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Nonatonic Harmonic Structures in Symphonies by Ralph Vaughan Williams and Arnold Bax

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Nonatonic Harmonic Structures in Symphonies by
Ralph Vaughan Williams and Arnold Bax

Cameron Logan, Ph.D.

University of Connecticut, 2014

This study explores the pitch structures of passages within certain works by Ralph Vaughan Williams and Arnold Bax. A methodology that employs the nonatonic collection (set class 9-12) facilitates new insights into the harmonic language of symphonies by these two composers. The nonatonic collection has received only limited attention in studies of neo-Riemannian operations and transformational theory. This study seeks to go further in exploring the nonatonic's potential in forming transformational networks, especially those involving familiar types of seventh chords. An analysis of the entirety of Vaughan Williams's Fourth Symphony serves as the exemplar for these theories, and reveals that the nonatonic collection acts as a connecting thread between seemingly disparate pitch elements throughout the work. Nonatonicism is also revealed to be a significant structuring element in passages from Vaughan Williams's Sixth Symphony and his *Sinfonia Antartica*.

A review of the historical context of the symphony in Great Britain shows that the need to craft a work of intellectual depth, simultaneously original and traditional, weighed heavily on the minds of British symphonists in the early twentieth century. The nonatonic collection, with its ability to bridge between tonal or modal pitch space and

non-tonal or chromatic pitch space, seems to arise naturally from Vaughan Williams's need to answer the pressures both of symphonic tradition and nascent modernism. The employment of nonatonicism is not restricted to Vaughan Williams; it is shown to be at work also in the Second and Third Symphonies of Arnold Bax. Bax gained considerable attention as a symphonist during the time that Vaughan Williams was working out his Fourth Symphony. Specific musical connections between works by Vaughan Williams and Bax have received little attention, beyond an enigmatic link between Vaughan Williams's Piano Concerto and Bax's Third Symphony (the original version of Vaughan Williams's concerto contained a quotation of Bax's symphony, but this quotation was later removed). While this study does not definitively solve the riddle connecting these two works, it does establish a shared harmonic language between Vaughan Williams and Bax, reinforcing previous suggestions that the two composers may have exchanged ideas.

Nonatonic Harmonic Structures in Symphonies by
Ralph Vaughan Williams and Arnold Bax

Cameron Logan

B.M., Texas Tech University, 2001

M.M., University of Hartford, 2005

A Dissertation

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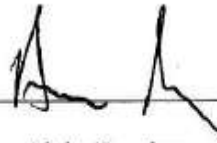
Doctor of Philosophy Dissertation

Nonatonic Harmonic Structures in Symphonies by
Ralph Vaughan Williams and Arnold Bax

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Cameron Logan, B.M., M.M.

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Peter Kaminsky

University of Connecticut

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Five years ago I first showed my initial work on the nonatonic collection to the scholars who would form my Dissertation Advisory Committee. At that time my ideas could fit onto a single sheet of manuscript paper (front and back!). Both Richard Bass and Peter Kaminsky immediately offered new insights and pointed out paths that I would eventually explore in this project. When I demonstrated to Alain Frogley that the nonatonic collection could be used in an analysis of the Fourth Symphony, he had already made the major contribution of revealing to me the great variety and depth to be found in music by Vaughan Williams.

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CHAPTER 1:

THE FLOWERING OF THE SYMPHONY IN BRITAIN

1.1 The Weight of Revolution

“The English Symphony is almost entirely a twentieth-century creation,” writes Hugh Ottaway in his book on Vaughan Williams symphonies.¹ Surveys of British music or of the symphony as a genre tend to echo this sentiment;² in more generalized musical-historical narratives, even the extensive twentieth-century flowering of the British symphony is given little attention, if it is discussed at all. To take two examples from guides intended for lay audiences, Alex Ross devotes only a brief consideration to composers of the English musical renaissance; when he does turn his attention to British music he focuses on Benjamin Britten.³ On symphonies by British composers before Britten, Ross’s comments are limited to two broad observations: he suggests that many of them were influenced by Sibelius, and that orchestras in the U.K. would upset their audiences if they “neglected the symphonies of Elgar and Vaughan Williams.”⁴ To take an earlier example, Harold Schonberg devotes an entire chapter to the English musical renaissance, but relies on now stale observations for his discussions of the symphonies of

¹ Hugh Ottaway, *Vaughan Williams Symphonies* (Seattle: University of Washington Press, 1973), 5.

² Specialized accounts that explore the British symphony as a subject include: Ralph Hill, ed., *The Symphony* (Baltimore: Penguin Books, 1954), which includes chapters on Elgar, Vaughan Williams, and Bax; Robert Simpson, edited by *The symphony* (New York: Drake Publishers, 1972), especially volume 2; and Jürgen Schaarwächter, *Die Britische Sinfonie 1914-1945* (Köln-Rheinkassel, 1994). More recent accounts are A. Peter Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, Vol. III, Part B of *The Symphonic Repertoire* (Bloomington, IN: Indiana University Press, 2008); and Alain Frogley, “The Symphony in Britain: guardianship and renewal,” in *The Cambridge Companion to the Symphony*, edited by Julian Horton (New York: Cambridge University Press, 2013), 376-395.

³ Alex Ross, “Grimes! Grimes! The Passion of Benjamin Britten,” in *The Rest is Noise: Listening to the Twentieth Century* (New York: Picador, 2007), 447-482.

⁴ Ross, *The Rest is Noise: Listening to the Twentieth Century*, 173-174, 581.

Elgar and Vaughan Williams.⁵ For Elgar, Schonberg simply describes the two symphonies as post-romantic and compares them to Brahms and Strauss, while for Vaughan Williams his discussions rely on the composer's well-known interest in folksong. What Alex Ross, Harold Schonberg, and other writers on twentieth-century music have in common is a familiar focus on only its most obviously revolutionary aspects. In a moment of striking hyperbole, Schonberg contextualizes Schoenberg's break from tonality as a moment from the same mold as other twentieth-century achievements such as the publication of Freud's *The Interpretation of Dreams*, Plank's quantum theory, Einstein's theory of relativity, and the first manned flight of the Wright brothers.⁶

When the focus is on the revolutionary efforts of twentieth-century composers, the symphony stands little chance. It is a genre laden with tradition, and engages in the radical aspects of twentieth century music with great difficulty. While leading composers of the "New Music", such as Schoenberg and Bartók, wrote well for the orchestra, they and others like them would more often turn to chamber music or smaller ensembles than the previous generation. While this was largely a practical concern, such as Stravinsky's use of a small number of musicians while spending World War I in Switzerland, the emphasis on reduced numbers would be received as a "reaction to the excessive size of the orchestra required for almost any of the late nineteenth-century symphonic pieces."⁷ More troubling than the size of ensemble was the more urgent element of the new generation's harmonic idiom. The principle of atonality would cast a menacing shadow over then accepted symphonic practice, whose idealized forms rely on a contrast of key.

⁵ Harold Schonberg, "The English Renaissance: Elgar, Delius, Vaughan Williams," in *The Lives of the Great Composers*, 3rd ed. (New York: W. W. Norton & Co., 1997), 492-509.

⁶ Schonberg, *The Lives of the Great Composers*, 3rd ed., 578.

⁷ Louise Cuyler, *The Symphony* (Warren, MI: Harmonie Park Press, 1995), 188.

Robert Simpson presents the conservative viewpoint of tonality as integral to the symphony, a genre in which:

no single element is ever abandoned, or deliberately excluded, that the composer must master them all and subordinate them to the demands of the whole. In this sense the symphony is profoundly *inclusive*. If a composer chooses to exclude, for example, a great natural resource like tonality, he at once excludes inclusiveness. He may bring off something expressive and individual, but he denies himself the kind of comprehensiveness that a symphony must have if we accept that it is to be the highest type of orchestral music (and, I think, history commands us to insist upon this).⁸

Atonal composers would find ways to wed their harmonic practice with sonata-form principles, but more often these sonata forms would appear in chamber works and generally not in music bearing the title of symphony. Table 1.1 readily displays this disparity by drawing attention to two significant points.⁹ First, the small number of symphonies composed between 1909 and 1920 is especially revealing. After the death of Mahler, the composers who are working within the traditional thread of the symphony are Elgar, Nielsen, Sibelius, and Vaughan Williams. The symphonies by Prokofiev and Ives are more experimental or follow the emerging trends of the twentieth century. Prokofiev's *Classical Symphony* received immediate performance, while Ives's Fourth would not receive a complete performance until 1965. D'Indy's *Sinfonia brevis* is too brief to fulfill much of the expectations of the traditional symphony, and his music did not receive

⁸ Robert Simpson, "Introduction" in *The Symphony*, vol. 2 (Baltimore: Penguin Books, 1967), 10.

⁹ This table is based on one found in Preston Stedman, *The Symphony* (Englewood Cliffs, NJ: Prentice Hall, 1979) 250-1. I have added works by prominent British composers for the benefit of later sections. The absence of works by British composers in Stedman's table is further illustration of the pervasive neglect applied to this segment of the repertoire.

frequent performance even during his own life. Rather than engage in the tradition of symphony composition, much of the absolute music for orchestra uses generic titles that embrace no sort of tradition whatsoever. Schoenberg's Five Pieces for Orchestra, Bartók's Four Pieces for Orchestra and Webern's Six Orchestral Pieces dodge the expectations that would arise had they been called symphony. Bartók's Four Pieces follow traditional patterns of form that are recognizably symphonic: the second piece (movement) is a scherzo, the fourth piece (movement) is a march – but the choice of title uncovers a deliberate avoidance of the genre. In a related case, Stravinsky's *Symphonies of Wind Instruments* upsets almost every possible genre-expectation that comes with the label *symphony*. This looks forward to a trend of works that carry the title in some form but avoid creating a recognizable symphonic fabric. Webern's Symphony, Op. 21 (1928) is another example. While grounded in traditional forms, the sparse instrumentation and brief two movements do not meet standard expectations in symphonic practice.

The second aspect of orchestral composition revealed by Table 1.1 is an emphasis on producing programmatic works, especially single-movement tone poems, a line that certainly continues from nineteenth-century practice. By the last decade of the nineteenth century, the “institutions of art-music”¹⁰ arose as a complex set of interactions between 1) organizations and performing spaces to deliver operatic, orchestral, and chamber music, 2) the patrons, entrepreneurs, performers and publishers to support and populate these organizations, 3) educators, historians, academics, critics and reviewers to codify specific values and structures¹¹ to describe the products of these organizations and the people who populated them, and 4) a set of musical works from a glorified past that exemplified those

¹⁰ Described in James Hepokoski, *Sibelius: Symphony No. 5* (New York: Cambridge University Press, 1993), 3.

¹¹ *Ibid.* Hepokoski aptly describes these as “textbook-codified *Formenlehre* systems.”

same values and structures. Reliance, particularly by orchestras, on the canon of established works meant very few opportunities for contemporary composers to have their orchestral music performed, though they may have had an easier time getting premieres of shorter works that emphasized picturesque or nationalistic associations. Respighi's *Fountains of Rome* emphasizes nationalism of a picturesque type; it was premiered three years into his professorship at the Conservatorio di Santa Cecilia. The early orchestral works of Arnold Bax also display these qualities, though the subjects are less nationalistic than they are exotic, exploiting a fascination with Celtic landscapes and legends. After an exploration of programmatic music, Bax would eventually follow Elgar and Vaughan Williams as a composer of symphonies.

Table 1.1 – Prominent Orchestral Works 1899 – 1920

1899	Debussy	<i>Nocturnes</i>
	Elgar	Variations on an Original Theme (Enigma)
1900	Mahler	Symphony No. 4
1901	Rachmaninoff	Second Piano Concerto
1902	Sibelius	Symphony No. 2
	Mahler	Symphony No. 5
	Nielsen	Symphony no.2, 'De fire temperamenter'
1903	Strauss	<i>Sinfonia Domestica</i>
	Schoenberg	<i>Pelleas et Melisande</i>
1904	Ives	Symphony No. 3 (not performed until 1947)
	Mahler	Symphony No. 6
	D'Indy	Symphony No. 2

1905	Debussy	<i>La Mer</i>
	Mahler	Symphony No. 7
1906	Schoenberg	<i>Kammersymphonie</i>
1907	Delius	<i>Brigg Fair</i>
	Stravinsky	Symphony in E-flat major
	Bartók	<i>Két portré</i>
	Mahler	Symphony No. 8
	Ravel	<i>Rhapsodie Espagnole</i>
1908	Scriabin	<i>Le poème de l'extase</i>
	Sibelius	Symphony No. 3
	Rachmaninoff	Symphony No. 2
	Elgar	Symphony No. 1
1909	Schoenberg	<i>Fünf Orchesterstücke</i>
	Mahler	Symphony No. 9
1910	Scriabin	<i>Prométhée, le poème du feu</i>
	Stravinsky	<i>L'oiseau de feu</i>
	Vaughan Williams	<i>A Sea Symphony</i> (No. 1), <i>Fantasia on a Theme by Thomas Tallis</i>
1911	Stravinsky	<i>Petrushka</i>
	Ravel	<i>Daphnis et Chloé</i>
	Sibelius	Symphony No. 4
	Elgar	Symphony No. 2
	Nielsen	Symphony no.3, ' <i>Sinfonia espansiva</i> '
1912	Debussy	<i>Images</i>
	Bartók	Four Orchestral Pieces

	Vaughan Williams	<i>The Wasps</i> (from 1909 incidental music)
1913	Stravinsky	<i>Le sacre du printemps</i>
	Webern	Six Orchestral Pieces
1914	Vaughan Williams	<i>London Symphony</i> (No. 2)
	Bax	<i>November Woods</i>
1915	Sibelius	Symphony No. 5
	Strauss	<i>Eine Alpensinfonie</i>
1916	Holst	<i>The Planets</i>
	Respighi	<i>Fontane di Roma</i>
	Ives	Symphony No. 4 (2 nd movement performed in 1927)
	Bax	<i>The Garden of Fand</i>
	Nielsen	Symphony no.4, ‘ <i>Det uudslukkelige</i> ’
1917	Prokofiev	<i>Classical Symphony</i> (No. 1)
	Griffes	<i>The White Peacock</i>
1918	D'Indy	<i>Sinfonia brevis (de bello gallico)</i>
1919	Ravel	<i>La Valse</i>
1920	Stravinsky	<i>Symphonies d'instruments à vent</i>

Well before the time period that is charted by Table 1.1, circumstances forced a number of requirements and expectations onto the symphony, considered as the “highest type of orchestral music.”¹² Conservative interests demanded that the symphony be fully

¹² Simpson, “Introduction” in *The Symphony*, vol. 2, 10.

integrated, where: “internal activity is fluid, organic...at the end of a great symphony there is the sense that the music has grown by the interpenetrative activity of all its constituent elements.”¹³ Thus the symphony’s design made it appealing to connoisseurs; a successful symphony establishes an intellectual weight and breadth of expression, without which the symphony would fail to meet expectations. In addition, perhaps the most important requirement was the sense that the work must strike a difficult balance between acknowledging tradition while maintaining the individuality of the work. Constant comparison of new symphonic output to Beethoven was inevitable; this persisted from shortly after Beethoven's death through the nineteenth century and beyond. Hubert Parry (1848-1918), writing in the first edition of *Grove's Dictionary of Music and Musicians*, presents the problem of inevitable comparison to Beethoven as being almost insurmountable:

It might seem superfluous to trace the history of the Symphony further after Beethoven. Nothing since his time has shown, nor in the changing conditions of the history of the race is it likely anything should show, any approach to the vitality and depth of his work. But it is just these changing conditions that leave a little opening for composers to tread the same path with him.¹⁴

Despite his pessimism, Parry does not fully dismiss the existence of successful symphony composers after Beethoven. Parry and others acknowledged Schubert, Mendelssohn, Schumann and Brahms as Beethoven’s heirs, and it was accepted that each had contributed enough to keep the symphony from dying out. Whether or not any of these

¹³ Simpson, “Introduction” in *The Symphony*, vol. 2, 10.

¹⁴ Parry, Hubert. “Symphony,” in *A Dictionary of Music and Musicians*, ed. George Grove, vol. 4 (London: Macmillan, 1889), 27-28.

heirs “had actually enhanced or strengthened it in the wake of Beethoven” is the open question of the era after his death.¹⁵

To tread the same path as Beethoven meant directly engaging with his achievements in the genre. Beethoven’s heirs were challenged to follow the master’s model, but not to follow too closely. When a new symphony seemed to be too near its tacitly accepted source it was deemed unoriginal; Mendelssohn’s *Lobgesang* has long suffered from a negative comparison to Beethoven’s Ninth Symphony.¹⁶ Instead the symphonist must take Beethoven’s model and affect some kind of innovation or progress. A successful new symphony demonstrated some sort of originality, so only “by differentiating itself from established works could a new composition gain acceptance.”¹⁷ Yet originality for its own sake would not be acceptable for symphonic composition. As Schumann wrote, “whosoever seeks originality has necessarily lost it, up to a certain point, for it no longer speaks directly from the self.”¹⁸ Sincerity of intent allows the pure originality to flow out, from the “unconscious dialectic of the artistic spirit,” according to A. B. Marx.¹⁹

This delicate balance between originality and tradition, along with the inherent conservatism of orchestral institutions, and the difficult task of wedding the symphonic form with the dissonant, eventually atonal, harmonic vocabulary of the early twentieth century seems to have generally hampered the composition of new symphonies.

Conditions in Britain circumvented many of these hindrances and promoted an intense

¹⁵ Mark Evan Bonds, *After Beethoven: Imperatives of Originality in the Symphony* (Cambridge, MA: Harvard University Press, 1996), 139.

¹⁶ Bonds, “The Flight of Icarus” in *After Beethoven: Imperatives of Originality in the Symphony*, 73-108.

¹⁷ Bonds, *After Beethoven: Imperatives of Originality in the Symphony*, 24.

¹⁸ Robert Schumann, *Tagebücher*, edited by Gerd Nauhaus (Leipzig: Deutscher Verlag für Musik, 1971), 104 (6 August 1828) – found in Bonds, *After Beethoven: Imperatives of Originality in the Symphony*, 25.

¹⁹ Adolf Bernhard Marx. *Die Musik des neunzehnten Jahrhunderts*. Leipzig: Breitkopf & Härtel, 1855), 101 – found in Bonds, *After Beethoven: Imperatives of Originality in the Symphony*, 26.

interest in composing new symphonies. The new institutions formed during and in the generations prior to the English musical renaissance actively promoted new works by native composers. Hostility to “continental” modernism left the traditional models to flourish without serious competition. As for striking the difficult balance between originality and tradition, the first successful British version was premiered in Manchester on December 3rd, 1908. Hans Richter (1843-1916) conducted a new work dedicated to him: Elgar’s First Symphony. Within a year Elgar’s First was given an astonishing number of performances, with concerts in America, Germany, Austria, Russia, and Australia. According to one recent assessment it “was perhaps the most widely admired new symphony in music history.”²⁰

Elgar's First Symphony created a model by which British symphonic efforts of similar quality could be attempted, but the First World War would alter these conditions such that the start of a flurry of symphony composition in Britain would be delayed until the early 1920's. Meanwhile, Elgar's achievement comes at the pinnacle of investments in musical infrastructure within Britain, which naturally came with attendant compositions, including symphonies. The flowering of the British symphony in the twentieth century comes after the significant investment begun in the nineteenth century. During this time the formation of performing and educational institutions would provide the foundation of the symphonic ambitions of the English musical renaissance.

²⁰ Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 87.

1.2 First Attempts: 1813 to c. 1850

While the role of the composer should not be ignored, the creation of a new symphony depends on competent organizations to promote, program, and perform these works, which often require a great deal of preparation before their first public hearing. Yet for much of the nineteenth century, Britain struggled to adopt the idea that “a really good orchestral style depended on the orchestra regularly playing together.”²¹ Many well-meaning individuals, some at cross-purposes, entered into the project of developing capable performing organizations. Their results were mixed.

The first noteworthy organization was the Philharmonic Society. Founded in 1813, the Philharmonic Society gained permission in 1912 to add “Royal” to its title, and today the Royal Philharmonic Society is the second oldest concert-giving organization in the world, after the Leipzig Gewandhaus. At its founding, the Society stated its purpose as providing quality performances of both orchestral and chamber music, where a perceived absence had been felt. At this time the closest thing that could be regarded as regular orchestra concerts were given by the Concert of Ancient Music, founded in 1776. Attendance at these concerts were restricted to the “upper ten thousand” and operated under a prohibition of performing any works written more recently than twenty years. One contemporary account states that performances given by the Concert of Ancient Music were:

dry-as-dust affairs, made up from year to year with odds and ends from old masters, slovenly performed and carelessly conducted...An outsider was able now and then to gain admission, but only to be wearied to death with the unceasing round of dull formality which marked the performances, which

²¹ Reginald Nettel, *The Orchestra in England: a Social History* (London: Alden Press, 1948), 199.

were directed in turns by an archbishop, dukes (royal or otherwise), lords, and a member or two of the commonalty who had blue blood in their veins.²²

By contrast the Philharmonic Society makes clear its goal in the 1813 charter to “rekindle in the public mind that taste for instrumental music” by performing “in the most perfect manner possible...the best and most approved instrumental music.”²³ The initial signatories were among the most capable and respected London musicians of the day. They included Muzio Clementi (1752-1832), composer and pianist, as well as Johann Peter Salomon (1745-1815), the violinist and impresario who lured Haydn to London in 1791 and 1794. Clementi and Salomon together led the first concert on March 8th, 1813, which included a mixture of orchestral and chamber music featuring Beethoven, Haydn, and Mozart along with an overture by Luigi Cherubini (1760-1842) and works by Antonio Sacchini (1730-1786) and Luigi Boccherini (1743-1805). Despite its disdain for the stale Concerts of Ancient Music, the Philharmonic Society only programed two works by living composers.

The Philharmonic Society was a financial success from its start, and it planned to use its profits to attract composers from the continent to London. In 1817, the society offered a generous fee of three hundred guineas to Beethoven if he would come to London to premiere two new symphonies. The offer was made in a letter by Ferdinand Ries (1784-1838), a member of the Philharmonic Society and former pupil of Beethoven. It seems the Society hoped to utilize the personal relationship between teacher and student to lure Beethoven to London. The strategy seemed to impel Beethoven to a prompt response, in which Beethoven asked Ries to request an additional 100 guineas as

²² Robert Elkin, *Royal Philharmonic: the Annals of the Royal Philharmonic Society* (London: Rider and Company, 1946), 9.

²³ *Ibid.*, 12.

his deafness required “more attendance and cost than ordinary, particularly while traveling in a strange land.”²⁴ Beethoven expressed deep interest in the project, asking Ries to describe the numbers in the orchestra and the quality of the performance hall, but the Philharmonic Society decided they could not meet the additional cost. Despite this, the Philharmonic Society would later provide generous patronage to Beethoven. In November 1822 the Society offered £50 to commission a new symphony, which would become Beethoven’s Ninth. In February 1827, the Society sent £100 to Beethoven, apparently at the request of Anton Schindler (1795-1864), to “be applied to his comforts and necessities during his illness.”²⁵ Within a month Beethoven had died, and the Society waived their claim on the return of the funds, which had been unspent.

Beethoven’s works continued to be favored above all others by the Philharmonic Society, whose programs increasingly highlighted the growing repertory of Germanic instrumental works. While Beethoven never made the trip to London many other prominent composers would appear at the Philharmonic Society Concerts, including Mendelssohn, Berlioz, Wagner and Tchaikovsky. In addition to its reverence for the Germanic instrumental tradition, the Society resolved in its first decade to set aside a fund to “provide an orchestra for the trial of new music composed in this country” and “afford all composers in the Kingdom an opportunity of hearing and appreciating their works in the most correct manner, and to procure for them an introduction to the musical world.”²⁶ These ambitions to provide patronage for living British composers seems to have been abandoned, as comparatively few native works were performed by the Philharmonic Society in the nineteenth century.

²⁴ Elliot Forbes, *Thayer’s Life of Beethoven* (Princeton, NJ: Princeton University Press, 1967), 676.

²⁵ Elkin, *Royal Philharmonic: the Annals of the Royal Philharmonic Society*, 28.

²⁶ *Ibid.*, 18.

In 1834, the Society of British Musicians was founded in London to foster the composition of new British music. Originally, members had to be British by birth and the concerts featured only British music. While initially successful, criticisms of the Society of British Musicians as being narrow and insular caused the group, in 1841, to program works by non-members and foreigners. While its stated purpose was to encourage native music, the Society of British Musicians failed to stimulate the composition of new symphonies by British composers. The organization dissolved in 1865.²⁷

In 1852, several members of the Philharmonic Society broke away to form the New Philharmonic Society. When compared with its parent institution (called the “Old Philharmonic” during this period), the New Philharmonic favored more adventurous programs and, in an effort to attract a broader audience, lower ticket prices. The prospectus included the following statement: “The New Philharmonic does not entertain the opinion, acted upon by an elder institution, that no schools but those which may be called classical are to be considered as capable of affording pleasure, and that the works of such schools can only be enjoyed by a select few amateurs and artistes.”²⁸ The New Philharmonic Society was itself the sight of some considerable disagreement; in 1858 several members resigned to create the Musical Society of London, which aspired to curate a library and lecture series in addition to producing concerts. The Musical Society of London “lasted until 1867 when Clara Schumann played in its last concert.”²⁹ The New Philharmonic held on until 1879, and in its existence it did succeed in programing

²⁷ Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 85, and “Society of British Musicians,” in *Grove Music Online*, *Oxford Music Online*, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/26079> (accessed May 12, 2014).

²⁸ Elkin, *Royal Philharmonic: the Annals of the Royal Philharmonic Society*, 47.

²⁹ Nicholas Temperley, et al, “London (i),” in *Grove Music Online*, *Oxford Music Online*, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/16904pg6> (accessed May 12, 2014).

more new British works than the “Old” Philharmonic.³⁰

From the founding of the Philharmonic Society in 1813 to about midcentury, new British symphonies were produced by only a handful of serious composers. Of this group three names came to limited prominence: Cipriani Potter (1792-1871), William Sterndale Bennett (1816-1875), and George Macfarren (1813-1887).³¹ Potter, active in the Philharmonic Society from 1815 until his death in 1871, wrote symphonies closely derived from the Classical Viennese tradition. Bennett’s musical style is more aligned with the first generation of musical Romantics; his music bears a striking similarity to Mendelssohn’s. Macfarren, active in the founding of the Society of British Musicians, proposed the controversial opinion of Mozart’s superiority to Beethoven, though his symphonies are more derivatives of Beethoven than of Mozart. Table 1.2 shows the dates of symphonies by these three composers, who would persist in composing symphonies despite a general lack of interest by patrons and audiences.

Table 1.2 Symphonies by British Composers ca. 1820 to 1845

1819	Potter	Symphony No. 1
1821	Potter	Symphony No. 2
1826	Potter	Symphony No. 6, Symphony No. 7
1828	Potter	Symphony No. 8
	Macfarren	Symphony No. 1
1831	Macfarren	Symphony No. 2

³⁰ Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 85.

³¹ For Background information on Potter and Bennet see Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 11-85; for Macfarren see Cyril Ehrlich, *The Music Profession in Britain since the Eighteenth Century* (New York: Oxford University Press, 1985), 85–7, 90, 96 and Nicholas Temperley, "Macfarren, Sir George," in *Grove Music Online, Oxford Music Online*, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/17324> (accessed May 12, 2014).

1832	Potter	Symphony No. 10
	Bennett	Symphony No. 1
	Macfarren	Symphony No. 3
1833	Potter	Symphony No. 11
	Bennett	Symphony No. 2
	Macfarren	Symphony No. 4, Symphony No. 5
1834	Potter	Symphony No. 12, Symphony No. 15
	Bennett	Symphony No. 3
1835	Bennett	Symphony No. 5
1836	Macfarren	Symphony No. 6
1840	Macfarren	Symphony No. 7
1845	Macfarren	Symphony No. 8

1.3 First Flowering: c. 1850 to 1914

The societies surveyed so far relied on their members to provide the principal parts while the rest of the orchestra was constructed piecemeal. Beginning at midcentury, a handful of permanent performing ensembles would arise to provide a model for quality and discipline. In London, the Crystal Palace Saturday Concerts, which ran from 1855-1901, would become the principal source of affordable classical music performances. Led by August Manns (1825-1907), in collaboration with George Grove (1820-1900), the Crystal Palace Orchestra “could render new works quite effectively; it was the only fully established, permanent and completely disciplined orchestra active in London.”³² Like the Philharmonic Society concerts, the programs centered on the German orchestral

³² Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 86.

repertory, though the Crystal Palace Orchestra was skilled enough to produce quality first performances by a new generation of English composers, which included Arthur Sullivan (1842-1900), Frederic Cowen (1852-1935), Henry Gadsby (1842-1907), Alfred Holmes (1837-1876), and his brother Henry (1839-1905). With audiences made up of the middle- and working-classes, the Crystal Palace Saturday Concerts applied the “Victorian belief in progress through education and experience”³³ by bringing culture to the under-served.

In Manchester, a similar impulse to undertake the musical education of the public drove Charles Hallé (1819-1895) in his efforts with the ensemble that was to bear his name. Like Manns, Hallé was an émigré musician who came to London, a city already crowded with professionals from the continent. Unlike Manns, Hallé left London for Manchester within a year of his arrival in 1848. In 1849 he took over the established Gentlemen’s Concerts with permission to reform the orchestra according to his vision. The opportunity to enact a substantial improvement to the ensemble came in 1857, when a six month art exhibition spurred a temporary increase in the size of the orchestra. Rather than allow the orchestra to shrink down, Hallé kept the musicians on at his own expense. The Hallé Orchestra gave its first performance on January 30th, 1858.³⁴ The new ensemble was successful and profitable, owing to Hallé’s insistence on providing education for the public, tickets that were affordable, and programs that included a high degree of contemporary music. Works by Brahms, Dvořák, Grieg and Tchaikovsky were heard, and were performed much sooner after their continental premieres than previously known in England. Hallé led the orchestra until his death; his successor Hans Richter would enjoy even greater prominence, though his tenure in Manchester would be marked

³³ Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 86.

³⁴ An account of the early history of the Hallé Orchestra can be found in Michael Kennedy, *The Hallé Tradition: A Century of Music* (Manchester: Manchester University Press, 1960), 18-98.

with some controversy. There was complaint that Richter placed too much emphasis on Brahms, Wagner, and Beethoven while ignoring newer works by Debussy and Delius. However, Richter programmed many of the latest works by Strauss and Elgar, and gave the first British performance of a Sibelius symphony, No. 2, in 1905. Other controversies arose. These would include the great annoyance felt by his Manchester employees when Richter employed a group of local musicians for his London-based “Richter Concerts,” an annual series that predated his appointment with the Hallé Orchestra and lasted for four years after.

Manns, Hallé, and Richter formed a group of prominent conductors working in England with which other names could be added. An assured addition would be Henry Wood (1869-1944). Wood took the lead of the new Queen’s Hall Orchestra in 1895 and brought prominence and stability to an informal series of concerts known as the Promenades, which had been in existence in London since 1838.³⁵ As with the Crystal Palace Saturday Concerts, the Proms offered inexpensive tickets for the purpose of providing culture to the working-classes. Financial problems with the Queen’s Hall Orchestra spurred a subset of the musicians to leave and form the London Symphony Orchestra in 1904, a “long-lasting experiment in musicians’ self-governance and a new chapter in British orchestral management.”³⁶

The rise of permanent orchestras headed by competent and driven conductors provided the means by which new British symphonies could be performed. When compared with the first half of the nineteenth century, the second half features high

³⁵ For the early history of Henry Wood’s Proms concerts at Queen’s Hall see Leanne Langley, “Building an Orchestra, Creating an Audience: Robert Newman and the Queen’s Hall Promenade Concerts, 1895-1926,” in *The Proms: A New History*, edited by Jenny Doctor and David Wright (London: Thames & Hudson Ltd., 2007), 32-73.

³⁶ Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 86.

numbers of new native symphonies. During this time, Bennett and Macfarren would write their final symphonies while a new generation of English composers began to try the genre.³⁷ Among them included Thomas Wingham (1846-1893). A student of Bennett, Wingham wrote four symphonies, of which the third features a choral finale. Also among the new composers was Arthur Sullivan, best known for his theatrical collaborations with W.S. Gilbert (1836–1911). John Francis Barnett (1837-1916), active in the short lived Musical Society of London, is known for a completion of Schubert's Seventh Symphony (D. 729), which was performed by the Crystal Palace Orchestra in 1883. Frederic Cowen served as an interim conductor between Hallé and Richter in Manchester. He wrote six symphonies of which his Fourth Symphony, titled "Scandinavian," was extremely popular. Henry Gadsby, a member of the Philharmonic Society, was organist at St. Peter's and the author of a textbook on harmony.

The Holmes brothers, Alfred and Henry, began their careers in tandem as a pair of performing violin prodigies. They toured the continent in 1855, when Alfred was 18 and Henry 16. Alfred settled in Paris and devoted himself to concert touring and composing. His symphonies follow the *symphonie dramatique* format, a precedent set by Berlioz. His first, "Jeanne d'Arc" was premiered in St. Petersburg in 1867 and given an English performance at the Crystal Palace in 1875. Henry lived for a year with his brother in Paris, but left in 1865 to find his own career. In London, Henry achieved success as a chamber musician and was appointed to a professorship of violin at the Royal College of Music in 1883. Henry was sacked in 1894 for improper behavior toward his female students and spent the rest of his career as a violin teacher in San Francisco.

³⁷ A more detailed survey of the nineteenth-century British composers who wrote symphonies can be found in Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 87-89.

Table 1.3 lists symphonies by British composers in the second half of the nineteenth century. In addition to the names just mentioned, the list includes works by Hubert Parry and Charles Villiers Stanford (1852-1924). Their significant contributions to the standards adopted by the English musical renaissance will be discussed below. There are also symphonies by Ebenezer Prout (1835-1909), a noted theorist and critic, Francis William Davenport (1847-1925), a pianist and theorist, and Frederick Cliff (1857-1931), a cellist. Several of the symphony composers also worked as conductors; these include Julius Benedict (1804-1885), Henry David Leslie (1822-1896), Edward German (1862-1936), and William George Cusins (1833-1893). William Wallace (1860-1940), wrote a single symphony, “The Creation,” but produced many more symphonic poems. Four symphonies were written by William Henry Bell (1873-1946), who removed himself from the London symphonic milieu in 1912 by permanently immigrating to South Africa. During this period there was one symphony apiece by John McEwen (1868-1948), a Scottish composer, and Samuel Coleridge Taylor (1875-1912), an English composer of African descent. The long career of Cyril Scott (1879-1970) is marked at its outset by the early success of his First Symphony, premiered in Darmstadt, and his Second Symphony, which was premiered by Wood at the Proms. The “Cotswolds” Symphony was the first orchestral work of Gustav Holst (1874-1934) to receive a public performance. While it was certainly the most ambitious composition by Holst up to that point, critics judged much of the “Cotswolds” to be weak and unoriginal.³⁸

³⁸ Michael Short, *Gustav Holst: the Man and his Music* (New York, Oxford University Press, 1990), 44.

Table 1.3 Symphonies by British Composers ca. 1865 to ca. 1900

1864	Bennett	Symphony No. 8 (first version)
	Barnett	Symphony (in A minor)
1866	Sullivan	Symphony No. 1 “Irish”
1867	Bennett	Symphony No. 8 (second version)
	A. Holmes	Symphonie Dramatique No. 1 “Jeanne d’Arc”
1868	A. Holmes	Symphony “The Youth of Shakespeare”
1869	Wingham	Symphony No. 1
	Cowen	Symphony No. 1
1871	Gadsby	Symphony (No. 2?)
1872	Cowen	Symphony No. 2
	Wingham	Symphony No. 2
	H. Holmes	Symphony No. 1
1873	Wingham	Symphony No. 3
1874	Benedict	Symphony No. 1
	Macfarren	Symphony No. 9
	Prout	Symphony No. 1
1875	Stanford	Symphony No. 1
	Benedict	Symphony No. 2
1876	Davenport	Symphony No. 1
1877	Prout	Symphony No. 2
1880	Cowen	Symphony No. 3 “Scandinavian”
1881	Leslie	Symphony “Chivalry”
1882	Stanford	Symphony No. 2 “Elegiac”

	Parry	Symphony No. 1
1883	Parry	Symphony No. 2 “Cambridge” or “University”
	Wingham	Symphony No. 4
1884	Cowen	Symphony No. 4 “Welsh”
1885	Prout	Symphony No. 3
1887	Stanford	Symphony No. 3 “Irish”
	Cowen	Symphony No. 5
	Prout	Symphony No. 4
	H. Holmes	Symphony “Boscastle”
1888	Gadsby	Symphony “Festal”
1889	Stanford	Symphony No. 4 “English”
	Parry	Symphony No. 3, Symphony No. 4 (1 st version)
	Cliffe	Symphony No. 1
1890	German	Symphony No. 1
1892	Cusins	Symphony
	Cliffe	Symphony No. 2
1893	German	Symphony No. 2
1894	Stanford	Symphony No. 5
1896	Coleridge-Taylor	Symphony
1897	Cowen	Symphony No. 6 “Idyllic”
1898	McEwen	Symphony No. 1
1899	Wallace	Symphony “The Creation”
	Bell	Symphony No. 1 “Walt Whitman”

1900	Holst	Symphony “Cotswolds”
	Scott	Symphony No. 1
1903	Scott	Symphony No. 2

Despite the large number of British symphonies written during this period, few gained more than token recognition. The elite class, possessing great influence as music patrons, resisted the viewpoint that music by native composers could equal the quality of music from mainland Europe, especially Germany. The difficulty experienced by British composers in gaining attention in their own country created a division between “a small section of professional musicians who in their own interests, resented German 'vanity', and a very large and influential section, from the Queen downwards, who wanted only the best music and knew this to be German.”³⁹ Efforts to match or supersede the German achievements became a key preoccupation, not just of professional musicians but of music enthusiasts, including George Grove. Grove’s musical erudition, first available to the public at large through his Crystal Palace program notes, attracted the attention and support of music professionals and patrons. These would include royal patrons such as the Prince of Wales and the Duke of Albany. The latter royal outlined the importance of education to an emerging British musical identity in an 1881 speech at the Free Trade Hall in Manchester:

Key to German success was in planning in education: specifically, universal elementary education, backed up with conservatories which would nurture the gifted young. The result of such provision was a thoroughly musical

³⁹ Nettel, *The Orchestra in England: a Social History*, 217.

people, for whom music was a daily, necessary and regular element of life.⁴⁰

Efforts at establishing a prominent conservatory that would be analogous to institutions on the continent date back to the founding of the Royal Academy of Music in 1822.⁴¹ The RAM saw its nascent effectiveness diminish as financial troubles struck within its first decade; these troubles would persist past midcentury. It was not until 1868 that a stable grant could be guaranteed and it was after this point that the RAM began to prosper.

The RAM's aim to become the nation's preeminent conservatory would be controverted with the opening of the Royal College of Music in 1882 and the Royal Manchester College of Music in 1893. The RMCM, founded by Hallé in the last years of his life, maintained a high standard from its onset.⁴² In London, the RCM, founded by Grove with the help of his royal supporters, directly challenged German musical-hegemony in seeking to "be to England what the Berlin Conservatorie is to Germany."⁴³ As the RCM's first director, Grove would prove to be influential in determining the future quality of the English musical renaissance in two hires: Parry as Professor of Music History and Stanford as Professor of Composition. Grove had already contracted Parry as an editor of the first edition of *The Dictionary of Music and Musicians*, to which Parry contributed more than 100 articles. Parry's achievements as a composer were just at this point coming into

⁴⁰ Meirion Hughes and Robert Stradling, *The English Musical Renaissance 1840 – 1940: Constructing a National Music* (New York: Manchester University Press, 2001), 29.

⁴¹ For an account of the history of the RAM published in its centenary year, see Frederick Corder, *A History of the Royal Academy of Music, from 1822 to 1922* (London: F. Corder, 1922).

⁴² Robert Beale, *Charles Hallé: A Musical Life* (Burlington, VT: Ashgate Publishing Company, 2007), 175-200.

⁴³ Hughes/Stradling, *The English Musical Renaissance 1840 – 1940: Constructing a National Music*, 30

focus. With piano and choral works already well-received he began to produce more orchestral works after 1880. Parry enjoyed a concurrent appointment at Oxford, and demonstrated great skill as an administrator. He succeeded Grove as director of the RCM in 1895.⁴⁴

At the time of his RCM appointment, Stanford had an already established reputation as a precocious composer and conductor.⁴⁵ While a student at the Queens College of Cambridge University, Stanford was appointed assistant conductor to the Cambridge University Musical Society (CUMS) in 1871, and appointed conductor in May 1873. After being awarded a B.A. in 1874, Stanford pursued further studies in Leipzig and Berlin. In 1877, he returned to resume leadership of the CUMS; under his direction the CUMS became a significant force in English musical life. In that year the CUMS was the first English ensemble to perform Brahms's First Symphony, less than a year after its premiere in Karlsruhe. Dvořák conducted the CUMS in an 1891 performance of his Symphony No. 8, premiered in Prague the year before. Friction between Stanford and his overseers in Cambridge caused him to leave the CUMS in 1893. His final event with the CUMS was to bring Tchaikovsky, Saint-Saëns, Boito and Bruch to the university to receive honorary doctorates and hear performances of their works.

As symphonists, Parry and Stanford have roughly concurrent careers.⁴⁶ Parry wrote five symphonies between the years 1882-1912; Stanford wrote seven from a period

⁴⁴ For a full biography, see Jeremy Dibble, *C. Hubert H. Parry: His Life and Music* (New York: Oxford University Press, 1992).

⁴⁵ For a full biography, see Jeremy Dibble, *Charles Villiers Stanford: Man and Musician* (New York: Oxford University Press, 2002).

⁴⁶ An engaging analysis of the symphonic works of both Parry and Stanford can be found in Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 90-207.

of 1875-1911. In their harmonic vocabulary and orchestration, both are followers of Brahms. In addition, both composers would embrace extramusical associations within their works. More than half of Stanford's symphonies carry descriptive titles, including Symphony No. 2 "Elegiac" and Symphony No. 3 "Irish." The same is true for Parry, whose symphonies include Symphony No. 2 "The University" and Symphony No. 3 "English." The extramusical portion of these works is not concretely programmatic, as in Berlioz, but accepting of more nebulous pictorial associations, as in Beethoven. In the case of Parry's final two symphonies, these philosophical associations seem to have perplexed audiences. Symphony No. 4 bears the title "Finding the Way." Its four movements are: "1. Looking for It; 2. Thinking on It; 3. Playing on It; and 4. Girt for it." Perhaps more inscrutable is his Symphony No. 5, a "Symphonic Fantasia," whose movements are: "1. Stress, 2. Love, 3. Play, and 4. Now!" One review "found the music itself more eloquent than explanation of its purport."⁴⁷

Table 1.4 Symphonies by British Composers ca. 1905 to ca. 1915

1906	Stanford	Symphony No. 6
1908	Elgar	Symphony No. 1
1910	Parry	Symphony No. 4 (2 nd version)
	Vaughan Williams	<i>A Sea Symphony</i> (No. 1)
1911	Stanford	Symphony No. 7
	McEwen	Symphony No. 2 "Solway"
	Elgar	Symphony No. 2
1912	Parry	Symphony No. 5 (Symphonic Fantasia)

⁴⁷ Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 200.

1914	Vaughan Williams	<i>London Symphony</i> (No. 2)
1915	Bantock	<i>Hebridean Symphony</i>

Table 1.4 lists symphonies by British composers from the beginning of the twentieth century through the beginning of World War I. During this time there is a modest swell in support specifically aimed toward the promulgation of works by native composers.⁴⁸ Thomas Beecham (1879-1961) and Landon Ronald (1873-1938) joined Henry Wood as prominent and well-regarded conductors of English birth, and they would all champion the works of British composers. In 1903 a fund was established at the RCM to engage professional orchestras to play new British works. 1905 saw the establishment of the Society of British Composers, who put on concerts and helped defray the cost of publishing new works. The society disbanded after World War I as it was deemed the improved situation for British musicians had been attained. Another society with similar aims was the short-lived Music League, founded in 1908 for which Elgar served as President. In addition to these societies, private patrons of music now generously supported performances of new British music, since state and municipal funding for concerts were a rarity during this time. From about 1910 the two most prominent independent music patrons were Henry Balfour Gardiner (1877-1950) and Bevis Ellis (1883-1916).

It was at an Ellis concert that Vaughan Williams's *A London Symphony* was first heard. The new work was well received by the specialist audience that attended the Ellis productions; more widespread appreciation for *A London Symphony* and its predecessor,

⁴⁸ The early twentieth-century milieu of efforts aimed at supporting British music is briefly described in Michael Kennedy, *The Works of Ralph Vaughan Williams* (London: Oxford University Press, 1980), 94-95.

A Sea Symphony, would be attained after World War I. It was also during this time that McEwen, now a professor at the RAM, completed his Second Symphony. Inspired by the Solway Coast, McEwen's Second Symphony is considered the best of his mature output. These works all came after Elgar's First Symphony, a work which would dethrone Parry and Stanford as Britain's leading symphonists and propel Elgar to international stature.

Elgar had delayed his entry into symphonic composition much in the way that Brahms had. In fact, Elgar, at 51, was older than Brahms had been (43) at the time of the premiere of his First Symphony. The reason is clear: "Like Brahms, Elgar felt the weight of expectation engendered by a concert canon revolving around Beethoven. Both entered the symphonic arena with works of the utmost seriousness and formal complexity."⁴⁹ Elgar tackled the question of the symphony in a lecture given in 1905 at the University of Birmingham, where he held a brief professorship. Elgar's remarks make clear his great reverence and admiration for the symphonic tradition:

I hold that the Symphony without a programme is the highest development of art...It seems to me that the greatest genius of our days, Richard Strauss, recognises the Symphonic Poem as a fit vehicle for his splendid achievements, some writers are inclined to be positive that the symphony is dead. Perhaps the form is somewhat battered by the ill-usage of some of its admirers, although some modern Symphonies still testify to its vitality: but when the looked-for genius comes, it may be absolutely revived. I am sure Richard Strauss could give us a symphony to rank among, or above the finest

⁴⁹ Julian Rushton, "In search of the symphony: orchestral music to 1908," in *The Cambridge Companion to Elgar*, edited by David M. Grimley and Julian Rushton (New York: Cambridge University Press, 2004), 148.

if he chose.⁵⁰

The reference to Strauss's achievements in the symphonic poem is noteworthy, as one immediate review claimed that Elgar's First Symphony had "refertilised the symphonic form by infusing into it the best ideas that could be gathered from the practice of the writers of symphonic poems."⁵¹ Hans Richter called it "the greatest symphony of modern times and not only in this country."⁵² Reaction was nearly universally positive, even among Elgar's detractors. Charles Maclean, often hostile to lyricism of the Wagnerian sort, wrote the following about Elgar's First Symphony:

Now at the hands of one of her [England's] own veritable sons, not those of an alien or a naturalized person, a work has been produced so absolutely up to date in every sense, of such commanding merit, and of such extraordinary and immediate success, that no one can doubt land has been touched, nay a definite territorial point in music-evolution has been annexed. All honour to Elgar, who has secured this for England.⁵³

Maclean evokes the imagery of a seafaring empire, an apt metaphor as Elgar's First Symphony conquered musical halls all over the world, receiving about a hundred performances in its first year. In 1909 there were "eighty-two performances – seventeen in London and the rest in America, Manchester, Vienna, Berlin, Bonn, Leipzig, St.

⁵⁰ Edward Elgar, *A Future for English Music, and Other Lectures*, edited by Percy M. Young (London: Dobson Books Ltd, 1968), 207.

⁵¹ Michael Kennedy, *The life of Elgar* (New York: Cambridge University Press, 2004), 111 and Michael Kennedy, "Music," in *The Cambridge Guide to the Arts in Britain: The Edwardian Age and the Inter-war Years*, edited by Boris Ford (New York: Cambridge University Press, 1989), 127. The musical resemblance between Strauss and Elgar fed Elgar's critics in England, who viewed Strauss as the purveyor of incoherent cacophony. The antipathy was fueled by a 1902 meeting between Strauss and Elgar, when *The Dream of Gerontius* was performed at the Lower Rhine Festival. There Strauss proclaimed Elgar as "the first English progressivist."

⁵² Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 210.

⁵³ Aidan Thomson, "Re-reading Elgar: Hermeneutics, Criticism and Reception in England and Germany, 1900-1914" (D.Phil thesis, Oxford University, 2002), 221.

Petersburg, and Sydney, among other places.”⁵⁴

Given the enormous success of his First Symphony, it was perhaps impossible for Elgar’s Second Symphony to meet the weight of expectation. Elgar conducted the premiere at Queen’s Hall on May 24th, 1911, and was disappointed by empty seats and a less than enthusiastic audience. A contemporary critic who was present at the premiere noted two reasons that the concert was not sold out: “the tickets were more expensive and the program, as part of a London Music Festival, consisted of three other premieres.”⁵⁵ Common opinion has been that the Second Symphony is one of Elgar’s finest creations, but significantly less so when compared with the First.

1.4 Interlude: The Great War

While on a yachting visit to Bournemouth in 1907, Kaiser Wilhelm II offered the use of his private band over the local ensemble for a public concert.⁵⁶ Music had long been Germany’s most effective diplomat, and the Kaiser’s offer seems to have carried no hostility toward his British hosts. For their part, many in England would have agreed that the German ensemble would have been preferable, despite the ascendancy of British musical institutions. This attitude had in part caused the managers of the Hallé Orchestra to seek out Richter, rather than offer the job to a native conductor.⁵⁷ When war began in August, sentiment turned rapidly against contemporary German musicians. Anti-German feeling forced the removal of Edgar Speyer (1862-1932) from his substantial involvement in the Proms concerts. Beginning in 1902, Speyer had provided the bulk of the financial

⁵⁴ Michael Kennedy, *Portrait of Elgar* (New York: Oxford University Press, 1968), 190.

⁵⁵ Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 222.

⁵⁶ Nettel, *The Orchestra in England: a Social History*, 243.

⁵⁷ A suitable native-born candidate would have been Frederic Cowen, who conducted the Hallé on an interim basis until Richter arrived to take the job.

support enjoyed by the Proms. Though he was born in New York, Speyer's German lineage came under attack from the London press. Speyer eventually left for New York in 1915 rather than face allegations of collaborating with the enemy. Things were not so fortunate for Dr. W. Strecker (1884–1958), a German music publisher who spent the war detained as an enemy alien. Anti-German sentiment ceased the performance of German works from the late nineteenth century and beginning of the twentieth, but did not suspend hearings of Beethoven, Mozart, Haydn, or Handel.

The first Proms concert of the war featured a new work by Elgar: *Sospri* for strings, harp, and organ. The restrained and introspective nature of *Sospri* would herald a style that Elgar would return to in post-war chamber works and in his Cello Concerto. Audiences paid very little attention to Elgar's new style, and at that first Proms concert of the war their enthusiasm could only be roused by a performance of *Land of Hope and Glory*.⁵⁸ That the concerts were able to continue at all is notable. The war would place a financial strain on orchestral institutions, but would not force their hiatus. The Proms and the concerts of the Royal Philharmonic Society continued thanks to considerable private funding. Prominent among these efforts was Thomas Beecham, who initially worked closely with the Royal Philharmonic and later in his own orchestral ventures.⁵⁹ Percy Pitt (1869-1932), Landon Ronald, Henry Wood, along with Elgar and Parry were also active as conductors during the war. While public concerts continued, there was a considerable drop off in recitals and concerts in private venues. Notable new English music during the war was composed by those who had stayed behind: Elgar and Granville Bantock (1868-

⁵⁸ Kennedy, "Music," in *The Cambridge Guide to the Arts in Britain: The Edwardian Age and the Inter-war Years*, 131.

⁵⁹ Beecham's efforts with the Philharmonic Society are briefly chronicled in Elkin, *Royal Philharmonic: the Annals of the Royal Philharmonic Society*, 107-108.

1946), who were both too old to fight; and Bax, who was too ambivalent to sign-up and later deemed too physically unfit for conscription. The composers at home did not concern themselves with the abstract demands of the symphony during this moment, with one notable exception. Bantock completed his *Hebridean Symphony* in 1915 and the work was performed at Queen's Hall in 1917. It is a richly programmatic work in a single movement, controverting many of the accepted values associated with symphonic tradition. It would be some years after the conclusion of the war that a new British symphony worthy to follow Elgar's First would be premiered.

Two wartime events bear mentioning as significant contributing elements to the flowering of the British symphonies that was to come after World War I. The first was the foundation of the Carnegie United Kingdom Trust in 1914, which awarded grants for the performance and publication of English music. The first published music by the Trust was a chamber work in 1917, but the Trust would later be the first to publish Vaughan Williams's *A London Symphony* and Bantock's *Hebridean Symphony*. The second noteworthy event was the foundation of the British Music Society, five months before the Armistice. Populated by wealthy and educated patrons of music, the British Music Society sought to coordinate British musical life by producing concerts, promoting British music in periodicals, and (after the war) reconnecting to cultural institutions in former enemy countries. The first annual congress of the British Musical Society in 1920 would help introduce *A London Symphony* to a wide audience and impel greater recognition for Vaughan Williams.⁶⁰

⁶⁰ Both the Carnegie United Kingdom Trust and the origins of the British Music Society are given brief descriptions in Kennedy, *The Works of Ralph Vaughan Williams*, 145-146.

1.5 Second Flowering: Between the Wars

The total number of military deaths suffered by the United Kingdom during World War I was close to 900,000. Given the staggering loss, it seems unfair to focus on a handful of casualties, but the number of prominent British musicians killed in action had a substantial effect on musical life in the interwar years. Vaughan Williams, who served in France, wrote of his “dread coming back to normal life with so many gaps.”⁶¹ George Butterworth (1885-1916), who had written well for the orchestra, was among the losses he felt, along with Bevis Ellis, who had promoted orchestral concerts in Britain beginning in 1910. In addition to these, Denis Browne (1888-1915), a composer and a critic for *The Times*; and Cecil Coles (1888-1918), a Scottish composer educated at the RCM, would not return from the fighting.

The gaps in Vaughan Williams’s life widened with the death of Parry one month before the Armistice. In a published tribute, Vaughan Williams wrote of his former teacher: “I still often go out of my way to pass his house in Kensington Square in order to experience again the thrill with which I used to approach his door on my lesson day.”⁶² The directorship of the RCM went to Hugh Allen (1869-1946), who hired both Vaughan Williams and Holst to teach composition. Through this position, Vaughan Williams would have direct contact with the next generation of British composers. Within a few years of the war’s end, Vaughan Williams was conducting the London Bach Choir, leading the Handel Society concerts and giving lectures for the British Music Society. He used his influence in these organizations to program the music of British composers; this included performing new works of his own, as the Bach Choir did in giving the premier

⁶¹ Kennedy, *The Works of Ralph Vaughan Williams*, 142.

⁶² *Ibid.*, 146.

performance of *Sancta Civitas*.⁶³ A particularly successful performance by the LSO of *A London Symphony* at a concert of the British Music Society further amplified Vaughan Williams's reputation. Music critic Richard Capell (1885-1954) claimed that this performance "turned Vaughan Williams overnight into a national figure."⁶⁴ Soon after this, *A London Symphony* was frequently programmed by orchestras all over Britain, while *A Sea Symphony* was already becoming a repertoire piece for provincial choral societies. The post-war enthusiasm for Vaughan Williams's pre-war works, alongside his activities as educator and conductor placed Vaughan Williams in a position of leadership among British composers.

Before the war, Bax had not garnered much attention outside professional circles and had produced only a modest number of works. After the war, Bax found himself in a very different position. He had spent the conflict composing new music and now had a large catalogue of works at the ready. His wartime output included a substantial number of solo piano pieces that had been quick to reach publication and popularity. In addition, several orchestral works were at the ready or were nearly completed and awaited scoring. His colleagues had written very little music during the war, and those that returned from the fighting were slow to premiere new works. Elgar was increasingly silent after the war; the death of his wife in 1920 amplified his inactivity.⁶⁵

While it's unlikely that Bax thought of these circumstances as the opening into which he might become more broadly recognized, it proved to be exactly the case.⁶⁶

⁶³ David Manning, "The public figure: Vaughan Williams as writer and activist," in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 236.

⁶⁴ Kennedy, *The Works of Ralph Vaughan Williams*, 153.

⁶⁵ The situation is surveyed in Lewis Foreman, *Bax: A Composer and His Times*, (Woodbridge: Boydell Press, 2007), 178.

⁶⁶ While Bax may not have had the business sense to recognize the opportunity, Lewis Foreman has suggested that the English critic Edwin Evans (1874-1945) was more perceptive to the need for publicity.

Bax's name became known to the wider public in the years after the war, and matched the growing renown with furious productivity. Bax never sought the busy schedules of Vaughan Williams or Holst, and was largely unencumbered by the demands of teaching, conducting, and performing. In addition, Bax had an enviable ability at the keyboard that served his compositional process. The works published or premiered from the end of war to the mid-1920s were well-received and positive attention from the press added fuel to Bax's growing reputation. Bax gained enough recognition that his publishers financed a concert devoted to his works held in Queen's Hall on November 13th, 1922.⁶⁷ Programs devoted entirely to the works of a living composer were rare, and rarer still for a composer under forty years of age. Yet Bax's music was all over London in the winter of 1922. Following the Queen's Hall concert, the Viola Sonata was premiered and the famed Flonzaley Quartet performed Bax's First String Quartet. The tone-poem *Tintagel* premiered in a December concert of the Royal Philharmonic Society in London.

That year, 1922, is also the year that new symphonies by British composers returned to concert halls. The first of the post-war symphonies is Vaughan Williams's *A Pastoral Symphony*; ideas for the work date from 1916. Premiered in London on January 16th, *A Pastoral Symphony* provoked a mixed reaction.⁶⁸ Positive reviews emphasized the sincerity of emotional sentiment and called the new symphony an advance on its predecessors. Less positive reviews come across to today's eye as overly superficial in lampooning the music of an idealized English countryside, well-trodden ground for

As Bax's most ardent champion in the press, Evans makes his case in Edwin Evans, "Modern British Composers – II: Arnold Bax," *Musical Times*, 60, no. 913 (March 1919), 103-105 followed by Edwin Evans, "Modern British Composers – II: Arnold Bax (continued)," *Musical Times*, 60, no. 914 (April 1919), 103-105.

⁶⁷ This concert is profiled in detail in Foreman, *Bax: A Composer and His Times*, 213-215.

⁶⁸ A brief survey of the initial reception of *A Pastoral Symphony* can be found in Kennedy, *The Works of Ralph Vaughan Williams*, 155-157.

British orchestral works to be sure. Nonetheless this is a facile interpretation of what seems to be composer's aims. Among Vaughan Williams's orchestral works, it was a favorite of Holst's.

Vaughan Williams had a small part in the production of another new British symphony of 1922; he advised Arthur Bliss (1891-1975) on his *A Colour Symphony*. The impetus for Bliss's symphony came during the previous year at a luncheon meeting spurred by Elgar. This meeting also included composer and organist Herbert Howells (1892-1983) and conductor and composer Eugene Goossens (1893-1962). Bliss described the encounter in this way:

[Elgar] had asked several musicians to have lunch with him... I had no idea who else might have been invited... The luncheon went a bit awkwardly with Elgar at his most nervous; then, when the coffee came, he suddenly told us the reason of our being gathered there. He wanted Howells... Goossens and myself each to write a new work for the Gloucester Festival of 1922.⁶⁹

Howells and Goossens wrote works involving chorus, while Bliss set to work on a symphony. Though purely instrumental, *A Colour Symphony* rejects the accepted responsibility to be absolute music. Each of the standard four movements carries a color association, along with a list of descriptive words provided by Bliss. The work premiered on September 7th with Bliss conducting the LSO; due to poor preparation it was initially not very well received. Elgar found the work to be "disconcertingly modern," but *A Colour Symphony* did find admirers in Britain and in the United States. It, along with a few other high quality works, began to build Bliss's reputation.

The third significant British symphony to be premiered during 1922 was the First

⁶⁹ Arthur Bliss, *As I Remember* (London: Faber and Faber Ltd., 1970), 71.

Symphony of Arnold Bax. The work had begun its life as a new and difficult piano sonata, completed by the end of June 1921. The idea to score the work as a symphony came to Bax from the pianist Harriet Cohen (1895-1967), an intimate friend of Bax who gave premieres and recorded many of Bax's piano works. Bax worked at the orchestration and composed an entirely new slow movement, and the new symphony was first heard in Queen's Hall on December 4th, three weeks after the dedicated Bax concert given in that same hall. The harmonic language was a radical departure from previous British symphonies, especially Vaughan Williams's *Pastoral* which was surely still in the memories of the London critics.⁷⁰ In this work, indeed in many of Bax's symphonies, expressive dissonance is used in a remarkably free manner. The actual title exhibits some modern thought regarding key centers; Bax calls his First Symphony a "Symphony in E-flat" leaving off the modal designation as in Elgar's "Symphony in A-flat *major*."

Formally the work is unusual in its three movements, harkening back to the work's origins as a piano sonata and not unheard of in the symphonic repertoire.⁷¹ In all seven of his symphonies, Bax utilizes the three movement format, and in all but one utilizes an unusual formal appendage called an epilogue. Here a Vaughan Williams influence is quite strong; Vaughan Williams had used an epilogue to conclude *A London Symphony*. Nonetheless, the practice of ending a symphony with an epilogue has become largely associated with Bax. Immediate reception of Bax's First Symphony was strong and largely positive. Headlines after the premiere described the "wonderful new work performed at Queen's Hall."⁷² Perhaps most revealing is this headline from the *Pall Mall*

⁷⁰ Foreman, *Bax: A Composer and His Times*, 216.

⁷¹ Just one notable example would be Mozart's "Prague" Symphony, No. 38 in D major, K. 504.

⁷² Graham Parlett, *A catalogue of the works of Sir Arnold Bax*, (New York : Oxford University Press, 1999), 163.

