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A LINEAR APPROACH TO JOHN ADAMS' RECENT WORKS

by

Olivia Maynard

A Thesis

Submitted to the Graduate School,
the College of Arts and Sciences
and the School of Music
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Master of Music

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ABSTRACT

This paper presents and demonstrates a linear approach to works from John Adams' most recent compositional period (1991–). Existing research into this period primarily focuses on specific surface-level events, with little examination of deeper large-scale structures within the works. Chapter 1 reviews the existing research, as well as relevant research into minimalist music and post-tonal analysis, and some existing approaches are then incorporated into the methodology presented in Chapter 2. The methodology is presented in three stages: identifying formal structure, identifying linear structures through salient pitches, and determining harmonic support for those salient pitches. The methodology is demonstrated in greater detail in Chapter 3 through an analysis of Adams' 1996 chamber work, *Hallelujah Junction*. The linear analysis of *Hallelujah Junction* reveals an overarching harmonic progression within the work and provides insight into the manner in which Adams establishes and resolves harmonic expectations, even through his characteristic gradual processes.

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DEDICATION

I would also like to thank my family and friends for their unending love and support for all my endeavors.

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CHAPTER I – INTRODUCTION

The works of American composer John Adams can be sorted chronologically into three approximate stages. Though Adams experimented with minimalist techniques throughout the 1970s, his self-proclaimed op. 1, *Phrygian Gates* and its companion *China Gates*, was published in 1977. This marks the beginning of the first stage, characterized by gradually shifting harmonies and repetitive “cells.”¹ A transitional period then began in 1987 after the premiere of *Nixon in China*, in which Adams moves away from the harmonically-based style and more strict minimalist concepts. By 1991, *The Death of Klinghoffer* introduced a new, more contrapuntal style, which hallmarks Adams’ most recent period. This period is the focus of this paper, particularly works written from 1996 onward. Though *Klinghoffer* marked the significant shift in Adams’ writing, he describes the five or so years following that premiere as a period of experimentation and states that *Slonimsky’s Earbox*, premiered in 1996, marks the successful integration of his new contrapuntal style with older minimalist techniques.²

Analysis of minimalist music has challenged theorists since its rise in the late 1960s, and linear analysis has been largely ruled out as an appropriate approach to understanding the style’s characteristic gradual processes.³ However, this paper argues that the evolution of Adams’ unique postminimalist⁴ style allows for a linear analysis,

¹ John Adams, liner notes to “Phrygian Gates” on *The John Adams Earbox*, Halle Orchestra, Nonesuch Records 7653-2, 1999, CD.

² ———, liner notes to “Slonimsky’s Earbox” on *The John Adams Earbox*, Halle Orchestra, Nonesuch Records 7653-2, 1999, CD.

³ Joseph N. Straus, “The Problem of Prolongation in Post-Tonal Music,” *Journal of Music Theory* 31, no. 1 (April 1987): 1-21.

⁴ The definition of ‘postminimalist’ adopted here is taken from Jonathan Bernard’s 2003 article, in which he defines Adams as a postminimalist based on the criteria that (1) his music can be traced back to minimalist origins and (2) his style developed in response to earlier minimalism.

and that such an analysis informs not only the broad harmonic structure, but some of the gradual melodic processes, as well. Review of the existing literature pertaining to John Adams reveals that no prominent analytical approaches to his later music have emerged, and certainly no linear approaches, that comprehensively examine large-scale structures in the works.

CHAPTER II – LITERATURE REVIEW

The literature considered for this study can be broken into three primary categories of narrowing scope but increasing relevance: writings on postmodern and post-tonal analysis, writings on minimalist music, and finally, writings on John Adams' music specifically. The consideration of non-minimalist post-tonal analytical techniques in this paper is largely precautionary, to ensure that an existing approach is not equally suited for Adams' later works. Writings on non-Adams minimalist music are considered with similar intention, to ensure that an existing approach does not apply, but are also considered for their approaches to specific minimalist techniques. Finally, writings on Adams' music are considered for approaches to his personal techniques, many of which are incorporated into this paper's methodology.

The macro-micro relationship between postmodernism and minimalism allows much of the research on post-tonal analysis to be adapted for analysis of minimalism, compensating for some of the gaps in research into minimalist music.⁵ For example, many of the problems addressed in Patrick McCreless' 1991 article on post-tonal closure rhetoric⁶ are revisited by Catherine Pellegrino in 2002, examining closure in Adams'

⁵ 'Postmodernism' here refers to the definitions put forward by Robert Carl and Jann Pasler, that postmodernism (1) refers to either the strict period following 1450-1950 or more general developments around the turn of the 20th c., (2) throws into question certain contextual assumptions regarding Modernism, (3) returns to more traditionally accessible music, (4) reconsiders consonance and tonality ('postmodernism of reaction'), or (5) explicitly questions and explores social and political affiliations ('postmodernism of resistance'). Pasler specifically cites Adams' political satire, but his music also largely reconsiders consonance and tonality—a focus more forefront in this study.

⁶ Patrick McCreless, "The Hermeneutic Sentence and Other Literary Models for Tonal Closure," *Indiana Theory Review* 12 (Spring/Fall 1991): 35-73.

music.⁷ The adapted approach to these rhetorical gestures presented by Pellegrino proves more potentially relevant in this paper's approach to form, but the relevant details are essentially encompassed by Sanchez-Behar's dovetailing approach, discussed below. Joseph Straus, James Baker, and Robert Fink's writings on post-tonal adaptations of the Schenkerian model of linear analysis are also considered as potentially relevant to a linear analysis of Adams' later works. Baker first offered an extensive comparison of Schenker and Salzer's models of prolongation in 1983,⁸ followed by Straus' 1987 article proposing a new approach to middle-ground analysis.⁹ Fink addressed post-tonal prolongation again in 2001, criticizing the total integration of surface-level and deep structures in Schenkerian and Salzerian models.¹⁰ He argued instead for an approach accounting for non-hierarchical structure, demonstrated through analysis of minimalist Steve Reich's *Piano Phase*. The primary insight garnered through these writings relate to the process of adapting Schenkerian techniques in a post-tonal context, but these processes require further adaptation to suit Adams' writing, adaptations which are informed through the following writings on minimalism and Adams.

While writings on minimalist music span decades and do encompass most aspects of the music—tonality and modality, rhythm and meter, form and structure, and almost any other conceivable governing force—the greatest volume of studies are focused on

⁷ Catherine Pellegrino, "Aspects of Closure in the Music of John Adams," *Perspectives of New Music* 40, no. 1 (January 2002): 147-75.

⁸ James Baker, "Schenkerian Analysis and Post-Tonal Music," in *Aspects of Schenkerian Theory*, ed. David Beach (New Haven: Yale University Press, 1983): 153-86.

⁹ Straus, "The Problem of Prolongation."

¹⁰ Robert Fink, "Going Flat: Post-Hierarchical Music Theory and the Musical Surface," in *Rethinking Music*, ed. Nicholas Cook and Mark Everist (Oxford: Oxford University Press, 2001), 102-37.

rhythmic features. Steve Reich himself first described minimalist music as a “gradual process,”¹¹ a concept which was then approached mathematically by Richard Cohn,¹² Paul Epstein,¹³ and John Roeder,¹⁴ notably. These theories have proven foundational in understanding minimalist music, but this paper’s focus is more directly supported by the research into minimalist music by David Schwarz, Robert K. Schwarz, and Anatol Vieru. David Schwarz published an article in 1993 comparing two cognitive structures in the music of Adams and Reich, arguing that a semiotic approach to minimalist music can and does support linear analysis.¹⁵ Robert Schwarz also compared Adams and Reich in his article, but was concerned with the shift from process to intuition in their compositions, foreshadowing the observations made in Jonathan Bernard’s article a decade later.¹⁶⁻¹⁷ Vieru presented a mathematical theory of the modal sequences and repetitive structures characteristic to minimalism, and while his full mathematical approach may not directly support a linear analysis, his examination of modality, as well as additive and subtractive processes, could be adapted to inform the formal and harmonic focuses within this paper’s methodology.¹⁸ These three studies provide insight into minimalist tonality and

¹¹ Steve Reich, “Music as a Gradual Process,” *Perspectives of New Music* 19, no. 1 (October 1980): 373-92.

¹² Richard Cohn, “Transpositional Combination of Beat-Class Sets in Steve Reich’s Phase-Shifting Music,” *Perspectives of New Music* 30, no. 2 (Summer 1992): 146-77.

¹³ Paul Epstein, “Pattern Structure and Process in Steve Reich’s ‘Piano Phase,’” *The Musical Quarterly* 72, no. 4 (1986): 494-502.

¹⁴ John Roeder, “Beat-Class Modulation in Steve Reich’s Music,” *Music Theory Spectrum* 25, no. 2 (2003): 275-304.

¹⁵ David Schwarz, “Listening Subjects: Semiotics, Psychoanalysis, and the Music of John Adams and Steve Reich,” *Perspectives of New Music* 31, no. 2 (July 1993): 24-56.

¹⁶ Robert K. Schwarz, “Process vs. Intuition in the Recent Works of Steve Reich and John Adams,” *American Music* 8, no. 3 (Fall 1990): 245-73.

¹⁷ Jonathan Bernard, “Minimalism, Postminimalism, and the Resurgence of Tonality in Recent American Music,” *American Music* 21, no. 1 (April 2003): 112-33.

¹⁸ Anatol Vieru, “Generating Modal Sequences (A Remote Approach to Minimal Music),” *Perspectives of New Music* 30, no. 2 (Summer 1992): 178-200.

modality, but none provide such specific insight into Adams' harmonic language as the writings by Johnson, Pellegrino, and Sanchez-Behar.

The focuses of these three authors—harmony, tonal organization and closure, form, and counterpoint—are most directly correlated to this examination of Adams' music, and provide the greatest influence. Timothy Johnson was the first author to establish a definitive theory of Adams' harmonic language, and while his system was tailored for Adams' early works, his hierarchical approach identifies fundamental elements of Adams' writing still evident in later works. Johnson's 1993 article provides a detailed outline of the methodology for determining hierarchical tonal regions in Adams' music,¹⁹ a methodology which is applied directly in this paper to support a linear analysis. Catherine Pellegrino, as mentioned earlier, addressed the challenges of formalist analysis of minimalist music, focusing specifically on the ambiguous closure rhetoric in Adams' music.²⁰ While Pellegrino's outline of closure rhetoric was also focused on Adams' early works, and proves less relevant to later repertoire, certain aspects of her research are incorporated into this paper's methodology via Sanchez-Behar's dovetailing research. Alexander Sanchez-Behar has, within the past decade, examined counterpoint, polyphony,²¹ dovetailing,²² symmetry,²³ and the influence of Slonimsky's *Thesaurus of*

¹⁹ Timothy Johnson, "Harmonic Vocabulary in the Music of John Adams: A Hierarchical Approach," *Journal of Music Theory* 37, no. 1 (Spring 1993): 117-56.

