THE UNIVERSITY OF HULL

Constraint and creative decision making in the composition of concert works, film and video-game soundtracks

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by

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Abstract

This PhD research investigates the types, implications and origins of constraint within the contexts of various music composition projects. It then presents the practical value of this deeper understanding as a contemporary music composer.

To explore the topic of constraint, the doctorate contains a portfolio of original music compositions and a reflective commentary on those compositions. The music spans a wide range of purposes, including works for concert hall, film and videogame. This breadth, across 33 musical works for 17 different projects of both collaborative and independent types, facilitates the extension of our understanding of constraint and its role in the process of music-making. The commentary, focussing on each composition individually or in small groups, extrapolates how constraint emerges within different circumstances.

Analysing the music, in tandem with an account of their contextual backgrounds, demonstrates how different constraints influence music composition. The result of this research is that one can start to generalise the creative challenges a contemporary composer faces in the form of constraint. The research does this by proposing a series of labels: intrinsic, extrinsic, functional and aesthetic. These categories emerged through the creative practices of the portfolio, delineating and searching for constraint as a means of grounding creative decisions. The commentary and portfolio, taken together, will offer insights into the four proposed categories of constraint while explicating my compositional practice.

Introduction

> In art as in everything else, one can only build upon a resisting foundation: whatever constantly gives way to pressure, constantly renders movement impossible. My freedom thus consists in my moving about within the narrow frame that I have assigned myself for each one of my undertakings (Stravinsky, 1942:64-5).

This composition portfolio contains a selection of my works from 17 different projects spanning from August 2015 to May 2019. The projects also span forms of collaborative and independent media (such as film and game soundtracks) and concert work projects (solo to large ensemble). It is these mixtures of scale, approaches to and functions of writing music that is a defining characteristic of my doctoral portfolio.

In response to the portfolio's content, the accompanying commentary takes as its thesis *the role and impact of constraint on music composition*. Therefore, this commentary is a critical reflection on the contexts within which a composition is conceptualised and created, and shows how the creative challenge extends beyond the inherent constraints of writing and conceptualising music alone. It demonstrates how a composition is not only composed within a context but is a complex interplay between the composer and that context. This interplay invites, at times, ambiguity, happenstance and discovery but also, potentially, a grounding upon which a composer can consciously objectify and rationalise their creative decisions.

The importance of this practice and research is that it not only deepens our theoretical understanding, as composers, of the role of constraint in our work, but it provides a straightforward, practical approach to musical composition

for many kinds of projects. Reflecting on a large number of challenges and successes, it is possible to start postulating how and in what ways constraints contribute to those challenges and successes. For example, in my experience, there has almost always been a correlation between the balance and clarity of a project, a concept's purpose or artistic limitations, and the efficiency with which I have been able to compose. If the project or concept has clarity and provides a suitable balance between restriction and ambiguity, then I have found composition to be a smoother process. Therefore, I have begun to search for constraints inherent in a project or concept and consider how they might act as a framework for composition and to ground creative decisions. Furthermore, I have started to think about how these constraints relate to myself as an artist, and in what ways they can and might need extending to establish the creative boundaries and goals of a project. In other words, for me, an idea needs to be measurable if it is to be deemed good or bad. Constraints can provide the units and tools of measurement.

In pursuing this thesis, the commentary combines two approaches: (1) to identify and discuss the mechanics of my works, and (2) to highlight the contextual peculiarities and similarities of each project. Placing these in counterpoint, analysing portions of the compositions and reflecting on the reasoning for specific compositional decisions as a response to a creative problem or objective, these approaches coalesce and enrich the topic of constraint. Moreover, they serve to expand our understanding of it beyond its usefulness as a self-imposed creative device, or a tool in the composer’s toolbox, to also include how it occurs within the wider circumstances of each project.

The first three sections of the commentary focus on the three types of music in the portfolio: 1) concert hall works; 2) film soundtracks; and 3) video-game soundtracks. In these sections, I focus on recounting the specific contexts of each project and how these directly constrained and influenced compositional decisions. These three sections, to give them focus and fluidity, do not attempt to extract and analyse the contextual similarities and differences themselves.

The fourth section of the commentary focuses on the two Hullywood Scratch Orchestra projects: *Bowhead* (2016) and *Haunted Emotions (*2018, ongoing). Both of these projects used live musicians to record the soundtracks, which entailed a different production method to my other works that were for concert performance or MIDI. Moreover, each project experimented with different recording methodologies. For instance, *Bowhead* split the ensemble into two groups to record each group separately but in one room; *Haunted Emotions* used many groups, isolating each musician into isolation booths. Each of these had different ramifications for the composition process as the reliance on space and people constrained recording and rehearsal time. Therefore, the music needed to be playable, by student musicians, within the confines of the recording sessions, which impacted composition. This section analyses and evaluates these specific issues: how constraints in production can influence composition.

Finally, section five reflects on and cross-examines the previous parts of the commentary, discussing how I have come to think of constraint in my practice as a music composer now. In doing so, I posit a way in which we might label, categorise and better understand constraint and how it can be used more

deeply, to a composer's advantage, when composing in the future. In doing this, I propose four labels for defining types of constraint: intrinsic, extrinsic, functional and aesthetic. Intrinsic and extrinsic indicate where limitations emerge: projects impose intrinsic restrictions; composers (self-)impose extrinsic restrictions. Whereas, limitations that delineate the operational requirements of musical composition are *functional* constraints, while *aesthetic* conditions arise from stylistic and artistic qualities in the project and composer.

Synopsis of portfolio contents

On the following page I present a synopsis of the composition portfolio's contents. This offers general information regarding each project's start and end dates, presenting the varying periods of each project, which are salient to particular projects such as *Half Empty* (2016) and the time constraints it imposed on the composition process. It also includes data regarding the medium of each composition, emphasising the breadth and variety that characterises the portfolio. Lastly, the final column records the total durations of each piece and the aggregate length for all the projects combined.

#	Project/Composition	Start MM/YY	End MM/YY	Medium	Duration (mins)
1	***Rhapsody for Violin and Piano***	08/15	12/15	Concert	7
2	***Bach and the Sentry***	01/16	02/16	Concert	3
3	***Curiosities of the Mage's Sanctum***	(11/15)[1] 03/16	04/16	Short Film & Concert	3
4	***Exposure/Lake at the Foot of the Mountain***	(11/15) 04/16	04/16	Short Film & Concert	3
5	***Half Empty***	(11/15) 05/16	05/16	Short Film (animation) & Concert	6.5
6	***Bowhead/ The Icebreaker Cycle***	10/16	12/16	Short Film (animation) & Concert Hall	9
7	***In Memory***	(08/14) 01/17	05/17	Concert	13
8	***Six Sided Slime from Outer Space***	04/17	09/17	Video-game	10
9	***DecryptVR***	06/17	09/17	Video-game (VR)	13
10	***The Expendables***	11/17	11/17	Concert	3
11	***Haunted Emotions***	10/17	Ongoing[2] (06/18)	Video-game	15
12	***Robo-Basho***	10/17	Ongoing (11/17)	Video-game	2.5
13	***The Polar Express Rescore/ Christmas Rush***	12/17 11/18	12/17 11/18	Short Film & Concert	4
14	***Sputnik***	02/18	02/18	Short film	5
15	***Flailing Trees and Assailing Weeds***	03/18	03/18	Concert	3
16	***Bewere!***	10/18	11/18	Concert	4
17	***Fanfare and Lyric***	11/18	05/19	Concert	5
				Total:	109

[1] The start date brackets in this table for *Curiosities of the Mage's Sanctum*, *Exposure/Lake at the Foot of the Mountain* and *Half Empty* mark the beginning of the collaboration/project; whereas the second, unbracketed date marks the start of focussed work to a more defined, finalised composition. For example, beyond early correspondence, actual composition work on *Half Empty* was only a couple of days in length. *In Memory*'s bracketed date marks the approximate date at which I conceptualised the work. The unbracketed dates outline the period of composition for *In Memory*.

[2] As of 18/11/2019. (Same for *Robo-Basho*) The end date brackets for *Robo-Basho* and *Haunted Emotions* mark an approximate end of composition and production for the music included and discussed in this commentary and portfolio.

1. The Concert Works

This section of the commentary will focus on the concert works within the portfolio: *Rhapsody for Violin and Piano* (2015), *Bach and the Sentry* (2016), *In Memory* (2017), *The Expendables* (2017), *Flailing Trees and Assailing Weeds* (2017), *Bewere!* (2018) and *Fanfare and Lyric* (2019).

This section will deal with one of the defining challenges of concert composition: conceptualisation. While not unique to concert music it is this aspect that I find most challenging and exciting about this type of composition, as there is a need to create a work from apparently nothing; whereas, in the other kinds of composition in this commentary, the conceptual space is often outlined implicitly by the media or broader project considerations and collaboration. Typically, at least in the case of the compositions presented in this section, the process entailed the identification or creation of constraints, which I endeavoured to utilise as a means of reducing the inconceivable number of options a blank piece of paper presents. These constraints could have been brought about by the purpose and functions or, even, early conceptual aspects of the composition, which could have been at varying levels of depth and detail, offering boundaries or an initial bearing upon which to initiate composition. For example, aspects of the commission shaped *Rhapsody for Violin and Piano*, which happened to parallel a pre-existing concept for the work. I, therefore, imposed a design for the composition, as a means of limiting and guiding compositional decisions. The succeeding works, *Bach and the Sentry* and *In Memory* demonstrate a conscious aesthetic shift away from pre-design while also revealing the emergence of quotation as a compositional technique and means of informing

compositional decisions that permeate most of the portfolio in varying forms. Lastly, *Bewere!* and *Fanfare and Lyric* demonstrate ways in which periods of open, intuition-led composition, as informed by stimuli (such as video-game genre or on occasion, early concepts and functional constraints, such as the location and performance/production resources) are used to compose and develop ideas. Once these sources of inspiration appear to dry up, or there is a need to bring the compositions to a close for a deadline, the existing compositional materials were often evaluated and subjected to self-imposed constraints, such as the imposition of an overall design, and the curtailing (*Bewere!*) or expansion (*Fanfare and Lyric*) of thematic numbers and development. *Flailing Trees*, *The Expendables* and *Bewere!*, all demonstrate aesthetically defined works that were very stylised toward their extra-musical influences from video-game.