Gazette: “Music of Noble Hatred. Grief and Tragedy in new Bax symphony. Audience moved. First impressions marked and powerful.”⁷³ Early critics named the First Symphony 'The Demon' and one New York critic wrote that the music represented the composer's reaction to the Great War. Bax for his part followed Elgar's precedent in insisting that his music be taken on its own merits and without any programmatic influence. According to Bax “the harsh and stormy music was an example of pure music, unassociated with contemporary events.” Bax's proponents often suggest that the First Symphony reveals his capacity for an intellectual depth that was sustained throughout his seven symphonies. As David Cox puts it, if the “works before 1922 suggested the fluent and colourful tone-poet rather than the symphonic architect, this impression was dispelled by the impact of the First Symphony, a soundly-constructed large-scale work of tremendous urgency and power.”⁷⁴

It is perhaps a coincidence that the year in which the British symphony reemerged was also the year of first broadcasts by the BBC. The BBC's license actually dates from January 1923, but “the studios – such as they were – were ready in several locations before that date, the service began in London on 14 November 1922.”⁷⁵ Stations in Birmingham, Manchester and Newcastle all opened by the end of 1922, with 1923 seeing additional main stations open in Cardiff, Glasgow, Aberdeen and Bournemouth. Belfast was the last of the major centers to open, in September 1924. Between the wars the BBC “developed from an uncertain experimental start reaching a few thousands, to a national

⁷³ Graham Parlett, *A catalogue of the works of Sir Arnold Bax*, 163.

⁷⁴ David Cox, “Arnold Bax” in *The Symphony*, vol. 2, edited by Robert Simpson (Baltimore: Penguin Books, 1967), 164.

⁷⁵ Ronald Taylor, “Music in the Air: Elgar and the BBC,” in *Edward Elgar : music and literature*, edited by Raymond Monk (Brookfield, VT: Ashgate Pub. Co., 1993), 328.

and overseas network, with a sophisticated output of programmes.”⁷⁶ In a short time it would be able to exert a large influence on the British public. By 1938 nearly three in every four British households were regular radio listeners.⁷⁷

Within its first decade, three events would intimately tie the BBC to the future of orchestral music in Britain. First among these in terms of impact was the formation of the BBC Symphony Orchestra in 1930. The quality of orchestral performances in London had declined during the 1920’s. Ensembles outside the capital maintained a higher quality as evidenced by both the Hallé Orchestra, now under the baton of the Irish-born conductor Hamilton Harty (1879-1941), and the Birmingham Symphony Orchestra, which, although formed in 1907, first became a significant force beginning in 1924 under the direction of Adrian Boult (1889-1983). Boult was hired as director of the BBC Symphony and became a champion of the music of British composers, especially Vaughan Williams. Beecham, who formed the London Philharmonic in 1932, challenged the emergence of the BBC Symphony as the foremost orchestra in London, and their competition helped effect a higher performance standard.⁷⁸

Even before the formation of the BBC Symphony, the broadcasters worked to enter the sphere of public performance. Beginning in 1924 the first of a series of BBC-backed public concerts occurred, which the broadcasters hoped would foster an identity of the BBC as an institution known for serious music-making. In 1927, the BBC took over management of the Proms concerts, then near a total financial collapse.⁷⁹ By this

⁷⁶ Taylor, “Music in the Air: Elgar and the BBC,” 327.

⁷⁷ Jenny Doctor, “A New Dimension: The BBC Takes on the Proms 1920-1944,” in *The Proms: A New History*, 77.

⁷⁸ This situation is highlighted in Kennedy, “Music,” in *The Cambridge Guide to the Arts in Britain: The Edwardian Age and the Inter-war Years*, 121-122.

⁷⁹ The BBC’s takeover of the Proms, and the considerable opposition to same, is detailed in Doctor, “A New Dimension: The BBC Takes on the Proms 1920-1944,” in *The Proms: A New History*, 79-89.

point the Proms had gained the prestige reserved for national traditions, and the executives at the BBC hoped to gain some of this prestige by association. Another goal for the BBC's taking control of the Proms: the new partnership came with access to the acoustically superior Queen's Hall, from which they had been blocked by conservative interests wholly against the new position broadcasting had assumed in the culture. When the BBC Symphony was formed, it replaced the Queen's Hall Orchestra as the main ensemble of the Proms, further confirming the partnership.

Finally, the BBC attempted to intimately tie itself to the propagation of new British symphonies with its commission of Elgar's Third. Rumors that Elgar was producing a new symphony began to circulate in 1932, encouraged in no small part by Elgar's friend George Bernard Shaw (1855-1950).⁸⁰ At the Worcester Festival in September, Elgar added fuel to the fire when he mentioned that he had written a new symphony but that "no one wanted his music now."⁸¹ Shaw urged the BBC to become involved or else Elgar's difficult financial position would prevent him from fully completing the work. In November a formal offer from the BBC was sent to Elgar. The commission of Elgar's Third Symphony was announced on December 14th, 1932. He would leave the work incomplete with his death in 1934.

The year Elgar received a commission for his Third Symphony was the year Bax heard the premiere of his Fifth. This is a time in which Bax was regarded as among the leading British composers.⁸² A series of profiles on British composers began to run in the

⁸⁰ The pertinent correspondence between Shaw, Elgar, and officials at the BBC is reprinted in Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 234-239.

⁸¹ Brown, *European Symphony from ca. 1800 to ca. 1930: Great Britain, Russia, and France*, 235.

⁸² A 1930 article by L. Henderson Williams entitled "Bax – the Philosopher's Musician" actually lists Bax as leading even Vaughan Williams and Holst – found in Colin Scott-Sutherland, *Arnold Bax*, (London: J.M. Dent & Sons Limited, 1973), 71-72.

Musical Times; Bax, Holst and Vaughan Williams all received profiles lasting multiple issues, though Bax was the first of this trio to be given this honor.⁸³ Much of Bax's reputation during this time rested on his growing cycle of symphonies, which “constituted the most sustained attempt to add to the opulent romantic symphony a recognizably English sub-species.”⁸⁴ It was also during this time that there was an increasing “English passion for the music of Sibelius.”⁸⁵ The first concert in Britain featuring a Sibelius symphony was a 1905 performance of the Second Symphony in Manchester, with a very successful performance of the Fourth Symphony occurring in Birmingham in 1912. It was then that Sibelius began to exert a growing influence on English composers, but “it was not until about 1930 that the general public became ‘Sibelius-minded’”⁸⁶ The symphonies of Sibelius provided much of what essentially conservative British audiences admired in music, while eschewing what was considered the false or distasteful practices of more radical composers, like Schoenberg and Stravinsky. The critic Constant Lambert (1905-1951), who took pride in prodding the establishment, made special effort to enshrine Sibelius as the composer who “seems to point most surely to the future.”⁸⁷ During the mid-1930's, the *Radio Times* asserted “Bax and Sibelius to be the greatest living symphonists”.⁸⁸

⁸³ The series of profiles is cataloged in “Answers to Correspondents,” *The Musical Times*, 66, no. 985 (March 1, 1925), 269-271.

⁸⁴ Peter Evans, “Instrumental Music I,” in *Music in Britain: The Twentieth Century*, edited by Stephen Banfield (Cambridge, MA: Blackwell Publishers Inc., 1995), 198.

⁸⁵ Michael Trend, *The music makers: the English musical renaissance from Elgar to Britten* (New York: Schirmer Books, 1985), 41.

⁸⁶ Kennedy, *The Works of Ralph Vaughan Williams*, 110.

⁸⁷ Arnold Whittall, “British Music in the Modern World,” in *Music in Britain: The Twentieth Century*, edited by Stephen Banfield (Oxford: Blackwell Publishers Ltd., 1995), 17.

⁸⁸ Lewis Foreman, “Restless Explorations: articulating many visions,” in *Vaughan Williams in perspective: studies of an English composer*, edited by Lewis Foreman (London: Albion Music Ltd., 1998), 3. Boulton found this article to be so annoying he wrote to the magazine’s editor claiming Vaughan Williams as a greater symphonist than even Sibelius, see Jenny Doctor, “Vaughan Williams, Boulton and the BBC,” in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 255.

Bax and Sibelius met on two occasions. The first occurred in 1909 at a recital given by the Music League. While Bax was not a member of the Music League, the “Music Club” (as Bax referred to it) often called on him as a substitute pianist at the eleventh hour. Sibelius was not the only noted composer Bax met at these functions; through the Music League he also met Debussy and Schoenberg.⁸⁹ Before the war Bax displayed only a moderate interest in Sibelius’s music, but as the decades passed Bax, like many of his colleagues, would come under the spell of Sibelius’s work. This interest first becomes apparent in 1924, around the time Bax begins work on his Second Symphony. Letters written during this year to Cecil Gray and Philip Helsintine include requests for the loan of a score to Sibelius’s Fourth Symphony.⁹⁰

The second meeting between Bax and Sibelius occurred in the summer of 1932, while Bax was vacationing in Scandinavia with Harriet Cohen. The two companions found themselves in Helsinki, but as Sibelius was not at that time in the city, they traveled to Järvenpää to meet him. Cohen remembered the event fondly, writing that the three of them “laughed and ate and drank, and the two composers, who liked each other on sight, got on famously. I remember noting how their talk veered round continually to history – a subject in which they were both interested.”⁹¹ Just a few months before, Bax had completed his Fifth Symphony, dedicated to Sibelius. The opportunity for Sibelius to study a published score of Bax’s Fifth came a few years later, when Walter Legge (1906-1979), then working as a music critic, gave a published copy of Bax’s Fifth to Sibelius. Legge reported that Sibelius was already familiar with Bax’s music and gave the following opinion of Bax after reading through the score: “Bax is one of the great men of

⁸⁹ Arnold Bax, *Farewell My Youth* (New York: Longmans, Green and Co., 1943), 56.

⁹⁰ Foreman, *Bax: A Composer and His Times*, 225.

⁹¹ Harriet Cohen, *A Bundle of Time* (London: Faber and Faber, 1969), 206.

our time; he has a fine musical mind, an original, personal style, a splendid independence, and, thank God, he can write a melody, and is not ashamed to do so.”⁹²

The growing influence of Bax and Sibelius, alongside established figures like Vaughan Williams and Elgar, seems to have spurred great interest in composing symphonies among a substantial number of British composers. Table 1.5 lists the symphonic efforts of British composers between the wars. Havergal Brian (1876-1972) and Rutland Boughton (1876-1960) are of the same generation as Vaughan Williams. Brian had no formal academic training; his first symphony, titled “The Gothic,” is a vocal-orchestral work that was unperformed until after World War II. His music was not widely known during the interwar years, though his interest in symphonic music yielded an impressive number of works.⁹³ Boughton had only a brief study with Stanford at the RCM; he became known for his Glastonbury Festival performances. These ran from 1914 to 1926, interrupted only by his service in World War I. His mature Second Symphony, titled “Deirdre,” came more than twenty years after his first fledgling effort in the genre, a youthful work from 1904 with the title “Oliver Cromwell.”⁹⁴

Of the next generation of British composers, several of those on Table 1.5 bear the mark of a more institutionalized training. Gordon Jacob (1895-1984), Elizabeth Maconchy (1907-1994), and Edmund Rubbra (1901-1986) were all students at the RCM during this time. Jacob went on to teach at the RCM from 1924-1966, his First Symphony was written early in his career.⁹⁵ Maconchy’s Symphony of 1930 was withdrawn; she

⁹² Walter Legge and Jean Sibelius, “Conversations with Sibelius,” *The Musical Times* 76, No. 1105 (March, 1935), 219.

⁹³ Brian’s earliest symphonic efforts are discussed in Malcolm MacDonald, *The Symphonies of Havergal Brian, Volume 1: Symphonies 1-12* (London: Kahn and Averill, 1974).

⁹⁴ See Michael Hurd, “Rutland Boughton, 1878-1960,” *The Musical Times*, 119, no. 1619 (January 1978), 31-33.

⁹⁵ For a detailed biography see Eric Wetherell, *Gordon Jacob: a Centenary Biography* (London, Thames Pub., 1995).

later became a well-known composer of chamber music.⁹⁶ With a poor working-class background, Rubbra was fortunate to first study with Holst at Reading University. With the help of a scholarship his studies with Holst continued at the RCM with occasional lessons from Vaughan Williams. In the 1930s Rubbra left London permanently to reside at Chilterns. His First Symphony, completed in 1937, forecasts later achievements in the genre that would come after World War II.⁹⁷ E. J. Moeran (1894-1950) had eighteen months as a student at the RCM before he volunteered for service in World War I. After returning he continued his studies as a student of John Ireland (1879-1962). Interest in his music caught the attention of Harty, whose Hallé Orchestra commissioned a symphony from Moeran for performance in 1924. Unable to fulfill this commission at the time, Moeran completed the symphony after retirement in the Cotswolds. His Symphony in G minor was first performed in January 1938.⁹⁸ George Lloyd (1913-1984) studied further from the RCM influence at Trinity College of Music. Both his First and Second Symphonies gained success with provincial orchestras, and he began to gain the attention of the London music scene right before World War II. After the end of World War II professional setbacks forced a hiatus from full time composition, but Lloyd would eventually complete twelve symphonies in all.⁹⁹

⁹⁶ Jenny Doctor, "Intersecting Circles: the Early Careers of Elizabeth Maconchy, Elisabeth Lutyens and Grace Williams," *Women & Music*, 2 (1998), 90-109.

⁹⁷ For a recent and very complete assessment of Rubbra's symphonies see Leo Black, *Edmund Rubbra: Symphonist* (Rochester, NY: Boydell & Brewer Inc., 2008).

⁹⁸ See Geoffrey Self, *The Music of E.J. Moeran* (London: Toccata Press, 1986).

⁹⁹ Lewis Foreman. "Lloyd, George," in *Grove Music Online, Oxford Music Online*, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/16822> (accessed May 19, 2014).

Table 1.5 Symphonies by British Composers ca. 1922 to ca. 1939

1922	Vaughan Williams	<i>A Pastoral Symphony</i> (No. 3)
	Bax	Symphony No. 1
	Bliss	<i>A Colour Symphony</i>
1924	Holst	Choral Symphony
1926	Bax	Symphony No. 2
1927	Brian	Symphony No. 1 "The Gothic"
	Boughton	Symphony No. 2 "Deirdre"
1929	Jacob	Symphony No. 1
	Bax	Symphony No. 3
1930	Maconchy	Symphony (withdrawn)
1931	Brian	Symphony No. 2
	Bax	Symphony No. 4
1932	Brian	Symphony No. 3
	Bax	Symphony No. 5
	Lloyd	Symphony No. 1 – rev. 1934, 1980
1932-34	Elgar	Symphony No. 3 – sketches
1933	Brian	Symphony No. 4 "Das Siegslied"
	Lloyd	Symphony No. 2
	Lloyd	Symphony No. 3 – rev. 1935
1933-4	Holst	Scherzo - part of an unfinished Symphony
1934	Tippett	Symphony in B-flat (unpublished)
1935	Vaughan Williams	Symphony No. 4
	Bax	Symphony No. 6

	Walton	Symphony No. 1
1935-1937	Rubbra	Symphony No. 1
1937	Brian	Symphony No. 5 “Wine of Summer”
	Rubbra	Symphony No. 2 – rev. 1950
1938	Moeran	Symphony in G minor
1939	Bax	Symphony No. 7
	Rubbra	Symphony No. 3

During the interwar years continental modernism of the “New Music” sort gained some modest traction among London audiences, and it exerted an influence on those British composers who were curious enough to engage with the music of composers like Schoenberg and Bartók. Michael Tippett (1905-1998) and Benjamin Britten (1913-1976) were beginning to establish themselves before World War II, but it was William Walton (1902-83) who was the conscripted champion of the avant-garde during the interwar years. Recruitment came from the Sitwells, brothers Osbert (1892-1969) and Sacheverell (1897-1988) and their elder sister Edith (1887-1964), wealthy literati who were the heirs to the Baronetage of Renishaw and Derbyshire. The Sitwells tirelessly sought out the most exciting and progressive new works in arts and literature. Based on the strength of his Piano Quartet, they decided that Walton would be their paragon of modernist music. Walton was certainly receptive to musical modernism, especially in his treatment of rhythm, where his style closely follows the models of Stravinsky and Bartók. An early string quartet gained the attention of continental expressionists at the 1923 International Society for Contemporary Music in Salzburg. Berg took notice and arranged for Walton

to meet Schoenberg.¹⁰⁰

Walton's compositional process seems to have alternated fits of creative fury interrupted by long bouts of writer's block. Eager to follow the successes of his Viola Concerto (1929) and the oratorio *Belshazzar's Feast* (1931), Walton accepted a commission from Harty to write a symphony for the Hallé Orchestra. Walton relished the opportunity in a letter to his friend, the noted World War I poet Siegfried Sasson (1886-1967): "Harty has asked me to write a symphony for him...A rather portentous undertaking, but the Hallé is such a good orchestra and Harty such a magnificent conductor besides being very encouraging that I may be able to knock Bax [off] the map"¹⁰¹ The symphony took much longer to compose than Walton seemed to have planned for, judging from a number of canceled premieres. Eventually only the first three movements were performed in December 1934, and these were very well received. One critic recognized that even in these three movements Walton had realized "that 'symphonic ideal', which Sibelius more than any other composer seems to have re-created for the rising generation."¹⁰² The recognition that Walton had worked from the much-cherished model of Sibelius was echoed by another critic, who also noted that the precious balance between progress and tradition had been struck:

"The symphony is full of effects that have to be classed as modernisms. Yet it is quite different from the modern type...By the rule it is old fashioned; but by reaching backward in its thought and forward in its expression it unites two worlds in a manner far more progressive than the ideal of being

¹⁰⁰ Kennedy, "Music," in *The Cambridge Guide to the Arts in Britain: The Edwardian Age and the Inter-war Years*, 148-149.

¹⁰¹ Letter dated January 28th, 1932; quoted in Stephen Lloyd, *William Walton: Muse on Fire*, (Rochester, NY: Boydell Press, 2001), 112.

¹⁰² Lloyd, *William Walton: Muse on Fire*, 118.

up to date and nothing more.”¹⁰³

The modernist strain comes from Walton’s treatment of rhythm, by that point a noted element of his style. As one analyst has pointed out, if Walton “wished in the Symphony to live up to his *enfant terrible* reputation, he should turn to the dimension in which he was most at home...there can be few moments in the symphonic repertoire that are rhythmically so relentless.”¹⁰⁴

Unfortunately, the lack of a final movement created the impression that Walton could not think of a satisfying ending. The completed work was given in November 1935, and the *finale* was vehemently criticized as not living up to the promise of the first three movements. Earlier that year audiences had been treated to Vaughan Williams’s reentry into symphonic composition with his Fourth Symphony in F minor. The Fourth Symphony consciously engages with modernist dissonance, as does Bax’s Sixth Symphony of that same year.

Yet the modernist flirtations by Vaughan Williams, Bax, and even Walton, have less to do with the modernism of Ezra Pound (“Make It New!”) than they do with T. S. Eliot, whose poetry includes pervasive quotations from the works of previous generations. Modernism is not all revolutionary. It consists of “paradoxical if not opposed trends towards revolutionary and reactionary positions, fear of the new and delight at the disappearance of the old.”¹⁰⁵ For British institutions and audiences in the first part of the twentieth century, the music of Schoenberg, Stravinsky, and Bartók represented an iconoclastic challenge to conservative musical tastes.¹⁰⁶ The divorce from traditional

¹⁰³Lloyd, *William Walton: Muse on Fire*, 118.

¹⁰⁴ Robert Meikle, “The Symphonies and Concertos,” in *William Walton: Music and Literature*, edited by Stephen R. Craggs (Aldershot: Ashgate Publishing Ltd., 1999), 76.

¹⁰⁵ Peter Childs, *Modernism* (New York : Routledge, 2000), 17.

¹⁰⁶ British journals of the interwar years reveal the extent to which attitudes regarding these composers

textures and familiar harmonies meant that music by these composers could not successfully engage with the accepted practice of symphony composition.¹⁰⁷ However, the brand of modernism that actively treats with tradition while creating an original statement allows for dealing with the symphony and one of its main ideals, the emphasis on the balance between acknowledging history and maintaining individuality. Though composers interested in the revolutionary type of modernism would eventually gain acceptance in the U.K., it is this second type of modernism that thrived in Britain between the two World Wars – and one of the most pertinent reasons why the traditional thread of symphony composition prospered through British composers. The symphonies by Vaughan Williams, Bax, and their contemporaries form a substantial component of Britain's admirable contribution to the tradition of the symphony. These achievements found encouragement in the success of Elgar's First Symphony, which in turn owed much to the founding efforts of nineteenth century British symphonists.

were debated. As an example, the printed opinions on Schoenberg show a lively debate. Some reviewers argued for the superiority of Schoenberg's ideals as in Richard S. Hill, "Schoenberg's Tone-Rows and the Tonal System of the Future," *The Musical Quarterly*, 22, no. 1 (January 1936), 14-37, while others thought that acceptance of Schoenberg's music was an inevitability of history, see R. D. Welch, "The Assault on Modernism in Music," *The Musical Quarterly*, 7, no. 3 (July 1921), 408-417. Less complimentary assessments include a description of Schoenberg as an "unbleached German Romantic who has taken it into his head to remake the universe in a test-tube," in Carl Engel, "Harkening Back and Looking Forward," *The Musical Quarterly*, 14, no. 1 (January 1928), 1-15, and another casting Schoenberg as "the survival of a perverted romanticism which began with Baudelaire," in E. Lockspeiser, "[Review of] Modern Composers by Guido Pannain," *Music and Letters*, 14, no. 1 (January 1933), 71. By 1939, opinions of Schoenberg's music were still hotly disputed, as reported on by Noah Heath Taylor, "The Schoenberg Concept," *Music & Letters*, 20, no. 2 (April 1939) 183-188.

¹⁰⁷ Nonetheless, many of these composers premiered works during this era that can be considered symphonic, for example Schoenberg's *Variations for Orchestra*, op. 31 (1928), and Bartók's *Music for Strings, Percussion and Celesta* (1936). Reaction to Schoenberg's op. 31 was mixed at the premiere, and *Music for Strings, Percussion and Celesta* "only gained adequate appreciation...during the Bartók craze which swept America and parts of Europe in the later 1940s and 1950s," see Malcolm Gillies, "Masterworks (I): Music for Strings, Percussion and Celesta," in *The Bartók Companion*, edited by Malcolm Gillies (Portland, Oregon: Amadeus Press, 1994). Both the op. 31 *Variations* and *Music for Strings, Percussion and Celesta* evade the great weight of tradition that would have come with the title of Symphony, a challenge readily accepted by British composers of the interwar years.

CHAPTER 2:

THE CHALLENGE OF THE BAX/VAUGHAN WILLIAMS INTERSECTION

2.1 Bax in Vaughan Williams's Piano Concerto

Figure 2.1 shows five measures from the final movement of the original version of Vaughan Williams's Piano Concerto, premiered on February 1st, 1933. The passage is a transposed quotation from the final movement of Bax's Third Symphony, and is found in Vaughan Williams's original version of the concerto at the end of an extended cadenza that proceeds to a ten measure orchestral ritornello that ends in G major.

Figure 2.1 – Quotation of Bax's Third Symphony in Vaughan Williams's Piano Concerto



As demonstrated in the previous chapter, the symphony remained the paramount genre of instrumental music in Britain during this time, though its importance had declined in continental Europe. When Vaughan Williams's Piano Concerto was premiered, the leading composer of new British symphonies was Arnold Bax. Vaughan Williams was a great admirer of Bax's Third Symphony¹ and may have intended the

¹ Michael Kennedy, *The Works of Ralph Vaughan Williams* (London: Oxford University Press, 1980), 236.

quotation as a type of homage to the then leader in symphonic composition. However, the quotation has been taken to have more personal significance rather than being a brief and simple salute.

In the autograph score, Vaughan Williams emphasized the passage with quotation marks in red ink, “similar to the way in which the theme from Mendelssohn’s overture *Calm Sea and Prosperous Voyage* is marked in the “Romanza” of the *Enigma Variations*.”² It is known that Vaughan Williams visited the British Library to study the *Enigma Variations* manuscript, so the similarity between these two quotations seems deliberate. It was also a deliberate gesture on the part of the composer to draw attention to the quotation by mentioning it in a written program note distributed at the premiere performance. The reason for the quotation remains mysterious, the only indication Vaughan Williams gave is also found in the autograph score; beneath the quotation the line “according to my promise” is found in the composer’s hand.

The promise referred to is unknown, as is the person to whom the promise was made. It is generally assumed that the promise was to Bax, but it may have been one given to the pianist Harriet Cohen. Vaughan Williams wrote the concerto for her, and she gave the first performances. At the time of the premiere, Vaughan Williams possessed serious intent about the quotation, as he took special care to mention it to Cohen in a letter written before the first performance:

I have written to Adrian and told him that if you both feel that it is overscored anywhere he has *carte blanche* to thin out the orchestration all he thinks fit.

Gustav will, I hope, be there to advise. I do hope you are better – and I know

² Duncan Hinnells, “Vaughan Williams’s Piano Concerto: the first seventy years,” in *Vaughan Williams in Perspective*, edited by Lewis Foreman (London: Albion Music Ltd, 1998), 130.

that well or ill you are going to play BEAUTIFULLY. One small point – the 2 bars of Arnold – I like them *slower* (I know Wood takes it quicker) – quite slow and very far off like a dream.³

Many critics seemed to have been confused by the Bax quotation; H. C. Colles (1879-1943) speculated in his review that “the composer shared with the pianist some personal secret about it.”⁴ By the time of a repeat performance in the fall of that year, Vaughan Williams wanted the passage removed. He wrote to Cohen, “the quotation from Arnold is a mistake for public performance [having] personal rather than musical significance.”⁵ This exact phrase was used in a review of the Piano Concerto by Frank Howes (1891-1974), a professor of music history at the RCM who may have had opportunity to question Vaughan Williams on this subject.⁶ Virtually all subsequent accounts follow Colles and Howes in accepting a personal, extra-musical reason behind the mysterious Bax quotation. Kennedy is typical when he suggests that the quotation was a “symbol of friendship and a most unusual occurrence in the music of Vaughan Williams, who generally eschewed such personal references.”⁷

The personal connections and friendship between Vaughan Williams and Bax has been sparsely documented, and biographers have tended to spend more time delving into other relationships. In the case of Vaughan Williams, more interest has been placed on the friendship he shared with Holst. As college classmates and later colleagues in the full

³ Kennedy, *The Works of Ralph Vaughan Williams*, 236.

⁴ Colles review is quoted in Michael Kennedy, “This Concerto is a Masterpiece,” *Journal of the RVW Society* 4 (November 1995), 9.

⁵ Lewis Foreman, *Bax: A Composer and His Times*, (Woodbridge: Boydell Press, 2007), 248.

⁶ “The passage in question is this (emphasis mine): “A quotation from Bax’s third Symphony stands in the score at the end of the cadenza, but as the reference seemed to have a *personal rather than a musical significance*, it was removed after the first performance.” Frank Howes, “Vaughan Williams Pianoforte Concerto,” *The Musical Times*, Vol. 74, No. 1088 (October 1933), 886.

⁷ Kennedy, “This Concerto is a Masterpiece,” 9.

flowering of the English musical renaissance, this is a friendship that deserves the great amount attention that it has received. In Bax's case, biographers have concentrated on the relationship he had with Harriet Cohen. Recent study of letters reveals the depth of their passionate affair and has exposed heightened threads of both elation and anxiety within their romance. The scandal of this affair may have proven a distracting influence in serious study of Bax's friendships with his fellow composers. What follows is an attempt to reconstruct the significant events of the friendship between Vaughan Williams and Bax with the hope to contextualize the possible personal significance that could have contributed to the enigmatic Bax quotation within Vaughan Williams's Piano Concerto.

2.2 Personal Intersections between Vaughan Williams and Bax

Vaughan Williams and Bax were likely well aware of each other before their first encounter. While Vaughan Williams was educated at the RCM in Kensington, Bax received his composition training at the older Royal Academy of Music, at that time located on the other side of Hyde Park in Hanover Square. While Vaughan Williams received composition lessons from Parry and Stanford, Bax's principal composition teacher was Frederick Corder (1852-1932). Corder's early studies were at the RAM, though a scholarship allowed him to study for four years in Europe. He spent three of these at the Hochschule für Musik und Tanz Köln and spent his final year in Milan where he met Verdi. When he returned to England, Corder worked as a conductor and composer and began teaching at the RAM in 1888. "Corder was an enthusiastic Wagnerian, and directed his students...towards the expressive milieu of Bayreuth."⁸ Not just Wagner, but

⁸ Meirion Hughes and Robert Stradling, *The English Musical Renaissance 1840 – 1940: Constructing a National Music* (New York: Manchester University Press, 2001), 39.

Liszt and Dvořák were also preferred models, clearly different from “those who, at the Royal College under Stanford and Parry, were taught to look to Bach and Brahms for models. This dividing line was to be quite clearly marked in the course of English music over the first few years of the twentieth century.”⁹ The divide was obvious to all involved; Bax seemed to have harbored “a jejune ‘team’ hostility towards the RCM,”¹⁰ remarking as late as 1913 that at a concert of RCM partisans one might see “Stanford with his most Sarcophagus expression in the background...you might also savour a new rhapsody on Little Puddleswick drinking-songs by R. Vaughan Williams Mus. Doc.”¹¹ For his part, Vaughan Williams seemed to have esteemed Stanford’s influence, and later saw Bax’s music as “quite undisciplined. I wish he had had some grueling lessons from Stanford. But probably they would have quarreled and nothing would have come of it.”¹² Bax much admired his own teacher, but even staunch Bax supporters have admitted that Corder’s teaching was a “permissive rather than a restricting influence. It might perhaps have benefited Bax had his professor been stricter.”¹³

While their school environments set them up as potential rivals, Vaughan Williams and Bax had a tendency to travel in the same circles, sharing mutual friends but never meeting. Through an academy friend Bax befriended the Franco-Greek critic Michel-Dimitri (M.D.) Calvocoressi (1877-1944) around 1905 or 1906. Calvocoressi wrote fluently in a number of languages and was a member of the *Société des Apaches*. “Later, through Edwin Evans, Calvocoressi was responsible for Vaughan Williams studying with Ravel...many years later [Bax] dedicated his Five Greek Folksongs to the

⁹ Colin Scott-Sutherland, *Arnold Bax*, (London: J.M. Dent & Sons Limited, 1973), 10.

¹⁰ Hughes/Stradling, *The English Musical Renaissance 1840 – 1940: Constructing a National Music*, 205.

¹¹ Foreman, *Bax: A Composer and His Times*, 108-9.

¹² Kennedy, *The Works of Ralph Vaughan Williams*, 386.

¹³ Scott-Sutherland, *Arnold Bax*, 10.

critic, who had then become a naturalized Briton.”¹⁴ Vaughan Williams was also acquainted with Bax’s piano professor at the RAM, Tobias Matthay (1858-1945), vividly described by another RAM student, Arthur Alexander, in this account:

His greeting and farewell took the form of a brushing glissando kiss. I well recall my embarrassment at being kissed in Oxford Street at a busy time of the day, and worse, the terrible occasion when he rushed on to the platform of the Queen’s Hall and embraced me as I left after playing *The Emperor*. And I remember ‘V.W.’ telling me with amused horror, that he was once kissed by Uncle Tobs! I should have liked to see that.¹⁵

While Bax was not kind to Matthay in his memoirs, “he owed him a lot and elsewhere wrote of him with affection.”¹⁶

Another mutual friendship that was to be extremely valuable for both composers was that of Henry Balfour Gardiner. An English composer of the same generation, Gardiner was of a different educational background than either Vaughan Williams or Bax. Rather than train at one of the flourishing music schools in Britain, Gardiner was one of several British musicians to receive their education in Frankfurt. While Gardiner was frustrated with his compositions (his extreme self-critical nature caused him to destroy many works) “his finest achievement was the remarkable series of eight choral and orchestral concerts of almost exclusively British music that he organized, financed and in part conducted in Queen’s Hall in 1912 and 1913.”¹⁷ The first two of these

¹⁴ Foreman, *Bax: A Composer and His Times*, 39.

¹⁵ Arthur Alexander, “I Remember Matthay,” *RAM Magazine* (October 1958), 52-53; found in Foreman, *Bax: A Composer and His Times*, 17.

¹⁶ Foreman, *Bax: A Composer and His Times*, 16.

¹⁷ Stephen Lloyd, “Henry Balfour Gardiner,” in *Grove Music Online, Oxford Music Online*, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/10662> (accessed May 23, 2014).

concerts featured two tone poems by Bax, *Enchanted Summer* and *Festival Overture*, the latter of which was likely “overshadowed...by Elgar conducting his own Second Symphony and Percy Grainger performing the Tchaikovsky B-flat minor piano concerto.”¹⁸ Music by Vaughan Williams was programmed alongside that of Bax in the first concert of the second season, but this was not the first time the two composers had had works featured in the same evening; the earliest known instance of this occurrence was on September 25th, 1909 at a function of the short-lived Music League.¹⁹

The Gardiner concerts brought the works of contemporary British composers to the forefront, but Gardiner also provided the means to bring British composers into contact with one another. Conductor Charles Kennedy Scott described the salon atmosphere at Gardiner’s

small town house in Kensington, off Edwardes Square...There his friends gathered; there Percy Grainger would play his own compositions, or Bax, with his unrivalled power of score-reading, the compositions of other members of the circle when their own skill was insufficient; there plans were discussed, programmes settled with eager anticipation. The moving spirit was, of course, Balfour Gardiner; no accredited institution could have supplied the stimulus that he gave.²⁰

Kennedy Scott also lists Holst, Delius, Frederic Austin, Roger Quilter, Benjamin Dale, and Cyril Scott as also being frequent guests of Gardiner’s, but pointedly remarks about Vaughan Williams’s strange absence.²¹ It is indeed odd that Vaughan Williams, whose

¹⁸ Foreman, *Bax: A Composer and His Times*, 97-98.

¹⁹ *Ibid.*, 65.

²⁰ *Ibid.*, 98.

²¹ Scott-Sutherland, *Arnold Bax*, 38.

writing on “Who Wants the English Composer?” was already placing him in a leadership role among his contemporaries, would have completely shunned these meetings. It is especially strange given Gardiner’s role in championing new works by Vaughan Williams. Is it possible that Kennedy Scott merely recalled things incorrectly, and that Vaughan Williams was present for at least one musical evening at Gardiner’s Kensington home?

The Gardiner-organized concert series was abandoned with the coming of war; his absence created an “opening in the London concert world for enterprising promotion.”²² This opening was filled, at least temporarily, by Bevis Ellis, who was a “close friend of the composer and folk-song collector George Butterworth. Butterworth was in turn a friend of Vaughan Williams.”²³ Ellis also became a fast friend of Bax’s who wrote that in early 1914, “I had become much attached to him...and almost every evening we spent together either at his highly civilized Albany flat or at Covent Garden or some theatre or restaurant.”²⁴ While Gardiner’s concerts had brought the music of Vaughan Williams and Bax together, his social circle had apparently failed to create a personal contact between the two. Ellis’s concerts were to succeed at both tasks.

The Ellis concerts lasted for about a week, beginning on March 20th, 1914 and ending on the 27th. This last concert included three songs by Bax for voice and orchestra, and also the first performance of Vaughan Williams’s *A London Symphony*.²⁵ This work became a favorite of Bax’s, and their “friendship had sprung from this work”²⁶ This is a friendship that would have stalled from Vaughan Williams’s absence from England

²² Foreman, *Bax: A Composer and His Times*, 115.

²³ *Ibid.*

²⁴ Arnold Bax, *Farewell my youth* (New York: Longmans, Green and Co., 1943), 94.

²⁵ Foreman, *Bax: A Composer and His Times*, 116.

²⁶ Kennedy, *The Works of Ralph Vaughan Williams*, 106.

during World War I, but was rekindled in the 1920's and would last until Bax's death in 1953. Their friendship would cause the composers to single each other out in written praise for British music in general, as in this passage from an essay by Bax in 1925:

There appear certain signs of revolt against postwar fads in all the arts, and for my own part I am heartily glad of it. Those amongst my British contemporaries whom I respect and for whose work (notably that of Vaughan Williams) I have the greatest sympathy, have developed their own personal styles, regardless of any of the heady excitements emanating from Austria or Russia. And I believe the sincerity of English composers is one of the most remarkable features of their work.²⁷

Accounts by Harriet Cohen reveal that Bax and Vaughan Williams became quite close during this time;²⁸ she described Vaughan Williams's presence as having a "quietening" [sic] effect on Bax, who was known to be quite shy and anxious at times.²⁹ Lunch meetings between the two were common; Bax alludes to one in a 1926 letter to Cohen and these lunches continued into the 1940s at least.³⁰

More public praise would be written in the mid 1930's, with Vaughan Williams writing the following in a 1933 letter to the *Radio Times*:

I notice a curious error in your issue of December 16. In discussing a concert of compositions by Arnold Bax and various Continental composers [Szymanowski, Schoenberg, Conrad Beck, Norbert van

²⁷ Arnold Bax, "I am a Brazen Romantic," *Musical America* (July 1928), 9; found in Foreman, *Bax: A Composer and His Times*, 239.

²⁸ Foreman, *Bax: A Composer and His Times*, 247-248.

²⁹ *Ibid.*, 335.

³⁰ *Ibid.*, 253 and Hugh Cobbe, editor, *Letters of Ralph Vaughan Williams: 1895-1958* (New York: Oxford University Press, 2008), 322.

Hannenhaim, Hindemith, Poulenc and Stravinsky] you state that ‘Arnold Bax is clearly in place in this distinguished company’. I take it that the sentence was meant to express that the other composers were not unworthy of a place beside Arnold Bax. Personally, I do not consider that most of the names on that programme are worthy to stand beside Bax, but this, of course, is a matter of opinion.”³¹

Later Vaughan Williams would list Bax as a musical ally in his book on *National Music*, published in 1934 and taken from lectures given in the U.S.³² Yet for all these tributes, none would mean more to Bax than a Christmas parcel received in 1935, which contained a copy of Vaughan Williams’s Fourth Symphony, inscribed to Bax. Bax’s letter of reply was immediate: “Coming back from a few days in Devon tonight I found your ever-to-be honoured present awaiting me. This is the finest tribute of affection and comradeship that has ever been paid me, and I shall value it all my life. I need say no more than this.”³³ Vaughan Williams’s Fourth Symphony is dedicated to Bax, though Bax had already dedicated an earlier work to Vaughan Williams, Bax’s *Lyrical Interlude* for String Quintet of 1922.

While Bax was certainly capable of warm and sincere compliments, he must have been a hard friend to have at times. In some cases, Bax’s proclivity for the sardonic might be conceived as being more scornful rather than merely mischievous. Often cited is this remark by Bax to Vaughan Williams; “You know, V.W., all your best sellers are not your own.”³⁴ While Vaughan Williams’s use of folk music is well documented, the issue of

³¹ Ralph Vaughan Williams, “A Matter of Opinion,” *Radio Times* (January 1933), 13; found in Foreman, *Bax: A Composer and His Times*, 374.

³² Hughes/Stradling, *The English Musical Renaissance 1840 – 1940: Constructing a National Music*, 195.

³³ Kennedy, *The Works of Ralph Vaughan Williams*, 247-8.

³⁴ *Ibid.*, 76.

folk music in Bax is much more complex. The widespread collecting of folk songs by 20th century English composers was something that Bax was prone to make light of, as in the reference to “Puddleswick drinking songs” cited earlier. On another occasion, when Bax was on holiday in Spain with fellow composers, “Bax challenged his companions, Gardiner and Holst, in disquieting terms: ‘Come now...you can’t honestly say that you think much of English folk songs. Why, they’re all either bad or Irish.’”³⁵ For Bax, the affinity for Celtic identity was both “emotionally sincere and musically profound,”³⁶ composing works that appropriated Irish elements or were based on authentically Irish sources. One such notable instance is found at the start of the third movement of Bax’s Third Symphony. There the violas affect a convincing fiddle-tune with

the side-drum providing a reasonably effective version of the bodhran drum accompaniment. This is not a direct copy; nor is it pastiche – the passage in question is an integrated part of a symphonic argument. But the music would have been impossible without the Irish folk tradition.³⁷

For virtue of having outlived Bax, Vaughan Williams was able to aptly handle his assertion that the best English folk songs were actually Irish in origin. After Bax’s death, Harriet Cohen bequeathed a number of his belongings, including books and music, to Cork University “on condition that they be housed in a suitable Memorial Room in tribute.”³⁸ The room was opened on October 15th, 1955 by Vaughan Williams who gave a memorial lecture and the next day an anniversary recital of Bax’s music was given. This annual series of recitals and lectures, endowed by the Bax family, takes place each

³⁵ Hughes/Stradling, *The English Musical Renaissance 1840 – 1940: Constructing a National Music*, 205.

³⁶ *Ibid.*

³⁷ Andrew Blake, *Land without music: music, culture and society in twentieth-century Britain* (New York: Manchester University Press, 1997), 218.

³⁸ Scott-Sutherland, *Arnold Bax*, 189.

year on the anniversary of Bax's death. The memorial lectures given by Vaughan Williams took the form of a "belated riposte. In his widow's words, he proved 'that all the Irish folk-songs came from the English Pale. The audience did not lynch him, but some would have liked to. This he knew and wickedly enjoyed.'"³⁹ Bax's derision of folk-song quotation contrasts starkly with Vaughan Williams's dedication to folk-song, and might in some minds cast doubt on whether they were musical allies at all. It is true that Bax held a rather puckish attitude to folk song use, but it appears the two men were to value each other's insight in the more abstract musical genres, most notably the symphony.

2.3 Musical Connections between Vaughan Williams and Bax

As stated before, the premiere of *A London Symphony* provided the initial impetus for the friendship between Vaughan Williams and Bax. While the personal connection between the two composers arose from this event, it also encouraged discussion and cooperation on the technical aspects of composition. Vaughan Williams recalled an example of this aspect of their relationship, when the younger composer made a suggestion following the premiere of *A London Symphony*:

We were discussing my, then new, London Symphony. One passage disappointed me and I asked his advice. He suggested the addition of a counter melody on the oboe. Indeed he sat down at the pianoforte and improvised one. This actual passage was too obviously Baxian to make its inclusion possible. But, following his advice, I made up another which,

³⁹ Hughes/Stradling, *The English Musical Renaissance 1840 – 1940: Constructing a National Music*, 205.

though not nearly so good as his, was more in keeping with the rest of the movement.⁴⁰

As for Bax, *A London Symphony* seems to have contributed to his interest in the symphony as a genre. Bax greatly admired *A London Symphony* and adopted its most progressive formal feature, the epilogue, into his own symphonic writing. In fact, the epilogue seems a crucial feature that is used to give balance to Bax's unusual three-movement symphonic forms."⁴¹

The musical intersection between Vaughan Williams and Bax becomes more difficult to untangle when it comes to Vaughan Williams's Piano Concerto. The knot also involves Bax's Third Symphony and Vaughan Williams's Fourth Symphony. The amount of consultation between the two composers during this time may have been extensive. It is known with certainty that Vaughan Williams was able to persuade Bax into lengthening the crescendo that ends the first movement of his Third Symphony by sixteen measures,⁴² but the exact reason for the quotation in Vaughan Williams's Piano Concerto remains puzzling. The confusion increases with the difficult task of establishing a clear chronology regarding the completion of Bax's symphony, Vaughan Williams's concerto, and Cohen's association with the composition of both works.⁴³ Duncan Hinnells has best summarized these difficulties and suggests some convincing explanations:

⁴⁰ Foreman, *Bax: A Composer and His Times*, 116

⁴¹ *Ibid.*

⁴² *Ibid.*, 248

⁴³ The difficulty of this task is described by Robert Threlfall, "The Final Problem and Vaughan Williams's Piano Concerto," *Music Opinion* (February 1975), 237-8, and Kennedy, "This Concerto is a Masterpiece," 9, and Foreman, *Bax: A Composer and His Times*, 248.

Although Vaughan Williams's overt 'quotation' of Bax's Third Symphony (apparently composed in 1929) occurs in the concerto's finale (drafted in 1931), the Bax theme is also connected with Vaughan Williams's slow movement which was drafted in 1926.

However, there are numerous possible explanations, including the possibility that either (or both) composers sketched thematic material far earlier than they drafted specific movements and that they exchanged ideas; conversely, aspects of their musical outlook and [the] context which they shared may have prompted them to draft similar material, a relationship which Vaughan Williams may have decided to make explicit by quotation. It certainly appears possible, examining the ink, paper and Vaughan Williams's pagination of the autograph full score that the Bax quotation was added later than the rest of the movement was copied, which leaves many possibilities open.

Contemplating this chronology may prove fruitful in another respect, however. A letter from Vaughan Williams to Cohen in January 1931 seems to indicate that it was only then that the concerto became 'hers'. This seems to suggest that Vaughan Williams did not necessarily conceive the concerto with her in mind, and conflicts with the assumption of many of those involved. Boult criticized Vaughan Williams for having written a Busonian concerto 'for' Cohen in a letter to Arthur Bliss, and Cohen herself evidently liked to think that the concerto was written for her.⁴⁴

⁴⁴ Hinnells, "Vaughan Williams's Piano Concerto: the first seventy years," 131.

Taking each of these issues in turn, Lewis Foreman has indicated that Bax first began work on his Third Symphony late in 1927.⁴⁵ This still indicates that Bax's symphony was written after the second movement of Vaughan William's concerto, in which resemblances to Bax's symphony are found.

As for these thematic resemblances, a brief examination shows that these similarities are somewhat pedestrian. Figure 2.2 shows the theme stated in the Epilogue of Bax's Third Symphony, from which the mysterious quotation is derived. Figure 2.3 shows the theme from the second movement of Vaughan Williams's Piano Concerto which Robert Threlfall has asserted is related to the Bax quotation.⁴⁶

The relationship between these themes is highly superficial. Both encompass the melodic filling in of a descent by fifth, a familiar thematic paradigm in tonal music. As Hinnells points out, a shared cultural context may have encouraged similar thematic design. This shared context need not be limited to British instrumental music written between the wars but could encompass the entirety of the common-practice since such melodic design is so frequently encountered in the standard repertoire.

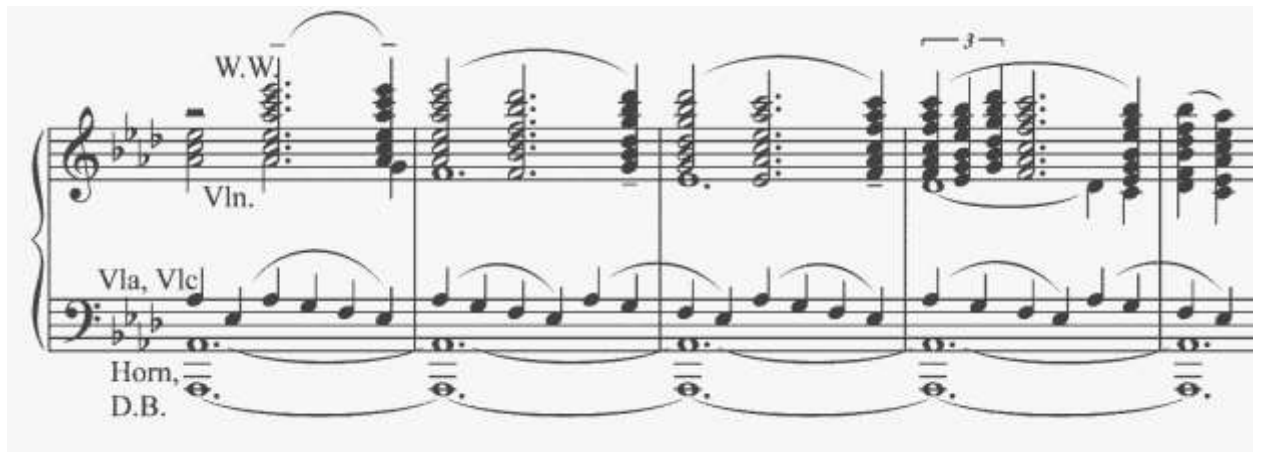
Figure 2.2 – Bax, Symphony No. 3/III 241-248



⁴⁵ Foreman, *Bax: A Composer and His Times*, 268.

⁴⁶ Threlfall, "The Final Problem and Vaughan Williams's Piano Concerto," 237-8.

Figure 2.3 – Vaughan Williams, Piano Concerto/II 65-86



There is much to support Hinnells's other suggestion, that the two composers drafted thematic material and exchanged ideas. Vaughan Williams often solicited the advice of other composers while working through nascent compositions. Holst's advice was especially valued, but Vaughan Williams would also hear the opinions of other composers at "private run-throughs of his draft compositions...in which substantial orchestral works would be played at the piano and Vaughan Williams would ask for direct and honest criticism."⁴⁷ Besides Holst and Bax, composers such as Arthur Bliss, Herbert Howells, Edmund Rubbra, and Gerald Finzi (1901-1956) were present and offered their suggestions on new works by Vaughan Williams. At a hearing of a draft of Vaughan Williams's Fourth Symphony in 1934, Bliss recalls making such pointed and critical remarks that he felt he had insulted his host. Bliss wrote a letter of apology, to which Vaughan Williams wrote the following reply:

⁴⁷ Arthur Bliss, *As I Remember* (London: Faber and Faber Ltd., 1970), 205.

You mustn't think your advice has not been valuable because I have not exactly followed it – when I give advice to my pupils I tell them that they can do one of 3 things

- a) accept it blindly – bad
- b) reject it kindly – bad but not so bad
- c) rethink out a 3rd course for themselves – sound⁴⁸

Vaughan Williams's penchant for seeking advice and then formatting his own solutions had been in place at least since Bax's suggestions for *A London Symphony*. According to Edmund Rubbra, Bax was frequently consulted on matters of orchestration, a point that was refuted by Ursula Vaughan Williams though she admits she is only aware that Bax was not consulted on major orchestral works from about 1940 onward.⁴⁹

Ursula Vaughan Williams does admit that Bax, like Bliss and others, was consulted on the Fourth Symphony, which belongs as a peripheral member of the tangled web between Bax's Third Symphony and Vaughan Williams's Piano Concerto. The dedication of the Fourth Symphony seems to have meant a great deal to Bax, as described above. For his part, Vaughan Williams seemed to think his Fourth Symphony shared a connection to Bax's Third Symphony. Vaughan Williams hints at this kinship in a letter to Boult in which Vaughan Williams suggested that he program Bax's Third Symphony in a concert alongside his own Fourth Symphony.

⁴⁸ Cobbe, ed. *Letters of Ralph Vaughan Williams: 1895-1958*, 233.

⁴⁹ Edmund Rubbra, "Review of *Vaughan Williams* by James Day," *Music and Letters*, Vol. 43, No. 1 (January 1962), 70 and Ursula Vaughan Williams, "Vaughan Williams and Bax," *Music & Letters*, Vol. 43, No. 2 (April 1962), 199. It is passing odd that Ursula Vaughn Williams would comment on the genesis of the Fourth Symphony, composed between 1932-34, when she first met the composer in 1938.

After Bax's death, Vaughan Williams began to express doubts about the quality of Bax's music.⁵⁰ Yet, while Bax was at his prime, Vaughan Williams wrote: "I sometimes wish I could think of the strange chords of my old friend Arnold Bax."⁵¹ It is odd then, that Vaughan Williams would choose to quote a passage from Bax's Third Symphony that contains very little of this esteemed strangeness. The passage is wholly contained within a single diatonic scale and contains none of the caustic dissonances that had become associated with Bax since the premiere of his First Symphony. If Vaughan Williams had wanted to choose a passage that highlighted the strange chords, he might have focused on a progression just fifty measures after the quotation, shown in Figure 2.4.

The key of the epilogue is unambiguously C major, but the succession of triads shown in Figure 2.4 cannot be easily reconciled within that key. Embracing an analytical method that eschews traditional functions for transformational voice-leading provides somewhat better results. Figure 2.5 reduces to harmonies of the upper orchestra to those occurring only on the first beat of each measure. The movements between each triad can be explained through neo-Riemannian transformations, shown above the staff. The neo-Riemannian transformations discussed here are single voice displacements between two triads represented by a single letter. P refers to a "Parallel" transformation which moves the third of a major triad down by semitone to create a minor triad, or vice versa. L refers to a "Leittonwechsel" transformation in which the root of a major triad moves down by semitone to become the fifth of a minor triad, or vice versa.⁵² In order to map the initial

⁵⁰ These doubts were expressed in a 1956 letter to Michael Kennedy, see Cobbe, ed. *Letters of Ralph Vaughan Williams: 1895-1958*, 588.

⁵¹ Hubert Foss, *Ralph Vaughan Williams* (London: George G. Harrap & Co., Ltd., 1950), 35.

⁵² These transformations are discussed and demonstrated in David Lewin, *Generalized Musical Intervals and Transformations* (New Haven: Yale University Press, 1987), 175-9. Neo-Riemannian operations and

triad CM onto $A^b m$, a compound transformation of P, followed by L, followed by P must be implemented. The following transformation, mapping $G^{\sharp} m$ (enharmonically $A^b m$) onto EM, can be achieved through a single application of the L transformation.

Figure 2.4 – Bax, Symphony No. 3/III 296-299



Figure 2.5 – Basic Harmonic Reduction of Bax, Symphony No. 3/III 296-299



The presence of alternating P and L transformations strongly suggests a pitch structure based upon the hexatonic collection, set-class 6-20 (014589). In fact, each of the three triads shown in Figure 2.5 would exist as nodes within a single hexatonic system.⁵³ However, within the passage being discussed, there are several tones which are not included within a single hexatonic scale. Figure 2.6 restores two harmonies from the musical surface into the harmonic reduction, the Fm occurring on beat three of measure

their associated analytical constructs are discussed more fully in Chapter 3 of this study.

⁵³ See Richard Cohn, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late Romantic Triadic Progressions," *Music Analysis*, 15 (1996), 9-40.

296 and the C[#]m occurring on beat three of measure 298. These harmonies have been selected due to their metrical position which lends some hierarchical weight, an interpretation supported by the indicated articulation in the upper strings.

In Figure 2.5, the first transformation, a compound, represents a preponderance of analytical complexity when compared to the second transformation, which can be represented by a single basic operation: L. This interpretation is a significant distortion from the musical surface, as Figure 2.6 is able to show. Figure 2.6 reveals that an equal amount analytical complexity can be found throughout the passage. This Figure also uses two more types of neo-Riemannian transformations. A “Relativ” transformation, represented by R, moves the fifth of a major triad up by whole step to become the root of a minor triad, and vice versa. Also in Figure 2.6 is an L' transformation, in which two chord members of a major triad move by semitone to form a minor triad, and vice versa.⁵⁴ In the first two measures, an L' transformation maps CM onto Fm. This is followed by a compound RP transformation which maps Fm onto A^bm. After this harmony is respelled to G[#]m, a compound PL' maps the harmony onto C[#]m. An R transformation maps C[#]m onto EM.

Figure 2.6 – Revised Harmonic Reduction of Bax, Symphony No. 3/III 296-299



⁵⁴ L', along with other second category neo-Riemannian operations, are discussed in Robert D. Morris, "Voice-Leading Spaces," *Music Theory Spectrum*, 20.2 (Fall 1998), 175-208.

While Figure 2.6 presents a more symmetrical deployment of neo-Riemannian transformations in its analysis of the passage, it can no longer be said to present harmonies that are solely confined to a single hexatonic collection. The triads shown in Figure 2.6 do conform to a single symmetrical pc collection called the nonatonic collection. As its name implies, the nonatonic collection contains nine distinct pc members and is created from an interval pattern of 2 + 1 + 1.⁵⁵ The nonatonic collection that includes all of the pcs shown in Figure 2.6 is given as Figure 2.7.

Figure 2.7 – Nonatonic Collection which contains the triads in Figure 2.6



The nonatonic collection is also found at work in draft versions of Vaughan Williams's Piano Concerto. Evidence in the autograph score and letters between Cohen and Vaughan Williams indicate that revisions were ongoing from 1933 to 1934. Figure 2.8 shows a drafted change to the ending of the final movement. This ending was likely abandoned around the time the Bax quotation was removed, and seems to represent an attempt to work the Bax quotation into a smooth transition which moves the pitch center from B^b to conclude on G.⁵⁶

⁵⁵ Described in Matthew Santa, "Nonatonic Progressions in the Music of John Coltrane" in *Annual Review of Jazz Studies 13* (Lanham, MD: Scarecrow Press, Inc., 2003), 13-25, and Matthew Santa, "Nonatonic Systems and the Parsimonious Interpretation of Dominant-Tonic Progressions," *Theory and Practice*, 28 (2003), 1-28. The nonatonic collection studied more fully in Chapter 3 of this dissertation.

⁵⁶ Hinnells, "Vaughan Williams's Piano Concerto: the first seventy years," 131.

Figure 2.8 – Vaughan Williams, Piano Concerto/III draft ending ca. mid-1933



The final chords, GM and F[♯]M, combine to form a member of set-class 6-Z19 (013478), an important nonatonic subset. The preceding two measures plus the last beat of the measure before utilize the notes contained in G and F[♯] and add three more pitch-classes: F, A, and E[♭]. When taken together, this forms a complete nonatonic collection, shown in Figure 2.9. The opening of this passage, beginning on B[♭], contains pitch-classes C and F[♭], which do not appear in the nonatonic collection shown in Figure 2.9. Instead the tones of the first three measures of the passage combine to form set-class 6-Z49 (013479), another important nonatonic subset which also appears in the octatonic collection. The nonatonic collection involved, which is further completed by a D and F occurring later in the passage, is shown in Figure 2.10. The first two beats of the fourth measure of the passage represent a space where tones belonging to both of the nonatonic

collections appear. Significantly, the intersection of these two nonatonic collections is the hexatonic collection, $HEX_{1,2}$, which is featured in the fifth and sixth measures of the passage. Figure 2.11 summarizes these analytical comments.

Figure 2.9 – Nonatonic Collection appearing at the end of the passage in Figure 2.8

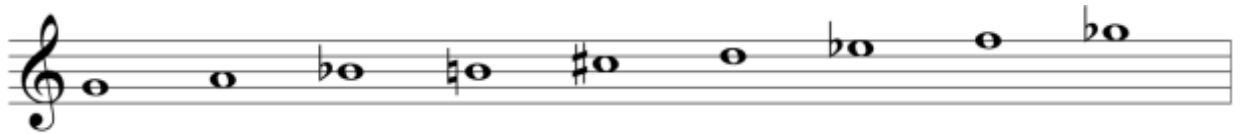


Figure 2.10 – Nonatonic Collection appearing at the start of the passage in Figure 2.8



Figure 2.11 – Vaughan Williams, Piano Concerto/III draft ending with comments

The image displays a musical score for the Piano Concerto/III draft ending by Vaughan Williams. The score is written for piano and includes several annotations highlighting specific nonatonic collections and their subsets.

Annotations include:

- 6Z-49 subset of Nonatonic shown in Fig. 2-10**: Points to a section of the score.
- Blending of both Nonatonic Collections**: Points to a section of the score.
- HEX_(1,2) subset of both Nonatonic collections**: Points to a section of the score.
- Complete Nonatonic Collection shown in Fig. 2.9**: Points to a section of the score.
- 6Z-19 subset of Nonatonic parsed into G and F# triads**: Points to a section of the score.

The nonatonic collection represents an unexplored musical connection between Vaughan Williams and Bax. The following chapters explore the nonatonic collection and its workings within pieces by these two composers, with particular focus on Vaughan Williams's Fourth Symphony.

CHAPTER 3:

THE NONATONIC COLLECTION

3.1 Forms and Rotations of the Nonatonic Collection

The nonatonic collection can be created when an octave is divided symmetrically as three periods of the interval pattern 2 + 1 + 1, or whole tone + semitone + semitone. The collection is set class 9-12, and its complement is the augmented triad. Like the augmented triad, the nonatonic set has exactly four distinct forms, shown in Figure 3.1. This pitch collection is known by several other labels. Olivier Messiaen (1908-1992) presented the collection as his third mode of limited transposition.¹ Less well known is the role of this collection in the music of Russian-born composer Alexander Tcherepnin (1899-1977). Some even refer to it as the “Tcherepnin scale,” due to his frequent usage and extensive theorizing on the nonatonic collection.² Yet another name was given in an influential essay on voice-leading parsimony by Jack Douthett and Peter Steinbach, who use the label “enneatonic collection” when referring to set-class 9-12. Unfortunately, this term has also been used to refer to non-symmetrical nine-note scales involving microtones.³ The most recent scholarly literature has tended to refer to this collection as

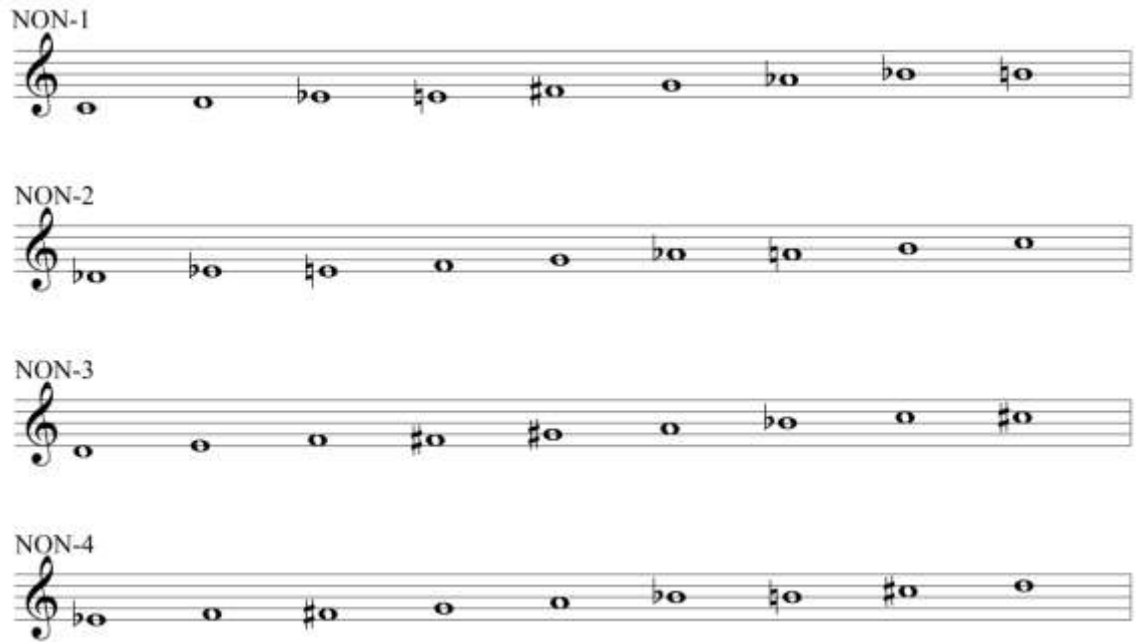
¹ For Messiaen’s own introduction to this pitch collection see Olivier Messiaen, *The Technique of my Musical Language*, translated by John Satterfield (Paris: Leduc, 1956), 69-70. An example of recent interest in this pitch collection in Messiaen analysis can be found in Christoph Neidhöfer, “A Theory of Harmony and Voice Leading for the Music of Olivier Messiaen,” *Music Theory Spectrum*, 27.1 (Spring 2005), 1-34.