²⁰ Pellegrino, "Aspects of Closure."

²¹ Alexander Sanchez-Behar, "Counterpoint and Polyphony in Recent Instrumental Works of John Adams," PhD diss., Florida State University, 2008.

²² ———, "Dovetailing in John Adams's 'Chain to the Rhythm,'" *Indiana Theory Review* 31 (Spring 2013): 88-114.

²³ ———, "Symmetry in the Music of John Adams," *Tempo* 68 (April 2014): 46-60.

Scales and Melodic Patterns in Adams' later works.²⁴ While his examination of counterpoint and symmetry in Adams' post-1990 repertoire does not focus on overarching linear structure, as in this study, it does provide tremendous insight into the development of his surface-level contrapuntal textures. In contrast, his examination of Slonimsky patterns has proven directly applicable to *Hallelujah Junction*, the primary focus of this paper's analysis, and his analytical approach to dovetailing is adopted in this paper's methodology as a primary indicator of formal structural division.

²⁴ Alexander Sanchez-Behar, "Finding Slonimsky's Thesaurus of Scales and Melodic Patterns in Two Concerti by John Adams," *Music Theory Spectrum* 37, no. 2 (2015): 175-88.

CHAPTER III – METHODOLOGY

The analytical methodology presented in this paper, demonstrated fully in the subsequent analysis of *Hallelujah Junction*, can be broken into three main steps: identifying formal divisions within the work, identifying possible linear patterns presented through salient pitches in the introductory passages of each formal section, and finally, applying Timothy Johnson's hierarchical approach to determine the modal supporting harmonies for the salient pitches. Beginning with a formal analysis seems, on the surface, to contradict more widely accepted Schenkerian practices;²⁵ however, a primary indicator of pitch salience in this study is temporal placement, and as introductory passages of formal sections are considered particularly significant, establishing a formal framework allows one to narrow in immediately on the most temporally significant pitches. In this sense, the indicators of formal structure discussed in this paper are related to the linear structure, and all three steps are incorporated into a singular linear approach. These pitches also indicate the largest-scale structures within the works, in contrast to the small-scale linear elaborations that are generated through Adams' characteristic style of gradual development. The significance placed on formal structure within this method is further supported by Alexander Sanchez-Behar's research into compositional dovetailing, seen in the following detailed discussion of formal structure.

²⁵ As discussed in Charles J. Smith's article, Schenker identified a close relationship between form and structure in *Formenlehre*, and most contemporary Schenkerians share the consensus that form is born out of fundamental structure. However, conflicts between the typical 'conformational' approach to form and Schenker's 'particularist' approach often result in separation of formal and linear analyses.

Formal Structure

Timothy Johnson, in his 1994 article, characterizes Adams' style through his minimalist treatment of harmony, texture, and rhythm, as well as frequent expansion of these elements and incorporation of extended melodic lines.²⁶ This characterization is reinforced by Adams' commentary on *Slonimsky's Earbox*, identifying the piece as the first to cohesively balance early minimalist techniques with his late contrapuntal style. Despite the continued early minimalist influence, however, Adams' treatment of harmony, texture, and rhythm does evolve in his later works. While his early works often employed long stretches of static rhythms and textures to aurally isolate and emphasize the shifting harmonies,²⁷ texture and rhythm receive more dynamic treatment in his later works, and harmonic shifts are more often heard through motivic development than through isolated vertical harmonies. Adams' increasingly dynamic treatment of texture does, however, introduce a consistent process of textural dovetailing in his later works, which will serve as the primary indicator of formal structure within this study.

Textural shifts are approached in great detail in Sanchez-Behar's 2015 article examining the third movement of *Naive and Sentimental Music*, Adams' 1998 work for orchestra.²⁸ Sanchez-Behar is specifically interested in Adams' employment of dovetailing technique, in which an overlapping passage smoothly transitions between two formal sections. He states that these overlapping transitions are typically marked by the introduction of new musical material amidst block and texturally subtractive processes.

²⁶ Timothy Johnson, "Minimalism: Aesthetic, Style, or Technique?," *The Musical Quarterly* 78, no. 4 (Winter 1994): 742-73.

²⁷ John Adams, liner notes to "Common Tones in Simple Time" on *The John Adams Earbox*, Halle Orchestra, Nonesuch Records 7653-2, 1999, CD.

²⁸ Sanchez-Behar, "Dovetailing."

He additionally distinguishes between these formal dovetailing transitions and non-transitional additive processes by citing Catherine Pellegrino’s three indicators of musical closure in Adams’ music: tonal patterns, formal aspects of closure, and rhetorical gestures.²⁹ Sanchez-Behar agrees with Pellegrino that rhetorical gestures are the strongest indicator, as they can be presented independently of tonal patterns or formal structures, and he proposes that subtractive processes are the primary rhetorical gesture employed by Adams to signal closure in his late-period orchestral writing. The following chart, modeled after Sanchez-Behar’s visual depiction of dovetailing in *Naive and Sentimental Music*, illustrates such subtractive textual processes in “Manny’s Gym,” the second movement of *Century Rolls* (1997). This transition in the work serves as a clear example of dovetailing, with gradual exclusion of the piccolo, flute, and clarinet amidst the introduction of new material in the bass clarinet, horn, and strings. Furthermore, the passage marks the first formal division within the movement, supported by harmonic and rhythmic shift within the piano solo.

		m. 47	m. 52	m. 53	m. 54
Picc.	A material				
Fl. 1	A material				
Cls. 1 & 2	A material				
Bass cl.					B material
Hns. 1, 2 & 3			B material		
Strings			B material		
Piano	A material	B material			

Figure 1 Adams, *Century Rolls*, “Manny’s Gym,” mm. 47-54, dovetailing process

²⁹ Pellegrino, “Aspects of Closure.”

As stated by Sanchez-Behar, the prominence of dovetailing in Adams' later works reflects the gradual developments characteristic of his latest writing style; musical divisions are typically not highlighted aurally, but rather smoothed over. However, Adams does occasionally break from his typical treatment of texture, rhythm, and harmony; an example of a sudden shift in texture can be seen in the following excerpted passage from *Slonimsky's Earbox* (Ex. 1).

The image displays a page from a musical score for the piece *Slonimsky's Earbox*, specifically measures 148 through 150. The score is arranged in a standard orchestral format with multiple staves for different instruments. The instruments listed on the left include Piccolo, Flute 1, Flute 2, Oboe 1, Oboe 2, English Horn, E♭ Clarinet, B♭ Clarinet 1, B♭ Clarinet 2, Bass Clarinet, Bassoons 1, 2 & 3, Horn 1, Horn 3, Horn 2, Horn 4, C Trumpet 1 & 2, C Trumpet 3 & 4, Trombones 1 & 2, Tuba, Timpani, Percussion 2, Percussion 3 (Cymbals), Piano, Keyboard 2, Harp, Violin 1, Violin 2, Viola, Violoncello, and Contrabass. The score shows a complex texture with many instruments playing active, often melodic lines. A significant textural shift occurs at the beginning of measure 150, where many of the active lines in the woodwinds and strings change abruptly, creating a new sonic landscape. The notation includes various musical symbols such as notes, rests, beams, and dynamic markings.

Musical Example 1 Adams, *Slonimsky's Earbox*, mm. 148-50, sudden textural shift

Adams describes this piece as being modeled after the explosive opening measures of Stravinsky's *Song of the Nightingale*,³⁰ and this specific shift in instrumentation and tone color could be attributed to that inspiration, but *Slonimsky's Earbox* is not alone in its employment of such sudden shifts. While less common than the more gradual dovetailing technique, such shifts are equally significant indicators of formal division, and are arguably more perceptible to the listener. Consideration of both textural transition styles is necessary when identifying the formal structures of works from this later period.

Johnson identifies rhythmic pulse as a dominant musical element in Adams' music, but as observed in texture, his treatment of rhythm evolves from the strict pulse of early works in the variable later works. Unlike texture, however, consistent rhythmic processes cannot be easily observed across his late-period repertoire. No single rhythmic technique can be identified as independently signaling formal divisions; however, shifts in steady rhythmic patterns and metric—or metrically-accentual—shifts certainly support formal divisions signaled by textural dovetailing. This introduces the concept that formal divisions observed within the works may be weighted as more or less structurally significant based on the number of musical elements working to signal the division. The number of elements at play, the markedness of the division as notated by Adams in score, and quantitative measures of significance will all be considered in the later analysis of *Hallelujah Junction* to hierarchically organize formal divisions in the work and establish the formal structure. As prominent elements of Adams' style, rhythm and meter do factor into most formal divisions; for example, the formal division identified earlier as an

³⁰ Adams, liner notes to "Slonimsky's Earbox."

example of dovetailing in “Manny’s Gym” is further supported and lent more significance by the rest in the piano solo at m. 47, the first full pause in the piece for the solo part, and the introduction of new beat subdivisions at the formal transition. The steady rhythmic patterns and subdivisions in the piano part before and after this transition are illustrated below.

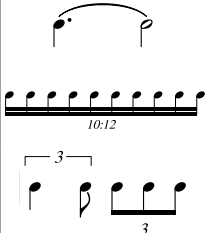
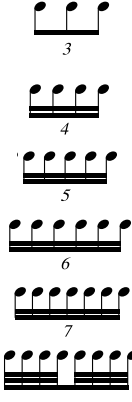






	A section rhythmic patterns	Description	B section rhythmic patterns
longest ↑ duration of shortest note value ↓ shortest		Various tied values, all 2+ beat duration 10:12 subdivision of 3 beats, slightly longer than triplet Varied triplet subdivisions, shortest value is 3:1 beat subdivision	
		Quadruplet subdivision	
		Quintuplet subdivision	
		Sextuplet subdivision	
		Septuplet subdivision	
		Octuplet subdivision	
		Subdivided triplet, shortest value is 12:1 beat subdivision	

Figure 2 Adams, *Century Rolls*, “Manny’s Gym,” rhythmic patterns in the solo piano part

A trend in the durations of A and B section note values can be observed; most specifically highlighted is the degree of contrast between Section A note values and the subdivided triplet which rhythmically marks the transition into the B section.