Deepening the interplay between conceptualisation, the composer, and the constraining factors of a project, another way in which to group these compositions is by the presence of a commissioning party, as this imposes functional considerations. *Rhapsody*, for example, was the only formal commission in this section. However, commissioned in a less formal sense, *Bach and the Sentry* and *Fanfare and Lyric* could also be added into this category. For instance, *Bach and the Sentry* was for a workshop opportunity, while I composed *Fanfare and Lyric* for my wedding ceremony. All of these commissions had specific purposes, linked to times, places and people. Therefore, to be successfully performed, the music needed to be appropriate for its purpose. Conversely, *In Memory*, *Flailing Trees*, *Bewere!* and *The Expendables* were independently initiated projects. In the case of

these works, the concept was extra-musical and formed the starting point for each composition. It was these extra-musical qualities that provided the conceptual basis for each work and a means by which I could rationalise and restrict the process of composition. These extra-musical qualities were then elaborated on, by the imposition of a specific ensemble. In the case of *In Memory* this was a solo piano and for *Bewere!* an orchestra. Gradually, the creation of material became a form of constraint in itself, as the composition and my, as the composer, broader aesthetic qualities entailed the concise development of a small number of ideas. The musical ideas, particularly for *In Memory*, encapsulated the initial concept of the work and became the primary means of intuitively rationalising composition, speeding up the writing process. Meanwhile, the material of *Flailing Trees*, *The Expendables* and *Bewere!* embodied each of their aesthetic groundings.

1.1 Rhapsody for Violin and Piano (2015)

Chronologically, this is the first work of the portfolio. It was commissioned by an experienced amateur duo (violin and piano) from Hull in the spring of 2015. The deadline was Christmas 2015 as one of the players was gifting it to the other, which gave the project a lifespan of around 5-6 months.

Beyond the instrumentation, the commission imposed few restrictions. However, there was a fortunate correlation between two composers, Béla Bartók and Olivier Messiaen, for whom they expressed a fondness and a concept I had for the work. The correlation between these composers was the use of palindromic and symmetrical devices. For example, Bartok deploys palindrome rhythms and a mirror-like, symmetrical 'pattern of fugal entrances' in his composition *Music for Strings Percussion and Celesta* (Sz. 106) (Bernard, 1986:188). Reflection and symmetry also occur in other works such as *Mikrokosmos No. 141* (Sz. 107) and *Concerto No. 2 for Piano and Orchestra* (Sz. 95) (ibid.: 191). Moreover, Messiaen documents his use of these techniques, such as his use of non-retrogradable rhythms in *Quatuor pour la fin du Temps* (1941), and modes of limited transposition, some of which are symmetrical scale structures and which 'realize in the vertical direction (transposition) what non-retrogradable rhythms realize in the horizontal direction (retrogradation)' (Messiaen, 1944:21).

In the case of *Rhapsody*, I considered the reference to these composers and this shared compositional device enough justification to pursue a concept that I had had for a while. This particular concept was inspired by Michael Tippett's

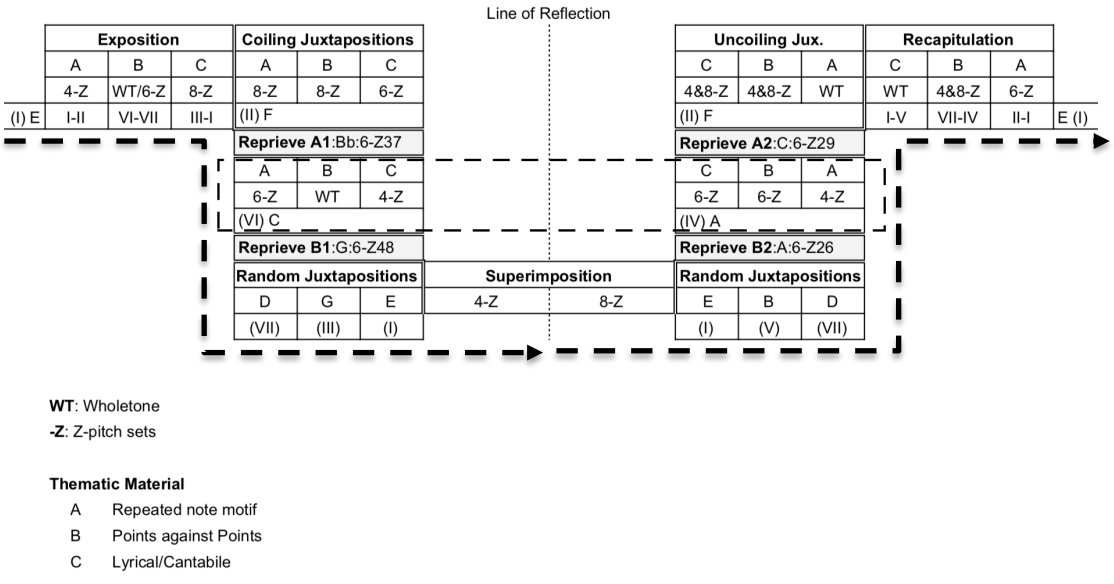
Piano Sonata No. 2 (1962),[3] and entailed the use of symmetry and subtle asymmetries that were embedded, structurally, in the design of the work and via the use of non-retrogradeable rhythms and phrases. This concept was to capture, in composition, the coiling and uncoiling, or straightening, of a rod. Only, rather than returning fully to its previously uncoiled state. The rod can only be straightened out so far as to resemble a stretched spring or SlinkyTM. In his *Piano Sonata No. 2*, Tippett presents a 'circular movement' (Kemp, 1984:376) containing multiple movements within it. 'The 'first movement' is a gradual *accelerando* from *lento* to *allegro*' (ibid.:377) that increases the rate at which ideas are juxtaposed. The increased rate of juxtaposition creates tension as the repetition becomes jarring and frenetic, generating the expectation of a musical climax that could result in the superimposition of some, if not all, of the musical material. Kemp goes so far as to suggest that 'Tippett would doubtless have superimposed rather than juxtaposed his material' (ibid.:377) if not for 'the limitations of the piano' (ibid.:379) and a single player. The distinction here is that I wanted my work to structurally cycle a concise number of themes, in this case three, to a climax, where all the ideas are briefly presented simultaneously, and then have the composition reverse the process, imperfectly, after this climactic point.

Figure 1.1.1 is a design I made in the early stages of composition, to achieve this concept. It is here that I articulated the large-scale structural symmetry, represented by the 'line of reflection', facilitating the concept of coiling and (imperfect) uncoiling. One way in which I achieved the imperfection/partial symmetry was to create three different themes with aspecific qualities. Instead

[3] I have since become aware that Michael Tippett's *Piano Sonata No. 3* (1972/3) uses an extended palindrome. I was not aware of this at the time of composing *Rhapsody*.

of giving each theme a specific musical quality, such as a particular, reoccurring rhythm or interval, each of them is distinguished by a broader sense of character. Doing this meant they could be adapted to fit each of the prescribed harmonic structures. The three themes [A, B and C] are given as a legend in figure 1.1.1 ('Thematic Material'), which then corresponds to their distribution through the work. The themes are defined as 'repeated note motif', 'points against points' and 'lyrical/cantabile'. 'Repeated notes' is simply the iteration of the same note several times before or partway through a section; 'points against points' is the counterpoint of, usually, two parts, typically in traditional 1st species (counterpoint); and 'lyrical/cantabile' is simply the use of longer, regular rhythmic durations. Characterising the themes in this way allowed me to recast them on to different pitch set structures, across sections and the line of reflection, without them losing their identity. For example, the dashed box annotation on figure 1.1.1 highlights the recasting of themes symmetrically across the line of reflection while the harmony changes, representing the imperfect uncoiling.