² Information on Tcherepnin can be found in Ludmila Korabelnikova, *Alexander Tcherepnin: The Saga of a Russian Emigré Composer*, translated by Anna Winestein, edited by Sue-Ellen Hershman-Tcherepnin (Bloomington: Indiana University Press, 2008) and in Kimberly Anne Veenstra, “The Nine-Step Scale of Alexander Tcherepnin: Its Conception, Its Properties, and Its Use” (PhD diss., Ohio State University, 2009).

³ Jack Douthett and Peter Steinbach, “Parsimonious Graphs: A Study in Parsimony, Contextual Transformations, and Modes of Limited Transposition,” *Journal of Music Theory*, 42.2 (Fall 1998), 241-263. Use of the term enneatonic for a microtonal scale can be found in Willy Hartner, “Some Notes on Chinese Musical Art,” *Isis*, 29.1 (July 1938), 72-94.

nonatonic, and that term is adopted also in the present study.⁴

Figure 3.1 – the four forms of the nonatonic collection

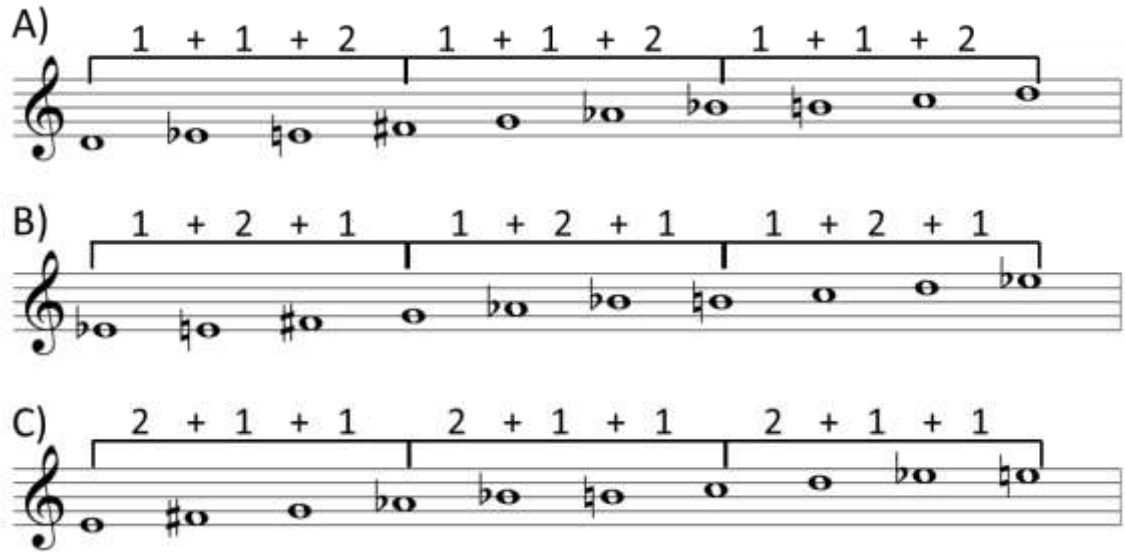


In scalar form, any complete nonatonic collection can be written to feature three cycles of one of three possible ordered interval patterns: $1 + 1 + 2$, $1 + 2 + 1$, or $2 + 1 + 1$. These are illustrated in Figure 3.2. The differences in these rotations were apparently very important to the two composers mentioned above. Whenever Messiaen discusses Mode 3 in his treatise, it is written as a $2 + 1 + 1$ series, as seen in Figure 3.2.C and in Figure 3.1 above. For Tcherepnin, the three distinct rotations hold a significant role in his compositional theory. The scale shown in Figure 3.2.B, created through the interval pattern of $1 + 2 + 1$, is Tcherepnin's "fundamental" form of the scale, while the other two

⁴ In addition to Veenstra, "The Nine-Step Scale of Alexander Tcherepnin: Its Conception, Its Properties, and Its Use," see also Matthew Santa, "Nonatonic Progressions in the Music of John Coltrane" in *Annual Review of Jazz Studies 13* (Lanham, MD: Scarecrow Press, Inc., 2003), 13-25 and Matthew Santa, "Nonatonic Systems and the Parsimonious Interpretation of Dominant-Tonic Progressions," *Theory and Practice*, 28 (2003), 1-28.

rotations are “derivative.”⁵

Figure 3.2 – the three possible interval rotations to create NON-1



3.2 Subsets of the Nonatonic Collection

The nonatonic collection is harmonically rich; many familiar harmonies and scale fragments can be found as constituent subsets within set class 9-12. In this way the nonatonic collection is comparable to the more familiar octatonic collection. Table 3.1 lists the subsets of the nonatonic collection, with some subsets of particular relevance for the present study shown in bold. Immediately apparent are the presence of the familiar triads of Western music, and four of the familiar seventh chords. In addition, the nonatonic set contains complete forms of two familiar symmetrical scales: it contains one transposition of the whole-tone scale, set class 6-35 (02468T), and two transpositions of the hexatonic scale, set-class 6-20 (014589). Significantly, a union of any two of these

⁵ Veenstra, “The Nine-Step Scale of Alexander Tcherepnin: Its Conception, Its Properties, and Its Use,” 17-26.

subsets, either both transpositions of the hexatonic scale or the whole-tone scale subset plus either form of the hexatonic subsets will create the complete nonatonic collection. Furthermore, the nonatonic collection contains significant subsets that intersect either with octatonic pitch-space or with diatonic pitch-space. Any nonatonic collection contains three forms of set class 6-Z49 (013479), a significant octatonic subset. A bridge to any one of the three octatonic collections can be facilitated through any one of the three transpositions of 6-Z49 within a single nonatonic collection. Strong intersections between the nonatonic collection and diatonic pitch-space are possible through set-class 6-Z26 (013578), a significant subset of the diatonic collection, 7-35 (013568T).

Table 3.1 – subsets of the nonatonic collection

<i>Type</i>	<i>Set Class</i>	<i>Prime Form</i>	<i>Descriptive name, if any exists⁶</i>
	9-12	(01245689T)	Nonatonic Collection
Octachordal Subsets	8-19	(01245689)	
	8-24	(0124568T)	
Septachordal Subsets	7-13	(0124568)	
	7-Z17	(0124569)	
	7-21	(0124589)	
	7-22	(0125689)	Persian, Major Gypsy, Hungarian Minor
	7-26	(0134579)	
	7-30	(0124689)	Neapolitan-Minor Mode
	7-33	(012468T)	Neapolitan-Major Mode, Lydian minor scale
	7-Z37	(0134578)	

⁶ Descriptive labels come from Larry Solomon, “The Table of Pitch Class Sets,” <http://solomonsmusic.net/pcsets.htm>. (accessed March 12, 2014)

Hexachordal Subsets	6-Z4	(012456)	
	6-Z10	(013457)	
	6-14	(013458)	
	6-15	(012458)	
	6-16	(014568)	
	6-Z19	(013478)	
	6-20	(014589)	Hexatonic scale, 3 rd order all combinatorial
	6-21	(023468)	
	6-22	(012468)	
	6-Z26	(013578)	Phrygian Hexamirror
	6-31	(013589)	
	6-34	(013579)	Scriabin's Mystic Chord
	6-35	(02468T)	Whole-tone scale, 6 th order all combinatorial
	6-Z43	(012568)	
	6-Z44	(012569)	Schoenberg Anagram Hexachord
	6-Z46	(012469)	
	6-Z49	(013479)	
Pentachordal Subsets	5-3	(01245)	Minor-second Major Pentachord
	5-6	(01256)	Oriental Pentacluster
	5-8	(02346)	Tritone-Symmetric Pentamirror
	5-9	(01246)	Tritone-Expanding Pentachord
	5-11	(02347)	Center-cluster Pentachord
	5-13	(01248)	Augmented Pentacluster
	5-14	(01257)	Double-seconds Triple-fourth Pentachord
	5-15	(01268)	Asymmetric Pentamirror
	5-16	(01347)	Major-minor-diminished Pentachord
	5-Z17	(01348)	Minor-major Ninth Chord

	5-Z18	(01457)	Gypsy Pentachord
	5-20	(01378)	Balinese Pelog Pentatonic
	5-21	(01458)	Major-augmented Ninth Chord
	5-22	(01478)	Persian Pentamirror
	5-24	(01357)	Phrygian Pentachord
	5-26	(02458)	Diminished-augmented Ninth Chord
	5-27	(01358)	Major-Ninth Chord
	5-28	(02368)	Augmented-sixth Pentachord
	5-30	(01468)	Enigmatic Pentachord
	5-32	(01469)	Neapolitan Pentachord
	5-33	(02468)	Whole-tone Pentamirror
	5-34	(02469)	Dominant-ninth Chord
	5-Z37	(03458)	Center-cluster Pentamirror
	5-Z38	(01258)	Diminished Pentacluster
Tetrachordal Subsets	4-2	(0124)	Major-second Tetracluster
	4-3	(0134)	Alternating Tetramirror
	4-4	(0125)	Minor Third Tetracluster
	4-5	(0126)	Minor Third Tetracluster
	4-6	(0127)	Perfect Fourth Tetramirror
	4-7	(0145)	Arabian Tetramirror
	4-8	(0156)	Double Fourth Tetramirror
	4-11	(0135)	Phrygian Tetrachord
	4-12	(0236)	Harmonic-minor Tetrachord
	4-14	(0237)	Major-second Minor Tetrachord
	4-Z15	(0146)	All-interval Tetrachord
	4-16	(0157)	Minor-second Quartal Tetrachord, Maj7 ⁽⁶⁵⁾
	4-17	(0347)	Major-minor Tetramirror

	4-18	(0147)	Diminished-Major seventh chord
	4-19	(0148)	Minor-Major seventh chord
	4-20	(0158)	Major seventh chord
	4-21	(0246)	Whole-tone Tetramirror
	4-22	(0247)	Major-second Major Tetrachord
	4-23	(0257)	Quartal Tetramirror
	4-24	(0248)	Augmented Seventh Chord
	4-25	(0268)	French-sixth, 7 ^(b5)
	4-26	(0358)	Minor seventh chord
	4-27	(0258)	Half-diminished 7 th , Dominant seventh
	4-Z29	(0137)	All-interval Tetrachord
Trichordal Subsets	3-1	(012)	Chromatic Trimirror
	3-2	(013)	Phrygian Trichord
	3-3	(014)	Major-minor Trichord
	3-4	(015)	Incomplete Major seventh chord
	3-5	(016)	Tritone-fourth
	3-6	(024)	Whole-tone Trichord
	3-7	(025)	Incomplete Minor seventh chord
	3-8	(026)	Incomplete Dominant7/Italian-sixth
	3-9	(027)	Quartal Trichord
	3-10	(036)	Diminished triad
	3-11	(037)	Consonant (i.e. Major or Minor) triad
	3-12	(048)	Augmented triad

Figure 3.3 displays the three forms of set-class 6-Z26 found within each of the four forms of the nonatonic collection. For example, NON-2 contains a pc set that serves as the prime-form representative of the set-class (013578), identified on the table as T_0 of 6-Z26. NON-2 also contains two transpositions of this 6-Z26 set, at T_4 (4579E0) and T_8 (89E134). Each of these transpositions can act as a bridge to diatonic pitch space; T_4 can traverse from NON-2 to C major as (4579E0) encompasses all the pitch-classes found within the C major scale except . The same is true for T_8 , which intersects with E major, and for T_0 , which intersects with A^b major. Each of these three major scales can be rotated to feature five of its alternative modes (e.g. Phrygian, Lydian, etc.) depending on the context of the musical surface to feature a modal/nonatonic intersection. The one mode which cannot intersect with the nonatonic collection is the Dorian mode. Table 3.2 summarizes the possibilities of intersections between diatonic (i.e. tonal/modal) pitch space and the four nonatonic collections. For example, NON-3 can intersect with D Lydian through 6-Z26 (T_1), to D Aeolian through 6-Z26 (T_9) or to F-sharp Lydian through 6-Z26 (T_5). NON-3 does not intersect with D Ionian, but NON-4 does.

Figure 3.3 – three forms of set-class 6-Z26 within each of the nonatonic collections

NON-1	D	D [♯]	E	F [♯]	G	G [♯]	B [♭]	B	C
6-Z26 (T ₇)	D	D [♯]			G	G [♯]	B [♭]		C
6-Z26 (T ₁₁)	D		E	F [♯]	G			B	C
6-Z26 (T ₃)		D [♯]	E	F [♯]		G [♯]	B [♭]	B	

NON-2	D [♯]	E	F	G	G [♯]	A	B	C	C [♯]
6-Z26 (T ₈)	D [♯]	E			G [♯]	A	B		C [♯]
6-Z26 (T ₀)	D [♯]		F	G	G [♯]			C	C [♯]
6-Z26 (T ₄)		E	F	G		A	B	C	

NON-3	C	C [♯]	D	E	F	F [♯]	G [♯]	A	B [♭]
6-Z26 (T ₅)	C	C [♯]			F	F [♯]	G [♯]		B [♭]
6-Z26 (T ₉)	C		D	E	F			A	B [♭]
6-Z26 (T ₁)		C [♯]	D	E		F [♯]	G [♯]	A	

NON-4	C [♯]	D	D [♯]	F	F [♯]	G	A	B [♭]	B
6-Z26 (T ₆)	C [♯]	D			F [♯]	G	A		B
6-Z26 (T ₁₀)	C [♯]		D [♯]	F	F [♯]			B [♭]	B
6-Z26 (T ₂)		D	D [♯]	F		G	A	B [♭]	

Table 3.2 – intersections between NON and familiar scales and modes

NON-1	Ionian	Phrygian	Lydian	Mixolydian	Aeolian	Locrian
6-Z26 (T ₇)	E ^b	G	A ^b	B ^b	C	D
6-Z26 (T ₁₁)	G	B	C	D	E	F [#]
6-Z26 (T ₃)	B	D [#]	E	G ^b	A ^b	B ^b

NON-2	Ionian	Phrygian	Lydian	Mixolydian	Aeolian	Locrian
6-Z26 (T ₈)	E	G [#]	A	B	C [#]	D [#]
6-Z26 (T ₀)	A ^b	C	D ^b	E ^b	F	G
6-Z26 (T ₄)	C	E	F	G	A	B

NON-3	Ionian	Phrygian	Lydian	Mixolydian	Aeolian	Locrian
6-Z26 (T ₅)	D ^b	F	F [#]	A ^b	B ^b	C
6-Z26 (T ₉)	F	A	B ^b	C	D	E
6-Z26 (T ₁)	A	C [#]	D	E	F [#]	G [#]

NON-4	Ionian	Phrygian	Lydian	Mixolydian	Aeolian	Locrian
6-Z26 (T ₆)	D	F [#]	G	A	B	C [#]
6-Z26 (T ₁₀)	F [#]	B ^b	B	D ^b	E ^b	F
6-Z26 (T ₂)	B ^b	D	E ^b	F	G	A

An example demonstrating the type of modal/nonatonic intersection described above is found in the main theme of the second movement of Vaughan Williams's Fourth Symphony, shown in Figure 3.4. Lionel Pike explains this melody as possessing an F-

Lydian bottom half and a C-Phrygian top half.⁷ As an alternative I suggest that the dual elements of F-Lydian and C-Phrygian can be folded into a single nonatonic collection, NON-2. As NON-2 contains a six-note subset of both F-Lydian and C-Phrygian (6-Z26 at T_4 and T_0), the nonatonic collection neatly accounts for this instance of dual-mode interpretation, common in Vaughan Williams analysis.

Figure 3.4 –Vaughan Williams, Fourth Symphony/II 10-17

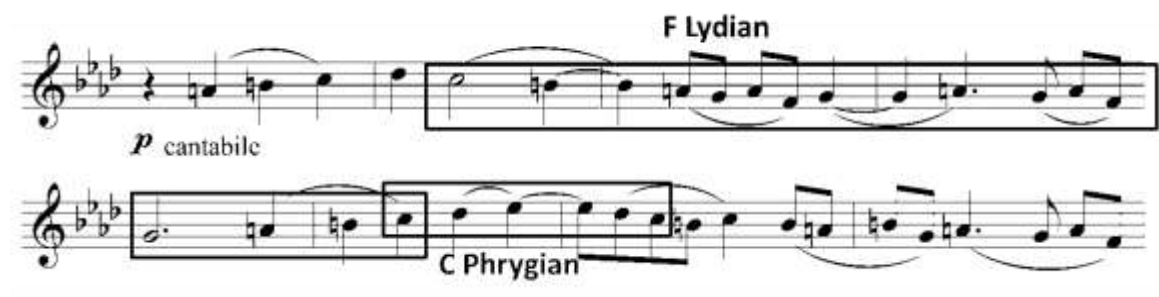


Figure 3.5, an example which demonstrates the nonatonic collection parsed into two constituent hexatonic scales comes from Tcherepnin's *Invention No. 4*, from his collection of keyboard inventions, Op. 13 (1920-21).⁸ Here a statement featuring $HEX_{(2,3)}$ in the right hand is followed by a statement featuring $HEX_{(1,2)}$, while the left hand maintains $HEX_{(2,3)}$ with only a G^\sharp lying outside the collection. The union of $HEX_{(2,3)}$ and $HEX_{(1,2)}$ is NON-4, the governing pitch collection of this piece.

⁷ Lionel Pike, *Vaughan Williams and the Symphony* (London: Toccata Press, 2003), 127.

⁸ More detail on this and several other of Tcherepnin's keyboard inventions can be found in Veenstra, "The Nine-Step Scale of Alexander Tcherepnin: Its Conception, Its Properties, and Its Use," Chapter 4.

Figure 3.5 – Tchernepnin, *Invention No. 4*, 8-13

HEX_(2,3)

HEX_(1,2)

cresc.

p

HEX_(2,3) (excepting G#)

Intersections between nonatonic and octatonic pitch-space can be achieved through the common subset, 6-Z49 (013479). These bridges to octatonic pitch-space behave in a similar way to 6-Z26 subsets link to diatonic (i.e. tonal/modal) pitch-space. Figure 3.6 displays the three forms of set-class 6-Z49 found within the four forms of the nonatonic collection.

Figure 3.6 – three forms of set-class 6-Z49 within each of the nonatonic collections

NON-1	D	D [♯]	E	F [♯]	G	G [♯]	B [♭]	B	C
6-Z49 (T ₃)		D [♯]	E	F [♯]	G		B [♭]		C
6-Z49 (T ₇)	D		E		G	G [♯]	B [♭]	B	
6-Z49 (T ₁₁)	D	D [♯]		F [♯]		G [♯]		B	C

NON-2	D [♯]	E	F	G	G [♯]	A	B	C	C [♯]
6-Z49 (T ₀)	D [♯]	E		G		A	B	C	C [♯]
6-Z49 (T ₄)		E	F	G	G [♯]		B		C [♯]
6-Z49 (T ₈)	D [♯]		F		G [♯]	A	B	C	

NON-3	C	C [♯]	D	E	F	F [♯]	G [♯]	A	B [♭]
6-Z49 (T ₁)		C [♯]	D	E	F		G [♯]		B [♭]
6-Z49 (T ₅)	C		D		F	F [♯]	G [♯]	A	
6-Z49 (T ₉)	C	C [♯]		E		F [♯]		A	B [♭]

NON-4	C [♯]	D	D [♯]	F	F [♯]	G	A	B [♭]	B
6-Z49 (T ₂)		D	D [♯]	F	F [♯]		A		B
6-Z49 (T ₆)	C [♯]		D [♯]		F [♯]	G	A	B [♭]	
6-Z49 (T ₁₀)	C [♯]	D		F		G		B [♭]	B

3.3 Triads within Nonatonic Pitch-Space and the three classes of Nonatonic Nodes

The appearance of two forms of the hexatonic scale within the nonatonic collection suggests that much previous scholarly work involving the hexatonic collection and set class 3-11 can greatly inform an understanding of nonatonic pitch space. Within any given nonatonic collection there are twelve possible transpositions of set class 3-11; six of these are major triads and six are minor triads. There are three transpositions of set class 3-10, the diminished triad, and three transpositions of set class 3-12, the augmented triad. The exact identities of these triads within the four nonatonic collections are summarized in Figure 3.7. Immediately observable is the fact that the roots of the six major or six minor triads within any given nonatonic collection spell one of the constituent 6-20 subsets. The roots of the three diminished triads within a nonatonic collection spell one of the constituent augmented triads within a nonatonic collection. These pitch-classes are always the lower participant in the three ordered whole-tone intervals within the scale. An augmented triad can be created using any one of the nine pitch-classes within the nonatonic collection, such that each of the three augmented triads listed for each nonatonic collection in Figure 3.7 actually represents a group of three inversionally equivalent pc sets.

Figure 3.7 – triadic subsets within the four nonatonic collections

NON-1: D D [♯] E F [♯] G G [♯] B [♭] B C									
<i>Major Triads</i>	<i>Minor Triads</i>			<i>Diminished Triads</i>			<i>Augmented Triads</i>		
E [♭] M, EM, GM, A [♭] M, BM, CM	E [♭] m, Em, Gm, A [♭] m, Bm, Cm			E ^o , A ^{♭o} , C ^o			D ⁺ , E ^{♭+} , E ⁺		

NON-2: D [♯] E F G G [♯] A B C C [♯]									
<i>Major Triads</i>	<i>Minor Triads</i>			<i>Diminished Triads</i>			<i>Augmented Triads</i>		
EM, FM, A [♭] M, AM, CM, C [♯] M	Em, Fm, A [♭] m, Am, Cm, C [♯] m			F ^o , A ^o , C ^{♯o}			E ^{♭+} , E ⁺ , F ⁺		

NON-3: C C [♯] D E F F [♯] G [♯] A B [♭]									
<i>Major Triads</i>	<i>Minor Triads</i>			<i>Diminished Triads</i>			<i>Augmented Triads</i>		
C [♯] M, DM, FM, F [♯] M, AM, B [♭] M	C [♯] m, Dm, Fm, F [♯] m, Am, B [♭] m			D ^o , F ^{♯o} , B ^{♭o}			C ⁺ , C ^{♯+} , D ⁺		

NON-4: C [♯] D D [♯] F F [♯] G A B [♭] B									
<i>Major Triads</i>	<i>Minor Triads</i>			<i>Diminished Triads</i>			<i>Augmented Triads</i>		
DM, E [♭] M, F [♯] M, GM, B [♭] M, BM	Dm, E [♭] m, F [♯] m, Gm, B [♭] m, Bm			D ^{♯o} , G ^o , B ^o			C ^{♯+} , D ⁺ , E ^{♭+}		

As Figure 3.7 shows, each pitch-class within a nonatonic collection can serve as a chord root for at least one constituent tertian harmony; however, some pitch classes have far more frequent opportunities to do this. Six of the nine pitch classes can act as the root of a major or minor triad. Of these six, three pitch classes can act as the root of a major,

minor, or diminished triad. The remaining pitch-classes of the nonatonic collection can only form the chord roots of an augmented triad. This is hardly a unique property within the nonatonic collection, and within nonatonic-governed musical passages these three pitch-classes have the tendency to appear as subservient chord members rather than fully acknowledged chord roots. I refer to these pitch classes as the “lower class” of nonatonic nodes as they lack the opportunity to serve as roots of diatonic harmonies. The lower class nodes are always the first, fourth, and seventh pitch-classes listed when a particular nonatonic scale is segmented as an ordered pattern of $1 + 1 + 2$. The three pitch classes that have the most opportunities to serve as roots for common diatonic sonorities are designated the “upper class” of nonatonic nodes. The upper class nodes are always the first, fourth, and seventh pitch-classes listed when a particular nonatonic scale is segmented as an ordered series of $2 + 1 + 1$. In between these are the three pitch classes that have the opportunity to form some of the common triads, but can serve as chord roots to fewer harmonies than the upper class. These are referred to as the “middle class” of nonatonic nodes. The middle class nodes are always the first, fourth, and seventh pitch-classes listed when a particular nonatonic scale is segmented as an ordered series of $1 + 2 + 1$. Figure 3.8 summarizes the pitch-classes that serve as upper, middle, or lower class nodes within each of the nonatonic collections.

Figure 3.8 – identities of the three classes of nodes in each nonatonic collection

NON-1:

<i>Upper Class</i>	E, G [♯] , C
<i>Middle Class</i>	E [♭] , G, B
<i>Lower Class</i>	D, F [♯] , B [♭]

NON-2:

<i>Upper Class</i>	F, A, C [♯]
<i>Middle Class</i>	E, G [♯] , C
<i>Lower Class</i>	E [♭] , G, B

NON-3:

<i>Upper Class</i>	F [♯] , B [♭] , D
<i>Middle Class</i>	F, A, C [♯]
<i>Lower Class</i>	E, G [♯] , C

NON-4:

<i>Upper Class</i>	G, B, E [♭]
<i>Middle Class</i>	F [♯] , B [♭] , D
<i>Lower Class</i>	F, A, C [♯]

The wealth of consonant triads in a nonatonic collection allows for the exploration of a system of neo-Riemannian operations (NROs) that extends beyond what is encountered within a single hexatonic collection. Traditional neo-Riemannian theory

begins with the first category of NROs, L, P, and R.⁹ These operations maintain two common tones while the third chord member moves by semitone (in the case of L and P) or whole tone (in the case of R). A second category of NROs consists of operations labeled L', P', and R'.¹⁰ Here one common tone holds while the other two chord members move by semitone (in the case of L' and P') or whole tone (in the case of R'). Compound operations, in which successions of NROs from the first two categories are employed, comprise a third category. Compound operations are performed with right orthography, beginning with the leftmost operation and proceeding through all listed operations to the rightmost one. As an example, PP' maps DM onto D^bM, since P maps DM onto Dm and P' maps Dm onto D^bM. One compound operation in particular is given a unique label, the D operation, which consists of a compound operation of RL.¹¹ In a D operation, one common tone maintains while one chord member moves by semitone and the remaining chord member moves by whole tone. Figure 3.9 illustrates examples of each of these operations on the staff.

⁹ The L, P, and R operations are discussed and demonstrated in David Lewin, *Generalized Musical Intervals and Transformations* (New Haven: Yale University Press, 1987), 175-9; Henry Klumpenhouwer, "Some Remarks on the Use of Riemann Transformations," *Music Theory Online*, 0/9 (July 1994); Brian Hyer, "Reimag(in)ing Riemann," *Journal of Music Theory*, 39.1 (Spring 1995), 101-38; and Richard Cohn, "Neo-Riemannian Operations, Parsimonious Trichords, and Their Tonnetz Representations," *Journal of Music Theory*, 41.1 (Spring 1997), 1-66; among many others.

¹⁰ These operations are discussed in Robert D. Morris, "Voice-Leading Spaces," *Music Theory Spectrum*, 20.2 (Fall 1998), 175-208. It should be acknowledged that P' is the same as David Lewin's SLIDE operation from *Generalized Musical Intervals and Transformations*. Also, L' is Carl Friedrich Weitzmann's *Nebenverwandt* relation from his 19th century treatise *Der übermässige Dreiklang*; the *Nebenverwandt* is updated in Richard Cohn, "Square Dances with Cubes," *Journal of Music Theory*, 42.2 (Fall 1998), 290.

¹¹ Several approaches to neo-Riemannian theory have excluded the D transformation as redundant, among them are Richard Cohn, "Neo-Riemannian Operations, Parsimonious Trichords, and Their Tonnetz Representations," but its inclusion based on a psychoacoustical approach is presented in Carol Krumhansl, "Perceived Triad Distance: Evidence Supporting the Psychological Reality of Neo-Riemannian Transformations," *Journal of Music Theory*, 42.2 (Fall 1998), 265-281.

Figure 3.9 – illustrations of common Neo-Riemannian Operations (NROs)

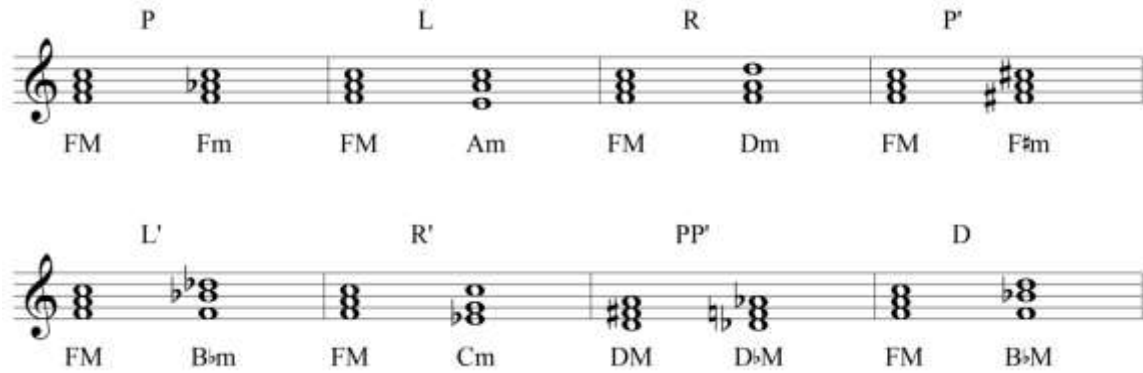


Figure 3.10 illustrates many of the same NROs shown in Figure 3.9, but in Figure 3.10 the arrangement of triads is meant to illuminate how hexatonic systems interact within a larger, constituent nonatonic collection. Figure 3.10 uses major and minor triads from NON-3. Triads whose roots are pitch classes from the upper-class nodes of NON-3 are given on the bottom staff while triads whose roots are from the middle-class nodes are given on the top staff. The succession of triads on each staff comprises alternations of P and L operations. These are also illustrated as cycles of harmonies within a hexatonic system, shown in Figure 3.11. Here the term *cycle* refers to a chain of clockwise or counter-clockwise harmonic moves within the system. These systems are represented by two hexagons, with the middle class nodes shown on the left and upper class nodes on the right right.¹² Lines between the two staves of Figure 3.10 show the various NROs that achieve triadic mappings between the two systems. Solid vertical lines represent D operations. All other lines are described as being either left-branching or right-branching. Left-branching lines move left and down from the top staff, while right-branching lines move right and

¹² The hexatonic systems shown are synonymous with the “Eastern” hexatonic system and the “Southern” hexatonic systems of Richard Cohn’s hexatonic theory; see Richard Cohn, “Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late Romantic Triadic Progressions,” *Music Analysis*, 15 (1996), 9-40.

down from the top staff. Solid left-branching lines represent R operations. Solid right-branching lines represent P' operations. Dashed right-branching lines represent L' operations. Dashed left-branching lines represent R' operations.

Figure 3.10 – illustration of Neo-Riemannian Operations (NROs) within NON-3

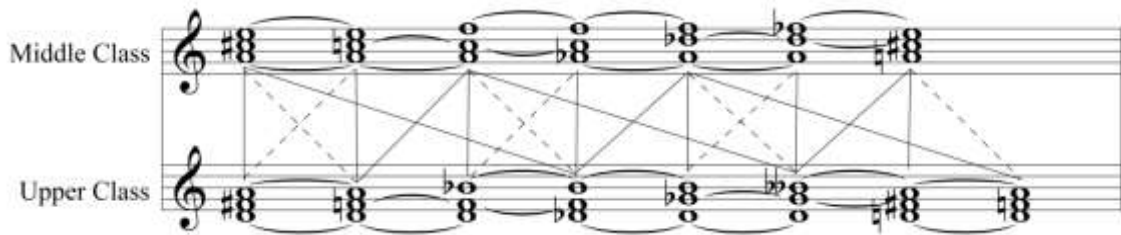


Figure 3.11 – the two hexatonic systems found within NON-3

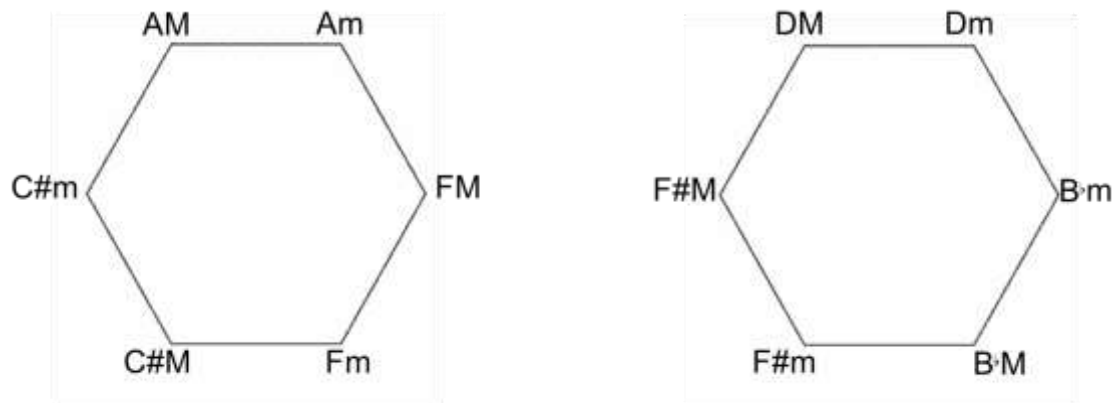


Figure 3.12 fuses the two hexatonic systems of Figure 3.11 into the *nonatonic system* for NON-3, represented by a hexagonal prism. The top hexagon maintains the arrangement of the hexatonic system created by the middle class nodes of NON-3 and the bottom hexagon does the same for the upper class nodes. The vertical lines that link the

two hexagons represent the D operations. The other lines either cut across the face of the resultant squares of the hexagonal prism (R, L' and R'), or fly within the figure itself (P'). Solid single lines represent R operations, dashed single lines represent P' operations, solid double lines represent L' operations, and finally, dashed double lines represent R' operations. Figure 3.12 graphically demonstrates the fact that the points of the hexagonal prism do not all possess an equal number of lines, and therefore an unequal number of NROs. Six of the points enjoy six possible operations while the remaining six have only four. This is summarized in Table 3.3.

Figure 3.12 – NON-3 nonatonic system

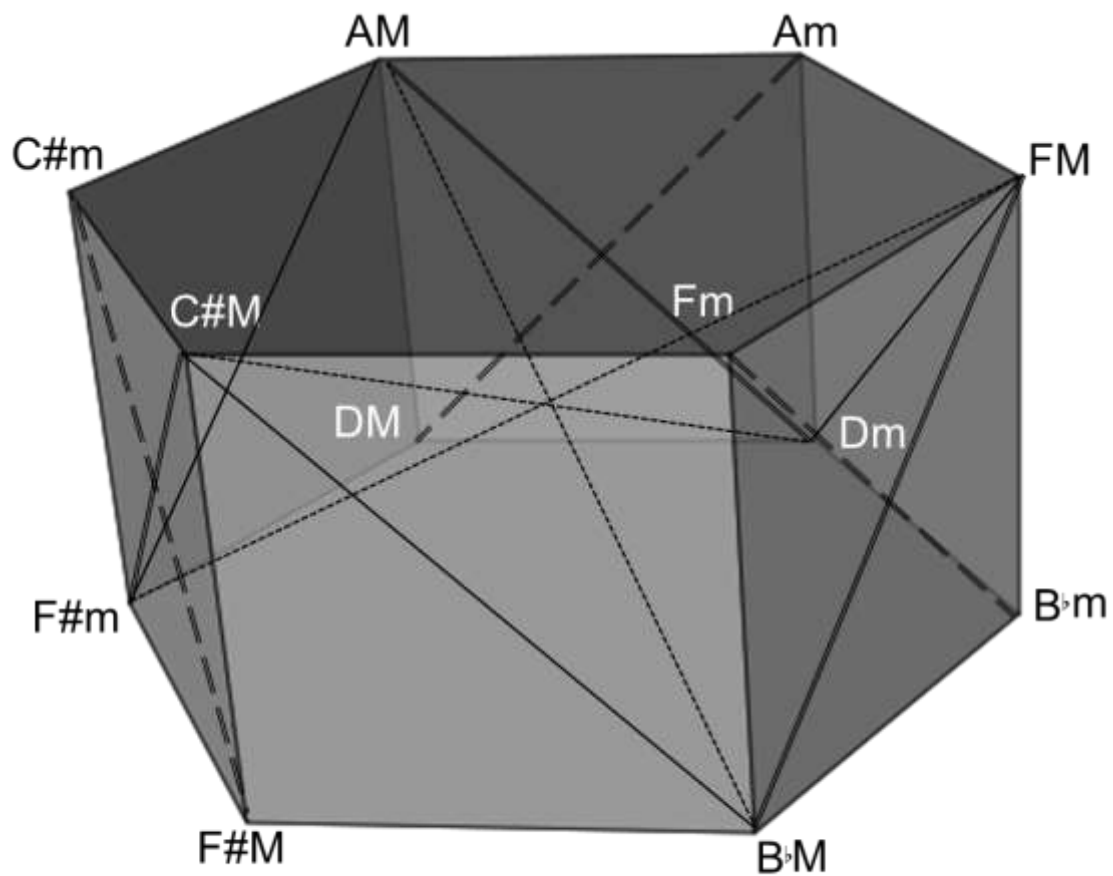


Table 3.3 – summary of NROs within the major and minor triads of NON-3

Point	NRO	Result	Point	NRO	Result
AM	P	Am	B ^b m	P	B ^b M
	L	C [#] m		L	F [#] M
	D	DM		D	Fm
	R	F [#] m		R	C [#] M
	P'	B ^b m		P'	AM
	L'	Dm		L'	FM
FM	P	Fm	F [#] m	P	F [#] M
	L	Am		L	DM
	D	B ^b M		D	C [#] m
	R	Dm		R	AM
	P'	F [#] m		P'	FM
	L'	B ^b m		L'	C [#] M
C [#] M	P	C [#] m	Dm	P	DM
	L	Fm		L	B ^b M
	D	F [#] M		D	Am
	R	B ^b m		R	FM
	P'	Dm		P'	C [#] M
	L'	F [#] m		L'	AM
Am	P	AM	B ^b M	P	B ^b m
	L	FM		L	Dm
	D	Dm		D	FM
	R'	DM		R'	Fm
Fm	P	FM	F [#] M	P	F [#] m
	L	C [#] M		L	B ^b m
	D	B ^b m		D	C [#] M
	R'	B ^b M		R'	C [#] m

C [#] m	P	C [#] M	DM	P	Dm
	L	AM		L	F [#] m
	D	F [#] m		D	AM
	R'	F [#] M		R'	Am

As Table 3.3 indicates, all triads in NON-3 can participate in P, L, or D operations. Six of these triads can participate in R, P', and L' operations, but not the R' operation. For the remaining six triads the opposite is true. Note that it is the major forms of the middle class nodes and minor forms of the upper class nodes that carry the group of six NROs. Their P-related brethren carry only four NROs. Why should this be the case?

The answer lies in a property of consonant triads identified by Carl Friedrich Weitzmann in his 1853 monograph *Der übermässige Dreiklang*.¹³ As the title indicates, Weitzmann explores the role of the augmented triad in the tonal system. Among Weitzmann's observations is that six consonant triads are related to a single augmented triad by single semitonal displacement (SSD).¹⁴ Figure 3.13 illustrates this property using a {D^b, F, A} augmented triad. While two voices remain, a single voice moves by semitone to create the following triads: AM, FM, C[#]M, Dm, B^bm, F[#]m. These are the same triads that enjoy six possible NROs as shown in Table 3.3. Therefore, there is a significant relationship between a Weitzmann region and the Nonatonic collection.

¹³ Background information and a 21st century perspective on Weitzmann's *Der übermässige Dreiklang* are found in Richard Cohn, "Weitzmann's Regions, My Cycles, and Douthett's Dancing Cubes," *Music Theory Spectrum*, 22/1 (Spring 2000), 89-103.

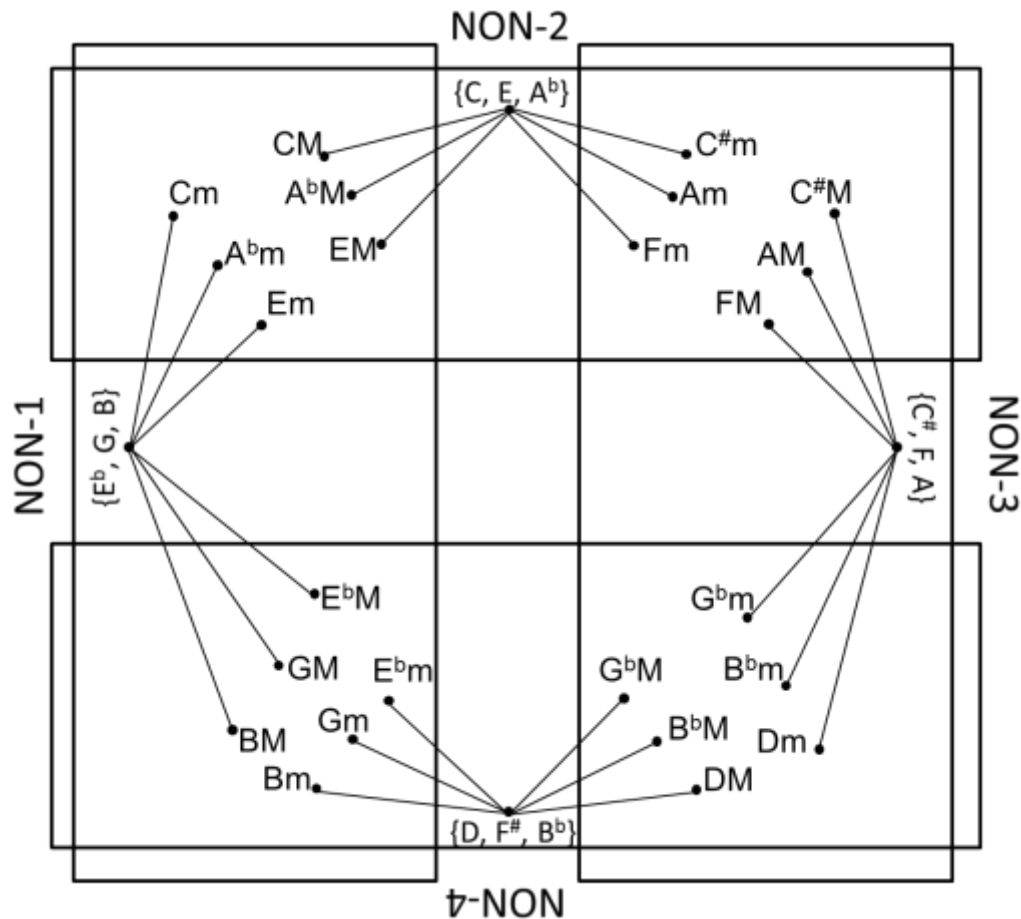
¹⁴ *Ibid.*, 94.

Figure 3.13 – six triads related to $\{D^b, F, A\}$ via SSD

Figure 3.14 displays a formal graph by Richard Cohn called the *Weitzmann graph*,¹⁵ with some original additions to shown how the four regions of the graph conform to the four nonatonic collections. As indicated on Figure 3.14, the six triads of a Weitzmann region lie in the center of a nonatonic collection. Their P-related triads, those that carry only four possible NROs within a particular nonatonic system, are found on the periphery of a nonatonic collection. These chords can participate with a new set of triads to form the Weitzmann region of an adjacent nonatonic collection.

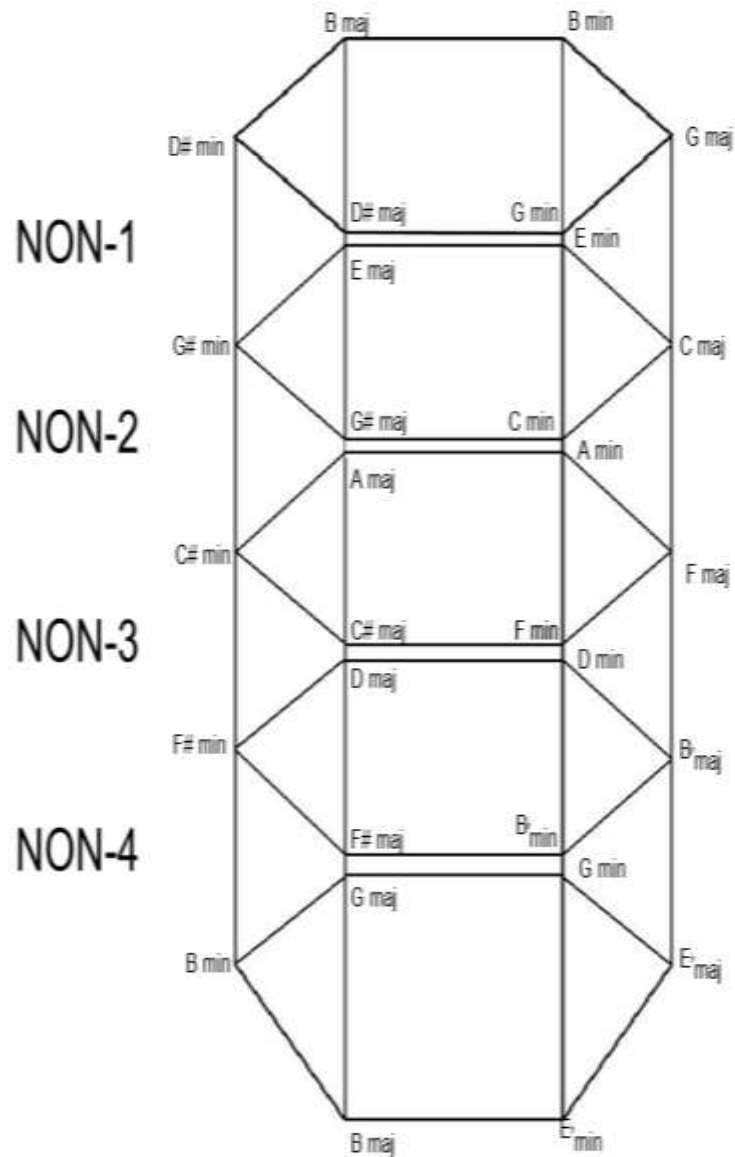
¹⁵ Cohn, “Weitzmann’s Regions, My Cycles, and Douthett’s Dancing Cubes,” 94.

Figure 3.14 – Weitzmann graph with boxes to indicate the four nonatonic collections



The Weitzmann graph shows one way of charting the four nonatonic collections and their constituent triads within chromatic pitch space. Figure 3.15 shows another way of charting nonatonic collections. The figure, called the Nonatonic Tower, utilizes the hexagonal prism form of the Nonatonic system shown in Figure 3.11. The bottom face of a nonatonic system, representing the upper class nodes, can be reinterpreted contextually as the upper face, or middle class nodes, of an adjacent nonatonic system. For this reason, the four nonatonic systems can be stacked in the fashion shown in Figure 3.15

Figure 3.15 – Nonatonic Tower

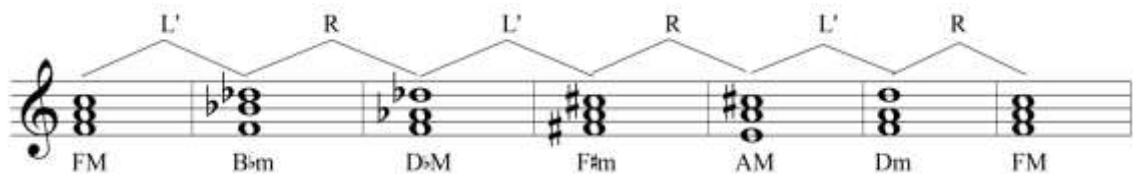


The nonatonic tower arranges the four forms of the nonatonic collections in such a way as to presume a kind of proximity measure between any two distinct forms of the nonatonic collection. This proximity measure arises from the presence or absence of

shared triads. When two distinct forms of the nonatonic collection share the six triads forming a hexatonic system (i.e. they share a hexagonal face on the nonatonic tower) then these two forms of the nonatonic collection are *closely-related*. Two distinct forms of the nonatonic collection that do not share any triads are *remotely-related*. Thus, NON-1 and NON-2 are closely-related forms of the nonatonic collection, while NON-1 and NON-3 are remotely-related. Significantly, the intersection between two closely-related nonatonic collections is a hexatonic collection, while the intersection between two remotely-related nonatonic collections is a whole-tone collection.

The six triads of a Weitzmann region can be created through a cycle of alternating R and L' operations. A *Weitzmann cycle* is illustrated in Figure 3.16.¹⁶ Richard Cohn's illustration of a Weitzmann cycle, from the first movement of Liszt's *Faust Symphony*, features a descending third sequence that encompasses the necessary harmonies.¹⁷ The example is reproduced here as Figure 3.17.

Figure 3.16 – Weitzmann cycle from NON-3



¹⁶ Cohn, "Weitzmann's Regions, My Cycles, and Douthett's Dancing Cubes," 98.

¹⁷ *Ibid.*, 100.

Figure 3.17 – Liszt, *Faust Symphony* 305-10

The musical score for Liszt's *Faust Symphony*, measures 305-10, is presented in two systems. The top system shows measures 305-307, and the bottom system shows measures 308-310. The right hand (treble clef) features a descending chromatic scale: C4, B3, Bb3, Ab3, G3, F3, E3, D3, C3. The left hand (bass clef) provides a harmonic reduction, with chords labeled below the staff: EM6, L', Am, R, CM6, L', Fm, R, AbM6, L', C#m, R. The chords are connected by lines, indicating a sequence of harmonies. The time signature is 2/4, and the key signature is C major.

It is true that six consonant triadic subsets from the nonatonic collection can result in a Weitzmann cycle. It is also true that a real sequence by major third that features triads with an L' relationship also results in a Weitzmann cycle. However, it is most likely erroneous to state that the sequence displayed in Figure 3.17 is an example of Liszt composing out the nonatonic collection. It is more likely that this passage is working through a harmonization of the descending chromatic scale with emphasis on the {C, E, Ab} augmented triad. As Cohn points out, Liszt may have become familiar with this chord progression from the music of Schubert.¹⁸ One passage that features the same progression can be found in the first movement of Schubert's Symphony No. 4 in C minor ("Tragic"). The excerpt is given here as Figure 3.18. A harmonic reduction of the passage is displayed in Figure 3.19. This passage states five of the six harmonies in a complete

¹⁸ Cohn, "Weitzmann's Regions, My Cycles, and Douthett's Dancing Cubes," 99.

Weitzmann cycle; the only harmony missing is C[#]m. In this passage the claim for nonatonicism as the structuring feature is even weaker given the inclusion of B⁷ and G⁷, two harmonies outside the NON-2 collection which would arise from the complete Weitzmann cycle, EM, Am, CM, Fm, A^bM, C[#]m.

Figure 3.18 – Schubert, Symphony No. 4 in C minor (“Tragic”)/I 89-108

Figure 3.19 – Harmonic Reduction of Schubert, Symphony No. 4 (“Tragic”)/I 89-108

In the Liszt and Schubert passages just cited, an overarching analytic finding seems to be that a real sequence by major third can create a (partial) Weitzmann cycle in which the (partial) assembly of a nonatonic collection is coincident. The next example, from the overture to Glinka's *Ruslan and Lyudmila*, better highlights symmetrical design and may hint at the presence of the nonatonic collection in the composer's mind. The excerpt is given as Figure 3.20. As in the Liszt and Schubert examples above, sequence by major third is still at the forefront in the arpeggiated chords DM , B^bM , $F^{\sharp}M$. These form nodes from $HEX_{(1,2)}$. The bass portion of the orchestra states a complete descending whole-tone scale. As the union of one transposition of the whole-tone collection and any one transposition of the hexatonic collection will result in a completion of the nonatonic collection, this passage gives rise to $NON-3$. While this passage highlights a distinguishing feature of the nonatonic collection, namely its ability to divide into constituent hexatonic and whole-tone collections, it is still perhaps not enough to claim Glinka's awareness of nonatonicism. The passage is very brief and any sense of

nonatonicism quickly gives way to a tonal melody that leads from B minor back to D major. In this respect I am in agreement with Kimberly Anne Veenstra’s assessment that “it is certainly a chromatic passage, and very distinct compared to the rest of the diatonic overture,” but ultimately unconvincing as a manifestation of the nonatonic collection.¹⁹

Figure 3.20 – Glinka, *Ruslan and Lyudmila*/Overture 357-361



Another passage deserving consideration from this perspective comes from Rimsky-Korsakov’s *The Tale of Tsar Saltan*, which demonstrates the way in which two hexatonic collections can combine to create a nonatonic collection. This passage is from Act II of the opera, beginning at rehearsal 112, and is given here as Figure 3.21. The swan’s song, shown in the top staff, assembles a complete statement of $HEX_{(3,4)}$. The accompaniment assembles a complete statement of $HEX_{(0,1)}$ parsed into constituent triads. Rimsky-Korsakov exerted a large influence on Alexander Tcherepnin, whose use of the nonatonic collection is confirmed. Veenstra, whose study of Tcherepnin’s music uncovers several examples where Tcherepnin relies on divisions of a nonatonic collection into constituent hexatonic collections, suggests that Rimsky-Korsakov may be the

¹⁹ Veenstra, “The Nine-Step Scale of Alexander Tcherepnin: Its Conception, Its Properties, and Its Use,” 151.

wellspring for this technique.

Figure 3.21 – Rimsky-Korsakov, *The Tale of Tsar Saltan* / Act II, rehearsal 112

The musical score for Figure 3.21 shows a piano accompaniment. The treble staff features a melodic line with a '8va' marking. The bass staff contains a series of chords. Above the bass staff, a bracket labeled 'HEX(3,4)' spans the first four measures, and another bracket labeled 'HEX(0,1)' spans the last four measures. Below the bass staff, a series of chord labels are connected by lines: Am, D♭M, Fm, AM, C♯m, FM, C♯m, FM. Below these labels are the letters PLP, L, PLP, L, PLP, PLP, PLP.

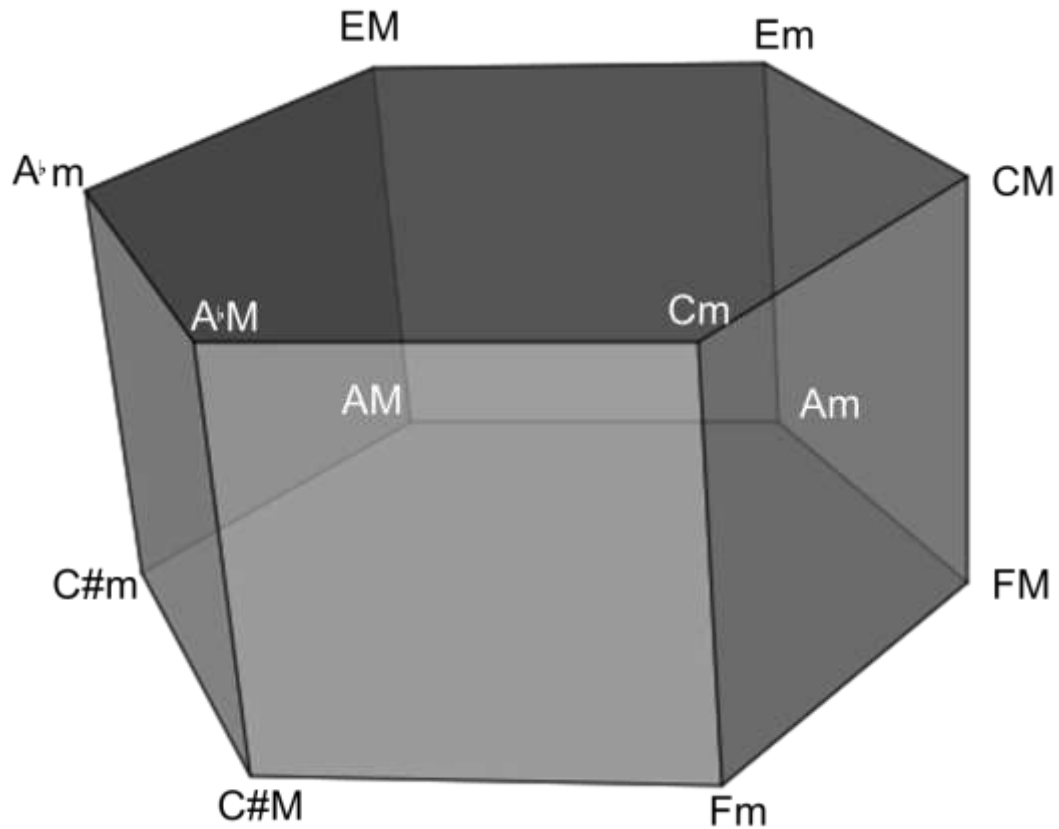
A brief example from Vaughan Williams's *Symphony No. 4* in F minor will demonstrate how the nonatonic collection impacts successions of triads in that work. This example occurs at the end of the closing of the recapitulation in the fourth movement, just before the beginning of an "epilogo fugato." This passage is shown in Figure 3.22. The passage begins with strings and woodwinds alternating statements of an eight-note truncation of NON-2. In this eight-note truncation, only C♯ is missing from the complete nonatonic collection. C♯ is introduced in the AM triad that occurs as the first of a pair of hammerstroke chords in the treble instruments of the orchestra. These two chords, AM and FM, can be explained as movements within the familiar "Eastern" hexatonic system. These hammerstrokes in the treble are answered with a pair of triads in the bass portion of the orchestra. In this case the two chords, A♭M and FM, do not conform to motion within a single hexatonic system – in fact, the root motion by minor third is more suggestive of movement within an octatonic system.

Figure 3.22 – Vaughan Williams, Symphony No. 4 in F minor/IV, 294-309

The musical score for Vaughan Williams' Symphony No. 4 in F minor, measures 294-309, is presented in four systems. The first system (measures 294-297) features the Strings and Wd winds. The second system (measures 298-301) continues the strings and woodwinds. The third system (measures 302-305) introduces the Fl/Ob/Clr, Tpt/Vln/Vla, Bsn/Trb, and Vlc/CB. The fourth system (measures 306-309) is labeled 'EPILOGO FUGATO' and features a complex rhythmic pattern in the strings.

As all three triads are subsets of NON-2, the NON-2 system shown in Figure 3.23 provides a simple model for understanding the occurrence of chord successions that cannot easily be explained through more familiar symmetrical pitch collections. The NON-2 system maintains the “Eastern” hexatonic system as the bottom face of a hexagonal prism, showing that the motion from AM to FM is a compound of a P and an L neo-Riemannian operation. The motion from A^bM to FM major involves the movement from a “middle” class node to an “upper” class node. Here an R operation cuts across the front face of the hexagonal prism, followed by a P operation to complete the chord mapping.

Figure 3.23 – NON-2 nonatonic system



Another composer who undoubtedly uses the nonatonic collection is Olivier Messiaen. One passage in which he exploits some of the triadic possibilities of the nonatonic collection is given below as Figure 3.24. This excerpt is from the first variation of his *Thème et Variations pour Violon et Piano* (1932); an excerpt that Messiaen himself cites as an instance of nonatonic organization.²⁰

The pattern of chords that is maintained in the top staff of the piano from measure to measure is what Messiaen refers to as a *pedal group*, defined by him as “repeated music...foreign to another music situated above or below it; each of these musics will

²⁰ Messiaen, *The Technique of my Musical Language*, 61. As noted earlier in this chapter, Messiaen identifies the collection as the “Third Mode of Limited Transposition.”

have its own rhythm, melody, harmonies.”²¹ Messiaen’s proclivity for maximum polyphony is joined with another common feature of his music: familiar sounding triads whose enharmonic spellings make them difficult to recognize visually. While NROs were easily deployed as an analytical method to explain the Liszt, Schubert, and Glinka passages already cited, standard NROs are more difficult to employ in this passage. For example, the succession of harmonies stated in the left hand of the piano includes some augmented and diminished triads as well as some trichords that resemble incomplete seventh chords. Because standard NROs focus on mapping one member of a particular set class onto another member of the same set class, they cannot achieve a mapping between two pc sets from different set classes.

²¹ Messiaen, *The Technique of my Musical Language*, 55.

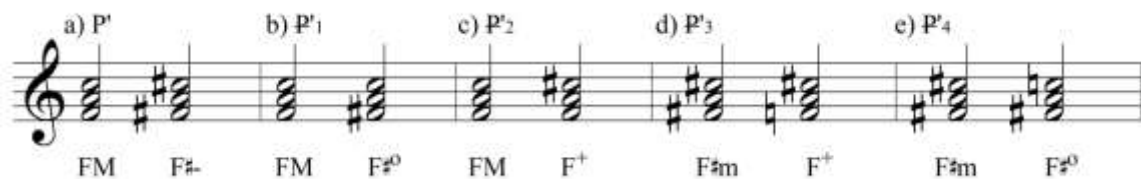
Figure 3.24 – Messiaen, *Thème et Variations pour Violon et Piano* 36-41

The image displays a musical score for three systems of music, each consisting of three staves: Violin (top), Piano Right Hand (middle), and Piano Left Hand (bottom). The music is in 3/4 time and features complex harmonic structures with many accidentals and ties. The first system includes triplets marked with a '3'. The notation is dense, with many accidentals and ties, suggesting a highly chromatic and complex harmonic language.

