HARMONIC PROGRESSION AND PITCH-CENTRICITY IN JOHN ADAMS PHRYGIAN GATES

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A thesis submitted in partial fulfillment of the requirements for the degree of Bachelor of Music with Honours in Musicology/Composition

School of Music, The University of Queensland, November 2015.

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Abstract

John Adams is one of the most frequently performed living composers in the realm of Western Art Music. As one of the foremost composers of minimalism, his solo piano work *Phrygian Gates*, to him, represents his initiation into this musical style, and as such, his "Opus one" (*Hallelujah Junction* 89). This work, representing a significant point in the development of Adams' musical style, also represents a significant occurrence in the development in the Western-classical music: the emergence of tonality.

Past analysis of *Phrygian Gates* has uncovered great depth on the process-based compositional devices which Adams employs in the construction of this work, exploring its use of proportional and temporal constructs, additive and reductive motivic processes, and the organisation of diatonic pitch collections throughout the work. However, little research has been undertaken in the field of harmonic analysis, seeking to uncover the possibility of harmonic progressions and even functions. Furthermore, the past literature fails to question the underlying assumption that the modal structure which Adams' claims is used throughout the work, that of alternating Lydian and Phrygian Modes, is perceived, or rather that the harmonies created and their functions serve to support these modal pitch centres.

This paper will investigate this aspect of *Phrygian Gates,* undertaking an analysis of harmony and harmonic progression Firstly, a micro-level analysis is undertaken in order to translate the slowly evolving texture of the work into vertical harmonies. Secondly, a macro-level analysis of harmony, voice-leading, and prolongation will show that (1) the opening section of the work creates conflicting interpretations of modality and pitch-centricity in each diatonic area, creating modal ambiguity and harmonic interest, and (2) the final section of the builds large-scale harmonic functions across diatonic areas, connecting the entire section in a single progression toward the final mixed-modal tonic.

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Chapter 1: Introduction

John Adams is one of the most frequently performed living composers in the realm of Western Art Music (Cahil n. pag.). Born in Worcester, 1947, he studied at Harvard University completing a Master's degree in 1972, however he was frustrated by the culture of composition at this time prevalent in academic institutions – that of the modernist aesthetic (Lankov 2). What he saw as the unemotional outlook of serial composition, highly celebrated at the time, was unengaging to him. He described one of his classes as a "mausoleum where we would sit and count tone-rows in Webern," (Adams, qtd. in Schwarz 256). Having finished his studies, though conscious of not following in the American academic style or European post-war aesthetic, he still lacked a clear compositional style and suffered from a loss in confidence as a composer (Adams, *Hallelujah Junction* 35). A catalyst to this was the influence of minimalism, with one of many experiences that profoundly affected his development of musical style being the first time he heard Steve Reich's *Drumming*, saying, "I was quite astonished by its rigor, because that was during a period when we were all doing these messy, free-form aleatoric pieces" (Adams qtd. in Schwarz 256).

The first true and coherent statement of Adams own distinctive musical voice came in the form of two solo piano pieces in 1977-1978, his first published works, which together he describes as his "Opus One" (Adams, *Hallelujah Junction* 89). These works, *Phrygian Gates* and its smaller companion piece *China Gates*, reflect the previously described rigorous approach to composition and the influence that "pulsation as the guiding principle", which he found in the works of Reich, had on his stylistic evolution (Adams, *Hallelujah Junction* 89). Adams himself describes them as "the most strictly organised, rigorously ordered works I ever composed, […] the fruits of my initiation to Minimalism" (*Hallelujah Junction* 89).

Phrygian Gates, the subject of this study, began as a proposal from Mack McCray, a close friend of Adams', to write him a virtuosic solo work, taking advantage of his large powerful yet subtle hands (Adams, *Hallelujah Junction* 88). The resultant work is a 22-minute "behemoth" as described by Adams, consisting of slowly evolving cells of music and almost constant quaver or semi-quaver movement, requiring the maximum concentration on the part of the performer (Adams, "List of Works", n. pag.).

Despite its origins, *Phrygian Gates* also shows Adams' intention to enrich the inherent simplicities of minimalism. A quote often attributed to him as that he is "a minimalist bored with minimalism" ("List of Works", n. pag.). Though this is by another author, Adams admits it is not far from the mark ("List of Works", n. pag.). While following strict processes in *Phrygian Gates*, Adams makes leaves room for his own musical choices within such processes, or make departures from them entirely. The intent of this study is to delve into the decisions made in the composition of this work not covered by these process-based compositional techniques. It is to evaluate how note-to-note decisions within compositional processes, whether arbitrary or based on Adams' compositional intuition, create functional harmonic constructs and shape the listeners perception of pitch-centricity, showing that the work creates two systems. Firstly, a system in which adjunct sections create conflicting interpretations of modality and pitch-centricity, creating modal ambiguity and harmonic interest, and secondly, a system in which adjunct sections of adjunct diatonic pitch-collections connect to build large-scale harmonic functions. A review of the current literature highlights the need for this and the areas of analysis yet uncovered by previous academic inquiry.

In analysis traditions of Western art music, the two most frequent points of departure are firstly the consideration of harmony and tonality, and secondly of form and structure. Both are often closely intertwined. As such, consideration of how

musicologists have approached these shall serve as the starting point in this review of existing literature on the work.

In the discussion of tonality in *Phrygian Gates*, a point that the title suggests is of considerable importance. Adams himself gives the most clear description, pointing out that the work cycles through six of the twelve pitch-centres on the circle-of-fifths (Adams, *Hallelujah Junction* 88). He more fully describes the interaction of modality as follows:

> The structure is in the form of a modulating square wave with one state in the Lydian mode and the other in the Phrygian mode. As the piece progresses the amount of time spent in the Lydian gradually shortens while that given over to the Phrygian lengthens. Hence the very first section, on A Lydian, is the longest in the piece and is followed by a very short passage on A Phrygian. In the next pair (E Lydian and Phrygian) the Lydian section is slightly shorter while its Phrygian mate is proportionally longer, and so on until the tables are turned. Then follows a coda in which the modes are rapidly mixed, one after the other. (Adams, "List of Works", n. pag.)

James Edward Evans' thesis "An Examination of the Role of Macro- and Micro-level Processes in John Adam's Phrygian Gates" is one of the most recent scholarly papers to consider the work in depth, and gives a holistic approach to its analysis. He shows that Adams' use of the circle-of-fifths serves only as a theoretical model for the organisation of pitch centres, as the work's modal alternation is between Lydian and Phrygian, rather than the Ionian and Aeolian modes of the circle-of-fifths (Evans 11). He further relates this modal structure to established canonical works, suggesting it to be a hybrid between J. S. Bach's *Well Tempered Clavier* and Bach's chromatic progression, of Chopin's 24 Preludes Op. 28, the first of which alternates on two modes

on a single pitch centre, major and minor in the case of Bach, and the second's pitch-centre progression via fifth, rather than Bach's chromatic progression (Evans 12). Catherine Pellegrino, in her paper "Aspects of Closure in the Music of John Adams", posits that this modal structure "does not suggest how or where it will end", in that a cycle of the circle-of-fifths only provides closure on its completion and return to the staring point (150). Evans' further discussion on the topic of tonality questions Adam's use of the term modulation to describe the movement between pitch centres, the changes between which are immediate and unprepared, stating, "no modulatory process is used, […] there is mode but no modulation," (15).

Whereas these papers consider the large-scale tonality of the work, Timothy Alan Johnson's thesis "Harmony in the Music of John Adams: From 'Phrygian Gates' to 'Nixon in China' ", as well as article his article "Harmonic Vocabulary in the Music of John Adam: A Hierarchical Approach", are the only scholarly works to consider vertical harmonic constructs. In these, Johnson develops a methodology for the analysis of harmony in Adam's work, in which repeated patterns, such as the waveforms of *Phrygian Gates*, are translated into triads and seventh chords, further contextualised by "sonorities", other prominent pitches, and a "field", the complete diatonic set in which it exists ("Harmonic Vocabulary", 117-18). This methodology will be considered in greater depth in Chapter 2. In "Harmony in the Music of John Adams", he applies the first level of this methodology to *Phrygian Gates*, which extends to analysing some of the vertical harmonies created and labelling them, however does not extend to analysing the relationship between these or looking at any possible implications of functionality that these may create, which he reserves for the latter chapters on other works by Adams.

Paul Barsom briefly considers the work at hand in "Large-Scale Tonal Structure in Selected Orchestral Works of John Adams", using it as the starting point in Adams development from works which employ simplistic harmonies and extensive pre-compositional designs towards works increasing in harmonic and structural complexity, intuitive composition, and "works which are more directionally goal-oriented in structure" (iii, 7). Throughout these works' consideration of harmony in *Phrygian Gates*, Evans, Pellegrino, Johnson and Barsom all make the underlying assumption that Adams' theoretical structure of alternating Lydian and Phrygian modes is perceived as such, though none analyse harmonic relationships or functionality which would confirm this.

The discussion of large-scale structural divisions in *Phrygian Gates* is the point of some debate among scholars, with contention as to its division into three or four sections. Robert Schwarz in "Process vs. Intuition in the Recent Works of Steve Reich and Johns Adams" adheres to a four-section structure, labelling "A System of Weights and Measures", (the central section of the work, the only one to be titled, and the work's only departure from a constant stream on running quavers or semiquavers) as the "third movement" (257). Pellegrino also follows the four-section model, which she compares to the four-movement piano sonata, based on the work's changes in texture in and out of "A System of Weights and Measures", the third section in her analysis, and the change in tempo between the first and second sections (159). Johnson, however, posits a three-section model, due to the lack in textural change across the tempo change in Schwarz and Pellegrino's first and second sections (144). Evans also follows the three-section model, based on the first section's goal-oriented modal movement from pitch-centre A to C#, the static C-sharp pitch-centre of "A System of Weights and Measures", and the final section's rapid alternation between D-sharp Phrygian, G Phrygian, A-flat Lydian

and D-flat Lydian (15). In this paper, the three-section model will be adhered to from this point.

Kyle Fry, in "Proportion, Temporality, and Performance Issues in the Piano Works of John Adams", delves deeper into *Phrygian Gates* structure, exploring how Adams' use of proportional constructs shape time and create inter-related sections. His analysis discusses the work's proportional frameworks acting on multiple levels, and emphasises the temporal palindromes acting on its large-scale structure (Fyr 107-66). He further discusses the works adherence to a 3-3-2-4 proportional plan, which permeates all level of the work (Fyr 123). Evans similarly explores palindromic structures in the work, exploring the first section of the work's palindromic development from Lydian to Phrygian modal dominance (18). Pellegrino discusses the palindromic structure of the final movement, a palindrome of pitch-centre and rhythm, as one of the work's few theoretical bases for closure, as a palindromes ending is defined once passing the mid-way point (153).

Closure in the *Phrygian Gates* is a point of interesting consideration, though it is only discussed by Pellegrino and Evans. Evans' contribution this discussion notes that through the work's alternation of modes and moving pitch-centres, it exhausts every diatonic pitch collection, suggestive of closure (13). Similarly, that its movement in pitch-centre from A to E-flat is of a tri-tone, the furthest distance between two pitches (Evans 13), thought as mentioned previously, Pellegrino suggests movement around the circle-of-fifths only provides closure on the completion of the cycle (150).

One of the most widely discussed aspects of *Phrygian Gates* is the role of process-based composition in the work. Schwarz's article most convincingly covers this topic, emphasising the role of additive and reductive processes and analysing *Phrygian Gates*' strict adherence to process as being the starting point in Adams' stylistic "shift

from process to intuition," and "might be indicative of a shift from minimalism to post-minimalism" (246, 220). Evans, drawing heavily from Schwarz's research, delves into the role of processes on both the macro- and micro-level, while Jeff Lankov, in "The Solo Piano Compositions Of John Adams: Style, Analysis, And Performance", contextualises these process-based practices within the development of minimalism. In the discussion of processes, Fry and Evans both also make particular note to Adams' departures from process.

Further contextualisation is found in the literature in discussion on minimalist piano music and the analysis of minimalist compositions. Ian Quinn's article "Minimal Challenges: Process Music And The Uses Of Formalist Analysis" highlights the use of and the methodologies by which formalist analytical methods may be applied to minimalist music (283), while Richard Andrew Lee in "The Interaction Of Linear And Vertical Time In Minimalist And Postminimalist Piano Music" highlights the need for formalist analytical methods to account for the inherent duality of minimal music, which abides by strict process yet encourages freedom on the part of the listener (57). These both thoroughly investigate the topic, though through the works of Adams' contemporaries.

From this survey of existing literature in relation to John Adams' *Phrygian Gates*, it is clearly evident that in-depth research on the work has been conducted, especially in the areas of analysis concerning the work's structure, tonality/modality, its rhythmic and proportional elements, and the use of minimalist or process-based compositional methods in its construction. These inquires make particular emphasis of this work's adherence to such processes, noting the work's placement at the beginning of Adam's stylistic development from process-based to more intuitive composition, and

note the few brief obvious exceptions to these processes. However, they do not make any significant enquiry into the work on a note-to-note level – on the whole they do not investigate how specific pitch choices, within compositional process-based frameworks, affect the piece. They do not proceed to investigate the most fundamental aspect of analysis in the Western art music tradition: harmony. The closest discussion to that of harmony is found in the consideration of the work's tonality/modality, which is central to the work, as the title would suggest, but no consideration is given to the areas of harmonic progression and possible chordal functionality in this completely diatonic work. Discussion of chords created in the work is limited to the analytical methods of Johnson, though application of his methodologies for analysing harmonic progression are reserved for Adams' later works. Moreover, throughout the literature, the underlying assumption is made that the structure of alternating Lydian and Phrygian modes on pitch-centres moving by perfect fifth, which Adams himself writes about in a number of sources, is accurate.

This paper will serve to question these aspects of the work, discussing how the harmonic progression, created by note-to-note choices within compositional processes, may serve to frame our understanding of pitch-centricity and tonicism.

To achieve this, analysis will take place on two levels. Beginning with a discussion of the work's structure and the means for dividing the work into discernable portions, Chapter 2 will investigate the work on the micro-, or note-to-note, level in order to create a summary of how harmony is perceived in the work. In-depth consideration of Johnson's methodologies for translating waveform patterns in *Phrygian Gates* into vertical harmonies will be taking as a methodological starting point, but incorporating the concepts of pitch salience and prominence to discern how pitches perceived as of greater importance affect our understanding of the harmony.

Chapter 3 will discuss the work on a macro-level, applying methods of harmonic analysis to the summarised harmonies draw of Chapter 2, in order to investigate its use of harmonic progression, functional harmonic tendencies, and how it constructs pitch-centricity and tonicisation. Chapter 4 will draw conclusions based on these findings, and point towards the application of these methodologies in further study.

Chapter 2: Methodology and Micro-level Analysis

Section 1: Structural Overview

As discussed in the literature review, there is some contention as to how large-scale sectional divisions can be made in *Phrygian Gates.* Being performed without breaks, the work does not readily lend itself to making the distinctions of movements, though authors such as Pellegrino and Schwarz attempt to do so (Pellegrino 159, Schwarz 257). The only indication in text as to sectional divisions is given at bar 640, titling the section "A System of Weights and Measures", accompanying a dramatic change in musical texture, content, and tonal organisation. This shift, as well as the accompanying shift back to the work's initial texture at bar 809, serve as the work's most clear structural divisions. The three-section reading of *Phrygian Gates*, followed by Johnson and Evans, and to which this paper will adhere, uses these as the sectional divisions. Further examination of the work's modal structure and development support this reading of the work. It should be mentioned at this point, that though "A System of Weights and Measures" will be examined within this structural consideration of the work, its disparity from the rest of the work does not lend itself to the harmonic analytical methodologies to be applied by this study, and as such is beyond its scope.

The three-section reading of *Phrygian Gates* aligns clearly to the work's modal structure. As conceived by Adams, explained in his previous quote, the work cycles clockwise around pitch-centres on the circle-of-fifths from A-natural through to E-flat, alternating in the form of a square-wave between the Lydian and Phrygian modes on each ("List of Works", n. pag.). This alternation, he explains, gives the work the "gates" portion of the title, borrowing the term from electronics, saying, "A 'gate' is a module, an electronic circuit that is either in one of two states, positive or negative, and on

command it flips instantaneously to its opposite state" (Adams qtd. in Fyr 89). From this, Fyr further adopts the term "module" to describe each subsequent change in mode, which are clearly denoted throughout the score by a change of key signature and double bar-lines. One exception to this can be noted from bars 923-977, where accidentals are used rather than key signatures due to the speed at which modular changes occur, however double bar lines are maintained. This paper adopts the use of the term module throughout, assigning numbers to each in progression. Figure 1 shows the duration of each module, the mode which Adams states they are in, the diatonic pitch-collection in which they exist, as well as the duration of each module.

On its examination, we can clearly see the three processes by which the modality of the work progresses. Section 1 exhibits the aforementioned movement around the circle-of-fifths, alternating between Lydian and Phrygian modes on each pitch-centre, from A-Lydian towards C-sharp-Phrygian. Evans describes this as "strictly goal-oriented, progressing towards C-sharp-Phrygian within the bounds of the processes by which the section is constructed," (15). Whereas Adams describes the alternation between Lydian and Phrygian modes as a "square-wave", Evans points out that this is incorrect, as a square-wave alternates at a steady frequency (16). From figure 1, we can see that throughout section 1, as the time in the Lydian mode on any given pitch-centre decreases, its Phrygian partner increases proportionally. This, Evans suggests, is more aptly described as a non-stochastic two-state trajectory (17). If section 1 is goal-oriented towards C-sharp-Phrygian, section 2 serves as the goal and is static. Section 3 can be seen to be what Adams had described as "a coda in which the modes are rapidly mixed, one after the other" ("List of Works", n. pag.). Here, the structural organisation is that of a palindrome, with the outer eight modules palindromic in terms of their proportions and modal organisation, and the central modules, modules 19-50, an exact palindrome

of rhythmic and pitch content (there are however variations in the articulation, dynamics and expression throughout).