Figure 1.1.1 pre-compositional design, *Rhapsdoy for Violin and Piano*



WT: Wholetone
-Z: Z-pitch sets

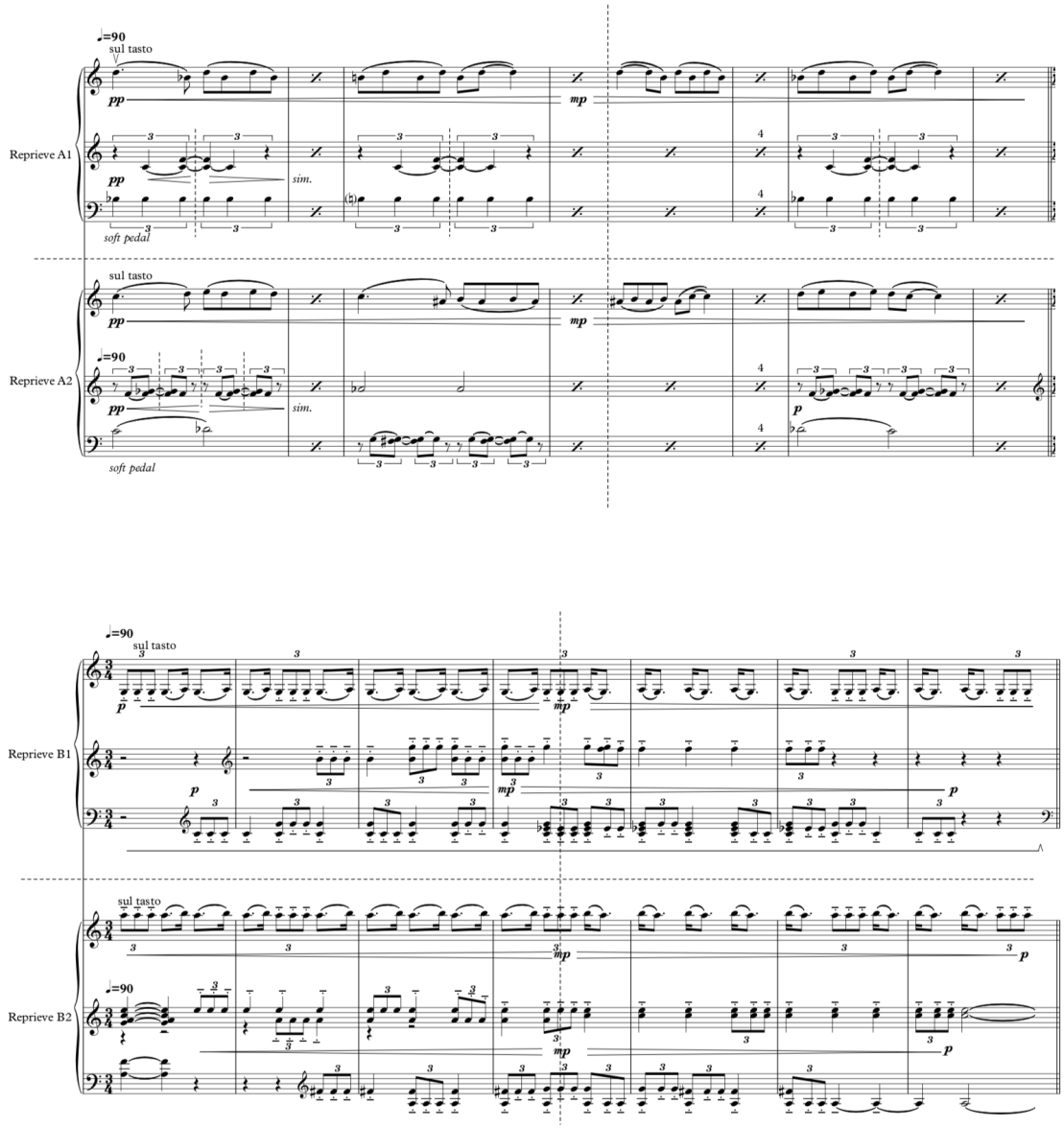
Thematic Material

A	Repeated note motif
B	Points against Points
C	Lyrical/Cantabile

Further emphasising this structural design, the imposition of tonal centres is achieved through recursion. This means that the emphasis on certain tonal areas occurs in different levels of the work. For example, the two sets of Roman numerals in the “exposition” (I-II-VI-VII-III-I) and “recapitulation” (I-V-VII-IV-II-I) are what determine smaller and medium scale harmonic decisions within the two halves of the work. In figure 1.1.1, the bracketed Roman numerals and an accompanying letter, which denotes the emphasised pitch centre, demonstrate this. In theory, the pitch sets are constructed and deployed so as to develop pitch-centricity, emphasising such a centre through recurrence of a particular pitch.

In the work itself, the symmetry is most easily extracted via the “reprieve” sections (demonstrated in figure 1.1.2). Here one can see the line of reflection from figure 1.1.1, represented by the horizontal dashed line. The vertical dashed lines show symmetry within each section and within some phrases. Some of the reflections are, again, not perfect, paralleling the work’s concept. It is here that one can also see the imposition of tonal centres at their most extreme, as the sections are harmonically more static. For example, in ‘Reprieve B1’ the violin imposes harmony in the form of a pedal on its open G-string. It does the same in ‘B2’ but in the form of an inverted-pedal on A (later reinforced by bass-pedal iterations in the piano part).

Figure 1.1.2 “Reprieve” section and cross-section symmetries



1.2 *Bach and the Sentry* (2016)[4]

Bach and the Sentry concert work was initiated by and completed for a composition workshop, at the University of Hull, for the contemporary music specialists, Trio Atem (mezzo-soprano, flute and cello). The group regularly perform and commission new works, programming those that experiment with non-standard notation or look to extend standard notation in novel ways. In combination with the text 'Bach and the Sentry', a World War 1 poem by Ivor Gurney (1916), the workshop presented an opportunity to revisit previously used techniques such as 'aleatory counterpoint' (Whittall, 1999:287-8), as deployed by Witold Lutosławski in a number of his works. Lutosławski is a composer whom I admire and I have studied, intermittently, his work for the past four years. I also revisit the use of quotation in this work.

The text itself offered a means of rationalising the use of quotation due to its subject matter and the context of its authorship. Ivor Gurney, a 'musician-turned-soldier' (Connie, 2015), recounts an experience of sentry duty where, what Connie terms, 'remembered notes' (ibid.) or Gurney calls the 'dearest Prelude' anaesthetises the tension and 'boredom of sentry duty' (ibid.). However, Gurney worries, in the second stanza, whether these effects will be reversed after the war, tarnishing the music he loves: 'When I return…and play that Prelude…Shall I feel as I felt, a sentry hardly walking, with a dull sense of No Man's Land again?'. The recurring textual references, including the title of

[4] In 2020 I recorded *Bach and the Sentry* during the Covid-19 UK national lockdown. I rearranged the work, replacing the flute for violin. In doing this, remotely multitracking each part, I found that I preferred the final section when it flows more and, as a result, I edited the music to do this. I have placed different versions of the score into the portfolio, along with the recording.

the work, with its specific reference to Bach, made the use of musical quotation feel justified.

Considering the text, title, author, and the makeup of Trio Atem, I decided to use the Prelude of Johann Sebastien Bach's *Cello Suite no. 1 in G* (BWV 1007; figure 1.2.1). A well-known composition, I wanted the quotation to be obvious, despite focussing on little more than the first portion of the arpeggiated figuration. Like the melodic treatment of *Rhapsody*, the quotation of the Bach Prelude undergoes permutations that were constrained and/or informed by the pitch-sets used in certain sections of the work. Table 1.2.1 demonstrates clear examples of the quotation, where its identity is, in relation to the source material, clearer. Table 1.2.2 demonstrates fragmented and altered versions of the motif.

Figure 1.2.1 extract from *Cello Suite No. 1* (BWV 1007, bar 1-4)

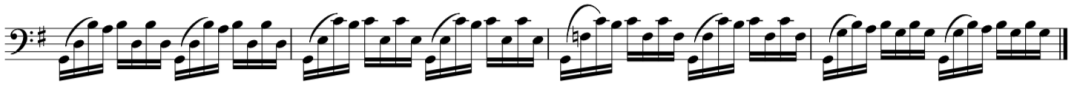


Table 1.2.1 quotations from *Cello Suite No. 1* (BWV 1007)

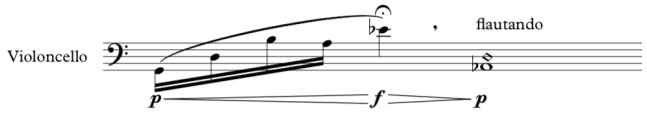
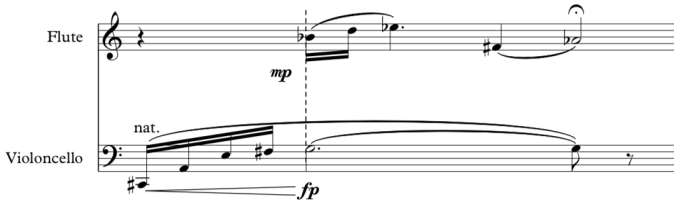
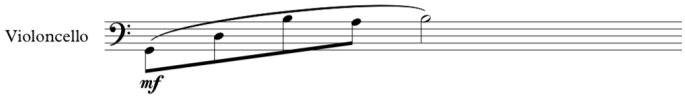
Location (Rehearsal Mark)	**Example**
A (very opening) (also at **D** just before **E**)	
C	
G (near end)	

Table 1.2.2 see p.18

Bach and the Sentry exhibits a concerted effort to avoid pre-design and rigorous constraint, which is evidenced by the consideration of imposing a design during early sketches of the work. figure 1.2.3 presents this sketch of the work. On the left margin of this figure I write “2nd section process = 6-z50 + 6-z26 instruments take up the complement of voice”.5 My intention, therefore, was to use the subtle differences of Z-set relationships, rationalised structurally through the distribution of complements between parts, to provide concision of harmonic content within the section, but also to provide some distinction and variety between the voice and instrumental material.

5 On the sketch I write 6-z26, when in fact the correct complement is 6-z29 and is the set I use in the work.

figure 1.2.4 demonstrates this use of z-sets in action as one can see the use of z-related sets 6-z50, in the voice, and 6-z29, in the instruments.