However, the Weitzmann region (Figure 3.12) shows that it is possible to parsimoniously link pc sets that belong to different set classes. This is a kind of *cross-type transformation*, which maps objects of one type onto objects of another type, in this

case members of set-class 3-11 onto one member of set-class 3-12.²² In the Weitzmann region, a single augmented triad is related to one of six possible major or minor triads through SSD. The operation that links an augmented triad to a major or minor triad can be defined as a Partial P' (or Partial SLIDE) as follows: Partial P' (\mathbb{P}') is similar to P' in that the third of a major or minor triad is maintained. However, only one voice of the root or fifth moves by semitone while the remaining voice remains stationary to create a pc set class (036) or (048). The four possible \mathbb{P}' operations are illustrated in Figure 3.25. The transformation in 3.25.a shows the standard P' operation linking FM and $F^\#m$, while 3.25.b and 3.25.c show \mathbb{P}'_1 and \mathbb{P}'_2 linking a major triad to either a diminished triad or an augmented triad. In \mathbb{P}'_1 , the root of a major triad ascends to create a diminished triad. In \mathbb{P}'_2 , the fifth of a major triad ascends to create an augmented triad. Transformations 3.25.d and 3.25.e show \mathbb{P}'_3 and \mathbb{P}'_4 linking a minor triad to either a diminished triad or an augmented triad. In \mathbb{P}'_3 , the root of a minor triad descends to create an augmented triad. In \mathbb{P}'_4 , the fifth of a minor triad descends to create a diminished triad. In a Weitzmann region, the major triads are \mathbb{P}'_2 related to the originating augmented triad while the minor triads are \mathbb{P}'_3 related to the same augmented triad.

Figure 3.25 – Illustrations of Partial P' (\mathbb{P}') Operations



²² Cross-Type Transformations are defined in Julian Hook, “Uniform Triadic Transformations” *Journal of Music Theory*, 46.1 (Spring 2002), 117, and Julian Hook, “Cross-Type Transformations and the Path Consistency Condition,” *Music Theory Spectrum*, 29.1 (Spring 2007), 3.

Figure 3.26 – Messiaen, *Thème et Variations* 36-41, Left Hand of the Piano

Figure 3.26 focuses on the chord progression in the left hand of the piano of the excerpt featured in Figure 3.24. P' operations show how one chord can be mapped onto another within nonatonic pitch space. In the first measure, E^{b+} maps onto EM by a compound operation of P'_3P , first mapping E^{b+} onto Em and then Em onto EM. EM is mapped onto Gm through PRP, a compound operation commonly found in octatonic pitch space. In the next measure, Gm is mapped onto $G^{\#0}$ through a compound operation PP'_1 , which first maps Gm onto GM and then onto $G^{\#0}$. P'_4P , the next compound operation, maps $G^{\#0}$ onto A^bm and then A^bm to A^bM . A^bM is prolonged with an upper neighbor motion to make a harmony that resembles an E^bMaj7 , though with the third missing a root-privileged analysis of this harmony is difficult. The NON-1 collection allows for either a G or G^b in the place of the third of this chord, and the top lines allow for both possibilities. In the fourth measure of the excerpt, A^bM is mapped onto E^{b+} , the harmony that also begins this passage. The operation used is a compound PP'_3 , a reverse of the operation at the beginning. The passage ends with a pair of incomplete dominant seventh chords with an intervening minor triad. The progression does not conform to normative functional harmony, but all harmonies are found in NON-1, including the implied seventh chords. The high number of seventh chord possibilities within the nonatonic collection demands a separate examination, provided below. Following a consideration of how

nonatonicism can impact the behavior of seventh chords, the next section presents a method of explaining the mappings of seventh chords within a nonatonic context.

3.4 Seventh Chords within Nonatonic Pitch-Space

Quite early in the flowering of neo-Riemannian theory, a fundamental problem arose between the analytical method of NROs and the repertoire it purported to explain. Adrian Childs summarized the problem in this way: NROs focus on major and minor triads as objects undergoing various transformations, but “the composers whose works seem best suited for neo-Riemannian analysis rarely limited their harmonic vocabulary to simple triads.”²³ This obstacle has been confronted from a number of perspectives, but the various approaches can be grouped into two basic categories. One set of approaches attempts to discover parsimonious voice-leading operations that map pitch sets of differing cardinalities onto one another; they therefore focus on ways to utilize NROs to explain mappings of seventh chords onto triads, and vice versa. The second set of approaches attempts to modify the method of arriving at trichordal NROs into one that can reasonably form tetrachordal NROs; they therefore focus on ways to utilize NROs to explain mappings of seventh chords onto other seventh chords.

A number of new neo-Riemannian transformations (NRTs) have been proposed to explain movements between seventh chords and triads.²⁴ Among these is the *inclusion transformation*, which maps any major or minor triad onto a seventh chord that contains

²³ Adrian Childs, “Moving Beyond Neo-Riemannian Triads: Exploring a Transformational Model for Seventh Chords,” *Journal of Music Theory*, 42.2 (Autumn 1998), 181.

²⁴ The reader will doubtless note the difference in terminology here. Previously I have discussed neo-Riemannian *operations* (NROs), but am now discussing neo-Riemannian *transformations* (NRTs). In the first case, an operation is a type of transformation that is one-to-one and onto. Every NRO maps a single pc set onto just one other pc set of the same cardinality, fulfilling the one-to-one and onto conditions. The transformations discussed here do not fulfill these criteria, and are thus transformations without being operations.

it.²⁵ The inclusion transformation will map a major triad onto a dominant seventh chord, and will map a minor triad onto a half-diminished seventh chord. Figure 3.27 illustrates these two types of inclusion transformations.

Figure 3.27 – Illustrations of the inclusion transformation

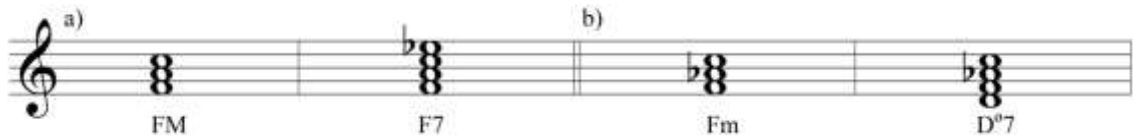


Figure 3.28 – Illustrations of the split/fuse transformation

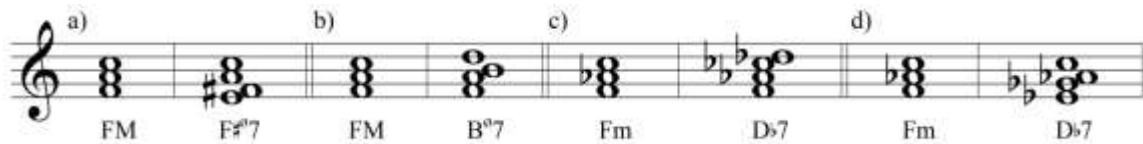


Figure 3.28 shows another type of NRT that has been proposed to explain movements between triads and seventh chords: the *split/fuse transformation*.²⁶ In the split transformation, two voices remain static while the third voice of a triad is divided into two voices that are arrived at by step in contrary motion. In the fuse transformation, two voices of a seventh chord remain static while the remaining two voices join together into a single pitch by motion in contrary motion by step. The split/fuse transformation is often

²⁵ See Hook, “Uniform Triadic Transformations” and Hook, “Cross-Type Transformations and the Path Consistency Condition.”

²⁶ A brief history of the split/fuse transformation would begin with Clifton Callender, “Voice-leading Parsimony in the Music of Alexander Scriabin,” *Journal of Music Theory*, 42.2 (Autumn 1998), 219-234. The further development of split/fuse can be traced in Guy Capuzzo, “Neo-Riemannian Theory and the Analysis of Pop-Rock Music,” *Music Theory Spectrum*, 26.2 (Fall 2004), 191, Graham Hunt, “David Lewin and Valhalla Revisited: New Approaches to Motivic Corruption in Wagner’s Ring Cycle,” *Music Theory Spectrum*, 29.2 (Fall 2007), 177-196, and Julian Hook, “Cross-Type Transformations and the Path Consistency Condition,” 4.

associated with the familiar NROs of L and R, since these transformations strongly resemble L and R. Figure 3.28.a and 3.28.c show “Leittonwechsel split” transformations; when reversed these would be “Leittonwechsel fuse” transformations. Figure 3.28.b and 3.28.d show “Relativ split” transformations; when reversed these would be “Relativ fuse” transformations.

An altogether different approach used to explain the voice-leading motion of seventh chords to triads is the RES function. Proposed by Richard Bass, the RES function goes beyond simple recognition of parsimonious voice-leading by emphasizing the “motion from a characteristic dissonant interval to a consonant one.”²⁷ Bass goes on to explain that:

Listeners familiar with the conventions of tonal harmony are conditioned to associate these motions with tonicization, or cadence, which is the essence of resolution. There are three such dissonances that characterize seventh chords employed in conventional tonicizing progressions: the tritone, the augmented sixth, and the diminished seventh.²⁸

The RES function reads these characteristic dissonances as unordered pitch class intervals 6, 2, and 3, which resolve in familiar fashion. These resolutions are illustrated in Figure 3.29. There are four fundamental types of RES function, two in which a tritone resolves to a major or minor third (RES6-4 and RES6-3), one in which an augmented sixth resolves to an octave (RES2-0), and one in which a diminished seventh resolves to a perfect fifth (RES3-5). RES functions have a further qualifier, a parenthetical indication that identifies the triadic chord members that form the interval of resolution. For

²⁷ Richard Bass, “Enharmonic Position Finding and the Resolution of Seventh Chords in Chromatic Music,” *Music Theory Spectrum*, 29.1 (Spring 2007), 73-100.

²⁸ *Ibid.*, 80.

example, the familiar progression of V^7 to I in a major key could be expressed by RES6-4 (1, 3).²⁹ This formulation recognizes the motion of the tritone between $\hat{4}$ and $\hat{7}$ to a major third between $\hat{1}$ and $\hat{3}$ (the root and third of the tonic chord). The familiar deceptive progression (V^7 to vi) in a major key could be expressed RES 6-4 (3, 5). In this progression, the motion of the tritone between $\hat{4}$ and $\hat{7}$ to a major third between $\hat{1}$ and $\hat{3}$ is the same, but $\hat{1}$ and $\hat{3}$ are now the third and fifth of the vi chord.

Figure 3.29 – illustrations of interval resolutions that are fundamental to the RES function



Figure 3.30 – Wagner, *Die Walküre*/Act II, Scene 2, 981-982



These two approaches, that of expanded NRTs and the RES function, can both be applied to the passage shown in Figure 3.30. Figure 3.30 is a reproduction of Graham

²⁹ A lowercase “a” or “b” shown to the right of a RES function further differentiates between the two enharmonically equivalent interpretations of the tritone. This level of detail is fully explored in the function tables found in Bass, “Enharmonic Position Finding and the Resolution of Seventh Chords in Chromatic Music,” 85-88.

Hunt's analysis of a "distorted" Valhalla motive from Wagner's *Die Walküre*.³⁰ The motion from F^{\emptyset_7} to EM at the opening of this passage is analyzed by Hunt as a "Leittonwechsel" fuse transformation. Note the joining of the pitches E^b and F on a single pitch E, while the remaining pitches A^b and C^b are enharmonically reinterpreted as G^\sharp and B. This motion can also be described using a RES function, in which case this motion is an example of RES 2-0 (1, 1). The RES function approach emphasizes the mapping of the dissonant interval onto an octave, while an analysis using split/fuse highlights the similarity of this progression to the familiar neo-Riemannian L operation.

Significantly, this passage also assembles an eight-note truncation of a nonatonic collection, in this case NON-2. This is likely to happen in progressions in which the following conditions are met: a) the chord roots of a progression of three chords form a representative of set-class 3-4 (015), and b) the harmonies conform to familiar tertian sonorities. This progression meets these requirements with familiar chords built on the chord roots F, E, and A. Note that in NON-2 the upper class nodes include F and A while E is a middle class node. The only NON-2 member that is missing is C^\sharp , and the F^\sharp of the ii^0 chord near the end of this passage is outside the NON-2 collection. At that moment, the tenuous manifestation of nonatonicism is obliterated as the music turns toward a less ambiguous E minor tonality from the tonal ambiguity imposed by the earlier F^{\emptyset_7} chord.

The great variety of seventh chords that can be constructed within nonatonic pitch-class space allows for the formation of an apparatus for understanding successions of these chords. Within any given nonatonic collection, the upper class nodes can act as chord roots for a major seventh chord, a minor seventh chord, a major-minor (dominant)

³⁰ Graham Hunt, "David Lewin and Valhalla Revisited: New Approaches to Motivic Corruption in Wagner's Ring Cycle," 178.

seventh chord, and a half-diminished seventh chord. In addition, the upper class nodes can act as chord roots for a major seventh chord with the third lowered by half-step, a minor-major seventh chord, or (0148) set-type. While the minor-major seventh is typically omitted from most basic theory texts, it is a chord that appears frequently in Vaughan William's Fourth Symphony and must be confronted in the present study. The middle class nodes can act as chord roots for both a major seventh chord and a minor-major seventh chord, but not for the other chords mentioned. The lower class nodes cannot act as the chord root of any of these types of seventh chord. These chords are shown in Figure 3.31. The identities of upper and middle class nodes within each of the respective nonatonic collections can be confirmed by referring to Figure 3.7 above.

Figure 3.31 – seventh chord subsets within the four nonatonic collections

NON-1:	D	D [♯]	E	F [♯]	G	G [♯]	B [♭]	B	C
<i>Maj7</i>	<i>Min-Maj7</i>				<i>Maj-Min7</i>	<i>Min7</i>		<i>Ø7</i>	
E [♭] Maj ⁷ , EMaj ⁷ , GMaj ⁷ , A [♭] Maj ⁷ , BMaj ⁷ , CMaj ⁷	E [♭] mM ⁷ , EmM ⁷ , GmM ⁷ , A [♭] mM ⁷ , BmM ⁷ , CmM ⁷				E ⁷ , A ⁷ , C ⁷	Em ⁷ , A [♭] m ⁷ , Cm ⁷		E ^{Ø7} , A ^{♭Ø7} , C ^{Ø7}	

NON-2:	D [♯]	E	F	G	G [♯]	A	B	C	C [♯]
<i>Maj7</i>	<i>Min-Maj7</i>				<i>Maj-Min7</i>	<i>Min7</i>		<i>Ø7</i>	
EMaj ⁷ , FMaj ⁷ , A [♭] Maj ⁷ , AMaj ⁷ , CMaj ⁷ , C [♯] Maj ⁷	EmM ⁷ , FmM ⁷ , A [♭] mM ⁷ , AmM ⁷ , CmM ⁷ , C [♯] mM ⁷				F ⁷ , A ⁷ , C ^{♯7}	Fm ⁷ , Am ⁷ , C [♯] m ⁷		F ^{Ø7} , A ^{Ø7} , C ^{♯Ø7}	

NON-3:	C	C [#]	D	E	F	F [#]	G [#]	A	B ^b
<i>Maj7</i>	<i>Min-Maj7</i>		<i>Maj-Min7</i>	<i>Min7</i>		<i>Ø7</i>			
F [#] Maj ⁷ , F [#] Maj ⁷ , A [#] Maj ⁷ , B ^b Maj ⁷ , C [#] Maj ⁷ , D [#] Maj ⁷	F ^b mM ⁷ , F [#] mM ⁷ , A ^b mM ⁷ , B ^b mM ⁷ , C [#] mM ⁷ , D ^b mM ⁷		F ^{#7} , B ^{b7} , D ⁷	F ^{#m7} , B ^{b7} m ⁷ , D ^{m7}		F ^{#Ø7} , B ^{bØ7} , D ^{Ø7}			

NON-4:	C [#]	D	D [#]	F	F [#]	G	A	B ^b	B
<i>Maj7</i>	<i>Min-Maj7</i>		<i>Maj-Min7</i>	<i>Min7</i>		<i>Ø7</i>			
F [#] Maj ⁷ , G [#] Maj ⁷ , B ^b Maj ⁷ , B ^b Maj ⁷ , D [#] Maj ⁷ , E [#] Maj ⁷	F [#] mM ⁷ , G ^{m7} mM ⁷ , B ^b mM ⁷ , B ^{m7} mM ⁷ , D ^{m7} mM ⁷ , E ^b mM ⁷		G ⁷ , B ⁷ , E ^{b7}	G ^{m7} , B ^{m7} , E ^{b7} m ⁷		G ^{Ø7} , B ^{Ø7} , D ^{#Ø7}			

The studies that have examined the possible use of the nonatonic collection as an organizational framework for transformations between seventh chords and triads have been few, but significant. One proposed model by Matthew Santa constructs a cycle of alternating triads and dominant seventh chords that assembles a complete nonatonic collection, shown in Figure 3.32.³¹ Note that the top staff focuses on parsimonious movements between major triads and (026) set-types. The bottom staff doubles the roots of the triads and completes the seventh chords through the articulation of the constituent whole-tone scale within the nonatonic collection being considered, in this case NON-1. Figure 3.33 reproduces a graphic representation of this cycle, which Santa refers to as the “northern” nonatonic system (after Cohn’s hexatonic systems). The similarity with Cohn’s systems is clear as the alternating triads maintain the PL compound movements of the hexatonic system. Santa’s studies explore the “transpositional opportunities within the

³¹ This theoretical model appears in both Santa, “Nonatonic Progressions in the Music of John Coltrane,” 13-25 and Santa, “Nonatonic Systems and the Parsimonious Interpretation of Dominant-Tonic Progressions,” 1-28.

system, measured by the number of clockwise moves from one chord to another. Thus

$T_1(\text{CM}) = \text{E}^{\flat 7}$, $T_2(\text{CM}) = \text{A}^{\flat}\text{M}$, and so on.”³²

Figure 3.32 – Santa’s cycle of alternating major triads and dominant sevenths

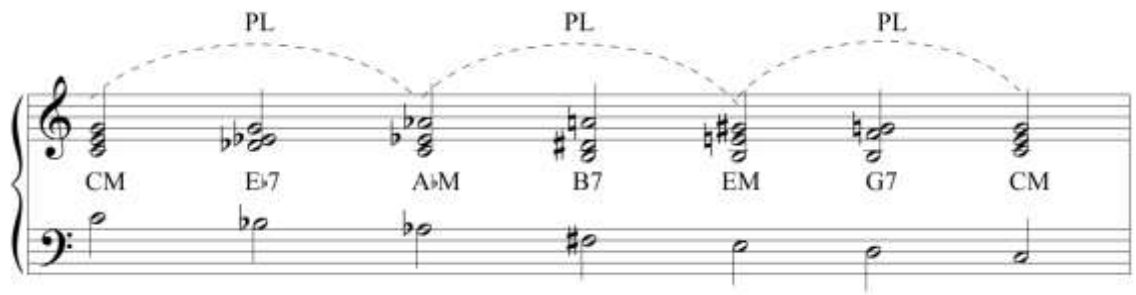
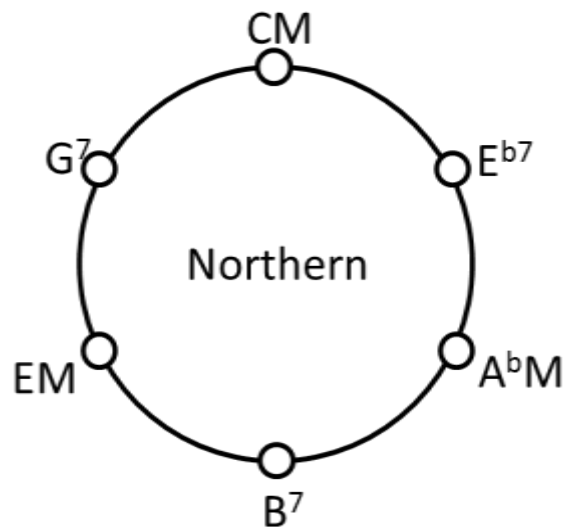


Figure 3.33 – Santa’s “northern” nonatonic system



³² Daniel Harrison, “Three Short Essays on Neo-Riemannian Theory,” in *The Oxford Handbook of Neo-Riemannian Music Theories*, edited by Edward Gollin and Alexander Rehding (New York: Oxford University Press, 2011), 555.

Expanding on Santa's work, Daniel Harrison shows the possibility for "productive functional relations" between the seventh chords and triads involved in Santa's cycle.³³ These functional relations are represented graphically in Harrison's revision of Santa's nonatonic system, given as Figure 3.34.

Harrison's expansion of Santa's studies focuses on *discharge functions*, which describe the motion of the dissonant (026) trichords onto consonant triads as shown in Figure 3.35. As Harrison describes, there are three types of discharge functions within the system, labeled as D_a , D_b , or D_c . D_a is the normal dominant seventh resolution involving the expected root-motion of descending fifth, D_b has root motion of descending minor-third while D_c has an ascending minor-second root motion. The harmonic movements can also be thought of as parsimonious motions from (026) representatives of dominant seventh chords onto the resulting triads. In terms of Bass's RES functions, D_a is RES6-4a (1, 3) while D_c is 6-3a (3, 5). D_b cannot be represented as a RES function as it does not exhibit the characteristic dissonance resolution assumed by the RES function.

³³Daniel Harrison, "Three Short Essays on Neo-Riemannian Theory," 555.

Figure 3.34 – Harrison's nonatonic system (NON-1)

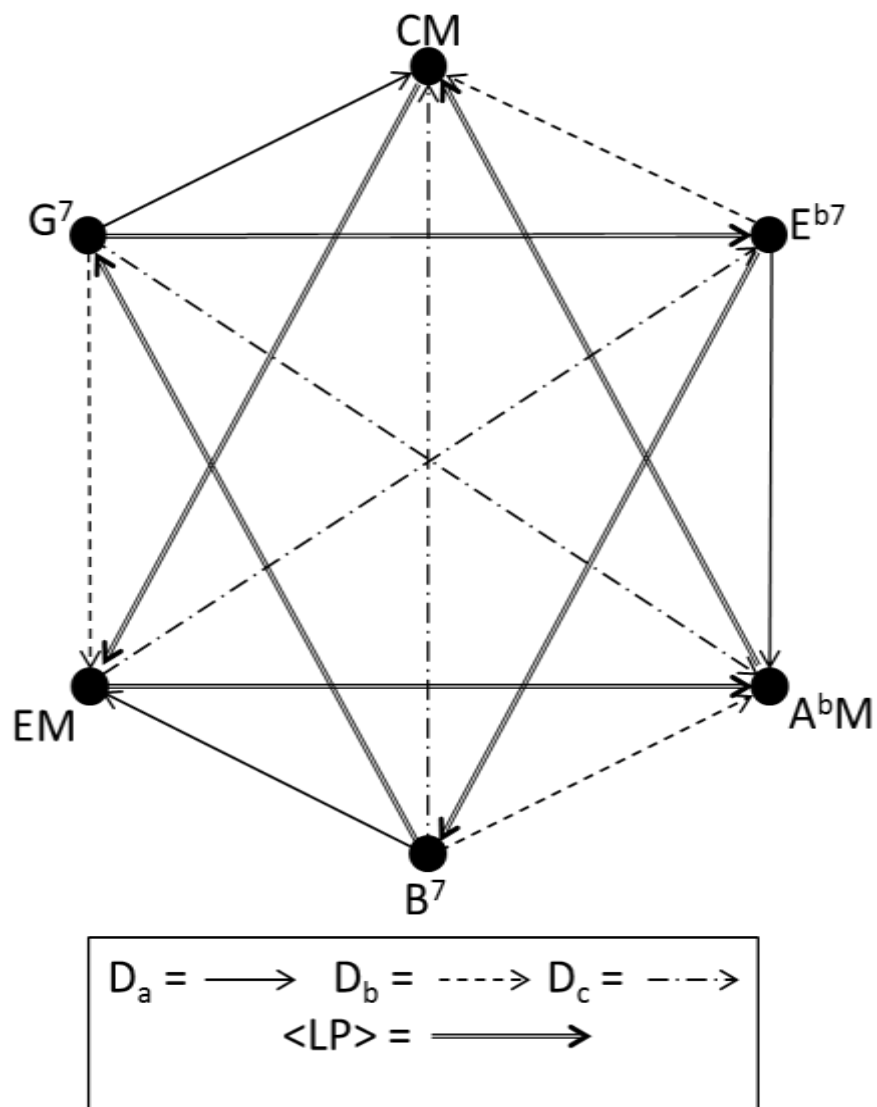


Figure 3.35 – illustrations of Harrison's discharge functions

The musical notation illustrates Harrison's discharge functions D_a , D_b , and D_c across three measures. The notation is written for piano (p) and features a grand staff with treble and bass clefs.

- Measure 1 (D_a):** Treble clef has a C4 chord (C-E-G). Bass clef has a G2 chord (G-B-E).
- Measure 2 (D_b):** Treble clef has a G4 chord (G-B-E). Bass clef has a C2 chord (C-E-G).
- Measure 3 (D_c):** Treble clef has an E4 chord (E-G-B). Bass clef has a C2 chord (C-E-G).

Below the notation, the chords are labeled: G⁷, CM, G⁷, EM, G⁷, and A^bM.

In addition to the discharge functions, Figure 3.34 displays LP compound transformations between the triadic nodes and also the seventh chord nodes. This view rises from work done by Cohn to shows the intervals of displacement involved in P, L, and R transformations among all the possible trichordal set classes.³⁴ Cohn's original purpose was "to show that of all the conventional trichords, only (037) enjoyed set-class preservation under parsimonious pitch-class displacements resulting in P, L, R operations," but, as Harrison explains in his study (026) trichords also enjoy set-class preservation when conceived of in whole-tone space.³⁵ This is why Figure 3.34 describes an LP relation between the seventh chord nodes.

Several inquiries into voice-leading transformations of seventh chords onto other seventh chords have utilized symmetrical pitch-class collections as a means of building an analytical language. Most of these focus on the octatonic collection as the structuring mechanism, as the tendency in these studies is to focus on passages of major-minor or half-diminished seventh chords moving by minor third.³⁶ The nonatonic collection has received relatively little attention in comparison, but Figure 3.36 reproduces a significant effort in that direction in Jack Douthett and Peter Steinbach's essay on parsimonious transformations in the context of symmetrical pitch-class collections.³⁷ The figure is called "EnneaCycles" by Douthett and Steinbach and shows how a particular nonatonic collection is partitioned into a succession of major-minor seventh, minor seventh, and half-diminished seventh chords. This reproduction of "EnneaCycles" imposes the

³⁴ Cohn, "Neo-Riemannian Operations, Parsimonious Trichords, and Their Tonnetz Representations," 1-66.

³⁵ Harrison, "Three Short Essays on Neo-Riemannian Theory," 560.

³⁶ See Adrian Childs, "Moving Beyond Neo-Riemannian Triads: Exploring a Transformational Model for Seventh Chords," 181-193, and Richard Bass, "Half-Diminished Functions and Transformations in Late Romantic Music," *Music Theory Spectrum*, 23.1 (Spring 2001), 41-60.

³⁷ Jack Douthett and Peter Steinbach, "Parsimonious Graphs: A Study in Parsimony, Contextual Transformations, and Modes of Limited Transposition," 246-247.

labeling of the four nonatonic collections utilized in this study.

Figure 3.36 – “EnneaCycles”

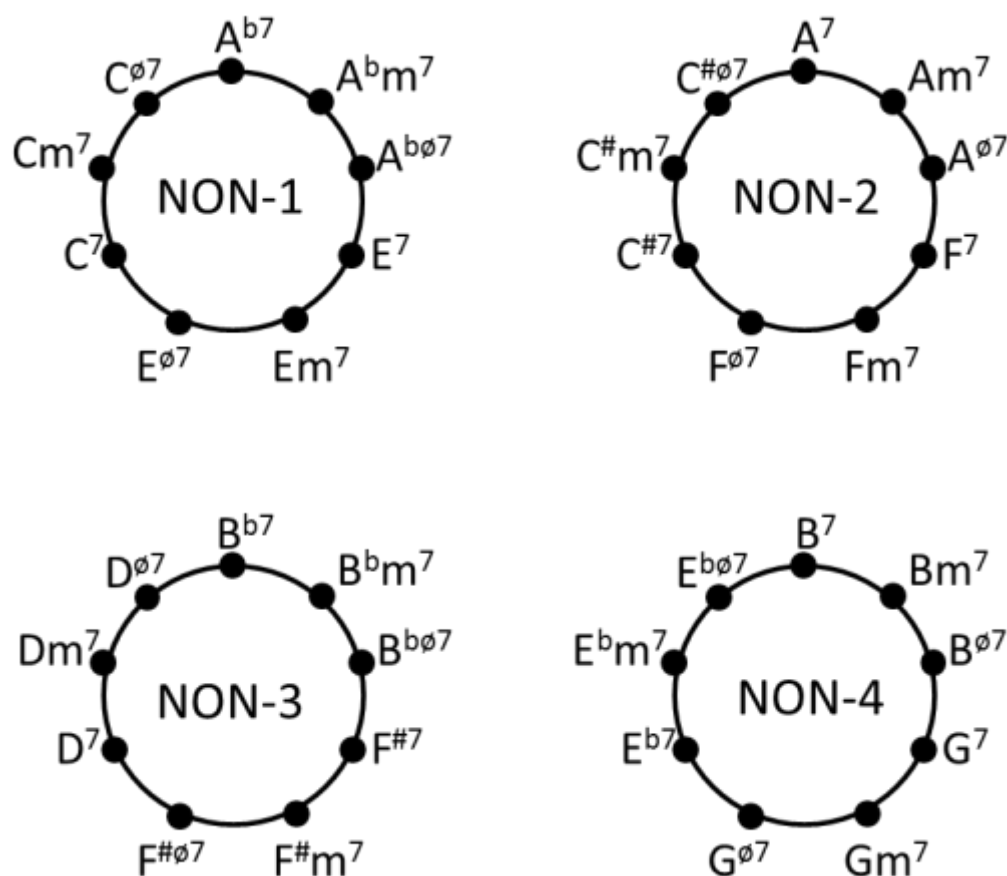
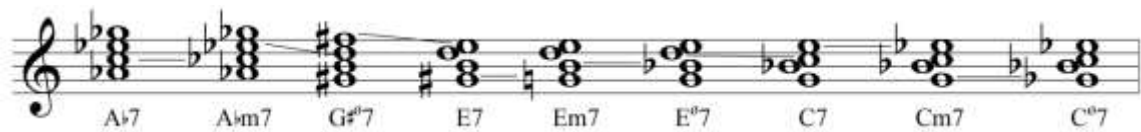


Figure 3.37 illustrates the “EnneaCycle” for NON-1 on the staff. It indicates that each movement within the cycle involves the motion of only one voice by whole tone or semitone. In their essay, Douthett and Steinbach introduce a relationship measure that reveals the proximity between two sonorities involved in a parsimonious transformation. This is notated as $P_{m,n}$, where m indicates the number of semitones traversed and n indicates the number of whole tones, with other voices remaining stationary.³⁸ As Figure

³⁸ Jack Douthett and Peter Steinbach, "Parsimonious Graphs: A Study in Parsimony, Contextual Transformations, and Modes of Limited Transposition," 243.

3.37 shows, movements within the cycle that maintain the chord root exhibit a $P_{1,0}$ relationship, while the movement between a half-diminished seventh and a dominant seventh chord whose roots are at an ordered pitch class interval of 8 exhibit a $P_{0,1}$ relationship.

Figure 3.37 – illustration of an “EnneaCycle” for NON-1



Most studies that explore this type of chord-mapping restrict their allowable operations to those that are quite close, where $m+n=1$ in $P_{m,n}$; that is to say chord-mappings in which only one tone moves by step. In a 1998 essay, Adrian Childs restricts his allowable seventh chord transformations to those of set-class 4-27 (0258) that exhibit a $P_{2,0}$ relationship.³⁹ That is to say, he presents transformations in which the seventh chords in question have two tones in common while the remaining voices move by semitone. Childs then categorizes these transformations by those in which the voice movement is by contrary motion (C-type transformations) or by similar motion (S-type transformations). Transformations are given a label in which the type of motion is indicated followed by a numeric subscript that specifies the unordered pitch class interval between the stationary voices and the initial unordered pitch class interval between the moving voices. Within the context of the octatonic collection, there are six varieties of S-type transformations and three varieties of C-type transformations. Figure 3.38 illustrates

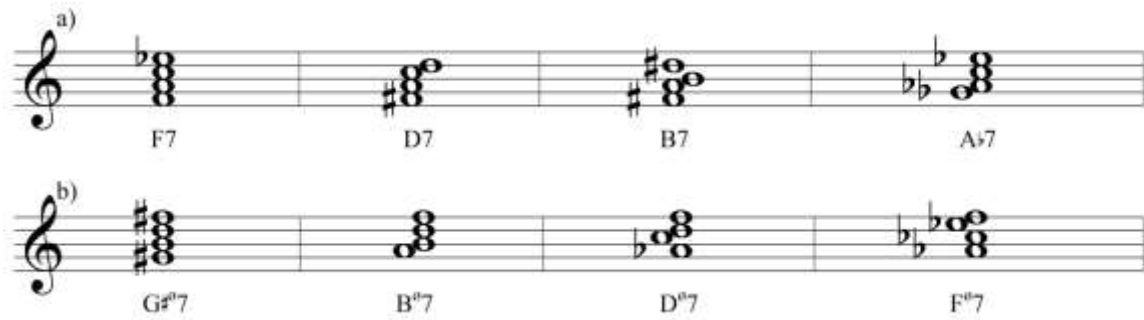
³⁹ Adrian Childs, “Moving Beyond Neo-Riemannian Triads: Exploring a Transformational Model for Seventh Chords,” 181-193.

examples of all of the possible transformation types outlined by Childs.

Figure 3.38 – illustrations of S- and C-type transformations within an octatonic context



The C-type transformations are notable for two reasons. First, they are all compounds of S-type transformations. Second, a cycle of these transformations will symmetrically divide an octave by assembling a complete octatonic collection. Figure 3.39 illustrates two examples of such cycles utilizing C-type transformations. Figure 3.39.a gives a cycle of dominant seventh chords created by a repetition of $C_{3(2)}$ transformations when read left to right. A cycle of repeating $C_{3(4)}$ transformations is required to perform this cycle in reverse order. Figure 3.39.b gives a cycle of half-diminished seventh chords created by a repetition of $C_{3(4)}$ transformations when read left to right. A cycle of repeating $C_{3(2)}$ transformations is required to perform this cycle in reverse order.

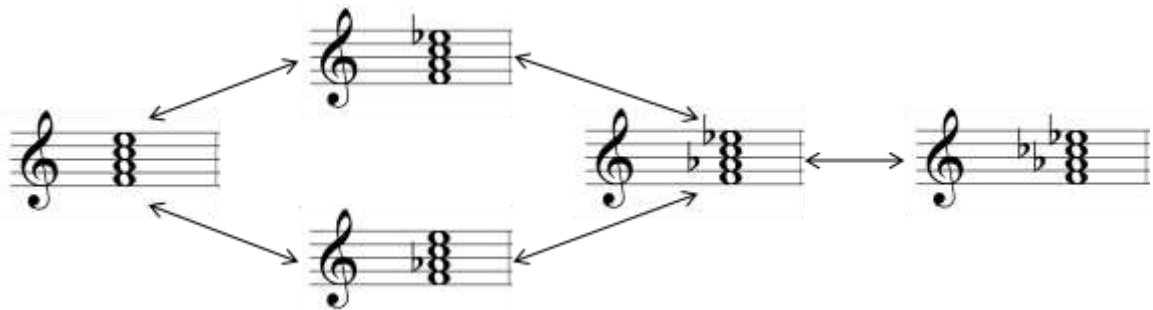
Figure 3.39 – examples of octatonic cycles using $C_{3(2)}$ or $C_{3(4)}$ transformations

Naturally, the relationship between these chords could also be expressed by stating that each chord is a transposition of a particular member of set-class 4-27, such that each movement within the cycle is T_3 (or T_9) of that set. An advantage of T_n is its universal validity when dealing with members of the same set class; thus T_n is equally valid within chromatic, octatonic, whole-tone, hexatonic, nonatonic or even tonal pitch space. The strength of T_n is also an unfortunate hindrance as it is a formation that is ignorant of the distinctions between musical contexts. For this reason, the transformations devised by Childs enjoy a particular advantage since they recognize something noteworthy about octatonic pitch space that is unrelated to transformations within other contexts. Translating these efforts onto the variety of seventh chords found within the nonatonic collection yields similarly idiosyncratic transformation types.

The accounting for potential seventh chord movements within the context of nonatonic pitch space will begin with a catalogue of those transformations with the closest possible proximity. These are transformations in which $m+n=1$ in $P_{m,n}$, that is to say those transformations which maintain three common tones and in which the remaining tone moves by either semitone or whole tone. These close proximity

transformations will include movements between chords that share the same root. There are five such transformations $P_{1,0}$ between the participating chords. They are 1) major seventh to minor-major seventh, 2) major seventh to dominant seventh, 3) minor-major seventh to minor seventh, 4) dominant seventh to minor seventh, and 5) minor seventh to half-diminished seventh. Figure 3.40 illustrates examples of this movement on the staff using F as the root of the five qualities of chord in question. All motions indicated by a double arrow are $P_{1,0}$. Skipping a level, for example from a major seventh to a minor seventh, is $P_{2,0}$. There is one $P_{3,0}$ transformation possible, which is the movement between a major seventh and a half-diminished seventh.

Figure 3.40 – some seventh chord movements which maintain root



Some of these transformations resemble the common NROs applied to triads. For example, the movement from a major seventh to a minor-major seventh could be described as a P transformation between the major or minor triad formed between the root, third and fifth of these two harmonies. In this analysis, the seventh is merely a tone by inclusion. The same is true for the motion between a minor seventh and a half-diminished seventh, though the major or minor triad is now formed between the third, fifth and seventh of the harmony and the chord root must be considered a tone of

inclusion. A P' (SLIDE) operation will map the minor triad formed between the third, fifth and seventh of a major seventh chord onto the major triad formed within a minor seventh chord. The proposed P'_4 operation will map the minor triad formed between the third, fifth and seventh of a major seventh chord onto the diminished triad formed within a dominant seventh chord. For ease of expression, the present study considers movements between seventh chords in which the root is the same as a Change of Quality (CQ) and will note the proximity as $P_{m,n}$ to show the voice-leading efficiency between these sonorities.

Figure 3.41 shows a graph I call the “nonatonic pentagram,” which summarizes CQ transformations for seventh chords, in this case those with an F root. Solid lines indicate those CQ transformations that are $P_{1,0}$, while dashed lines indicate those CQ transformations that are $P_{2,0}$. The one CQ transformation that is $P_{3,0}$, between a major seventh and a half-diminished seventh, is indicated with a dotted line.

In addition to CQ transformations, there are five possible seventh chord transformations available in nonatonic pitch space that are either $P_{1,0}$ or $P_{0,1}$ and involve root change. Four of these transformations are $P_{0,1}$ and involve exchanging the root for the seventh, or vice versa, in seventh chords of differing quality. Of these four, two involve root change by an ordered interval of 4 or 8, meaning that the two roots of the chords involved will both be members of the upper class nodes within a particular nonatonic collection. The other two involve root change by an ordered interval of 3 or 9, meaning that the root of one chord belongs to one of the upper class nodes while the root of the other belongs to one of the middle class nodes. Finally, the remaining transformation is $P_{1,0}$ and involves the root of a major seventh chord moving by semitone to become the root of a half-diminished seventh chord; in this transformation the chord roots migrate between the middle and

upper class nodes of a particular nonatonic collection. Table 3.4 summarizes these transformations. Root change is indicated as two numbers separated by a slash. The first number indicates the ordered interval of root motion when the operation is performed left to right, while the second number indicates the ordered interval of root motion when the operation is reversed. Each transformation is also given a name. The names all use *N* to indicate that these transformations are idiosyncratic to the nonatonic collection, while a numeric subscript indicates the transformation's specific type. Figure 3.42 realizes examples of each of these transformations on the staff.

Figure 3.41 – nonatonic pentagram for seventh chords with an F root

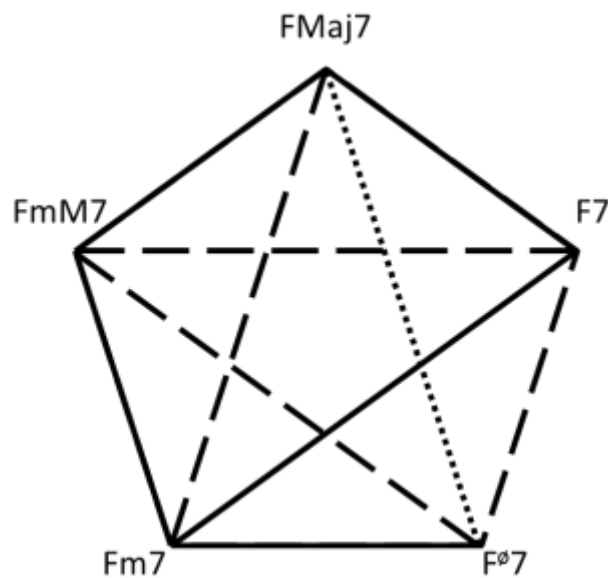
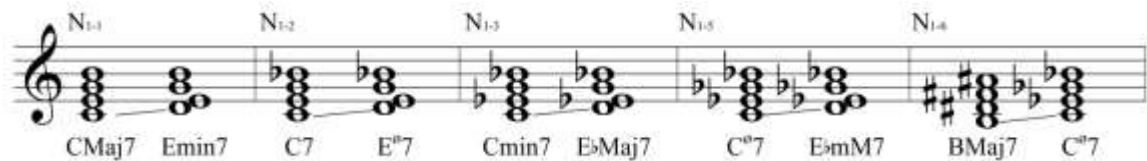


Table 3.4 – nonatonic transformations in which proximity=1

Position	Name	Mapping	Root Motion	$P_{m,n}$
Upper ↔ Upper	N_{1-1}	Maj7 ↔ Min7	4/8	$P_{0,1}$
	N_{1-2}	7 ↔ ø7	4/8	$P_{0,1}$
Upper ↔ Middle	N_{1-3}	Min7 ↔ Maj7	3/9	$P_{0,1}$
	N_{1-5}	ø7 ↔ Min-Maj7	3/9	$P_{0,1}$
	N_{1-6}	Maj7 ↔ ø7	1/11	$P_{1,0}$

Figure 3.42 – illustrations of nonatonic transformations in which proximity=1



Expanding the possible nonatonic transformations to involve motions similar to the ones Adrian Childs considers in his octatonic study yields thirteen possible transformations, which are listed in Table 3.5. These transformations resemble the transformations from Childs's study in that they maintain two common tones, while the two remaining tones move by step. However, most of these transformations involve motion by whole tone in at least one of the moving voices, which is not allowable in Childs's study. Because the allowable motions for these nonatonic transformations include movement by both whole tone and semitone, here the transformation types allow for relationships that are $P_{1,1}$ and $P_{0,2}$, in addition to $P_{2,0}$. For this reason, these transformations are described as "Proximity 2" transformations since $m+n=2$ in their relationship measure. Another significant difference from Childs's theory is in the types

of transformations that are represented on Table 3.5. The notations used here maintain the S- and C-type transformations from Childs, but also introduces a type of transformation that recognizes parallel motion between the moving voices. These transformations are shown as P-types, with the familiar numeric subscript that specifies the unordered pitch class interval between the stationary voices and the initial unordered pitch class interval between the moving voices. Note that all of Childs's S-type transformations would be considered P-type transformations here, since in Childs's S-type transformations the voices in motion move in the same direction by the same interval. Here, an S-type transformation refers to instances where the voices in motion move in the same direction but by different intervals.

One of the "Proximity 2" transformations maintains chord quality. It is listed as N_{2-11} and maps a major seventh chord onto another major seventh chord with root motion by an ordered pitch class interval of 5/7. Significantly, repeating this transformation in the manner of the cycles shown in Figures 3.37 and 3.39 will traverse outside the progenitor nonatonic collection and, after twelve moves, will return to the original harmony.

Table 3.5 – nonatonic transformations in which proximity=2

Position	Name	Mapping	Root Motion	$P_{m,n}$	Childs Transformation
Upper ↔ Upper	N_{2-1}	Maj7 ↔ 7	4/8	$P_{1,1}$	$S_{5(5)}/S_{5(6)}$
	N_{2-2}	Maj7 ↔ ø7	4/8	$P_{1,1}$	$C_{3(1)}/C_{3(4)}$
	N_{2-3}	7 ↔ Min7	4/8	$P_{1,1}$	$S_{3(2)}/S_{3(3)}$
	N_{2-5}	Min-Maj7 ↔ Min7	4/8	$P_{1,1}$	$S_{4(3)}/S_{4(2)}$

	N ₂₋₈	Min7 ↔ ø7	4/8	P _{1,1}	S ₃₍₃₎ /S ₃₍₂₎
Upper ↔ Middle	N ₂₋₁₁	Maj7 ↔ Maj7	5/7	P _{0,2}	P ₄₍₄₎ /P ₄₍₄₎
	N ₂₋₁₂	7 ↔ Maj7	3/9	P _{1,1}	C ₃₍₄₎ /C ₃₍₁₎
	N ₂₋₁₃	Min-Maj7 ↔ 7	5/7	P _{0,2}	P ₃₍₄₎ /P ₃₍₄₎
	N ₂₋₁₄	Min-Maj7 ↔ Maj7	3/9	P _{1,1}	C ₄₍₁₎ /C ₄₍₄₎
	N ₂₋₁₇	Min7 ↔ Min- Maj7	3/9	P _{1,1}	C ₅₍₅₎ /C ₅₍₄₎
	N ₂₋₁₈	Maj7 ↔ Min7	1/11	P _{2,0}	P ₅₍₅₎ /P ₅₍₅₎
	N ₂₋₂₄	ø7 ↔ Maj7	3/9	P _{1,1}	S ₅₍₆₎ /S ₅₍₅₎
	N ₂₋₂₅	Min-Maj7 ↔ ø7	1/11	P _{2,0}	P ₄₍₃₎ /P ₄₍₃₎

Figure 3.43 – illustrations of nonatonic transformations in which proximity=2

Figure 3.43 illustrates nonatonic transformations in which proximity=2. The figure shows three rows of musical notation, each representing a different transformation. The first row shows transformations N₂₋₁ through N₂₋₅, the second row shows N₂₋₁₁ through N₂₋₁₄, and the third row shows N₂₋₁₇ through N₂₋₂₅. Each transformation is illustrated with a musical staff showing the original and transformed chords.

Having considered both “Proximity 1” and “Proximity 2” transformations, this study now expands to observe the kinds of transformations that are “Proximity 3” within a particular nonatonic collection. These are transformations in which one tone is held in

common, while the other three tones move by whole tone or semitone. The transformations are listed on Table 3.6, and illustrations of these transformations are shown in Figure 3.44. Many, but not all, of the Proximity 3 transformations can be represented as a compound. On Table 3.6, a closest compound is listed if the Proximity 3 transformations can be represented as a Proximity 2 transformation coupled with a CQ of $P_{1,0}$. In some cases, two or more such compounds are possible, and the table lists these. In a few cases, no such compound is possible. Of these, a notable example is the transformation listed as N_{3-13} , which maps a half-diminished seventh onto a major seventh with root movement by an ordered pitch class interval of 4 (8 when reversed). This transformation is notable in that the root of the half-diminished seventh maps onto the fifth of the major seventh. In all other transformations characterized by root motion of 4/8, the root of the first chord, no matter what the quality of that chord, maps onto the seventh of the other chord involved. The other transformations with no listed compound could be represented by compounds with a CQ greater than $P_{1,0}$, but are listed here with no closest compound.

Table 3.6 – nonatonic transformations in which proximity=3

Position	Name	Mapping	Root Motion	$P_{m,n}$	Closest Compound(s)
Upper ↔ Upper	N_{3-2}	$7 \leftrightarrow 7$	4/8	$P_{2,1}$	$CQ + N_{2-1}$
	N_{3-3}	$\text{Min-Maj7} \leftrightarrow 7$	4/8	$P_{2,1}$	$CQ + N_{2-1}, N_{2-5} + CQ$
	N_{3-4}	$\text{Min-Maj7} \leftrightarrow \emptyset 7$	4/8	$P_{2,1}$	$CQ + N_{2-2}, CQ + N_{2-8}$
	N_{3-7}	$\text{Min7} \leftrightarrow \text{Min7}$	4/8	$P_{2,1}$	$CQ + N_{2-3}, CQ + N_{2-5}, N_{2-8} + CQ$
	N_{3-13}	$\emptyset 7 \leftrightarrow \text{Maj7}$	4/8	$P_{1,2}$	n/a

	N ₃₋₁₆	ø7 ↔ ø7	4/8	P _{2,1}	CQ + N ₂₋₈
Upper ↔ Middle	N ₃₋₁₇	Maj7 ↔ Maj7	3/9	P _{2,1}	CQ + N ₂₋₁₂ , CQ + N ₂₋₁₄
	N ₃₋₁₈	Min-Maj7 ↔ Maj7	5/7	P _{1,2}	CQ + N ₂₋₁₁ , N ₂₋₁₃ + CQ
	N ₃₋₁₉	Maj7 ↔ Maj7	1/11	P _{2,1}	n/a
	N ₃₋₂₀	Min-Maj7 ↔ Maj7	1/11	P _{1,2}	n/a
	N ₃₋₂₁	7 ↔ Min-Maj7	3/9	P _{2,1}	N ₂₋₁₂ + CQ, CQ + N ₂₋₁₇
	N ₃₋₂₂	Maj7 ↔ 7	5/7	P _{1,2}	N ₂₋₁₁ + CQ
	N ₃₋₂₃	Maj7 ↔ 7	1/11	P _{3,0}	N ₂₋₁₈ + CQ
	N ₃₋₂₄	Min-Maj7 ↔ 7	1/11	P _{2,1}	n/a
	N ₃₋₂₅	Min-Maj7 ↔ Min-Maj7	1/11	P _{2,1}	n/a
	N ₃₋₂₆	Min-Maj7 ↔ Min-Maj7	3/9	P _{2,1}	N ₂₋₁₄ + CQ, CQ + N ₂₋₁₇
	N ₃₋₂₇	Maj7 ↔ Min-Maj7	1/11	P _{3,0}	N ₂₋₁₈ + CQ
	N ₃₋₃₀	Min-Maj7 ↔ Min7	1/11	P _{3,0}	CQ + N ₂₋₁₈ , N ₂₋₂₅ + CQ

Figure 3.44 – illustrations of nonatonic transformations in which proximity=3

Figure 3.44 displays 15 musical examples of nonatonic transformations where proximity=3. Each example shows two chords connected by a double-headed arrow, indicating a transformation. The chords are labeled with their respective symbols (e.g., C7, E7, CmM7, E7, CmM7, Eø7, Cmin7, Emin7, Cø7, EMaj7, CMaj7, EbMaj7, GmM7, CMaj7, BMaj7, CMaj7, BmM7, CMaj7, EbmM7, GMaj7, C7, BMaj7, C7, BmM7, C7, CmM7, EbmM7, BMaj7, CmM7, BmM7, Cmin7).

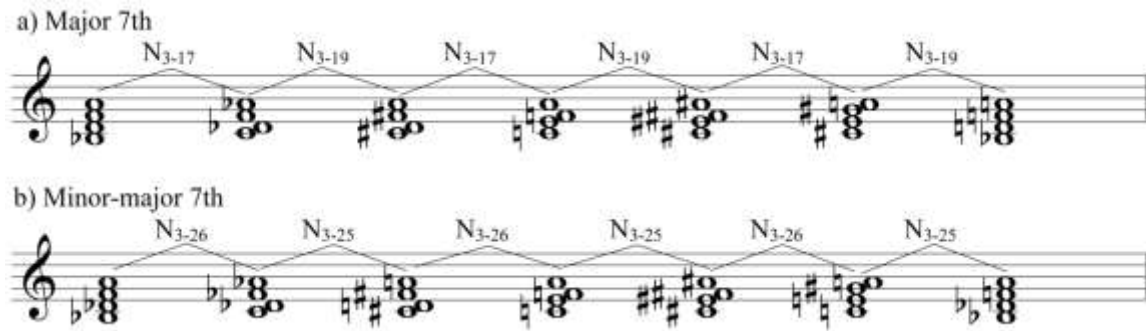
There are several proximity 3 transformations that maintain chord quality. Three such transformations move by an ordered pitch class interval of 4/8, which will allow for the kinds of symmetrical cycles shown in Figures 3.37 and 3.39. Examples of these cycles are shown in Figure 3.45. The cycles shown are actually subcycles from Douthett and Steinbach's "EnneaCycle" (see Figure 3.37), and can be recreated from that cycle by skipping two members within the sequence.

Figure 3.45 – illustrations of 4/8 symmetrical cycles



Four other proximity 3 transformations maintain chord quality. Two, N_{3-17} and N_{3-19} , map a major seventh chord onto another major seventh chord by root motion of either 1/11 or 3/9. The remaining two, N_{3-25} and N_{3-26} , map a minor-major seventh chord onto another minor-major seventh chord by the same types of root motion. This allows for symmetrical cycles of major seventh or minor-major seventh chords that alternate these transformations and whose roots alternate between chords built upon upper class nodes as root with those built upon middle class nodes. For this reason, the roots of the chords in this cycle will spell one of the constituent hexatonic scales within that nonatonic collection. These cycles are illustrated in Figure 3.46.

Figure 3.46 – illustrations of symmetrical cycles whose roots form a hexatonic scale



The opportunity to harmonize a hexatonic scale with seventh chords is not restricted to major seventh or minor-major seventh chords. When the root is an upper class node it can also be harmonized with a dominant seventh, minor seventh, or half-diminished seventh chord. Several of the transformations appearing on the above tables can facilitate these motions, provided these transformations are able to map the five seventh chord types onto either a major seventh or minor-major seventh chord by root motion of an ordered interval of $1/11$ or $3/9$. Figures 3.47 and 3.48 are graphs that chart these chord mappings when the root motion is by an ordered interval of $1/11$. These graphs use the “nonatonic pentagram” (see Figure 3.41) as the base of a pentagonal pyramid in which the points are all linked to a major seventh or minor-major seventh. As these graphs show, there are links on all sides of the pentagonal pyramid.

Compare these graphs to Figures 3.49 and 3.50, which chart these chord mappings when the root motion is by an ordered interval of $3/9$. These graphs show the same type of pentagonal pyramids; however, in Figure 3.50 a gap is shown between a major seventh and a minor-major seventh when the root motion is $3/9$. This gap confirms what can be shown by tabulating the percentage of transformations that involve certain

chord types. Obviously most of the nonatonic transformations discussed will involve a major seventh or minor-major seventh as they can be built on both the upper and middle class nodes. In comparing their raw totals, major sevenths are involved in 29% of nonatonic transformations that involve root change, whereas minor-major sevenths are involved in 25% of these transformations.

Figure 3.47 – graph of mappings from upper to a middle-class major seventh by 1/11

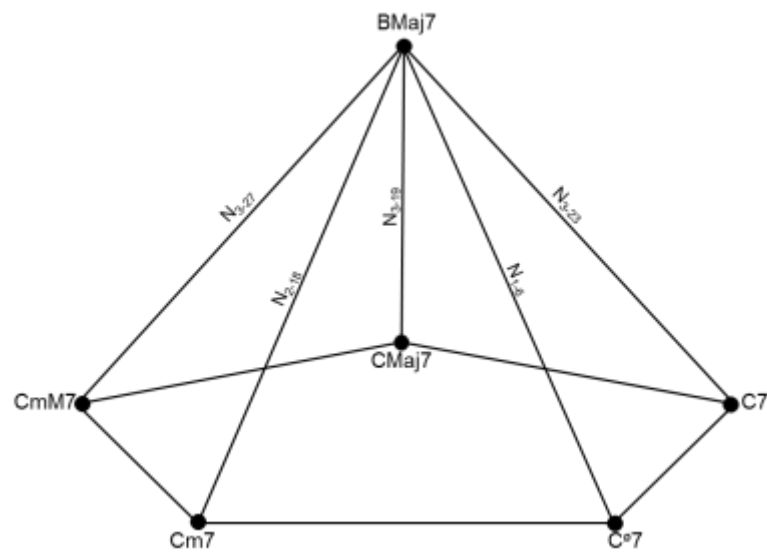


Figure 3.48 – graph of mappings from upper to a middle-class minor-major seventh by

1/11

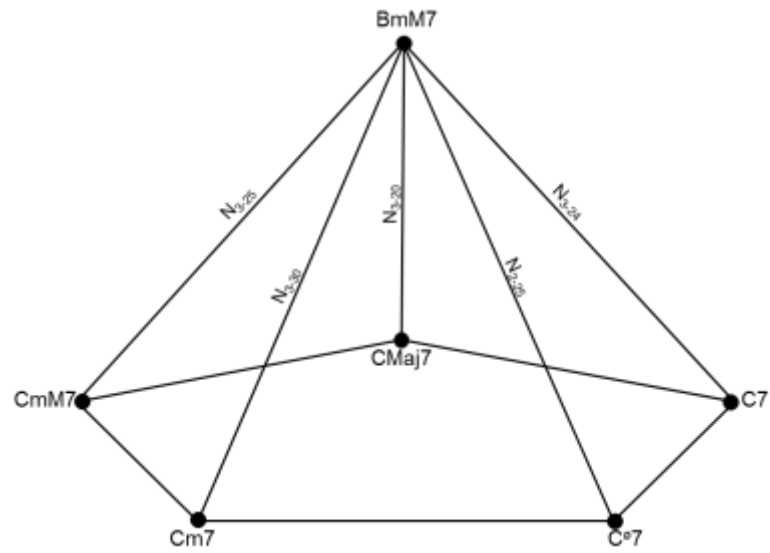


Figure 3.49 – graph of mappings from upper to a middle-class major seventh by 3/9

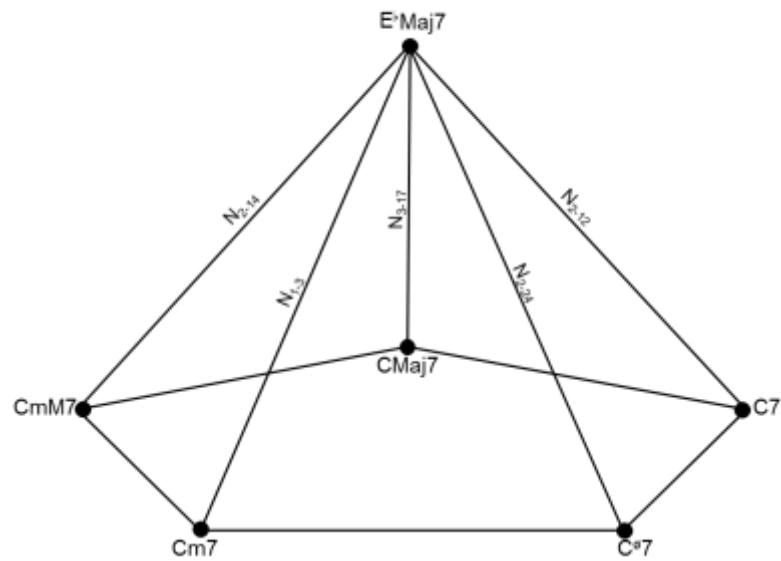
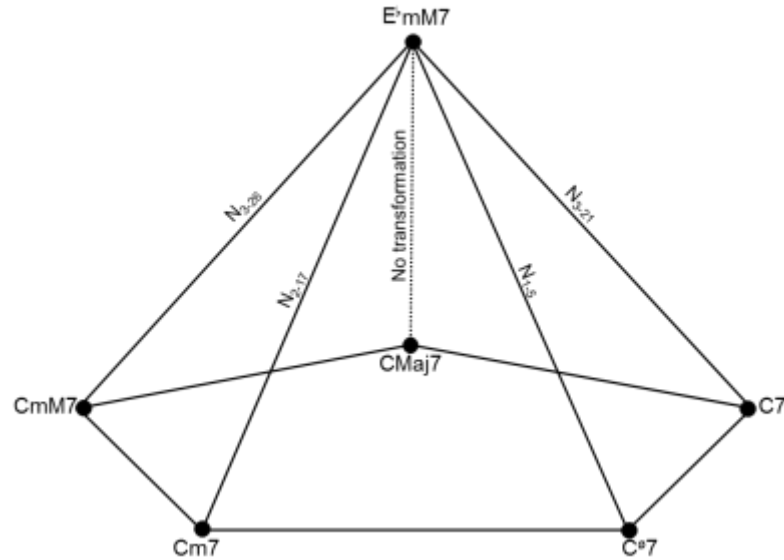


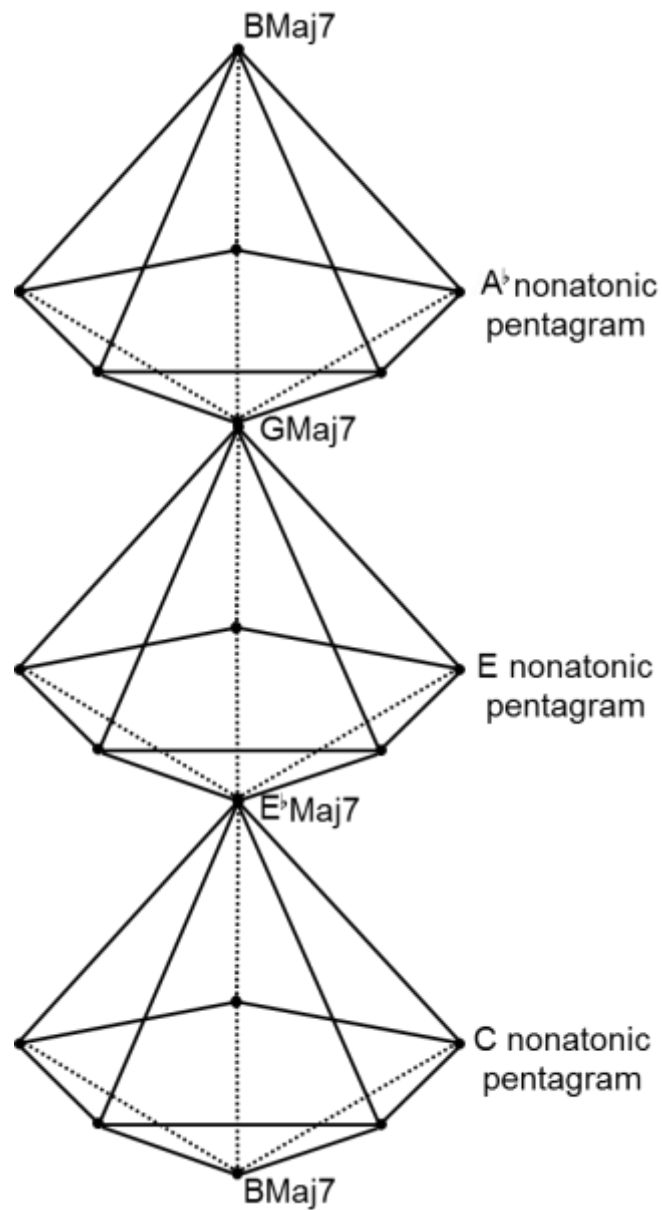
Figure 3.50 – graph of mappings from upper to a middle-class minor-major seventh by

3/9



Fusing several of these pentagonal pyramids together creates a graph called the “crystal tower,” which charts the motions of seventh chord harmonizations of a hexatonic scale in which major seventh chords built on the middle class nodes of a nonatonic collection form the apex of the conjoined pyramids. The crystal tower for NON-1, which harmonizes $\text{HEX}_{2,3}$, is shown in Figure 3.51.