Additionally stated in Johnson’s article, Adams’ music is distinguished from his more strict minimalist predecessors by his incorporation of frequent and extensive melodic lines. Particularly in the post-1996 style, a trend can be observed in Adams’

treatment of melodic material: melodic motives within fast outer sections or movements are typically short and repetitive, while melodies within the slow middle sections or movements feature augmented rhythms and long phrases. Isolated shifts in pitch and rhythm within melodic motives are similarly identifiable to the listener as shifts in texture or rhythm, but the small-scale adjustments may occur independently of broad transitions in the work. The analysis of *Hallelujah Junction* presented in this paper cites numerous examples of motivic development, such as the following developments on the piece's main "Hallelujah!" motive (Ex. 2). The motive is first introduced in the work's opening passage, the second iteration provides contrast in the central slow section, and the third concludes the piece. These three variations can be found in the introductory passages of formal sections marked by textural, rhythmic, and harmonic shifts. The motivic material alone does not dictate formal division, but the identification of motivic development within the introductory passage strongly supports the division, and motivic material acts as a primary indicator of pitch salience, as discussed in the next section of this paper.



Musical Example 2 Adams, *Hallelujah Junction*, (1) mm. 1-3, (2) mm. 282-4, (3) 642-4, "Hallelujah!" motives

The final characteristic element identified by Johnson, harmony, is perhaps the least commonly isolated in Adams' late-period works. That is not to say that the harmony is treated less intentionally in these works, but rather, Adams tends to treat the harmonic transitions more gradually and shifts in pitch content are primarily highlighted within the context of motivic development. This generally subdued treatment of harmony does, however, call more attention to the exceptional occurrences of aurally prominent harmonic shifts, which fall into two general categories: a sudden transition to a contrasting mode, or a notable contrast between chromatic and modal pitch content. The following excerpt from *Slonimsky's Earbox* illustrates a shift between the chromatic opening section of the work, especially reminiscent of Stravinsky's *Nightingale*, and the second formal section which is settled into four flats. Again, this harmonic shift supports a formal division signaled by a textural dovetailing transition.

The image displays a condensed musical score for the introduction to the 'A' section of John Adams' *Slonimsky's Earbox*, measures 48 through 55. The score is written for three staves. The first staff features a melodic line with various intervals, including triplets and dyads, and a key signature change from one flat to four flats. The second and third staves provide harmonic support with rhythmic patterns and sustained notes. The notation includes dynamic markings such as 'p' (piano) and 'f' (forte), and articulation marks like slurs and accents. The score illustrates a transition from a chromatic opening section to a section settled in four flats.

Musical Example 3 Adams, *Slonimsky's Earbox*, mm. 48-55 condensed score, intro–A section transition

Consideration of all four musical elements discussed above—texture, rhythm, melody, and harmony—is necessary in establishing significant formal divisions within works from Adams' later period. However, as stated earlier, greater weight and

significance can be placed upon formal divisions which are signaled by multiple elements or which mark quantitatively significant shifts in the elements. The following series of analytical preferences are derived from these observations of formal structure:

1. Textural dovetailing is the primary indicator of formal division in orchestral works, as are dovetailing processes present in non-orchestral works.
2. Harmonic and rhythmic shifts which are “marked” by motivic development serve as secondary indicators.
3. Harmonic and rhythmic shifts which are marked through Adams’ notation in the score, or through the disruption of static patterns, are tertiary indicators.
4. Divisions indicated through multiple elements are preferred over divisions indicated by only one.

Salient Pitches

A similar focus is placed in the second step of this analytical approach onto isolated musical elements in Adams’ writing. In the same way that Adams’ generally gradual but varied treatment of texture, rhythm, and harmony inform the formal structure of his later works, this treatment necessitates a specific approach to determining pitch saliency. The first indicator of salience to be considered is temporal, as stated earlier, and is strictly informed through the formal structure. Limiting consideration of structurally significant pitches to the introductory passages of each formal section not only lends consistent temporal significance to the pitches, but also allows one to immediately recognize the lesser structural significance of smaller-scale linear elaborations within the formal sections.

While temporality remains a consistent indicator for each salient pitch identified within the linear structure, other musical indicators may change, dependent on both the piece and the pitch's orientation within the form. The main indicators of salience, aside from temporality, are rhythmic, registral, and dynamic accentuation. The treatment of these smaller-scale melodic elements mirrors Adams' early treatment of harmony, as discussed earlier; often, one element will be isolated and shifted while the others remain fairly static or undergo less significant shifts. Additionally, as discussed in regard to formal structure, incorporation within a melodic motive, whether recurring or newly introduced, lends significant weight to any salient pitch identified through the aforementioned criteria. "Manny's Gym" contains examples of all three non-temporal indicators, as well as a motivic relationship between the salient pitches.

Three major formal divisions can be identified within "Manny's Gym," outlining a rough ternary structure: A-B-A'-coda. The opening A section introduces a melodic fifth motive between pcs B and F \sharp , and the first melodic phrase indicates pc B as particularly salient (Ex. 4). The pitch is emphasized rhythmically with the greatest duration and melodically as the first phrase circles the pitch through neighbor pcs A and C \sharp before leaping to F \sharp .



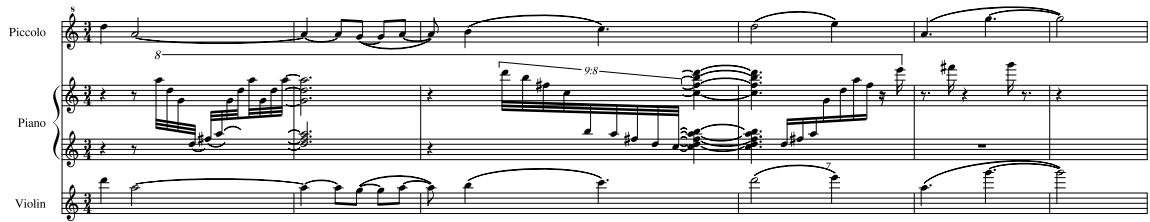
Musical Example 4 Adams, *Century Rolls*, "Manny's Gym," mm. 4-8, A section introductory passage

The formal division marking the B section, illustrated earlier as an example of textural dovetailing, marks the beginning of an extended, cadenza-like section focusing on the solo piano (Ex. 5). The opening measures of the piano solo contrast dynamically with the previous section through a jump from *pianississimo* to *mezzo forte*. Additionally, the new phrase begins with an unfamiliar rapid triplet subdivision and enters on pc A6, five octaves higher than pc A1, which ended the previous phrase. These dynamic, rhythmic, and registral contrasts all mark pc A as salient within the introductory passage of the piano solo section.

The musical score is for a piano solo in 3/4 time. It consists of two staves. The upper staff begins with a series of eighth-note triplets, marked with a '3' above each group. A slur covers the first four measures of this triplet pattern. The dynamic marking *ppp* is placed below the staff. In the fifth measure, there is a whole rest. The sixth measure contains a triplet of eighth notes, marked with a '3' above. The seventh measure features a triplet of sixteenth notes, also marked with a '3' above. The dynamic marking *mf* is placed below the staff. The lower staff begins with a series of eighth-note triplets, marked with a '3' above each group. A slur covers the first four measures. The fifth measure contains a triplet of eighth notes, marked with a '3' above. The sixth measure contains a triplet of eighth notes, marked with a '3' above. The seventh measure contains a triplet of eighth notes, marked with a '3' above. The dynamic marking *ppp* is placed below the staff. The eighth measure contains a triplet of eighth notes, marked with a '3' above. The dynamic marking *mf* is placed below the staff. The score is labeled 'Piano' on the left.

Musical Example 5 Adams, *Century Rolls*, “Manny’s Gym,” mm. 45-7, A–B section transition

The end of the cadenza-like B section is marked by an elongated rest in the piano solo and a return to the opening texture. Pc G is indicated as salient in the introductory passage of the A’ section through its placement as the registral apex of the first full phrase, as well as through the brief union of multiple parts—piccolo, piano, and violin—on the pitch (Ex. 6). The duration of pc G further supports its salience, and rhythmically, its entrance in the measure mirrors pc B from the opening A section.



Musical Example 6 Adams, *Century Rolls*, “Manny’s Gym,” mm. 130-4, A’ section introductory passage

The brief coda of “Manny’s Gym” is a single passage composed of three sustained chords in the string parts. The true registral apex of this passage is pc B5 in the viola, however, pc B is heard paired with pc F \sharp in the cello as a final recurrence of the fifth motive. Pc F \sharp of the motive actually ends the movement as the uppermost voice in the final chord, filling out an overall linear structure in the piece that mirrors the melodic fifth motive: B—A—G—F \sharp .

Musical Example 7 Adams, *Century Rolls*, “Manny’s Gym,” mm. 157-63, coda

Linear structures within Adams’ later works do not always reveal such direct motivic parallelisms, as in “Manny’s Gym.” For example, no melodic motive recurs through *Slonimsky’s Earbox*, but tritone relationships are featured prominently

throughout the work. The prominence of the tritone supports the fairly unusual linear structure identified in *Slonimsky's Earbox*, seen below.



Musical Example 8 Adams, *Slonimsky's Earbox*, linear structure

Unlike the structures identified in “Manny’s Gym” and *Hallelujah Junction*, the linear descent in *Slonimsky's Earbox* excludes the salient pc C of the introduction and coda sections. However, the descending line that can be identified between those sections not only outlines a tritone between pcs Bb and E, but also reveals a second tritone relationship between the outer sections’ pc C and the slow ‘middle’ section’s pc F#. As discussed earlier, Adams modeled the piece after the erupting tone colors of Stravinsky’s *Nightingale*, and the prevalent tritone supports this sense of contrast, especially between the hyperactive outer sections and the calm middle.

The following series of analytical preferences are derived from these observations of linear structure:

1. Temporal placement within the introductory passage of a formal section is the consistent primary indicator of pitch salience.
2. Pitches are marked as salient contextually through registral, dynamic, and rhythmic accentuation.
3. Marked pitches incorporated into motivic developments are preferred over non-motivic marked pitches.

4. In the absence of motivic development, marked pitches within the first contrasting harmonic or rhythmic event of an introductory passage are preferred.

Harmonic Support

The approach to harmonic analysis adopted in this study is informed directly by Timothy Johnson's 1993 article, "Harmonic Vocabulary in the Music of John Adams: A Hierarchical Approach." Johnson first introduced the concept of a common-tone index in his 1991 dissertation,³¹ as a method for mapping common pitch-class sets retained through the gradual harmonic developments of Adams' early works. Johnson's subsequent article outlines the hierarchical categorization and labelling of those common pitch-class sets.