Table 1.2.2 altered, fragmented quotations from *Cello Suite No. 1* (BWV 1007)

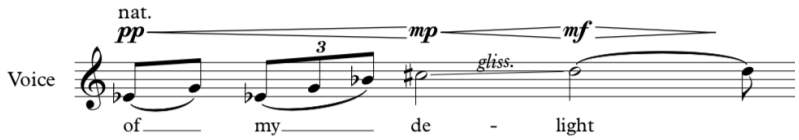
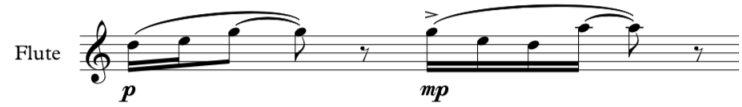
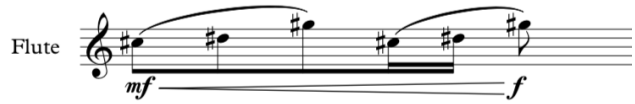
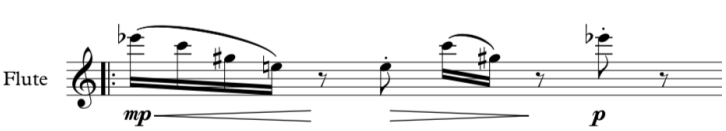
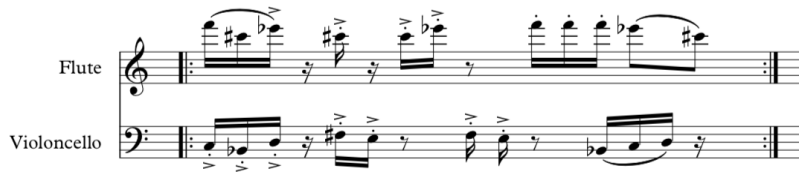
Location (Rehearsal Mark)	**Example**
B just before **C**	
Middle of **C**	
D	
D just before **E**	
E just before **F**	

Figure 1.2.3 early sketch manuscript (*Bach and the Sentry*)

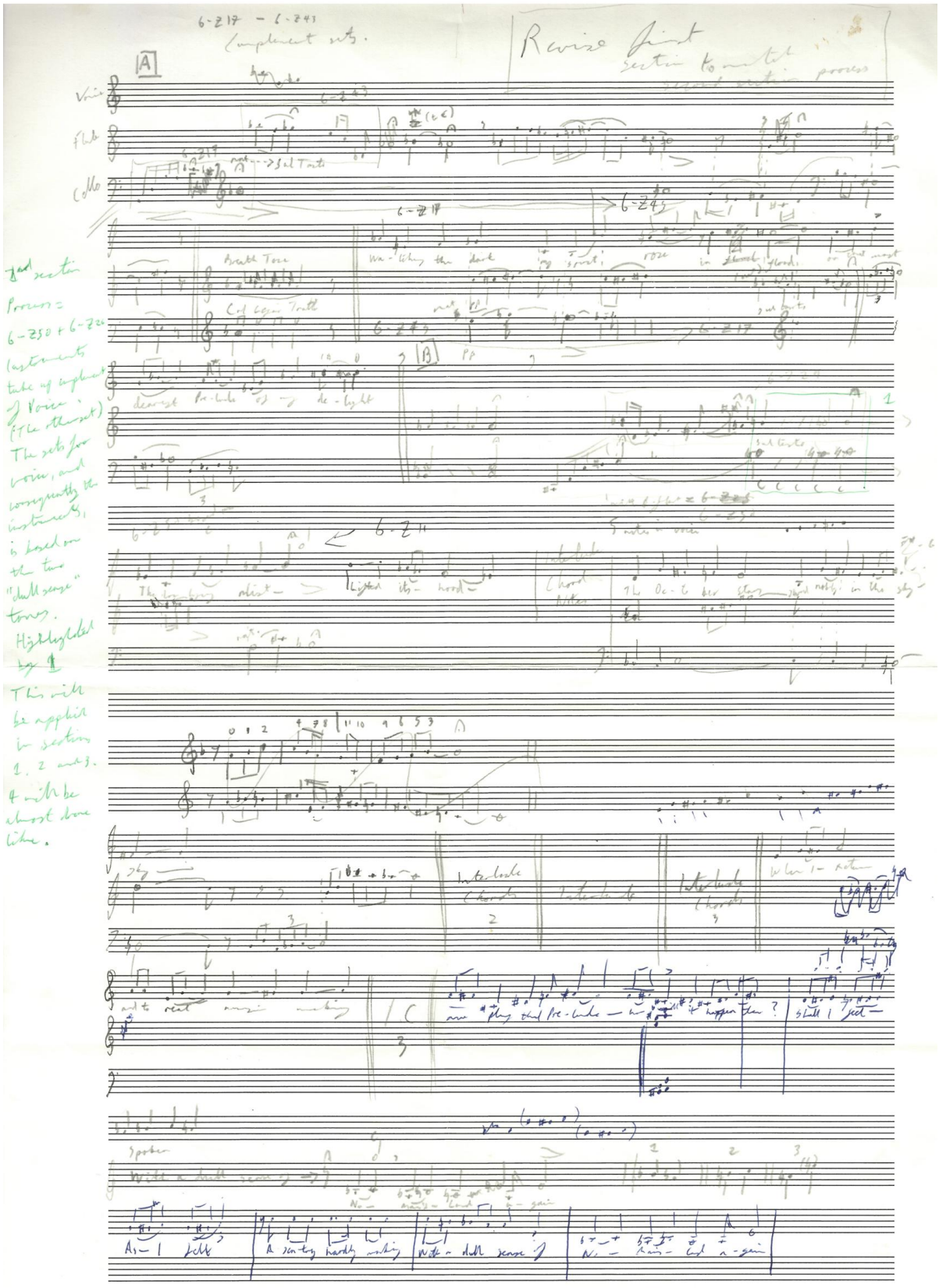
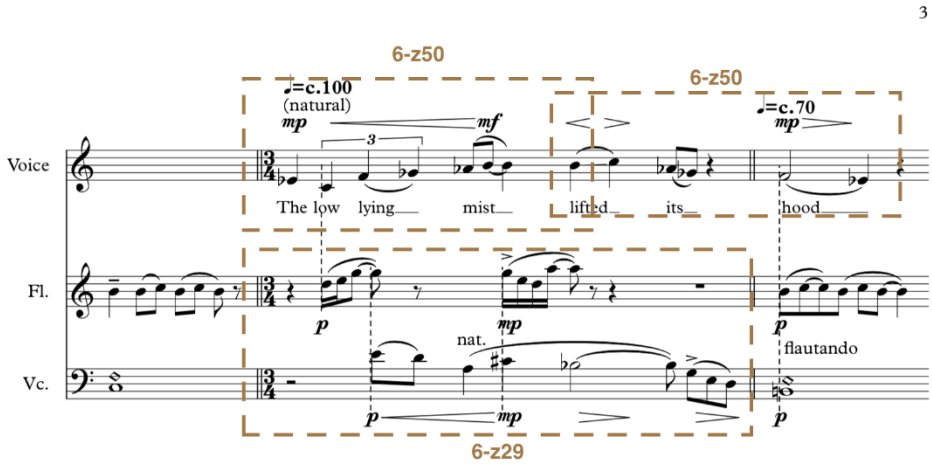
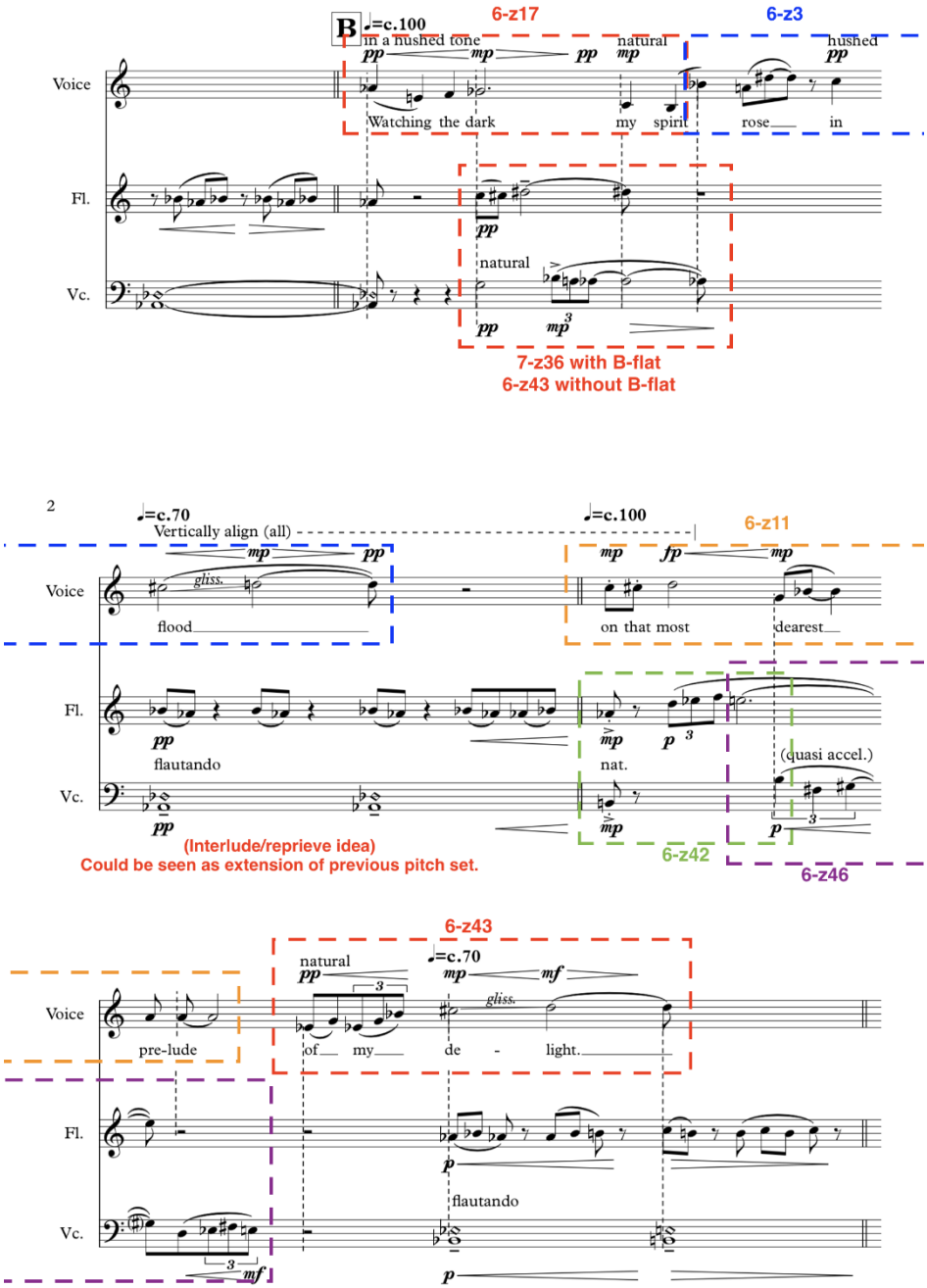