Figure 3.51 – NON-1 “Crystal Tower”



The importance of major seventh chords in assembling nonatonic pitch space is exemplified in Figure 3.52, from the first movement of Vaughan William’s Fourth Symphony. This is the secondary theme of the exposition, which features a wistful block-chord accompaniment in the winds underneath an expansive melody in the high strings.

The chordal accompaniment in the winds begins with a repeated progression of B^bMaj7, B^bmM7, and FmM7, which act to assemble an eight-note subset of NON-3. The melody itself strongly projects a D minor pitch center, in which only G falls outside NON-3.

Figure 3.52 – Vaughan Williams, Symphony No. 4 in F minor/I, 49-60

The musical score for Vaughan Williams' Symphony No. 4 in F minor, first movement, measures 49-60, is presented in four systems. Each system consists of a treble and bass staff. The first system is marked with a piano (*p*) dynamic and includes the label 'NON-3:'. The score is annotated with 'CQ' (Chordal Quality) and 'N3-18' (Non-3-18) to identify specific chordal structures. The melody in the treble staff is characterized by a D minor pitch center, with a G note falling outside the NON-3 set. The bass staff provides a steady accompaniment with a repeating pattern of eighth notes. The score includes various musical notations such as slurs, ties, and dynamic markings.

At this point in the passage the only seventh chord transformations that are

utilized are a CQ between B^bMaj7 and B^bmM7 and an N₃₋₁₈ transformation that maps B^bMaj7 onto FmM7. Note that there is no direct nonatonic transformation on the tables above that will map B^bmM7 onto FmM7, and these chords are not presented as adjacent sonorities in this passage. While the opening of the theme is content to restrict itself to these transformations, the subsequent statement quickly begins to make a greater use of the available nonatonic transformation types, shown in Figure 3.53. In measure 61, the pervasive B^bMaj7 is transposed up a minor third to a D^bMaj7. This initiates a transposed statement of the main progression, involving D^bMaj7, D^bmM7, and A^bmM7. This progression now assembles an eight-note subset of NON-2, and until measure 72 this passage is wholly governed by that collection. The transition from NON-3 to NON-2 is instigated through something similar to a common-chord modulation in tonal music. In NON-3, B^b is an upper class node while D^b is a middle class node. D^b is an upper class node in NON-2, and the shift from one nonatonic collection to the next is facilitated by this change of class. F is also an upper class node in NON-2 and acts as a pervasive chord root beginning in measure 64. A^b and C, both middle class nodes in NON-2, act as chord roots with lesser frequency. Note that A^b and C are both lower class nodes in NON-3, so they cannot serve as chord roots in that context.

Not all transitions between nonatonic collections are as smoothly connected; a more abrupt shift from NON-2 back to NON-3 characterizes the end of this passage, as shown in Figure 3.54. The NON-2 governed middle portion of the secondary theme reaches a nadir with repeated F^bMaj7 chords, a middle class node in NON-2. At measure 73 a canon begins between the upper and lower strings; this coincides with an immediate shift back to NON-3 with its pervasive B^bMaj7 chords. This conclusion of this line features only B^bMaj7 and D^bMaj7, the two chords that characterize the two nonatonic

collections utilized.

Figure 3.53 – Vaughan Williams, Symphony No. 4 in F minor/I, 61-72

Pivot Chord to NON-2:

61

N3-17

CQ

CQ

N3-18

N3-18

[N3-26+CQ]

(Passing Chords)

N2-11

CQ

[CQ+N1-1]

Figure 3.54 – Vaughan Williams, Symphony No. 4 in F minor/I, 72-77

The only types of seventh chords considered thus far are the standard types, with the notable addition of the minor-major seventh chord. However, the nonatonic collection allows for the consideration of many more tetrachords. Since the concept of chord root is very important to this theory of chord motions within and between nonatonic collections, insofar as they articulate classes of nonatonic nodes, this study continues its consideration of additional seventh chord types as constructions made from intervals above a root. The five types of seventh chord considered to this point allow for six qualities of intervals above the root: a major or minor third, a perfect or diminished fifth, and a major or minor seventh. While the chord root remains steady, the third, fifth and seventh can toggle between the two available options at each of the three intervallic distances. This creates eight seventh chord types: the five discussed thus far, and three new types. These are shown in Figure 3.55, with the new types identified by asterisks.

Figure 3.55 – eight chord qualities created by toggling intervals above an upper class root

Chord	Intervals
CMaj7	M7, P5, M3
C7	m7, P5, M3
CmM7	M7, P5, m3
CMaj7 ^(b5)	M7, d5, M3
Cmin7	m7, P5, m3
C ^O M7	M7, d5, m3
C7 ^(b5)	m7, d5, M3
C ^O 7	m7, d5, m3

As Figure 3.55 shows, the three new seventh chord types are ones whose root identity is controversial. The first has the appearance of a major seventh with the fifth lowered by semitone, and is labeled as CMaj7^(b5) to reflect this similarity. From a more generalized view this tetrachord belongs to set-class 4-16 (0157). Taking this harmony and lowering the third by semitone yields the seventh chord labeled in Figure 3.55 as a diminished triad with a major seventh, or diminished-major seventh chord. More generally this is an (0147) set type, set-class 4-18. Finally, lowering the seventh of the CMaj7^(b5) creates C7^(b5); a member of set-class 4-25 (0268).

Figure 3.56 – three problematic instances of root-based chord analysis

a) CMaj7^(b5)? b) C^OM7? c) C7^(b5)?

Figure 3.56 shows instances where these root-privileged chord labels are highly problematic. 3.56.a uses the same tones as the CMaj7^(b5) of Figure 3.55; however a view of this harmony as possessing a C root would need significant aid from its musical

context. As it is presented, 3.56.a is essentially a quartal harmony in which the proposed C root can best be understood as an added dissonant tone. 3.56.b uses the same pitch classes as the C⁰M7 of Figure 3.55, but as spelled seems to privilege the BM chord embedded within the harmony. Finally, 3.56.c uses the same pitch classes as the C7^(b5) of Figure 3.55, yet the enharmonic respelling of this harmony leads toward a view of it as a French augmented sixth sonority.

To be clear, this study advocates for the use of these root-privileged labels as tools for theoretical clarity and not analytical identification. Since the nonatonic collection projects three classes of nodes whose performance as chord roots is highly distinct, recognizing these harmonies as intervals above a root allows the idea of three classes (upper, middle, and lower) of nonatonic nodes to function as a structural network. These three “new” qualities of chord can be built upon the upper class nodes of a nonatonic collection, but not on the middle class nodes. Significantly, the 7^(b5) chord type can be built with lower class nodes as a root; this is the first significant harmony in which this is the case. Figure 3.57 shows the identities of these harmonies as they appear within the four nonatonic collections. As there are only six possible forms of set class 4-25, all the 7^(b5) chords make repeated appearances on Figure 3.57. This is caused by the high degree of intervallic symmetry that can be found in the 7^(b5) or (0268) set type, and it reveals a means of navigating among related nonatonic collections. Table 3.7 lists the six possible transpositions of this set class, identifies their root-quality labels, and shows the transpositions of the nonatonic collections in which they appear. The full implications of utilizing this harmony to navigate nonatonic pitch space are explored below.

Figure 3.57 – $\text{Maj}7^{(\flat 5)}$, $^{\circ}\text{M}7$, and $7^{(\flat 5)}$ within the four nonatonic collections

NON-1:	D	D [♯]	E	F [♯]	G	G [♯]	B [♭]	B	C
$\text{Maj}7^{(\flat 5)}$	$^{\circ}\text{M}7$				$7^{(\flat 5)} - \text{Upper Class}$		$7^{(\flat 5)} - \text{Lower Class}$		
$\text{EMaj}7^{(\flat 5)}$, $\text{A}^{\flat}\text{Maj}7^{(\flat 5)}$, $\text{CMaj}7^{(\flat 5)}$	$\text{E}^{\circ}\text{M}7$, $\text{A}^{\flat}\text{Maj}7^{(\flat 5)}$, $\text{C}^{\circ}\text{M}7$				$\text{E}7^{(\flat 5)}$, $\text{A}^{\flat}7^{(\flat 5)}$, $\text{C}7^{(\flat 5)}$		$\text{D}7^{(\flat 5)}$, $\text{G}^{\flat}7^{(\flat 5)}$, $\text{B}^{\flat}7^{(\flat 5)}$		

NON-2:	D [♯]	E	F	G	G [♯]	A	B	C	C [♯]
$\text{Maj}7^{(\flat 5)}$	$^{\circ}\text{M}7$				$7^{(\flat 5)} - \text{Upper Class}$		$7^{(\flat 5)} - \text{Lower Class}$		
$\text{FMaj}7^{(\flat 5)}$, $\text{AMaj}7^{(\flat 5)}$, $\text{C}^{\sharp}\text{Maj}7^{(\flat 5)}$	$\text{F}^{\circ}\text{M}7$, $\text{A}^{\circ}\text{M}7$, $\text{C}^{\sharp}\text{Maj}7^{(\flat 5)}$				$\text{F}7^{(\flat 5)}$, $\text{A}7^{(\flat 5)}$, $\text{C}^{\sharp}7^{(\flat 5)}$		$\text{E}^{\flat}7^{(\flat 5)}$, $\text{G}7^{(\flat 5)}$, $\text{B}7^{(\flat 5)}$		

NON-3:	C	C [♯]	D	E	F	F [♯]	G [♯]	A	B [♭]
$\text{Maj}7^{(\flat 5)}$	$^{\circ}\text{M}7$				$7^{(\flat 5)} - \text{Upper Class}$		$7^{(\flat 5)} - \text{Lower Class}$		
$\text{F}^{\sharp}\text{Maj}7^{(\flat 5)}$, $\text{B}^{\flat}\text{Maj}7^{(\flat 5)}$, $\text{DMaj}7^{(\flat 5)}$	$\text{F}^{\sharp}\text{Maj}7^{(\flat 5)}$, $\text{B}^{\flat}\text{Maj}7^{(\flat 5)}$, $\text{D}^{\circ}\text{M}7$				$\text{F}^{\sharp}7^{(\flat 5)}$, $\text{B}^{\flat}7^{(\flat 5)}$, $\text{D}7^{(\flat 5)}$		$\text{E}7^{(\flat 5)}$, $\text{A}^{\flat}7^{(\flat 5)}$, $\text{C}7^{(\flat 5)}$		

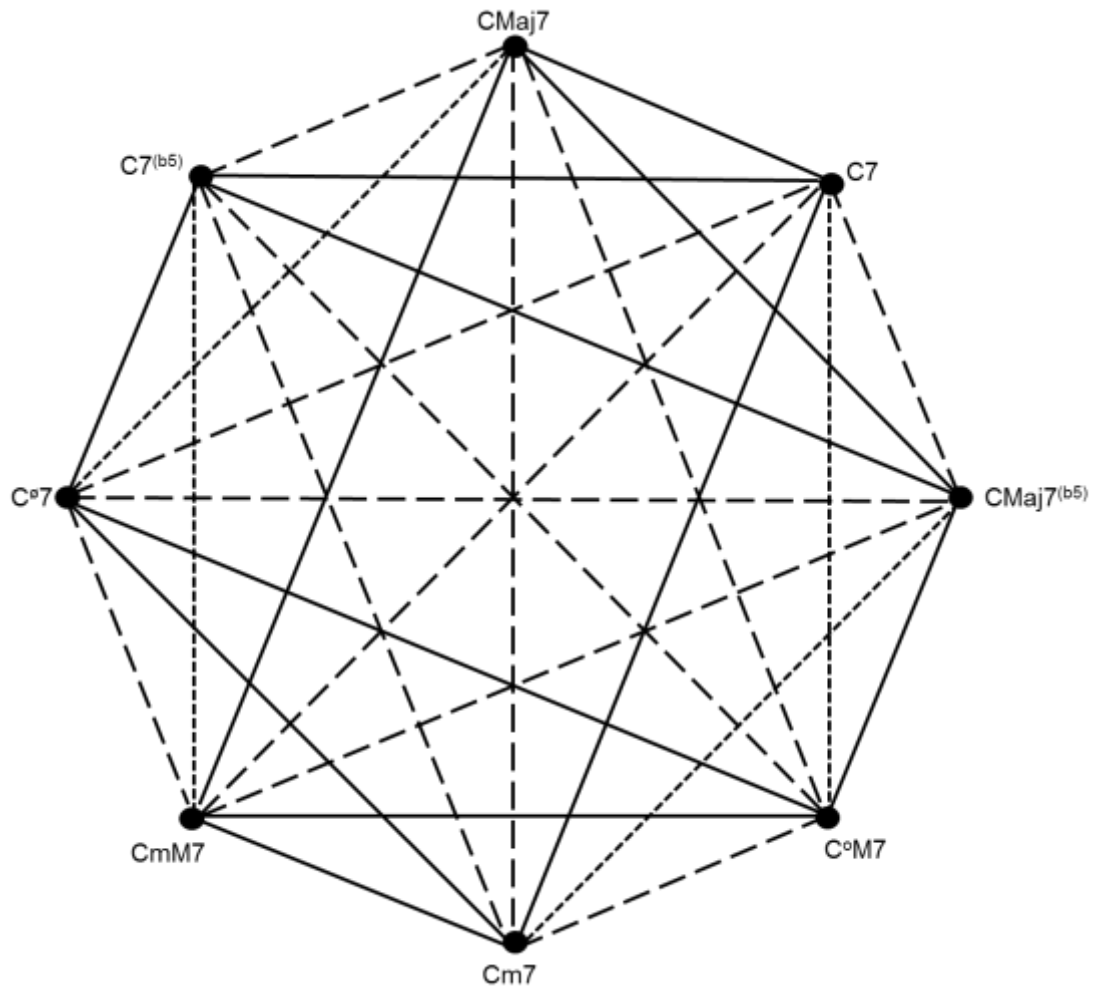
NON-4:	C [♯]	D	D [♯]	F	F [♯]	G	A	B [♭]	B
$\text{Maj}7^{(\flat 5)}$	$^{\circ}\text{M}7$				$7^{(\flat 5)} - \text{Upper Class}$		$7^{(\flat 5)} - \text{Lower Class}$		
$\text{GMaj}7^{(\flat 5)}$, $\text{BMaj}7^{(\flat 5)}$, $\text{E}^{\flat}\text{Maj}7^{(\flat 5)}$	$\text{G}^{\circ}\text{M}7$, $\text{B}^{\circ}\text{M}7$, $\text{E}^{\flat}\text{Maj}7^{(\flat 5)}$				$\text{G}7^{(\flat 5)}$, $\text{B}7^{(\flat 5)}$, $\text{E}^{\flat}7^{(\flat 5)}$		$\text{F}7^{(\flat 5)}$, $\text{A}7^{(\flat 5)}$, $\text{C}^{\sharp}7^{(\flat 5)}$		

Table 3.7 – the (0268) set type within the four nonatonic collections

PC-set	Labeled as $7^{(b5)}$	Appears in
(0268)	$D7^{(b5)}, A^b7^{(b5)}$	NON-1, NON-3
(1379)	$E^b7^{(b5)}, A7^{(b5)}$	NON-2, NON-4
(248T)	$E7^{(b5)}, B^b7^{(b5)}$	NON-1, NON-3
(359E)	$F7^{(b5)}, B^b7^{(b5)}$	NON-2, NON-4
(46T0)	$F^{\#}7^{(b5)}, C7^{(b5)}$	NON-1, NON-3
(57E1)	$G7^{(b5)}, C^{\#}7^{(b5)}$	NON-2, NON-4

While expanding the possible chord types to include the $Maj7^{(b5)}$, $^{\circ}M7$, and $7^{(b5)}$, the CQ transformation remains the same as before. However, the three new chord members significantly change how the CQ transformation is charted. Figure 3.58 displays one form of a graph called the “nonatonic octagram,” which charts the voice-leading proximities between the eight chord qualities in question. Compare this to the nonatonic pentagram shown in Figure 3.41. As in the nonatonic pentagram, transformations at a distance of $P_{1,0}$ are here shown as solid lines, $P_{2,0}$ as dashed lines and $P_{3,0}$ as dotted lines.

Figure 3.58 – nonatonic octagram for seventh chords with a C root



Much that is asymmetrical about the nonatonic pentagram is made symmetrical in the nonatonic octagram. In the nonatonic pentagram only two chords, the major seventh and half-diminished seventh, are $P_{3,0}$ from each other. The remaining three common seventh chords find $P_{3,0}$ pairs in the three additional chords present in the octagram: the dominant seventh is $P_{3,0}$ with the diminished-major, the minor-major seventh is $P_{3,0}$ with the $7^{(b5)}$, while the minor seventh is $P_{3,0}$ with the $Maj7^{(b5)}$. In addition, each of the eight harmonies has three $P_{1,0}$ transformations and three $P_{2,0}$ transformations, making 28 possible CQ transformations.

Figure 3.59 is a musical example with chord transformations that can be easily charted on the nonatonic octagram. The passage, from Tcherepnin's *Message*, Op. 39 (1926), presents harmonies from NON-2 in a repetitive pattern, first stating the enharmonic equivalent of an F7, followed by an F[°]M7 and an FMaj7.⁴⁰ These harmonies are perhaps best analytically explained as an exploration of minor third movements within the nonatonic collection over an F pedal tone, but since that F is an upper class node the resulting harmonies are predictably present on the nonatonic octagram.

Figure 3.59 – Tcherepnin, *Message* 208-211



Expanding to transformations that involve root change, Tables 3.8, 3.9, and 3.10 include transformations that involve the three chord types added to the lists provided in Tables 3.4, 3.5, and 3.6. Figures 3.60, 3.61, and 3.62 present examples of each of the nonatonic transformations on a staff. New among these transformations are those that involve lower class nodes as chord roots; these transformations always involve a 7^(b5) chord type. Information that does not appear on the previous tables is highlighted.⁴¹

⁴⁰ A detailed analysis of this piece can be found in Veenstra, "The Nine-Step Scale of Alexander Tcherepnin: Its Conception, Its Properties, and Its Use," 81-102.

⁴¹ These tables present an unbroken ordering in the transformation types. It is the omission of the three additional seventh chord types that was the reason of the numeric gaps in Tables 3.4, 3.5, and 3.6.

Table 3.8 – comprehensive nonatonic transformations in which proximity=1

Position	Name	Mapping	Root Motion	$P_{m,n}$
Upper ↔ Upper	N ₁₋₁	Maj7 ↔ Min7	4/8	P _{0,1}
	N ₁₋₂	7 ↔ ø7	4/8	P _{0,1}
Upper ↔ Middle	N ₁₋₃	Min7 ↔ Maj7	3/9	P _{0,1}
	N ₁₋₄	Maj7 ↔ Dim-Maj7	1/11	P _{0,1}
	N ₁₋₅	ø7 ↔ Min-Maj7	3/9	P _{0,1}
	N ₁₋₆	Maj7 ↔ ø7	1/11	P _{1,0}
Upper ↔ Lower	N ₁₋₇	7 ↔ 7 ^(b5)	6/6	P _{1,0}
	N ₁₋₈	Maj7 ^(b5) ↔ 7 ^(b5)	6/6	P _{1,0}
	N ₁₋₉	ø7 ↔ 7 ^(b5)	6/6	P _{1,0}

Figure 3.60 – illustrations of nonatonic transformations in which proximity=1

Figure 3.60 illustrates nonatonic transformations in which proximity=1. The figure shows two staves of music, each containing several pairs of chords connected by double-headed arrows, representing transformations between nonatonic chords.

Staff 1 (Upper ↔ Upper):

- N₁₋₁: CMaj7 ↔ Emin7
- N₁₋₂: C7 ↔ E^b7
- N₁₋₃: Cmin7 ↔ E^bMaj7
- N₁₋₄: BMaj7 ↔ C⁰M7
- N₁₋₅: C⁰7 ↔ E^bmM7

Staff 2 (Upper ↔ Middle and Upper ↔ Lower):

- N₁₋₆: BMaj7 ↔ C⁰7
- N₁₋₇: C7 ↔ F[#]7^(b5)
- N₁₋₈: CMaj7^(b5) ↔ F[#]7^(b5)
- N₁₋₉: C⁰7 ↔ F[#]7^(b5)

Table 3.9 – comprehensive nonatonic transformations in which proximity=2

Position	Name	Mapping	Root Motion	$P_{m,n}$	Childs Transformation
Upper ↔ Upper	N ₂₋₁	Maj7 ↔ 7	4/8	P _{1,1}	S ₅₍₅₎ /S ₅₍₆₎
	N ₂₋₂	Maj7 ↔ ø7	4/8	P _{1,1}	C ₃₍₁₎ /C ₃₍₄₎
	N ₂₋₃	7 ↔ Min7	4/8	P _{1,1}	S ₃₍₂₎ /S ₃₍₃₎
	N ₂₋₄	7 ↔ 7 ^(b5)	4/8	P _{1,1}	S ₆₍₅₎ /S ₆₍₆₎
	N ₂₋₅	Min-Maj7 ↔ Min7	4/8	P _{1,1}	S ₄₍₃₎ /S ₄₍₂₎
	N ₂₋₆	Maj7 ^(b5) ↔ 7	4/8	P _{0,2}	P ₅₍₆₎ /P ₅₍₆₎
	N ₂₋₇	Maj7 ^(b5) ↔ Min7	4/8	P _{1,1}	S ₅₍₆₎ /S ₅₍₅₎
	N ₂₋₈	Min7 ↔ ø7	4/8	P _{1,1}	S ₃₍₃₎ /S ₃₍₂₎
	N ₂₋₉	7 ^(b5) ↔ 7 ^(b5)	4/8	P _{0,2}	P ₆₍₆₎ /P ₆₍₆₎
	N ₂₋₁₀	7 ^(b5) ↔ ø7	4/8	P _{1,1}	S ₆₍₆₎ /P ₆₍₅₎
Upper ↔ Middle	N ₂₋₁₁	Maj7 ↔ Maj7	5/7	P _{0,2}	P ₄₍₄₎ /P ₄₍₄₎
	N ₂₋₁₂	7 ↔ Maj7	3/9	P _{1,1}	C ₃₍₄₎ /C ₃₍₁₎
	N ₂₋₁₃	Min-Maj7 ↔ 7	5/7	P _{0,2}	P ₃₍₄₎ /P ₃₍₄₎
	N ₂₋₁₄	Min-Maj7 ↔ Maj7	3/9	P _{1,1}	C ₄₍₁₎ /C ₄₍₄₎
	N ₂₋₁₅	Maj7 ↔ Maj7 ^(b5)	1/11	P _{1,1}	S ₅₍₅₎ /S ₅₍₄₎
	N ₂₋₁₆	Min-Maj7 ↔ Maj7 ^(b5)	1/11	P _{0,2}	P ₅₍₄₎ /P ₅₍₄₎
	N ₂₋₁₇	Min7 ↔ Min-Maj7	3/9	P _{1,1}	C ₅₍₅₎ /C ₅₍₄₎
	N ₂₋₁₈	Maj7 ↔ Min7	1/11	P _{2,0}	P ₅₍₅₎ /P ₅₍₅₎
	N ₂₋₁₉	7 ^(b5) ↔ Min-Maj7	3/9	P _{1,1}	C ₄₍₄₎ /C ₄₍₁₎
	N ₂₋₂₀	Maj7 ↔ 7 ^(b5)	1/11	P _{2,0}	P ₄₍₄₎ /P ₄₍₄₎
	N ₂₋₂₁	Min-Maj7 ↔ 7 ^(b5)	1/11	P _{1,1}	S ₄₍₃₎ /S ₄₍₄₎

	N ₂₋₂₂	Dim-Maj7 ↔ Min-Maj7	3/9	P _{1,1}	C ₃₍₁₎ /C ₃₍₄₎
	N ₂₋₂₃	Min-Maj7 ↔ Dim-Maj7	1/11	P _{1,1}	S ₅₍₄₎ /S ₅₍₃₎
	N ₂₋₂₄	ø7 ↔ Maj7	3/9	P _{1,1}	S ₅₍₆₎ /S ₅₍₅₎
	N ₂₋₂₅	Min-Maj7 ↔ ø7	1/11	P _{2,0}	P ₄₍₃₎ /P ₄₍₃₎
Upper ↔ Lower	N ₂₋₂₆	Maj7 ↔ 7 ^(b5)	6/6	P _{2,0}	P ₄₍₄₎ /P ₄₍₄₎
	N ₂₋₂₇	7 ^(b5) ↔ 7	2/10	P _{1,1}	S ₆₍₆₎ /S ₆₍₅₎
	N ₂₋₂₈	Min7 ↔ 7 ^(b5)	6/6	P _{1,1}	C ₂₍₄₎ /C ₂₍₂₎
	N ₂₋₂₉	7 ^(b5) ↔ 7 ^(b5)	2/10	P _{0,2}	P ₆₍₆₎ /P ₆₍₆₎
	N ₂₋₃₀	Dim-Maj7 ↔ 7 ^(b5)	6/6	P _{1,1}	C ₆₍₄₎ /C ₆₍₆₎
	N ₂₋₃₁	ø7 ↔ 7 ^(b5)	2/10	P _{1,1}	S ₆₍₅₎ /S ₆₍₆₎
Middle ↔ Lower	N ₂₋₃₂	7 ^(b5) ↔ Maj7	5/7	P _{2,0}	P ₄₍₄₎ /P ₄₍₄₎
	N ₂₋₃₃	Min-Maj7 ↔ 7 ^(b5)	3/9	P _{1,1}	C ₄₍₁₎ /C ₄₍₄₎
	N ₂₋₃₄	7 ^(b5) ↔ Min-Maj7	5/7	P _{1,1}	S ₄₍₄₎ /S ₄₍₃₎

Figure 3.61 – illustrations of nonatonic transformations in which proximity=2

Figure 3.61 illustrates 28 nonatonic transformations (N2-1 to N2-28) in which proximity=2. Each transformation is shown on a musical staff with a treble clef, displaying the two chords involved and their relationship.

The transformations are as follows:

- N2-1: CMaj7 to E7
- N2-2: CMaj7 to E°7
- N2-3: C7 to Emin7
- N2-4: C7 to E7⁽⁵⁾
- N2-5: CmM7 to Emin7
- N2-6: CMaj7⁽⁵⁾ to E7
- N2-7: CMaj7⁽⁵⁾ to Emin7
- N2-8: Cmin7 to E°7
- N2-9: C7⁽⁵⁾ to E7⁽⁵⁾
- N2-10: C7⁽⁵⁾ to E°7
- N2-11: GMaj7 to CMaj7
- N2-12: C7 to E♭Maj7
- N2-13: GmM7 to C7
- N2-14: CmM7 to E♭Maj7
- N2-15: BMaj7 to CMaj7⁽⁵⁾
- N2-16: BmM7 to CMaj7⁽⁵⁾
- N2-17: Cmin7 to E♭mM7
- N2-18: BMaj7 to Cmin7
- N2-19: C7⁽⁵⁾ to E♭mM7
- N2-20: BMaj7 to C7⁽⁵⁾
- N2-21: BmM7 to C7⁽⁵⁾
- N2-22: C°M7 to E♭mM7
- N2-23: BmM7 to C°M7
- N2-24: C°7 to E♭Maj7
- N2-25: BmM7 to C°7
- N2-26: CMaj7 to F♯7⁽⁵⁾
- N2-27: B♭7⁽⁵⁾ to C7
- N2-28: Cmin7 to F♯7⁽⁵⁾

Figure 3.61 continued – illustrations of nonatonic transformations in which proximity=2

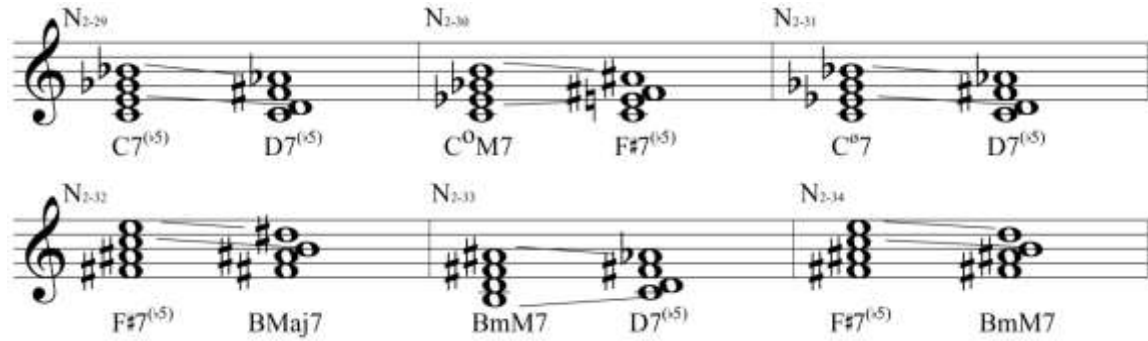


Table 3.10 – comprehensive nonatonic transformations in which proximity=3

Position	Name	Mapping	Root Motion	$P_{m,n}$	Closest Compound(s)
Upper ↔ Upper	N ₃₋₁	Maj7 ↔ 7 ⁽⁵⁾	4/8	P _{2,1}	N ₂₋₁ + CQ
	N ₃₋₂	7 ↔ 7	4/8	P _{2,1}	CQ + N ₂₋₁
	N ₃₋₃	Min-Maj7 ↔ 7	4/8	P _{2,1}	CQ + N ₂₋₁ , N ₂₋₅ + CQ
	N ₃₋₄	Min-Maj7 ↔ ø7	4/8	P _{2,1}	CQ + N ₂₋₂ , CQ + N ₂₋₈
	N ₃₋₅	Maj7 ⁽⁵⁾ ↔ 7 ⁽⁵⁾	4/8	P _{1,2}	N ₂₋₆ + CQ, CQ + N ₂₋₉
	N ₃₋₆	Maj7 ⁽⁵⁾ ↔ ø7	4/8	P _{2,1}	CQ + N ₂₋₂ , N ₂₋₇ + CQ
	N ₃₋₇	Min7 ↔ Min7	4/8	P _{2,1}	CQ + N ₂₋₃ , CQ+N ₂₋₅ , N ₂₋₈ + CQ
	N ₃₋₈	Min7 ↔ 7 ⁽⁵⁾	4/8	P _{2,1}	CQ + N ₂₋₄ , N ₂₋₈ + CQ
	N ₃₋₉	7 ⁽⁵⁾ ↔ 7	4/8	P _{2,1}	CQ + N ₂₋₆ , N ₂₋₉ + CQ
	N ₃₋₁₀	7 ⁽⁵⁾ ↔ Min7	4/8	P _{2,1}	CQ + N ₂₋₃ , CQ + N ₂₋₇ , N ₂₋₁₀ + CQ
	N ₃₋₁₁	Dim-Maj7 ↔ 7	4/8	P _{1,2}	CQ + N ₂₋₆
	N ₃₋₁₂	Dim-Maj7 ↔ Min7	4/8	P _{2,1}	CQ + N ₂₋₅ , CQ + N ₂₋₇
	N ₃₋₁₃	ø7 ↔ Maj7	4/8	P _{1,2}	n/a

	N ₃₋₁₄	$\emptyset 7 \leftrightarrow \text{Maj} 7^{(5)}$	4/8	P _{0,3}	n/a
	N ₃₋₁₅	$\emptyset 7 \leftrightarrow 7^{(5)}$	4/8	P _{1,2}	CQ + N ₂₋₉
	N ₃₋₁₆	$\emptyset 7 \leftrightarrow \emptyset 7$	4/8	P _{2,1}	CQ + N ₂₋₈ , CQ + N ₂₋₁₀
Upper ↔ Middle	N ₃₋₁₇	Maj7 ↔ Maj7	3/9	P _{2,1}	CQ + N ₂₋₁₂ , CQ + N ₂₋₁₄
	N ₃₋₁₈	Min-Maj7 ↔ Maj7	5/7	P _{1,2}	CQ + N ₂₋₁₁ , N ₂₋₁₃ + CQ
	N ₃₋₁₉	Maj7 ↔ Maj7	1/11	P _{2,1}	N ₂₋₁₅ + CQ
	N ₃₋₂₀	Min-Maj7 ↔ Maj7	1/11	P _{1,2}	N ₂₋₁₆ + CQ
	N ₃₋₂₁	7 ↔ Min-Maj7	3/9	P _{2,1}	N ₂₋₁₂ +CQ, CQ+N ₂₋₁₇ , CQ+N ₂₋₁₉
	N ₃₋₂₂	Maj7 ↔ 7	5/7	P _{1,2}	N ₂₋₁₁ + CQ, CQ + N ₂₋₁₃
	N ₃₋₂₃	Maj7 ↔ 7	1/11	P _{3,0}	N ₂₋₁₈ + CQ, N ₂₋₂₀ + CQ
	N ₃₋₂₄	Min-Maj7 ↔ 7	1/11	P _{2,1}	N ₂₋₂₁ + CQ
	N ₃₋₂₅	Min-Maj7 ↔ Min-Maj7	1/11	P _{2,1}	N ₂₋₂₃ + CQ
	N ₃₋₂₆	Min-Maj7 ↔ Min-Maj7	3/9	P _{2,1}	N ₂₋₁₄ +CQ, CQ+N ₂₋₁₇ , CQ+N ₂₋₂₂
	N ₃₋₂₇	Maj7 ↔ Min-Maj7	1/11	P _{3,0}	N ₂₋₁₈ + CQ
	N ₃₋₂₈	$\text{Maj} 7^{(5)} \leftrightarrow \text{Min-Maj} 7$	3/9	P _{2,1}	CQ + N ₂₋₁₉ , CQ + N ₂₋₂₂
	N ₃₋₂₉	$\text{Maj} 7 \leftrightarrow \text{Maj} 7^{(5)}$	5/7	P _{1,2}	N ₂₋₁₁ + CQ
	N ₃₋₃₀	Min-Maj7 ↔ Min7	1/11	P _{3,0}	CQ + N ₂₋₁₈ , N ₂₋₂₅ + CQ
	N ₃₋₃₁	$7^{(5)} \leftrightarrow \text{Maj} 7$	3/9	P _{2,1}	CQ+N ₂₋₁₂ , N ₂₋₁₉ +CQ, CQ+N ₂₋₂₄
	N ₃₋₃₂	Min-Maj7 ↔ $7^{(5)}$	5/7	P _{1,2}	N ₂₋₁₃ + CQ
	N ₃₋₃₃	Dim-Maj7 ↔ Maj7	3/9	P _{2,1}	CQ+N ₂₋₁₄ , N ₂₋₂₂ +CQ, CQ+N ₂₋₂₄
Upper ↔ Lower	N ₃₋₃₄	$7^{(5)} \leftrightarrow \text{Maj} 7$	2/10	P _{2,1}	N ₂₋₂₇ + CQ
	N ₃₋₃₅	$7 \leftrightarrow 7^{(5)}$	2/10	P _{1,2}	CQ + N ₂₋₂₉
	N ₃₋₃₆	Min-Maj7 ↔ $7^{(5)}$	6/6	P _{3,0}	CQ+N ₂₋₂₆ , CQ+N ₂₋₂₈ , CQ+N ₂₋₃₀

	N ₃₋₃₇	7 ^(b5) ↔ Maj7 ^(b5)	2/10	P _{1,2}	N ₂₋₂₉ + CQ
	N ₃₋₃₈	Min7 ↔ 7 ^(b5)	2/10	P _{2,1}	CQ + N ₂₋₃₁
	N ₃₋₃₉	7 ^(b5) ↔ Min7	2/10	P _{2,1}	N ₂₋₂₇ + CQ
	N ₃₋₄₀	7 ^(b5) ↔ ø7	2/10	P _{2,1}	N ₂₋₂₉ + CQ
Middle ↔ Lower	N ₃₋₄₁	Maj7 ↔ 7 ^(b5)	3/9	P _{2,1}	CQ + N ₂₋₃₃
	N ₃₋₄₂	7 ^(b5) ↔ Min-Maj7	1/11	P _{1,2}	n/a

Figure 3.62 – illustrations of nonatonic transformations in which proximity=3

Figure 3.62 displays 21 musical examples (N₃₋₁ to N₃₋₂₁) illustrating nonatonic transformations where proximity=3. Each example shows two chords connected by a double-headed arrow, indicating a transformation. The chords are labeled with standard musical notation.

- N₃₋₁: CMaj7 ↔ E7^(b5)
- N₃₋₂: C7 ↔ E7
- N₃₋₃: CmM7 ↔ E7
- N₃₋₄: CmM7 ↔ E^ø7
- N₃₋₅: CMaj7^(b5) ↔ E7^(b5)
- N₃₋₆: CMaj7^(b5) ↔ E^ø7
- N₃₋₇: Cmin7 ↔ Emin7
- N₃₋₈: Cmin7 ↔ E7^(b5)
- N₃₋₉: C7^(b5) ↔ E7
- N₃₋₁₀: C7^(b5) ↔ Emin7
- N₃₋₁₁: C^øM7 ↔ E7
- N₃₋₁₂: C^øM7 ↔ Emin7
- N₃₋₁₃: C^ø7 ↔ EMaj7
- N₃₋₁₄: C^ø7 ↔ EMaj7^(b5)
- N₃₋₁₅: C^ø7 ↔ E7^(b5)
- N₃₋₁₆: C^ø7 ↔ E^ø7
- N₃₋₁₇: CMaj7 ↔ E^bMaj7
- N₃₋₁₈: GmM7 ↔ CMaj7
- N₃₋₁₉: BMaj7 ↔ CMaj7
- N₃₋₂₀: BmM7 ↔ CMaj7
- N₃₋₂₁: C7 ↔ E^bmM7

N₃₋₂₂ GMaj7 C7
 N₃₋₂₃ BMaj7 C7
 N₃₋₂₄ BmM7 C7
 N₃₋₂₅ BmM7 CmM7
 N₃₋₂₆ CmM7 E^bmM7
 N₃₋₂₇ BMaj7 CmM7
 N₃₋₂₈ CMaj7⁽⁵⁾ E^bmM7
 N₃₋₂₉ GMaj7 CMaj7⁽⁵⁾
 N₃₋₃₀ BmM7 Cmin7
 N₃₋₃₁ C7⁽⁵⁾ E^bMaj7
 N₃₋₃₂ GmM7 C7⁽⁵⁾
 N₃₋₃₃ C⁰M7 E^bMaj7
 N₃₋₃₄ B^b7⁽⁵⁾ CMaj7
 N₃₋₃₅ C7 D7⁽⁵⁾
 N₃₋₃₆ CmM7 F[#]7⁽⁵⁾
 N₃₋₃₇ B^b7⁽⁵⁾ CMaj7⁽⁵⁾
 N₃₋₃₈ Cmin7 D7⁽⁵⁾
 N₃₋₃₉ B^b7⁽⁵⁾ Cmin7
 N₃₋₄₀ B^b7⁽⁵⁾ C⁰7
 N₃₋₄₁ BMaj7 D7⁽⁵⁾
 N₃₋₄₂ B^b7⁽⁵⁾ BmM7

As in Table 3.6, Table 3.10 shows the closest compound transformations that achieve the same mapping as the proximity 3 transformations. Four of the transformations that appeared in Table 3.6 with no viable compound transformation appear here with an acceptable compound. Of these, two (N₃₋₁₉ and N₃₋₂₀) use a compound that contains a Maj7⁽⁵⁾ harmony as an intermediary, one (N₃₋₂₄) contain a 7⁽⁵⁾ and the remaining transformation (N₃₋₂₅) contains a diminished-major seventh chord. The N₃₋₁₃ transformation is still listed as possessing no closest compound, as does the adjacent transformation N₃₋₁₄ which maps a half-diminished seventh onto a Maj7⁽⁵⁾ by root interval of 4/8. These transformations are the only ones in which the root moves to become the fifth of the resulting chord when the root changes by an ordered interval of 4,

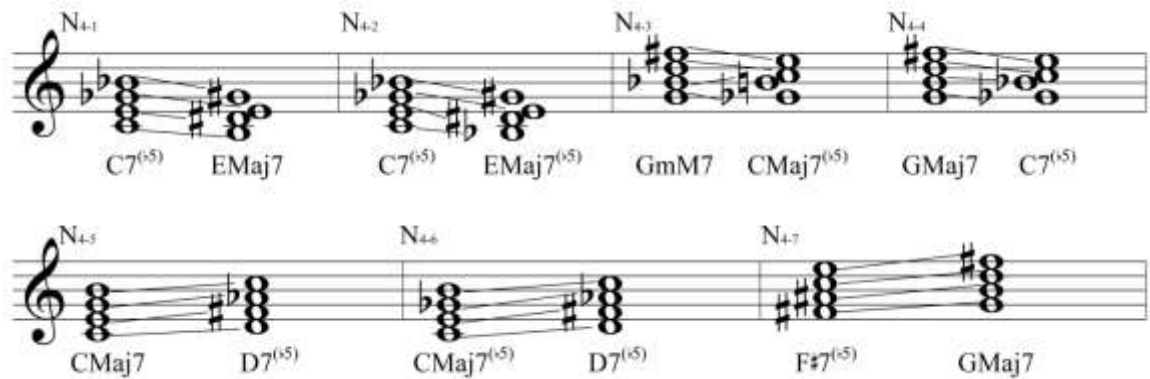
a peculiarity already noted. The final transformation lists another instance where no closest compound can be given. This transformation, N_{3-42} , maps a $7^{(b5)}$ onto a minor-major seventh by root motion of 1/11. It can therefore be found only in motions where the root migrates from the lower class to the middle class.

The three additional chord types also provide the opportunity for an unusual type of seventh chord transformation. As in the above transformations, these new types join two chords that share at least one constituent pitch-class and in which allowable voice motion is restricted to a distance of a semitone or whole tone. However, what makes these transformations unusual is that their relationship measure adds up to four. As expressed by $P_{m,n}$ these are transformations in which $m+n=4$, meaning that all four tones within the seventh chord move and one tone maps onto a pitch class that is present in the originating chord. Table 3.11 catalogues the “Proximity 4” nonatonic transformations, of which there are only seven. Two of these transformations resemble N_{3-13} and N_{3-14} with root to fifth mapping as described above. The last of these, N_{4-7} , resemble N_{3-42} in which all voices ascend. The two preceding transformations on the table, N_{4-5} and N_{4-6} , are characterized by similar motion but cannot be described as having a closest compound in the same fashion as the other transformations listed on Table 3.11. Figure 3.63 provides illustrations of each of these transformations.

Table 3.11 – nonatonic transformations in which proximity=4

Position	Name	Mapping	Root Motion	$P_{m,n}$	Closest Compound(s)
Upper ↔ Upper	N ₄₋₁	7 ^(b5) ↔ Maj7	4/8	P _{2,2}	CQ + N ₃₋₁₃
	N ₄₋₂	7 ^(b5) ↔ Maj7 ^(b5)	4/8	P _{1,3}	CQ + N ₃₋₁₄
Upper ↔ Middle	N ₄₋₃	Min-Maj7 ↔ Maj7 ^(b5)	5/7	P _{2,2}	N ₃₋₁₈ + CQ, N ₃₋₃₂ + CQ
	N ₄₋₄	Maj7 ↔ 7 ^(b5)	5/7	P _{2,2}	N ₃₋₂₂ + CQ, N ₃₋₂₉ + CQ
Upper ↔ Lower	N ₄₋₅	Maj7 ↔ 7 ^(b5)	2/10	P _{2,2}	n/a
	N ₄₋₆	Maj7 ^(b5) ↔ 7 ^(b5)	2/10	P _{1,3}	n/a
Middle ↔ Lower	N ₄₋₇	7 ^(b5) ↔ Maj7	1/11	P _{2,2}	N ₃₋₄₂ + CQ

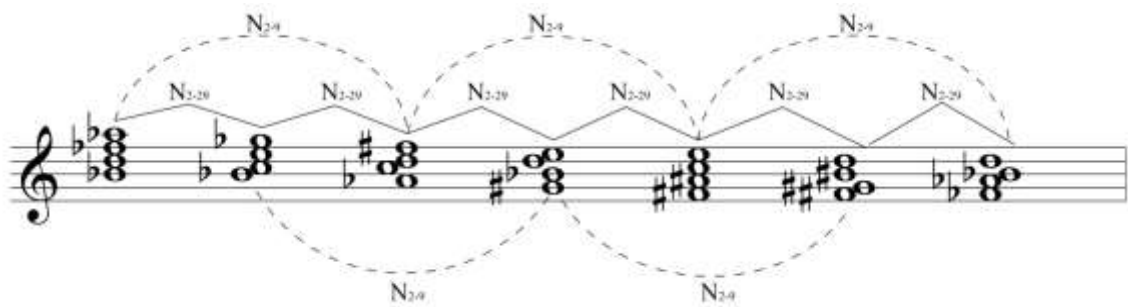
Figure 3.63 – illustrations of nonatonic transformations in which proximity=4



The complete listing of nonatonic transformations includes two new P_{0,2} transformations that maintain chord quality, N₂₋₉ and N₂₋₂₉. Both of these involve the 7^(b5) quality, and move by an interval of either 4/8, in the case of N₂₋₉, or 2/10, in the case of N₂₋₂₉. Repeated use of these transformations divides the octave symmetrically, and two

repeated N_{2-29} transformations are the equivalent of one N_{2-9} transformation. An illustration of a cycle of these transformations is given in Figure 3.64. The cycle of N_{2-29} transformations harmonizes the constituent whole tone scale found within a nonatonic collection; in this case the cycle moves through the following chords: $B^b7^{(b5)}$, $C7^{(b5)}$, $D7^{(b5)}$, $E7^{(b5)}$, $F^{\sharp}7^{(b5)}$, $G^{\sharp}7^{(b5)}$, and then returning to $B^b7^{(b5)}$.

Figure 3.64 – illustration of N_{2-9} and N_{2-29} nonatonic cycles



The cycle exploits the intervallic symmetry found within the (0268) set class in two significant ways. First, only three pitch sets are present. $B^b7^{(b5)}$ has the same tones as $E7^{(b5)}$, in the same way that $C7^{(b5)}/F^{\sharp}7^{(b5)}$, and $D7^{(b5)}/G^{\sharp}7^{(b5)}$ are identical sets. For this reason, the cycle assembles all the pitch classes found within a single whole tone collection, with no other pitch classes included. Therefore the cycles shown above can belong to two different nonatonic collections, in this case NON-1 or NON-3. A similar harmonization of the opposing whole tone scale could link itself to either NON-2 or NON-4.

These transformations provide one means of explaining the errant incomplete seventh chords in an excerpt of Messiaen's *Thème et Variations* first considered in Figures 3.24 and 3.26. Figure 3.65 reproduces the analysis given in Figure 3.26 with

0explanations of the implied seventh chords included. The N_{2-29} transformation helps explain the movement from the incomplete $F^{\#}7$ to the incomplete $E7$ with $E^b m$ acting as an intermediary. While it is true that the N_{2-29} transformation connects $7^{(b5)}$ quality chords, these harmonies are missing their fifth, and the fifth of the chord does not participate in the voice-leading of N_{2-29} . Use of Harrison's discharge functions could also be useful, since the missing fifth leaves (026) trichords. The motion from $F^{\#}7$ to $E^b m$ could be explained as a D_b discharge function, but would need to involve mode change, as the discharge functions privilege resolutions to major triads rather than minor triads. Similar to the incomplete N_{2-29} transformations described above, a missing tone of G facilitates two complete N_{2-11} transformations in the third and fourth measures of the example. As before, this tone does not participate in the voice-leading of the transformation.

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Figure 3.65 – Messiaen, *Thème et Variations* 36-41, Left Hand of the Piano

The musical score for the left hand of the piano in Messiaen's *Thème et Variations*, measures 36-41, is shown. The chords are labeled as follows:

- Measure 36: E_b^+
- Measure 37: EM
- Measure 38: Gm
- Measure 39: $G^{\#0}$
- Measure 40: $A^{\#}M$ (E_bMaj7)
- Measure 41: $A^{\#}M$
- Measure 42: E_b^+
- Measure 43: $F^{\#}7$
- Measure 44: E_bm
- Measure 45: $E7$

The transformations are labeled as follows:

- $P'3P$, PRP , $PP'1$, $P'4P$ are labeled above the first four measures.
- N_{2-11} is labeled above the fifth and sixth measures, with a bracket indicating the transformation between them.
- $PP'3$ is labeled above the seventh measure.
- N_{2-29} is labeled above the eighth and ninth measures, with a dashed bracket indicating the transformation between them.

The ability of the nonatonic collection to form basic tertian sonorities and to link to almost all commonly utilized modal scale-types and symmetrical collections allows it to function as a connecting thread among seemingly disparate musical elements. The next chapter explores these properties in detail as significant pitch-structural elements in Vaughan Williams's Fourth Symphony.

CHAPTER 4:

AN ANALYSIS OF VAUGHAN WILLIAMS'S FOURTH SYMPHONY

4.1 Genesis and Immediate Reception

A particularly productive and innovative period in Vaughan Williams's output begins in 1923 and runs for a little more than a decade.¹ At the onset of this period is *Sancta Civitas* (1923-25), a biblical oratorio featuring passages of dissonance and indeterminate tonality, qualities that characterize many of the works of this period. Around the same time Vaughan Williams completed the Concerto for violin and strings (1924-5), an excursion into neo-classicism of the "back to Bach" sort, and also the strikingly original *Flos campi* (1925), a suite for solo viola, with small chorus and orchestra. In *Flos campi*, the music for the chorus is wordless; the only hint at philological meaning comes from Latin quotations taken from the *Song of Songs* given at the beginning of each movement. The Piano Concerto, discussed in Chapter Two of this dissertation, belongs with these exploratory works as does the one-act opera *Riders to the Sea* (1925-32), noted for utilizing octatonicism to evoke the sorrowful portions of the plot.² The ballet *Job* (1927-30) uses a wide range of musical styles, tonal for God and angular and dissonant for Satan.

The Symphony in F minor (1931-34), the Fourth, culminates this period of compositional exploration. While the Fourth Symphony is the foremost of a set of related

¹ Michael Kennedy has referred to this time as Vaughan Williams's most "fertile period," see Michael Kennedy, "Fluctuations in the response to the music of Ralph Vaughan Williams," in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 280.

² Walter Aaron Clark, "Vaughan Williams and the 'Night Side of Nature': Octatonicism in *Riders to the Sea*", in *Vaughan Williams Essays*, edited by Byron Adams and Robin Wells (Burlington, VT: Ashgate Publishing Co., 2003), 55-72.

works of recognized quality and originality, the attributed inspiration is somewhat astonishing in its stark banality. Vaughan Williams claimed that he had read a critic's account of a concert of modern music, referred to as a "Freak Festival," which featured the performance of a new symphony. Based on the account, Vaughan Williams decided that he would write a modern symphony, and "without any philosophical, prophetic, or political germ, [the Fourth Symphony] took its life from a paragraph in *The Times*."³

While the initial impetus may have lacked a forceful intellectual foundation, the end result is both forceful and intellectual. The influence of Holst is felt in the score, and Holst heard an early draft in January 1932. Vaughan Williams involved Holst throughout the early composing of the work. Late in 1933 a letter from Vaughan Williams alludes to some of the objections his friend and colleague seems to have raised: "The 'nice' tunes in the finale have already been replaced by better ones (at all events they are *real* ones). What I mean is that I *knew* the others were made-up stuff and these are not. So there we are."⁴ Holst's advice may not have been restricted to melodic materials; Holst is known to have made suggestions on all manner of musical parameters in previous works. However, Holst's death in May 1934 meant that his valued advice was suddenly unavailable, and a large stretch of time runs from Holst's passing to the premiere of Vaughan Williams's new symphony in April 1935. Vaughan Williams consulted with Bax on the work, and while the exact nature of the younger composer's contributions is unknown it is at least acknowledged that Bax would have provided suggestions on matters of orchestration. As recounted in Chapter Two of this dissertation, Bliss and

³ Ursula Vaughan Williams, *R. V. W.: A Biography of Ralph Vaughan Williams* (London: Oxford University Press, 1973), 190.

⁴ Ralph Vaughan Williams and Gustav Holst, *Heirs and Rebels: Letters written to each other and occasional writings*, edited by Ursula Vaughan Williams and Imogen Holst (London, Oxford University Press, 1959), 84.

others sat in “jury” at a piano rendering of a late version of the Fourth Symphony.

Despite the loss of Holst, Vaughan Williams did not lack for counsel.

The audience enthusiastically applauded the premiere of the Fourth Symphony, given by Boult leading the BBC Symphony Orchestra at Queen’s Hall on April 10, 1935. Reviews were mixed, though positive assessments outweighed the negative. Edwin Evans, a staunch champion of Bax, described the Fourth Symphony as a “vigorous, uncompromising work, with no superfluous matter about it, only downright assertions.”⁵ H. C. Colles, more guarded in his acclaim, thought that Vaughan Williams had been spurred “to venture into a larger and freer-spoken world that he had sought before,” and that the inspiration for this had come from Bax.⁶ Eric Blom (1888-1959), writing in the *Birmingham Post*, noted the relation between the Fourth Symphony and previous works such as *Job*, and the Piano Concerto. He found the dissonant polyphony to be as uncompromising as anything the younger generation (i.e. Walton) might put forth, and that the symphony was at its core “tremendously strong, convincing and wonderfully devised.”⁷ Henry Wood put it another way, commenting that the Fourth Symphony was Vaughan Williams’s way of “beating the moderns at their own game.”⁸ William McNaught, writing in the *Musical Times*, thought the new work to be masterly.⁹ Elizabeth Trevalyan, a friend of the composer’s, wrote in a private letter that the Fourth Symphony was an advance from Vaughan Williams’s previous compositions that featured a “vastly wider and profounder emotional range.”¹⁰

⁵ Quoted in Michael Kennedy, *The Works of Ralph Vaughan Williams* (London: Oxford University Press, 1980), 244.

⁶ *Ibid.*

⁷ *Ibid.*

⁸ James Day, *Vaughan Williams* (London: Oxford University Press, 1998), 67.

⁹ Kennedy, *The Works of Ralph Vaughan Williams*, 244.

¹⁰ *Ibid.*, 245.

While unified in their praise, there is a striking disunity among these accounts on the aspects which are praiseworthy. Some, like Evans and Blom, commend the intellectual rigor of the Fourth Symphony while others, like Colles and Trevalyan, emphasize emotional impact above academic structure. The same wide spectrum of rationale can be found among the early detractors; some felt it was too modern to be comprehensible, while others heard it as not modern enough. Ernest Newman (1868-1959), the celebrated music critic of *The Sunday Times*, initially found the Fourth Symphony less original than Walton's Symphony, of which three movements had been performed four months prior. Neville Cardus (1888-1975), writing in the *Manchester Guardian*, found the Fourth Symphony to be old-fashioned and thought it strange that while Vaughan Williams had "discarded the idioms and general emotional tones of pre-war English music, [he] had stopped short of post-war freedom of rhythm and...harshness of dissonance."¹¹ Others found in it nothing more than "clever academic music" with the aim to stir the very "depths of pessimism."¹²

Among the critical voices that raised objections to Vaughan Williams's Fourth Symphony is Vaughan Williams himself. During the first rehearsals, Vaughan Williams was noted to have said, "I don't know whether I like it, but it's what I meant."¹³ In a later rehearsal he is noted to have told the orchestra, "Gentlemen. If this is modern music, you can keep it!" His most complete comments on his intentions behind the Fourth Symphony are found in a 1937 letter:

When you say you do not think my F mi. symph. beautiful my answer *must* be that *I do* think it beautiful – not that I did not *mean* it to be beautiful

¹¹ Kennedy, *The Works of Ralph Vaughan Williams*, 244.

¹² *Ibid.*, 244-5.

¹³ *Ibid.*, 246.

because it reflects unbeautiful times – because we know that beauty can come from unbeautiful things (e.g. King Lear, Rembrandt’s School of Anatomy, Wagner’s *Niebelungs*, etc.)...I am not at all sure that I like it myself *now*. All I know is that it is what I wanted to do *at the time*...I wrote it not as a definite picture of anything external – e.g. the state of Europe – but simply because it occurred to me like this...¹⁴

Here Vaughan Williams refers to a common programmatic ascription that has been laid on the Fourth Symphony since its earliest performances. One admirer, in a letter written within a year of the first performance, stated that the Fourth Symphony could well have been titled “Europe, 1935.”¹⁵ Adrian Boult liked to make claims of Vaughan Williams “foreseeing the whole thing,” in this case the entirety of the Second World War.¹⁶ If Vaughan Williams’s comments are to be taken as definitive, these things were not on his mind while the symphony was being written. As Michael Kennedy reports, when Vaughan Williams was asked what his Fourth Symphony really meant, “his answer was ‘F minor’.”¹⁷

If German military mobilization was far from Vaughan Williams’s mind during the composition of the Fourth Symphony, it is likely that another form of Germanic hegemony was very much a concern. James Day has referred to the Fourth Symphony as a kind of “nightmare version of Beethoven’s Fifth.”¹⁸ On the most obviously formal level, the Scherzo of Vaughan Williams’s Fourth Symphony ends in a nebulous transition

¹⁴ Kennedy, *The Works of Ralph Vaughan Williams*, 247.

¹⁵ *Ibid.*, 246.

¹⁶ Day, *Vaughan Williams*, 67.

¹⁷ Kennedy, “Fluctuations in the response to the music of Ralph Vaughan Williams,” 283.

¹⁸ Day, *Vaughan Williams*, 99. Day introduces the term *marche macabre* to describe the final movement of Vaughan Williams’s Fourth Symphony.

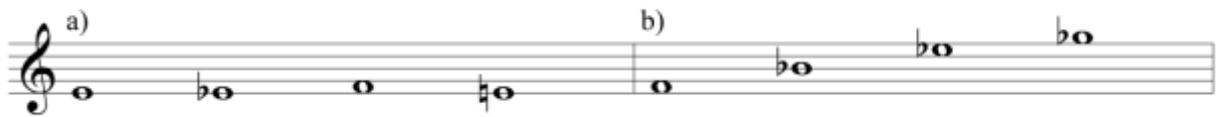
that segues directly into a march for the Finale. However, the Beethovenian *marche triomphale*, begun by three heroic CM triads, is transformed by Vaughan Williams into a *marche macabre* that opens with three bombastic triads: FM, AM, and DM. Another Beethoven reference seems to have also been at work in the Fourth Symphony: Vaughan Williams claimed that the opening of the first movement was cribbed from the finale of Beethoven's Ninth Symphony. In Beethoven, the dissonant B^b over a Dm triad in second inversion, highlighting a minor ninth, characterized what Wagner called the "terror fanfare." In Vaughan Williams, the opening of the symphony begins with a D^b over a spare octave C.

In the musical materials just mentioned, analysis informed by knowledge of the nonatonic collection and its potential sub-structures can offer some insight. The three triads at the opening of the fourth movement contain a seven tone subset of a nonatonic collection: NON-3. NON-3 plays an important role in organizing the pitch materials of the symphony, as do its adjacent nonatonic collections, NON-2 and NON-4. The nonatonic collection arises naturally from a musical surface that navigates from highly chromatic passages toward themes that are based in twentieth-century usage of traditional modes, such as the Lydian and Phrygian. The following analysis uses the preceding theoretical discussion of the nonatonic collection and its pitch-structural potential to reveal the common thread to which the pitch materials of the symphony can be related.

4.2 First Movement: *Allegro*

Vaughan Williams's program note for the Fourth Symphony points out the two main motives of the symphony, shown in Figure 4.1.¹⁹ The first motive (Figure 4.1.a) is a four-note figure consisting of two descending semitones while the second (Figure 4.1.b) is an ascending figure of perfect fourths followed by a minor third. Both motives are heard within the first 20 measures of the first movement and recurrences and transformations of these motives saturate the entirety of the symphony. Most analyses of the Fourth Symphony focus on these motives; of these the analysis by Lionel Pike deserves the greatest praise in showing how the first of these motives projects a scheme of referential pitch-classes.²⁰ Pike's focus on the first of the two main motives leads him to describe it as a "flattened-out B-A-C-H motive" and points out the instances of full statements of a transposed "B-A-C-H" motive as being a signifier for the composer's intention to confront Germanic musical hegemony in this symphony. In his program note, Vaughan Williams is adamant that his first motive is not the "B-A-C-H" motive, even though one such motive appears in measures 3-5 of the opening.

Figure 4.1 – the two main motives of the Fourth Symphony



¹⁹ Vaughan Williams's program note on the Fourth Symphony can be found in Kennedy, *A Catalogue of the Works of Ralph Vaughan Williams* (London: Oxford University Press, 1982), 157-160.

²⁰ Lionel Pike, *Vaughan Williams and the Symphony* (London: Toccata Press, 2003), 114. The idea of the "flattened-out B-A-C-H" is first discussed on page 113.