Johnson identifies collections of diatonic pitch-class (pc) sets in Adams' music as "complexes," which can be broken into three distinct, but inclusively-related, pc sets:

$$\text{chord} \subseteq \text{sonority} \subseteq \text{field}^{32}$$

A *chord* includes the pc set of any strongly presented triad or seventh chord in a given passage. A *sonority* includes the chord pc set, as well as any other strongly presented pcs. The *field* denotes an entire diatonic collection, in which the chord and sonority pcs are found. If the sonority includes any non-diatonic pcs, a *superdiatonic field* is necessitated, one which denotes strongly presented non-diatonic pcs in addition to the collection.³³

³¹ Timothy Johnson, "Harmony in the Music of John Adams: From *Phrygian Gates* to *Nixon In China*" (PhD. diss., State University of New York, Buffalo, 1991).

³² ———, "Harmonic Vocabulary," 118, fig. 1.

³³ Ibid., 118.

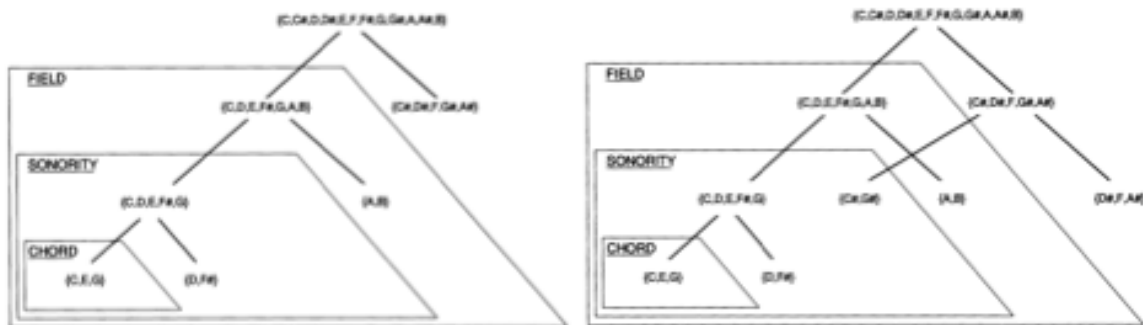


Figure 3 Johnson, 1993, diagrams of the diatonic complex (*left*) and superdiatonic complex (*right*)

Johnson is able to uniquely identify complexes as chord-field pairs, using the seven authentic modes to label field pc collections.³⁴

The mapping process is demonstrated in the following excerpts from “Manny’s Gym,” which identify the harmonic support for two salient pitches within the linear structure. Within the first excerpt (Ex. 9), both a B major triad and F[#]m7 chord are strongly presented, but Johnson’s first Chord Preference Rule dictates that the lowest sounding pitch determines the chord root, making B major the most strongly-presented chord of this passage.³⁵ Johnson’s second Field Preference Rule states that a major triad will either fall under an lydian, ionian, or mixolydian modal designation, depending on its surrounding sonority pcs.³⁶ The specific sonority pcs which signal these modes are an augmented fourth above the chord root (lydian), a perfect fourth and major seventh (ionian), or a minor seventh (mixolydian). This passage contains a pc A, a minor seventh above the chord root, determining its modal designation to be mixolydian. All sonority

³⁴ Johnson, “Harmonic Vocabulary,” 125-6.

³⁵ Ibid., 129.

³⁶ Ibid., 136-7.

pcs within this passage are pulled directly from the diatonic field determined by the chord and modal designation: B mixolydian.

Musical Example 9 Adams, *Century Rolls*, “Manny’s Gym,” mm. 4-8, A section introductory passage

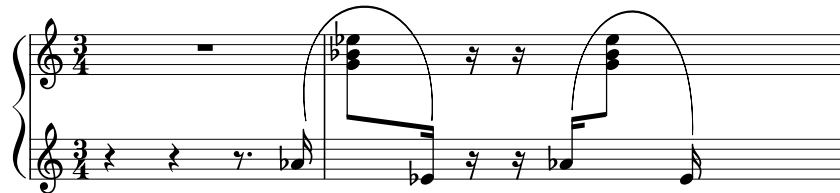
Example 10, however, illustrates a superdiatonic complex in which sonority pcs in the passage are not found in the diatonic field. In naming this complex, the same process is used to determine the diatonic chord-field pair, and superdiatonic sonority pcs are then appended parenthetically as intervals above the chord root: Am7 dorian (M3).

Musical Example 10 Adams, *Century Rolls*, “Manny’s Gym,” mm. 47-9, B section introductory passage

CHAPTER IV – ANALYSIS OF HALLELUJAH JUNCTION

The following analysis is presented chronologically, discussing formal, linear, and harmonic structural developments as they occur throughout *Hallelujah Junction*. Within the analysis, a background linear structure is identified as a scalar descent from $\hat{5}$ to $\hat{1}$ in $A\flat$ major. The salient pitches which compose this linear descent are identified through the primary, secondary, and tertiary indicators discussed above, all within introductory passages of formal sections which are also identified through aforementioned indicators.

The first three sounds of *Hallelujah Junction* introduce a syncopated motive emphasizing a leap of a fifth between pcs $A\flat$ and $E\flat$, followed by another leap down to $E\flat$ (Ex. 11). John Adams has explained that this motive, from which a majority of the melodic material in the piece can be traced, acts as an onomatopoeic representation of the abbreviated exclamation, “-lelujah!”³⁷



Musical Example 11 Adams, *Hallelujah Junction*, mm. 1-2, piano 1, “-lelujah!” motive

The motive reflects the exclamation’s natural inflection by melodically and metrically stressing the syllable “-lu-” in the onomatopoeia. These same stresses provide the contextual salience for pc $E\flat$, which acts as the primary tone of the fundamental line. The pc $E\flat$ on “-lu-” is heard as the upper voice of an $E\flat$ triad in first inversion, the only strongly presented chord in this introductory passage. As the second piano enters and

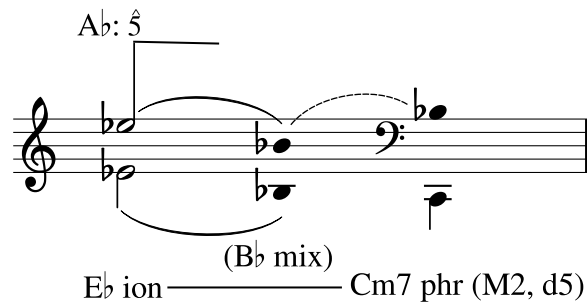
³⁷ John Adams, “John Adams on Hallelujah Junction,” Vimeo video, duration: 2:52, published 2015.

begins volleying the motive with the first part, pcs F, C, and D are gradually introduced to the harmonic palette. These sonority pcs, however, still fit within the E \flat ionian diatonic field, making E \flat ionian the appropriate label for the first complex.

The first notable shift in this complex occurs in m. 44, where a B \flat major triad supplants the E \flat . Though none of the field pcs change in the following passages, the appropriate label at this shift becomes B \flat mixolydian, acknowledging the new strongly-presented chord. In this analysis, B \flat mixolydian and E \flat ionian will be considered *complementary complexes*, due to their shared diatonic pc sets. Complementary complexes have a prolongational relationship, in the sense that any diatonic pc or pc set found in the first complex can appear in the second. In this sense, as well, the shift to B \flat mixolydian can be considered a prolongation of the initial E \flat ionian supporting harmony throughout the A section.

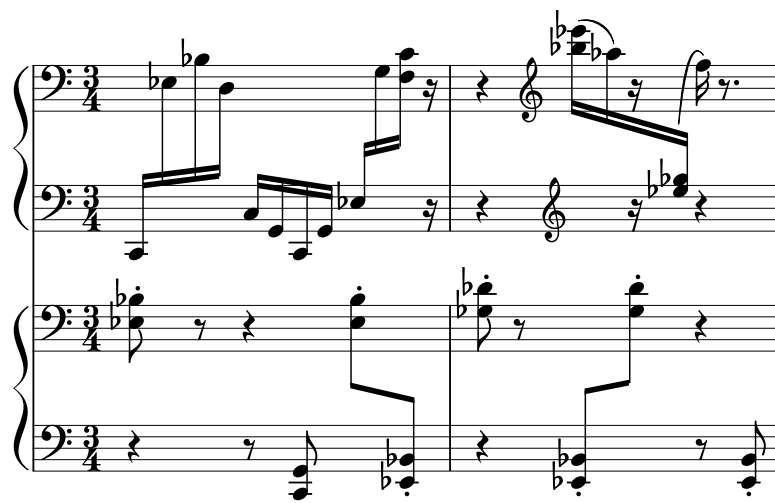
The second notable shift is brought on by the initiation of the first suggested dovetailing process at m. 78, when the first piano part moves away from the “-lelujah!” motive and begins arpeggiating a Cm7 chord. The shift to Cm7 alone does not change the diatonic field, as the pcs in a Cm7 chord can be found in the B \flat mixolydian pc set. However, the following passages introduce the non-diatonic pcs D \flat and G \flat . Now reconsidering the diatonic field of this passage, Johnsons’s second Field Preference Rule dictates that the presence of a Cm7 chord and a sonority pc which is a m2 above the root (D \flat in this passage) defines this passage’s diatonic field as Cm7 phrygian. The presence of sonority pcs outside the Cm7 phrygian field make this a superdiatonic complex, however, appropriately labeled as Cm7 phrygian (M2, d5). While this subsection distinctly contrasts the previously static pc collection, the introduction of the Cm7

phrygian diatonic field heralds the arrival of a number of complementary complexes in later sections, ultimately leading to the complementary $A\flat$ ionian, which supports the final tonic of the fundamental line. Example 12 below diagrams the harmonic middle-ground structures discussed in the A section.



Musical Example 12 Adams, *Hallelujah Junction*, A section middle-ground sketch

The suggested dovetailing process initiated at m. 78 concludes in m. 88, when the second piano part joins the first in arpeggiating a $Cm7$ chord. This process serves as a primary indicator of formal division; however, the second suggested instance of dovetailing in mm. 105–114 is marked as more significant by an accompanying harmonic shift from $Cm7$ phrygian to $E\flat m7$ dorian and the introduction of new material which recalls the contour and phrasing of the “-lelujah!” motive (Ex. 13). This significant division at m. 114 then marks the transition between the A and B sections.