Figure 1.2.4 second section process ('The low lying mist…', *Bach and the Sentry*)



This use of harmony is interesting, in contrast to *Rhapsody*, which also uses pitch sets, as it demonstrates a design that emanates from existing sketches. This approach to composition is different and more indicative of my future process: intuitively generating material and then deriving or imposing design. Here it emerges intuitively, although there is the consideration of extending its imposition. At the top of figure 1.2.3, I write "revise first section to match second section process". However, I do not revise the material of section 1 to match this process (see figure 1.2.5), favouring the freer use of pitch sets and, thus, freer composition, as well as a more organic, and thus ambiguous design.

Figure 1.2.5 first section non-process (rehearsal mark B, *Bach and the Sentry*)



1.3 *In Memory* (2017)

In Memory is a composition that I undertook as an independent project. It was conceptualised in 2014 but was not composed until 2017. Conceptually the work was inspired by visits, over several years, to my grandfather who was suffering from Alzheimer's. Using source material I wanted to compose a work that encapsulated the neurological deterioration inflicted by the disease, based on my own reflections of these intermittent visits.

The decision to use a pre-existing work as a means of communicating the underlying concept of deterioration, in this instance Wolfgang Amadeus Mozart's *Piano Sonata no. 16, in C-major* (K. 545), was justified in a pair of different but combined ways.[6] The first of these was that the work needed to communicate a perceptible form of change beyond that of its own linear unfolding and development. Secondly, I had found that listening to works such as Andre Ristic's *Variations psychogéographiques sur «Tannhaüser»* (2005), Luciano Berio's *Rendering:per orchestra* (1989/90) and Frederic Rzewski's *The People United Will Never Be Defeated!* (1975), had made me perceive a pair of shifting planes as the new composition moved away and back toward their respective pieces of materials.

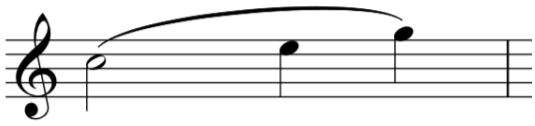
From a compositional perspective, it is this perceived, controllable distance, a pair of moving planes, between *K.545* and *In Memory* that acted as an initial stimulus for composition and the justification for certain compositional decisions. For example, although the tempi are much slower throughout *In Memory*, meaning the durational values of the motifs and fragments taken

[6] The work does, particularly towards its end, use quotations of other material. These are identified by annotations in figure 1.3.5

from K. 545 are slightly obscured, the opening of *In Memory* closely tracks the original source material. This can be seen in the fragments of the right-hand melody (figure 1.3.1a-b), Alberti bass (figure 1.3.2a-b) and then the scale fragments (figure 1.3.3a-b). The straightforward fragmentation that characterises the musical borrowing here acts as a starting point from which the compositional rationale could be expanded and refined, propelling the composition's development with growing concision, moving the compositional process to one that was more balanced between the seemingly-intuitive and rationalised decisions.

Figure 1.3.1 the opening melodies in *In Memory* and *Piano Sonata in C-major* (K.545)

a) K.545, bar 1



b) In Memory, opening (before rehearsal mark A)

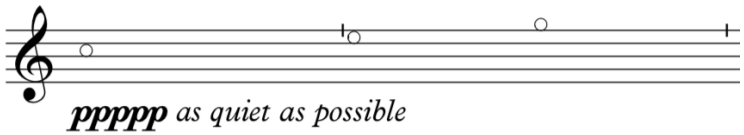
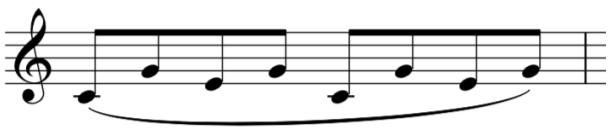


Figure 1.3.2 the use of Alberti bass in *In Memory* and *Piano Sonata in C-major* (K.545)

a) K.545, bar 1



b) In Memory, opening (before rehearsal mark A)

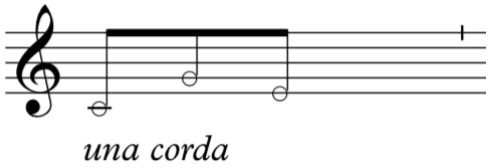
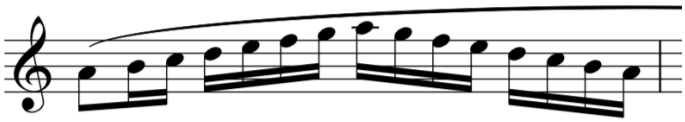
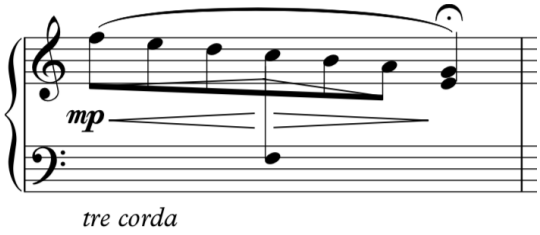


Figure 1.3.3 the use of scales in *In Memory* and *Piano Sonata in C-major* (K.545)

a) K.545, bar 5



b) In Memory, (rehearsal mark A)



As the composition began to progress the thematic units were severed from the source material and defined in their own right. This increased understanding of the materials at play provided me with a more objectified means of making compositional decisions, a form of rationale. *In Memory* initially traced the original Mozart sonata but now possessed thematic units that were able to take on their own developmental paths. This led to the compositional process, at times, being distillable to a series of simple questions such as "what is the source material doing here?"; "should I use the relevant thematic material of *In Memory*?" and "how detached and/or distant from the source should it be?".

The thematic material was defined similarly to *Rhapsody*. Not intended to communicate or carry meaning beyond that of the conceptual boundaries of the work itself, the themes are similarly characterised by multiple, less specific qualities, the way they are deployed compositionally and how they are defined by broader qualities as opposed to a single specific trait. For example, the core three themes can be distilled as follows:

1. 'octave and/or displacement', which originates from a combination of K.545 opening with an octave between the two hands and the displacement of ideas that occurs between the hands later in the work (figure 1.3.4a-b).

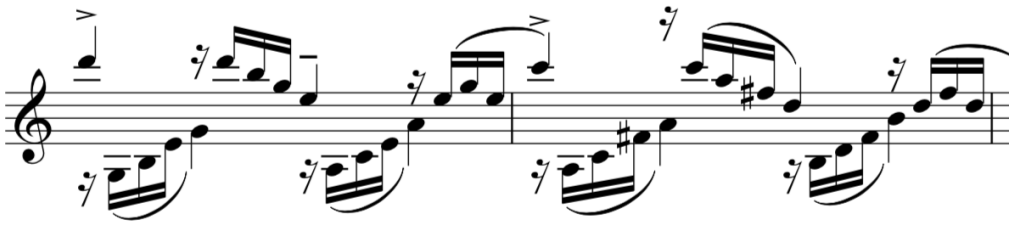
2. 'descending scale' which is grounded by the frequent use of scalic structures within K. 545 (figure 1.3.3).

3. ‘arpeggio and broken chord structure’, which I actually break down into forms 1 and 2: form 1 consisting of the arpeggio structure that is grounded in the opening of the 1st subject of K. 545 (figure 1.3.1a) and form 2 consisting of the broken chord structure such as the Alberti bass (figure 1.3.2a).

It was the construction of these themes compositionally and this distillation of them in terms of my understanding of them as the composer that enabled me to rationalise their deployment more objectively via the questions highlighted in the preceding paragraph.