Module	Mode	Diatonic Pitch Collection												Section	Tempo	Duration		Starting Bar
		1♭	0♭/0♯	1♯	2♯	3♯	4♯	5♯/7♭	6♯/6♭	7♯/5♭	4♭	3♭	2♭			quavers	seconds	
1	A Lyd						A Lyd							Section 1	♩ = 180	900	150	1
2	A Phr	A Phr														180	30	114
3	E Lyd							E Lyd								792	132	137
4	E Phr		E Phr													360	60	235
5	B Lyd								B Lyd							540	90	266
6	B Phr			B Phr												540	90	334
7	G♭ Ldy									G♭ Ldy					♩=240	540	67.5	402
8	F♯ Phr				F♯ Phr											1078	134.75	470
9	D♭ Lyd										D♭ Lyd					270	33.75	606
10	C♯ Phr					C♯ Phr								Section 2		1350	168.75	640
11	A♭ Lyd											A♭ Lyd		Section 3	♩=180	240	40	809
12	G♯ Phr						G♯ Phr									240	40	839
13	A♭ Lyd											A♭ Lyd				120	20	869
14	G♯ Phr						G♯ Phr									120	20	884
15	A♭ Lyd											A♭ Lyd				60	10	899
16	G♯ Phr						G♯ Phr									60	10	907
17	A♭ Lyd											A♭ Lyd				30	5	915
18	G♯ Phr						G♯ Phr									30	5	919
19	A♭ Lyd											A♭ Lyd				24	4	923
20	D♯ Phr							D♯ Phr								24	4	926
21	E♭ Lyd												E♭ Lyd			24	4	929
22	G♯ Phr						G♯ Phr									24	4	932
23	A♭ Lyd											A♭ Lyd				12	2	935
24	D♯ Phr							D♯ Phr								12	2	937
25	E♭ Lyd												E♭ Lyd			12	2	939
26	G♯ Phr						G♯ Phr									12	2	941
27	A♭ Lyd											A♭ Lyd				6	1	943
28	D♯ Phr							D♯ Phr								6	1	944
29	E♭ Lyd												E♭ Lyd			6	1	945
30	G♯ Phr						G♯ Phr									6	1	946
31-38	D♯ Phr/E♭ Lyd							D♯ Phr					E♭ Lyd			24	4	947
39	G♯ Phr						G♯ Phr									6	1	954
40	E♭ Lyd												E♭ Lyd			6	1	955
41	D♯ Phr							D♯ Phr								6	1	956
42	A♭ Lyd											A♭ Lyd				6	1	957
43	G♯ Phr						G♯ Phr									12	2	958
44	E♭ Lyd												E♭ Lyd			12	2	960
45	D♯ Phr							D♯ Phr								12	2	962
46	A♭ Lyd											A♭ Lyd				12	2	964
47	G♯ Phr						G♯ Phr									24	4	966
48	E♭ Lyd												E♭ Lyd			24	4	969
49	D♯ Phr							D♯ Phr								24	4	972
50	A♭ Lyd											A♭ Lyd				24	4	975
51	E♭ Lyd												E♭ Lyd			30	5	978
52	D♯ Phr							D♯ Phr								30	5	982
53	E♭ Lyd												E♭ Lyd			60	10	986
54	D♯ Phr							D♯ Phr								60	10	994
55	E♭ Lyd												E♭ Lyd			120.5	20.0833	1002
56	D♯ Phr							D♯ Phr								120	20	1018
57	E♭ Lyd												E♭ Lyd			240	40	1033
58	D♯ Phr							D♯ Phr								240	40	1063

Palindrome

Figure 1. Modules in *Phrygian Gates.*

Having defined the large-scale sections of the work, and made the distinctions of modules, a span existing in a single diatonic pitch-collection, it is necessary to make

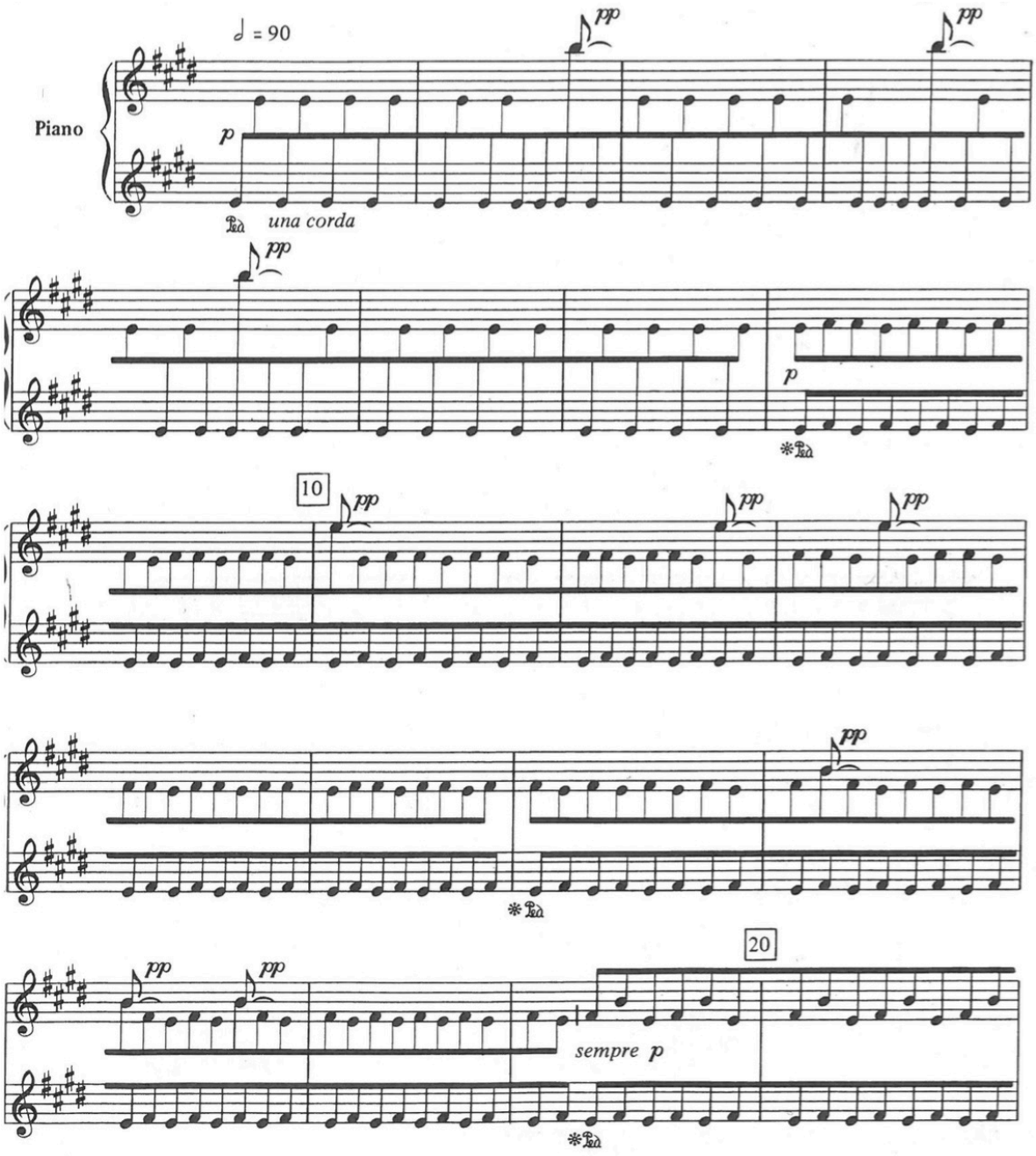
further divisions of the work into smaller sections. These must each be able to be summarised as a vertical harmony in the micro-level analysis, thus allowing for the analysis of harmonic progression and pitch-centricity on the macro-level. In order to do so, the texture of the work must be considered. Adams describes it as follows:

> I imagined each hand of the performer as its own wave maker, independent of each other. The "waves" were actually repeated patterns that changed shape as the music moved along. Inserted into every new key area was an arbitrary "ping", usually a high bell-like note . . . (Adams *Hallelujah Junction* 88)

These two textures, the "waves" and "pings", evident throughout the first and final sections of the work, are clearly distinct from the other both visually and aurally. This is due to the constant nature of the waves as opposed to the interjectory pings, and the central register of the waves contrasted with the pings' location either octaves above or below.

Throughout, the central wave texture, consisting of constant running quavers or semiquavers, is continuously beamed, crossing bar lines and systems. This beaming is, however, broken at times within a module as the wave pattern changes or develops with the addition or subtraction of pitches. The opening page of *Phrygian Gates* clearly displays this at bars 8, 15, and midway through bar 19 (see Ex. 1). Fyr suggests the use of the term "phrases" to describe sections beamed together, making emphasis that phrase changes across each hand may not align as the wave patterns develop independently of each other (121). For the sake of creating vertical harmonies in the micro-level analysis, it is necessary to make phrase divisions that align across both hands. This has been achieved either by making phrase divisions when either hand's wave pattern changes, or, when phrase divisions are offset by one bar or less, by making the division after the overlap in phrases. Throughout this analysis, phrases are labelled

alphabetically within each module. With this in mind, bar 1 would represent module 1 phrase “a”, 1a, bar 9 1b, bar 15 1c, and so on (see Ex. 1).



Ex. 1. Adams. *Phrygian Gates*, bars 1-20.

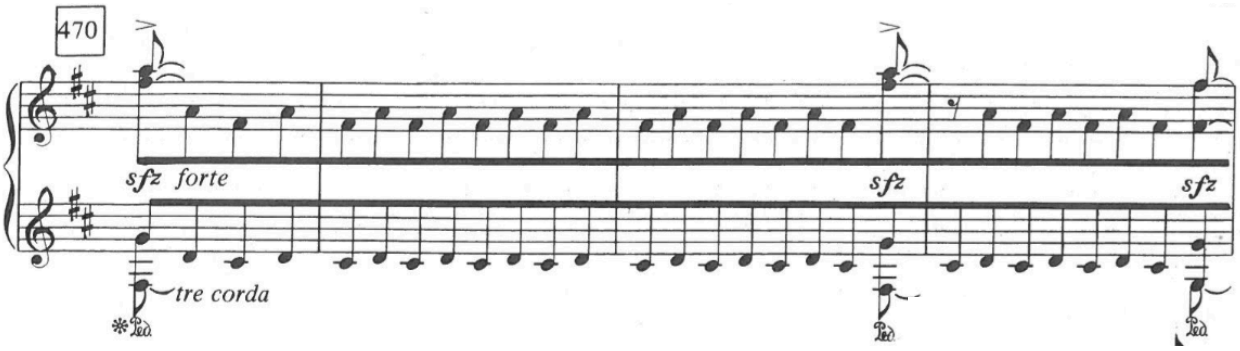
Having now divided the work into large-scale sections, based on changes in texture and modal/proportional processes, modules, sections of music within a single

diatonic pitch collection, and phrases, localised areas with consistent waveform patterns and pitch-collections, attention must be turned to translating the waveform patterns of each phrase into vertical harmonies.

Section 2: Translating Phrases into Vertical Harmonies

As previously discussed, the aim of this paper is to investigate how tonic centres are constructed in *Phrygian Gates*, conducted in the macro-level analysis by discerning any functional harmonies, the effect of harmonic progressions and the prominence of certain harmonies. To achieve this on the macro-level, it is therefore necessary on the micro-level to evaluate how the harmony of each phrase is constructed and to summarise each as a vertical harmony. It is also vital to evaluate the effect of voice-leading tendencies, which may be framing perception of pitch-centricity.

To develop appropriate methodologies, consideration should be given to the work at hand and its particular textural construction. As discussed in the previous section, there is a clear distinction between the texture Adams describes as "pings" and the central texture of "waves". This separation is achieved by the pings' prominent placement at either registral extremity, their irregular and infrequent occurrence compared to the consistent movement and repetition of the waves, and by the varied use of articulation, dynamics contrast and expressive devices (see Ex. 2).



Ex. 2. Adams. *Phrygian Gates*, bars 470-73.

Although extremely prominent when initially sounded, their infrequency compared to the constant repetition of the pitches in the central texture would suggest that the pings' pitches are, in fact, additional to the harmony of the phrase as a whole, as opposed to being a central component pitch. Even where pedalling effects would cause a ping's pitch to be sustained throughout a phrase, the sound fades between each infrequent iteration, compared to the constant re-sounding of the pitches of the waves. As such, in this micro-level analysis, the pings shall be separated from the central texture. This allows for their contour and voice-leading to be considered separately, as if its own melodic pattern, and for their role in the greater harmony of the phrase, whether it has a functional, extra-tertiary or non-harmonic application, to be considered in conjunction to the analysis of the central texture by itself. Analysis by this means will also give an interesting insight into Adams' compositional intuition, having described the choice of the pings' pitches as "arbitrary" (*Hallelujah Junction* 88).

Johnson's methodology, as developed in his paper "Harmony in the Music of John Adams: From 'Phrygian Gates' to 'Nixon in China' ", serves as the starting point in the development of this methodology. As a preface to his methodology, Johnson states the following:

> Following the minimalist tradition, much of Adams's music consists of long passages employing a single set of pcs (pitches), usually encompassed within a single diatonic set. In many of these passages the pcs form complete diatonic triad or seventh chords corresponding to chords of traditional tonal music, with no additional pcs. In other passages textural and registral formations imply traditional triads or seventh chords, but additional pcs obscure these to some degree. These phenomena suggest a hierarchical approach to the harmonic analysis of Adams's music. (Johnson "Harmony in Adams" 25)

This hierarchical approach is a three-tiered system called a "complex" (26). At its most fundamental level is a prominently projected triad or seventh chord, Johnson's preference rules suggesting that where chords are presented in their entirety, or omitting the fifth (or rarely the third if no other possibilities are available), those pitches constitute the chordal pitches (52). Where more than one option of chord is available, the lowest sounding pitch should be taken as the root, however, where this pitch cannot serve as a possible root, clear arpeggiation or block chords define the chordal pitches (Johnson 55-56). In labelling these chords, Johnson opts for using modal designations in terms of the chord's root. This, he proposes, avoids the tonic Ionian/Aeolian preference inherent in Roman-numeral analysis labelling, while still maintaining each chord's unique situation in its diatonic context (Johnson 39-49). Take for instance the central texture of the phrase shown in Ex. 2. These pitches, D, F#, A and C#, would in the context of a D-major key signature be labelled I^7 (or III^7 should we be in the relative minor key), whereas Johnson would label it D Ionian ^{7}.

The second tier is of "sonority" pitches, other prominent non-chordal pitches, stating the importance of the interaction between chord and non-chord tones in Western-classical music (Johnson 27). These, however, must be of prominence, not simply notes passed through briefly in the course of a melody (Johnson 58). Such notes reside in the third and final tier, the "field", which surmises the entire diatonic pitch-collection in which a given complex resides, usually indicated by the presence of a key signature in the music of Adams (Johnson 63).

Though this forms a comprehensive methodology for the analysis of vertical harmonic constructs in *Phrygian Gates*, it poses a number of issues in its application within the following macro-level analysis. The labelling of chords with modal designations serves to remove any implication of functional harmony, or scale degree

bias and tonicisation. However, the analysis at hand serves precisely to determine which pitch-classes are tonicised. Moreover, Adams claims *Phrygian* Gates to exist in specific modes, to have specific pitch-centres, and therefore tonic scale-degree bias. Such labels would suggest that the only possible scale degree bias exists solely on the root of each successive chord, denying the possibility of collections of phrases or entire modules to centre on a pitch. Johnson's distinction of sonorities, though an interesting insight into possible common combinations of non-chordal pitches which Adams uses to give his harmonic language colour, do not serve a functional analytical purpose as they are currently presented in his analysis. For these prominent non-chordal pitches to serve in this paper's analysis of harmonic function, progression and pitch-centricity, they must be given a functional context. Such could include as part of a voice-leading pattern, as a functional or semi-functional non-harmonic tone, such as an unresolved suspension, or part of a functional ninth, eleventh or thirteenth chord. In designating chordal pitches, Johnson states that these are "prominent" pitches, but uses "prominent" in terms of a pitch's organised placement within a pattern such as a block chord or arpeggio. His use of the term, however, neglects the consideration of whether a pitch is aurally perceived as prominent, i.e. which pitches a listener perceives as prominent. This requires the consideration of pitch salience.

When considering two abstract events, Fred Lerdahl suggests, "for X to be more salient than Y, X must stand out perceptually in comparison to Y; for example, X might be bigger or longer or louder than Y," (Lerdahl 7). Applied to music, he lists the following conditions upon which listeners infer the relative salience of events.

An event is deemed to have greater structural importance if it is:

a. attacked within the region
b. in a relatively strong metrical position
c. relatively loud
d. relatively prominent timbrally
e. in an extreme registral position
f. relatively dense
g. relatively long in duration
h. relatively important motivically
i. next to a relatively large grouping boundary

(Lerdahl qtd. in Dibben 267)

When considering the application of these to the piece at hand in the micro-level analysis, a number of these become obsolete. For example, due to the work's lack of beat-stress, suggested by the constant beaming and performance note, stating, " … care should be given so that no single note predominates over the others", condition b. becomes less relevant. Similarly, the work's lack of clear motivic material, with patterns slowly evolving over the surface of the work, removes condition h. Other conditions, such as f. and c. may serve a greater purpose in the macro-level analysis, enabling us to discern which harmonies and phrases are superordinate to others.

Of the above conditions, conditions e, f. and g. serve to best enrich Johnson's methodology for the purpose at hand. While condition f. could be taken to refer to a section with a dense texture, when considered alongside condition g, it has the possibility of greater application in discerning the between the prominence of two (or more) pitches. Specifically, if we consider a pitch to be "relatively long in duration" as

accumulative, i.e. the sum of multiple successive iteration of said pitch, these two conditions in combination would suggest that a pitch with a more frequent rate of repetition is of greater prominence than one of a less frequent rate. The importance of a pitch's duration is supported by Krumhansl and Kessler, who state, "In music certain tones are emphasized by their prevalence […] and these tones typically have longer durations," (qtd. in Parncutt 339). This translation of duration to mean a pitch's frequency of repetition is extremely poignant in piano music, where a note has a natural decay regardless of the notated length.

Section 3: Preference Rules for Micro-level Analysis

With these conditions in mind, coupled with Johnson's analytical methodology, the preference rules for translating the waveform patterns each phrase's central texture into vertical harmonies are as follows.

Presentation:

Chords presented in their entirety are preferred, with the possible omission of the fifth. The third may be omitted where no possible alternatives are available.

Bass:

Where more than one chord is presented in its entirety, the bass note should be taken as the root.

Arpeggiation:

Where the bass note cannot function as the root of the chord, clear arpeggiation designates chordal pitches.

Pitch Repetition:

If the determination of a chord is between two pitches, the pitch with a more frequent rate of repetition, due to its waveform pattern, constitutes the chordal pitch.

Registral Extremities.

The highest and lowest pitches, excluding the pings, which are considered separately, are maintained in the first level of analysis. This allows for the exploration of the work's registral evolution, voice leading, and implied bass/root motion.

Voice-leading:

Significant voice leading patterns within and across waveforms and phrases are maintained, in order to evaluate their affect on our perception of pitch-centricity.

Clusters:

Where cluster chords are presented in block form, without arpeggiation, the entire cluster is maintained on the first level of analysis.

Having applied these preference rules to Phrygian Gates in the micro-level analysis, a harmonic summary of the entire work can be created, shown in full in appendix 1. A brief discussion will serve to highlight some points of interest in the analysis.

Throughout, key signatures and double bar lines are maintained as per the score at modular boundaries. Phrases are denoted by a regular bar line. In some cases, a single phrase may contain a harmony that evolves through time by changes in inversion, or the addition of stacking intervals. To denote these within phrase boundaries, dotted bar lines had been used. An example of this is evident in the first phrase of module 4, in

which seconds are progressively stacked above the E-minor chord, creating a cluster of increasing size and density.

There have been a few occasions where two differing full chords are present in their entirety, presented as block-chords in alternation of each other. The above preference rules do not serve to fully highlight this dual chordal harmony, being a means for making reductive choices. As such, in these occasions, both chords have been maintained and presented as trill between the two, which is evident in phrases 1h, 2a, 2b, and 58b.

Beaming has been used for two purposes in this analysis. Firstly, it is used to connect repeated pitches in the pings. An example of such is evident throughout module 3, in which E-naturals as present almost continuously in the bass-pings. A more complex example is module 5, in which B-naturals are present first in the upper-register pings, followed by the lower register, and returning in the upper register in module 6. As such, the beaming across the staves serves to connect these. A final example is module 11 through to module 13, where a single pitch is enharmonically spelt as both A-flat and G-sharp in turn.

The second use of beaming is to highlight any voice leading patterns that may exist. An example of such pattern include organised changes in the work's register, for example that shown in phrases 8t through to 8w, in which the upper and lower registral boundaries move by a second each phrase. A more complex example is evident in the first module, in which the increase in register by descending scale is spread between the wave an ping textures. Module 57 gives an example where the registral change occurs by an arpeggio, rather than a scale.

The preference rule concerning voice leading states that significant voice leading patterns within and across waveforms and phrases are maintained in the micro-level

analysis. This has been included to allow these instances, which might not have been represented in the harmonic reduction otherwise, to be evaluated in the macro-level analyses' discussion of voice leading as a determining factor of pitch-centricity. These patterns have been represented with a closed note-head where they appear in the wave texture, as opposed to the open note-head of the harmonic reduction. An example of this is evident in phrase 2b and 2d, in which an ascending tetra-chord links the end of each phrase to the beginning of the next. These voice-leading patterns shall be discussed in greater depth in Chapter 3.

Chapter 3: Macro-level Analysis

Section 1: Methodology

Having summarised the phrases of *Phrygian Gates* into a series of vertical harmonies through the micro-level analysis, an analysis of harmonic progression and pitch-centricity can be undertaken. To do so, three factors will be considered in combination, that of functional harmony, voice leading, and prolongation. In the consideration of harmony, Roman-numeral analytical methods shall be applied as a starting point in determining harmonic function. However, to determine which mode shall be given tonic preference in application of these analytical tools, the mode in which each given module is stated to exist according to Adams will be considered first. Thus, this analysis will should first seek to examine Adams' harmonic conception of the work, before delving into the possibility of other interpretations with greater functionality. In this analysis, the discussion of voice leading will serve to examine patterns that lead towards a pitch-centre, such as modal scales or arpeggios, or those which outline patterns of harmonic function, such as falling perfect-fifth root/bass motion. Here, the term voice leading is not explicitly applied to mean how any singular voice progresses from on pitch to the next, as such voice interactions are not present in any traditional manner in the work. Rather, it will be used to refer to expansion and contraction of the work's register, considering the movement of the highest and lowest pitches in each phrase, of both the waves and pings texture, corresponding to the bass and top voices in traditional harmonic analysis. The entirely diatonic nature of the work (except for one brief encounter in phrase j-l in module 1) allows us to consider these voice-leading patterns in terms of scale degrees.