Musical Example 13 Adams, *Hallelujah Junction*, mm. 113-4, A–B section transition

The introductory passage of the B section, though brief, indicates pc D \flat as salient through registral and rhythmic placement. Harmonically, the transition into B is marked by a previously static Cm7 chord shifting up a third to Ebm7, presenting pc D \flat as the uppermost voice; as discussed in relation to the form, the new material incorporating this Ebm7 chord also recalls the “-lelujah!” motive. Rhythmically, a rest in the first piano part allows the Ebm7 chord to be heard unobstructed within the introductory passage, the first such instance for one of the staccato chords, bringing the D \flat to the musical forefront. Though structurally significant, this compact harmonic transition into the B section, technically lasting only two beats, is left fairly understated, especially aurally. However, the following introductory passage presents contrasting melodic and harmonic content, highlighting the formal division.

Not only does the introductory passage following the transition flesh out the Ebm7 supporting chord into a full Ebm7 dorian complex with additional sonority pcs F, A \flat , and C, but it also introduces contrasting melodic patterns pulled from Slonimsky’s *Thesaurus*. In his 2015 article, Alexander Sanchez-Behar describes three presentations of Slonimsky

patterns in Adams' later works: direct quotations from the *Thesaurus*, paraphrases of the cyclic intervallic patterns, and newly-composed melodic patterns modeled after the *Thesaurus*.³⁸ The B section of *Hallelujah Junction* features the first presentation identified by Sanchez-Behar, and likely the second and third, as well. Pattern nos. 1045, 1036, 1047, 1040, and 1035 are quoted directly from the *Thesaurus*, and their transpositions indicate the shifting complexes. For example, the Ebm7 dorian complex serves as the principal supporting harmony for the first few passages of the B section, but a sonority pc C \flat is briefly introduced in mm. 121–23 through the transposition of Slonimsky Pattern nos. 1047 and 1040. The introduction of the Slonimsky patterns in this section not only creates a contrasting melodic contour, but also allow for gradual changes in the pc sets.

Beyond the aural transition at the beginning of the B section and the melodic contrast generated through the introduction of Slonimsky patterns, a clear divide between the first two sections can be identified quantitatively through the harmonic rhythms and palettes. While the A section includes two distinct diatonic complexes and one superdiatonic, B contains seven distinct diatonic and five distinct superdiatonic.³⁹ None of the three complexes from A reappear in the exact same form in B; only the diatonic portion of A's Cm7 phrygian (M2, d5) complex is carried over, but with the addition of new non-diatonic sonority pcs in B. The shift in harmonic rhythm can be observed in the average durations of each complex in the sections, calculated as:

$$A: 113 \text{ measures} / 3 \text{ complexes} = \text{an average duration of } 37.67 \text{ mm.}$$

³⁸ Sanchez-Behar, "Finding Slonimsky," 182.

³⁹ The diatonic and superdiatonic field maps for each section can be found in the appendixes.

B: 160 measures / 30 complexes = an average duration of 5.33 mm.

The average durations of the complexes in each section show that the harmonic rhythm of the B section is, on average, at least seven times faster than in A. Additional data points for the durations, shown below in Figure 4, reveal that A's minimum, maximum, and median durations are all reduced by at least half in B.

	Range	Median	Mode	Mean
Section 1	29–43 mm.	41 mm.	—	37.67 mm.
Section 2	1–19 mm.	4 mm.	2 mm.	5.33 mm.

Figure 4 Adams, *Hallelujah Junction*, complex duration data for A and B sections

These data points quantitatively demonstrate an aural contrast heard in the B section through the frequent introduction of new sonority pcs and change in chords throughout the section. Despite the widened palette and accelerated harmonic rhythm, however, the twelve distinct complexes of B can ultimately be divided into two prolongational sections. In the first half, the pc set of the initial $E\flat m7$ dorian complex is prolonged through the identical $E\flat m$ dorian, and through two complexes whose fields are one pc removed from $E\flat m7$ dorian: the superdiatonic $Cm/Cm7$ phrygian ($d5$) and the diatonic $C\flat$ lydian. The inclusion of the non-diatonic sonority pc $D\flat$ in the superdiatonic complexes allows for the continuation of the previous pc set, and pc $C\flat$ of the $C\flat$ lydian complex is only briefly introduced through Slonimsky patterns 1047 and 1040. A new complex— Cm aeolian—is then introduced in mm. 166–193, and acts as somewhat of a bridge between the two prolongational groups. The second half, beginning in m. 194, prolongs the pc set of an $E\flat 7$ mixolydian complex through the complementary diatonic $Cm7$ phrygian complex, and through superdiatonic iterations of both $E\flat 7$

mixolydian and Cm7 phrygian. The only deviations in the second half occur briefly in mm. 252–54 and 261–62, two chromatic passages best labeled Bm dorian. The transition between the B and A' sections is then smoothed with the carry-over of the strongly-presented Cm7 chord, which becomes the supporting harmony for the next member of the fundamental line.

As in the A section, a brief suggestion of dovetailing can be found within B at mm. 134–38 but becomes overshadowed by a more significant division at m. 275. While dovetailing serves as a primary indicator of formal division, the process stands alone at m. 134, compared to m. 275, where both secondary and tertiary indicators may be found: a harmonic shift from E \flat m7 dorian to Cm7 aeolian and a rhythmic shift from simple to compound beat division, accompanied by the introduction of a rhythmically augmented “-lelujah!” motive, as well as a prolonged rest and double bar line. This division, signaled by multiple indicators, marks the true transition between the B and A' sections.

Though a Cm7 chord carried over from the B section serves as the supporting harmony for A' as well, this section bears much closer resemblance to A. Before making any comparisons, however, a few significant contrasts in A' should be noted. This section is unique in that greater contrast can be observed through Adams' actual notation—reduced tempo, compound beat division, *expressivo* marking, less accented or staccato articulation, and longer phrases. These stylistic changes, combined with the rest held between B and A', provide aural contrast in A', despite its allusion to A section material.

The first diatonic complex established in A', Cm7 aeolian, is complementary to the E \flat ionian complex prolonged through much of the A section. Whereas the initial introduction of the Cm aeolian complex in B occurs within a context of melodic and

harmonic contrast, the complex transitions in A' into an aurally grounding harmony, suggestive of a tonic key area. The complementary relationship between Cm aeolian and E \flat ionian allows the same pc set to appear in the introductory passages of A' as in A, which generates a sense of returning to a 'home' diatonic field in A'. Compounding this aural return 'home' is the immediate re-introduction of the "-lelujah!" motive in m. 276. In line with the stylistic changes of A', the motive is rhythmically augmented, allowing longer phrasing and more legato articulation. The pitch content is slightly adjusted as well; rather than an E \flat triad appearing on "-lu-," a Cm triad acts as the strongly-presented chord. While this passage establishes the supporting harmony for the A' section, and aligns itself with the harmonies of A, the progression of the fundamental line is not made clear immediately.

As in the establishment of the primary tone E \flat , the next member of the fundamental line, pc C, is also presented as contextually salient through the "-lelujah!" motive. However, in the A' section, a linear progression within the introductory passage creates an ascent up to pc C. The initial statement of the motive in this section presents pc G as the uppermost voice on the "-lu-" syllable; melodic development of the motive then moves the uppermost voice up by step to A \flat , B \flat , and finally, C in m. 285. The step progression can be seen in the middle-ground sketch of the introductory passage:

The musical score consists of two staves. The upper staff is in treble clef and contains a melodic line with a trill on the final note, marked with a trill symbol (three dots) and the notation 'Ab: 3'. The lower staff is in bass clef and contains a harmonic line, marked with 'arp.' and a trill symbol. The text 'Cm7 aeolian' is written below the lower staff.

Musical Example 14 Adams, *Hallelujah Junction*, mm. 275-85 middle-ground sketch

Further aligning the A' section with A is a reduced harmonic palette and rhythm. A' contains only three distinct diatonic complexes and one superdiatonic complex, which last an average of 20.75 mm./complex. The initial supporting harmony introduced in A', Cm7 aeolian, is prolonged throughout the section with the complementary diatonic complex Ab lydian and through the superdiatonic Cm7 phrygian (M2), with only one brief deviation to C ionian (mm. 320–22). Once again, the Cm7 aeolian supporting harmony carries into the next section.

The first suggested instance of dovetailing after the double bar line occurs in mm. 356-62. This process is accompanied by rhythmic diminution, a shift from pedaled legato to staccato attacks, and the initiation of frequent metric changes, all lent further significance through the introduction of a staccato interpretation of the “-lelujah!” motive. This division, marked through primary and secondary indicators, marks the transition between A' and C (Fig. 5).

		m. 355	m. 358	m. 359	m. 361
Piano 1	S3 material		S4 material		
Piano 2	S3 material				
			(Piano 2)	S4 material	

Figure 5 Adams, *Hallelujah Junction*, mm. 355-61 dovetailing diagram

It is the intervallic content of the staccato motive—prominently presented leaps of a fifth in the second piano part—that defines the next member of the fundamental line as B \flat . The leaps of a fifth mirror the intervallic relationships of the motive in A between pcs A \flat , E \flat , and later, B \flat . Like the primary tone E \flat , pc B \flat in the C section is heard both as the upper member and lower member of an ascending perfect fifth. The melodic fifth relationship between pcs B \flat and F, a non-chord sonority tone, particularly distinguishes pc B \flat as part of the fundamental line, and not just a chord tone of the supporting Cm7.

Adam’s pattern of establishing the supporting harmony and pc member of the fundamental line early in each section is particularly notable in the C section, as shortly after the introductory passage, the section is intended to descend into a “full-tilt boogie.”⁴⁰ The focus of the section becomes shifts between a duple and triple rhythmic pulse,⁴¹ while the two pianos toss improvisatory riffs on the “-lelujah!” motive back and forth.⁴² The “full-tilt boogie” can be observed harmonically, as well, through the widest harmonic palette of any section in the piece: five distinct diatonic and fourteen distinct superdiatonic complexes. The harmonic rhythm of C is initially very close to B; considering mm. 358–610, the average duration of each complex is 6.84 mm./complex. However, a significant shift in the harmonic rhythm of C occurs at m. 611 and including the remaining 31 measures (mm. 611–42)⁴³ in the calculation reduces the average to 1.35 mm./complex, significantly lower than any other section.

⁴⁰ John Adams, liner notes to “Hallelujah Junction” on *The John Adams Earbox*, Halle Orchestra, Nonesuch Records 79453-2, 1999, CD.

⁴¹ Ibid.

⁴² ———, “John Adams on Hallelujah Junction.”

⁴³ The detailed complex map for mm. 611–642 can be found in Appendix E.