Figure 1.3.4 displacement and octave transposition of material within *Piano Sonata in C-Major* (K. 545)

a) bar 18-19



b) bar 26-27

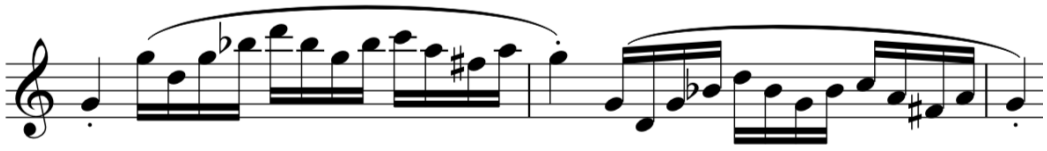
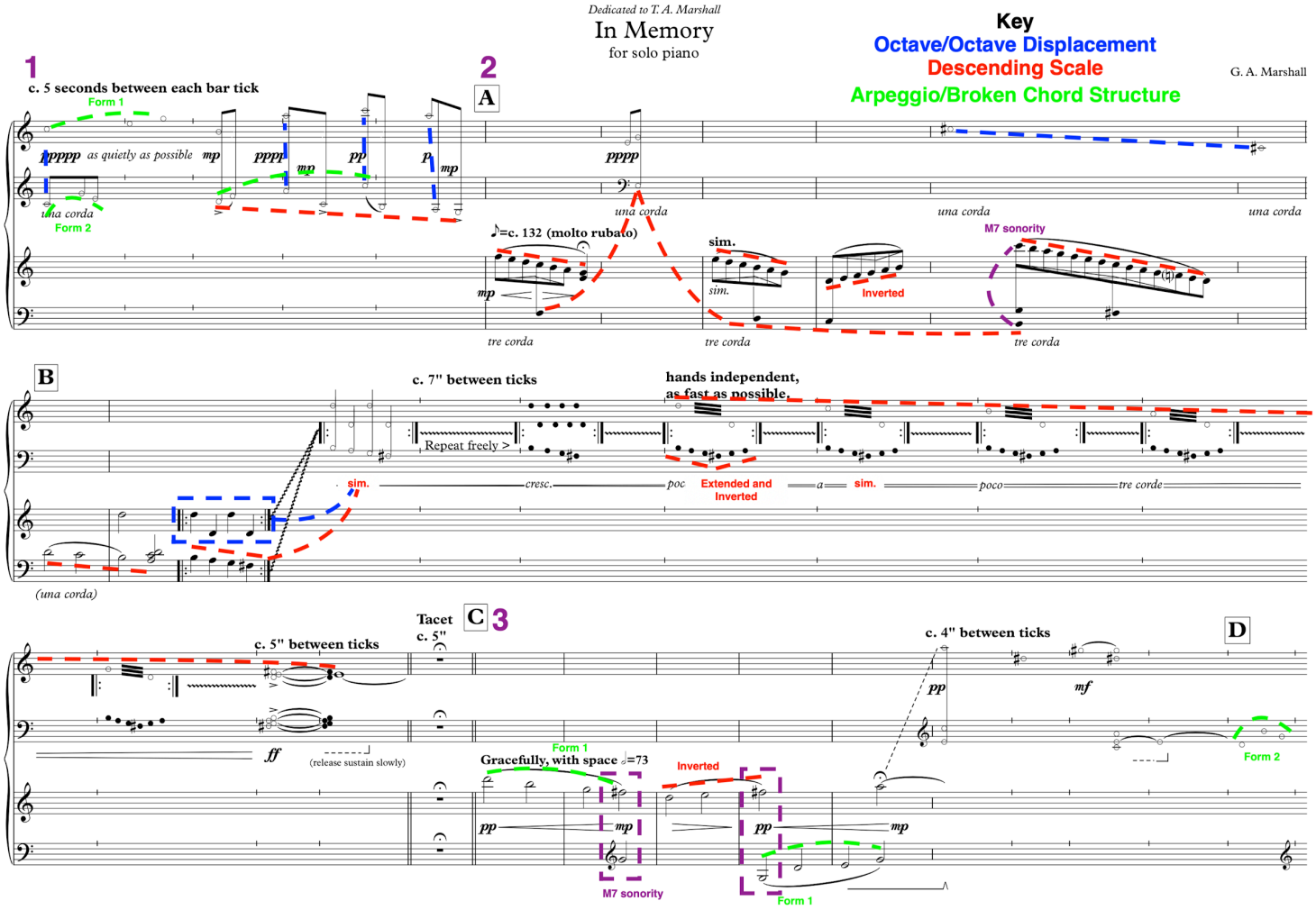
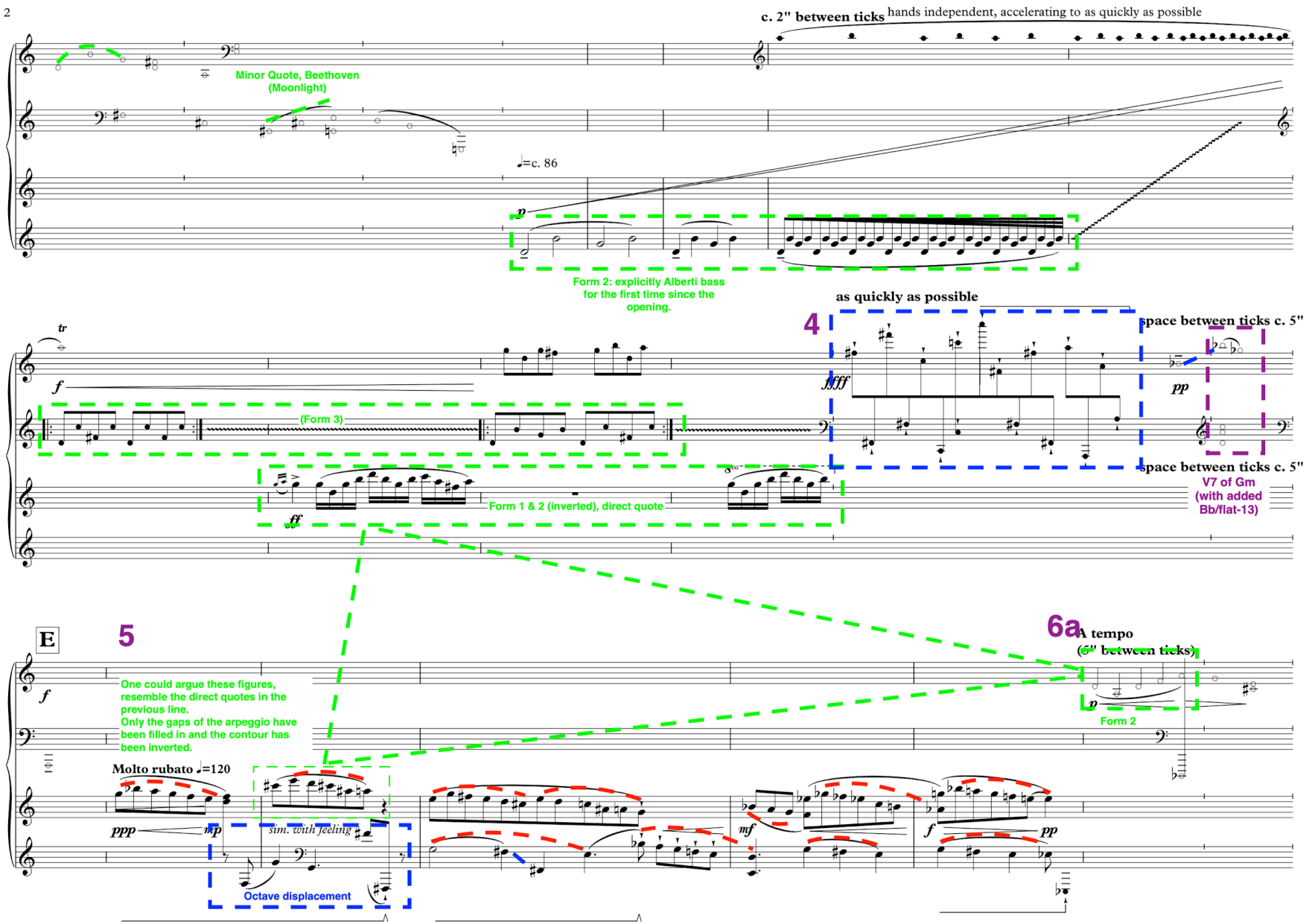