The combination these methods lead to the application of prolongational analysis. As given in Chapter 2, Lerdahl gives the following as factors to determine the structural importance of an event:

a. attacked within the region
b. in a relatively strong metrical position
c. relatively loud
d. relatively prominent timbrally
e. in an extreme registral position
f. relatively dense
g. relatively long in duration
h. relatively important motivically
i. next to a relatively large grouping boundary

(Lerdahl qtd. in Dibben 267)

He further goes to stipulate the subordination of one event the context of another, saying, "X_1 repeats literally as X_2. One might say that X extends in space or is prolonged in time. […] The repetition of X creates a frame or context for Y. The two Xs connect perceptually and Y is perceived inside that connection. In other words, Y is subordinate within the context $X_1 – X_2$" (Lerdahl 7). Applying this to vertical harmonies, these factors will serve to create a three-tiered analysis, presenting the entire micro-level analysis in the foreground, while showing events of increasing salience, which prolong themselves through time, in the middle- and background.

The entire macro-level analysis of each the first and third sections of *Phrygian Gates* are found in Appendix 2 and 3 respectively. Section 2 of this chapter will consider each module of the first section of the work in turn, discussing the sudden shifts in harmony/tonality between each, and the conflict between Adams' attempts to

tonicise alternating Lydian/Phrygian modes and prevailing functional harmonies. Section 3 will discuss the work's "coda", examining how, regardless of the work's stated rapid changes in mode and pitch-centres, the section can be understood as a single progression towards a tonic E-flat/D-sharp, the final pitch-centre of the work.

Section 2: Modal Conflict in the Harmony and Voice Leading of Section 1

The opening phrases of the entire work (refer to Ex. 1) show the most pressing need for a harmonic analysis of *Phrygian Gates.* In A Lydian according to Adams' harmonic structure for the work, constant streaming E-naturals in the central texture, and the addition of B-naturals in the pings, outlining and E harmony. In a four-sharp key-signatured diatonic context, this would obviously suggest an E-major tonality, rather than A Lydian. Though it could be considered a dominant harmony of A, the first-inversion B-major chord presented in the central texture of phrase 1e acts as V^6 in E, confirmed by the deceptive cadence towards vi (refer to fig. 2). Note should be given to the blurring of clear harmonic distinctions, created by the gradual evolution of the wave patterns. For example, overlapping of I and V in 1b and 1c created by the E – F# alternation, the first-inversion bass suspension of E against the B^6 chord, the delayed resolution of the B in the deceptive cadence between 1e and 1g, creating a vi^7 in 1f, and the alternation between V and vi^6 harmonies in 1h before final resolution in 1i. As such, by removing areas of indistinct harmony and considering a harmony's subordinate context within areas of another prevailing function, the middle ground shows a clear I-V^6-vi progression in the key of E-major. At no time does the harmonic progression tonicise A-Lydian, or even present in the central texture a complete A-major chord.

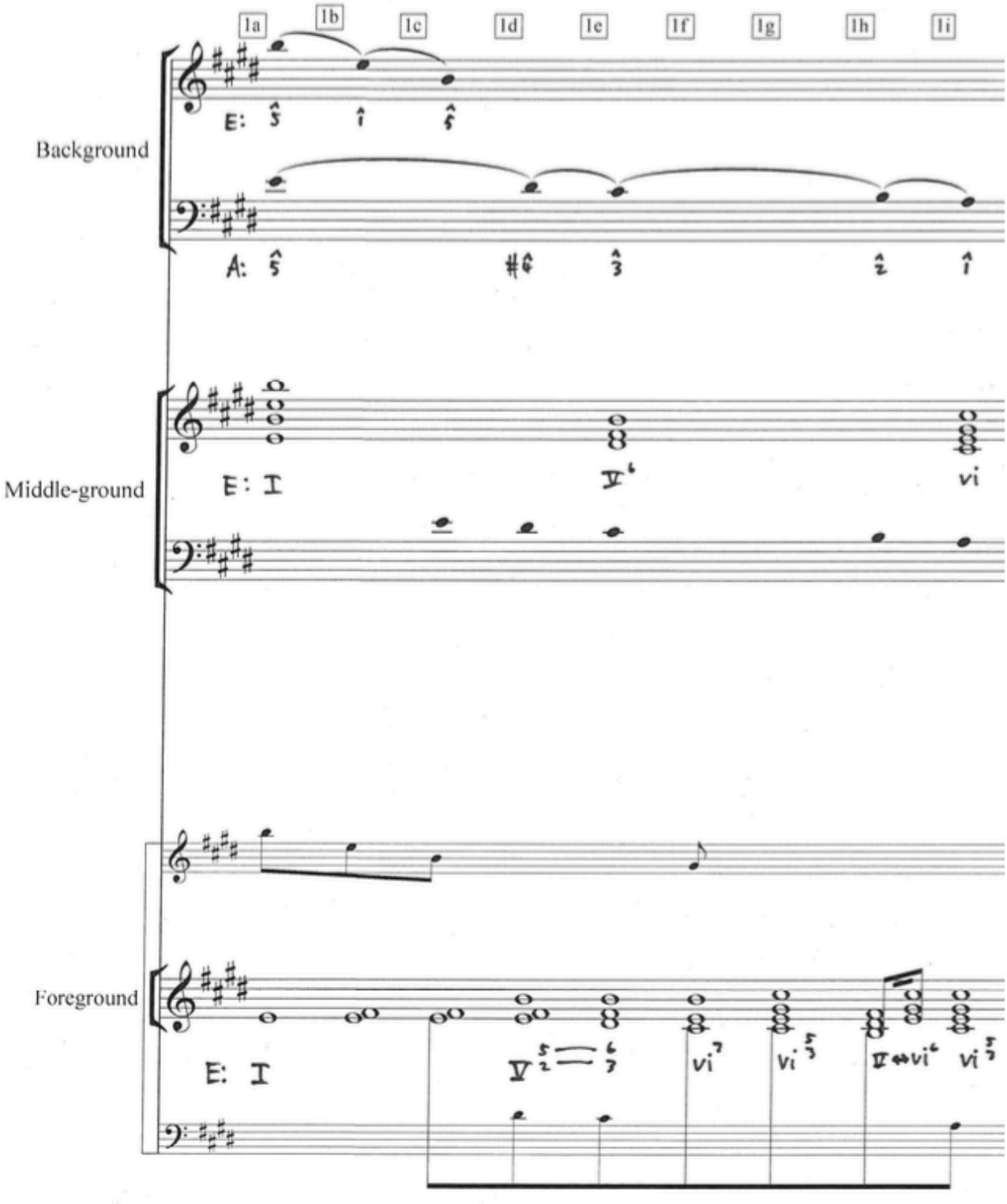
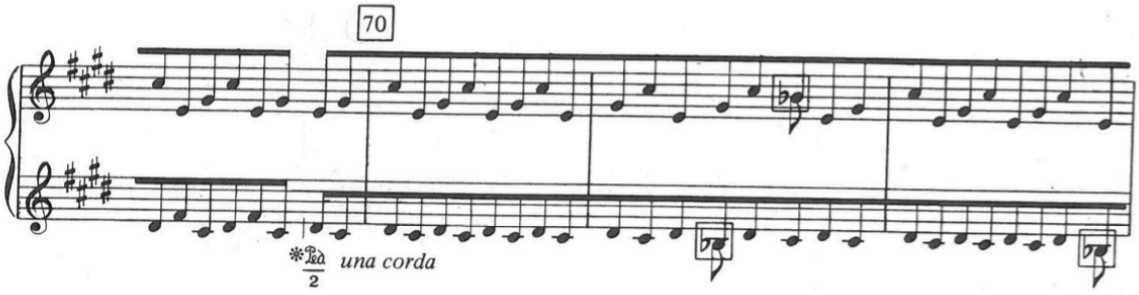


Figure 2. Macro-level analysis, 1a – 1i

However, the voice leading in the progression of bass notes would suggest otherwise. Accompanying this I-V^6-vi progression in E-major, the expansion of the work's register creates a scale unfolding in the lowest pitch of each phrase (a combination of both wave and ping textures as shown in the foreground of fig. 2), descending from E through to A, representing a progression of dominant to tonic in A-Lydian. The conflict between these two processes in determining pitch-centricity give the passage a subtle complexity and interest, encouraging the freedom on the part of the listener stated as of importance by Lee in his discussion of minimalist music (57). Module one provides one other point of significant interest: one of the only points at which a non-diatonic note is presented. 1j and 1l present a B-flat in the pings, clearly out of the realms of the E-major/A-Lydian diatonic pitch-collection, and further highlighted boxes in Adams' music (refer to Ex. 3).



Ex. 3. Adams. *Phrygian Gates*, bars 69-72.

As such, this has drawn considerable interest in the past literature. Evans considers these in the context of the pitch-class A by which they are surrounded in the bass pings, suggesting the B-flats as chromatic upper-neighbour, or modal-mixture from the Phrygian mode, thus serving to tonicise, though non-diatonically, A (49-50). However, if considered as part of the overall harmony of the phrase, enharmonically re-spelling the B-flat as an A-sharp, an $a\#^{ø7}$ is created, a secondary-dominant towards the

dominant chord in E-major. Though this interpretation is unresolved in the following phrases, it contributes towards the complexity and richness of the harmony, and the conflict between modal pitch-centres in the work.

The shift into module 2 sees the movement to A-Phrygian in Adams' harmonic structure. This is supported by the prominent A-natural C-natural of the left-hand wave texture, and the alternation between E and G, chordal pitches of a^7, with lower-neighbours D and F. However, if these notes are considered as the alternation of two chords that share A as their bass, phrase 2a can be interpreted as the alternation between $d^{4/3}$ and a^7, or in other terms, the candencial second-inversion formula in d natural-minor, consistent with the key-signature. Phrase 2b supports such an interpretation, with the repetition of E G expanding towards D A in the right-hand wave texture, followed by a fully-presented v^7 in phrase 2c. Again, bass voice-leading conflicts with this, supporting Adams' A-Phrygian modality, with the alternation between E and A across these phrase, 5ˆ–1ˆ in A-Phrygian. The second half of the phrase, though still maintaining a E-A alternation of bass pitches, suggests a modulation to the relative major mode, F, based on the progression present making us of the foundations of functional harmony, pre-dominant, dominant, tonic progression: IV-I^6-$V^{6/5}$-I^6. The final three phrases of this module also exhibit one notable example of internal voice-leading, show in the analysis above the central texture (refer to fig. 2), further supporting an F-major interpretation by its leading-note/tonic alternation.

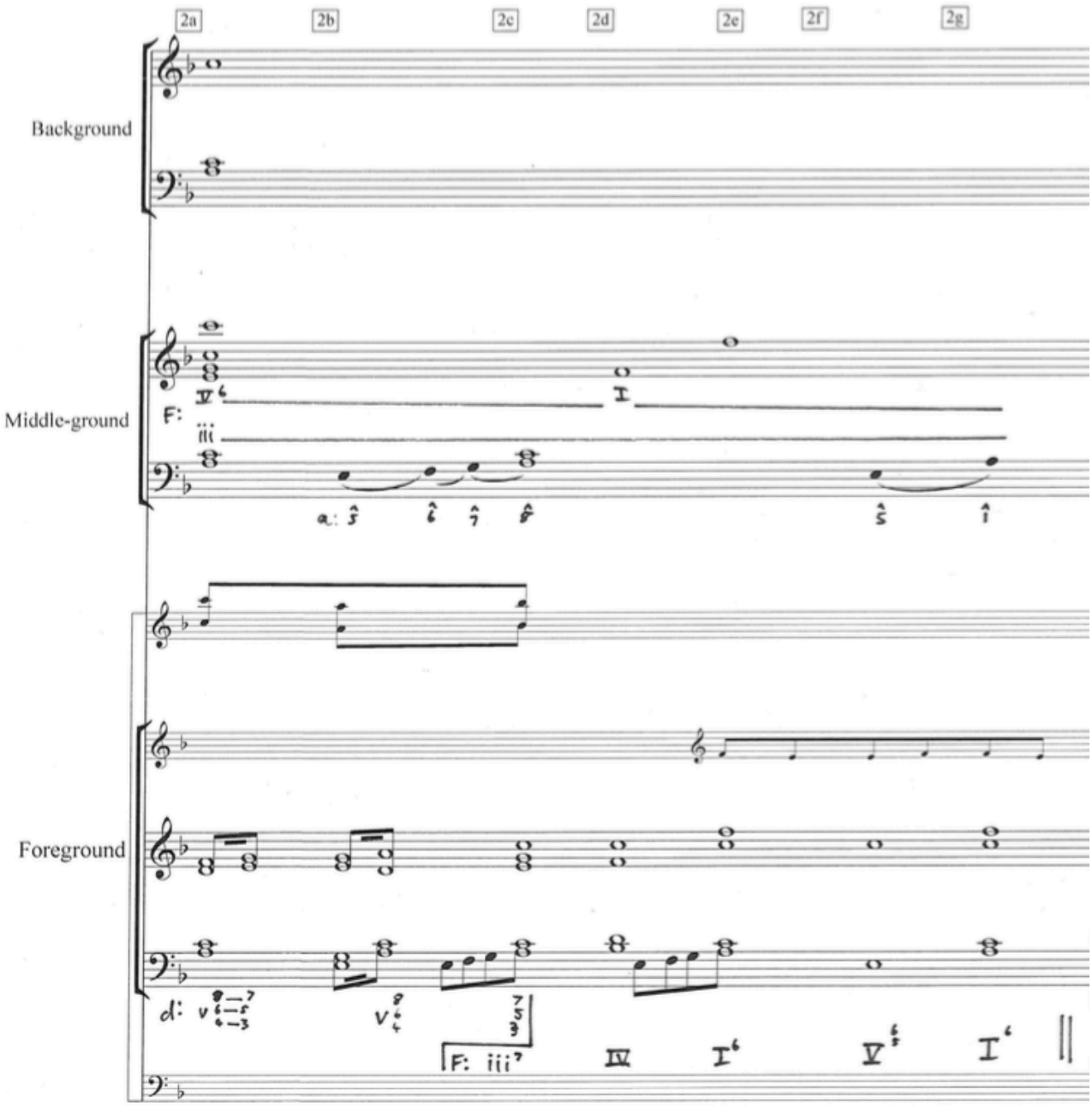


Figure 3. Macro-level analysis, 2a – 2g

Module 3 introduces a device that becomes a notable feature throughout the analysis of modules stated to be in Lydian modes: the use of bass pings to outline a Lydian-tonic drone. Here, from phrase 3c onwards, E is presented in the bass pings, suggesting towards the E-Lydian modality Adams' structure, and prolonged by its extensive duration and salience. This E-Lydian interpretation is supported by the

harmony of the central texture, when considered in conjunction with the bass, in phrases 3f through 3n, presenting a constant E-major harmony with sporadic use of sevenths and ninths, and a brief departure to a vii^9 harmony in 3k. However, the surrounding two-thirds of the module present an almost constant F#-major harmony, which in the context of the relative-major mode, B-major, serves a dominant function. Further more, the E bass-ping drone can be reconsidered in this text as the seventh of this chord, creating a $V^{4/2}$ harmony in B. In this context, the E major harmonies serve a more functional role as a pre-dominant chord IV preparing the dominant harmony, which remains unresolved throughout the module. The upper-register pings further support this, constantly presenting notes of the F#-major triad throughout, even during the discussed area of E-major harmony.

Module 4 provides the least modal conflict of any module in section 1, immediately and consistently emphasising the E-Phrygian modality of Adams' structure. This is achieved by a constant E drone in the lowest voice, a turn figuration in the next voice/wave-pattern up, emphasising the flat second-degree of the Phrygian mode's resolution to the tonic, and the upper-most wave pattern's clusters, building from notes of the tonic triad, G and B. Fig. 4 shows these patterns, as well as highlighting the voice-leading in the growth of the clutters, ascending from 5ˆ-1ˆ throughout the first phrase. The final phrase abandons these features in favour of a series of ascending scales beginning on C. This change, though dramatic, does not affect the established E-Phrygian modality, with the previous harmonic content cross-faded with the new material through constant use of the sustain pedal.

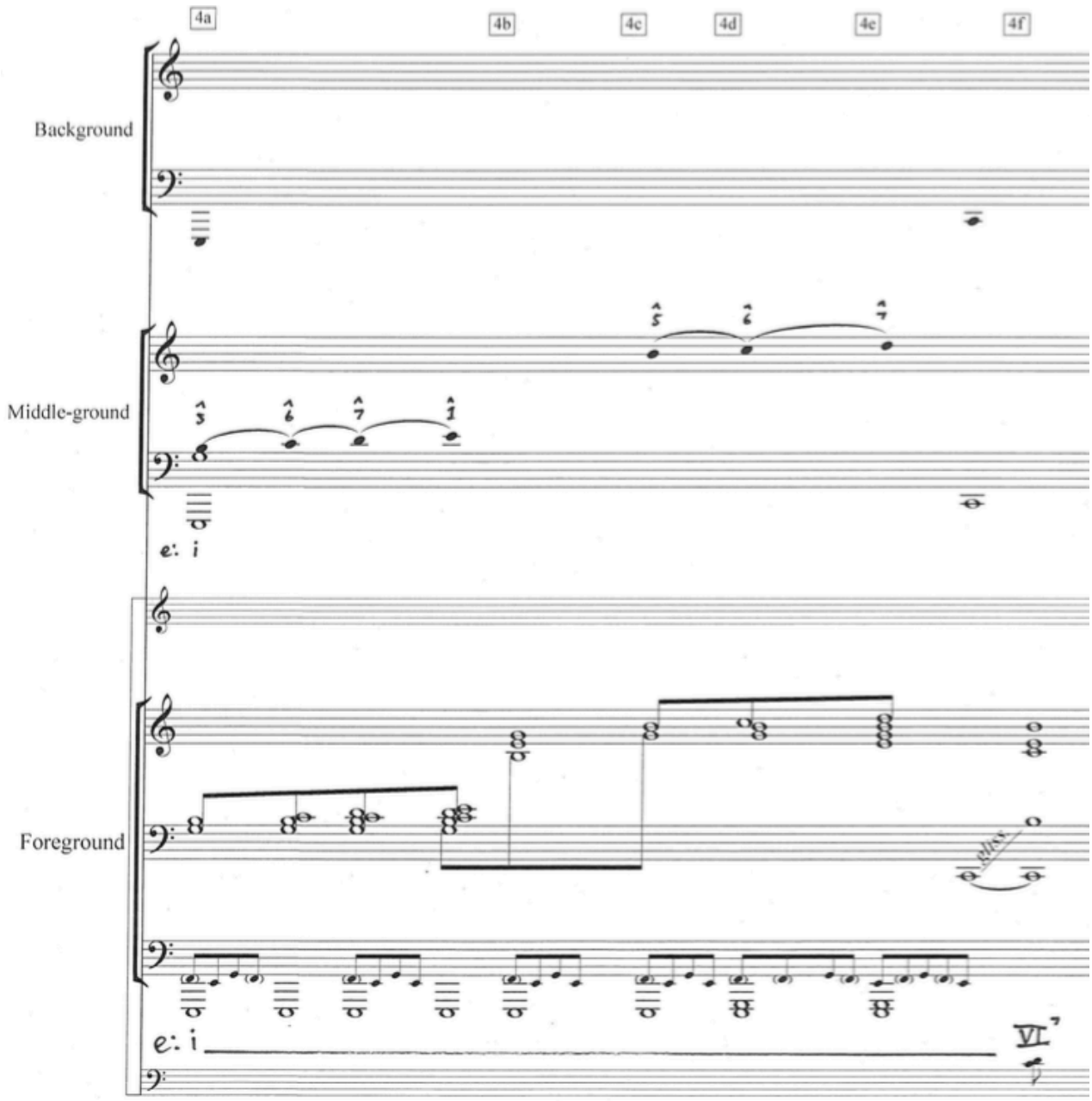
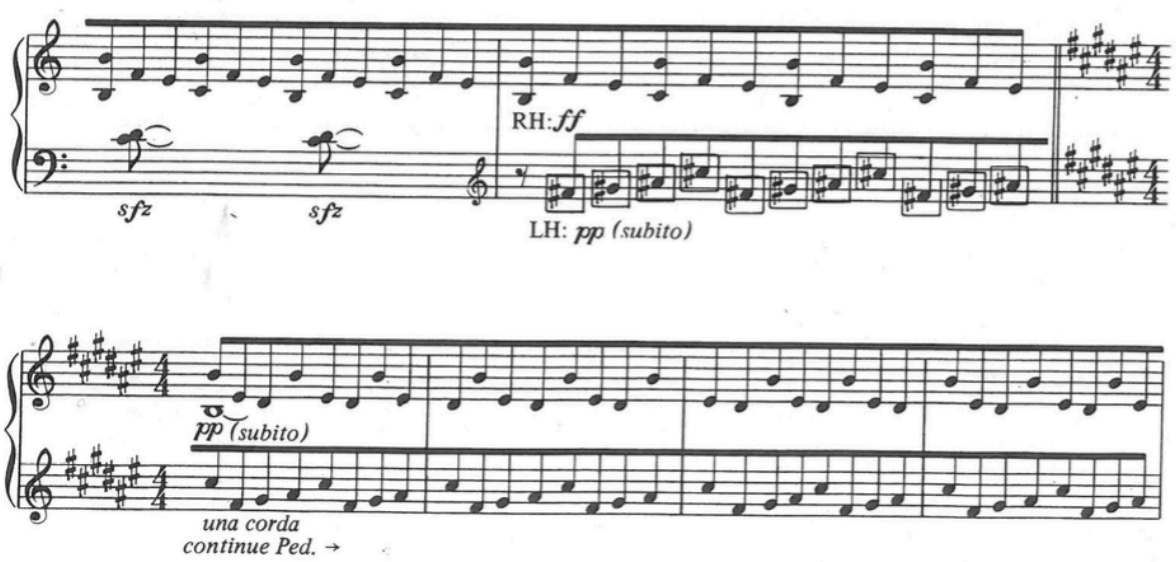


Figure 4. Macro-level analysis, 4a – 4f

Brief mention should also be given to the cross-fade effect used between modules 4 and 5. This modular elision, created by superimposing the left-hand wave-pattern of the upcoming module in the final bar of module 4, using the sustain pedal to allow the pitch content of module 4 to fade slowly over time, serves to blend the boundaries between the two modal areas (refer to Ex. 4.).