The most common diatonic fields in this section are Cm aeolian (7 recurrences) and Gm aeolian (6 recurrences), which seemingly prolong the initial Cm7 aeolian complex. However, the increased chromaticism, seen in the prevalence of additional sonority pcs,⁴⁴ really obscures any aural sense of prolongation occurring in this section. Rather, the chromatic passages seem to be pulling away from the initial harmony, and as the section progresses, could be interpreted as moving towards a B \flat -rooted harmony. For example, in m. 646, the Cm dorian complex— complementary to B \flat ionian—is introduced and becomes the third-most common field (4 recurrences). Following Cm dorian, another complex complementary to B \flat ionian is introduced: F mixolydian. At this point, the second-most common complex Gm aeolian returns and rather than being heard as a prolongation of Cm aeolian, might instead be heard as yet another complement to B \flat ionian.

The perception of this suggested move towards B \flat is strengthened through the common-practice expectation that dominant harmony will precede the final return to tonic. As discussed in the analysis of the A' section, a return to the E \flat ionian complex, or any of its complement, generates a sense of returning to a tonic key area or an aural return 'home.' As the C section progressively builds tension, the ultimate resolution of that tension could reasonably be expected to suggest a traditional dominant-tonic cadential relationship, and if an E \flat -rooted complex is felt to represent the tonic key area, a B \flat -rooted complex could then represent a dominant key area. Adams even briefly realizes this expected B \flat –E \flat cadence in mm. 629–30 when a chromatic passage lands on

⁴⁴ See Appendix D for the full complex map with sonority pcs.

a B \flat triad, the music then rests for one beat, and the “-lelujah!” motive finally makes an appearance with “-jah!” landing on pc E \flat (Ex. 15).

Musical Example 15 Adams, *Hallelujah Junction*, mm. 628-30, pseudo-cadence in E \flat

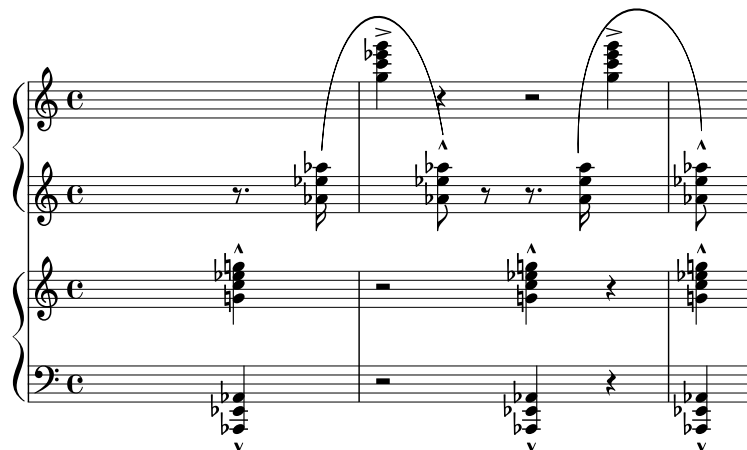
The conflict in this pseudo-cadence, however, lies with the linear structure. At this point in the work, the line has been fully established as a scalar descent: E \flat —D \flat —C—B \flat , outside the E \flat ionian key area. Rather than ending the piece on this conflicted pseudo-cadence, Adams instead continues to build chromatic tension in the remaining twelve measures of C, before settling the conflict with a final step down in the linear structure to pc A \flat . Multiple potential formal divisions can be identified in the C section, due to the increasingly dynamic harmonic and rhythmic shifts. Firstly, a double bar line in m. 474 marks a harmonic resolution, marked by a subtle suggestion of the “-lelujah!” motive. Secondly, a series of double bar lines between mm. 505–41 mark isolated shifts in either rhythm or harmony, but none are supported through motivic development. Two brief suggestions of dovetailing occur toward the end of the section, but neither processes include harmonic or rhythmic shifts. Finally, however, a harmonic shift to A \flat ionian in m. 643 is prominently marked as significant through the introduction of the full

“Hallelujah!” motive and Adams’ accentual and dynamic markings. It is this formal division, marked through multiple secondary and tertiary indicators, that finally transitions into the A’’ section and initiates the structural step down to A_b. The following chart tallies the indicators present at each potential formal division in *Hallelujah Junction*, and the relative significance of these five potential divisions in C can be observed.

Formal section	Measures	Primary indicator	Secondary indicators		Tertiary indicators			Preferred division
		Suggested dovetailing process	Harmonic shift incorporating motivic development	Rhythmic shift incorporating motivic development	Sudden harmonic shift	Sudden rhythmic shift	Notated divisions	Multi-level indicators present
A	78-88	✓						<input type="checkbox"/>
	105-14	✓	Cm7 phr–E _b m7 dor					✓
B	134-38	✓						<input type="checkbox"/>
	275	<input type="checkbox"/>	E _b m7 dor–Cm7 aeo	Simple to compound beat division			Prolonged rest; double bar line	✓
A’	356-62	✓		Rhythmic diminution; frequent metric changes				✓
	474	<input type="checkbox"/>			Cm7 aeo resolution		Double bar line	<input type="checkbox"/>
C	505-41	<input type="checkbox"/>			Gm aeo, Bf ion	Metric changes	Double bar lines	<input type="checkbox"/>
	589-91	✓						<input type="checkbox"/>
	625-31	✓						<input type="checkbox"/>
A’’	643	<input type="checkbox"/>	Chromatic–A _b maj7 ion				Accents; sforzando	✓

Figure 6 Adams, *Hallelujah Junction*, formal indicators

Within the four measures of the A’’ section, Adams is able to resolve both the harmonic and linear expectations built in the previous four sections of *Hallelujah Junctions*. These four measures (pick-up into m. 643–m. 646) are composed entirely of the onomatopoeic motive, though it is finally heard in its full four-syllable iteration, “Hallelujah!” (Ex. 16) This conclusive repetition of the motive, uniting the two piano parts, hammers out an A_bmaj7 chord at *fortissimo* across four octaves, clarifying any ambiguity around the true tonic harmony of *Hallelujah Junction*.



Musical Example 16 Adams, *Hallelujah Junction*, mm. 642-4, final “Hallelujah!” motive

Identifying the ultimate harmonic goal of *Hallelujah* as an $A\flat$ ionian complex allows for a better retrospective understanding of the prevalent $E\flat$ ionian complex and its complements in the previous sections. Without this harmonic revelation in A'', the $E\flat$ ionian field pc set generated the closest suggestion of a tonic or ‘home’ key area; however, placed now into a full context, any $E\flat$ -rooted complex is better understood as a dominant-functioning key area. The recurrences, then, of the $E\flat$ ionian complex and its complements throughout the previous four sections actually keep the larger harmonic structure leading *toward* the ‘tonic’ $A\flat$. The harmonic expectations of the C section, in which a developing dominant–tonic relationship may be perceived between $B\flat$ -rooted and $E\flat$ -rooted complexes or their complements, can also be better understood now as a suggestion of a common-practice V/V–V (or ii–V) progression preceding the true authentic cadence.

This new understanding of the $E\flat$ – $A\flat$ harmonic relationship unveils a motivic parallelism⁴⁵ between the “Hallelujah!” motive, both in its abbreviated and full iterations, and the larger structure. In the introduction of the abbreviated motive in A, the stress placed on the onomatopoeic representation of the “-lu-” syllable provides the contextual salience for pc $E\flat$, and deems the other melodic pc in the motive— $A\flat$ —to be ornamental. At this point in the piece, the $E\flat$ ionian complex is also heard as the primary harmony, and comes to suggest a ‘tonic’ key area. However, just as the understanding of the $E\flat$ ionian harmony shifts in A’, so does the melodic interpretation of the “Hallelujah!” motive. In the final, full iteration of the motive, the pc member of the fundamental line does not appear on the stressed syllables. Rather, pc $A\flat$ can be heard on syllables “-le-” and “-jah!” as an upward resolution of the stressed pc G. The new understanding of the motive, paralleling the harmonic structure, is that stressed syllables are actually functioning dominantly or as tonic preparation, leading melodically back to the ‘tonic’ $A\flat$.

⁴⁵ A detailed explanation of motivic parallelism can be found in Charles Burkhart’s article “Schenker’s ‘Motivic Parallelism.’”

CHAPTER V – CONCLUSION

In the liner notes to *Slonimsky's Earbox*, John Adams confirms that the 1996 piece marks the successful integration of his newer contrapuntal style with older, more strict minimalist techniques. The literature examined in this paper identifies polyphonic counterpoint, expansion on melodic lines, textural dovetailing, and incorporation of Slonimsky's melodic scales and patterns as components of Adams' latest style; while the more strict minimalist influences can still be seen in his treatment of rhythm and pulse and stretches of gradual harmonic progression. The methodology presented above incorporates Adams' consistent implementation of textural dovetailing, as discussed by Sanchez-Behar, in formal analysis; his expanded treatment of melody in identification of salient pitches; and the strict harmonic influences carried over from his early works in the application of Johnson's analytical approach. As such, the methodology is best suited for application in Adams' most recent work, from 1996 onward, and is also adaptable across multiple media in Adams' repertoire, as demonstrated by the analytical examples excerpted from an orchestral work, a concerto, and a chamber work. As Sanchez-Behar states in his 2008 dissertation, Adams' later, more analytically-challenging works hold a significant place in his repertoire but remain largely unexplored.⁴⁶ This paper aims to establish and demonstrate a methodology which incorporates existing research on this period into a singular analytical approach to large-scale linear structures, with the hope to encourage further exploration.

⁴⁶ Sanchez-Behar, "Counterpoint and Polyphony."

APPENDIX A – Complex map for *Hallelujah Junction* A section

mm.	chord pc set	additional sonority pcs	field pcs	complex label
1-43	Eb, G, Bb	F, Ab, C	Eb, F, G, Ab, Bb, C, D	Eb ion
44-84	Bb, D, F	C, Eb, Ab	Bb, C, D, Eb, F, G, Ab	Bb mix
85-113	C, Eb, G, Bb	Db, D, F, Gb, Ab	C, D, Db, Eb, F, Gb, G, Ab, Bb	Cm7 phr (M2, d5)

The bolded passage establishes the supporting harmony for the pc member of the fundamental line in that section.