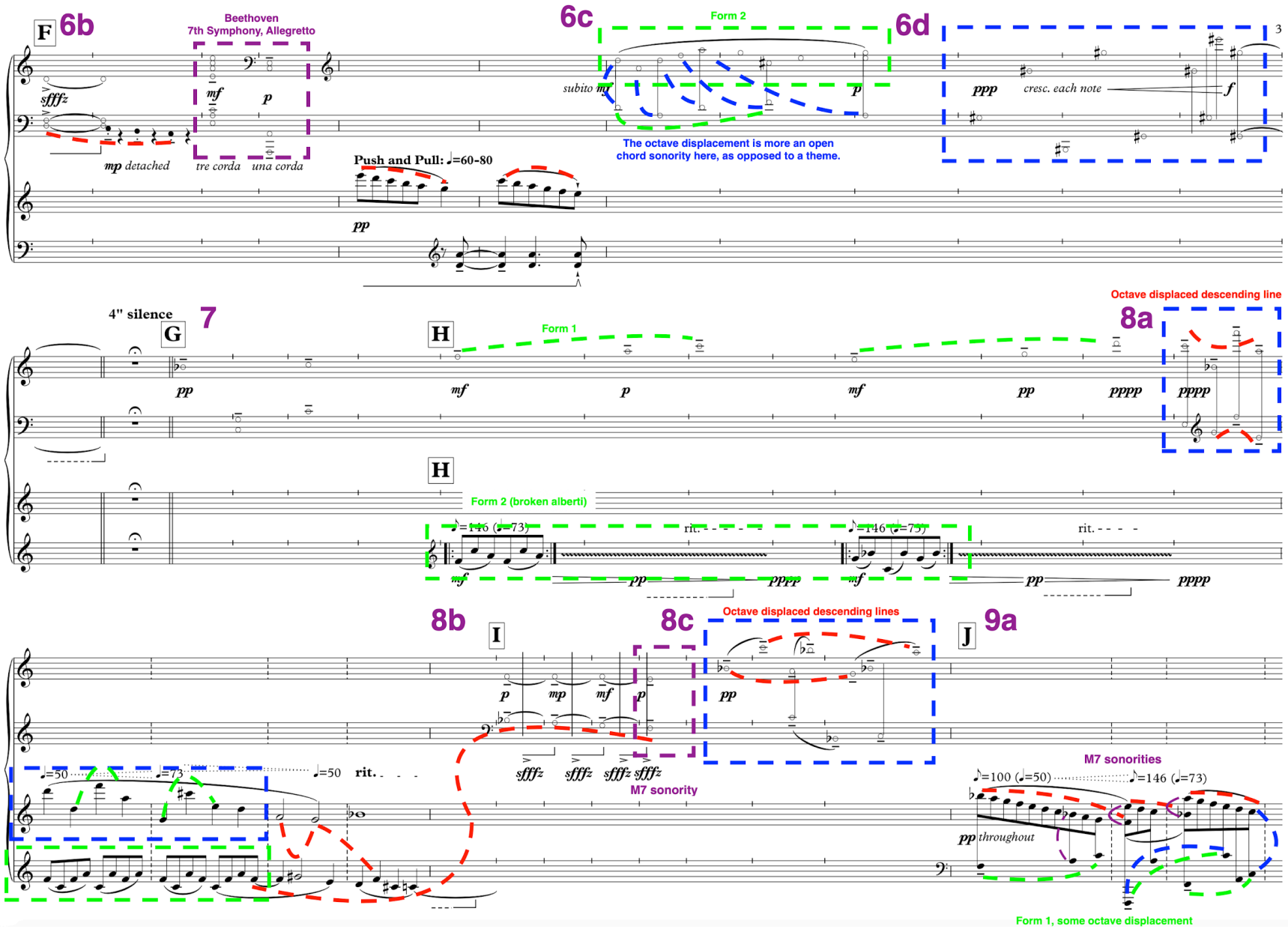
Figure 1.3.5 presents a colour coded annotation of *In Memory* demonstrating the concise use of the thematic material that was a result of this approach to composition. A fundamental form of development, which is a consistent process in many of my works, is juxtaposition and superimposition. However, the nature of *In Memory*'s themes, being more broadly characterised, made it possible for the ideas to be not only juxtaposed and superimposed in a more traditional sense, but also to be merged in a form of superposition; for example, the use of displacement is used multiple times in connection with the scale and arpeggio melodic ideas. 8a demonstrates a merging of both displacement-scale and displacement-arpeggio, where the melodic ideas are altered so that what ordinarily might have been a descending scale in step motion (or a skipping arpeggiated ascent) is now a descending scale that is characterised by leaps between two, or more, different octaves.

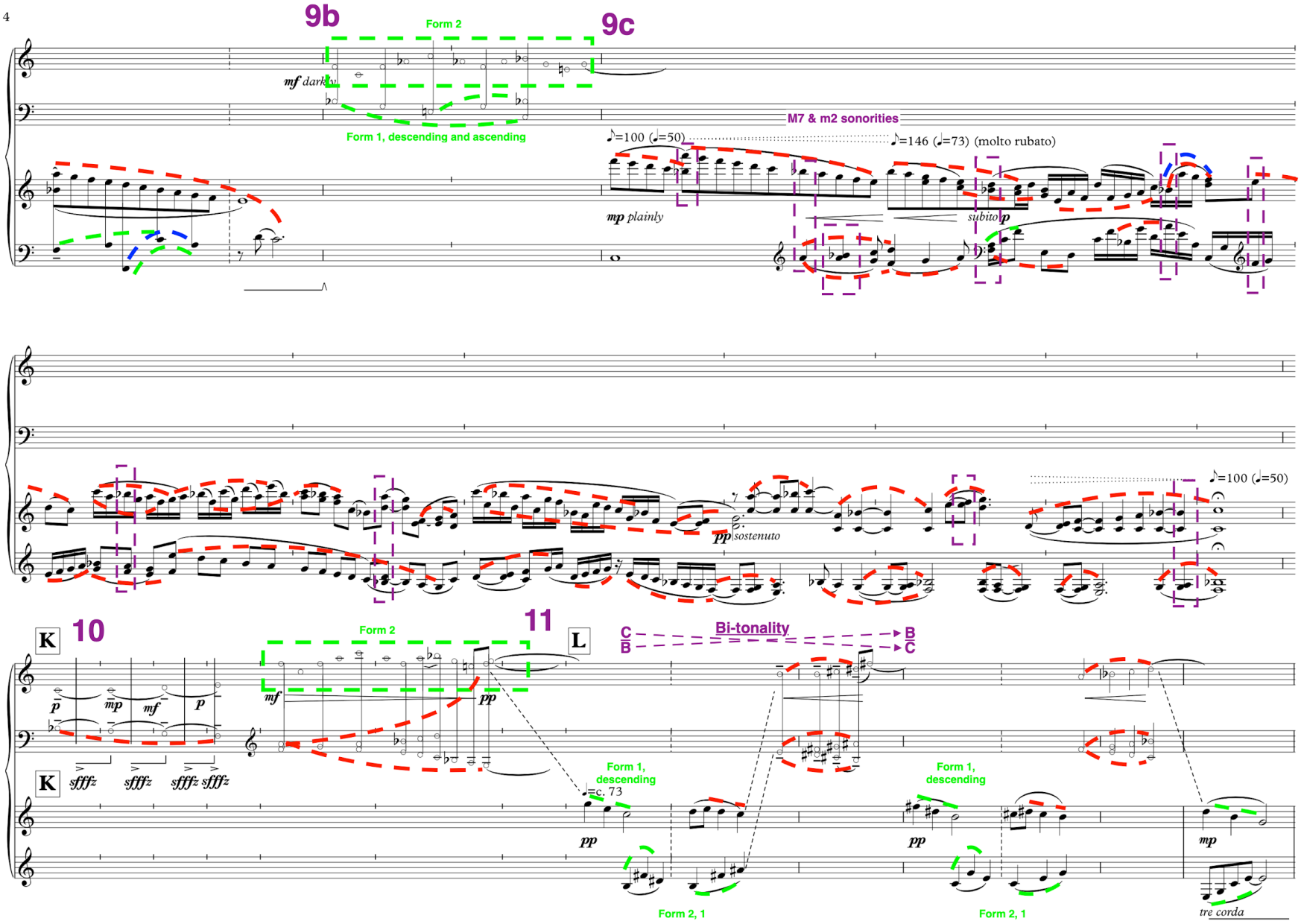
Figure 1.3.5 annotated score (*In Memory*)[7]