In trying to reconcile the symphony's disparate pitch materials, which range from dissonant chromatic pitch space to more consonant, mode-based tertian harmonies that often feature the Lydian or Phrygian modes, it is advantageous to take Vaughan Williams at his word and accept the main motive as the four-note figure of two descending semitones rather than the full "B-A-C-H" motive that spans three semitones. The advantage comes in recognizing that the two motives given in Figure 4.1 are both subsets of the same nonatonic collection. The nonatonic collection is the key to navigating between chromatic pitch-space and diatonic pitch space, as Figure 4.2 shows.²¹ In Figure 4.2, level d is chromatic pitch space, level c is nonatonic (NON-3) pitch space, and level b is modal (T_5 of 6-Z26) pitch space. As shown, level b is a six-note subset of an F Phrygian scale, noted by Pike and others to be an important structuring scale of Vaughan Williams's Fourth Symphony. As the nonatonic collection maintains identity at T_4 , enacting T_4 transformations of level b yield pc collections of (9T0245), a six-note subset of D Aeolian, and (12568T), a six-note subset of D Lydian. D Aeolian and D Lydian are both important structuring scales in the S and C rotations of the Fourth Symphony's first movement. In this way, level b intersects with modal (i.e. diatonic) pitch space and chromatic pitch space (level d) through the nonatonic collection (level c).

In Figure 4.2, level a is a proposed chord level that unifies what Pike describes as the most significant pitch centers of the Fourth Symphony: F, F^\sharp , C, and C^\sharp . Much of what occurs in the symphony seems to confirm Pike's perspective. For example, the composing out of the P theme in the first movement (see Figure 4.5) emphasizes these four pcs.

²¹ The conceptual foundation of this diagram is heavily indebted to Fred Lerdahl, *Tonal Pitch Space* (New York: Oxford University Press, 2004), 47-77.

Figure 4.2 – a proposed pitch space model for Vaughan Williams’s Fourth Symphony

a)	0	1				5	6					
b)	0	1				5	6		8		10	
c)	0	1	2		4	5	6		8	9	10	
d)	0	1	2	3	4	5	6	7	8	9	10	11

Figure 4.3 displays another pitch-space model for Vaughan Williams’s Fourth Symphony. In Figure 4.3, the (0156) set-type shown at the chord level, level a, has been replaced with an (0158) set-type. These two set-types, respectively labeled 4-8 and 4-20, share many similarities. Both are mirror sets, meaning each is symmetrical by reflection around a pc axis. They share this quality with the descending semitone motive, shown as Figure 4.1.a. There are several reasons to presume that (0158), otherwise known as the major seventh chord, may serve as a better chord exemplar in a pitch-space model of the Fourth Symphony. The harmonic foreground of the Fourth Symphony contains many major seventh chords and an R2-related²² set-type, (0148), the minor-major seventh chord featured prominently in Chapter 3 of this dissertation. In addition, (0158) contains an ic 3, while (0156) does not. Transformations by T3 and T9 characterize the distance between several adjacent pitch centers throughout the symphony, so it is advantageous for an explanatory pitch-space model to incorporate this possibility. Other adjacent pitch centers are located at distances of ordered pitch intervals 1/11, 4/8, and 5/7, each are accounted for by both (0156) and (0158). Since (0158) accounts for all of the most

²² R2 refers to a type of maximal similarity, explained in Allen Forte, *The Structure of Atonal Music* (New Haven: Yale University Press, 1973), 48.

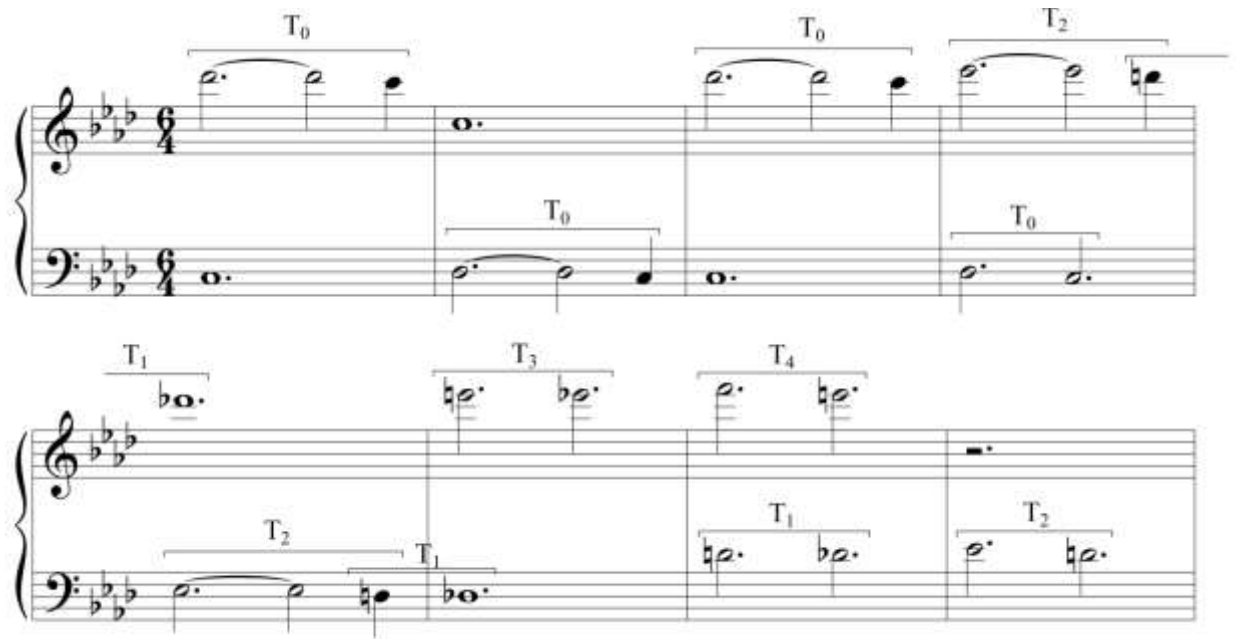
prominent T_n levels between the pitch centers of the Fourth Symphony, it seems to serve better than (0156).

Figure 4.3 – another proposed pitch space model for Vaughan Williams’s Fourth Symphony

a)	0	1				5				8		
b)	0	1				5	6		8		10	
c)	0	1	2		4	5	6		8	9	10	
d)	0	1	2	3	4	5	6	7	8	9	10	11

The prime theme area of the first movement exposition, measures 1-31, begins with an explosive statement of a descending semitone D^b above C in the treble range of the orchestra with a C positioned as far below as possible. At its closest spacing the D^b is one octave above the C in the interval between the two trumpets and the widest spacing is in the strings and woodwinds. The spacing does not significantly alleviate the tension of the dissonant semitone, and the descent from D^b to C in the upper parts is so brief that it cannot be seriously described as a resolution. Instead, the descending semitone becomes the originating cell from which the first motive is constructed. The first full statements of this motive occurs in measures 6-9, and an intervening “B-A-C-H” motive can be found in measures 3-5. Since both the first motive of the symphony and the “B-A-C-H” motive are made up of the descending semitone cell, each instance can be shown to be a transposition of the original statement, as shown in Figure 4.4.

Figure 4.4 – Tn levels of descending semitone in 1st movement, 1-8



As the transposition levels shown in Figure 4.3 increase by semitone, it follows that this portion of the prime theme can be taken as a composing out of an ascending chromatic scale. Figure 4.5 shows how this is possible in the opening 14 measures. Figure 4.5 shows Pike's "pivotal notes" as open note heads.

Figure 4.5 – contrapuntal reduction of 1st movement, 1-14



At measure 15 the second motive that opens with ascending fourths appears for the first time, stated in the trumpets accompanied by descending fifths and fourths in the low brass. Following this is an altered statement of the fourths motive in the woodwinds, which is followed by descending fourths in a dotted rhythm that is reminiscent of the first two measures. The arrangement of fourths leads to a pc collection of (T01356), which is a member of set-class 6-Z25 (013568). The pc collection, like pitch-space level b shown in Figures 4.2 and 4.3, is a six-note subset of a F-Phrygian scale, which ends this passage and leads to a restatement of the opening descending motive, this time transposed to feature a descending semitone of G^b to F.

As this passage (14-19) stands between the first and second statements of the main P material and utilizes a contrasting motivic and pc profile, it acts in the way a parenthetical statement might behave in a literary context. The restatement of the opening P material at measure 20 initiates another attempt at a composing out of the ascending chromatic scale, beginning where it left off in measure 14. However, a cadential figure featuring descending thirds closes off the P section and interrupts the progress of a background chromatic ascent. The pcs used in this cadential gesture, (5890), combine to form a member of set-class 4-17 (0347), an important nonatonic subset. In addition, the cadential gesture links the primary pitch centers of the exposition P-rotation, C and F, leaving the exposition P tonally closed. Figure 4.6 displays a contrapuntal reduction of the passage from measure 20-31.

Figure 4.6 – contrapuntal reduction of 1st movement, 20-31

The exposition P-zone exhibits an essentially ternary structure, in which the fourths motive parenthesis acts as a contrasting middle. This is a structure that is deployed with great frequency throughout the Fourth Symphony. In this case, it allows for the successive presentation of two modernist pitch techniques: dissonant chromaticism in the A section, and quartal harmonies in the B section. The pitch-materials of the quartal harmonies are in turn utilized to articulate a mode-based pitch collection, in this case F Phrygian.

The Tr that follows in measures 32-44 resembles the passage from measures 10-14 and arises from a background chromatic scale, though instead of filling in an octave C the transition is a filling in of an octave B. Some nonatonic elements begin to seep into the transition. Measures 39-42 present a modified form of the ascending figure; the pcs featured form the set (89E01345), a member of set-class 8-19 (01245689). This set-class is one of the two possible octachordal subsets of the nonatonic collection; in this case the pcs featured are a subset of NON-2. A harmonized descending semitone in measures 44-45 articulates G^bM and FM triads and forms a six-note subset of NON-3. The cadential gesture reappears at measures 46-48, and is a subset of NON-2. This is the first of several passages that present NON-2 and NON-3 in conflict.

The confrontation of NON-3 and NON-2 is played out in the exposition S. S differs from P in a number of immediately perceptible ways. The texture shifts from a two-line imitative one in P to a three-line homophonic texture at measure 49. The accompanimental lines are divided between a terse bass-line in the lower strings and repeating chords in the winds. These chord motions are discussed in Chapter 3 above; see Figures 3.51, 3.52, and 3.53 for a piano reduction of this passage and analytical notations identifying the nonatonic transformations between the various chords in the accompaniment. The melody is an expansive tune featuring dramatic leaps, with a D pitch center. This passage is often described as bitonal in the melody's projection of a D pitch center against the accompaniment's B^b pitch center. At measure 62 the repeating chords are transposed (T₃) to move the pitch collection from NON-3 to NON-2. The melody at this point is developed freely until measure 67, when the main S theme returns in the low strings and woodwinds. The passage from measure 62 to measure 67 serves as a contrasting middle between the two statements of the main S theme linking the NON-3 passage, realized as a D/B^b bitonal surface, with a NON-2 passage, realized as an A/F bitonal surface.

Thus far, the motion from pitch centers in the exposition follows the intervals embedded within the chord level (level a) of the Fourth Symphony's pitch-space model, as discussed earlier and shown in Figure 4.3. The "tonic" statement of P, centered on F and occurring at measure 20, is T₅ from the first P centered on C, a "dominant" statement. The B^b centered accompaniment figures of S are in turn T₅ from the "tonic" statement of P centered on F. The B^b pitch center is controverted by a melodic statement on D, separated by T₄. These pitch centers are T₅ from the ones at the return of the main S theme at measure 67.

An emphatic, if non-traditional cadence occurs at measures 81-83 and harmonizes a statement of the opening of the main S theme. The cadence resolves to F^\sharp , T_1 from an F center or T_9 from an A pitch center, both present in the bitonal passage which precedes it. F^\sharp is also T_4 from the D pitch center of the closing theme that follows. The closing theme introduces an ostinato in the lower portion of the orchestra; this ostinato assembles a five-note subset of NON-3. The strident closing theme, stated in the horns, assembles a nonatonic subset as it unfolds. The theme and ostinato are shown in Figure 4.7.

Following the first melodic descent F^\sharp - F - E and back to F^\sharp , the D and then G^\sharp are added as whole tones surrounding two consecutive semitones, a characteristic nonatonic construction. The rise to G^\sharp is decorated by a melodic leap to A, another member of the same nonatonic collection. Eventually more members of NON-3 are added, with the appearance of B^\flat articulated by a melodic leap to C in the same fashion as the earlier G^\sharp and A. The complete nonatonic subset projected by the closing theme is a member of 8-24 (0124568T), truncated from NON-3 by a single pc.

Figure 4.7 – closing theme of 1st movement exposition, 85-90

The governing pitch collection now shifts from NON-3 to NON-4; this time the transition occurs through a series of common tones (F, A, and B^b) in measure 94. The pitch materials of the passage from measures 95-106 are wholly contained within NON-4, with E^b (T₁ from the previous pitch center D) serving as the primary pitch center. This passage features significant energy loss at measure 100 with a reduced use of brass and *legato* articulations in the melody and accompaniment. The original ostinato figure from measure 84 returns in the full orchestra and shifts the governing pitch collection back to NON-3, which maintains control to the end of the exposition.

As the E^b/NON-4 passage from measures 95-106 serves as the contrasting middle between two statements of the main thematic material of the closing theme, it becomes clear that the exposition C is constructed in the same ternary fashion that is also present in the exposition P and S. Figure 4.8 shows a diagram of the formal areas of the first

movement exposition, revealing the essential ternary structure in each of the main thematic areas.

Figure 4.8 – form diagram of the 1st movement exposition

P			Tr	S					C		
A	B	A'		C	D	C'	Canon	½C	E	F	E'
1-14	14-19	20-31	32-44	49-61	62-67	67-72	73-80	81-83	84-94	95-106	107-122
C		F	F	D/B ^b		A/F	A	F [#]	D	E ^b	D

The development begins at measure 123 with another bombastic statement of the descending semitone that opened the symphony; this time the passage is transposed to feature a motion from E^b to D. The opening half of the development then proceeds to reconstruct the main motive of the symphony by first working through statements of the descending semitone cell. These statements are transposed to feature an ascending chromatic scale, and chromatic pitch-space dominates. This motion is controverted by a descending line in the low strings, in measures 127-136; these lines are treated to the familiar process of invertible counterpoint at measures 137-144. This passage is further intensified with the introduction of a line consisting of descending leaps in the second violin, joined by a solo flute in measure 141. Chromatic pitch-space is abandoned for diatonic pitch-space in measures 145-150. The low winds and strings hang onto the melodic shape and dotted rhythms associated with the descending semitone motivic cell, but it is significant that when chromatic pitch space is abandoned so is the primary motivic material. The previously domineering element, the descending semitone cell, is replaced by a series of planed consonant triads, which ascend to an arrival on Gm at measure 151.

At this moment full statements of the main P motive return, harmonized to create minor triads with G, F[#], and A^b roots. Of these, the G^m and A^b_m receive metrical emphasis and together form a member of set-class 6-Z19 (013478), an important nonatonic subset. This passage, marked *animato*, features alternating outbursts between the high and low registers of the orchestra and acts as the climax of the development. The intensity begins to diminish with the introduction of a new motive arising from the pervasive descending semitone, expanded to feature (016) trichords. This motive plays an important role in the retransition that begins in measure 162. Here the (016) expanded motive alternates with the main descending semitone, and rises by chromatic sequence. P-related materials are combined with this ascending sequence, including the rising chromatic lines first heard in the exposition in measures 10-14. The motive containing ascending fourths also returns, beginning first on F in measure 170, then on F[#] in 172, G in 174, and finally on C in rhythmic diminution at 176-178.

Other analysts have noted that the preponderance of P-material in the development seems to impel an extremely brief statement of P in the recapitulation.²³ Beginning in measure 179, the recapitulation presents an F-centered statement of the opening figure, similar to the one found at measures 20-23. At the recapitulation, the descending semitone is harmonized to create minor triads with G^b and F serving as chord roots. Successive minor triads whose roots are a semitone apart appear prominently in the development and return in a noteworthy manner later in the symphony. At this moment, G^b_m and F_m combine to form a 6-Z19 subset of NON-3. The descending semitone is further harmonized as it commences its characteristic chromatic ascent, as in the

²³ Pike, *Vaughan Williams and the Symphony*, 120 and J.P.E. Harper-Scott, "Vaughan Williams's Antic Symphony," in *British Music and Modernism, 1895-1960*, edited by Matthew Riley (Burlington, VT: Ashgate Publishing Company, 2010), 182.

exposition. New in the recapitulation is a (013) trichord given as a stepwise ascent in the trumpets, violins, and 1st oboe in measure 180. The figure (F – G^b – A^b) reinforces the assumption that F Phrygian acts as a structural referent at this crucial moment. This figure recurs in measure 183, transposed to initiate on G^b and including the flutes, and is answered in measure 184 by the lowest instruments of the orchestra. This time the figure (G^b – A^b – A) is an intervallic inversion of the original and continues to feature pcs in NON-3. In measure 185 the figure is given its last presentation at this point in the horns and trombones and is transposed to initiate on B^b. This is an original intervallic form of the figure (B^b – C^b – D^b); of the four nonatonic collections these three pcs can only be found in NON-4.

Significantly, the intersection of NON-3 and NON-4 is HEX_(1,2). The pcs in HEX_(1,2) all serve as pitch centers within the Fourth Symphony's opening movement. Of the pitch centers featured, only two fall outside this collection: the C-centered opening of the symphony and the G-centered height of the development. Both these moments have been regarded as far from the main pitch-centers of the movement: the “off-tonic” opening of the symphony while the center of the development customarily represents the furthest departure from the most important pcs of the pitch hierarchy.²⁴

As the main descending semitone figure receives harmonization in the recapitulation, the cadential figure of the recapitulation is similarly harmonized in measure 188. The harmonized forms are reserved for the upper end of the orchestra, and are two utterances of a succession of Fm7 to FM chords. After a brief caesura, the strings and low brass state a B^bMaj7 chord to initiate the S-rotation of the recapitulation.

²⁴ The viewpoint in which symphony opens away from the tonic is given by Pike, *Vaughan Williams and the Symphony*, 114 and Harper-Scott, “Vaughan Williams's Antic Symphony,” 180.

The recapitulation S is more a suggestion of the exposition S than it is a restatement. Motives from the S melody are found in the bass portion of the orchestra while the accompanimental chords are the same as before. As in the exposition, the Secondary theme ends on an F^\sharp pitch center, and the nonatonic collection remains the most important element in structuring the pitch materials of the recapitulation.

In a passage of nonatonic-governed pitch space, explanations that rely on hexatonic systems can lead to an incomplete analysis. This occurs in J. P. E. Harper-Scott's essay on Vaughan Williams's Fourth Symphony.²⁵ Figure 4.9 shows Harper-Scott's complete hexatonic system as he views its occurrence in the first movement recapitulation. The cycle begins with Fm, occurring in measure 179 at the beginning of the recapitulation. The recapitulation then presents a series of significant triads in alternating P and L operations until a compound LP transformation maps AM onto D^bM . A final P maps D^bM onto D^bm , which is shown in this diagram to close the movement.

Figure 4.9 – Harper-Scott's Hexatonic view of the 1st movement recapitulation



Unfortunately, in Harper-Scott's analysis the hexatonic system acts in this case as the mythical Procrustean bed. Figures 4.10.a, 4.10.b, and 4.10.c show moments from the

²⁵ Harper-Scott, "Vaughan Williams's Antic Symphony," 181-183.

musical surface in which the nodes of the hexatonic system are supposedly manifest.

Figure 4.10.a shows measures 189-191, the beginning of the secondary theme in the recapitulation of the first movement. Harper-Scott shows this moment projecting F major, a claim that is strongly controverted by the incessant B^bmaj7 chords and a bass melody that strongly suggests D minor. Figure 4.10.b shows measures 200-201, a moment within the secondary theme in which NON-2 claims governance over NON-3 as the controlling pitch collection, just as it does in the secondary theme of the exposition. Here Harper-Scott shows this moment projecting A minor, which is controverted by the Fmaj7 chords. Figure 4.10.c shows measures 209-211, near the conclusion of the secondary theme within the Recapitulation. At measure 210, Harper-Scott views A major as the most significant harmony. This is difficult to accept, because measure 210 is near the conclusion of a phrase that ends on F[#] minor.

Figure 4.10 – Problematic passages in conflict with the analysis shown in Figure 4.9

a)

b)

c)

Perhaps the most troubling aspect of Harper-Scott's hexatonic explanation is his representation of the closing theme in the recapitulation, shown in Figure 4.9 as D^b minor. The return of the closing theme at the end of the movement is in D^b major, whereas it is in D major at the end the exposition. In the recapitulation, after nine measures of closing material, the harmonies are wrenched up a semitone for a brief restatement in D major. When the harmony settles back onto D^b in measure 228, it is decidedly D^b major and not

D^b minor. Whereas this passage features some brief D^b minor triads as a form of mode mixture, the final harmony of the movement is a D^b major triad.

Figure 4.11 shows a revised viewpoint of the first movement recapitulation. In Figure 4.11 the prevailing harmonies at the moments selected by that Harper-Scott replace those given in his highly problematic diagram. This analysis, which adopts the nonatonic collection, rather than the hexatonic collection, as the most significant structuring element, reconciles all the indicated harmonies as constituents of NON-3.

Figure 4.11 – Revised view of first movement recapitulation

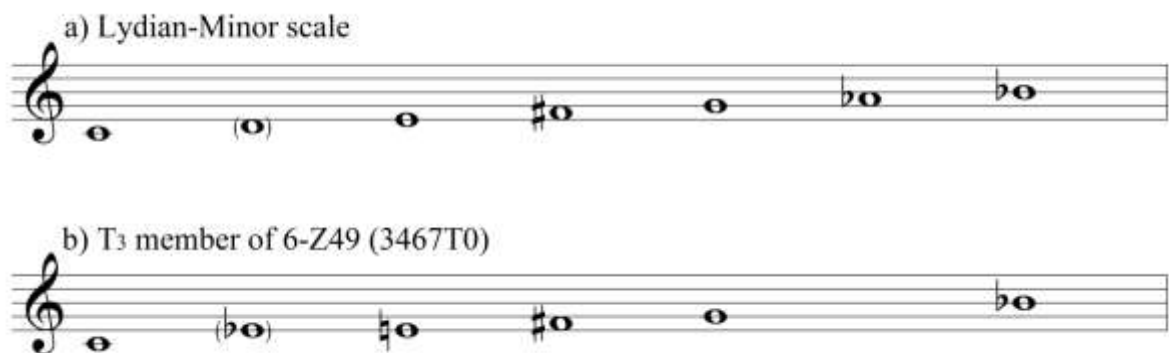


While the P and S rotations of the first movement recapitulation closely mimic the character of those rotations in the exposition, the C rotation of the recapitulation departs significantly from the strident statement of the exposition. There is a dramatic tempo reduction to *Lento*, and the dynamic level is brought to *pianissimo*. Divided strings present essentially three layers: the harmonized C theme in the violas and first cellos, a bass ostinato in the second cellos and basses, and a countermelody in the violins. The theme in the first violas here is completely contained within NON-2, as are the harmonizations with just a few notes lying outside of NON-2. Rhythmically distinct is the descending counter-melody in the violins, whose pcs all belong to NON-2. In fact, the pcs of the descending line (4578E1) form a member of the 6-Z49 set-class (013479). This is a significant set-class in Vaughan Williams's vocabulary for the Fourth Symphony and

associated works. It also appears in the draft of the Piano Concerto finale discussed in Chapter 2 of this dissertation (see Figure 2.11). This set-class is an octatonic subset as well, and the potential to utilize it as a bridge between nonatonic and octatonic pitch space is noted above in Chapter 3 (see Figure 3.6).

This set-class is remarkably similar to the Lydian-minor scale, a pc collection that has gained some attention in Vaughan Williams analysis.²⁶ Figure 4.12 shows an example of a Lydian-minor scale initiated from C alongside a representative of set-class 6-Z49, in this case the member is T₃ from the prime form. The two pc sets have five tones in common; to get from the Lydian-minor to the 6-Z49 representative a D must be exchanged for an E^b and an A^b must be omitted. The Lydian-minor is itself a nonatonic subset; it is a member of set-class 7-33 (012468T).

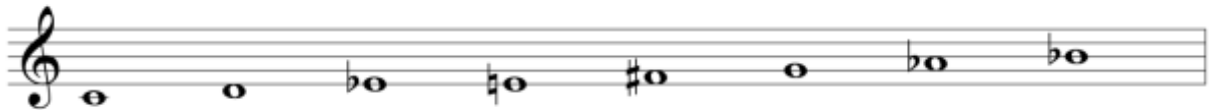
Figure 4.12 – A Lydian-minor scale alongside a member of the 6-Z49 set-class



²⁶ Alain Frogley, *Vaughan Williams's Ninth Symphony* (New York: Oxford University Press, 2001), 117 n. 5, David Manning, "Harmony, Tonality and Structure in Vaughan Williams's Music" (PhD diss., University of Wales, Cardiff, 2003), 121, and Hugh Ottaway and Alain Frogley, "Vaughan Williams, Ralph." *Grove Music Online. Oxford Music Online. Oxford University Press*, accessed May 15, 2014, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/42507>. The term Lydian-minor is also found in Vincent Persichetti, *Twentieth Century Harmony* (New York: W. W. Norton, 1961), 179.

The union of these two pc sets is shown in Figure 4.13. The resulting pc set is a member of set-class 8-24 (0124568T), one of the two possible eight-note subsets of the nonatonic collection. This scale possesses a number of notable features, such as an Aeolian top portion wedded to a Lydian $\hat{4}$ and a mixed-mode $\hat{3}$. There are a number of possibilities presented in the revised Lydian-minor that would interest a composer who wishes to utilize mode-based pitch materials in a modernist context, as Vaughan Williams seems to be seeking in the Fourth Symphony.

Figure 4.13 – A revised Lydian-minor scale (member of set-class 8-24)



A change of key signature at measure 222 shifts the prevailing pitch collection from NON-2 to NON-3. The divided strings take up fragments of the C theme with resemblances of the counter-melody in 223-224 and 226-227. The conflict between NON-2 and NON-3 is summarized in a statement related to the counter-melody given in the solo flute at 224-225. The initial part of this statement is confined to NON-2, though the introduction of F# in 225 takes the rest of the statement into the realm of NON-3. Underneath the contrasting segments (213-221 and 222-227) is an unchanging bass ostinato, an (016) trichord containing C, G, and F#. At 213 the ostinato's emphasis on C presents the defining semitone clash of the movement with the prevalent D^b of the C

theme. The descent from G to F[♯] reinforces the idea of the descending semitone.

However, the ostinato also participates in the conflict of NON-2 and NON-3, as the C-G interval is present in NON-2 while C- F[♯] is present in NON-3.

The conflict is abandoned in favor of NON-2 at the conclusion of the movement (228-240), where the third segment of the recapitulation C is formally fused to a coda. The C theme is also abandoned in favor of the counter-melody, which now receives a lush harmonization. The counter-melody is fragmented beginning in 232 and is reduced to concluding D^bm and D^bM triads in the final measures. Figure 4.14 provides a diagram of the second half of the symphony, containing the development and recapitulation.

Figure 4.14 - form diagram of the 1st movement development and recapitulation

Development			Recapitulation (Coda)					
Entry 123-150	Cental 151-162	Retransition 162-178	P 179-188	S 189-212	C 213- 229	222- 227	228- 240	
D	G		F	D/B ^b F [♯]	D ^b	D	D ^b	

The off-tonic end of the first movement has drawn comment for ending in D^b major rather than returning to the F minor tonality (qua F Phrygian) of the exposition. The off-tonic nature of the ending is really a shift from NON-3 to NON-2, each collection representing a network of pitch centers. The conflict between NON-2 and NON-3 continues to play out in the subsequent movements of the symphony.

4.3 Second Movement: *Andante moderato*

The opening fanfare, stated first in the brass and then followed in the woodwinds, is derived from the ascending fourths theme. This opening continues the D^b pitch center that concludes the first movement. The harmonies are nearly all contained within D^b Lydian, with one exception being the $D^b m M7$ chord that ends each fanfare. D^b Lydian intersects with NON-2 through a common 6-Z26 pc set (see Table 3.2) and $D^b m M7$ can only be constructed within NON-2.

Like the first movement, the second movement is in sonata form; the P rotation of the exposition is heralded by a walking bass introduction in measures 7-9. This continues as the accompaniment to the main theme of P, given in the first violins. The theme is wholly contained within the F Lydian-minor scale, a constituent of NON-2. The theme is answered in the manner of a fugue in the second violins and violas at measure 18. The answer is T_5 of the initial statement, placing it wholly within the realm of B^b Lydian-minor with one notable exception. There is a G where an expected G^b would occur in measure 23. The alteration occurs in the publication of the original version as well as the revised version of the symphony, so it is likely intentional. Without the G, B^b Lydian-minor is an assured subset of NON-3, and the exposition P of the second movement seems to use fugal process to reference the conflict between NON-3 and NON-2 that first arose in the previous movement.

The first P theme (P1) begins to spin out in 24-26, developing a turn motive within the second movement identified and discussed by Pike in his analysis of the symphony.²⁷ This leads to a second P theme (P2) stated first in the solo oboe. This

²⁷ Pike, *Vaughan Williams and the Symphony*, 126.

passage, 27-37, is arrayed as if a fugue exposition, with subject entries in the solo oboe, solo clarinet (29), solo bassoon (32), and finally low strings (35). Figure 4.15 provides a diagram of the subject entries. A first-time listener may assume that this passage will continue as a full-fledged double fugue. However, that procedure is not rigorously followed. The pitch materials used in the P2 are decidedly more chromatic than P1; however, the solo oboe statement can be found to be completely within NON-3 with the exception of a B. The most striking feature of this tune is the oscillating melodic fourths, first heard in the oboe statement in 28. This is a reference to the ascending fourths motive of the first movement, which did not receive much development in the first movement. The second and third movements correct this imbalance by putting focus on the ascending fourths motive. The manner in which the second movement achieves this is through the opening fanfare figure and the oscillating fourths motive at the tail of the P2 theme.

Figure 4.15 – Diagram of subject entries at P2

S2, "Fugue Exposition"												TR
	27	28	29	30	31	32	33	34	35	36	37	38
S	S (Ob.) _____											
A			A (Cl.) _____									
T						A inc (Bsn.)_						
B									S (Vc./Cb)_			

A new theme is presented in the first violins at 38, and is presented as if this will be a third P theme (P3). However, this area begins to take on more transitional rhetoric as it proceeds, and so the beginning of TR is located here, formally fused to a P reference in

the walking bass figure of the low strings in 38-43. An F tonal center is first assumed by the tune in the violins and the walking bass figure, and F could exist as a valid tonal center in both NON-3 and NON-2. The oscillating fourths are foregrounded in the transition, transformed into a vigorous and energetic section with loud dynamics. This paves the way for a more peaceful S theme, marked *Tranquillo*, and exhibiting the characteristic exposition procedure of belonging within a pitch center located a fifth away from the P rotation (C at S while P began on F). This theme bears some resemblance to the theme of the epilogue of Bax's Third Symphony, which is most apparent when comparing the end of Bax's theme with the beginning of this one by Vaughan Williams. Recall that this is the same Bax theme initially quoted at the conclusion of Vaughan Williams's Piano Concerto and discussed at length in Chapter 2 of this dissertation. The two themes are shown together in Figure 4.16. Both themes strongly project a C tonal center, while the Vaughan Williams theme is "made strange" through the F[#] and E^b in the second bar.²⁸ Given Vaughan Williams's interest in this passage from Bax, his general enthusiasm for Bax's Third Symphony, and the dedication of his Fourth Symphony to Bax, it is curious that this reference has not been identified in previous analyses of Vaughan Williams's Fourth Symphony.

²⁸ The process of *verfremdt* ("makes strange") is discussed in reference to Vaughan Williams's Fourth Symphony in Harper-Scott, "Vaughan Williams's Antic Symphony," 176.

Figure 4.16 – Themes from Bax 3/III, 241-248 and Vaughan Williams 4/II, 61-63

a) Bax



b) Vaughan Williams



Pike's turn motive is found embedded within S, and is developed until it begins to resemble the opening of the P2 tune. The end of S (66-69) serves as a link to the development, beginning in 70. Vaughan Williams identifies this section as a cadential gesture, indicating that the composer may have thought of this passage as the palpable closing of the second movement exposition. If this passage is to be taken as the exposition C, then it is formally fused to S.

The brief development is situated in chromatic pitch space and saturated with the oscillating fourths of P2. The opening fanfare returns, juxtaposed with development material (m. 89), and this section (89-91) functions as a retransition to the recapitulation, beginning in 92.

As in the first movement, the second movement recapitulation fails in many ways to live up to the expectations founded in the exposition. P1 appears as it had before, as an F Lydian-minor tune in the violas and solo clarinet beginning in 96, and a B^b Lydian-minor tune in the second violins and English horn at 99. The entrance of the answering statement comes much earlier than it does in the exposition, and as in the first movement,

the recapitulation is greatly compressed. Controverting the main theme of this movement at the recapitulation is a new theme in the first violins. The new theme begins at 96 and constructs a member of set-class 6-Z26. In this case this is T_4 of 6-Z26, an intersection with the F Lydian scale and a subset of NON-2. NON-2 pitch materials dominate this passage, though (as in the exposition) they conflict with the essentially NON-3 materials of the B^b Lydian-minor transposition of the theme.

Significantly, P2 does not reappear as there is no restatement of the double-fugue process suggested in the exposition. Instead, P3 initiates in the low strings at 107, answered in canon by a solo horn in 109. The solo oboe featured before in P2 is given a new theme in this passage. The pitch materials strongly project a B pitch center, which is not achievable in NON-3 and can only be projected from NON-2 with some difficulty, as B is a lower-class node in that collection. As in the exposition, P3 melds with the TR, much abbreviated here though still made from the oscillating fourths motive of P2.

The recurrence of C is now transposed to begin on F, fulfilling the basic sonata principle. The pitch materials here nearly all fall within NON-2, with the exception of D. Significantly, D melts away as the theme is further developed in the solo flute. While the descending semitone theme is not present for most of this movement, a harmonized version of the main motive occurs in the trombones at 131. The harmonized statement begins and ends with a $G^b m$ triad (enharmonically spelled to include A rather than B^{bb}). The $G^b m$ triad in the trombones is replaced by an FM triad in the strings as the final harmony. This seems to be a thinly disguised reference to the descending G^b -F semitone in the P rotations of both the exposition and recapitulation of the first movement. Both harmonies ($G^b m$ and FM) are found within NON-3.

The flute cadenza cannot belong to any nonatonic collection in its entirety, as it contains four descending semitones at its outset. However, the B^b initiating tone is soon abandoned and the remaining pcs form a member of set-class 7-21 (0124589), a subset of NON-2. In many ways, B^b has served throughout this movement as an aggravator within passages that would otherwise be contained completely within NON-2. It appears in this way in the opening fanfare, and in the P1 rotations of this movement. B^b, along with D and F[#], are in many ways the exemplar pitch centers of NON-3. In NON-3 these are the upper class nodes; they are not to be found within NON-2. They act to subordinate other tonal centers, such as F and D^b, which exist as upper-class nodes in NON-2 but are middle-class nodes in NON-3. This conflict of pitch centers continues in the final movement of the symphony, but is in many ways forgotten in the third movement, where motivic development takes on a much larger role.

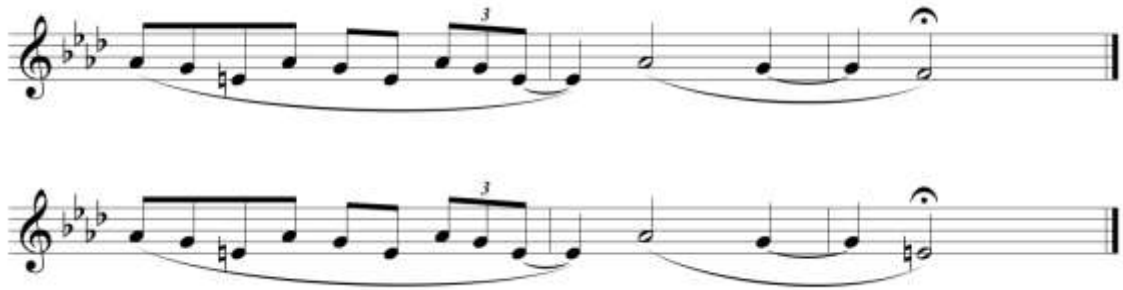
Most commentaries have mentioned the famous revision in the flute cadenza that ends the second movement, and this dissertation would be remiss without considering the issue. Initially the flute theme ended with an F rather than E. An F close reinforces the root of the FM chord in the strings; the change to E seems to indicate that Vaughan Williams wanted things to be more tonally open at the conclusion. Pike writes that the Vaughan Williams left “the movement that much finer for being unresolved.”²⁹ Harper-Scott, who takes the opinion that the second movement’s bitonal elements are a parody of modernist technique, is compelled to explain that the absence of closure does not suddenly turn the parody into a sincere statement of modernist aesthetic, but instead “adds spice and a final parodistic feint.”³⁰

²⁹ Pike, *Vaughan Williams and the Symphony*, 133.

³⁰ Harper-Scott, “Vaughan Williams’s *Antic Symphony*,” 187.

Figure 4.17 shows the final measures of the flute cadenza, in both the original and revised versions. It seems that much ado has been made about something of little import in considering the issue of tonal closure with this revision. A nonatonic viewpoint, on the other hand, allows for the recognition that both F and E are pcs found within NON-2. In fact, if the FM chord is thought to still be in the ear with the flute's final tone, as seems to be suggested by the recognition of E as negating tonal closure, then the resulting harmony would be FMaj7. Knowing that the movement opens with an ardent D^bmM7 (a continuance of the D^b pitch center that ends the first movement), the nonatonic perspective recognizes that both these harmonies can be found only in NON-2. Besides, it seems that by changing the F to an E, the composer is only repeating a melodic gesture that had already occurred thrice before.

Figure 4.17 – two versions of the flute cadenza that ends the second movement



4.4 Third movement: *Allegro molto*

Analysts writing about this symphony have commented on the stark differentiation between the scherzo (third movement) and the two movements that precede it.³¹ In the first movement, the descending semitone motive controls the foreground. In the second movement, the descending semitone motive moves offstage while the fourths motive is allowed time in the spotlight. In the scherzo, both the descending semitone and ascending fourths motives come to the forefront, sometimes stated in dialogue and at other times juxtaposed in disquieting ways.

Pitch materials also distinguish the scherzo from the movements that come before it. It is noteworthy in the long range tonal argument of the symphony that the second movement ends with an FM chord, and the fourth movement begins with an FM chord. In many ways, the scherzo acts as a kind of jocular aside, albeit a dramatically extended one. As Harper-Scott has noted, the scherzo is a movement of harmonic stasis.³² Motivic saturation unifies the scherzo more than the sort of sophisticated tonal argument that is presented in the first two movements.

The movement is cast in a typical ternary form, with a transitional appendage added after the restatement of the A section. The opening scherzo (A) lasts until measure 149, when the trio (B) begins in the manner of a fugue exposition, and marked *Quasi meno mosso*. The repeat of the scherzo reestablishes the opening tempo at measure 214. As is the case with the recapitulations of the first and second movements, the return of the scherzo is highly abbreviated, leading to a transitional passage that begins in 271. This section references the fugue subject of the trio, but this is quickly abandoned after

³¹ Harper-Scott, "Vaughan Williams's Antic Symphony," 188.

³² *Ibid.*, 187-191

only nine measures. A long transition begins at measure 284, and segues without a break into the final movement. Other analysts have remarked at length on the resemblances to Beethoven's Fifth Symphony.³³ Pike's quip on the parallels between the two movements is especially germane: "Here Vaughan Williams might have said to anyone mentioning the similarity to Beethoven, 'Any fool can see that.'"³⁴ What is not so readily apparent is the use of the nonatonic collection in the transition linking the scherzo to the finale.

A nonatonic subset is presented by the opening of the scherzo's main theme, a rocket in the strings and woodwinds. The "head" of the theme comes from the ascending fourths motive, initiating on D and proceeding as D – G – C – D – G – C – E^b – A^b. These combine to form a member of set class 5-20 (01378). In this case the pcs are found within NON-1, closely related to NON-2 but remotely related to NON-3. The tail of the theme is likewise constructed from ic5, realized as fifths instead of fourths. With the exception of an A, the entire theme falls within NON-1.

The theme is answered by harmonized versions of the full descending semitone motive, first in the trombones at 5-6 as Dm – C[#]m – E^bm – Dm. Of these chords, Dm is repeated and E^bm is given metrical accent; together they form a member of set-class 6-Z19 (013478) and appear in much the same fashion as Gm and A^bm at the height of the first movement development. The harmonized descending semitone repeats on the same triads in rhythmic diminution, first in the woodwinds and then in the strings. The motive then becomes a quasi-ostinato stated alongside a return of the rocket-theme, in the solo bassoon at measure 11. Here, and in the repeated statement in the flutes and oboes at 19,

³³ Pike, *Vaughan Williams and the Symphony*, 133-138, and Harper-Scott, "Vaughan Williams's Antic Symphony," 187.

³⁴ Pike, *Vaughan Williams and the Symphony*, 138. In this passage Pike imagines Vaughan Williams pithily quoting Brahms, whose reaction to an observation that the finale of his First Symphony resembled Beethoven's Ninth: "Any fool can see that."

the tail of the theme leaves a disintegrated trail of descending ic5 cells (14-18, 24-25).

These cells are further developed into gestures of closure in measures 26-39.

A contrasting section commences at measure 40, with a new theme stated in the violins, violas, oboes and horns. Of these, the horns are the most prominent; Pike describes them as barking “like a pack of hounds.”³⁵ The theme is built from filled-in minor thirds: F \sharp – E – D \sharp followed by D – E – F. The pizzicato chords in the strings harmonize these with BM and Dm, respectively. The assumed pitch center in this passage (40-53) is B by virtue of it being the lowest sounding element of the texture and the more frequent repetitions of BM when compared to Dm and Fm, both infrequently presented in this passage. The union of BM and Dm (23569E) is a member of set-class 6-Z49 and can be found within NON-4. NON-4 is closely related to NON-3 but remotely related to NON-2. It is perhaps tempting to assert that NON-1 and NON-4 here act as surrogate combatants in the conflict between NON-3 and NON-2 that plays out in the first two movements. However, what can be stated with more certainty is the impression that NON-1 and NON-4 contribute to the sense that the third movement is distinctive in its pitch materials from the first two movements. This distinctiveness comes from the ascendancy of octatonic pitch-space within the third movement. As the thematic materials now privilege movement by ic3 over ic4 or ic5, octatonicism begins to coalesce. The union of BM, Dm and Fm is a complete octatonic collection, Oct_{2,3}, whose pc nodes outline the diminished seventh chord {B, D, F, A \flat }.

At first, the minor third B – D is foregrounded, first by the “barking” horns and then in a new theme stated by the flutes, clarinets and solo trombone in 48-50. This is repeated in piccolo, solo horn and solo trumpet in 51-54, then in the original

³⁵ Pike, *Vaughan Williams and the Symphony*, 135.

instrumentation at T_3 (D – F) in 54-56. At measure 57, the structuring interval is shifted once again at by T_3 (F – A^b). Fm and A^b m triads predominate in 58-70, and this passage is characterized by an intensely rapid energy gain which lets off as a *decrescendo* in 69-71. The quiet dynamic persists in 71-77, where the clarinets enact the final gasps of the minor thirds theme, and likewise octatonic pitch space begins to fade.

The harmonized form of the descending semitone motive returns at 78-81 and is presented in much the same way as at the opening of the movement: first in the trombones, then in rhythmic diminution in the woodwinds and strings. The ascending portion of the rocket-theme is stated in rhythmic augmentation, first initiating from F in the bassoons and clarinets at measure 80, and then from A^b in the strings at measure 85. The harmonized descending semitone takes on more urgency in the clarinets and bassoons from 88 to 91, and this motive is utilized as an emphatic cadence gesture in 92-100. The strings then pick up the motive in its quasi-ostinato guise for a repeat of the A section beginning at measure 102.

The repeat of the A section is greatly abbreviated; measures 102-128 are identical to 10-39. Measures 129-143 deliver a remembrance of the B section of the scherzo, without the recurrence of the “barking” horns. This passage does give a frantic statement of the minor thirds theme in the woodwinds, and BM, Dm, and Fm all appear as triads within this passage. These materials combine to briefly reassert octatonic pitch space. Measure 144-148 mimic the energy loss segment of 71-77, and functions as a transition to the Trio. Figure 4.18 displays a diagram of the scherzo portion of the movement from 1-148.

Figure 4.18 – diagram of the opening scherzo of the third movement

A				B						A'			
1-5	5-9	10-25	26-39	40-47	48-57	58-70	71-77	78-91	92-100	102-117	118-128	129-143	144-148
A1	x triads	A1	cad	B1	B2	cad	energy loss	x triads A1 aug	cad	as 10-39		B2/cad	Trans
D				B		F				D			

The Trio (150-213) is much shorter than the Scherzo (1-149) that comes before it, and further differentiates itself in resembling a fugue in its deployment of thematic materials. The subject expands on the ascending fourths motive, and begins with a dotted rhythm that becomes a defining characteristic. Pitch materials are all diatonic within A^b major, though the focus on fourths and the imitative texture subvert any sense of functional harmony. The Trio begins as if it will be a four-voice fugue, with the subject stated first in a solo tuba (backed by bassoons). The answer given by the trombones at 157 is characteristically T₇-related to the subject. Subsequent subject entries occur in the trumpets at measure 163, and finally in the solo flute and piccolo at 174. The tail of the fugue subject is repeated and becomes a quasi-cadential gesture from 181 to 186. The dotted motive stated at the head of the subject becomes the source of development in a section from 187 to 196 that resembles a fugue episode. The dotted rhythm features in successive statements that are T₅ from each other, initiating on C in the solo flute and oboe, then on F in the solo clarinet, and finally on B^b in the solo bassoon. A truncated version of the subject is given in stretto beginning in 197. Figure 4.19 diagrams the form of this fugue exposition of the Trio section.

Figure 4.19 – diagram of the opening of the third movement Trio

TRIO, Fugue Exposition																	
	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166
S																	
A																	S (trumpets)_____
T																	A (trombones) _____
B	S (tuba) _____																

(Bridge)								Exposition									
	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183
S																	S (flute) _____
A	_____																
T																	
B																	

In measures 202-213 the dotted rhythm takes over. This passage intensifies greatly, presenting a descending second sequence in 208-213 that leads from C through E^b to D to begin a reprise of the Scherzo at 214. Measures 214-252 are a restatement of 1-39. The “barking” horns do not return; however, the theme based on minor thirds is found in the solo flute at 254, and is picked up by the basses and bassoons at 259. This passage (254-270) presents BM and Dm triads, and serves to recall the earlier use of octatonic pitch space.

These materials are abandoned abruptly at measure 271 to begin a passage, until 279, that resembles the opening fugue exposition of the Trio. Here truncated versions of the subject are stated in the same instruments and in the same order as 149-174. The minor third gesture emphasizing B is given as a closing figure in 280-283.

The transition linking the third and fourth movements begins at measure 283. The low strings first establish an oscillating semitone, G[♯] – A – G[♯], as a kind of energized pedal. At 288, the first violins state an altered version of the ascending fourths motive. This altered version adds octave reinforcement to the initiating tone and then ascends a

semitone: B – E – A – B – C. At 292, a solo bassoon expands this theme, chromatically filling in a major second (spelled as a diminished third) above the octave: B – E – A – B – C – D^b. These pcs combine to form a member of set-class 5-11 (02347), a nonatonic subset. At 296 the first violins restate a transposed version of this altered version of the ascending fourths motive, T₄ from its original statement. The solo bassoon echoes with a T₄ form of its statement, beginning at 300 and successfully completing the (02347) set type by ascending to F at 303.

The transposition level used between 288 and 296, ordered interval 4, creates a subsequent statement of a 5-11 set type that belongs within the same nonatonic collection as the original, in this case NON-2. A third statement T₈ from the original would complete the nonatonic collection, and perhaps indicate an *a priori* awareness on the part of the composer as to some properties of the nonatonic collection. Such a statement occurs in the first violins at 304-307. It is a fully formed statement that is T₈ from the original bassoon entry of 292, ending with a semitone A^b-A to match the oscillating semitone in the bass. The solo bassoon again echoes the violins from 305-309, this time adding a chromatic filling in before the octave reinforcing tone, F[#] leading to G. This F[#] is the only pc to fall outside the NON-2 collection from the passage 283-315.

Figure 4.20 – nonatonicism in the transition between the third and fourth movements

The musical score for piano, measures 284-315, is presented in two systems. The first system (measures 284-299) is labeled '5-11 (T₉): (9E014)' and contains measures 284-287, 288-291, 292-296, and 296-299. The second system (measures 300-315) is labeled '5-11 (T₁): (13458)' and '5-11 (T₃): (57890)' and contains measures 300-303, 304-309, and 310-315. The notation includes treble and bass staves with various notes, rests, and accidentals, illustrating the nonatonic pitch space.

In measures 310-315 the descending semitone A-G[#] is reinforced and full statements of the descending semitone motive of the first movement begin to appear at 316. The end of the transition (316-324) frantically states this motive in imitation, and intensifies through crescendo toward the opening of the fourth movement.

4.5 Fourth movement: *Allegro molto* (Finale con Epilogo Fugato)

The three chords that open the finale confirm the establishment of nonatonic pitch space in the transition between the third and fourth movements. The triads, FM, AM, and DM could also be understood as a kind of functional progression in D major. In this hearing, the opening FM is a flat-median (^bIII) preparation to an authentic cadence in that key, which is itself a median key-relation to the global tonic of the symphony.

What follows cannot wholly be contained within either extended common-practice tonal procedures or nonatonic-governed pitch space. Instead, all of the competing pitch-structures presented thus far in the preceding movements are brought to bear in a cavalcade of thematic areas exhibited within the fourth movement exposition. Figure 4.21 displays a diagram of the exposition.

Figure 4.21 – form diagram of the fourth movement exposition

P					TR	S/C	
1-4	5-14	15-19	20-37	38-51	52-76	77-105	106-114
P1	P2	P1	P2	P3	P1/P3	S1	S2/C
F					NON-2	B ^b	A

P is comprised of three thematic areas; the first (P1) is made up of the forceful statement of three triads followed by a descending flurry ending with the statement of two triads, A^bM and GM, at measure 4. A reiteration of the descending semitone motive that has permeated the symphony, these two triads are also found within NON-1, while the preceding scalar flurry is more suggestive of the F Lydian-minor, a subset of NON-2. P2 presents a recollection of OCT_(2,3) with an accompanimental figure described by the composer as an “oompah” bass.³⁶ The P2 continuity is interrupted by a brief statement of P1 at 15-19. This time the theme is given the familiar canonic treatment between the treble and bass portions of the orchestra, a procedure used extensively in the symphony since the first movement exposition. P2 resumes at measure 20, here also presenting a melodic figure above the “oompah” accompaniment. The melody, first stated in the

³⁶ Vaughan Williams ironically explains that this term is reserved for professional circles; see Kennedy, *A Catalogue of the Works of Ralph Vaughan Williams*, 159.

woodwinds in measure 24, recalls the descending semitone that provided the structuring force of the first movement. The whimsical nature of P2 gives way to an affected seriousness in P3 (38-51), whose pitch content is wholly contained within F Phrygian.

Palpable thematic material transforms into less stable, transitional material in measure 52. At this point, a return of the “head” of P1 leads into an expansive development of the “tail” of P1, which serves as the opening of TR. From a pitch content perspective, comparing P3 with TR begins with the replacement of B^b with B, and the disappearance of G^b . By measure 55 the pitch content of TR can be found entirely within NON-2, and begins to feature the T_8 member of 6-Z49 (89E035) in the strings. This form of 6-Z49 appears as a subset of NON-2 and $OCT_{(2,3)}$. G^b returns with a statement of P3 in the brass at measure 62. The T_8 form of 6-Z49 is again highlighted in 68-70, and the remainder of TR is contained within NON-2, with the exception of the occasional G^b .

S1 begins in measure 77; as in the first movement, the F pitch center of P is controverted by an S whose pitch center is on B^b . The first statement of S1 (77-81) appears in the oboe, bassoon, and first violins. The pitch content is a nearly complete statement of B^b Lydian-minor, with E^b and D^b lying outside this collection. The inclusion of D^b leads toward the union of Lydian-minor and 6-Z49 discussed above, and in this case strongly suggests NON-3 (with the E^b lying outside the collection). NON-3 pitch structure is negated by measure 87; subsequent statements of S1 material are transposed to begin on E^b in the low strings at measure 90 and on D^b in the woodwinds at 94. By this point the “tail” of S1, whose perfect intervals serve to recall the ascending fourths motive of the first movement opening, overtakes the foreground until ending abruptly at measure 106. The seven-measure passage that follows is a blending of formal functions, serving as both S2 and C. In the exposition this passage features only the brass and the pitch content

comes entirely from NON-2, with the exception of a single D stated in the third trombone and tuba at measure 112. The texture thickens to feature the tutti orchestra at 113 leading to the development at 115.

The entry to the development recalls P1 in its three emphatic triads; at measure 115 they are AM, C[#]M, and F[#]M. The triads are T₄ from the corresponding passage at the beginning of the movement, which features FM, AM, and DM. In both cases, the succession of triads strongly suggests NON-3, though both could be understood as a kind of extended- practice functional progression in the keys of F[#] major and D major. The union of these two progressions is a complete NON-3. While surface level articulations of NON-3 are subjugated against more pervasive appearances of NON-2 materials in the preceding portion of this movement, the conflict between NON-2 and NON-3 continues with a sally from NON-3 at the opening of the development.

The “tail” of P1 articulates more active developmental material through measure 134. The A[#] present in the F[#]M chords of measure 115, and again in 117, evaporates in favor of A throughout this passage. The lack of A[#] and D leads the pitch structure away from the NON-3 feint of measure 115. When G begins to appear at measure 121, complete statements of NON-2 occur. This gives way to chromaticism in 129, where D and B^b are reintroduced in the low brass through a statement of the ascending fourths motive. The concluding gesture of this portion features a chromatic descent from E to C, which leads to A through a (01458) set-type, a nearly complete hexatonic scale. The G[#] in this measure gives way to an A[#], acting as the third of F[#]M on the downbeat of measure 135. This F[#]M is given as part of an “oompah” bass statement of P2, and leads to a near complete statement of OCT_(0,1), eventually completed with an E^bM in 140.

This passage, 135-167, develops P2 material through a continual semitone descent that reveals itself through the descending semitone reminiscences of the P2 melody heard in the woodwinds and horns. These fill out a long-range chromatic descent from C[#] to F[#], while the accompanimental figures cycle through various triadic articulations of each of the three octatonic collections. Figure 4.22 displays an analytical reduction of this passage. As the figure indicates, this passage leads to F[#] – the same tone highlighted at the beginning of the development that also serves as a barrier harmony between the two significant sections heard thus far. F[#] predominates in the next passage, 168-176, a development of P3 material given as F[#] Phrygian (rather than F Phrygian, as in the exposition). The P3 theme undergoes canonic treatment between the woodwinds and strings. The theme dissolves, first through descending fourths in 173-174, and then chromatically from C[#] to C.

Figure 4.22 – Analytical Reduction of Vaughan Williams 4/IV, 135-167

The figure displays an analytical reduction of Vaughan Williams' 4/IV, measures 135-167. It consists of four systems of musical notation, each with a treble and bass staff. Chord symbols are written below the bass staff, and octave markings (OCT) are indicated below the chord symbols.

System 1 (Measures 135-137):

- Measure 135: $F\sharp$ A C A
- Measure 136: $F\sharp$ A C $E\flat$ C A
- Octave marking: OCT_(0,1)

System 2 (Measures 144-146):

- Measure 144: F $A\flat$ $C\flat$ $A\flat$
- Measure 145: F $A\flat$ F Dm Bm Dm
- Octave marking: OCT_(2,3)

System 3 (Measures 152-154):

- Measure 152: E G $B\flat$ G
- Measure 153: $E\flat$ $G\flat$ Am $G\flat$ $E\flat$ C
- Measure 154: D B $A\flat$ B D F $A\flat$ F
- Octave markings: OCT_(1,2), OCT_(0,1), OCT_(2,3)

System 4 (Measures 162-164):

- Measure 162: $D\flat$ $B\flat$ 7 $D\flat$ $B\flat$ 7
- Measure 163: C $E\flat$
- Measure 164: C $E\flat$
- Octave markings: OCT_(1,2), OCT_(0,1)

C becomes a kind of decorated pedal tone for a very unusual passage in measures 177-188. Here the strings present an altered version of the theme from the ending of the first movement. The harmonized theme follows the same general rhythmic outlay of the original while presenting a distinct intervallic profile. In this statement, the theme rises (measure 178) before it descends (measure 179), which is the opposite of the original. As Pike explains in his analysis, this reversal

“echoes the inversions which so often accompany the fourth-based theme.

Nevertheless, the recollection of this theme from an earlier movement is quite clear, and represents something of a surprise, although its inclusion makes a valid point in the [symphonic] argument.”

Pike goes on to explain that the combination of a C-natural bass combined with a DM triad allows for the recurrence of the (06) dyad that persists through the symphony from its initial appearance in the first movement exposition. The shift in this statement from DM to D^bM and back to DM (measure 183-184) reverses the pitch center movement at the end of the first movement.

Whereas in the present study alternative explanations pitch resources have revealed new structural interpretations in much of the symphony, this is a passage where it is difficult to improve on Pike’s analysis. The pitch collection utilized in 177-182 is a form of set-class 10-4 (012345689T). This form of 10-4, (6789TE0234), includes within it NON-1 with an additional tone, pc 9. The inclusion of A here allows for the statement of DM triads, and the pervasiveness of pc 9 discourages the possible interpretation that A is a subordinate tone within a governing nonatonic collection. NON-1 is strongly suggested by the statement of three augmented triads, C⁺, E^b⁺, and B^b⁺, which are maximally even partitions of NON-1. Still, these triads are stated with some brevity, and

can only be heard as departures from a pitch space directed from DM as the main referent. While the nonatonic collection often proves itself useful as an explanatory apparatus within this symphony, its utility in this passage is more limited.

Although the passage from 177-188 provokes doubt in the usefulness of the nonatonic collection as an explanatory apparatus in the Fourth Symphony, the passage that follows (189-213) is much more convincing. This passage resembles the transition between the third and fourth movements, where an oscillating dyad (A-G[#]) forms the screen over which the complete NON-2 collection is projected as three pentachordal partitions, each of which expresses a form of set-class 5-11. This passage presents the same forms of set-class 5-11 as NON-2 unfolds, and the first of these is even given in the solo bassoon, which was highlighted in the transition between the third and fourth movements. The oscillating dyad is given here as a stable A^b pedal tone, and references to the main descending semitone motive are heard throughout the orchestra.

As in the two previous sonata form movements (the first and second), the recapitulation of the fourth movement is significantly compressed. The entire TR passage of the exposition is notably absent; P3's F Phrygian moves directly to a D Lydian infused S1. In the first movement exposition, S1 is initially centered on B^b Lydian which, like D Lydian, intersects significantly with NON-3. The sonata principle is fulfilled when the formally fused S2/C passage of 266-272 is transposed to initiate from the global pitch center of the symphony, F.

Furious scalar motion in the woodwinds and strings begins to project a sense of energy gain, beginning at measure 273. Initially quite chromatic, the pitch structure begins to crystalize into nonatonic governed pitch space with the abandonment of B^b, followed soon by the absence of D and G^b. By measure 292 the pitch materials are

completely contained within NON-2, highlighted by the hammerstroke chords: AM – FM and A^bM – FM. This passage is discussed with more specificity in Chapter 3 (see Figure 3.22).

Pike describes the Epilogo Fugato as encompassing most of what had been previously stated in the movement.³⁷ If the reality matched the implication, and the variety of themes from the exposition received fugal treatment, then the ending of the Fourth Symphony would be most impressive. However, fugal procedure is largely abandoned by measure 353. For that reason, the analysis presented in this study adopts a viewpoint by Harper-Scott, who posits that the actual fugal portion of the finale, from 309-353, serves as a “parenthesis in the structure” that “operates in a separate tonal space and could be lifted out without disturbing the tonal configuration of the music on either side.”³⁸ This analysis suggests that a viewpoint in which the epilogue commences at measure 309 is a kind of marked mirage, which misleads the listener from hearing the end as being more like an extensive coda that revisits most of the thematic material of the movement.³⁹

This procedure, a fugal harbinger which precedes an expansive finale, is common in the symphonic literature. Whether or not this conforms to the standard procedure of a symphonic epilogue remains an open question. The distinction between an epilogue and a coda is poorly defined in musicological sources, if it is explored at all. Indeed, one source defines epilogue as simply another name for a coda.⁴⁰ Only Hugh Ottaway seems to have

³⁷ Pike, *Vaughan Williams and the Symphony*, 151.

³⁸ Harper-Scott, “Vaughan Williams’s Antic Symphony,” 194

³⁹ For a different opinion, see Julian Horton, “The late symphonies,” in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 204. Horton’s analysis views the fugal epilogue as consisting of five parts, each presenting subject entries against thematic recurrences. This claim, in my view, is hard to support given that the purported subject statements are highly subordinated as accompanimental figures within the texture.

⁴⁰ “Epilogue,” *The Oxford Companion to Music*. *Oxford Music Online*. *Oxford University Press*, accessed

given this issue serious consideration, noting that the symphonic epilogues of Vaughan Williams involve some “thematic link with the first movement,” with Brahms’s Third Symphony serving as the “clearest precedent.”⁴¹ Subsequent studies of Vaughan Williams’s symphonies seem to ignore the issue, and it is unclear whether these studies tacitly accept the notion that the epilogue is simply a coda by another name.

When encountered in the symphonies of Vaughan Williams and Bax, it is clear there are several distinctive features that differentiate an epilogue from a coda. As William Caplin describes it, a coda occurs “after the end” and is “analogous to a closing section,” since the primary structural close of a sonata form is achieved in the recapitulation.⁴² It has been noted that after Beethoven, codas became more or less an obligatory portion of sonata-form.⁴³ This brings up the first noteworthy feature that distinguishes a coda from an epilogue. A coda can occur at the conclusion of any movement in a multi-movement work. An epilogue must be the concluding portion of the work as a whole, and can only be found in the final movement.