Ex. 4. Adams. *Phrygian Gates*, bars 264-69.

Module 5 once again shows how Adams' conception of a Lydian or Phrygian mode structure is undermined by a prevailing Ionian-mode functioning harmony. Intended as B Lydian, the module presents the standard functional progression IV-V-I in F-sharp major, and prolongs an F-sharp major harmony throughout phrases 5d to 5m. Though opening on a B-major chord, which might be interpreted as tonic in B-Lydian, its relative duration to the F-sharp harmonies suggests its subordinate position, more functionally considered as predominant as part of a $IV_{}^{6}$ –V^6 – I progression. The pings, however, provide subtle conflict between these modal areas, with the upper-register pings presenting the pitches B, A#, C#, E# and G# in phrases 5e through 5i, phrases 5j through 5m presenting F#, B, C# and A#, and the bass-pings presenting A# and B (refer to fig. 5). These sets can be split into two separate collections, each serving a functional harmonic purpose in F-sharp major, contrasted with the B-natural pings, which elude to the conflicting B-Lydian modality. 5e through 5i presents chord V^6 in F-sharp, most clear in the arpeggiation of the pitches E#, G# and C# in phrase 5h. The second set, C#, A# and F#, present a F-sharp tonic function, again clearly presented as an arpeggio in

the final phrase. As such, the upper-register pings serves to outline a $V^6 – I^{6/4}$ progression.

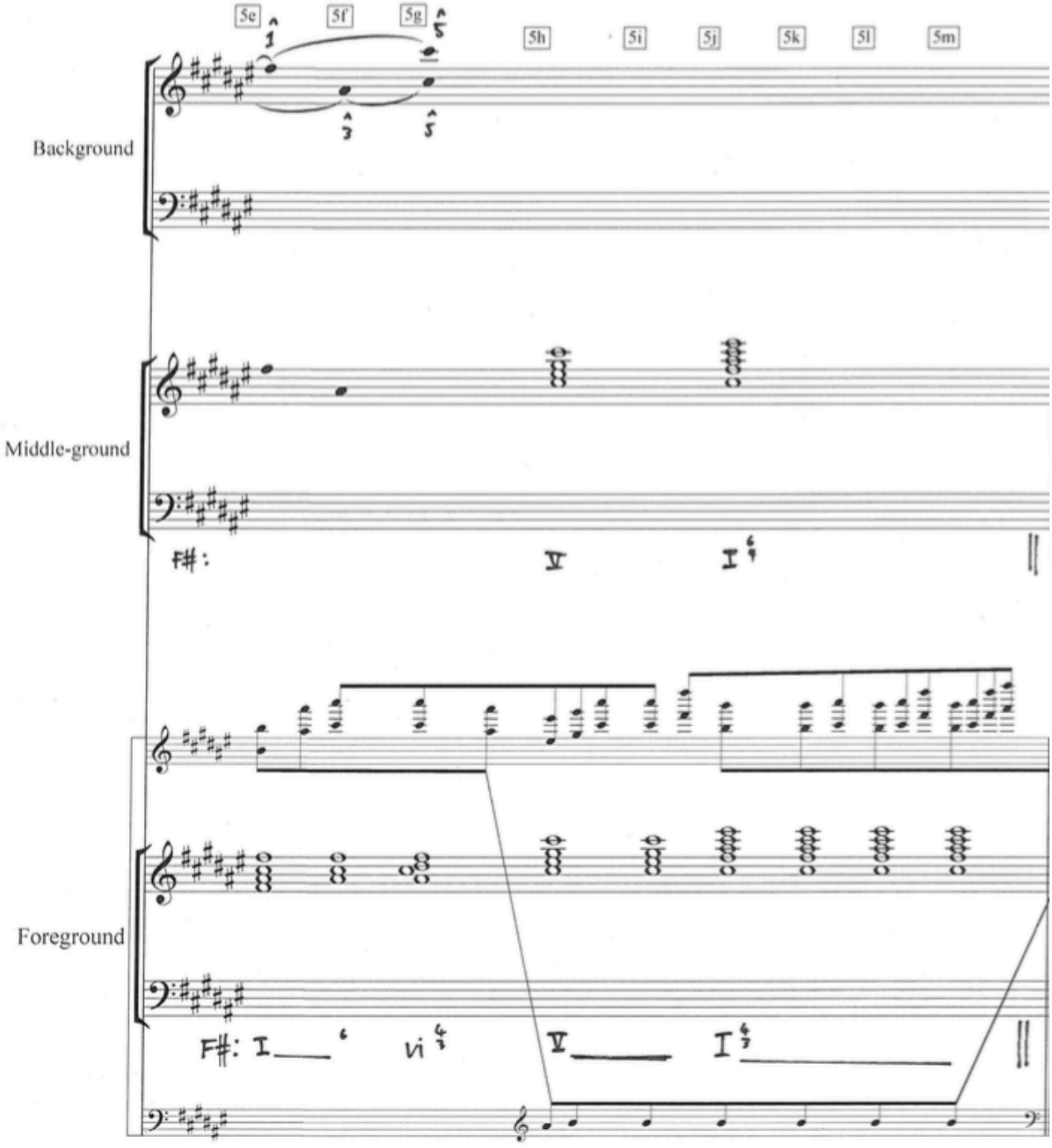


Figure 5. Macro-level analysis, 5e – 5m

Module 6 presents what looks like, on the foreground level, a modulation from G-major to B-Phrygian. This is created by a constant dominant-function harmony in the central texture from modules 61 through 6d, with a divergence to $iii^{4/3}$, which on this level can be understood at tonic-substitution of iii for I. In phrases 6a and 6b, though in the Phrygian mode according to Adams, the use of bass pings on the Lydian tonic again suggests modal conflict, with possible interpretations including their function as the seventh in the prevailing $V^{4/2}$ harmony in G-major, as the Lydian tonic drone, which might be expected from its use in module 3, or possibly as the lowered second-degree leading towards the yet un-established Phrygian tonic. This final interpretation finds greater hold when considering the middle-ground analysis. Due to the dramatic change in register between phrases 6c and 6d, the $b^{4/3}$ chord at 6d, previously analysed as $iii^{4/3}$ in the context of G-major, is an event of significant salience, and therefore prolongs from the fore- to middle-ground level of analysis. The following chord, previously analyses as $V^{6/5}$ in G-major, can be reinterpreted accordingly as the dominant of B-Phrygian with an added thirteenth, $v^{o\,13}$, resolving to a B-minor chord in the following phrase. With this in mind, on the middle-ground level of analysis we can re-consider the initial chord of this module as $v^{o\,6/4}$ in B-Phrygian, rather than $vii^{o\,6/4}$ in G as originally interpreted in the foreground analysis. Thus, though analysis of the foreground harmony suggest a modulation from G-major to B-Phrygian, consideration of salient events which prolongate show the progression as aimed towards B-Phrygian in the first five phrases, supported by a I - II - v^{o} - i progression in the following ten phrases.

For module 7, two Roman-numeral analyses have been provided for the opening eight phrases to highlight how, though an interpretation in the mode which Adams alludes to, here G-flat-Lydian, is possible, an interpretation in the relative major

provides more satisfying functionality (refer to fig. 6.). Here, the central texture creates a D-flat-major chord, interrupted only by a C-half-diminished seventh in phrase 7d. Though this can be analysed as an area of dominant function in G-flat, with a brief departure to a secondary dominant of the dominant, a more coherent reading is of a I – vii^{ø7} – I$^{4/2}_^{5/3}$ progression in D-flat. This is supported by the final phrases, which simply alternate between tonic and dominant functions in D-flat. Again, bass-pings present a Lydian-tonic drone, aiming to tonicise the G-flat-Lydian mode, but also serving as the seventh of the dominant chords in D-flat, thus providing modal conflict and harmonic complexity.

The transition between module 7 and module 8 provides the first instance of a functional relationship between modal areas. Module 8 opens on an F-sharp-minor chord, the tonic of the Phrygian mode to which it aims. When enharmonically re-spelt, the final D-flat-major chord of module 7o can be considered the dominant of F-sharp, a perfect cadence tonally connecting the two modules. Further more, the underlying G-flat bass-ping serves as a tonic drone in the coming F-sharp mode.

The final module has the most harmonic clarity, with a single phrase and therefore single chord presented. Arpeggios in both hands outline a D-flat major chord, unadorned by any other pitches when first presented. In the large-scale context of the previous modules, this could be understood as a return to the D-flat-major tonality of module 6 after a departure to the subdominant F-sharp (enharmonically G-flat). However, intervening G-naturals, presented in the bass-pings midway through the phrase, represent the #4ˆ of the Lydian mode, thus establishing the modality as Lydian rather than Ionian.

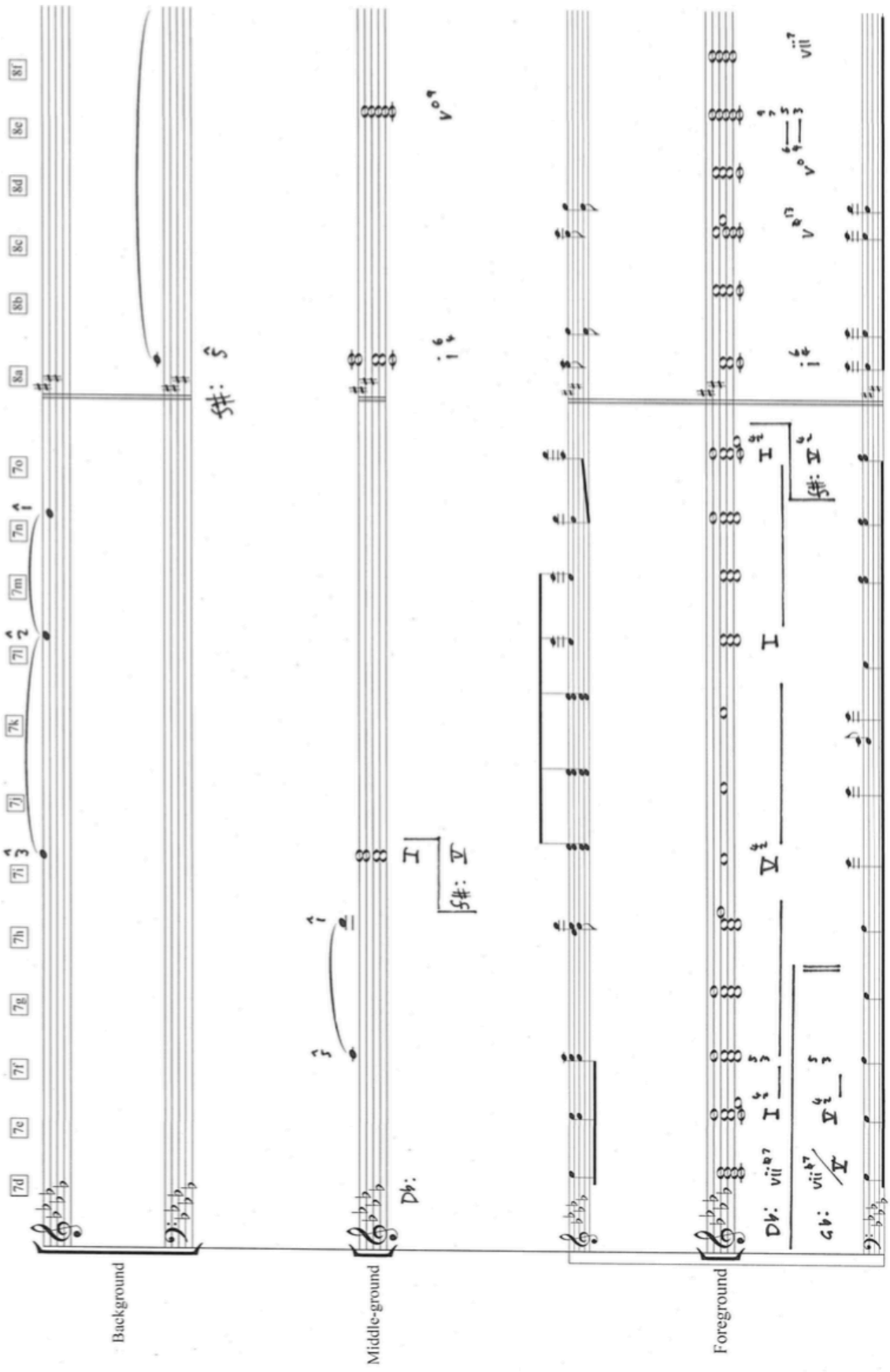


Figure 6. Macro-level analysis, 7d – 8f

With this analysis of pitch-centricity in first section of *Phrygian Gates* in mind, figure 8 re-evaluates figure 1, showing the dominance of the Ionian mode in modules which aimed towards the Lydian, while all but the first the Phrygian module succeed in asserting their Phrygian modality.

Module	Mode as per Adams structure	Diatonic Pitch Collection												Section	Tempo	Duration		Starting Bar
		1♭	0♭/0♯	1♯	2♯	3♯	4♯	5♯/7♭	6♯/6♭	7♯/5♭	4♭	3♭	2♭			quavers	seconds	
1	A Lyd						E Ion							Section 1	♩ = 180	900	150	1
2	A Phr	F Ion														180	30	114
3	E Lyd							B Ion								792	132	137
4	E Phr		E Phr													360	60	235
5	B Lyd								F♯ Ion							540	90	266
6	B Phr			B Phr												540	90	334
7	G♭ Ldy									D♭ Ion					♩=240	540	67.5	402
8	F♯ Phr				F♯ Phr											1078	134.75	470
9	D♭ Lyd										D♭ Lyd					270	33.75	606

Figure 7. Modules in *Phrygian Gates,* section 1, according to Macro-level harmonic analysis.

Section 3: Large-scale progression in the Harmony of Section 3

Though showing functional progressions within each module, the opening section of *Phrygian* Gates did not show large-scale functional progressions progressions across the section, other than the development of diatonic pitch-collections discussed the in Chapter 2. Marco-level harmonic analysis of the final section of the work, however, suggests otherwise, presenting what can be interpreted as a single progression towards pitch-centre E-flat/D-sharp through the use of chromatic voice leading and modal mixture. Consideration of the work's structure alludes towards this possibility (refer to fig. 1). Firstly, while section 1 does not revisit any diatonic pitch-collection, permanently moving on via the process discussed in section 1 of Chapter 2, the final section constantly switches between four pitch-collections, allowing for the possibility of repeated harmonies and progressions. Secondly, the modules of the final section are of short duration, the longest only 40 seconds, compared to 30 seconds for the shortest

of section 1, with 40 of its 48 modules containing a single phrase, and therefore single chord. These factors speak to the possibility of greater continuity across modular boundaries.

As such, in the macro-level analysis of this section, preference has been given to a determining a chord's function in the context of the surrounding harmonies and tonal goals, rather than referencing Adams' tonal structure, as conducted in the analysis of section 1. This is due to the inability of modules with a single chord to convincingly tonicise a pitch other than its own root. A clear example of this is the opening module, module 11, which presents the progression d^{o} - B ♭ $^{6/5}$ - $g^{4/3}$ across its four phrase. Though Adams' harmonic plan would suggest this module to be in A-flat-Lydian, the first two chords would suggest a dominant function in E-flat, with G-minor a tonic substitute, therefore vii^{o} - $V^{6/5}$ - $iii^{4/3}$ in E-flat-major. Similarly, the A-flat presented in the bass-pings, though a possible attempt to establish an A-flat-Lydian tonic, can be seen to serve a more functional purpose as the seventh of the dominant chord, now $V^{4/2}$, and as the lowered second degree in G-Phrygian, the E-Flat major substitution in the dominant chord's resolution.

Chromatic voice leading is a key component linking together modules in section 3. Though there is no functional connection between the $g^{4/3}$ chord of the phrases 11c and 11d, and the $B^{6/4}$ of 12a, they are connected by the chromatic ascension of the F to F-sharp and D to D-sharp, and the continued A-flat bass-pings, now enharmonically spelt as G-sharp. Similarly the final chord of module 12, module 13, and the first chord of module 14, each present a minor triad ascending a semitone from the last, f# - G - G#. This chromatic ascension is clearly presented in the background level of analysis (refer to fig. 8.). The final phrase of module 15 through to module 17 shows a similar

progression, with the ascension and return from a G-minor chord to G-sharp-minor and back.

Throughout the first three modules of section 3, the bass-pings present a repeated A-flat/G-sharp. Though it can be assumed these were intended as a device to tonicise the A-flat/G-sharp pitch-centre outlined by Adams' harmonic structure (refer to fig. 1.), they can be see to have varying functionalities when considered against he changing harmonies above. As discussed, in module 11 they serve first as the seventh in the dominant chord, followed by the Phrygian second scale degree against the G-minor chord. This interpretation, as the Phrygian second degree, can be applied to the final phrase of module 12 leading into the G-minor chords of module 13.

The harmonic progression of modules 17 through to 24 is able to be interpreted as a progression modulating between pitch-centres G-natural and E-flat/D-sharp. For the purpose of this analysis, Roman-numeral analysis is being used throughout these modules rather than D-sharp, though they may be presented in the context of D-sharp in the score. As such, an enharmonic re-spelling of modules 18 through to 50 has been provided in the foreground level of analysis. In these modules, there are two particular chords of note: those presented in modules 18 and 22. Both $d\#^{ø7}$ chords, they on first inspection do not seem to serve a functional purpose in the G-centric context. However, noting that both chords are followed by chords with D-natural in the bass, chord $v^{ø7}$ in G-Phrygian and $g^{6/4}$ respectively, $d\#^{ø7}$ chords can be interpreted as an approximate French augmented sixth chord, with the third lowered by a semitone. As such, they serve a predominant function towards the Phrygian dominant in module 19, and second inversion tonic, which can be understood as the beginning of an un-realised candencial second inversion formula.