APPENDIX B – Complex map for *Hallelujah Junction* B section

mm.	chord pc set	additional sonority pcs	field pcs	complex label
114-117	Eb, Gb, Bb, Db	Ab, C, F	Eb, F, Gb, Ab, Bb, C, Db	Ebm7 dor
118-139	Eb, Gb, Bb	F, Ab, C, Db	Eb, F, Gb, Ab, Bb, C, Db	Ebm dor
(121-123)		F, Ab, Cb, Db	Eb, F, Gb, Ab, Bb, Cb, Db	Ebm aeo
140-141	Cb, Eb, Gb	Db, F, Ab, Bb	Cb, Db, Eb, F, Gb, Ab, Bb	Cb lyd
142-146	Eb, Gb, Bb	F, Ab, C, Db	Eb, F, Gb, Ab, Bb, C, Db	Ebm dor
147-148	Cb, Eb, Gb	Db, F, Ab, Bb	Cb, Db, Eb, F, Gb, Ab, Bb	Cb lyd
149-151	Eb, Gb, Bb	F, Ab, C, Db	Eb, F, Gb, Ab, Bb, C, Db	Ebm dor
151-156	C, Eb, G	Db, F, Gb, Ab, Bb	C, Db, Eb, F, Gb, G, Ab, Bb	Cm phr (d5)
157-158	Eb, Gb, Bb	F, Ab, C, Db	Eb, F, Gb, Ab, Bb, C, Db	Ebm dor
159-164	C, Eb, G, Bb	Db, F, Gb, Ab	C, Db, Eb, F, Gb, G, Ab, Bb	Cm7 phr (d5)
164-166	Eb, Gb, Bb	Ab, Db	Eb, F, Gb, Ab, Bb, C, Db	Ebm dor
166-176	C, Eb, G	D, F, Ab, Bb	C, D, Eb, F, G, Ab, Bb	Cm aeo
177		+B	C, D, Eb, F, G, Ab, Bb, B	Cm aeo (M7)
178-193		+A	C, D, Eb, F, G, Ab, A, Bb, B	Cm aeo (M6, M7)
194-205	Eb, G, Bb, Db	Ab, C	Eb, F, G, Ab, Bb, C, Db	Eb7 mix
205-210	C, Eb, G, Bb	Db, Ab	C, Db, Eb, F, G, Ab, Bb	Cm7 phr
211-214	Eb, G, Bb, Db	Ab, C	Eb, F, G, Ab, Bb, C, Db	Eb7 mix
214-227	C, Eb, G, Bb	Db, Ab	C, Db, Eb, F, G, Ab, Bb	Cm7 phr
228-230	Eb, G, Bb, Db		Eb, F, G, Ab, Bb, C, Db	Eb7 mix
231-237	Eb, G, Bb, Db	A, F	Eb, F, G, Ab, A, Bb, C, Db	Eb7 mix (A4)
237-240	C, Eb, G, Bb	Db, F, A	C, Db, Eb, F, G, Ab, A, Bb	Cm7 phr (M6)
241-252		+E	C, Db, Eb, E, F, G, Ab, A, Bb	Cm7 phr (M3, M6)
252-254	B, D, F#	C, F, G#	B, C, C#, D, E, F, F#, G#, A	Bm dor (m2, d5)
254-258	C, Eb, G, Bb	C#, F, A	C, Db, Eb, F, G, Ab, A, Bb	Cm7 phr (M6)
259-260		+E	C, Db, Eb, E, F, G, Ab, A, Bb	Cm7 phr (M3, M6)
261-262	B, D, F#	C, G#	B, C, C#, D, E, F#, G#, A	Bm dor (m2)
262-266	C, Eb, G, Bb	Db, F, A	C, Db, Eb, F, G, Ab, A, Bb	Cm7 phr (M6)
(263)		+Ab		

Appendix B Continued

266-271	C, Eb, G, Bb	Db, F, Ab, A	C, Db, Eb, F, G, Ab, A, Bb	Cm7 phr (M6)
272		+E	C, Db, Eb, E, F, G, Ab, A, Bb	Cm7 phr (M3, M6)
273-274	Eb, G, Bb, Db	C	Eb, F, G, Ab, Bb, C, Db	Eb7 mix

APPENDIX C – Complex map for *Hallelujah Junction* A' section

mm.	chord pc set	additional sonority pcs	field pcs	complex label
275-320	C, Eb, G, Bb	D, F, Ab	C, D, Eb, F, G, Ab, Bb	Cm7 aeo
307	C, Eb, G, Bb	D, Db, F, Ab	C, Db, D, Eb, F, G, Ab, Bb	Cm7 phr (M2)
320-322	C, E, G	B, D, F, A	C, D, E, F, G, A, B	C ion
323-342	Ab, C, Eb	Bb, D, G	Ab, Bb, C, D, Eb, F, G	Ab lyd
342-357	C, Eb, G, Bb	D, F, Ab	C, D, Eb, F, G, Ab, Bb	Cm7 aeo

APPENDIX D – Complex map for *Hallelujah Junction C* section

mm.	chord pc set	additional sonority pcs	field pcs	complex label
358-369	C, Eb, G, Bb	D, F	C, D, Eb, F, G, Ab, Bb	Cm7 aeo
370-378	C, Eb, G, Bb	D, F, Ab, A	C, D, Eb, F, G, Ab, A, Bb	Cm7 aeo (M6)
379-395		+F#	C, D, Eb, F, F#, G, Ab, A, Bb	Cm7 aeo (A4, M6)
396-412	C, Eb, G	Ab, Bb	C, D, Eb, F, G, Ab, Bb	Cm aeo
413-430	Ab, C, Eb, G	Bb, Db, F	Ab, Bb, C, Db, Eb, F, G	Abmaj7 ion
430-446	Db, F, Ab	Eb, G, Bb, B, C	Db, Eb, F, G, Ab, Bb, B, C	Db lyd (A6)
446-449	C, Eb, G	D, F, B	C, D, Eb, F, G, A, Bb, B	Cm dor (M7)
450-451	Ab, Eb	B, C, D, F, F#	Ab, B, Bb, C, D, Eb, F, F#, G	Ab lyd (A2, A6)
452-454	C, Eb, G	D, F, B	C, D, Eb, F, G, A, Bb, B	Cm dor (M7)
454-455	Ab, Eb	B, C, D, F, F#	Ab, B, Bb, C, D, Eb, F, F#, G	Ab lyd (A2, A6)
456-457	C, Eb, G	D, F, B	C, D, Eb, F, G, A, Bb, B	Cm dor (M7)
458-459	D, F#, A	Eb, C	D, Eb, E, F#, G, A, B, C	D mix (m2)
460-461	C, Eb, G	D, F, B	C, D, Eb, F, G, A, Bb, B	Cm dor (M7)
462-463	F, A, C, Eb	F#	F, Gb, G, A, Bb, C, D, Eb	F7 mix (m2)
464-465	C, Eb, G	D, F, B	C, D, Eb, F, G, A, Bb	Cm dor (M7)
466-473	F, A, C, Eb	F#	F, Gb, G, A, Bb, C, D, Eb	F7 mix (m2)
474-477	C, Eb, G	Ab, Bb	C, D, Eb, F, G, Ab, Bb	Cm aeo
478-479	G, Bb, D	Eb, F	G, A, Bb, C, D, Eb, F	Gm aeo
480-481	C, Eb, G	Ab, Bb	C, D, Eb, F, G, Ab, Bb	Cm aeo
482-491	G, Bb, D	Eb, F	G, A, Bb, C, D, Eb, F	Gm aeo
492-493	C, Eb, G	Ab, Bb	C, D, Eb, F, G, Ab, Bb	Cm aeo
494-517	G, Bb, D	Eb, F	G, A, Bb, C, D, Eb, F	Gm aeo
500		+C		
508		+A		
518-523	Bb, D, F	C, E, G, A	Bb, C, D, E, F, G, A	Bb lyd
524-528	G, Bb, D	A, Eb, F	G, A, Bb, C, D, Eb, F	Gm aeo
529-540	Bb, D, F	C, E, G, A	Bb, C, D, E, F, G, A	Bb lyd
541-545	G, Bb, D	A, Eb, F	G, A, Bb, C, D, Eb, F	Gm aeo
546-549	Bb, D, F	C, E, G, A	Bb, C, D, E, F, G, A	Bb lyd
550-553	G, Bb, D	A, Eb, F	G, A, Bb, C, D, Eb, F	Gm aeo

Appendix D Continued

554-574	Bb, D, F	C, E, G, A	Bb, C, D, E, F, G, A	Bb lyd
575-576	E	A, Bb, C, C#	E, F#, G, A, Bb, B, C, C#, D	E dor (d5, m6)
577-578	Bb, D, F	C, A	Bb, C, D, Eb, F, G, A	Bb ion
579-582	D, F#, A	F, C	D, E, F, F#, G, A, B, C	D mix (m3)
593-598	D, F#, A	C, C#	D, E, F#, G, A, B, C, C#	D mix (M7)
599-602	G#, D#, F#	C, D, E, F	G#, A, B, C, C#, D, D#, E, F, F#	G#7 phr (d4, d5, d7)
603-607	D, F#, A	C, C#	D, E, F#, G, A, B, C, C#	D mix (M7)
608-609	F	Bb, B, Eb	F, G, A, Bb, B, C, D, Eb	F mix (A4)
609-611	F	G, G#, A, Bb, B, C, C# D, D#, E, F#	F, Gb, G, Ab, A, Bb, B, C, C#, D, D#, E	F ion (m2, m3, A4, A5, A6)
611-642	D, F#, A B, D, F#, A Eb, G, Bb E, G#, B Gb, Bb, Db G, B, D A, C#, E C, E, G Db, F, Ab Ab, C, Eb Bb, D, F F#, A#, C# B, D#, F# F, A, C A, C, Eb Bb, Db, F, Ab B, D, F# E, G, B D, F, A C, Eb, G A, C#, E, G# Bb, D, F, A C, E, G, B G#, B, D#		D, E, F#, G, A, B, C# B, C#, D, E, F#, G, A Eb, F, G, Ab, Bb, C, D E, F#, G#, A, B, C#, D# Gb, Ab, Bb, C, Db, Eb, F G, A, B, C, D, E, F# A, B, C#, D, E, F#, G# C, D, E, F, G, A, B Db, Eb, F, Gb, Ab, Bb, C Ab, Bb, C, Db, Eb, F, G Bb, C, D, Eb, F, G, A F#, G#, A#, B, C#, D#, E# B, C#, D#, E, F#, G#, A# F, G, A, Bb, C, D, E A, Bb, C, D, Eb, F, G Bb, C, Db, Eb, F, Gb, Ab B, C#, D, E, F#, G, A E, F#, G, A, B, C, D D, E, F, G, A, Bb, C C, D, Eb, F, G, Ab, Bb A, B, C#, D, E, F#, G# Bb, C, D, Eb, F, G, A C, D, E, F, G, A, B G#, A#, B, C#, D#, E, F#	D ion Bm7 aeo Eb ion E ion Gb ion G ion A ion C ion Db ion Ab ion Bb ion F# ion B ion F ion Adim loc Bbm7 aeo Bm aeo Em aeo Dm aeo Cm aeo Amaj7 ion Bbmaj7 ion Cmaj7 ion G#m aeo