The word itself and its literary origin make this plain. From the Greek “lógos” (“word”), the *epílogos* is the afterword. In literary contexts it is the concluding portion, occurring after both the climax and denouement. In drama, the epilogue is a speech, delivered at the conclusion of a play, given by a character who speaks to the audience directly. With literary usage as a starting point, one might presume that the symphonic epilogue occurs after the resolution of the central tonal argument or thematic narrative. Its

May 16, 2014, http://www.oxfordmusiconline.com/subscriber/article/opr/t*114/e2293.

⁴¹ Hugh Ottaway, *Vaughan Williams Symphonies* (Seattle: University of Washington Press, 1972), 10.

⁴² William Caplin, *Classical Form* (New York: Oxford University Press, 1998), 179.

⁴³ Roger Bullivant and James Webster, “Coda,” *Grove Music Online*, *Oxford Music Online*, *Oxford University Press*, accessed May 15, 2014, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/06033>.

usage in drama seems to propose a self-conscious act on the part of the playwright; the epilogue is a moment in which the “fourth wall” is broken and the play takes on a deeply introspective tone – aware of itself as a play when it concludes.

For Vaughan Williams, the epilogue allows for the “contemplative mode of expression” that is a noted characteristic of his music.⁴⁴ In his symphonies that utilize an epilogue, this sense of introspection typically manifests itself through soft dynamics and a slow tempo. This is true in Vaughan Williams’s *A London Symphony*, the first work to feature an epilogue. The dynamic markings begin as *pianissimo* and remain soft throughout. The tempo begins as *Andante sostenuto* and actually slows, becoming *Lento* at 201 and then *Tranquillo* at 209.

If the conclusion of *A London Symphony* can be taken as the prototypical symphonic epilogue, then its appearance in symphonies by Vaughan Williams and Bax largely conform to the model of soft dynamics and slow tempo. Table 4.1 lists symphonies by Vaughan Williams and Bax and gives some qualities of the epilogue of each. Of the eight symphonies given here, half begin with a soft dynamic and maintain this dynamic level throughout. The concluding portion of Bax’s Second Symphony begins *fortissimo* but ends *pianissimo* to *niente*.⁴⁵ Bax’s Fifth Symphony reverses this progression. The final section begins *pianissimo*, perhaps setting up the expectation for a tranquil epilogue, but ends *fortissimo*. The Fourth Symphony by Bax begins at a

⁴⁴ Alain Frogley, *Vaughan Williams’s Ninth Symphony* (New York: Oxford University Press, 2001), 15.

⁴⁵ In this case, Bax did not mark this section as an epilogue. However, it is described as an epilogue in Robert H. Hull, *A Handbook on Arnold Bax’s Symphonies* (London: Murdoch, Murdoch, & Co., 1932), 32. Since Arnold Bax gave permission that Hull’s handbook be published with his approval, it can be presumed that Bax favored the description of “epilogue” in his Second Symphony. The same can be said of the “Tempo di Marcia trionfale, Un pochettino più sostenuto” that ends Bax’s Fourth Symphony, which Hull also describes as an epilogue.

moderate dynamic and ends loudly. Only the epilogue of Vaughan Williams's Fourth Symphony begins and ends fortissimo, making it the most atypical from the ideal.

Table 4.1 – Qualities of the epilogues in symphonies by Vaughan Williams and Bax

Work	Marked as	Start dynamic	Ends as	Measures
VW 2	<i>Andante sostenuto</i>	<i>pp</i>	<i>Tranquillo</i>	173-232
Bax 2	<i>Molto largamente</i>	<i>ff</i>	<i>pp, niente</i>	143-200
Bax 3	<i>Poco lento</i>	<i>pp</i>	“Very calm”	238-361
Bax 4	Tempo di Marcia trionfale, Un pochettino più sostenuto	<i>mf</i>	<i>fff</i>	309-379
Bax 5	Doppio movimento alla breve	<i>pp</i>	poco largamente, <i>ff</i>	395-520
VW 4	Epilogo fugato con anima	<i>ff</i>	Meno mosso (Tempo di No. 1), <i>ff</i>	309-464
Bax 6	<i>Lento</i>	<i>p</i>	<i>Molto tranquillo</i>	465-510
VW 6	<i>Moderato</i> (♩ = 56)	<i>sempre pp</i> <i>e senza cresc.</i>	<i>pp, niente</i>	1-106

After the fugal interruption of measures 309-353, the final portion of the symphony, 354-464, commences with a statement of P2 in which the melody starts from B^b. This is the first moment of the fourth movement, other than the development, in which P2 begins on a pitch other than C. The statement from B^b is answered by one from E^b at 358. This is echoed in the basses and tuba, joined by bassoons and the bass clarinet, from 361-364. The familiar “oompah” accompaniment associated with P2 is absent, replaced by references to the descending second and ascending fourths motives. These motives begin to dominate the texture by 363.

P3 receives its final call at 367 and, like the appearance of P2 that had preceded it, it undergoes several surprising changes. In all subsequent statements, P3 had been composed from F Phrygian, but at this point P3 begins on D rather than F. Also, at this point an important intervallic difference changes the quality of the P3 melody. The third interval is now a whole tone instead of a semitone, projecting a sense of D Locrian rather than D Phrygian. A pitch center on D is reinforced by the entrance of the timpani in 372.

The D tone center continues at measure 379, though D Locrian changes quality to become D Lydian with the final appearance of S-material. S had previously been transposed to begin from D in the recapitulation. An A Lydian statement of S occurs at 386. Surrounding these are statement of the descending seconds theme, presented as they occurred earlier in the fugal interruption, and following the same pitch centers (D at 379, and then A at 385). A final statement of S, on D Lydian, begins in the basses and horns at 392. From measure 400-419 the “tail” of S and the descending seconds motives are spun out, reaching a climatic point from 413-419.

S2/C material returns at 420, centered within A Lydian. The passage presents nonatonic materials in conflict; C material is found within NON-2 while the reference to the descending seconds motive, given in the flutes and trumpets as two consecutive ascending seconds, is found in NON-3. This passage, 420-432, seems to act as a kind of transition to P1 material, which begins at measure 433. At this point, all the thematic materials of the exposition have returned, making the passage from 353 to 452 a fourth rotation in the sonata-form, comparable to the exposition, development, and recapitulation. This is highly unusual for a section of a symphony identified as an epilogue.

The symphony's final utterance begins at measure 453, and is a harmonized version of the opening of the first movement. The harmonization presents G^bm and Fm triads in close proximity, forming a member of 6-Z19 that can only be found in NON-3, as occurred in the first movement recapitulation. This recollection of the symphony's beginning is followed by minor triads whose roots ascend by semitone from D^b to G^b. Of the six triads presented, four belong to NON-3. These are the four boundary chords of this statement: D^bm, Dm, Fm, and G^bm. A brass fanfare mimicking the ascending fourths motive begins in 460 and arrives at a climatic chord, the same member of 6-Z19 from just a few measures earlier. Harper-Scott refers to this chord as an "enriched dominant 13th chord" that impels a kind of authentic cadence in the final moment.⁴⁶ This analysis is difficult to understand, and seems to distort a dissonant and modernist ending gesture in favor of a common-practice viewpoint.

The fourth movement of the Fourth Symphony serves its finale function by incorporating all the competing pitch structures of the symphony and bringing these elements into close proximity. Chromatic and modal pitch space asserts itself in the thematic areas of the fourth movement, while octatonic pitch space arises in the development. Nonatonic pitch collections serve as a connecting thread, especially in transitional sections, and in the final 11 measures.

The conflict between NON-2 and NON-3 that entangle much of the first two movements is brought to a climactic finish in favor of NON-3. This outcome could have been predicted by focusing on the significant pitch classes F, F[#], C, and C[#] – presumed by Pike to have the greatest structuring influence within the Fourth Symphony. While the

⁴⁶ Harper-Scott, "Vaughan Williams's Antic Symphony," 195.

critical semitone between C and C \sharp can be found in both NON-2 and NON-3, only NON-3 contains all four of Pike's "pivotal notes."

When contemplating the question of whether Vaughan Williams was aware of the nonatonic collection, only the transitional passage between the third and fourth movements seems to suggest that he was. It seems more likely that when composing an extensive work that uses the two contrasting motives of Figure 4.1, and while also putting chromaticism and mode-based pitch materials in close proximity, the outcome provides fertile ground from which nonatonic pitch structures can arise. Striking appearances of nonatonic structures in other works by Vaughan Williams, as well as those by Arnold Bax, point to a common harmonic language based on the confluence of these compositional choices. The next chapter examines examples of nonatonicism in other works by these composers.

CHAPTER 5: NONATONICISM IN WORKS BY VAUGHAN WILLIAMS AND BAX

5.1 Introduction

The previous chapter presents an analysis of the complete Fourth Symphony, showing how the nonatonic collection acts as a connecting thread among the disparate pitch elements deployed within the work. This chapter constructs a network of analyses to reveal similarities in harmonic language in other works by Vaughan Williams. This chapter also includes discussions of two symphonies by Arnold Bax in order to widen the network with the goal of showing similarities in harmonic language between these two distinct voices.

5.2 Nonatonicism in works by Vaughan Williams premiered before the Fourth Symphony

The exploratory phase of Vaughan Williams's compositional output, discussed briefly at the opening of Chapter 4, includes several works noteworthy among Vaughan Williams's output for certain distinctive characteristics. For example, the Violin Concerto (1924–5) shows an interest by Vaughan Williams in the 20th century strain of neoclassicism, a style he did not seriously return to. Other compositions during this phase project forward into his most significant works, for example the style and harmonic language of the Piano Concerto (1926–1931) foreshadows the Fourth Symphony. Some works from this period, such as *Flos Campi* (1925), are considered to be among Vaughan

Williams's best.¹ This section presents brief analytical commentary on passages from four works from this period. Three of the works considered (*Sancta Civitas*, *Flos Campi*, and *Job*) are often counted among Vaughan Williams's highest achievements. The fourth, the Piano Concerto, has suffered from a mixed reception despite its ardent admirers. All four works exhibit important harmonic similarities with Vaughan Williams's Fourth Symphony.

Sancta Civitas

Boult seemed to think of *Sancta Civitas* as Vaughan Williams's favorite composition.² Among the earliest of Vaughan Williams's "modernist" works, *Sancta Civitas* heads the strain from which *Job*, the Piano Concerto, and ultimately the Fourth Symphony would emerge. *Sancta Civitas* also acts as the culminating work of a different strain, one in a line of vocal works that are deeply concerned "with reaching out towards a religious, though not necessarily Christian, view of reality."³ The earlier of these, *The Shepherds of the Delectable Mountains* (1921) and the Mass in G minor (1920–21), both feature a style more similar to the *Pastoral Symphony* (1922) than the Fourth Symphony.

The pitch structure of *Sancta Civitas* includes pervasive bitonality⁴ as well as frequent use of the Lydian-minor scale, most notably in statements by the solo baritone.

¹ Hugh Ottaway and Alain Frogley, "Vaughan Williams, Ralph." *Grove Music Online*. Oxford Music Online. Oxford University Press, accessed May 15, 2014, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/42507>.

² Jenny Doctor, "Vaughan Williams, Boult and the BBC," in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 259.

³ Hugh Ottaway and Alain Frogley, "Vaughan Williams, Ralph." *Grove Music Online*. Oxford Music Online. Oxford University Press, accessed May 15, 2014, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/42507>.

⁴ Described in James Day, *Vaughan Williams* (London: Oxford University Press, 1998), 131, as a "bi- and tri-planar harmonic technique" in which distinct lines project contradictory tonal centers, usually in a polyphonic, perhaps even imitative, texture.

The Lydian-minor scale, already discussed as a substantial feature in the Fourth Symphony, appears in a prominent role in other symphonic works by Vaughan Williams.⁵ In addition, parallel chords, or at times chords that are very nearly parallel, are used throughout the oratorio as both a harmonic screen in the accompanying orchestra but also at the forefront in choral statements highlighting important moments, such as on the text “Babylon the Great has fallen.” Lionel Pike compares Vaughan Williams’s frequent use of parallel chords as an allusion “to pre-polyphony and medieval organum – a landscape lost in the mists of time.”⁶

The three features listed above, bitonality, parallel chords, and the Lydian-minor scale, can all be shown to be connected by the thread of nonatonicism. Figure 5.1 shows a passage that occurs immediately after the first statement by the distant choir with distant trumpet. The orchestral accompaniment oscillates between CM and B⁺ triads, while in the lowest portion of the orchestra there is a melodic ascent from A^b, through B^b to C. This melodic ascent is repeated by the choir’s “Amen.”

⁵ The Lydian-minor scale is “prominent in the Finale of the Ninth,” Alain Frogley, *Vaughan Williams’s Ninth Symphony* (Oxford: Oxford University Press, 2001), 292.

⁶ Lionel Pike, *Vaughan Williams and the Symphony* (London: Toccata Press, 2003), 80

Figure 5.1 – *Sancta Civitas*, mm. 30-35

The musical score is written for a vocal ensemble and piano accompaniment. It consists of six systems of staves. The key signature is one sharp (F#) and the time signature is common time (C). The vocal parts (Soprano, Alto, Tenor, and Bass) are represented by the upper staves in each system, while the piano accompaniment is represented by the lower staves. The lyrics "Al - le - lu ia." are written under the vocal staves. The piano accompaniment features complex rhythmic patterns, including triplets and sixteenth notes, and is marked with "A" and "men." (meno). The score is divided into measures by vertical bar lines, and the lyrics are aligned with the vocal lines.

Al - le - lu ia.

A men.

A men.

A men.

This passage may be a manifestation of bitonality, in which tonal centricity may be perceived to belong to either the A^b , given its emphasis as the lowest tone, or the C, given its durational emphasis as a whole note, with C highlighted in the choir's "Alleluia." Together these pitch materials form a seven note truncation (678T024) of NON-1. This septachord is a form of the Lydian-minor scale, set class 7-33. Eight measures after the end of this passage, these materials are transposed by ordered interval 4 to feature the choir's "Alleluia" with EM, and an orchestral accompaniment that oscillates between EM and D^+ triads. The passage is shown in Figure 5.2. The solo baritone features a melodic ascent, C through D to E that parallels the melodic ascent on the lower orchestra in the Figure 5.1. These pitch materials create another form of the Lydian-minor scale (TE02468), and like the passage shown in Figure 5.1, this is also a septachordal subset of NON-1. It is perhaps significant that the intersection between these two forms of the Lydian-minor scale is the "even" whole-tone scale (02468T); though the choir's statement of "For the Lord" adds a further constituent of NON-1, pc 7, the root of the GM triad at "Lord." NON-1 begins to melt away at this point, with the appearance of C^\sharp and A, both outside the NON-1 collection.

Figure 5.2 – *Sancta Civitas*, mm. 42-51

And I heard _____ as it were the voice of a great mul-ti-tude and

Al - le - lu - ia, _____

great. _____

Al - le - lu -

ia. _____

A - - - - - men, _____

A - - - - - men, _____

A - - - - -

The musical score is for a piece in 3/4 time, key of D major. It features a vocal line and a piano accompaniment. The vocal line includes lyrics: "And I heard _____ as it were the voice of a great mul-ti-tude and", "Al - le - lu - ia, _____", "great. _____", "Al - le - lu -", "ia. _____", "A - - - - - men, _____", "A - - - - - men, _____", and "A - - - - -". The piano accompaniment consists of a right hand with triplets of eighth notes and a left hand with single notes. The score is divided into three systems, each with a vocal staff and a piano grand staff.

as the voice of man - y wa - ters say - ing

Al - le - lu ia, ia, Al - le - lu

A - - - - men. - - - -

men - - - -

The musical score is written in G major (one sharp) and 4/4 time. It consists of five systems of staves. The first system has a vocal line and a piano accompaniment. The second system continues the vocal line and piano accompaniment. The third system features a vocal line and a piano accompaniment. The fourth system has a vocal line and a piano accompaniment. The fifth system features a vocal line and a piano accompaniment. The piano accompaniment includes triplets in the right hand and single notes in the left hand.

This musical score is for a hymn, likely "Alleluia, For the Lord". It is written for a four-part vocal choir (Soprano, Alto, Tenor, Bass) and a piano accompaniment. The key signature is one sharp (F#), and the time signature is 4/4. The score is divided into five systems. The first system shows the vocal parts with the lyrics "Al - le - lu - ia". The second system shows the vocal parts with the lyrics "For the Lord". The third system shows the vocal parts with the lyrics "Al - le - lu - ia, For the Lord". The fourth system shows the vocal parts with the lyrics "Al - le - lu - ia, For the Lord". The fifth system shows the piano accompaniment, which consists of a series of triplets in the right hand and single notes in the left hand. The lyrics "Al - le - lu - ia, For the Lord" are written above the piano part.

"Al - le - lu - ia"

For the Lord

Al - le - lu - ia, For the Lord

Al - le - lu - ia, For the Lord

Al - le - lu - ia, For the Lord

The first part of the oratorio, up to rehearsal 9, features C, A^b, and E as pitch centers. In the second part of the oratorio, where the text shifts to the topic of the “Fall of the Nations,” the featured pitch centers are G, B, and E^b. Figure 5.3 shows a motive, created from descending triads, that becomes associated with the word “slain” in descriptions of the apocalyptic war.⁷ The four triads involved in the first appearance of this motive (BM, B^bM, GM, and F[#]M) form an eight note truncation of NON-4, a member of set-class 8-19. Subsequent recurrences of the slain motive omit some of these chords, or substitute minor triads for major. The many statements of the chorus on the text “Babylon the Great has fallen” relate back to this motive. It is significant that the main pitch centers of the “Fall of the Nations” section (G, B, and E^b) are also the upper class nodes of NON-4, of which the slain motive is an essential constituent.

Figure 5.3 – *Sancta Civitas*, mm. 177-178, first appearance of “slain” motive

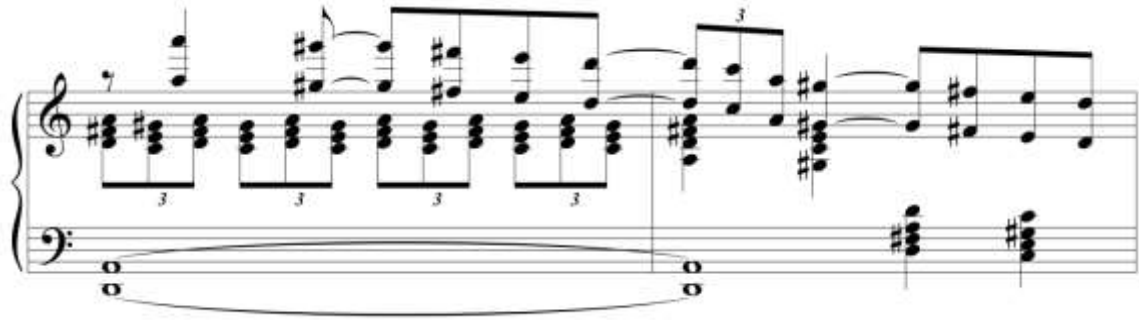


⁷ Charles McGuire refers to the passage on the armies of earthly kings as depicting the “forces of despair,” see Charles Edward McGuire, “An Englishman and a democrat’: Large choral works, and the British festival tradition,” in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 128.

Figure 5.4 shows a moment early in the final part of the oratorio, which centers on descriptions of the Holy City. At this point the oscillating triads from earlier are transposed to feature DM and C⁺, and serve as the accompaniment for a descending scale composed of the same pitch materials from these two triads. This moment brings to the foreground the resulting hexachord formed by these two triads, (024689), a member of set-class 6-34 with a prime form of (013579). This hexachord is better known as the “Mystic” chord and is associated with the compositional practice of Alexander Scriabin (1872-1915). Was Vaughan Williams aware of Scriabin’s use of this chord? It seems very likely. The term “mystic chord” arises from the work of English music critic Arthur Eaglefield Hull (1876-1928), who used the term in a two part article on Scriabin’s piano sonatas published in *The Musical Times*.⁸ Hull seems to have been something of a champion for Scriabin’s work after the composer’s death, giving a lecture on Scriabin’s harmonic practice for the Royal Musical Association on December 5, 1916, with Arthur Alexander performing the Fifth and Ninth Sonatas along with other selections.⁹ While Vaughan Williams could not have attended this lecture recital, there would have been ample opportunity for Hull to transmit his enthusiasm for Scriabin to Vaughan Williams after the war. Hull was an active academic, the author of a manual on organ playing and a textbook titled *Modern Harmony*. Like Vaughan Williams, Hull contributed articles to the *Grove Dictionary*. Hull founded the British Music Society, which gave the celebrated 1920 performance of *A London Symphony* that helped establish Vaughan Williams’s position as a leading composer.

⁸ Arthur Eaglefield Hull, “The Pianoforte Sonatas of Scriabin” *The Musical Times*, Vol. 57, Nos. 885 and 886 (Nov and Dec 1916), 492-495 and 539-542.

⁹ Notes from Hull’s lecture can be found in Hull, “Scriabin’s Scientific Derivation of Harmony versus Empirical Methods,” *Proceedings of the Musical Association*, 43rd session (1916-1917), 17-28.

Figure 5.4 – *Sancta Civitas*, mm. 398-399

A further appearance of the mystic chord is found at the end of the passage shown in Figure 5.5. This climatic passage directly precedes the tenor solo that signals the conclusion of the oratorio. It begins with a texture reminiscent of the sort of “pre-polyphony” that Pike associates with Vaughan Williams. In this case, the tenor carries the melody, which is harmonized a third above by the alto and a sixth above by the soprano (the bass doubles the soprano). The tenor melody is composed from a (8T0234) hexachord, a member of set-class 6-22 (012468). This set-class is a nonatonic subset, and in this case the form of 6-22 stated by the tenor is a subset of NON-1. The soprano and bass carry an exact transposition of the tenor melody by T_8 , meaning it must also be a subset of NON-1. The union of the tenor melody with its T_8 statement in the soprano and bass is (TE023468), a member of set-class 8-24. The alto is an inexact transposition, and expresses two pcs outside of NON-1 (F and A). The subordinated roles of these pcs suggest that the pitch structure of this passage is governed by NON-1, conveyed by the 6-22 hexachords and the triadic accompaniment, A^bM and F^{b+} , both subsets of NON-1. With a change of key signature negating the four flats, the orchestra takes up the melody stated by the tenor at the beginning of the passage. The orchestra adds a B^b to these melodic

statements to create the septachord (678T024), a form of the Lydian-minor scale. Another change of key, now to four sharps, brings back the motive of oscillating triads highlighted by Figure 5.4. The triads involved are now EM and D⁺. These two triads, when combined with the C in the bass portion of the orchestra, forms a septachord (TE02468), another form of the Lydian-minor scale, related by T₄ to the immediately preceding form of the scale.

Figure 5.5 – *Sancta Civitas*, mm. 556-595

The musical score for Figure 5.5 is presented in two systems. The top system shows the vocal line (treble clef) and piano accompaniment (grand staff). The vocal line includes the lyrics: "Heav'n and earth are full of thy glo - ry Lord God Al - migh - ty,". The piano accompaniment consists of two staves (treble and bass clefs). The bottom system shows the vocal line and piano accompaniment for the next two measures. The piano accompaniment features a mix of chords and single notes, with some measures containing rests.

The image displays a musical score for a piece titled "God Almighty" by Vaughan Williams. The score is written for voice and piano. The top system shows the vocal melody in a treble clef and the piano accompaniment in a bass clef. The key signature is three flats (B-flat, E-flat, A-flat), and the time signature is 3/4. The lyrics "God Al - migh - ty, Al - migh - ty" are written below the vocal line. The piano part features a complex, arpeggiated accompaniment. The bottom system continues the vocal melody and piano accompaniment, with the lyrics "ty, Glo - ry be to thee, O Lord,". The key signature changes to three sharps (F-sharp, C-sharp, G-sharp), and the time signature is 4/4. The piano part continues with a similar arpeggiated texture.

How might Vaughan Williams have conceived of this remarkable passage? In one respect, it seems that it could have been conceived of as a composing out of the augmented triad. Augmented triads are a featured harmony, and the three key signatures involved seem to arise from a long range premise of tonal centers based on the constituent pcs of an augmented triad $\{A^b, C, E\}$. The Lydian-minor scale is a featured

pitch structure that contains two augmented triads just like the “mystic” chord for which it is a superset. Together, all of these elements combine to express a latent nonatonicism that seems to characterize Vaughan Williams’s pitch organization at moments within *Sancta Civitas*, and in works related to it.

Flos Campi

Vaughan Williams wrote eleven concert works featuring an instrumental soloist with orchestra, and sometimes orchestra and chorus as is the case for the *Fantasia on the “Old 104th”* and *Flos Campi*. Five of these works were written during the decade between 1925 and 1935, and four of them were begun before 1930. As would be expected from works written during an exploratory phase in Vaughan Williams’s career, the style of these five are quite varied, ranging from Vaughan Williams’s experiment with neoclassicism (the Violin Concerto), to a Busonian work for virtuoso display (the Piano Concerto), and even to a revisiting of the folk song idiom of his earlier career in the *Fantasia on Sussex Folk Tunes* for Cello and Orchestra.

Flos Campi, regarded as one of the best of Vaughan Williams’s output during this phase, features a solo viola with small orchestra and wordless chorus. The harmonic content of *Flos Campi* ranges from an often referenced bitonal opening to novel diatonic counterpoint in the final movement.¹⁰ James Day describes the final movement as

¹⁰ Hugh Ottaway and Alain Frogley, “Vaughan Williams, Ralph.” *Grove Music Online*. Oxford Music Online. Oxford University Press, accessed May 15, 2014, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/42507>. Christopher Mark sees bitonality in Vaughan Williams as resulting from chord planing techniques, see Christopher Mark, “Chamber music and works for soloist and orchestra,” in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 188-189.

unfolding “gently, almost imperceptibly and in an unambiguous D major, like a Japanese flower opening out in water.”¹¹ However, it is hard to understand how the final movement could be described as D major without ambiguity: while the tones from the D major scale are used almost exclusively their usage subverts the establishment of a D major tonality. Furthermore, the piece ends with a Bm triad followed by an F[♯]m triad in the chorus; hardly an unambiguous D major.

Likewise, the opening duet between the solo viola and oboe cannot be understood as an example of bitonality, at least not “bitonality” as it may refer to the simultaneous sounding of two distinct keys. While the viola enters with an F Aeolian scale fragment, the oboe line does not clearly establish a tonal center on either E or A. The pitches involved (E, D, and A) seem to establish A as the tonic, though this is undermined by E, which is emphasized by both range and duration. While not exactly bitonal, the dissonant counterpoint continues with the entrance of the strings on Cm and E[♭]m triads, while the bassoon states a variation of the opening oboe line, substituting A[♭] for A. All the while, the solo viola and the oboe sustain G[♭] and D respectively.

This passage, shown in mm. 1-4 of Figure 5.6, is the first instance of a nonatonic pitch structure arising in *Flos Campi*. In the opening duet, F and A (the two presumed tonal centers) subside in favor of G[♭] and A[♭]. With F and A now absent, NON-1 pitch space is allowed to flourish with the statements of Cm and E[♭]m triads in the strings coupled with the bassoon’s variation of the oboe melody. After the fermata, the entrance of a new theme projects octatonic pitch structure based first on OCT_(0,1).¹² This theme

¹¹ Day, *Vaughan Williams*, 229.

¹² Vaughan Williams’s use of octatonic subsets in *Flos Campi* is discussed in Byron Adams, “Vaughan Williams’s musical apprenticeship,” in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 48-50.

undergoes a number of transpositions articulating several possible modal or octatonic readings, as discussed below.

When the motive first stated by the oboe returns, it is the bassoon's altered form replacing A^b for A. When this occurs, at measures 21-23, minor triads are again featured, this time B^bm and D^bm . These triads, along with the altered form of the opening motive, give rise to NON-3 pitch space. The three-note motive ($E - D - A^b$) can participate in both NON-1 and NON-3 pitch space, but not within the other two forms of the nonatonic.

Figure 5.6 – *Flos Campi*, mm. 1-23

The figure displays three systems of musical notation for the piece *Flos Campi*, measures 1-23. Each system consists of multiple staves for different instruments.

System 1 (Measures 1-4):

- Staff 1 (Soprano):** Labeled "solo vla" (solo viola). It begins with a rest, then contains a melodic line with triplets and slurs. A dynamic marking p is present.
- Staff 2 (Treble):** Labeled "ob." (oboe). It contains a melodic line with triplets and slurs. A dynamic marking p is present.
- Staff 3 (Bass):** Contains a single note with a fermata.

System 2 (Measures 5-8):

- Staff 1 (Soprano):** Labeled "pp" (pianissimo). It contains a melodic line with slurs. A text annotation reads "8-24 subset of NON-1 features Cm and E \flat m triads".
- Staff 2 (Treble):** Labeled "pp muted Str." (pianissimo muted strings). It contains a melodic line with slurs.
- Staff 3 (Bass):** Labeled "Bsn." (bassoon). It contains a melodic line with triplets and slurs.

Below System 2, a text annotation reads: Cm + E \flat m = (67T03), 5-32.

System 3 (Measures 9-12):

- Staff 1 (Soprano):** Labeled p (piano). It contains a melodic line with triplets and slurs. A text annotation reads "(679T013), 7-31 subset of OCT_(0,1)".
- Staff 2 (Treble):** Labeled p Fl. (piano flute). It contains a melodic line with triplets and slurs.
- Staff 3 (Bass):** Contains rests.

10

pp

Str. *p*

Cl.

cresc.

Bsn/Vla

14

f

f sost.

18

TUTTI *ff*

This musical score page contains three systems of music, numbered 10, 14, and 18. Each system consists of three staves: a top staff for woodwinds (Bassoon/Viola), a middle staff for strings, and a bottom staff for piano accompaniment. The key signature has two flats (B-flat and E-flat), and the time signature is 3/4. Measure 10 begins with a piano (*pp*) dynamic. The piano accompaniment features a triplet of eighth notes. Measure 14 shows a crescendo leading to a forte (*f*) dynamic. The piano accompaniment continues with triplet patterns. Measure 18 is marked 'TUTTI' and 'ff' (fortissimo), indicating a full orchestral entry with a very loud dynamic. The piano accompaniment maintains the triplet motif.

22

$Bbm + Dbm = (458T1), 5-32$

7-26 subset of NON-3 features Bbm and Dbm triads

Each time this exact form of the motive appears nonatonic pitch structures surround it. Figure 5.7 shows the next statement of this motive, beginning at measure 28. The motive is stated only once by the solo viola, with accompaniment by the wordless chorus on the chords $FmM7$ and $D^{\flat}7$. The movement between these harmonies, seventh chords respectively found on the middle and upper class nodes of NON-3, are related by N_{1-5} , a proximity 1 transformation predicted by Table 3.4 and displayed earlier in Figure 3.42 in Chapter 3. After the motive is stated, parallel minor triads appear to shift the pitch organization toward chromatic rather than nonatonic structure.

Figure 5.7 – *Flos Campi*, mm. 28-33

28 NON-3

p Chorus

f

p

Chromatic

FmM7 + D°7 = (02458), 5-26

The octatonic theme that enters in measure 5 deserves some discussion. In its recurrences in which the theme is harmonized by parallel triads, the essential octatonic nature of the theme is obscured, as in the four measures of the second statement in which all twelve pitch classes occur. Figure 5.8 displays the unharmonized themes to show the octatonic nature of this passage. The third statement and the first statement are shown to be closely related, in that they both project a 7-31 (0134679) subset of their respective octatonic collections, a relationship highlighted by the involvement of the solo viola in both instances. The third statement is T_1 from the original, mutating the collection from $OCT_{(0,1)}$ to $OCT_{(1,2)}$. $OCT_{(1,2)}$ is given in its entirety in the second statement, T_7 from the original and elaborated to complete the collection. The conflict between $OCT_{(0,1)}$ to $OCT_{(1,2)}$ is amplified in measures 17-20, when the lower strings state a fragment of the theme in quasi-stretto with an altered form of the theme in the upper strings. As the head of the theme given by the upper strings is T_5 from the same material stated in the low strings, $OCT_{(0,1)}$ and $OCT_{(1,2)}$ come into conflict with one another.

Figure 5.8 – *Flos Campi*, analytical reduction of mm. 5-21

mm. 5-8: 1st statement in solo Vla/Fl
7-31 subset of OCT_(0,1)

transition

mm. 10-14: 2nd statement in Strings
complete OCT_(1,2)

transition

mm. 13-16: 3rd statement in Bsn/Vla
7-31 subset of OCT_(1,2)

mm. 17-20: variation statement in Strings
complete OCT_(1,2)

transition

mm. 17-20: theme fragment in Strings
5-16 subset of OCT_(0,1)

Job

From its first performance as a concert work, Vaughan Williams's *Job* has been considered among his very best works. Richard Capell described the expectations and reception of *Job* at its premiere as a concert work on October 23, 1930:

“Practically nothing had been heard about this work beforehand and from the place on the programme something quite slight was expected. What we heard was one of Vaughan Williams's major compositions, a work of great spaciousness and rich in characteristic beauties, of the length of a

symphony.”¹³

Constant Lambert “singled out *Job* as one of Vaughan Williams’s finest works,” a sentiment that has been echoed by James Day and Michael Kennedy, among others.¹⁴ Both Day and Kennedy comment on similarities in style between *Job* and the Fourth Symphony, and Lionel Pike goes so far as to state that *Job* foreshadows the Fourth Symphony in its harmonic content.¹⁵ Pike points out the most palpable connection between the two works, a descending semitone “encountered in the Fourth Symphony, and used as Satan’s theme in *Job*.”¹⁶ This observation echoes Kennedy, who notes that “Satan’s Dance of Triumph” from *Job* resembles the scherzo of the Fourth Symphony, as they are “comparable in shape and substance.”¹⁷

Figure 5.9 shows the Satan motive of Vaughan Williams’s *Job*. While Pike captures the essence of this motive by labeling it as a descending semitone, more precisely the motive is a descending major 7th (G – A^b) followed by a descending minor 9th (A^b – G). A later statement of the motive presents a harmonized version; this occurs at a moment in the staged action in which Satan makes a wager with God over Job’s fate. The stage directions, written by Vaughan Williams in the score, read as this: “Satan says, ‘Put forth Thy hand now and touch all that he hath and he will curse Thee to Thy face.’” Figure 5.10 shows this passage.

¹³ Kennedy, *The Works of Ralph Vaughan Williams*, 204.

¹⁴ Day, *Vaughan Williams*, 54 and 61; and Kennedy, *The Works of Ralph Vaughan Williams*, 224.

¹⁵ Pike, *Vaughan Williams and the Symphony*, 107

¹⁶ *Ibid.*, 168.

¹⁷ Kennedy, *The Works of Ralph Vaughan Williams*, 223.

Figure 5.9 – Satan’s motive from *Job*Figure 5.10 – *Job*, Scene 1, 8 measures before rehearsal K

A two-staff musical score in 3/4 time with a key signature of one flat (B-flat). The top staff is for the right hand and the bottom for the left hand. The first five measures feature dense, complex chords in the right hand and simpler accompaniment in the left hand. The last three measures show a transition with more complex chords in the right hand and a more active left hand featuring triplets.

The first five measures of the passage shown in Figure 5.10 are comprised solely of pcs from NON-2. The triads involved ($A^b m$, $A m$, $A^b M$, $D^b m$, $C M$, $E m$) form an eight-note truncation of NON-2, with only F missing from the complete collection. F appears in the following three measures, though at this point two pcs outside of the NON-2 collection also appear: B^b and D. These tones are subordinated within the quarter note

triplet, while the emphasized harmonies, D^bm and Em, are triads built on upper and middle class nodes of NON-2.

Figure 5.11 shows a passage from Scene 2, “Satan’s Dance of Triumph.” Here nonatonicism emerges through an important septachordal subset, set-class 7-30 (0124689). 7-30 is notable as having an Rp relation (maximum similarity) with the Lydian-minor mode, set-class 7-33 (012468T). The pcs found in the first thirteen measures of Figure 5.11 combine to form a member of set-class 7-30 found only in NON-4. Only C[#] and F[#] are missing from the complete NON-4. At the end of the thirteenth measure, when the music recurs after having been transposed by T₈, another form of set-class 7-30 can be found, also a subset of NON-4. This form of set-class 7-30 presents the missing pcs that complete NON-4 (1 and 6), while D and A melt away.

Figure 5.11 –*Job*, Scene 2, rehearsal R

The musical score consists of four systems, each with a grand staff (treble and bass clefs). The key signature is one flat (B-flat). The first system features a treble staff with a whole rest followed by a series of chords, and a bass staff with a continuous eighth-note accompaniment. The second system continues the chordal texture in the treble and the eighth-note accompaniment in the bass. The third system introduces a more active treble line with eighth-note runs and maintains the eighth-note accompaniment in the bass. The fourth system continues the eighth-note runs in the treble and the eighth-note accompaniment in the bass, concluding with a final chord in the treble.

Piano Concerto

Like *Job*, the Piano Concerto foreshadows the Fourth Symphony in its character and harmonic content. Unlike *Job*, the Piano Concerto carries a more mixed reception. Detractors often decry the lack of unity, noting that the concerto “was conceived piecemeal and cannot be considered wholly successful.”¹⁸ Others, such as Lionel Pike, hold parts of the concerto in high esteem; Pike considers the finale of the concerto to be one of Vaughan Williams’s greatest accomplishments.¹⁹ This divided reaction has haunted the Piano Concerto since its premiere at Queen’s Hall on February 1, 1933, where apparently it was both applauded and hissed. Kennedy explains the problems of the work’s initial reception as coming from its “percussive nature and harsh harmonic idiom” which “militated against its appreciation in a country which knew hardly anything of Bartók’s and Hindemith’s similar works.”²⁰

Further complicating the reception of the Piano Concerto is the fact of its two versions. Adrian Boult, who conducted the premiere, suggested rescoring the solo part for two pianos to try to correct problems of balance. In 1946, Vaughan Williams worked out the revised version for two pianos in collaboration with Joseph Cooper. The opinion that this revision corrects the issue of balance is not universally shared; James Day writes at length on the problems of the version for two pianos:

“In the revised version the soloists obscure the theme by clattering away

¹⁸ Hugh Ottaway and Alain Frogley, “Vaughan Williams, Ralph.” Grove Music Online. Oxford Music Online. Oxford University Press, accessed May 15, 2014, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/42507>. Christopher Mark refers to the Piano Concerto’s “patchwork quality” but demonstrates in at least one passage that the Piano Concerto may possess a “greater degree of unity across the work than the *Grove* writers allow,” see Mark, “Chamber music and works for soloist and orchestra,” 189-191.

¹⁹ Pike, *Vaughan Williams and the Symphony*, 148.

²⁰ Kennedy, *The Works of Ralph Vaughan Williams*, 236. Later in that same year Bartók heard and liked a performance of the concerto in Strasbourg.

through and above the orchestral texture; and sporadically throughout the work Vaughan Williams thickens the piano part with ruthless zeal...Admittedly, in the original version, the demands on the soloist's stamina are heavy; but the same sense of desperate effort as that experienced when a good quartet rather than a string orchestra performs the *Grosse Fuge* is surely worth the sacrifices involved. If the single soloist had too hard a time of it, the duo version gives too hard a ride to the orchestra."²¹

One moment that is unchanged between both versions is the cadenza for a single piano that closes the first movement. Figure 5.12 shows this moment, which provides an insight into the various harmonic vocabularies utilized in this work, and in works related to it. The cadenza is preceded by an (027) trichord constructed from D, G, and C, played as tutti hammerstroke chords in the orchestra. The solo cadenza commences with an ascending arpeggio based on this (027) trichord. After reaching a G held by a fermata, the cadenza cycles through a number of scalar passages based on a variety of pitch collections. The first of these scale patterns forms an eight-note subset of NON-1, with only B missing from the complete NON-1. These eight notes form a member of set-class 8-24, notable as the proposed revision of the Lydian-minor scale discussed in Chapter 4 of this dissertation (see Figure 4.13). In fact, the pcs used in this scale passage are the exact pcs found in the exemplar shown in Figure 4.13. Nonatonic structure fades after another pause on G; the following scalar figure is composed out of a form of the diatonic collection, set-class 7-35. This particular form of the diatonic collection seems to

²¹ Day, *Vaughan Williams*, 230. This opinion is echoed by Michael Kennedy who calls the revision, "ill-advised," see Michael Kennedy, "Fluctuations in the response to the music of Ralph Vaughan Williams," in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 289.

be presented as A Dorian, if the perfect fourths at the middle of the passage are to be taken as structural intervals defining A as a pitch center. However, C Lydian may be the better choice considering the following scalar passage which seems to center on a C pitch center and features the opening pentachord of the C Lydian scale. In fact, the pc sets from the second and third scalar passages display the R_p relation (maximum similarity), with only one pc exchanged: the B for a B^b . This changes the diatonic collection to a form of the Acoustic scale, centered on C.

The solo piano emphasizes the upper trichord of the Acoustic scale with a triplet figure, which serves as the transition to an octatonic-related pc set, a form of set-class 7-31. This pitch set governs the end of the cadenza, with one notable exception: a B, which falls outside the $OCT_{(0,1)}$ collection, occurs in the left hand part, shown in Figure 5.12 in the fourth system within parentheses. B was the missing pc that would complete the NON-1 passage that opened the cadenza, and B is also a primary element in the theme that opens the second movement, which begins *attacca* after this cadenza.

Figure 5.12 – Vaughan Williams, Piano Concerto/I, ending cadenza

The image displays four systems of musical notation for the ending cadenza of Vaughan Williams' Piano Concerto I. Each system consists of a piano part (grand staff) and a soloist part (single staff).

- System 1:** Labeled "TUTTI" and "SOLO CADENZA". The piano part has a fermata over a chord. The soloist part begins with a melodic line. An annotation "(234678T0), 8-24 subset of NON-1" is placed below the soloist's first phrase.
- System 2:** The piano part features a long, continuous melodic line. An annotation "Diatonic collection (7-35), A Dorian" is placed below the piano part.
- System 3:** The piano part has a melodic line with a triplet of eighth notes. The soloist part has a melodic line with a triplet of eighth notes. An annotation "7-31 subset of OCT_{0,1} (missing C to complete)" is placed below the soloist's triplet.
- System 4:** The piano part has a melodic line with a triplet of eighth notes. The soloist part has a melodic line with a triplet of eighth notes. An annotation "Acoustic scale (7-34)" is placed below the piano part.

The opening of the second movement features the soloist(s) without orchestra.

There is not a significant difference between the version for one piano and the version for two, so Figure 5.13 shows the version for two pianos. In the version for one piano the

soloist gives the melody of the first piano in the right hand and with the left hand handles the arpeggios given to the second piano in the revised version. What is added are the sustained chords in the left hand of Piano I. These chords seem to clarify Vaughan Williams's harmonic thinking in this passage, which presents a succession of triads: CM, FM, Em, D^bM, CM, and A^bm. The roots of these triads nearly complete HEX_(0,1), and the union of all the pcs within these five triads forms a complete NON-2. The only pc from this passage that falls outside of the NON-2 collection is the occasional D in the melody and in Piano II, always with a C major chord in the left hand of Piano I.

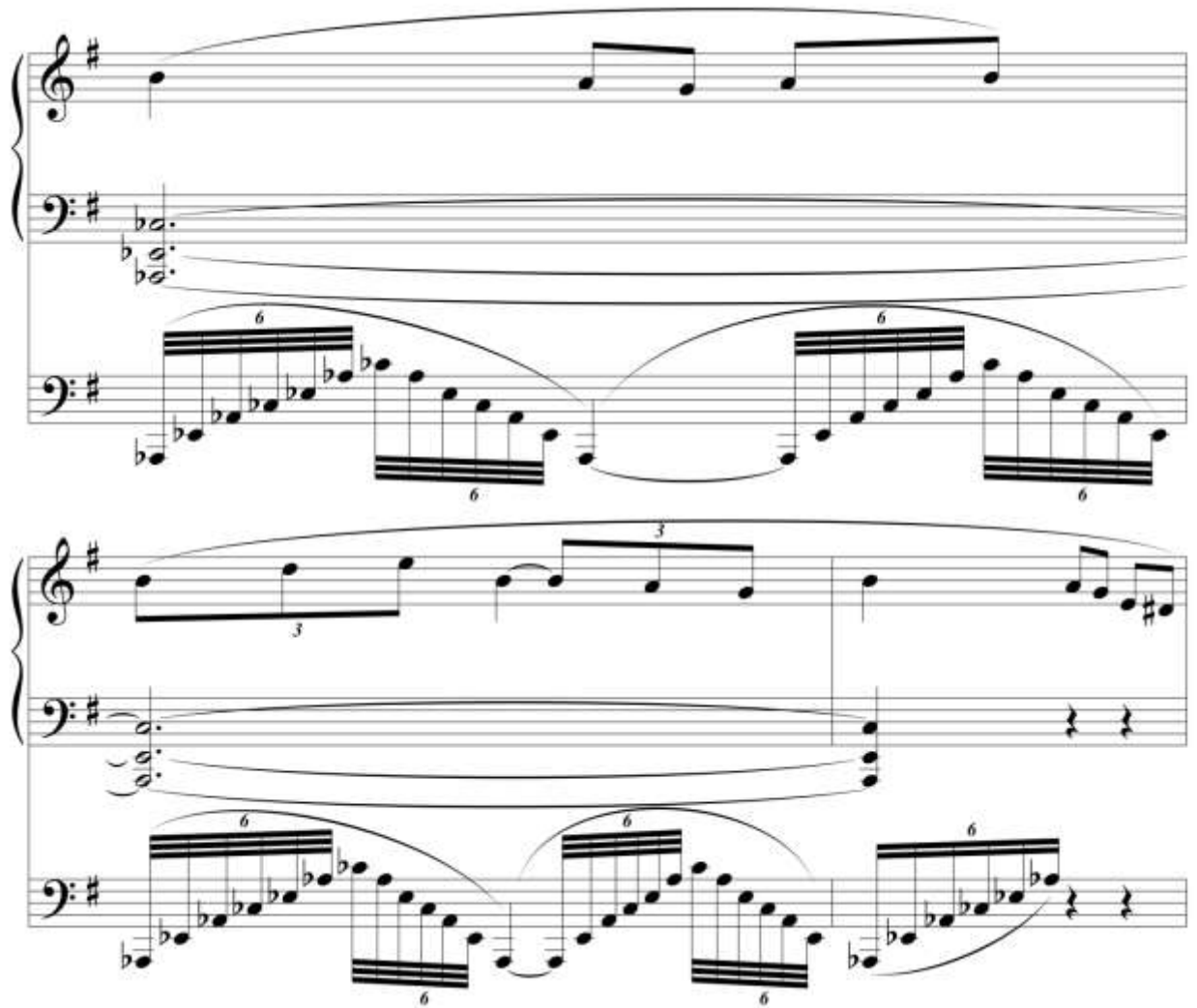
Figure 5.13 – Vaughan Williams, Piano Concerto/II, opening

The image displays the opening of Vaughan Williams' Piano Concerto No. 2, featuring Piano I and Piano II. The score is written in 3/4 time with a key signature of one sharp (F#). Piano I (top system) has a treble and bass staff. The right hand (treble) plays a melody of eighth and quarter notes, while the left hand (bass) plays sustained chords. Piano II (bottom system) also has a treble and bass staff. The right hand (treble) plays a melody of eighth and quarter notes, while the left hand (bass) plays arpeggiated chords. The score is divided into two systems. The first system shows the initial measures, and the second system shows the continuation of the music. The Piano I left hand plays sustained chords, while the Piano II left hand plays arpeggiated chords. The Piano II right hand plays a melody that includes a D note, which is outside the NON-2 collection.

The image displays two systems of musical notation for a piano piece. Each system consists of a grand staff with a treble and bass clef, and a separate bass staff below. The key signature is one sharp (F#), and the time signature is not explicitly shown but appears to be 4/4 based on the note values.

First System:

- Treble Staff:** Contains a single half note (F#4) followed by a half rest.
- Bass Staff:** Features a complex, rapid sixteenth-note pattern. It begins with a half note (F#3), followed by a series of sixteenth notes: G#3, A3, B3, C4, D4, E4, F#4, G#4, A4, B4, C5, D5, E5, F#5, G#5, A5, B5, C6, D6, E6, F#6, G#6, A6, B6, C7, D7, E7, F#7, G#7, A7, B7, C8, D8, E8, F#8, G#8, A8, B8, C9, D9, E9, F#9, G#9, A9, B9, C10, D10, E10, F#10, G#10, A10, B10, C11, D11, E11, F#11, G#11, A11, B11, C12, D12, E12, F#12, G#12, A12, B12, C13, D13, E13, F#13, G#13, A13, B13, C14, D14, E14, F#14, G#14, A14, B14, C15, D15, E15, F#15, G#15, A15, B15, C16, D16, E16, F#16, G#16, A16, B16, C17, D17, E17, F#17, G#17, A17, B17, C18, D18, E18, F#18, G#18, A18, B18, C19, D19, E19, F#19, G#19, A19, B19, C20, D20, E20, F#20, G#20, A20, B20, C21, D21, E21, F#21, G#21, A21, B21, C22, D22, E22, F#22, G#22, A22, B22, C23, D23, E23, F#23, G#23, A23, B23, C24, D24, E24, F#24, G#24, A24, B24, C25, D25, E25, F#25, G#25, A25, B25, C26, D26, E26, F#26, G#26, A26, B26, C27, D27, E27, F#27, G#27, A27, B27, C28, D28, E28, F#28, G#28, A28, B28, C29, D29, E29, F#29, G#29, A29, B29, C30, D30, E30, F#30, G#30, A30, B30, C31, D31, E31, F#31, G#31, A31, B31, C32, D32, E32, F#32, G#32, A32, B32, C33, D33, E33, F#33, G#33, A33, B33, C34, D34, E34, F#34, G#34, A34, B34, C35, D35, E35, F#35, G#35, A35, B35, C36, D36, E36, F#36, G#36, A36, B36, C37, D37, E37, F#37, G#37, A37, B37, C38, D38, E38, F#38, G#38, A38, B38, C39, D39, E39, F#39, G#39, A39, B39, C40, D40, E40, F#40, G#40, A40, B40, C41, D41, E41, F#41, G#41, A41, B41, C42, D42, E42, F#42, G#42, A42, B42, C43, D43, E43, F#43, G#43, A43, B43, C44, D44, E44, F#44, G#44, A44, B44, C45, D45, E45, F#45, G#45, A45, B45, C46, D46, E46, F#46, G#46, A46, B46, C47, D47, E47, F#47, G#47, A47, B47, C48, D48, E48, F#48, G#48, A48, B48, C49, D49, E49, F#49, G#49, A49, B49, C50, D50, E50, F#50, G#50, A50, B50, C51, D51, E51, F#51, G#51, A51, B51, C52, D52, E52, F#52, G#52, A52, B52, C53, D53, E53, F#53, G#53, A53, B53, C54, D54, E54, F#54, G#54, A54, B54, C55, D55, E55, F#55, G#55, A55, B55, C56, D56, E56, F#56, G#56, 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F#313, G#313, A313, B313, C314, D314, E314, F#314, G#314, A314, B314, C315, D315, E315, F#315, G#315, A315, B315, C316, D316, E316, F#316, G#316, A316, B316, C317, D317, E317, F#317, G#317, A317, B317, C318, D318, E318, F#318, G#318, A318, B318, C319, D319, E319, F#319, G#319, A319, B319, C320, D320, E320, F#320, G#320, A320, B320, C321, D321, E321, F#321, G#321, A321, B321, C322, D322, E322, F#322, G#322, A322, B322, C323, D323, E323, F#323, G#323, A323, B323, C324, D324, E324, F#324, G#324, A324, B324, C325, D325, E325, F#325, G#325, A325, B325, C326, D326, E326, F#326, G#326, A326, B326, C327, D327, E327, F#327, G#327, A327, B327, C328, D328, E328, F#328, G#328, A328, B328, C329, D329, E329, F#329, G#329, A329, B329, C330, D330, E330, F#330, G#330, A330, B330, C331, D331, E331, F#331, G#331, A331, B331, C332, D332, E332, F#332, G#332, A332, B332, C333, D333, E333, F#333, G#333, A333, B333, C334, D334, E334, F#334, G#334, A334, B334, C335, D335, E335, F#335, G#335, A335, B335, C336, D336, E336, F#336, G#336, A336, B336, C337, D337, E337, F#337, G#337, A337, B337, C338, D338, E338, F#338, G#338, A338, B338, C339, D339, E339, F#339, G#339, A339, B339, C340, D340, E340, F#340, G#340, A340, B340, C341, D341, E341, F#341, G#341, A341, B341, C342, D342, E342, F#342, G#342, A342, B342, C343, D343, E343, F#343, G#343, A343, B343, C344, D344, E344, F#344, G#344, A344, B344, C345, D345, E345, F#345, G#345, A345, B345, C346, D346, E346, F#346, G#346, A346, B346, C347, D347, E347, F#347, G#347, A347, B347, C348, D348, E348, F#348, G#348, A348, B348, C349, D349, E349, F#349, G#349, A349, B349, C350, D350, E350, F#350, G#350, A350, B350, C351, D351, E3



Another instance of nonatonicism is found in the third movement. In addition to the passage discussed in Chapter 2 of this dissertation (see Figure 2.11), there is a moment within the “Fuga Chromatica” that arises from the nonatonic collection. This passage is shown in Figure 5.14. As before, the version with two pianos is shown; here Piano II provides more information about Vaughan Williams’s harmonic thinking with chords that are not provided in the version for one piano. The succession of chords given by Piano II at the opening of this passage, B^bM, G^bM, D^bM, G^bM, B^bM, assembles a six-

note subset of NON-3. With the E and the A in Piano II an eight-note subset of NON-3 is assembled, as an eight-note subset yielding a form of set-class 8-19. Only the B that appears in the fourth measure in Piano I lies outside NON-3. The remaining pc to complete NON-3, C, can be found as the fifth of an F major triad in the eighth measure of the example in Piano I. The succession of chords beginning in the fifth measure (B^bM, AM, G^bM, B^bM, AM, G^bM, FM, DM, D^bM) contains triads found within NON-3; only the root of the BM triad in the ninth measure of the example falls outside NON-3.

Figure 5.14 – Vaughan Williams, Piano Concerto, III, mm. 92-100

The musical score is presented in three systems. The first system, labeled 'Piano I', shows a continuous eighth-note melody in both hands. The second system, labeled 'Piano II', shows chords in the right hand and eighth-note accompaniment in the left hand. A dashed line with '8vb' indicates an octave drop in the left hand. The third system, labeled 'Orchestra', shows the strings entering in measure 100 with a melody. The score is in B-flat major and 4/4 time.



5.3 Nonatonicism in symphonies by Vaughan Williams after the Fourth Symphony

The thirteen year period between the premiere performances of Vaughan Williams's *Pastoral Symphony* (No. 3) and the Fourth Symphony is the largest gap between any two consecutive symphonies in Vaughan Williams's output. This time coincides with the exploratory phase of Vaughan Williams's career, and after the Fourth Symphony he returned to the symphony as a genre with increasing frequency. The symphony, as discussed in Chapter 1 of this dissertation, was a genre laden with the expectation of engaging with an increasingly conservative tradition. This conservatism slackened somewhat after World War I, at least in the increasing acceptance by institutions and audiences for new works by native British composers. Those new works

were still judged by the standards of making an original utterance while engaging with the long tradition of accepted masterworks. While straddling this difficult balance, the title “Symphony” came with the presumption of intellectual weight and breadth of expression associated with the canonized masterworks of the genre.

Perhaps the pressure of meeting these expectations delayed Vaughan Williams’s return to working out a symphony after his *Pastoral*. Brahms and Elgar, composers greatly admired by Vaughan Williams, had felt this same pressure. One indication that the Fourth Symphony represented an acknowledgement by Vaughan Williams of the pressures and expectations associated with the genre is the work’s lack of a programmatic title. The Fourth Symphony is the first of Vaughan Williams’s symphonies to come without a descriptive title, conforming to the conservative expectation that a great symphony is foremost a work of absolute music.

It seems just as likely that Vaughan Williams delayed his Fourth Symphony due to a busy schedule spent teaching, conducting, and lecturing, in addition to crafting some of the remarkable compositions discussed above. Regardless of the motivating impulse, the Fourth Symphony does indicate some evolution of the composer’s thoughts on the genre. Palpable echoes of the Fourth Symphony’s style and harmonic language recur in subsequent symphonies by Vaughan Williams. This section explores such recurrences in two of those works.

Symphony No. 6 in E minor

Despite the roughly thirteen years separating the first performance of the Fourth Symphony from the first performance of the Sixth, a litany of similarities between the

two works has been noted. James Day describes both the Fourth and the Sixth as possessing a “hectic vitality” that is “forceful to the point of brutality.”²² Lionel Pike focuses on the similarity in formal processes; in his view both the Fourth and Sixth involve the “telescoping of sonata-form procedures,” and they represent an advancement in symphonic integration.²³ Pike’s analysis of the Sixth Symphony relies on a set of pivotal pitches, similar to his analysis of the Fourth Symphony. Like the Fourth, the pitch content of the Sixth Symphony gives rise to nonatonic constructions, though this thread is less pervasive than in the Fourth.

Figure 5.15 shows the opening of the Sixth Symphony. Like the Fourth Symphony, this work relies on a semitone as a fundamental compositional premise. In the Fourth Symphony, these arise from the primary theme of the first movement, which features first a descent from D^b to C and then G^b to F. The Sixth Symphony focuses on alternating motion, at times ascending or descending, on the semitone E and F. Often these are the roots of minor triads, sometimes major triads, and sometimes seventh or even ninth chords. The opening theme presents this as the harmonization of the primary melodic material. When first stated, a bombastic Em chord enters on the third beat of the first measure. When the theme is restated an Fm chord is given at the corresponding moment. The main motive of the primary theme also features the semitone between E and F, as these are its initial and terminal melody notes in measure 1, beats 1-3. The opening ascent from F to A^b suggests F minor, but on the descent the line skips down to E instead of F.

²² Day, *Vaughan Williams*, 214 and 104.

²³ Pike, *Vaughan Williams and the Symphony*, 217-219 and 251.

Figure 5.15 – Vaughan Williams, Sixth Symphony/I, 1-8

The musical score for Vaughan Williams' Sixth Symphony, I, measures 1-8, is presented in four systems. The first system (measures 1-4) shows a piano introduction in the bass with a treble line. The second system (measures 5-8) continues the piano introduction. The third system (measures 9-12) features a treble line and a bass line. The fourth system (measures 13-16) continues the piano introduction. The score includes various musical notations such as notes, rests, and chords. Specific annotations include 'Em' for the E minor chord in measure 1, 'Fm' for the F minor chord in measure 10, and 'HEX(1,2)' and 'HEX(3,4)' for hexachordal sets in measures 1, 2, 3, and 4 respectively.

In measure 1, the prime theme motive combines with the Em chord to form a (45789) pentachord, a form of set-class 5-3 (01245). Of all the nonatonic collections, this

particular form of 5-3 can only be found in NON-2. The furious scalar passage that answers the first statement of the prime theme uses all twelve pitch classes. On the descent, these are partitioned into two hexatonic scales; one of these, $\text{HEX}_{(3,4)}$, is a constituent of NON-2. The ascent favors chromaticism, but conspicuously avoids pcs 7 and 8. These are withheld until the return of the main theme, as G and A^b serve as the apex of that moment.

Measures 6 and 7 are composed entirely out of NON-2, and assemble the complete NON-2 pitch collection. This occurs by applying T_8 to the head of the main theme, first given as an ascending minor trichord (set-class 013) initiating from F. Stated initially as (578), the subsequent T_8 operations yield (134), then (9E0). Since the minor trichord is a subset of the nonatonic collection, two consecutive transpositions by T_8 form the complete collection.

The secondary theme of the Sixth Symphony's first movement, displayed in Figure 5.16, relies on a harmonic profile already encountered in *Sancta Civitas*: the close proximity of consonant (i.e. major or minor) and augmented triads. In this case, the accompaniment of the secondary theme alternates between Gm and F⁺ triads. Together they produce a form of set-class 6-31 (013589), not Scriabin's mystic chord, but a hexachord that is maximally similar (R_p) to the mystic chord. The melody features the same minor trichord found in the prime theme, though descending instead of ascending and transposed to imply G minor in the descent from B^b, to A, to G. The melody is harmonized at times, creating parallel major or minor triads. Together the pitch materials in this passage assemble an eight-note truncation (9TE12357) of NON-4, with an occasional C or E that falls outside the prevailing nonatonic collection. This octachord is a form of set-class 8-24, referred to in this dissertation as the "revised Lydian-minor

scale” which is also a pitch construction frequently encountered in the works by Vaughan Williams investigated in this chapter.

Figure 5.16 – Vaughan Williams, Sixth Symphony/I, 43-53



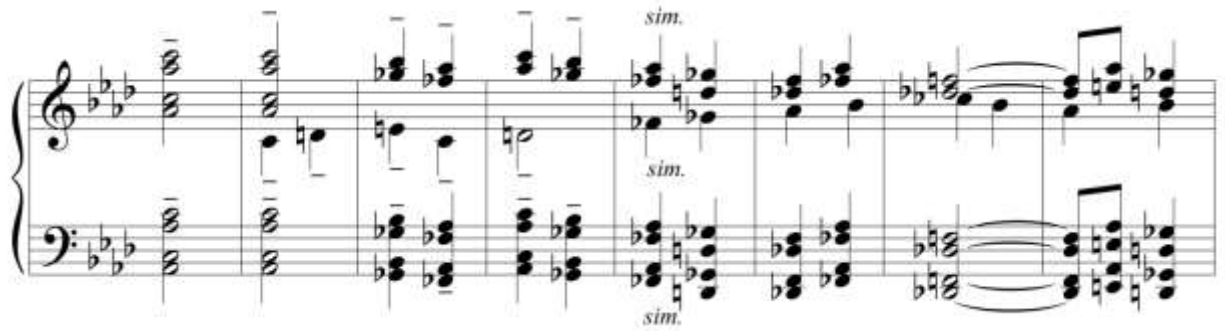


The second movement features a chromatic theme derived from the main compositional premise, alternating triads built on roots of F and E. Chromatic, non-tonal pitch space predominates throughout the movement, though in one instance a nonatonic construction is allowed to flourish. This occurs in the cello soli four measures before rehearsal 5, shown below as Figure 5.17. Initially the chords given in the divisi strings are Fm and Em, though after the cello soli this changes to Fm and EM (where the common tone, pc 8, is spelled enharmonically as an A^b in the EM triad). The two triads assemble six elements of NON-2, while the cello statement adds pcs 3 and 9, only the D passing tone is outside NON-2. Together an eight-note subset (345789E0) of NON-2 arises; this is a form of set-class 8-19.