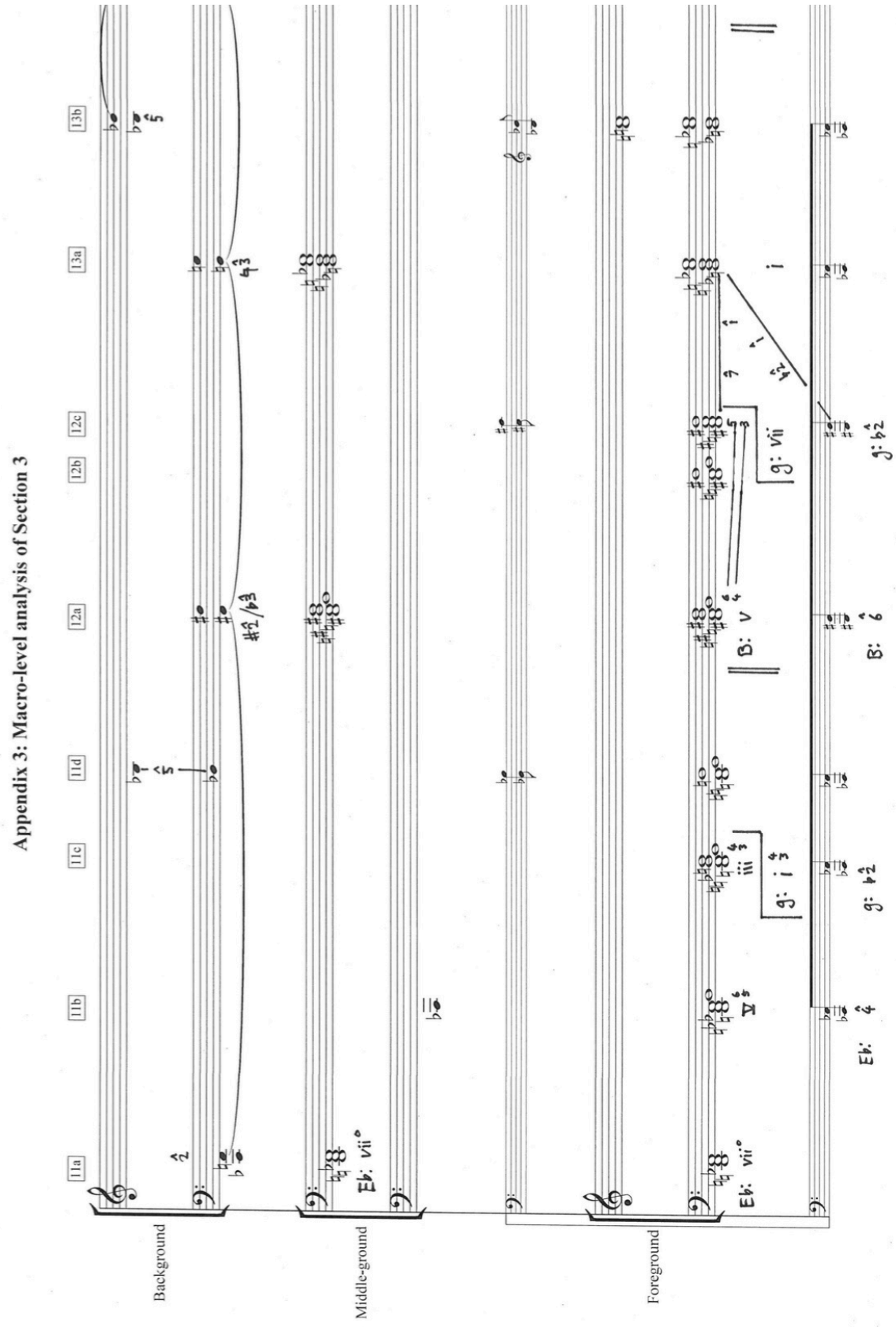


Figure 8. Macro-level analysis, 11a – 29

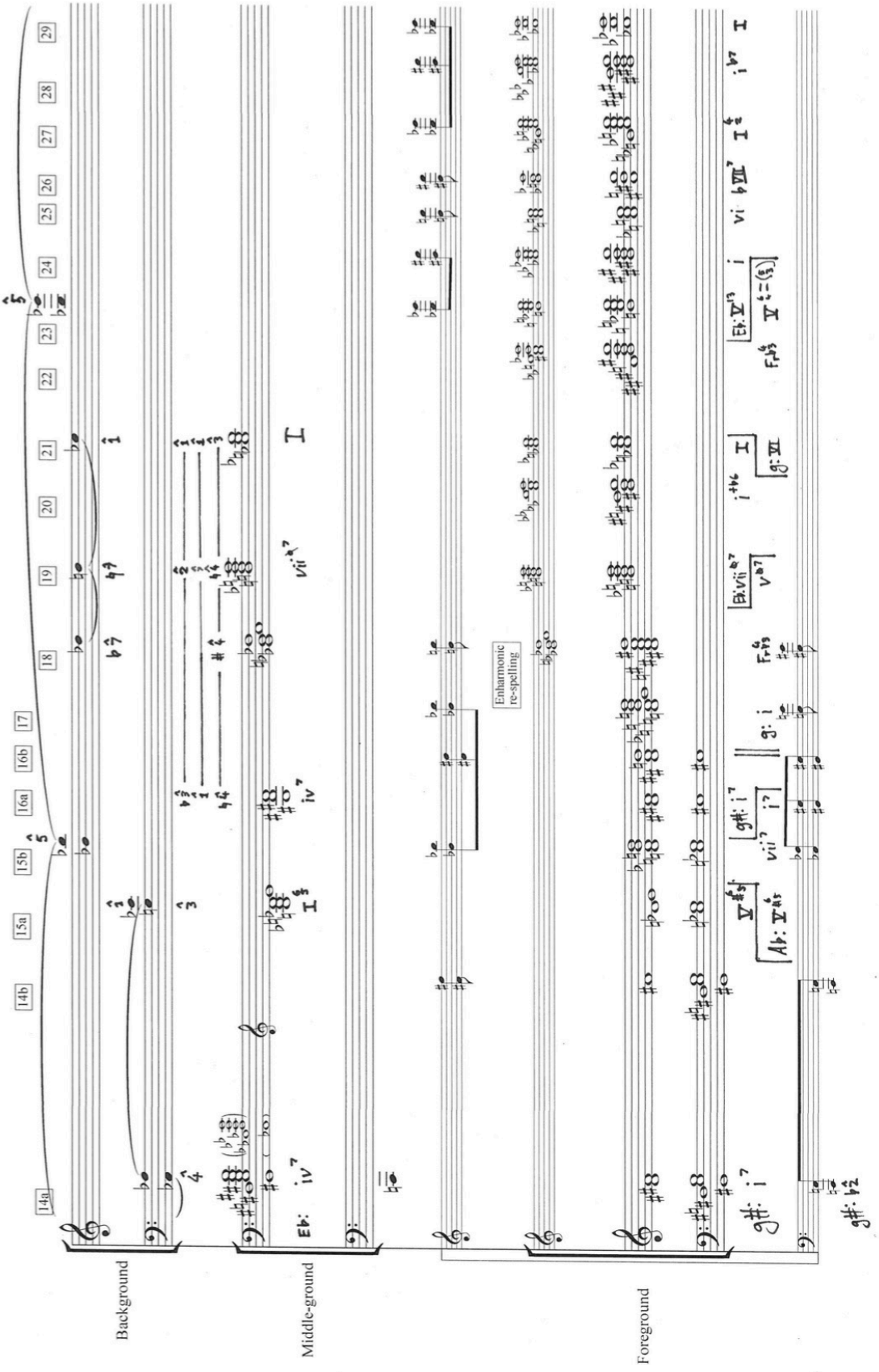


Figure 8. Macro-level analysis, 11a – 29 (continued)

This same chord, however, mirrored across section three's palindrome in module 47, invites a differing interpretation when the progression is considered in reverse. Presented in the context of a tonicised E-flat pitch-centre, prevailing from module 24 through to the closure of the work, the d#^{ø7} chord, enharmonically e ♭ ^{ø7}, is followed by an E-flat major chord. As such, being that it cannot function as the pre-dominant $Fr^{4/3}$ in G, a more satisfying interpretation can be deduced in terms of voice leading above the tonic (E-flat) root, with #4ˆ- 5ˆ, and ♭ 3ˆ- ♮3.

Throughout the central palindrome of this section, in which the rate harmonic change is its quickest due to the proportional structure of the work (refer to Chapter 2, Section 1), a E-flat/D-sharp pitch-centre is emphasised by the constant return to either E-flat/D-sharp major or minor chords (occasionally with added sevenths). This is further supported by the upper-register pings, which in modules 23, 24, 27-29, 40-42, 45, 46, 51, and 52, articulate B-flat/A-sharp, the dominant scale degree. One the harmonic movement begins to slow down, most notably at module 55, the harmonic function moves to emphasise dominant harmonies in E-flat/D-sharp, clearly evident in the B-flat-major chords of modules 55 and 57, leading towards the final module of the work in D-sharp-Phrygian.

Determining which harmonies prolong to the upper levels of analysis is made quite clear in the final section of *Phrygian Gates*, due to a number of factors. Firstly, the disparity in lengths of modules, and therefore phrases and harmonies, makes it very clear to determine events of greater structural importance due to their duration. For example, modules 55, 56, and 57 each present a single harmony, and are each long than another other single harmony in the section. As such, these harmonies are taken to be of greater structural importance and prolong to the middle-ground level. Secondly, the repetition a harmony, separated by another chord, is used frequently throughout. As

such, as espoused by Lerdahl, the intervening harmony can be understood as subordinate within the context of the surrounding harmony, which prolongates (7). Examples include module 21 through to module 54, in which E-flat-major chords are constantly presented, or the final module, which presents D-sharp-minor chords separated by a C-sharp minor harmony in phrase 58b. Finally, the section includes a few moments of notable change in register of density. These changes stand out as prominent events the music's development, and thus prolong. Examples include the sudden extension of the upper registral limits by an octave at module 31, and back at module 39, and the sudden drop in density from a full seventh chord to two-note trill at module 51. Bearing this prolongational analysis of section 3 in mind, this whole section, spanning 48 modules and constantly changing diatonic pitch-collections, can be summarised in the following single progression on an E-flat/D-sharp tonic:

vii^{o} - iv^{7} - I$^{6/5}$ - iv^{7} - vii^{ø7} - I - i$^{♭7/\#4}$ - I$^{4/2}$ - V$^{\#7}$ - ♭VI$^{4/2}$ - V - i^{7} (refer to Appendix 3.).

Chapter 4: Conclusion

Jonathan Bernard, in his article "Minimalist, Post-Minimalism, and the Resurgence of Tonality in Recent American Music" suggests four stages in the development of the minimalist style after its initial establishment:

> (1) Pieces became more complicated, which soon provoked (2) a greater concern with sonority in itself; as a result, (3) pieces began sounding more explicitly "harmonic," that is, chordally oriented, though not, at this point, necessarily tonal in any sense. Eventually, however, (4) harmony of an ever more tonal (or neotonal, or quasi-tonal) aspect assumed primary control. (Bernard 114)

James Chute further highlights this resurgence of tonality as "Among the most pervasive musical trends of the late 1970s and 1980s", in complete contrast to the once all encompassing "Who cares if you listen" attitude of Milton Babbitt in the preceding decades (i). The revival of tonality is one of the most striking aspects in the development of music through the twentieth century, having steadily progressed toward increase and eventually complete dissonance and atonality throughout the nineteenth and early twentieth centuries.

As such, John Adams' solo piano work *Phrygian Gates*, a work sitting precisely within the time period of tonalities resurgence and stating the importance tonality/modality in its own title, is a work of great importance. Moreover, the consideration of how harmony and tonality present themselves in the work are of considerable interest. Though Bernard states it "is not particularly tonal in the sense meant in the title of this article-tonal, that is, in a common-practice or quasi-common-practice sense," (117) this paper has shown that the harmonies created throughout the work, whether intuitively or intentionally written on the part of Adams, display

functional harmonic progressions. Furthermore, these progressions conflict with Adams own harmonic structure of alternating Lydian and Phrygian Modes, the assumed accuracy of which has previously gone un-examined.

Chapter 2 developed a methodology by which wave patterns in the work are to translated to vertical harmonies, able to be used in a chordal analysis, based on the combined methodologies developed by Johnson in "Harmony in the Music of John Adams: From 'Phrygian Gates' to 'Nixon in China' ", and the theories of pitch-salience and prominence as discussed by Lerdahl, Parncutt and Dibben.

After a brief discussion of methodologies for harmonic analysis, Chapter 3 presents a macro-level analysis of harmony and pitch-centricity in first and third sections of the work, identifying two differing approaches. In the first section of the work, it is made apparent that each module exists separate from each other, creating harmonic progressions within themselves. However, it is shown that there is conflict between tonicising the mode Lydian or Phrygian mode of Adams' harmonic structure and the relative Ionian mode, created primarily between the function of the prevailing harmonies and voice-leading patterns. This conflict is most evident in sections stated to be in the Lydian mode.

In the third section of the work, rather than each module existing separate of each other, the harmony can be understood as a single progression across the 48 modules in an E-flat/D-sharp pitch-centre, Achieved through the use of extensive chromatic voice leading and the use of modal mixture. This clearly refutes Adam's own statement of the work that "There is "mode" in this music, but there is no "modulation" ("List of Works" n. pag.).

The methodologies developed herein, though specifically developed for the work at hand, might serve in future analysis of works of tonal/modal nature, specifically

the methodologies applied in the micro-level analysis, which might find application in the works of other minimalist or post-minimalist composers.

More importantly, this analysis gives an interesting insight into the workings the work at hand, John Adams' *Phrygian Gates*, exploring both elements that create cohesion across the work, and those which create musical conflict, subtlety and interest, in this the seminal work of the composer's stylistic development.

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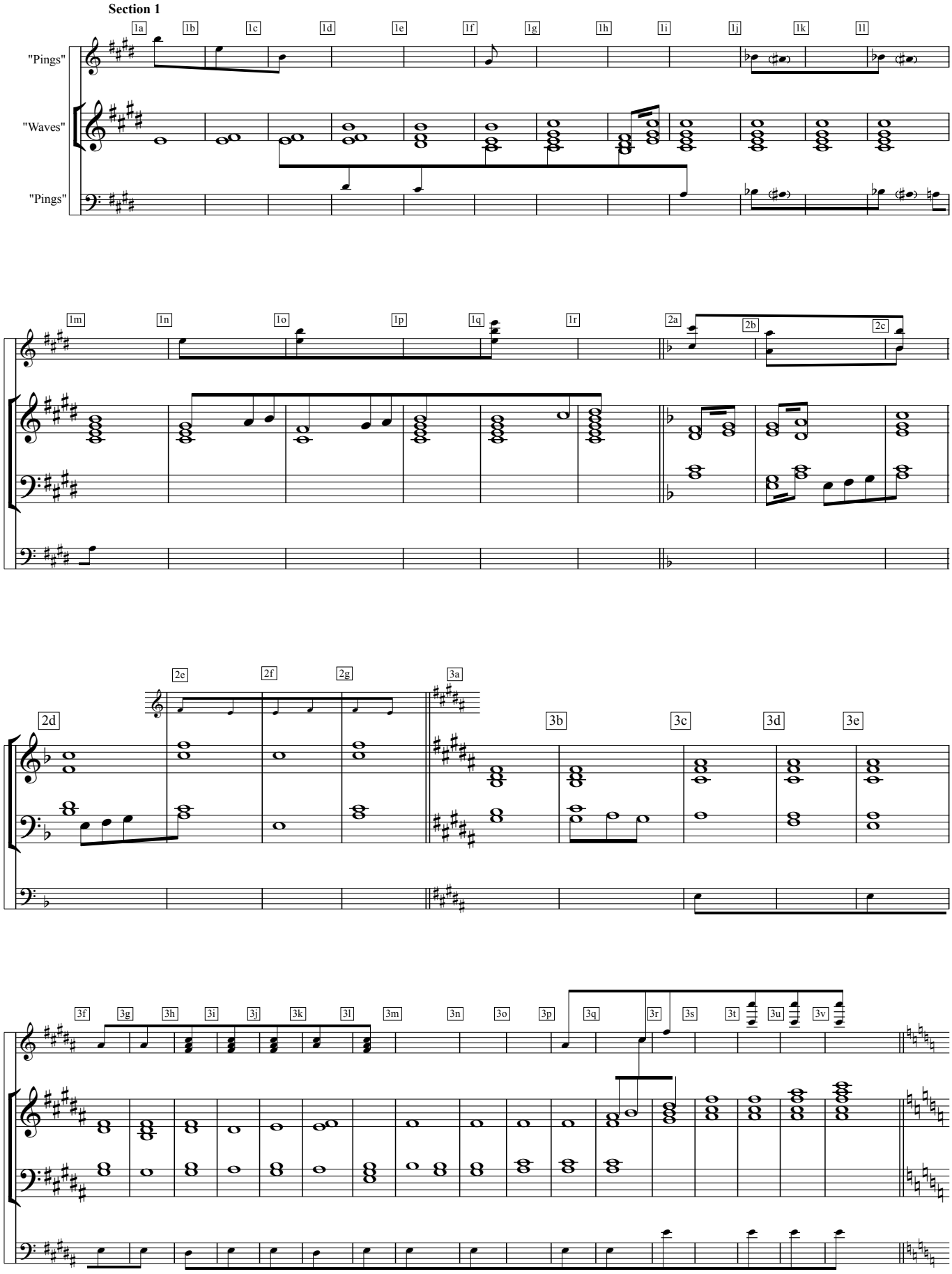
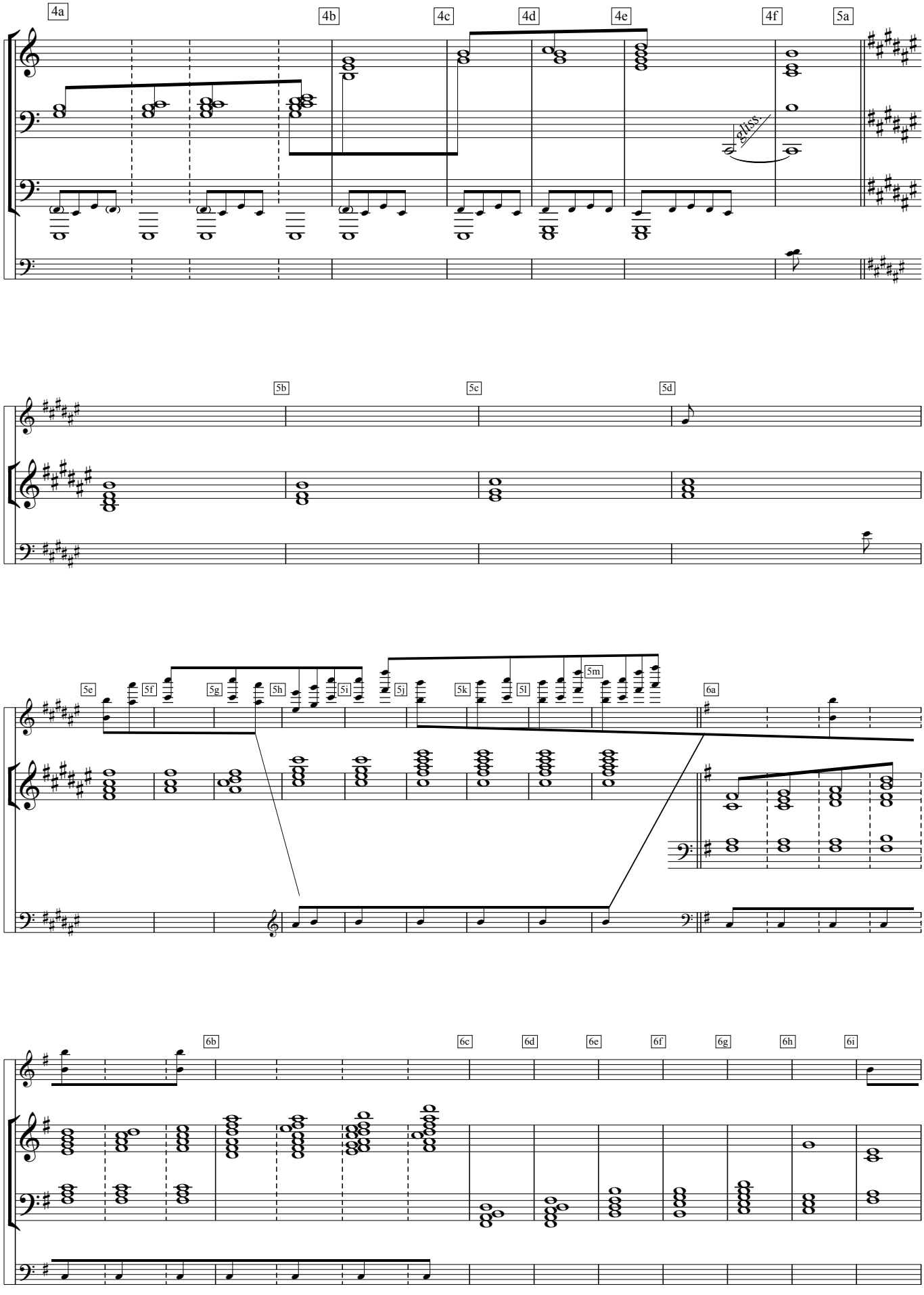
Appendix 1: Micro-level analysis

