robert Simpson, David Fanning and Daniel Grimley.