Figure 5.17 – Vaughan Williams, Sixth Symphony/II, 52-57

Like the second movement, the scherzo features pervasive chromaticism, even going so far as to state a “twelve-tone row” in the opening measures.²⁴ One passage brings forth a nonatonic construction through the use of the whole tone scale. This passage is shown in Figure 5.18. The pitch materials at the opening of this passage come exclusively from the “even” whole-tone scale, a constituent of both NON-1 and NON-3. In the sixth measure of this passage, two pcs outside this whole-tone scale (D^b and F) appear. This dyad pulls the pitch space toward NON-3, and this passage assembles a 8-24 subset (0124568T) of NON-3.

Figure 5.18 – Vaughan Williams, Sixth Symphony/III, 307-314



The Sixth Symphony is the first instance in which Vaughan Williams labels an entire symphonic movement as an epilogue. The opening of this movement once again highlights the semitone between F and E; the melody initiates on F and seems to be composed out of an altered F minor with a Lydian fourth scale degree. The melody dips

²⁴ Pike, *Vaughan Williams and the Symphony*, 230, describes this feature of the opening of the third movement in this way: “Perverse as it may seem, the upper part of the first seven bars (traced upwards at the top of the strings, though migrating between instruments), is a twelve-tone row. I am not sure whether anyone has previously ‘accused’ Vaughan Williams of writing serial music, a type of composition that was anathema to him.” While the third movement features pervasive chromaticism, it is not a serial piece, and Pike suggests that there seems to be an element of parody in the appearance of a twelve-tone row at the beginning of this movement.

to its nadir on E three times in measures 2 and 3, and each time the E is preceded by the F a semitone above. The opening also presents a taste of a nonatonic construction in a seven-note subset (34578E0) of NON-2. Only B^b falls outside the NON-2 collection. The seven-note subset is a form of set-class 7-21 (0124589).

Figure 5.19 – Vaughan Williams, Sixth Symphony/IV, 1-5



Another instance of a 7-21 septachord occurs in the cello solo two measures after rehearsal 4. This passage is shown in Figure 5.20. In this case all the notes of the cello solo belong to the septachord, without a single errant B^b to fall outside the global NON-2 collection. Furthermore, the form of 7-21 stated by the cello solo (0145789) is related by T₀I to the form of 7-21 stated at the opening, shown in Figure 5.19. The chords in the muted brass that precede and follow the cello solo again feature the semitone between E and F. The lower parts descend from F to E while the upper parts ascend from E to F. Tertian harmonies are created in between the resulting M7 and m9, creating an FMaj7 chord followed by an Emin9. Of the tones included here, only D falls outside NON-2 and the B can be added to the cello solo to form an eight-note subset of NON-2.

Figure 5.20 – Vaughan Williams, Sixth Symphony/IV, 39-42



While the previous examples focus on an important septachordal subset of the nonatonic collection, Figure 5.21 displays the use of a complete nonatonic collection in the Sixth Symphony epilogue. In this passage, tremolo strings create a screen behind muted trumpets and trombones, which begin by stating a six-note truncation of the Lydian-minor scale starting on B^b and ascending to A^b. The entire melody is composed out of a form of set-class 8-24 (0124568T), the revised Lydian-minor scale. The missing pc from the complete NON-3, A, can be found in the arco string statement in the fifth measure of the example. The only pc to fall outside the NON-3 collection is B, and its role in this passage is highly subordinated.

Figure 5.21 – Vaughan Williams, Sixth Symphony/IV, 58-62



Sinfonia Antartica

Five years separate the premiere performances of the Sixth Symphony with its successor, *Sinfonia Antartica*. James Day describes the two symphonies as coming from Vaughan Williams's work during World War II:

“RVW was invited to provide music for a number of films after *49th Parallel* and this enabled him to contribute personally and in a highly effective manner to the war effort. He rose to the challenge with enthusiasm and took considerable pains to ensure that his music was not just hackwork. Some of it, in fact, was later adapted and used in other works, notably the Sixth Symphony and *Sinfonia Antartica*.”²⁵

Day goes on to point out some musical similarities between the two symphonies. These include the imaginative blending of Dorian, Phrygian, and Mixolydian modes with “more conventional tonalities”²⁶ along with a process of “generating [thematic] development by evolution.”²⁷ Lionel Pike notes that *Sinfonia Antartica* begins: “by picking up an idea from a previous [symphony], in this instance it is the idea by which a major triad becomes minor through shifting the root up a semitone, used during the Sixth Symphony.”²⁸ What Pike is describing is the P' (aka SLIDE) transformation, an example of which can be found in Figure 3.9 (see Chapter 3). In *Sinfonia Antartica*, examples of the P' transformation can be found in the triadic accompaniment that opens the first movement. Figure 5.22 displays a reduction of the first twenty measures with a few analytical comments. P' describes the transformation that maps GM onto A^bm and back

²⁵ Day, *Vaughan Williams*, 75.

²⁶ *Ibid.*, 262

²⁷ *Ibid.*, 252-4

²⁸ Pike, *Vaughan Williams and the Symphony*, 258. In fact, both the root and fifth of the triad move up in parallel fifths while the third remains fixed.

again, as occurs in measures 2-4 and again in measures 9-11. P' also maps DM onto E^bm, as occurs in measures 6-7 and again in measures 13-14. As shown in Figure 5.22, the common tone is spelled enharmonically in the resulting minor triad, B in A^bm and F[#] in E^bm.

Figure 5.22 – Vaughan Williams, *Sinfonia Antartica*/I, mm. 1-20

The figure displays three systems of musical notation for the piano part of Vaughan Williams' *Sinfonia Antartica*/I, measures 1-20. Each system consists of a treble and bass staff. The first system (measures 1-7) features a melodic line in the treble and a harmonic accompaniment in the bass. Above the first system, two sets of curly braces indicate pitch classes: {3, 7, E} for measures 1-3 and {T, 2, 6} for measures 4-7. Below the first system, the harmonic analysis for measures 1-7 is provided: E^bm, GM, A^bm, GM, B^bm, DM, and E^bm. The second system (measures 8-14) shows a continuation of the melodic and harmonic material. Above the second system, the label 'NON-4' is placed above measures 8-9, '7-21 of NON-1' above measures 10-11, and 'NON-4' above measures 12-14. Below the second system, the harmonic analysis for measures 8-14 is provided: C^bM, GM, A^bm, GM, B^bm, DM, and E^bm. The third system (measures 15-20) continues the melodic and harmonic material. Above the third system, a curly brace {9, 1, 5} is placed above measures 15-17, and the label '8-19 of NON-3' is placed above measures 18-20. Below the third system, the harmonic analysis for measures 15-20 is provided: Bm, Am, D^bM, Dm, Fm, and Fm.

Of the twenty triads sounded by the accompaniment, thirteen (65%) are found in the NON-4 collection. These thirteen occur within the first fifteen triads of the passage, bringing the percentage to 86.6%. NON-4 predominates as a governing pitch collection in the first fifteen measures, and the influence of this pitch collection is felt throughout the entire twenty-measure passage shown. The melody for the first fifteen measures assembles an octachordal subset (8-19) of NON-4, with an occasional C or E occurring in a highly subordinated position. In the triadic accompaniment, only A^bm presents a tone (its root A^b) outside NON-4. Combined with GM and E^bm, which appear in close proximity, A^bm presents a slight pull toward NON-1 with a septachordal subset (678TE23) of NON-1, a member of set-class 7-21. There is a strong overlap between NON-1 and NON-4 in the E^bm, GM, and C^bM triads, all chords built on middle class nodes in NON-1, but upper class nodes in NON-4.

A, D^b, and F, all lower class nodes in NON-4, serve as triadic chord roots in the last five measures of the passage shown in Figure 5.22. The triads in these measures assemble an octachordal subset (01245689) of NON-3, a member of set-class 8-19. In NON-3, A, D^b, and F are middle class nodes rather than lower class nodes. The preponderance of triads built on recognizable nodes of a nonatonic system suggests that the augmented triad serves as a significant compositional premise. Augmented triads appear as the outline of melodic incipit, first as a {3, 7, E} in the first two measures, and then in measures 5-6, T₇ from the original, as {T, 2, 6}. In the final five measures, in which NON-3 takes over the pitch hierarchy, the melody highlights a {9, 1, 5} augmented triad. These three augmented triads, {3, 7, E}, {T, 2, 6}, {9, 1, 5}, combine to form a complete NON-4.

Another passage occurring later in the first movement also exhibits latent

nonatonicism, but through tetrachords rather than common triads. The passage is shown in Figure 5.23. The main pitch sets in this passage are (0148) and (6901); the first of these can be understood as $D^b m M7$ while the second is a member of set class 4-18 (0147). These harmonies form a six-note subset of NON-3, and the passage eventually accrues an 8-19 subset of NON-2, missing only D. The passage is highly chromatic, featuring tones outside of NON-3. These are often in subordinated roles, such as the B and E^b in the third measure of excerpt. Here, the tones outside NON-3 act as neighbor tones in the outer voices, quickly returning to the main chord pattern between (0148) and (6901).

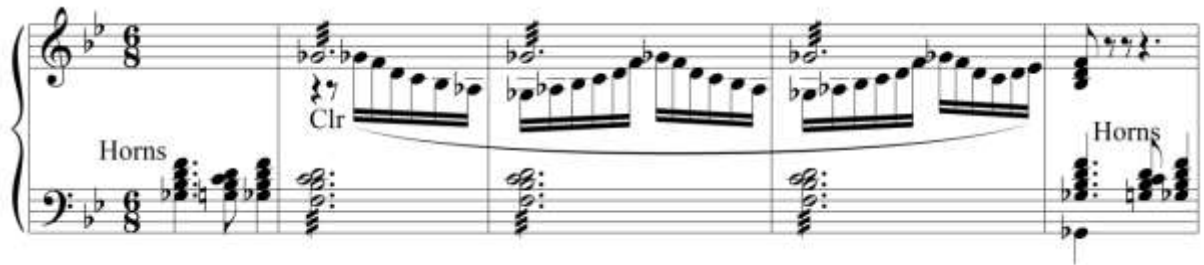
Figure 5.23 – Vaughan Williams, *Sinfonia Antartica*/I, 94-101



The opening of the second movement begins with a soft horn call in which the {T, 2, 6} augmented triad is prominent. An F is added to this chord at the outset, and the

dissonance between G^b and F is not softened when the G^b moves up to G. At this point the F leaps down to a D while the D descends to C, and then immediately returns to the opening chord. The horns and tremolo strings then sustain five of the six pcs appearing in the first measure. These five pcs form a pentachord (T0256), a member of set-class 5-30 (01468) and a subset of NON-3. While this harmony is sustained, the clarinets present a scalar passage that also features only pcs from NON-3. The scalar passage is a septachordal subset (4568T02) of NON-3, a member of set-class 7-33, identified earlier as the Lydian-minor scale. In this passage the only pc that does not belong to NON-3 is the G upper neighbor tone in the low horn part. This passage is shown in Figure 5.24.

Figure 5.24 – Vaughan Williams, *Sinfonia Antartica*/II, mm. 1-5



The opening of the third movement, shown in Figure 5.25, again features horns with woodwinds, this time flutes instead of clarinets. The bowed strings are absent, though a soft harp glissando (not shown in Figure 5.25) creates a faint foundation along with the soft timpani roll on E. The horns enter with a melody that features ascending and descending semitones, first as A-B b but later as G^b -F and C $^\sharp$ -C. The first segment of the melody, to the A in measure 5, when combined with the flute and sustained E in the timpani assembles a seven-note subset (45689T1) of NON-3. This septachord is a

member of set-class 7-Z17 (0124569). The missing tones of NON-3, D and C, slowly accrue: D first appears in measure 8 and C in measure 10. At this point the full NON-3 has been stated, with only E^b appearing outside the collection. NON-3 remains as the structural pitch collection until its authority is subverted by more tones outside of the collection, as occurs in the final three measures of this passage.

Figure 5.25 – Vaughan Williams, *Sinfonia Antartica*/III, mm. 1-16

The musical score for Figure 5.25 is written in 4/4 time and G major. It consists of four systems of staves. The first system includes a Flute (Fl.) part in the treble clef and a Timpani part in the bass clef. The Flute part begins with a trill (tr) and is marked *pp* (pianissimo). The Horns part enters in the third measure, marked *mp* (mezzo-piano). The Timpani part plays a series of sustained chords, marked *ppp* (pianississimo). The second system continues the melodic lines. The third system shows a more active bass line. The fourth system concludes the passage with sustained chords in the bass.

NON-3 also serves as the main structural pitch collection of the passage shown in Figure 5.26, which begins in the fourth movement at measure 70. The top staff gives a reduced form of alternating chords in the oboes, clarinets, horns, trumpets and trombones.

These begin with a B^b-F dyad and then move to sustain a dissonant tetrachord (8T24), which could be labeled as B^b7^(b5). The bottom staff shows a reduced form of the *pesante* chords in the bassoons, tuba, timpani, and divisi strings; these state the same (8T24) tetrachord. As Table 3.7 shows, this form of set-class 4-25 (0268) can be found in either NON-1 or NON-3. Counting the B^b-F dyad as part of the pitch language of this passage, then only NON-3 encompasses all the pcs stated. This is further confirmed by the tetrachord that ends this passage, (5901) a member of set-class 4-19 (0148). This chord adds three pcs from NON-3 to assemble an eight-note subset (89T01245), a member of set-class 8-19.

Figure 5.26 – Vaughan Williams, *Sinfonia Antartica*/IV, 70-77



The movement between 4-25 and 4-19 set-types observed above also characterizes the accompanimental figure of the passage shown in Figure 5.27, which occurs in the fifth movement beginning in measure 55. The accompanimental figure, rhythmically activated as quarter-note triplets, is stated by the flutes, oboes, horns, and trumpets. This moves from a (48E0) tetrachord, a member of set-class 4-19, to a (359E) tetrachord, a member of set-class 4-25 which could be labeled as $F7^{(65)}$. An A-E dyad follows this figure, in the oboes, horns, and trumpets, while the flutes, cellos, and double basses echo with this same dyad. These figures assemble a seven-note subset (34589E0) of NON-2. The melody in the clarinets and violas provides the missing pcs to form a complete NON-2. Only the D passing tones in the melody, along with the B^b grace notes in the accompaniment, fall outside NON-2.

Figure 5.27 – Vaughan Williams, *Sinfonia Antartica*/V, 55-62

The musical score for measures 55-62 of Vaughan Williams' *Sinfonia Antartica*, V, is presented in two systems. The first system includes parts for Flutes, Oboes, Horns, and Trumpets (Fl.Ob.Hrn.Tpt.), Flute and Harp (Fl.Hrp), Viola and Clarinet (Vla.Cl.), and Violoncello and Double Bass (Vlc.DB). The second system includes parts for Flutes, Oboes, Horns, and Trumpets (Fl.Ob.Hrn.Tpt.) and Viola and Clarinet (Vla.Cl.). The music features quarter-note triplets in the upper parts and a melodic line in the lower parts. The key signature has two flats (B-flat and E-flat).

5.4 Nonatonicism in symphonies by Bax before Vaughan Williams's Fourth

Many assessments of Bax's music eventually speak to its difficulty. Some of these difficulties manifest in a history of performance issues with Bax's music; difficulties by professionals to adequately handle either demanding piano parts or challenges in rehearsing the orchestral ensemble seem to have stifled performances.²⁹ A memorial article in *Music and Letters* on the occasion of Bax's death contains remembrances by several of his friends and colleagues who mention the challenging nature of his music.³⁰ Edwin Evans, one of Bax's foremost champions, explains the problem as arising from Bax's facility at the piano:

"Like Liszt he could improvise at sight a pianoforte transcription of any orchestral score, but the scores with which he performed this feat were such as never confronted that wizard of the keyboard: Strauss's "Heldenleben," Debussy's "Nocturnes," when both were novelties, are examples of his [Bax's] prowess in this direction. If, in those days, he piled difficulty upon difficulty, regardless of justification, one reason may have been that, not knowing what difficulty was, he could not discriminate against it. But out of this very exuberance, which had behind it real inventiveness, and not mere facility, grew some of Bax's most serviceable, as well as most characteristic, technical resources."³¹

²⁹ The tone-poem *Spring Fire* was meant to have been heard in Norwich in 1914, but the work was cut from the program due to difficulty in rehearsal. *Spring Fire* would not be premiered until after Bax's death. In addition, the difficulty in the piano accompaniments for much of Bax's vocal music seems to have been a hindrance in performance. See Edwin Evans, "Arnold Bax" *The Musical Quarterly* 9, no. 2 (April 1923), 167-180, and Lewis Foreman, *Bax: A Composer and His Times* (Woodbridge: Boydell Press, 2007), 117.

³⁰ Arthur Bliss, Arthur Benjamin, York Bowen, Eric Coates, Patrick Hadley, Peter Latham, Bernard Shore, R. Vaughan Williams, and William Walton., "Arnold Bax: 1883-1953" *Music and Letters* 35, no. 1 (January 1954), 1-14.

³¹ Edwin Evans, "Arnold Bax," 169.

The difficulty of these technical resources seems to have stymied serious analysis of Bax's music; most studies have either focused on form or pre-compositional allusions, both musical and literary, rather than Bax's harmonic language.³² To my knowledge, the analyses contained in this dissertation are the only ones to date that approach the harmonic language of Bax's music using referential pitch-class collections and neo-Riemannian transformations.

The two symphonies considered below, Bax's Second and Third Symphonies, premiered within just a few months of each other. The Second Symphony, began in 1924 and fully orchestrated by March of 1926, was not premiered until December 13, 1929, the same year the full score was published. Serge Koussevitsky, to whom the symphony is dedicated, gave the world premiere in Boston, while Eugène Goossens conducted the London premiere at Queen's Hall on May 20, 1930. The Queen's Hall audience had heard Henry Wood give the world premiere of Bax's Third Symphony two months earlier. Work on the Third Symphony seems to have begun in 1928, and completed by February of 1929. These years fall within the same frame in which Vaughan Williams was working on *Job* (1927-1930) and the Piano Concerto (1926-1931), while the time Vaughan Williams spent working out *Sancta Civitas* (1923-1925) and *Flos Campi* (1925) coincides with the time Bax was working out his Second Symphony.

³² Literary allusion is the basis for the connections drawn between Bax's tone poem *Tintagel* and a poem by Bax titled "Tintagel's Castle" in William B. Hannam, "Arnold Bax and the poetry of *Tintagel*" (Ph.D. dissertation, Kent State University, 2008). Quotations of Elgar's Violin Concerto in Bax's First String Quartet are the basis for the analysis in Michael Allis, "Bax's Elgar: Musical Quotation, Allusion and Compositional Identity in the First String Quartet in G" *Journal of the Royal Music Association* 136:2 (2011), 305-352.

Symphony No. 2 in E minor and C major

Latent nonatonicism emerges in the second movement of Bax's Second Symphony in a similar manner as Vaughan Williams's *Sancta Civitas*. As in Vaughan Williams's oratorio, an accompanimental figure putting consonant and augmented triads in close proximity allows for nonatonic structures to come forth. The passage shown in Figure 5.28 is the transition between the primary and secondary themes of the second movement exposition. Here the strings and brass sustain a bichord constructed of $F^\sharp m$ and G^+ . The two harps state the same pitch content, in broken chords and in the same range. The pitch content of the line in the cellos and basses features ic 5 and focuses on B, F^\sharp , and C^\sharp . The flute and oboe provide melodic interest, punctuated with sweeping flourishes from the celesta. The entirety of the pitch content for the first nine measures of this passage comes from the union of the two triads ($F^\sharp m$ and G^+), which combine to create a form of Scriabin's mystic chord, set-class 6-34. This form of the mystic chord, (679E13), is a subset of NON-4.

Figure 5.28 – Bax, Second Symphony/II mm. 45-57

This musical score is for the second movement of the Second Symphony by Arnold Bax, measures 45-57. The score is written for a full orchestra and includes the following parts:

- Flute/Oboe (Fl./Ob.):** The top staff, which is mostly silent, with a few notes appearing in the later measures.
- Trumpet/Trumpet Basso/Strings (Tpt./Trb./Strings):** The second staff, featuring a complex harmonic structure with the notation $F\sharp m \cup G^+ = (679E13)$.
- Harp:** The third and fourth staves, showing a continuous, flowing harmonic texture.
- Cello:** The fifth staff, featuring a melodic line with a long, sustained note in the first measure.
- Violoncello/Double Bass (Vlc./DB):** The sixth staff, featuring a melodic line with a long, sustained note in the first measure.
- Flute/Oboe (Fl./Ob.):** The seventh staff, featuring a melodic line with a long, sustained note in the first measure.
- Strings sul ponticello (Strings sul pont.):** The eighth staff, featuring a melodic line with a long, sustained note in the first measure.
- Cello (Cel.):** The ninth staff, featuring a melodic line with a long, sustained note in the first measure.
- Double Bass:** The tenth staff, featuring a melodic line with a long, sustained note in the first measure.

The score is written in a key signature of three sharps (F#, C#, G#) and a 3/4 time signature. The notation includes various musical symbols such as notes, rests, and dynamic markings.

FL/Ob.

Cel.

Ob./Cor Ang.

Ob./Cor Ang.

Cor Ang.

Brass/Strings

Strings sul pont.

Brass/Strings

The musical score is written for measures 274, 275, and 276. The key signature is three sharps (F#, C#, G#) and the time signature is 3/4. The score includes parts for Flute/Oboe (FL/Ob.), Cello (Cel.), Oboe/Cor Anglais (Ob./Cor Ang.), Brass/Strings, and Strings sul pont. The Flute/Oboe part features melodic lines with triplets and sixteenth-note runs. The Cello part provides harmonic support with chords and moving lines. The Oboe/Cor Anglais part has melodic passages, including a sixteenth-note run in measure 275. The Brass/Strings part consists of block chords. The Strings sul pont part features a rhythmic pattern of eighth and sixteenth notes. The piano accompaniment is shown in grand staff notation with treble and bass staves.

Other pitch elements of NON-4 appear at the tenth measure of the example, with the F given in the oboe melody and the B^b in the bass and chordal accompaniment. Together these form an octachordal subset (8-24) of NON-4. Of pcs found in the melody, only the A^b of the twelfth measure falls outside of the collection. C is also found in the chordal accompaniment of the tenth and twelfth bars, but on the whole NON-4 governs the pitch structure through its mystic chord subset (679E13). NON-4 governance fits with the harmonic content and pitch centers of much of the movement, where the main pitch center is B, an upper class node of NON-4.

The opening of this movement presents a pitch center on B and a motive based on the close proximity of consonant and augmented triads. The opening is shown in Figure 5.29. With the repeated BM triads, a B pitch center establishes itself more through insistence than through traditional tonal practice. BM oscillates with G⁺; as these triads share two common tones the transformation type linking them could be described as a Partial P', in this case the P'₂ transformation first shown in Figure 3.25 (see Chapter 3). Together, BM and G⁺ form a member of set-class 4-19 (0148). This particular form of 4-19 can be found in either NON-1 or NON-4. Much of the NON-4 collection appears in the first ten measures of the movement; all of NON-1 can be found in measures 11-17.

The eight note truncation (member of set-class 8-19) of NON-4 that appears in the first ten measures of the movement omits only F. E is the single pitch element that lies outside NON-4; it is found as the languorous appoggiatura that begins the horn solo in the second measure and in the clarinets beginning in measure 4. In fact, E seems to act as a replacement for F within the larger nonatonic framework.

Figure 5.29 – Bax, Second Symphony/II mm. 1-20

The image displays a musical score for the second movement of Bax's Second Symphony, measures 1 through 20. The score is written in 3/4 time and features a key signature of three sharps (F#, C#, G#). The notation is organized into four systems, each with a grand staff (treble and bass clefs).

- System 1:** The top staff is labeled "Fl/Harp" and the bottom staff is labeled "Horn I". The Flute/Harp part begins with a series of chords, while the Horn I part has a few notes.
- System 2:** The top staff continues the "Fl/Harp" part, and the bottom staff continues the "Horn I" part.
- System 3:** The top staff continues the "Fl/Harp" part, and the bottom staff is labeled "Horns".
- System 4:** The top staff continues the "Fl/Harp" part, and the bottom staff is labeled "Horns/Harp".

The score includes various musical notations such as notes, rests, and dynamic markings. The Flute/Harp part is characterized by a series of chords, while the Horn I and Horns parts have more melodic lines. The Violoncello/Double Bass part is not explicitly labeled but is present in the bottom staff of the first two systems.

The passage from measures 11-17 includes a complete NON-1, and several of the harmonic constructions suggest the harmonic partitions presumed of NON-1 in Chapter 3 of this dissertation. The chords stated in the horns at the beginning of measures 11-12 (G[#]M and GM) are chords that are only found together in NON-1. Other harmonies, such as BM and D[#]M found in the upper woodwinds of those same measures come from NON-1. They can also be found in NON-4; in NON-1 BM, GM and D[#]M are major triads built on middle class nodes, whereas they are upper class nodes in NON-4.

At times nonatonic pitch governance is obscured by Bax's intensely chromatic harmonic style; the complementary augmented triad is also found during this passage. For the most part pcs 1, 5 and 9 are in subordinated roles, as in the melodic turn in the cellos and double basses in measure 13. The moment that one of these pcs takes on a more important role, as the A does in measure 17, coincides with the moment at which this introductory passage ends and the set-up to the entrance of the primary theme begins, largely given over a NON-4 harmonic screen.

Figure 5.30 shows the first statement of the primary theme. A motive with the rhythmic profile of short-short-short-long-short-short-long-long serves as the basic premise of the theme. Four phrases comprise this statement of the theme, and each phrase is constructed from two statements of the main motive with some slight variations. The first phrase ends with an imperfect authentic cadence in B, the second phrase ends with a half cadence in B. The third phrase ends in an imperfect authentic cadence in G, and the last phrase evades a perfect authentic cadence with an expressive leap in the melody to end with an imperfect authentic cadence in B.

The harmonic palette of the first phrase involves every pc within NON-4, arising from many of the novel harmonic choices. Both F[#] and B can carry consonant triads in

NON-4, articulating an intersection between middle and upper class nodes of NON-4 with the dominant and tonic of a B-centered tonality. The appearance of a D[♯]min7 and a DMaj7 are both indicative of NON-4 pitch structures. Only an occasional E in this phrase lies outside the NON-4 collection. Within the second phrase, a significantly more chromatic harmonic language begins to assert itself over pitch constructions more related to the nonatonic collection.

Figure 5.30 – Bax, Second Symphony/II mm. 20-36

The figure displays a musical score for three staves: Violins, Horns, and Vlc./DB. The key signature is B major (three sharps). The score is divided into two systems, each with three measures. The first system is annotated with '1-1' and '1-2' above the measures. The second system is annotated with '1-2', '2-1', and '2-2' above the measures. The Vlc./DB staff includes figured bass notation: 'B: V⁷' at the end of the first system and 'B: I' at the beginning of the second system. The Horns staff features complex chordal textures, including some with natural signs on notes that are sharp in the key signature, suggesting chromatic alterations.

2-2 3-1 3-2

B: ii⁷ V G: vii⁷

3-2 4-1 4-2

G: I B: V⁹ I

Symphony No. 3

Chapter 2 of this dissertation outlines the challenge of the intersection between key works by Vaughan Williams and Bax's Third Symphony, premiered on March 14, 1930. That the Third Symphony was among Vaughan Williams's favorite works by Bax cannot be doubted, and Bax is known to have consulted with Vaughan Williams on this symphony. Vaughan Williams seemed to think that his own Fourth Symphony shared a

kinship with Bax's Third when he suggested to Adrian Boult that the two symphonies should be presented together in concert. Bax's Third Symphony seems to have played a role in the genesis of Vaughan Williams's Piano Concerto, at least in the quotation in the Finale that was subsequently removed. Other similarities can now be revealed using the same kinds of analytical approaches already applied to Vaughan Williams's Piano Concerto and the Fourth Symphony.

A solo in the principal bassoon begins the first movement. Robert Hull describes this opening gesture as a “quiet melody, graceful and flowing,”³³ while Bax himself described this passage as an “introduction in which the basic idea of the music is adumbrated as through a dark haze.”³⁴ Jürgen Schaarwächter points out that “Die Tonfolge A-B-Cis bildet die Kernidee die *Sinfonie*,”³⁵ an observation that had been previously made in Lewis Foreman’s biography on Bax.³⁶ Figure 5.31 shows the opening measures of the bassoon solo.

Figure 5.31 – Bax, Third Symphony/I, 1-4



The opening three notes form the “motto” described in Foreman and Schaarwächter. Curiously neither analyst has gone further to comment on the answering

³³ Robert H. Hull, *A Handbook on Arnold Bax's Symphonies* (London: Murdoch, Murdoch & Co., 1933), 33.

³⁴ Foreman, *Bax: A Composer and His Times*, 270.

³⁵ Jürgen Schaarwächter, *Die britische Sinfonie 1914-1945* (Köln: Kleinkamp Druck GmbH, 1995), 224.

³⁶ Foreman Bax: *A Composer and His Times*, 270.

gesture, a melodic descent from D, C[♯], to B[♭]. Both the melodic ascent to C[♯] and the melodic descent to B[♭] span (014) trichords; the answer (D, C[♯], to B[♭]) is T₁₁I from the original. These two (014) trichords combine to create a (9T12) tetrachord, a member of set-class 4-7 (0145). This is a mirror set in which the axis of symmetry occurs between the two pcs given durational emphasis, C[♯] in measure 1 and B[♭] in measure 2. Significant justification occurs throughout the symphony for conceiving of the two (014) trichords together as the main motive; it is rare for recurrences of the opening melodic ascent to appear without the answering melodic descent.

Furthermore, adding the answering melodic descent to the conception of the Third Symphony's *Kernidee* allows for the observation that this is a motive of two semitones at a distance of T₄. In this respect, Bax's Third Symphony shares a structural similarity with Vaughan Williams's Fourth Symphony, in which the main motive is also comprised of two semitones. In Vaughan Williams's symphony, the semitones are interlocking, at a distance of T₁ rather than T₄. Both motives, the main motive of two descending semitones in Vaughan Williams's Fourth and this opening motive from Bax's Third, are nonatonic subsets.

Including the E of measure 4 creates a (9T124) pentachord, a member of set-class 5-Z18 (01457). This melodic construct is sometimes referred to as the "Gypsy Pentachord," so-called for its adoption in gypsy tunes, though this pentachord appears frequently in Turkish, Arabic, Persian and Jewish music. It also coincides with a significant portion of the harmonic minor scale of Western music theory. David Cox observes that this pentachord suggests "the kind of oriental flavour that pervades Rimsky-Korsakov's *Scheherazade*."³⁷ However, attempting to link the opening melody with the

³⁷ David Cox, "Arnold Bax" in *The Symphony*, vol. 2, edited by Robert Simpson (Baltimore: Penguin

musical traditions of Eastern Europe, or even the Middle East, is likely fruitless. Robert Hull linked the overall mood of the Symphony with that of Northern legends, an interpretation that Bax cautiously accepted. According to Hull, who interviewed Bax at length regarding his first four symphonies, the composer agreed that the interpretation of the Third Symphony as resonating with Northern legends was “apt, allowing that subconsciously he may have been influenced by the sagas and dark winters of the North.”³⁸

Figure 5.32 displays the first nineteen measures of the first movement. The opening 4-7 tetrachord (9T12) is a subset of NON-3, and the entire bassoon solo presents an eight-note subset of NON-3, with only the G falling outside this pitch collection. The concluding arpeggio that occurs from measures 9 to 10 outlines an F[#]m7, a chord from NON-3 built using an upper-class node as a chord root. The bassoon then outlines a chromatic melodic descent, A^b – G – G^b – F – E, and from this point Bax’s intensely chromatic style takes over. The solo clarinet restates the opening melody, while the bassoon provides counterpoint, joined later by the 2nd clarinet. The chords given by the harp are particularly noteworthy. The first, a (1579) tetrachord, contains the augmented triad {F, A, D^b}. The second, T₂ from the first, contains the augmented triad {G, B, E^b}. The final chord, T₁₁ from the first, contains the augmented triad {E, A^b, C}. Each tetrachord is a member of set-class 4-24 (0248). The three augmented triads combine to form a complete NON-2, and only F[#] in the three tetrachords falls outside the collection.

Books, 1967), 157.

³⁸ Hull, *A Handbook on Arnold Bax’s Symphonies*, 33.

Figure 5.32 – Bax, Third Symphony/I, 1-19

The image displays a musical score for the first movement of Bax's Third Symphony, measures 1-19. The score is arranged in five systems. The first system features the Solo Bsn (Bassoon) in the bass clef, playing a melodic line with eighth and sixteenth notes, accented by slurs. The second system continues the Solo Bsn part. The third system introduces Cl. 1 (Clarinet 1) in the treble clef, playing a similar melodic line. The fourth system adds Cl. 2 (Clarinet 2) in the bass clef, playing a more complex, rhythmic pattern with slurs and accents. The fifth system features the Harp in the bass clef, playing a sustained, arpeggiated accompaniment. The key signature is one flat (B-flat major or D minor), and the time signature is 6/8.

Figure 5.33 shows a passage later in the first movement that contains a recurrence of the main motive. It begins with an augmented triad {F, A, C[#]} and proceeds with impelling force provided by the trumpet and horns on C[#]. Pizzicato strings state an F^m

triad while the incessant C^\sharp continues in the horns. Bass clarinet and bassoons enter with what at first seems to be a descending AM triad but then becomes a descent by ic 5 from $G^\sharp - E^\flat - B^\flat$. This line seems to be the lead into a new harmonized theme in the strings. This theme has some intervallic similarities to the main motive, in the ascending and descending semitone $F - G^\flat - F$ derived from the $C^\sharp - D - C^\sharp$ of the opening bassoon solo. The harmonization of the theme centers on a $B^b m$ triad, opening the possibility for the repeated C^\sharp in the horns to be heard as a common-tone link between $F^\sharp m$ and $B^b m$.

Figure 5.33 – Bax, Third Symphony/I, 131-143

The musical score for Bax, Third Symphony/I, measures 131-143, is presented in three systems. The first system features Horns (Hn.) and Trumpets (Tpt.) in the upper staff, and a Bassoon (Bsn.) and Bass Clarinet (B. Cl.) in the lower staff. The second system shows Strings (Str.) in the upper staff and Violin 2 (Vln 2) in the lower staff. The third system continues the string parts. Dynamics include piano (*p*), fortissimo (*sf*), and piano (*p*). The key signature has two flats (B-flat major).

The third measure of the harmonized theme (the seventh measure in the passage shown in Figure 5.33), features a G^{b+} triad on the downbeat. The union of this augmented triad with the F^+ at the start of this passage is $HEX_{(1,2)}$. The primary harmonies of the harmonized theme, G^bm and B^bm , are triads built on nodes of $HEX_{(1,2)}$. The passing chord between G^bm and B^bm , an A^bm in the first and third measures of the theme, introduces pitch elements that shift the pitch collection into nonatonic space. C^b and E^b are both members of NON-4, and these two pcs combine with $HEX_{(1,2)}$ form an 8-19 subset of NON-4. The A^b that serves as the root of the passing chord can be combined with $HEX_{(1,2)}$ to form a septachordal subset (89T1256) of NON-3, and this pitch-class set is a member of set-class 7-21 (0124589). Both E and G^\sharp can be found in the descending line in the bass clarinet and bassoon in the fourth measure of Figure 5.33; these pcs with $HEX_{(1,2)}$ form an 8-19 subset of NON-3. $HEX_{(1,2)}$ is a highly important structural element in Bax's Third Symphony, as it contains the untransposed main motive spanning a (9T12) tetrachord. As $HEX_{(1,2)}$ is contained in both NON-3 and NON-4, their emergence in this passage can be understood as additions to $HEX_{(1,2)}$.

Parallel major thirds can be a symptom of latent nonatonicism; Figure 5.34 demonstrates how this is possible. The figure presents two descending melodic lines; both can be assembled to form a member of set-class 6-Z4 (012456). The lower line begins on D^b and descends chromatically to B, then moves by whole tone to A before descending by two consecutive semitones to end on G. The upper line, T_4 from the lower, follows the same profile beginning on F and ending on B. The result is a sequence of parallel major thirds that assembles a complete nonatonic collection (NON-2 in this case) by the sounding of the sixth dyad.

Figure 5.34 – NON-2 partitioned into two melodic lines, each a form of 6-Z4



Figure 5.35 shows the final six measures of the second movement of Bax's Third Symphony, which nearly realizes the ideal case shown in Figure 5.34. As the first movement had opened with a bassoon solo, the second movement ends with a bassoon solo, which quickly becomes a duo. When the second bassoon enters in measure 140, it at first matches the lower line of the abstract example in Figure 5.34. A difference occurs when the line descends by an augmented second from B to A^b. It appears to carry on from there, with the first bassoon following with intervallic exactness. However, the first bassoon descends by whole tone instead of semitone from B to B^b. B^b is the only note in this example to fall outside NON-2, and the passage otherwise assembles an 8-19 subset of NON-2 (only A is missing).

Figure 5.35 – Bax, Third Symphony/II, 139-144

Figure 5.36 shows a passage from the third movement of Bax's Third Symphony; some sparse analytical notations are also included. The passage is highly characteristic of Bax's harmonic style, and this example seeks to demonstrate the mixed success of applying regular Roman numeral analysis to a passage of this sort. The phrase directly preceding this one ends on an emphatic DM chord in the tutti orchestra (not shown), and the analysis proceeds from the standpoint of D as being established as a local tonic. The passage shown in Figure 5.36 ends on an emphatic Em triad, and E as a pitch center is confirmed through extended statements of BM as the dominant of E. The passage shown has a transitional function, at least in affecting a change of pitch center, which fundamentally occurs in the quality change from Bm (vi in D, or v in E) to BM (V in E). Other chords seem to participate in the drive toward E, and are analyzed as such, including a F[#]7 chord in third inversion that appears to function as a secondary dominant of V in E, a IV in first inversion, a Neapolitan in second inversion, and an A^bM harmony which is analyzed as an enharmonic respelling of G[#]M (III[#]).

Figure 5.36 – Bax, Third Symphony/III, 74-81

D: vi IV
 E: v III
 E: V_2^4/V V^6 IV^6

E: II_4^6 III^\sharp V
 (iv?) V_4^6 i

As enlightening as the Roman numeral analysis can be, at least two problems occur in its application to this passage. First, if Roman numeral analysis describes not merely a harmony's identity but also its function as a contributing member toward establishing a tonality, then several of the chords analyzed in Figure 5.36 do not function in their normative fashion. It is perhaps possible to excuse some of these discrepancies as delayed resolutions, for example the promise of the Neapolitan to move toward the dominant is interrupted by the appearance of III^\sharp as perhaps a parenthetical harmony. Neo-Riemannian transformations may be able to account for some of the chord motions that defy traditional functional analysis. In this case, the Neapolitan harmony FM maps onto A^bM (III^\sharp) via a compound PR transformation. Another PR compound transformation

will map A^bM onto BM. The consecutive PR transformations seem to suggest a turn toward octatonic pitch structure, and the pitch elements of measure 78 assemble a complete OCT_(2,3). Neo-Riemannian transformations cannot easily account for all chord mappings, however. For example mapping the F[#]7 onto AM cannot be achieved using standard NROs, and the succession defies expanded cross-type transformations like the *fuse* transformation described in Chapter 3 of this dissertation (see Figure 3.28). Neither can the mapping between E^bM and F[#]7 be accounted for using standard or expanded NROs, and in fact the E^bM triad is also unaccounted for from the perspective of Roman numeral analysis.

Another problem with the Roman numeral analysis is its inability to easily account for all the chords sounded in Figure 5.36, especially near the end of the passage where the rate of harmonic change is dramatically different between the treble and bass portions of the orchestra. A moment that demonstrates this problem is the occurrence of an Am chord in the bass at beat 3 of measure 80. This chord is sounded against BM in the treble, where Am triads have also been stated, but in a highly subordinated role as passing chords between G⁺ and BM.

The close proximity between G⁺ and BM resembles passages from the previous discussion on Bax's Second Symphony, which crafted an analysis that included recognition of nonatonic constructions in addition to more traditional perspectives. Here the nonatonic collection can join the functional tonal perspective with the neo-Riemannian one. The nonatonic collection can account for much of the pitch materials that participate in the functional tonal progression; NON-1 includes Em (47E), BM (E36), and an incomplete F[#]7 (6T4). NON-1 will also include A^bM (803), analyzed as III[#], and E^bM (37T), which could not be incorporated into either the functional tonal

perspective or the traditional neo-Riemannian one. NON-1 also includes G^+ , which appears frequently near the end of the passage, and GM (7E2), which appears at the opening with Bm (E26), also a member of NON-1. The only traditional tertian harmonies not included in NON-1 are the complete $F^{\sharp}7$, as C^{\sharp} is outside NON-1, and AM, Am and FM. These last three triads are ably handled by both the functional tonal perspective and the neo-Riemannian one. A perspective that incorporates the nonatonic collection with other viewpoints shows that NON-1 serves as a connecting thread between the start of the passage through some of the surprising chord movements to its close on Em.

The majority of the Third Symphony epilogue is unambiguously in the key of C, with an ostinato in the bass featuring CM triads and an epilogue theme (discussed above in Chapter 2), which descends stepwise through a C major scale. The passage shown in Figure 5.37 shows a moment in the Third Symphony epilogue that deviates from the unambiguous and peaceful C pitch center. Here the trombones with the low strings state a harmonized version of the main motive; the triads featured are BM, CM, $E^{\flat}M$, and EM. The flutes and celesta oscillate between CM triads and (027) trichords. These two lines together form a complete NON-1, with no tones outside the collection. The trumpets and violins state an altered version of the main motive; melodically this is realized as two semitones separated by a major third (B-C-E-F-E-C). This is harmonized as BM, CM, CM, $D^{\flat}M$, CM. Both BM and CM are constituents of NON-1; $D^{\flat}M$ is not as two pcs, D^{\flat} and F, are outside NON-1.

Figure 5.37 – Bax, Third Symphony/II, 301-315

The musical score is presented in three systems, each consisting of two staves. The top staff is labeled 'Fl., Cel.' and the bottom staff is labeled 'Vlc., DB'. The middle staff is labeled 'Tpt., Vln' and 'Trb., Vlc., DB'. The music features complex harmonic structures with many accidentals and ties.

At measure 312, the twelfth measure of the passage shown in Figure 5.37, the harmonic language changes significantly. The trombones, with the low strings, sustain two chords for two measures each. The chords are $F^{\sharp}M$ and AM , the union of which forms a member of set-class 5-32 (01469), a pentachord that can be found in either NON-

3 or $OCT_{(0,1)}$. The trumpets and violins beginning at measure 312 state a series of diminished triads, beginning with a C^o (spelled enharmonically). These harmonies, from measure 312 to 315, assemble a complete $OCT_{(2,3)}$. The oscillating harmonies in the flutes and celesta at 312-313 feature the triads $A^b m$, Fm , and $E^b m$. All the tones here are found within $OCT_{(2,3)}$ except B^b . The pitch materials in this line combined with the pitch materials in the trumpets and violins assemble a complete $OCT_{(2,3)}$. In measure 314 $F^{\sharp}m$ now becomes the featured harmony in the flutes and celesta, ending on a $D^{\sharp o}$ triad in 315. These triads are members of $OCT_{(0,1)}$, perhaps merging better with the trombones and low strings at this moment.

Figure 5.38 shows the second part of this passage. Measures 316-317 serve as a linking figure to the restatement of the epilogue theme in the first horn and viola, harmonized by the horn section. The harp and violins give the oscillating figure heard in the flutes and celesta in the previous section, first alternating Cm with (027) trichords, and then CM with (027) trichords. The low strings state material derived from the main theme. From measures 320-323, all the strains involved combine to form an 8-19 subset of NON-2; the missing pc is C^{\sharp} and seems to be replaced with a D , a pc outside of NON-2. Also appearing outside the collection is the F^{\sharp} in measure 323, but this F^{\sharp} seems to foreshadow the assembling of an 8-19 subset of NON-1 in measures 324-325. Here the missing pc is B^b and seems to have been replaced with an A , a pc outside of NON-1.

Figure 5.38 – Bax, Third Symphony/III, 316-325

This musical score is for the third movement of the Third Symphony by Arnold Bax, measures 316-325. The score is written for a large orchestra and is divided into two systems. The first system consists of five staves: a top staff for Harp and Violins (Harp, Vln), a staff for Horns (Horns), a staff for Horns and Viola (Hrn., Vla), and a bottom staff for Trumpets, Violas, and Double Basses (Trb., Vlc., DB). The second system consists of two staves: a top staff for Violins and a bottom staff for Violas and Double Basses (Vlc., DB). The music is in a key with one flat (B-flat major or D minor) and a 4/4 time signature. The notation includes various musical symbols such as notes, rests, beams, and slurs, indicating a complex and expressive musical passage.

CHAPTER 6

SOME CONCLUSIONS AND SUGGESTED PATHS FORWARD

6.1 The Nonatonic Collection and its Nearly Even Cohort

The above chapters present analyses of various passages in which the nonatonic collection plays a significant pitch-structural role. Chapter 4 posits that the nonatonic collection acts as a connecting thread between many of the disparate pitch elements within Vaughan Williams's Fourth Symphony. Chapter 5 shows how works by Vaughan Williams that are often thought to be related to his Fourth Symphony share this link to the nonatonic collection. Chapter 5 also attempts to widen the network to show that this quality of nonatonic-relatedness appears within symphonies by Arnold Bax, written during the same era as Vaughan Williams's usage of nonatonic-related pitch elements.

The analyses in the previous chapters give rise to new questions. Perhaps foremost among these questions is this one: are the examples given in previous chapters linked only through their shared relationship with the nonatonic collection? Are there other shared structural features among the examples considered that might better explain the present pitch structures? Certainly other analytical methods have been deployed to explain Vaughan Williams's harmonic vocabulary, ranging from octatonic-based viewpoints to mode-based analysis. As demonstrated in Chapter 3, the nonatonic collection can act as a bridge between diatonic (i.e. tonal/modal) pitch-space and octatonic pitch-space. In addition, there are several passages explored above that utilize the full nonatonic collection in such a way as to take advantage of the nonatonic's unique periodicity. One of these passages, the transition between the third and fourth movements

of Vaughan Williams's Fourth Symphony, seems to rise from an *a priori* awareness of the nonatonic collection and its properties. However, many passages introduce tones outside of the main governing collection. As Byron Adams puts it when describing the composer's usage of octatonic elements, "Vaughan Williams's is never doctrinaire"¹ with his usage of symmetrical pitch collections.

Doubtless readers may have noticed that many of the passages analyzed do not use the full nonatonic collection, but may instead use structures strongly predicted by Chapter 3's explorations while only presenting a significant subset of the nonatonic collection. The two eight-note set classes found within the nonatonic, 8-19 (01245689) and 8-24 (0124568T), appear with some frequency. These octachords possess very distinct properties; to start, while there are twenty-four forms of set-class 8-19 there are only twelve forms of set-class 8-24, as 8-24 possesses inversional symmetry. 8-24 contains a complete whole-tone scale as a subset, making it quite distinct from 8-19. These octachordal subsets tend to differentiate the pitch language of specific works. For example, while Vaughan Williams's Sixth Symphony and his *Sinfonia Antartica* both possess passages related to the nonatonic collection, the octachordal subset 8-19 colors the pitch structure in *Sinfonia Antartica* while 8-24 colors (in a distinct way) the Sixth Symphony's pitch structure. The same could be said of Bax's Second Symphony (8-24) and his Third Symphony (8-19).

What of the passages that present an eight-note truncation of a nonatonic collection, in which the missing pc has been displaced by one that lies outside the supposed governing nonatonic? Figure 6.1 compiles these pitch collections, which were

¹ Byron Adams, "Vaughan Williams's musical apprenticeship," in *The Cambridge Companion to Vaughan Williams*, edited by Alain Frogley and Aidan J. Thomson (New York: Cambridge University Press, 2013), 48.

all observed across a number of examples referenced in Chapter 5. The collections, a-f, show tones from the governing nonatonic in open note heads while the tone which falls outside is shown as a filled note head.

Figure 6.1 – pitch collections from various examples discussed in Chapter 5

a) From Figure 5.14 (Vaughan Williams's Piano Concerto), NON-3 in which B replaces C

b) From Figure 5.17 (Vaughan Williams's Sixth Symphony), NON-2, in which D replaces Db*

c) From Figure 5.20 (Vaughan Williams's Sixth Symphony), NON-2, in which D replaces Eb

d) From Figure 5.29 (Bax's Second Symphony), NON-4, in which E replaces F

e) From Figure 5.35 (Bax's Third Symphony), NON-2, in which Bb replaces A

f) From Figure 5.38 (Bax's Third Symphony), NON-1, in which A replaces Bb

* The same collection is found in Bax's Third Symphony/III, 320-323, as shown in Figure 5.38

It is perhaps no surprise that each of the collections, a-f, shown in Figure 6.1 are all members of the same set class, 9-11 (01235679T), as 9-11 is related by SSD (single

semitonal displacement) to the nonatonic collection (i.e. set class 9-12). Due to this close relation with the nonatonic, set-class 9-11 possesses a quality called *near evenness*. Near evenness as a quality has been of great interest among music theorists in recent decades.² Near evenness can be contrasted with *perfect evenness*, in which an octave is divided in a series of equivalent intervals. The chromatic and whole-tones scales are perhaps the most well-known pitch collections to display perfect evenness, though the hexatonic scale and all of Messiaen's "modes of limited transposition" also possess the quality of perfect evenness. Set classes that possess near evenness can be formed through minimal perturbations of a perfectly even set class of the same cardinality. A minimal perturbation is one that is achieved by replacing one pitch class with another that is one semitone away. Figure 6.2 reproduces a chart from one of Richard Cohn's studies on this topic.³ The left half of the chart lists perfectly even set-classes of cardinality 2, 3, 4, and 6, here categorized as "dissonant/symmetric." The right half of the chart lists nearly even set-classes that are related to the set classes on the left by SSD. These set classes are categorized as "(relatively) consonant/asymmetric." Cohn limits this chart to the four set-classes shown on the left as these represent the four transposition cycles (T_2 , T_3 , T_4 , and

² Initially the consonant triad as a nearly even distribution of pcs within an octave sparked interest in Eytan Agmon, "Linear Transformations Between Cyclically Generated Chords," *Musikometrika* 46.3 (1991), 15-40, Richard Cohn, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions," *Music Analysis* 15.1 (1996), 9-40, and Richard Cohn, "Neo-Riemannian Operations, Parsimonious Trichords, and Their Tonnetz Representations," *Journal of Music Theory*, 41.1 (Spring 1997), 1-66. Subsequent studies went beyond the consonant triad to consider other set types, including Richard Cohn, "Weitzmann's Regions, My Cycles, and Douthett's Dancing Cubes," *Music Theory Spectrum*, 22.1 (Spring 2000), 89-103, Edward Gollin, "Near-Maximally-Distributed Cycles and an Instance of Transformational Recursion in Bartók's Etude Op. 18, No. 1," *Music Theory Spectrum* 30.1 (Spring 2008), 139-151, and Benedict Taylor, "Modal Four-Note Pitch Collections in the Music of Dvořák's American Period," *Music Theory Spectrum* 32.1 (Spring 2010), 44-59. Near-evenness is a central premise in Dmitri Tymoczko, *A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice* (New York: Oxford University Press, 2011), and is an important element in Richard Cohn, *Audacious Euphony: Chromaticism and the Triad's Second Nature* (New York: Oxford University Press, 2012).

³ Cohn, "Weitzmann's Regions, My Cycles, and Douthett's Dancing Cubes," 101.

T₆) that divide the octave evenly.

Figure 6.2 – From Cohn 2000, “The four transposition cycles and their SSD-relations”

Dissonant/Symmetric		(Relatively) Consonant/Asymmetric	
<i>Colloquial label</i>	<i>Forte-class</i>	<i>Forte-class</i>	<i>Colloquial label</i>
Tritone	2-6	2-5	Perfect Fifth Perfect Fourth
Augmented Triad	3-12	3-11	Major Triad Minor Triad
Fully Diminished 7 th	4-28	4-27	Dominant 7 th Half-diminished 7 th
Whole-Tone	6-35	6-34	Mystic Chord

Is it possible to expand this table to account for set-classes with larger cardinality?

Figure 6.3 attempts to do this. Given on the left side of the chart in Figure 6.3 are three perfectly even set-classes. The right side of the cart lists set-classes related by SSD to the set-classes on the left, and each of these possess near evenness as a quality. Can the set types on the left still be considered dissonant and the ones on the right (relatively) consonant? The inclusion of set-class 10-5 as the nearly even perturbation of 10-6 presents a compelling example for answering yes. Composers of the extended tonal practice frequently relied on set-class 10-5 as a resource, since this set-class includes the union of the tones from parallel major and minor scales.

Figure 6.3 – Adding large cardinality set-classes to the chart from Cohn 2000

Dissonant/Symmetric		(Relatively) Consonant/Asymmetric	
<i>Colloquial label</i>	<i>Forte-class</i>	<i>Forte-class</i>	<i>Colloquial label</i>
Octatonic Messiaen Mode 2	8-28	8-27	(none)
Nonatonic Messiaen Mode 3	9-12	9-11	(none)
Messiaen Mode 7	10-6	10-5	Major-minor mixed

The conflation of near evenness with consonance impels many of the arguments presented by Dmitri Tymoczko. For Tymoczko, nearly even chords carry significance “not just because they permit the combination of harmonic consistency and conjunct motion, but also because they are be acoustically consonant.”⁴ This can be easily demonstrated with the fundamental sonorities of Western tonal music (major and minor triads, dominant and half-diminished 7ths), as these chords contain “a preponderance of consonant intervals,” which requires that their “notes be relatively evenly distributed in pitch-class space.”⁵ Tymoczko goes on to assert that “the basic sonorities of Western tonal music are optimal for two distinct reasons: considered as sonic objects, they are acoustically consonant and hence sound pleasing in their own right; but since they divide the pitch-class circle nearly evenly, they can also be connected to their transpositions by efficient voice leading.”⁶

⁴ Tymoczko, *A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice*, 14.

⁵ *Ibid.*, 62.

⁶ *Ibid.*, 63-64.

What about composers who are interested in using the basic sonorities of Western tonal music, while acknowledging the modernist impulse to find a new and individual harmonic idiom? That is to say, what about composers who are in the same situation as Vaughan Williams in the second decade of the twentieth century? As demonstrated in previous chapters, the nonatonic collection allows for the joining of the traditional sonorities of Western tonal music with less common, more dissonant constructions. The nonatonic collection also allows for unusual chord motions of those same traditional sonorities that cannot be accounted for in traditional theories of tonal practice. The nearly even cohort for the nonatonic, set-class 9-11, widens the possibilities significantly. Of the eight chords listed on the chart given for Figure 6.2, seven are nonatonic subsets. Only the fully diminished 7th is not a subset of the nonatonic, but it is a subset of 9-11. In addition, the nearly even partner for the octatonic collection, set-class 8-27, is a subset of 9-11. Therefore, it may be the case that in some instances, a nonatonic collection can be connected to an octatonic collection with great efficiency through their partner set-classes that display near evenness. More studies on large cardinality set-classes that possess the near evenness quality are required in order to demonstrate this with greater confidence.

6.2 – Suggestions for Widening the Network

A few examples highlighted in Chapter 5 present passages featuring augmented triads in close proximity to consonant (i.e. major or minor) triads. In two of these examples, the union of the augmented and consonant triad is set-class 6-34: Scriabin's mystic chord. This occurs in Vaughan Williams's *Sancta Civitas* (see Figures 5.1, 5.2, and

5.4), in which an augmented triad is joined to a major triad to create a harmonic screen on which melodic statements occur. A similar texture appears in Bax's Second Symphony (see Figure 5.28), though in this case the mystic chord comes from the union of a minor triad and an augmented triad. Can a similar partitioning of the mystic chord be found in Scriabin's music?

Figures 6.4 and 6.5 show this to be the case. The first two measures of the passage shown in Figure 6.4 show a repeated gesture consisting of four triads in two groups of two. The initiating triad for each group, GM and A⁺, can be combined to form a member of set-class 6-34. In the last measure shown in Figure 6.4, the two groups of two triads now repeat the same chords within the measure; these chords are A⁺ and C[#]M. This is the same kind of succession of major and augmented triads that form the harmonic screen at the opening of the second movement of Bax's Second Symphony (see Figure 5.29).

Figure 6.4 – Scriabin, Piano Sonata No. 5, 65-67



Figure 6.5 – Scriabin, Piano Sonata No. 10, 184-191



The eight measure passage shown in Figure 6.5 presents a sequence, in which the final four measures is an exact replica of the first four after transposition by ordered interval of -4. The melodic gesture of the first two measures outlines an augmented triad, while the answering gesture comes to an arrival point on a major triad (including the tone in the left hand). In the first four measures the outlined augmented triad is {E, C, A^b} while the answering major triad is B^bM, in second inversion. In the sequential copy the outlined augmented triad is the same pc set as the preceding model, now spelled as {B[♯], G[♯], E}, while the answering major triad is F[♯]M, in second inversion. In each case the outlined augmented triad and the answering major triad can be combined to form a member of set-class 6-34.

Beyond this, the passage in Figure 6.5 shares additional similarities with passages

analyzed in Chapter 5. In the second and sixth measure of the passage, another major triad arises from the texture. In the second measure this is D^bM in first inversion, while in the sixth measure this is AM. These two chords, when taken together with the two major triads in the third and seventh measures (B^bM and F[#]M) and the augmented triad {E, A^b, C}, begin to express the kinds of chord movements predicted in Chapter 3 of this dissertation. The union of these harmonies is an 8-24 subset of NON-3 (0124568T). In this way this passage seems to share similarities of pitch structure with certain portions of Vaughan Williams's Sixth Symphony and his *Sancta Civitas*, and Bax's Second Symphony.

Chapter 5 noted Vaughan Williams's possible exposure to the music of Scriabin through A. E. Hull. On the question of Bax's indebtedness to Scriabin, several sources have remarked on this possibility.⁷ Bax's absorption of elements of Scriabin's style may simply have been inevitable due to his education occurring when it did, as there was a particular interest in Scriabin's piano music among students at the R.A.M. during the Edwardian era.⁸ New analyses of Scriabin's music that are mindful of the techniques outlined in this dissertation may reveal more pervasive similarities between his music and that of either Vaughan Williams or Bax.

If the network of analyses can be widened to include Scriabin, perhaps it can also include other composers. Sibelius should be considered a serious possibility, since his music exerted a great influence on both Vaughan Williams and Bax. Furthermore, the genre in which Sibelius's influence is most keenly felt, the symphony, also seems to be the genre where nonatonic pitch structures arise most cogently in Vaughan Williams's and

⁷ Colin Scott-Sutherland, *Arnold Bax*, (London: J.M. Dent & Sons Limited, 1973), 105, and Lewis Foreman, *Bax: A Composer and His Times*, (Woodbridge: Boydell Press, 2007), 79, 110-111.

⁸ Foreman, *Bax: A Composer and His Times*, 185.

Bax's output. To my knowledge, nonatonic-based analysis has not been applied to the music of either Ravel or Holst, though their influence on Vaughan Williams's music is certain. In addition to the well-known composers mentioned, Bax deserves greater consideration. It is my hope that the analyses of Bax's music that I have presented in this dissertation will spur others to investigate his symphonies using similar methods.

6.3 – A Question of Interacting Disciplines

Finally, have the analyses presented in this dissertation allowed us to come closer to understanding the enigmatic web of influence spun between Vaughan Williams's Piano Concerto, Bax's Third Symphony, and Vaughan Williams's Fourth Symphony? The nonatonic-based approach demonstrates clear similarities in harmonic language, similarities that have been quietly acknowledged but never fully explored. The nonatonic-based approach has also added further complications to the concerns raised by Duncan Hinnels, whose arguments on the Bax quotation in Vaughan Williams's Piano Concerto can be found in Chapter 2 of this dissertation. Hinnels seems to imply that the Piano Concerto may have exerted influence on Bax's Third Symphony, by virtue of the fact that Vaughan Williams began work on the concerto before Bax began his symphony. This implication must now account for the a network of similarities beginning before Vaughan Williams's Concerto, extending backward to *Sancta Civitas*, *Flos Campi*, and also Bax's Second Symphony. Hinnels's two suggestions, that Vaughan Williams and Bax drafted material and exchanged ideas, or that their shared outlook and context prompted them to write in a similar fashion, cannot be confirmed with certainty. However, the

preponderance of examples given in this dissertation suggests that it is more likely that the two composers did indeed exchange ideas.

These analytical findings are unable to answer many of the other important questions surrounding the key works by Bax and Vaughan Williams. The analyses do not fill in the story of why Vaughan Williams thought that Bax's Third Symphony should be programmed with his own Fourth Symphony, or why the Bax quotation in the Piano Concerto contained "personal rather than musical significance." Music analysis cannot solve all the mysteries of music history, but the interaction of these disciplines can suggest new paths forward. If Bax's Third Symphony displayed no significant harmonic similarities with either the Piano Concerto or the Fourth Symphony of Vaughan Williams, then the mysterious link between these three works would become further shrouded. However, the analyses presented in this dissertation strengthen the suggestions made by Hinnels: Vaughan Williams and Bax were steeped in a shared context that went beyond simply being native Britons in the same profession. The fact that they exchanged ideas is already known, but this exchange may have been more frequent than previously considered. Of course analysis will never reveal why the Bax quotation was originally included according to an unknown promise, but the preponderance of analytical evidence can bring us closer to knowing that the works in question share significant musical similarities, rather than a merely personal connection.

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