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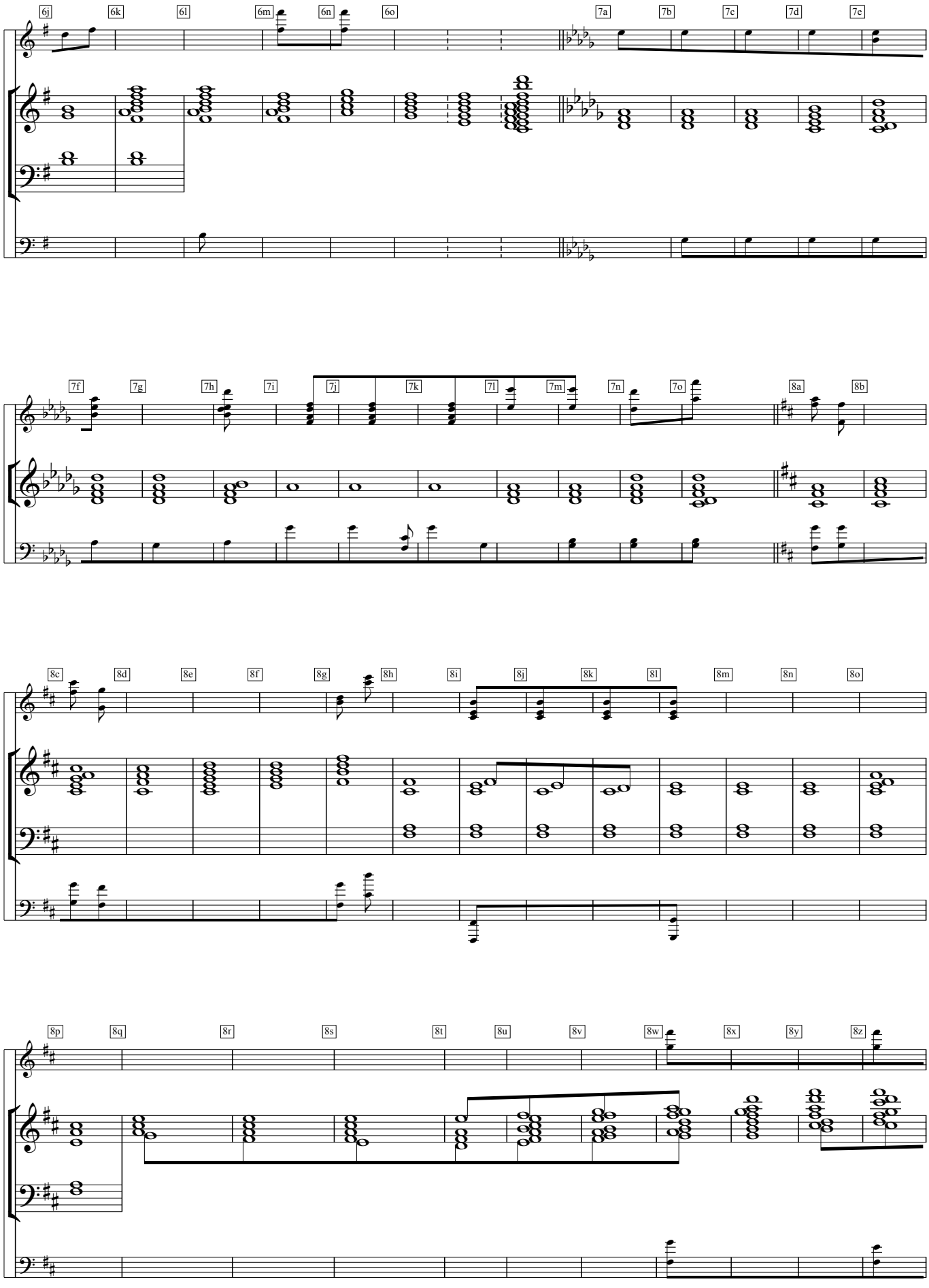

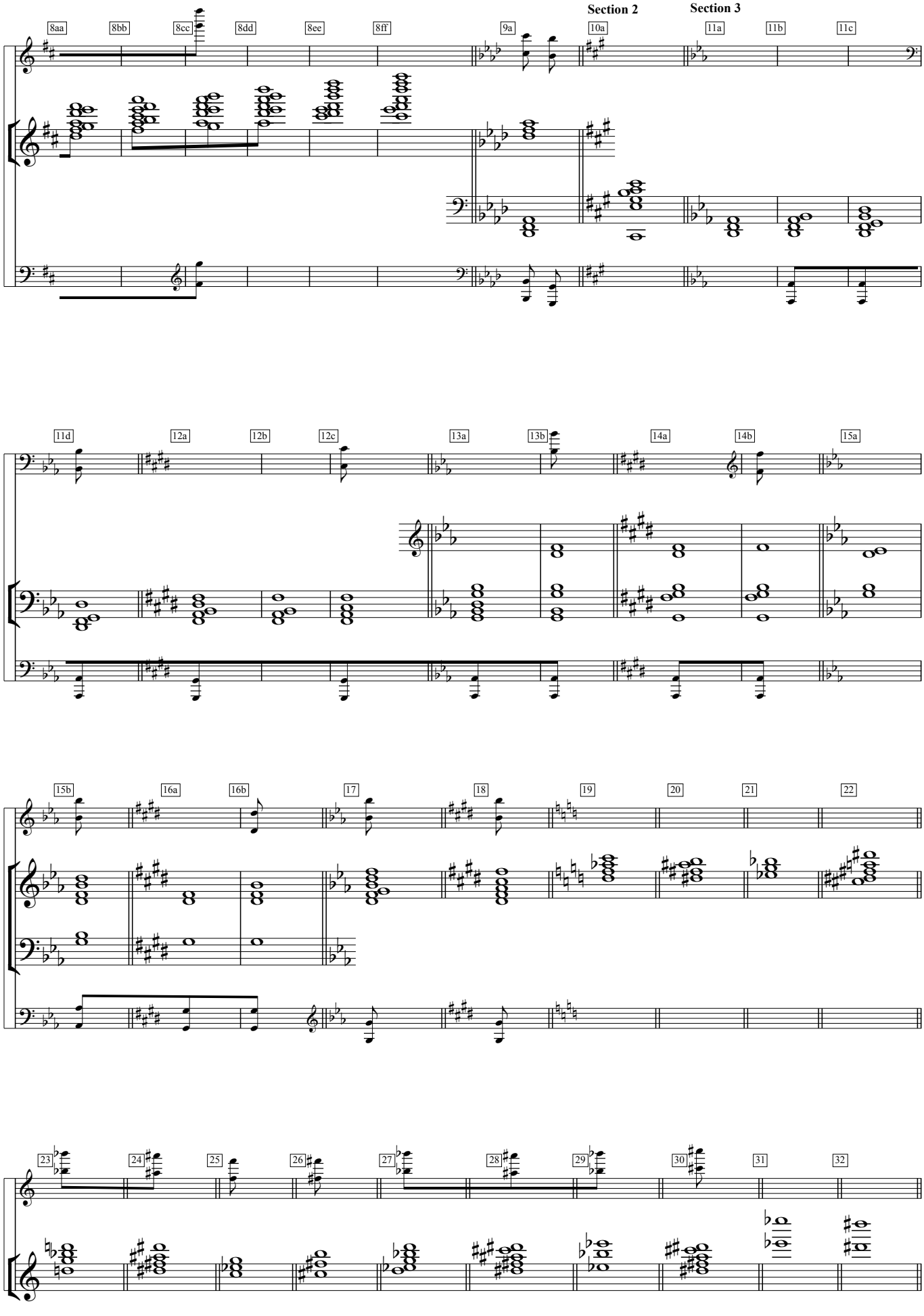
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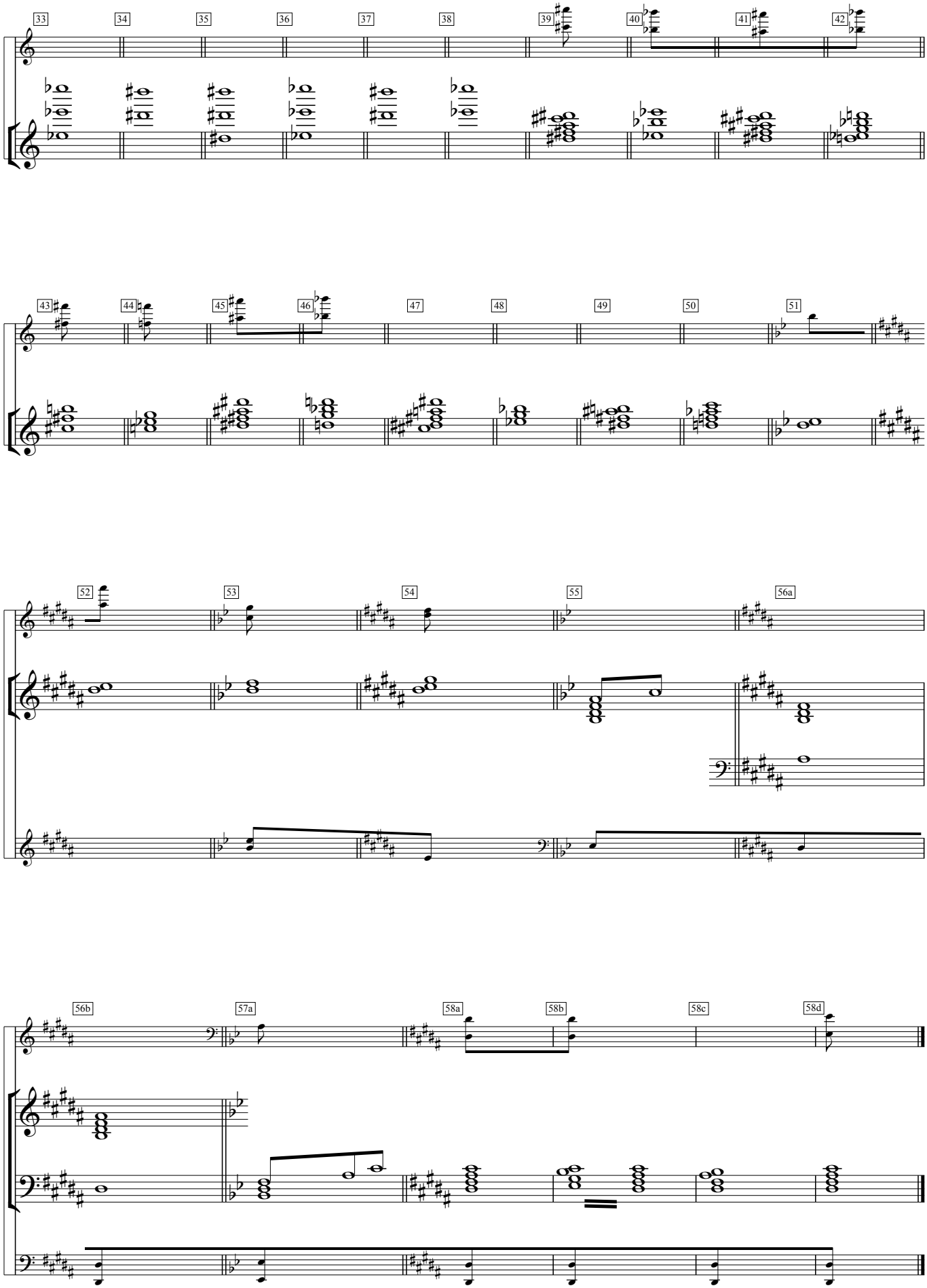
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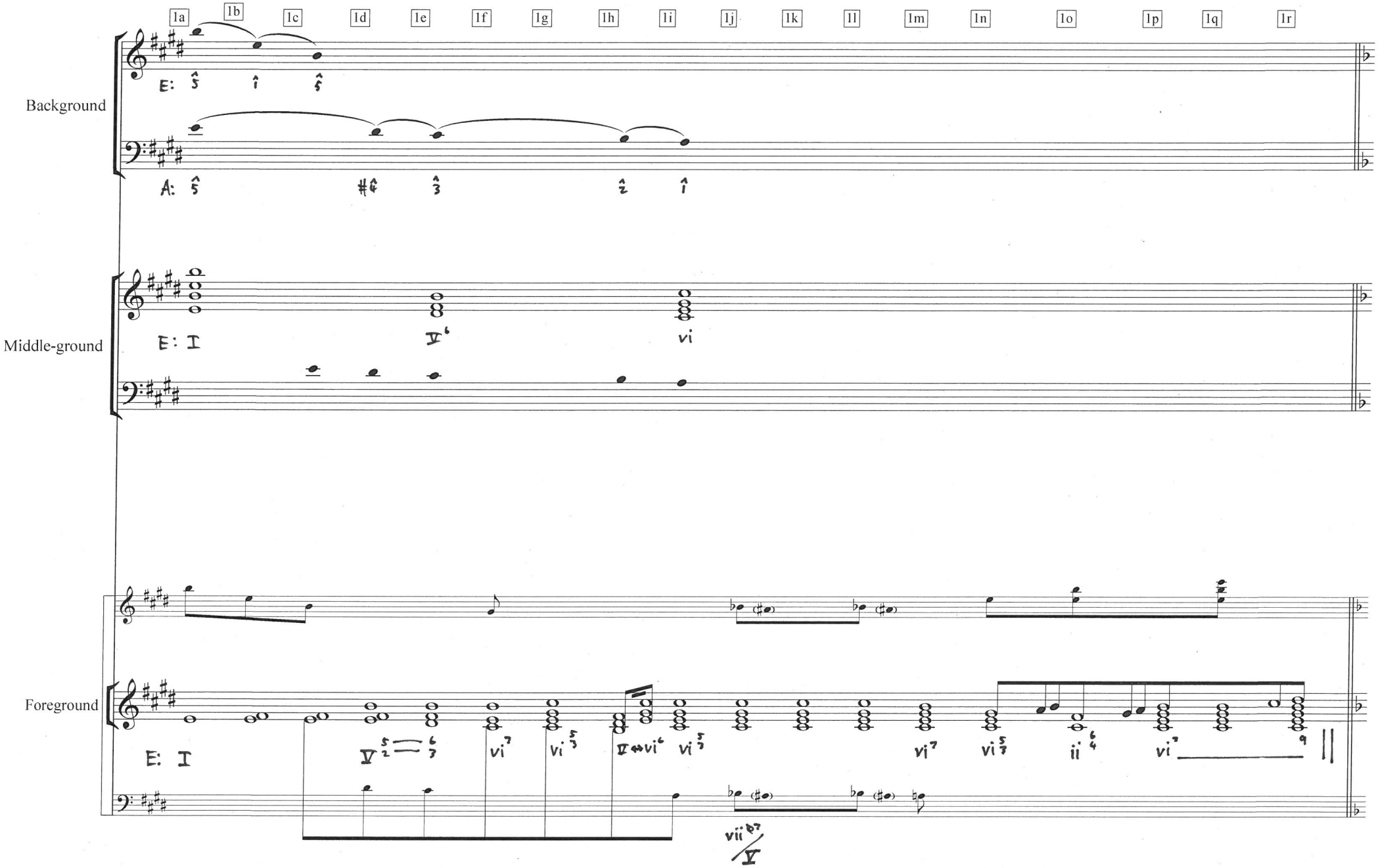
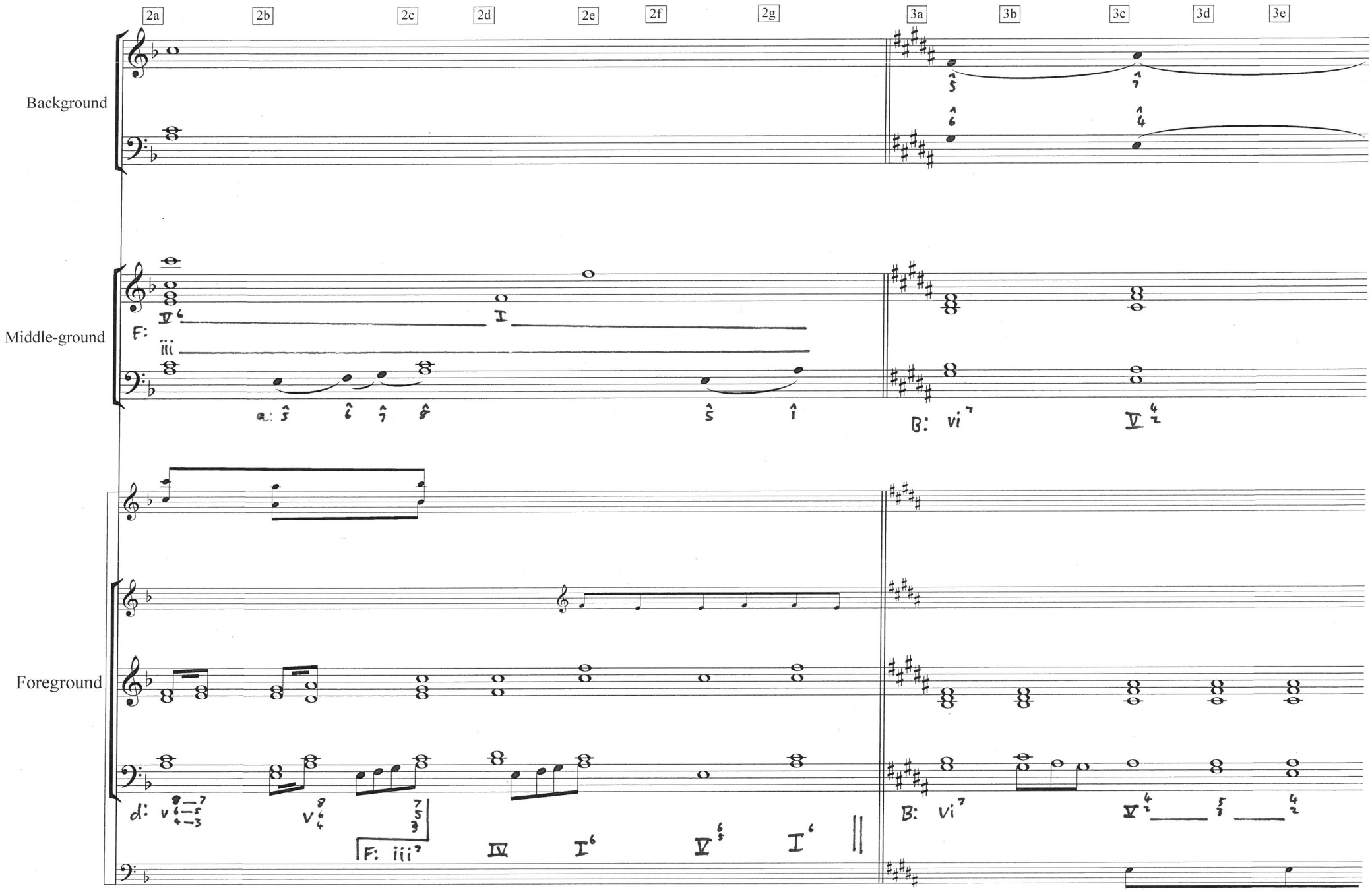
Appendix 2: Macro-level analysis of Section 1