Mm. 611-42 were treated as one superdiatonic complex in this map

APPENDIX E – Beat-specific complex map for mm. 611-42 of *Hallelujah Junction*

m.	beat	chord pc set	field pcs	complex label
611	3-4	D, F#, A	D, E, F#, G, A, B, C#	D ion
612	1	B, D, F#, A	B, C#, D, E, F#, G, A	Bm7 aco
	1-2	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	3-4	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	4	D, F#, A	D, E, F#, G, A, B, C#	D ion
613	1	B, D, F#, A	B, C#, D, E, F#, G, A	Bm7 aco
	1-2	Gb, Bb, Db	Gb, Ab, Bb, Cb, Db, Eb, F	Gb ion
	2-4	D, F#, A	D, E, F#, G, A, B, C#	D ion
614	1-2	B, D, F#, A	B, C#, D, E, F#, G, A	Bm7 aco
	1-3	G, B, D	G, A, B, C, D, E, F#	G ion
	4	D, F#, A	D, E, F#, G, A, B, C#	D ion
	4	A, C#, E	A, B, C#, D, E, F#, G#	A ion
615	1	C, E, G	C, D, E, F, G, A, B	C ion
	2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	3-4	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	4	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
616	1	Db, F, Ab	Db, Eb, F, Gb, Ab, Bb, C	Db ion
	1-2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	2	C, E, G	C, D, E, F, G, A, B	C ion
	3	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	4	C, E, G	C, D, E, F, G, A, B	C ion
	4	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
617	1	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
	1	Gb, Bb, Db	Gb, Ab, Bb, Cb, Db, Eb, F	Gb ion
	2	C, E, G	C, D, E, F, G, A, B	C ion
	2	Eb, Gb, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	2	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	3	F#, A#, C#	F#, G#, A#, B, C#, D#, E#	F# ion
	4	F, A, C	F, G, A, Bb, C, D, E	F ion
	4	Db, F, Ab	Db, Eb, F, Gb, Ab, Bb, C	Db ion
618	1	G, B, D	G, A, B, C, D, E, F#	G ion

Appendix E Continued

	1	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
	2	G, B, D	G, A, B, C, D, E, F#	G ion
	2-3	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
	2-3	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	3	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
	3	Db, F, Ab	Db, Eb, F, Gb, Ab, Bb, C	Db ion
	4	A, C#, E	A, B, C#, D, E, F#, G#	A ion
	4	C, E, G	C, D, E, F, G, A, B	C ion
	4	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
619	1	C, E, G	C, D, E, F, G, A, B	C ion
	1	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
	1	D, F#, A	D, E, F#, G, A, B, C#	D ion
	1	F, A, C	F, G, A, Bb, C, D, E	F ion
	2-3	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	3	B, D#, F#	B, C#, D#, E, F#, G#, A#	B ion
	4	F, A, C	F, G, A, Bb, C, D, E	F ion
	4	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
	4	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
620	1-2	Bb, D, F	Bb, C, D, Eb, F, G, A	
	2-3	G, B, D	G, A, B, C, D, E, F#	G ion
	3	D, F#, A	D, E, F#, G, A, B, C#	D ion
	4	A, C, Eb	A, Bb, C, D, Eb, F, G	Adim loc
621	1	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	1-2	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
	3	D, F#, A	D, E, F#, G, A, B, C#	D ion
	3-4	B, D#, F#	B, C#, D#, E, F#, G#, A#	B ion
	4	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
622	1-2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	1-2	E, G#, B	E, F#, G#, A, B, C#, D#	E ion

Appendix E Continued

	3	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
	3-4	F, A, C	F, G, A, Bb, C, D, E	F ion
	3-4	F#, A#, C#	F#, G#, A#, B, C#, D#, E#	F# ion
623	1	G, B, D	G, A, B, C, D, E, F#	G ion
	1-2	C, E, G	C, D, E, F, G, A, B	C ion
	2	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
	3-4	F, A, C	F, G, A, Bb, C, D, E	F ion
	4	Bb, Db, F, Ab	Bb, C, Db, Eb, F, Gb, Ab	Bbm7 aeo
624	1	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
	1-2	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	2	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	3	F, A, C	F, G, A, Bb, C, D, E	F ion
	3	Bb, Db, F, Ab	Bb, C, Db, Eb, F, Gb, Ab	Bbm7 aeo
625	1	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	1	A, C#, E	A, B, C#, D, E, F#, G#	A ion
	2	G, B, D	G, A, B, C, D, E, F#	G ion
	2-3	D, F#, A	D, E, F#, G, A, B, C#	D ion
	4	F, A, C	F, G, A, Bb, C, D, E	F ion
626	1	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	3	B, D#, F#	B, C#, D#, E, F#, G#, A#	B ion
	4	B, D, F#	B, C#, D, E, F#, G, A	Bm aeo
	4	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
627	1	A, C#, E	A, B, C#, D, E, F#, G#	A ion
	1	D, F#, A	D, E, F#, G, A, B, C#	D ion
	2	G, B, D	G, A, B, C, D, E, F#	G ion
	2	E, G, B	E, F#, G, A, B, C, D	Em aeo
	3	F, A, C	F, G, A, Bb, C, D, E	F ion
	3	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
	4	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion

Appendix E Continued

	4	F, A, C	F, G, A, Bb, C, D, E	F ion
628	1	D, F#, A	D, E, F#, G, A, B, C#	D ion
	1	E, G, B	E, F#, G, A, B, C, D	Em aeo
	2	C, E, G	C, D, E, F, G, A, B	C ion
	2	D, F, A	D, E, F, G, A, Bb, C	Dm aeo
	3	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
	3	C, E, G	C, D, E, F, G, A, B	C ion
	4	D, F, A	D, E, F, G, A, Bb, C	Dm aeo
	4	C, E, G	C, D, E, F, G, A, B	C ion
629	1	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
	1	D, F, A	D, E, F, G, A, Bb, C	Dm aeo
	2	C, E, G	C, D, E, F, G, A, B	C ion
	2	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
630	1-3	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo
	4	D, F#, A	D, E, F#, G, A, B, C#	D ion
631	1	B, D, F#, A	B, C#, D, E, F#, G, A	Bm7 aeo
	1	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo
	2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	3	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo
	4	D, F#, A	D, E, F#, G, A, B, C#	D ion
632	1	B, D, F#, A	B, C#, D, E, F#, G, A	Bm7 aeo
	1	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo
	2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	3	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo
	4	D, F#, A	D, E, F#, G, A, B, C#	D ion
633	1	B, D, F#, A	B, C#, D, E, F#, G, A	Bbm7 aeo
	1	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo
	2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	3	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo

Appendix E Continued

	4	D, F#, A	D, E, F#, G, A, B, C#	D ion
634	1	B, D, F#, A	B, C#, D, E, F#, G, A	Bbm7 aeo
	1	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo
	2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	3	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo
	4	D, F#, A	D, E, F#, G, A, B, C#	D ion
635	1	C, E, G	C, D, E, F, G, A, B	C ion
	1	C, Eb, G	C, D, Eb, F, G, Ab, Bb	Cm aeo
	2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	3	A, C#, E, G#	A, B, C#, D, E, F#, G#	Amaj7 ion
	4	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	4	E, G, Bb	E, F, G, A, Bb, C, D	Edim loc
636	1	Db, F, Ab	Db, Eb, F, Gb, Ab, Bb, C	Db ion
	1-2	D, F#, A	D, E, F#, G, A, B, C#	D ion
	2	C, E, G	C, D, E, F, G, A, B	C ion
	3	Bb, D, F, A	Bb, C, D, Eb, F, G, A	Bbmaj7 ion
	4	C, E, G	C, D, E, F, G, A, B	C ion
	4	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
637	1	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
	1	Gb, Bb, Db	Gb, Ab, Bb, Cb, Db, Eb, F	Gb ion
	2	C, E, G	C, D, E, F, G, A, B	C ion
	2	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	3	C, E, G, B	C, D, E, F, G, A, B	Cmaj7 ion
	4	C, E, G	C, D, E, F, G, A, B	C ion
	4	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
638	1	D, F#, A	D, E, F#, G, A, B, C#	D ion
	1	F, A, C	F, G, A, Bb, C, D, E	F ion
	3	C, E, G	C, D, E, F, G, A, B	C ion
	3-4	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion

Appendix E Continued

	4	D, F#, A	D, E, F#, G, A, B, C#	D ion
639	1	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
	1-2	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	3	Gb, Bb, Db	Gb, Ab, Bb, Cb, Db, Eb, F	Gb ion
	3	F, A, C	F, G, A, Bb, C, D, E	F ion
	3-4	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	4	A, C#, E	A, B, C#, D, E, F#, G#	A ion
640	1	A, C#, E	A, B, C#, D, E, F#, G#	
	1	F, A, C	F, G, A, Bb, C, D, E	F ion
	1	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	2	F, A, C	F, G, A, Bb, C, D, E	F ion
	2-3	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	3	B, D#, F#	B, C#, D#, E, F#, G#, A#	B ion
	3-4	C, E, G	C, D, E, F, G, A, B	C ion
	3-4	A, C, E	A, B, C, D, E, F, G	Am aeo
	4	Ab, C, Eb	Ab, Bb, C, Db, Eb, F, G	Ab ion
	4	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
641	1	Db, F, Ab	Db, Eb, F, Gb, Ab, Bb, C	Db ion
	1-2	G, B, D	G, A, B, C, D, E, F#	G ion
	2	F, A, C	F, G, A, Bb, C, D, E	F ion
	3	B, D#, F#	B, C#, D#, E, F#, G#, A#	B ion
	3-4	E, G#, B	E, F#, G#, A, B, C#, D#	E ion
	4	Db, F, Ab	Db, Eb, F, Gb, Ab, Bb, C	Db ion
642	1	Eb, G, Bb	Eb, F, G, Ab, Bb, C, D	Eb ion
	1	Bb, D, F	Bb, C, D, Eb, F, G, A	Bb ion
	1-2	G, B, D	G, A, B, C, D, E, F#	G ion
	2	G#, B, D#	G#, A#, B, C#, D#, E, F#	G#m aeo
	2	F, A, C	F, G, A, Bb, C, D, E	F ion

APPENDIX F – Complex map for *Hallelujah Junction A''* section

mm.	chord pc set	additional sonority pcs	field pcs	complex label
642-646	Ab, C, Eb, G		Ab, Bb, C, Db, Eb, F, G	Abmaj7 ion

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