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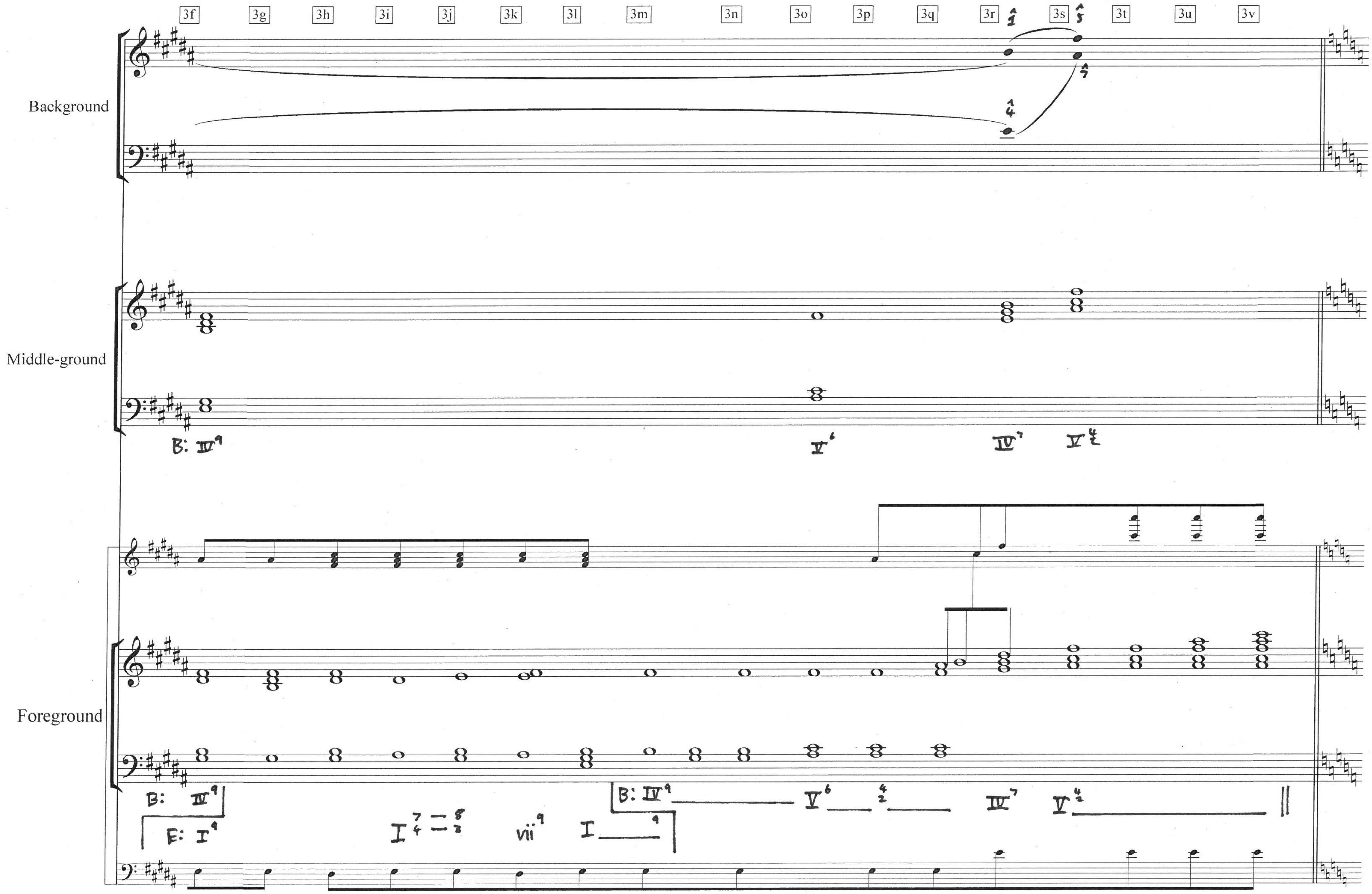

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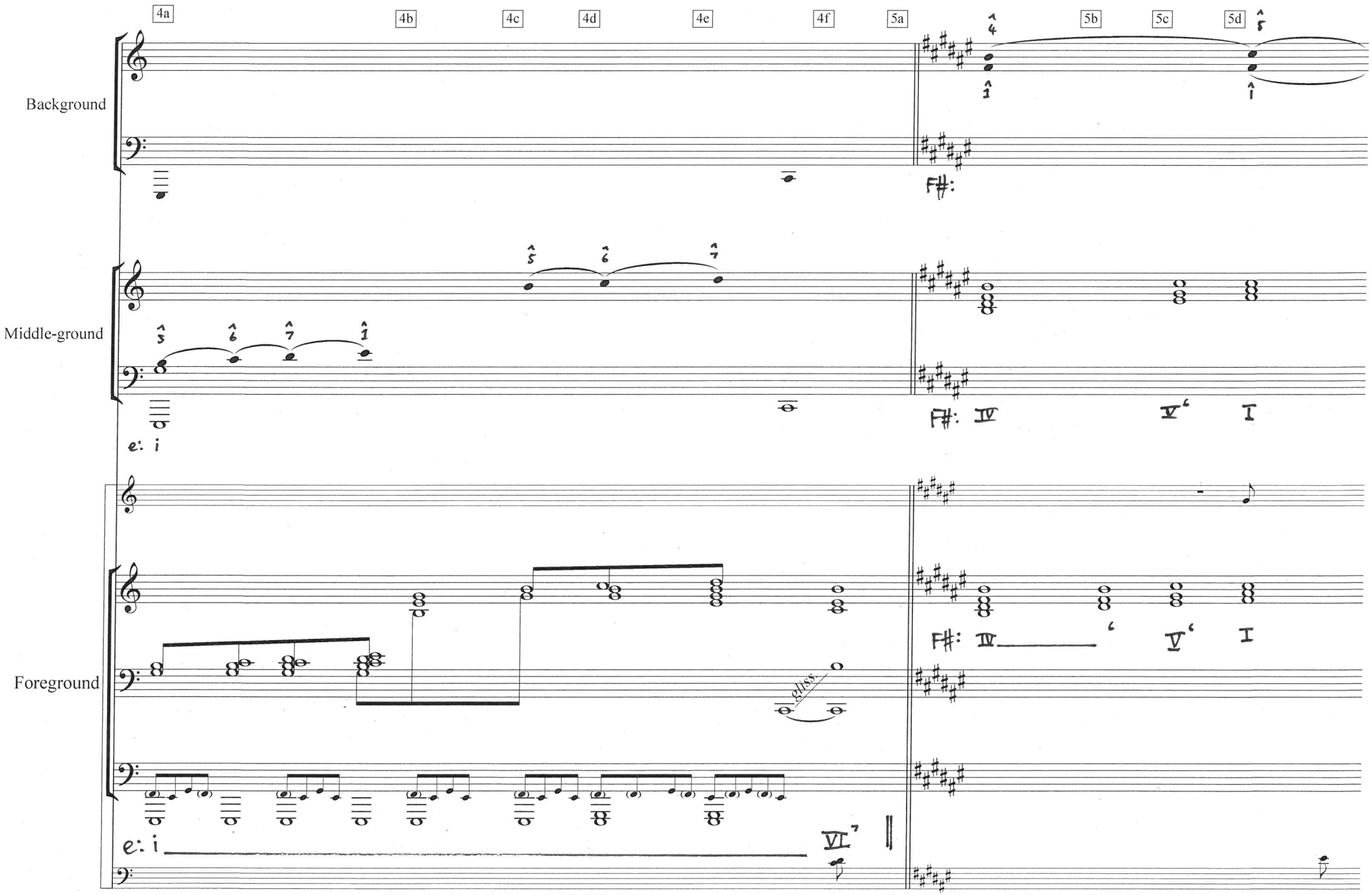
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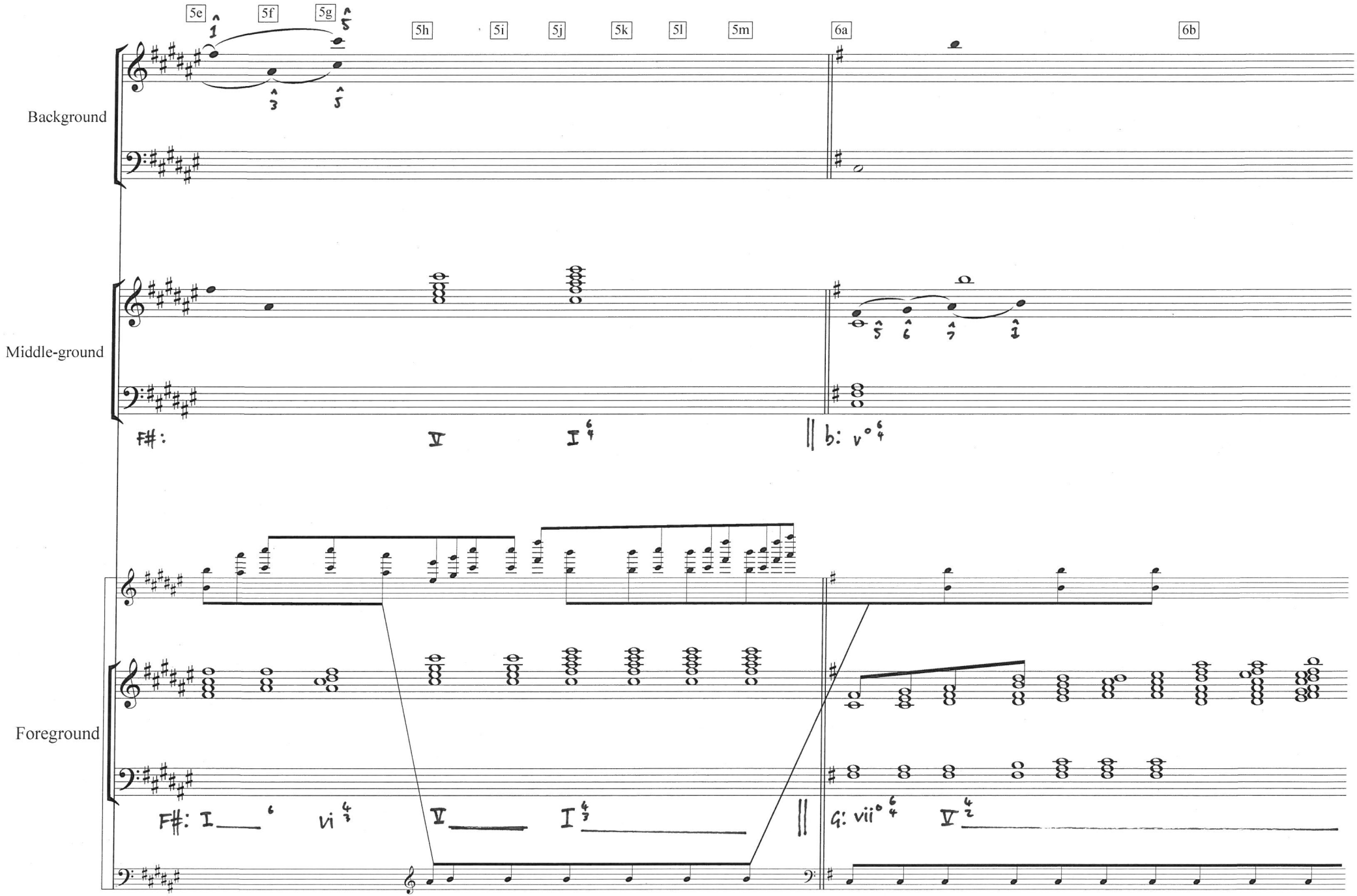
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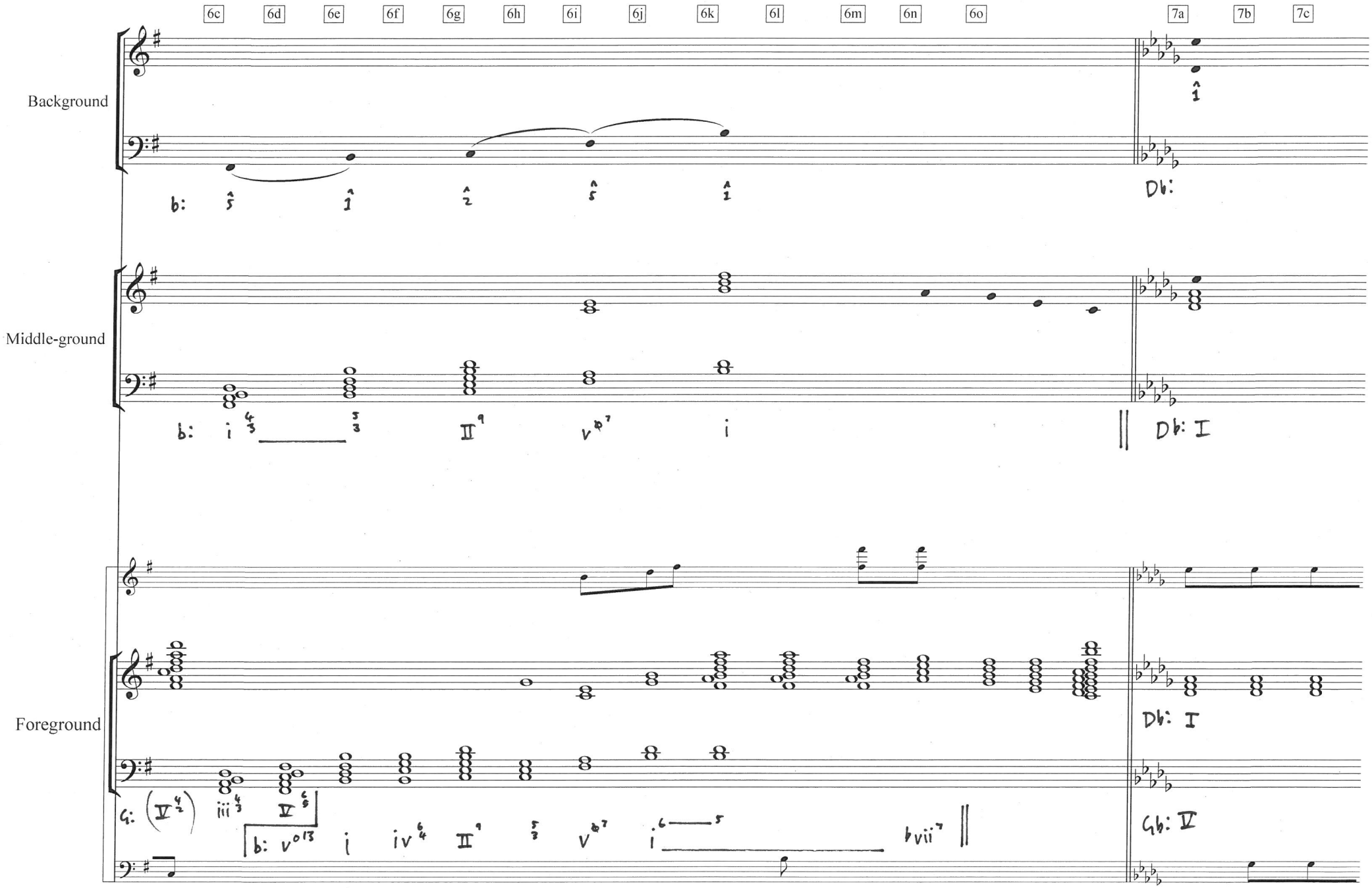
G: vii° 6/4 V 4/2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Middle-ground
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$\hat{1}$
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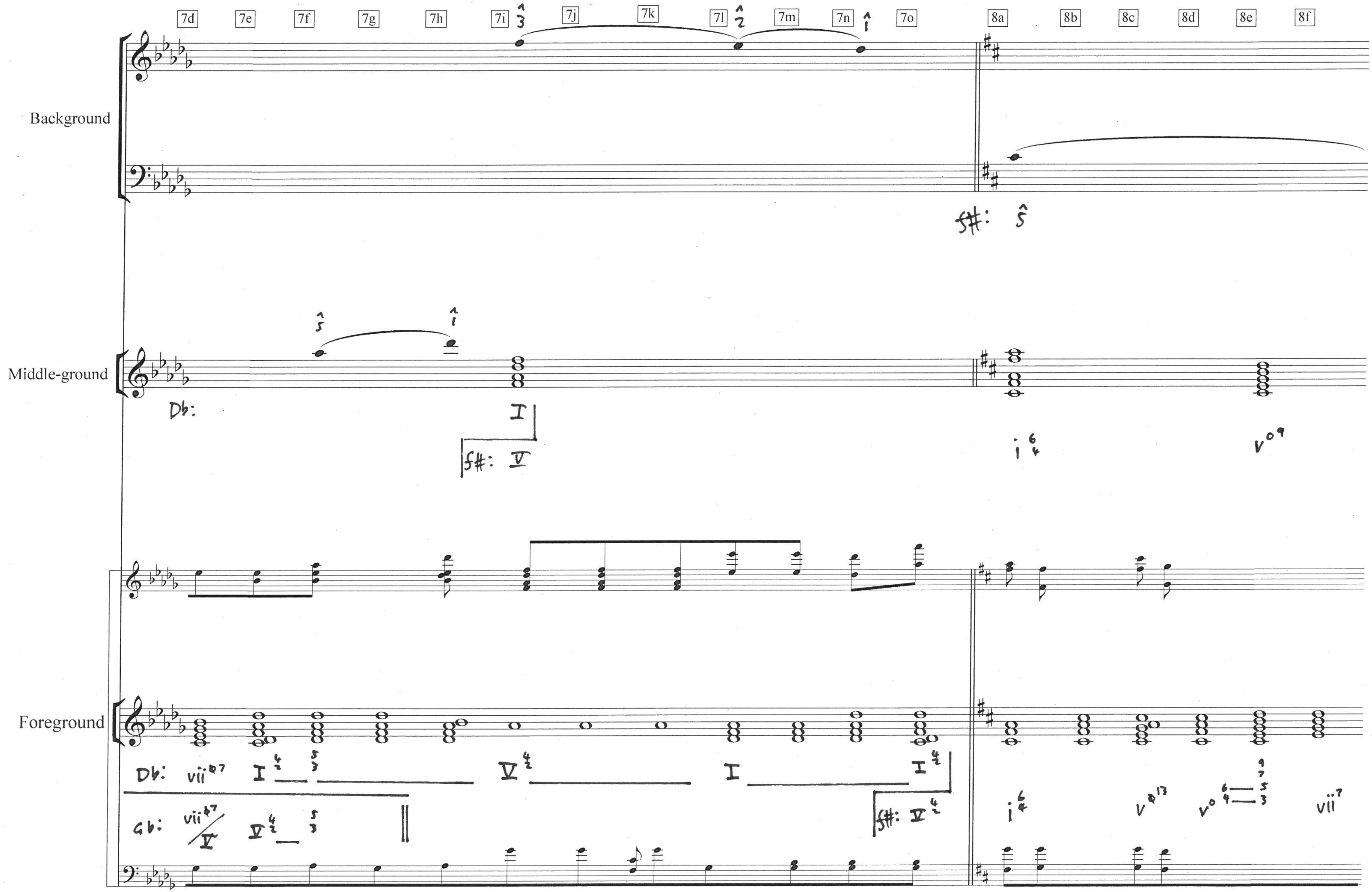
Db: I
Db: I
G: (V$^4_2$) iii$^4_3$ V$^6_5$
b: V^{o13} i iv$^6_4$ II^9 $\frac{5}{3}$ V^{b7} i^6 ^{5} bvii^7
Gb: V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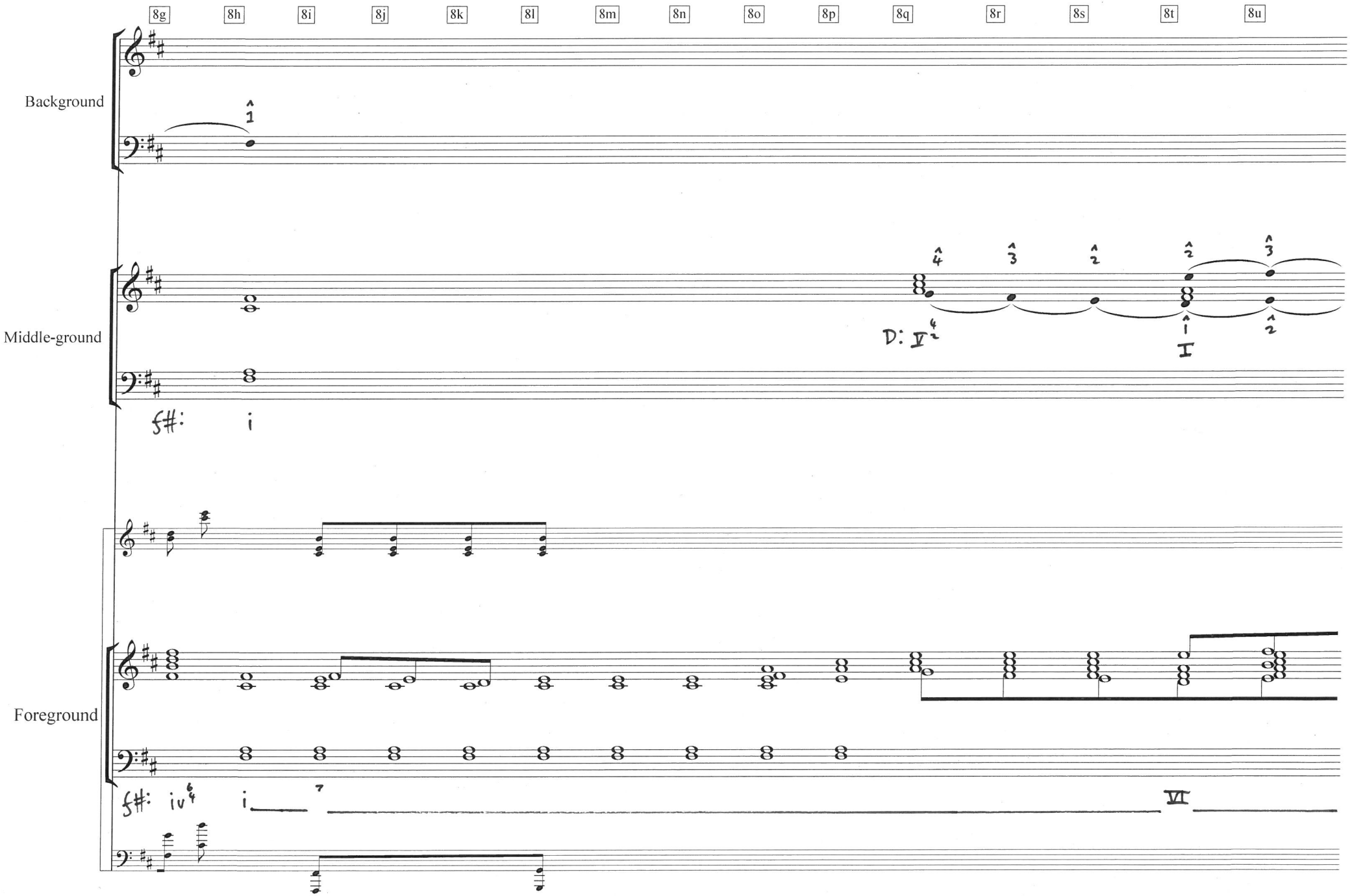
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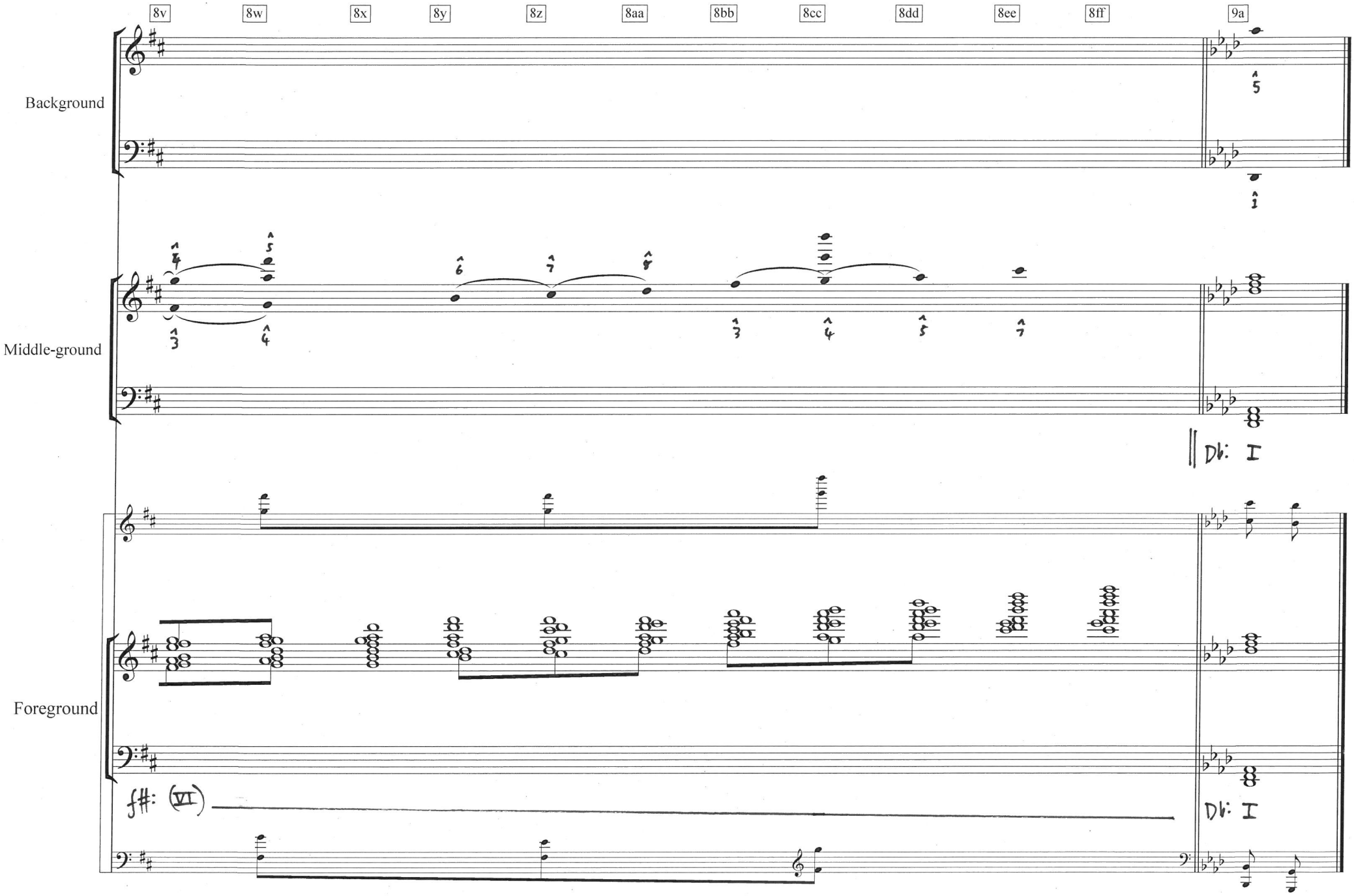
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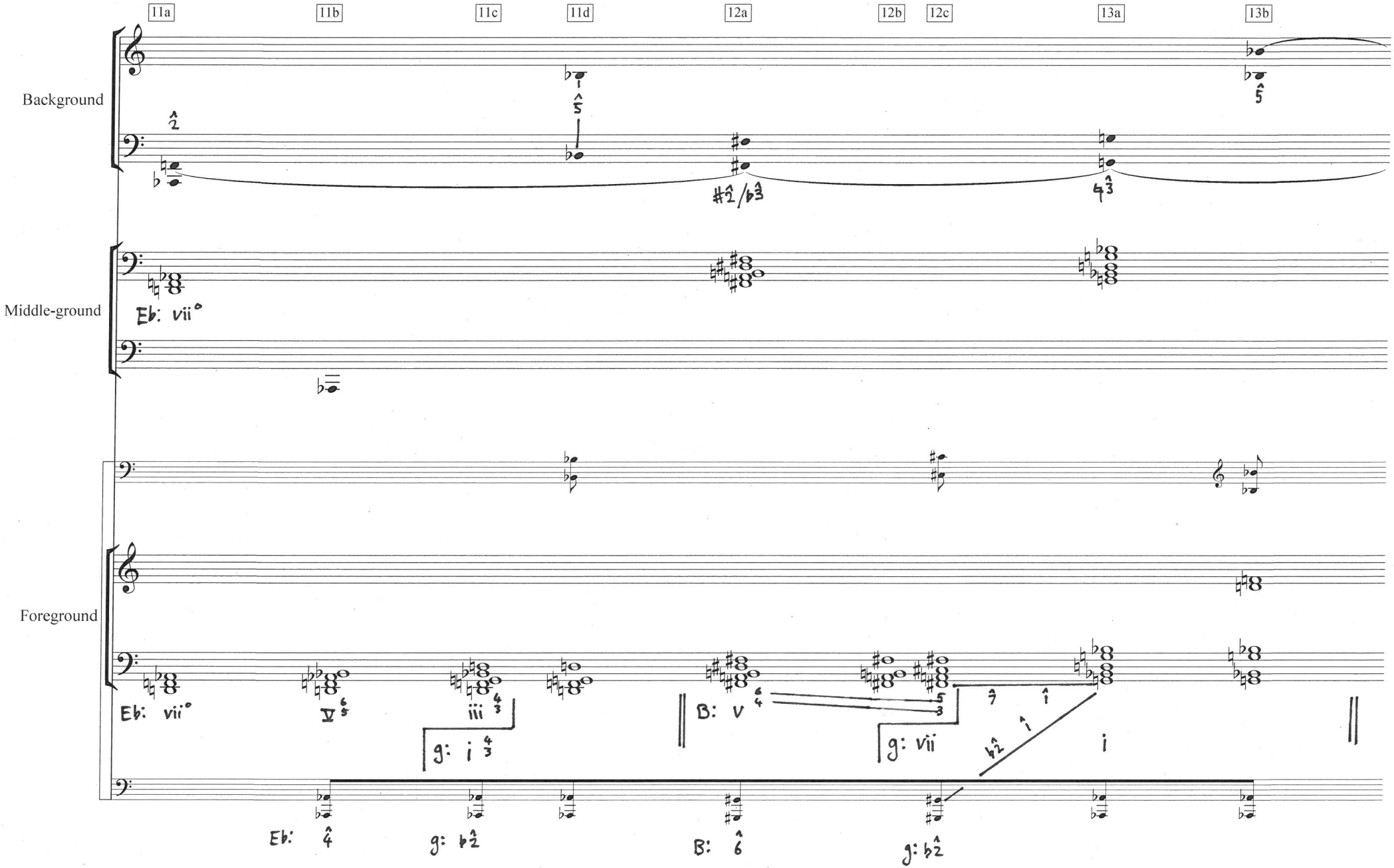
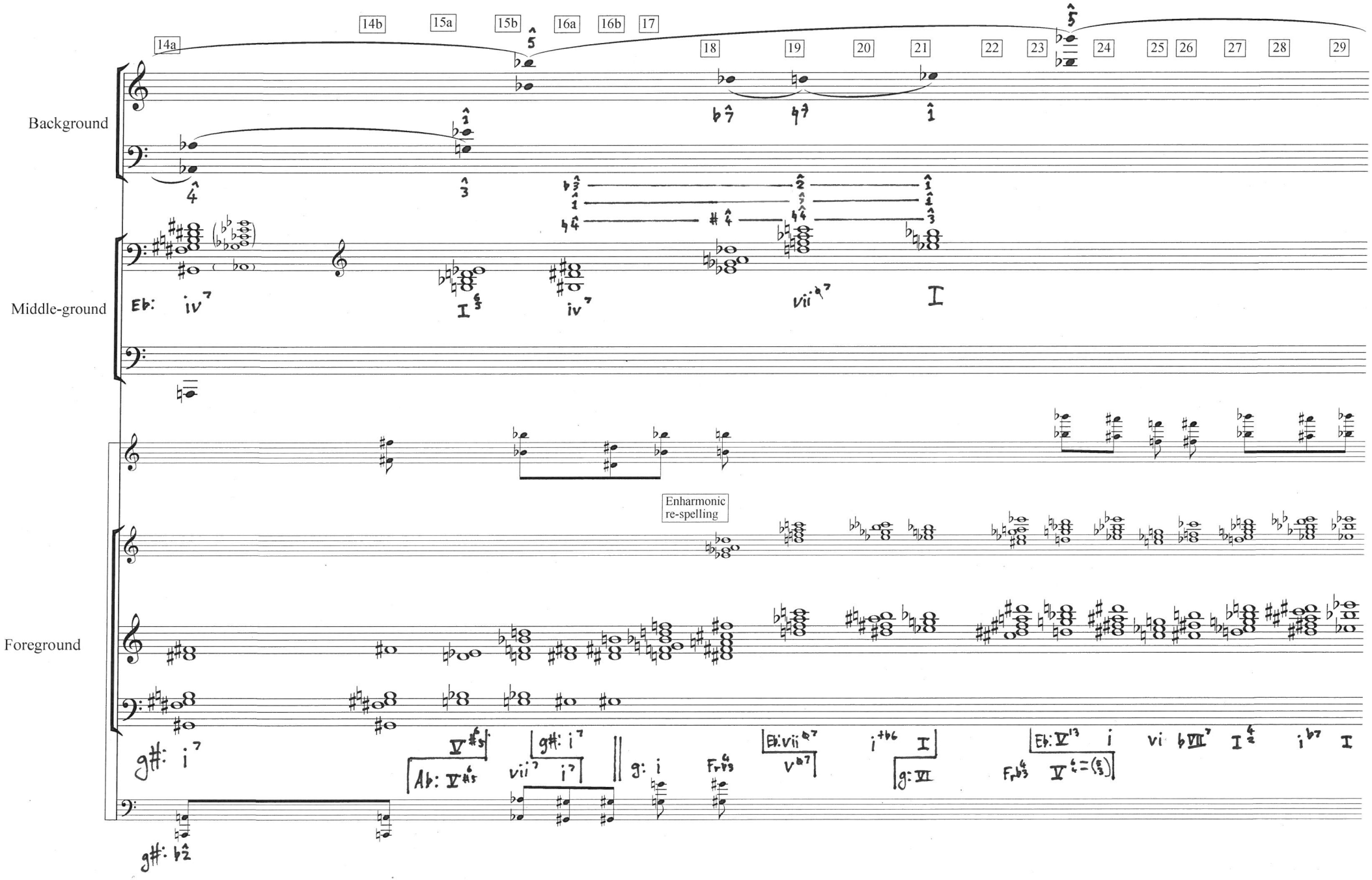
Appendix 3: Macro-level analysis of Section 3

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Eb: iv7
I6/5
iv7
vii°7
I
Enharmonic re-spelling
g#: i7
V#5/3
Ab: V#5
vii°7
i7
g#: i7
g: i
F: V6/3
Eb: vii°7
V°7
i+6
I
g: VI
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i♭7
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F: V6/5=(5/3)
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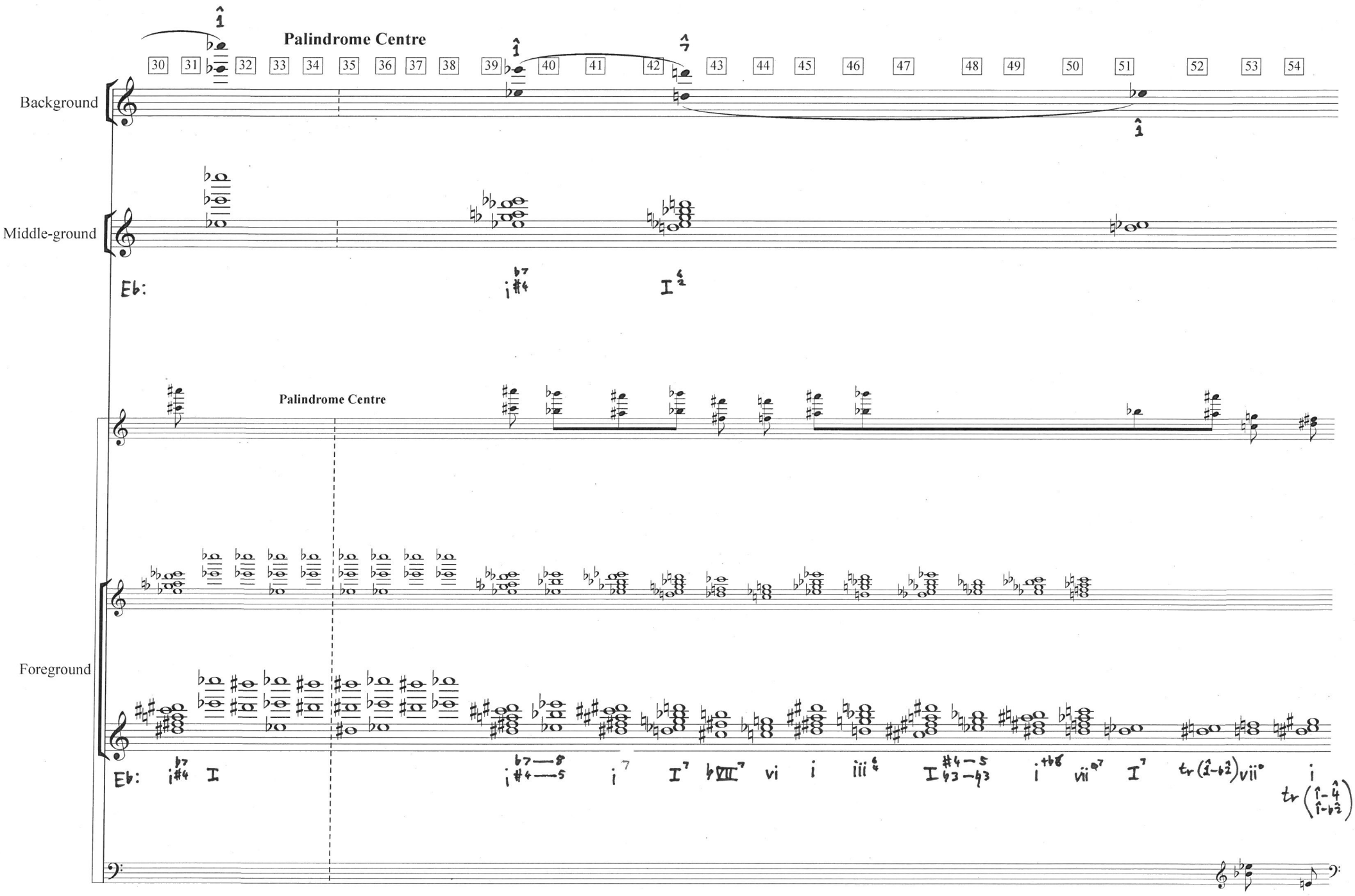
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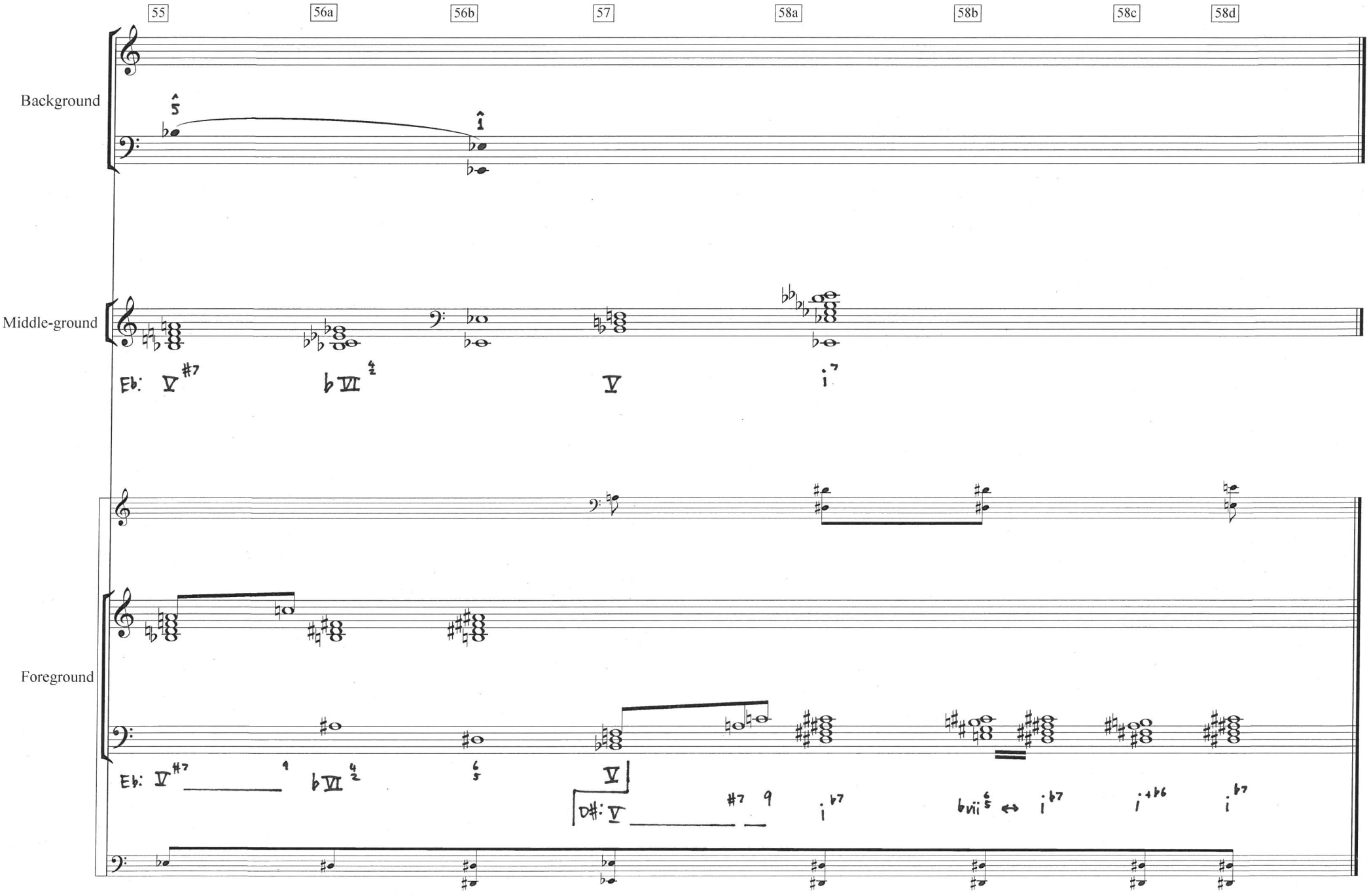
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