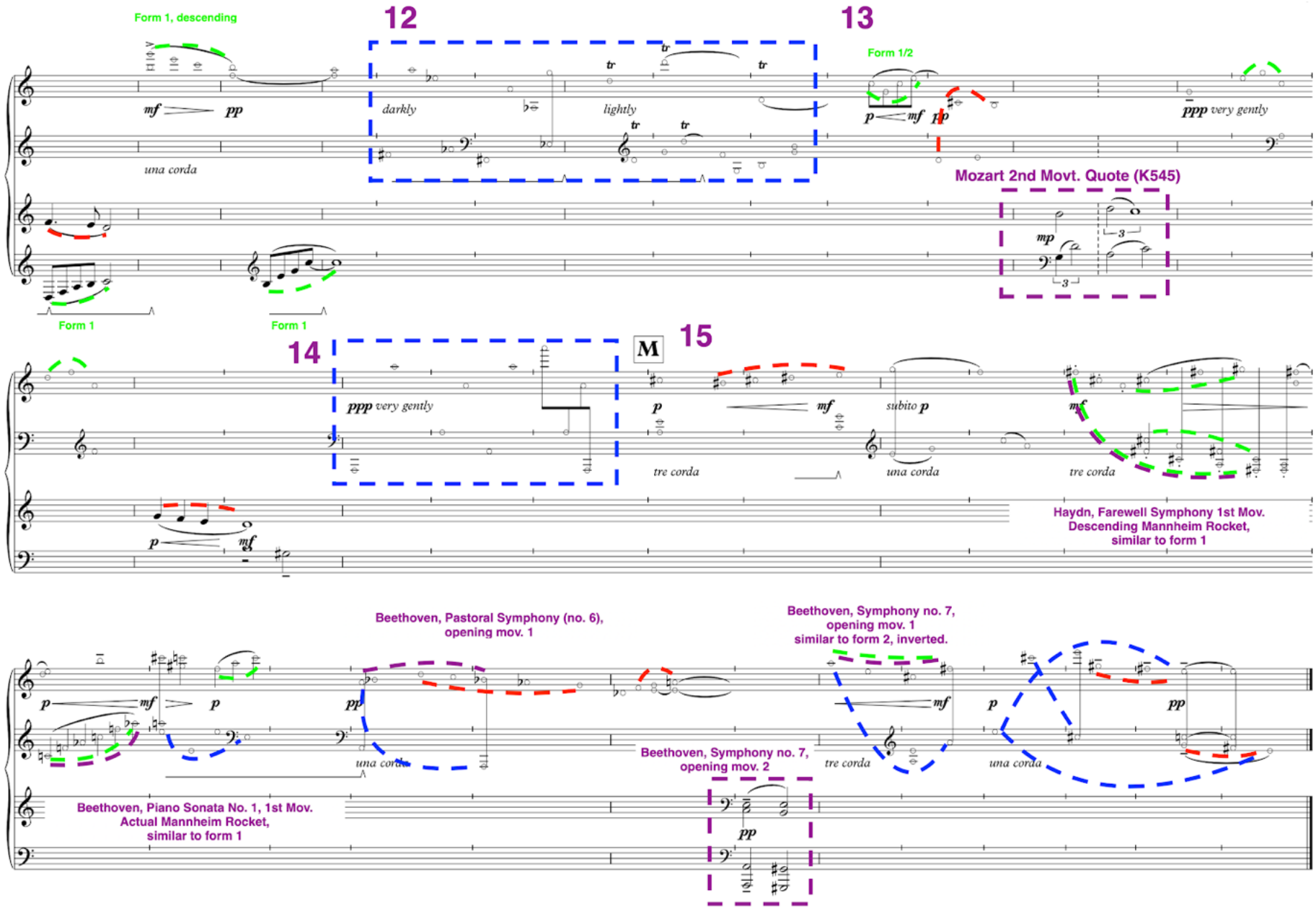


[7] The annotations in this score are extended to highlight some other details. These include the emphasis on the major-7th interval that is sometimes reduced to other 'sharp dissonances' (Persichetti, 1962:14) such as the minor-2nd and minor-9th. It also highlights some other quotation within the piece. This is most noticeable at the end, where I extend the quotation to include works from Haydn and Beethoven, using material of similar melodic qualities to the core melodic ideas in *In Memory*.


c. 2" between ticks
hands independent, accelerating to as quickly as possible
Minor Quote, Beethoven
(Moonlight)
♩=c. 86
Form 2: explicitly Alberti bass for the first time since the opening.
as quickly as possible
4
space between ticks c. 5"
space between ticks c. 5"
V7 of Gm
(with added
Bb/flat-13)
(Form 3)
Form 1 & 2 (inverted), direct quote
E
5
6a
A tempo
(5" between ticks)
Form 2
One could argue these figures, resemble the direct quotes in the previous line.
Only the gaps of the arpeggio have been filled in and the contour has been inverted.
Molto rubato ♩=120
sim. with feeling
Octave displacement


F
6b
Beethoven
7th Symphony, Allegretto
sfffz
mf
p
mp detached
tre corda
una corda
Push and Pull: ♩=60-80
pp
6c
Form 2
subito mf
p
The octave displacement is more an open chord sonority here, as opposed to a theme.
6d
ppp
cresc. each note
f
3
4" silence
G
7
pp
H
Form 1
mf
p
mf
pp
pppp
Octave displaced descending line
8a
pppp
H
Form 2 (broken alberti)
♪=146 (♩=73)
rit.
mf
pp
pppp
8b
I
8c
Octave displaced descending lines
p
mp
mf
p
pp
sfffz
M7 sonority
J
9a
♩=50
♩=73
rit.
M7 sonorities
♪=100 (♩=50)
♪=146 (♩=73)
pp throughout
Form 1, some octave displacement


9b
Form 2
9c
mf darkly
Form 1, descending and ascending
M7 & m2 sonorities
♪=100 (♩=50)
♪=146 (♩=73) (molto rubato)
mp plainly
subito p
pp sostenuto
♪=100 (♩=50)
K
10
Form 2
11
L
C
B
Bi-tonality
B
C
p
mp
mf
p
mf
pp
sfffz
sfffz
sfffz
sfffz
Form 1, descending
♩=c. 73
pp
Form 2, 1
Form 1, descending
pp
Form 2, 1
mp
tre corda


Form 1, descending
12
13
Form 1/2
mf
pp
una corda
darkly
lightly
p
mf
pp
ppp very gently
Mozart 2nd Movt. Quote (K545)
mp
Form 1
Form 1
14
15
M
ppp very gently
p
mf
tre corda
subito p
una corda
mf
tre corda
Haydn, Farewell Symphony 1st Mov.
Descending Mannheim Rocket,
similar to form 1
Beethoven, Pastoral Symphony (no. 6),
opening mov. 1
Beethoven, Symphony no. 7,
opening mov. 1
similar to form 2, inverted.
p
mf
p
pp
una corda
Beethoven, Symphony no. 7,
opening mov. 2
mf
tre corda
p
una corda
pp
Beethoven, Piano Sonata No. 1, 1st Mov.
Actual Mannheim Rocket,
similar to form 1
pp

1.4 *Bewere!* (2018)

Composed between August and November 2018, the origins of *Bewere!* lie within video-game music. *Bewere!* was a creative response to an indie-game, *Gare au Garou!* (*Beware the Werewolf!*; Nicholas Duboc, 2018), which I planned to submit as a demo, seeking the opportunity to score the game itself. Unfortunately, the game already had a composer, so I simply composed the work as a concert work instead. This afforded functional freedoms that working on the actual game project would not have done, which resulted in the composition's development taking an interesting shape.

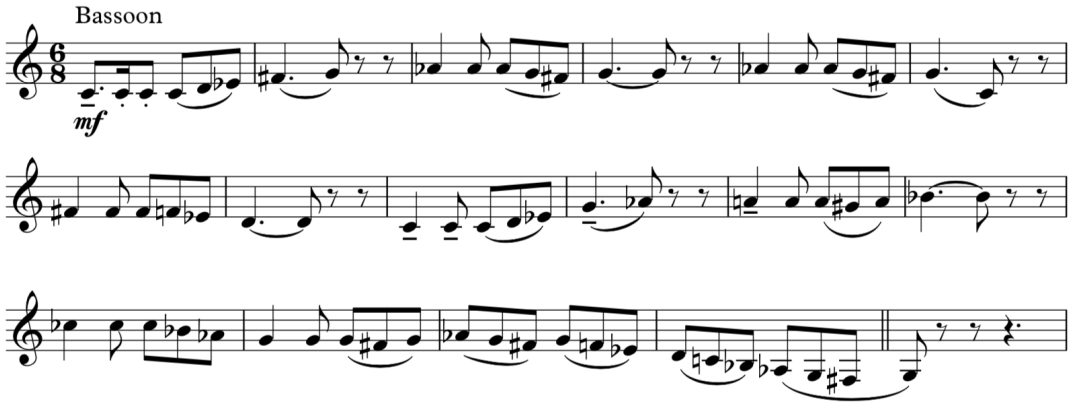
Stylistically the composition is informed by the initial stimulus, a video demo of the video-game *Gare au Garou!* (ibid.), which presented the game's art style, gameplay and narrative. On watching this video the game presented a gothic, Burton-Elfman-esque horror style that had dark and, potentially, jumpscare subject matter that was softened by the cartoon quality that I likened to a 3D rendering of characters from the cartoon strip and animation, *Snoopy* (1950). The influence of the game on the composition was loosened by the fact there was no opportunity for it to be the game's soundtrack. However, the game's stylistic qualities provided direction for the composition and a persistent means of rationalising compositional decisions as it progressed. Ideas needed to have at least some relevance to the musical style that the game project was suggesting but need not be designed to function with the project itself.

The video of *Gare au Garou!* sparked the initial idea that forms the composition's A section (figure 1.4.1a). Using a strategy similar to Aaron Walz

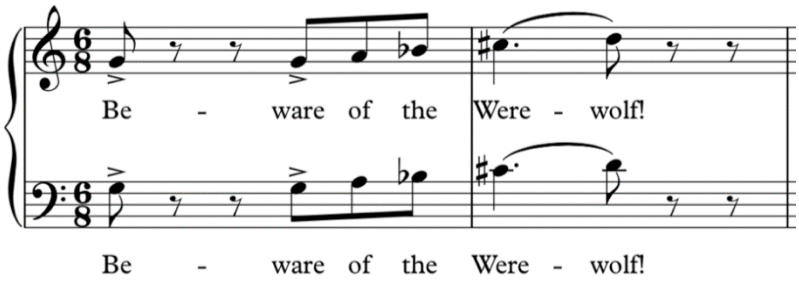
(CasualConnect, 2011:15'15"), who sometimes uses words and phrases that emerge in collaborative discussions with developers as a means of composing material for projects. I sang the English translation of the game's title "Beware of the Werewolf", which opens the work (figure 1.4.1b) and was extended into the fuller melody (figure 1.4.1a). It also led to the eventual use of choir and the generation of some extra lyrics.[8]

Figure 1.4.1 main melody (*Bewere!*)

a) full exposition, bar 13-28



b) initial fragment of melody, bar 1-2



[8] In producing the track by MIDI I tested the use of East West's worldbuilder, which I had used briefly in *Six Sided Slime from Outer Space* (2017): 'Gungee Jump'. With the work not being for a specific project, and with the more complex text, I decided to use a simpler pair of 'ahh' and 'mmm' choir patches.

As there was no deadline being imposed by a wider project, composition could be approached in a relaxed way. The sketches were developed on an *ad hoc* basis with many different ideas being created and considered. Figure 1.4.2 demonstrates a short idea that was eventually used in the final piece, primarily due to its concision, while figures 1.4.3a and b present two middle section sketches that were not used.

Figure 1.4.2 middle section/B-theme (reduced) (*Bewere!*, bar 60-75)

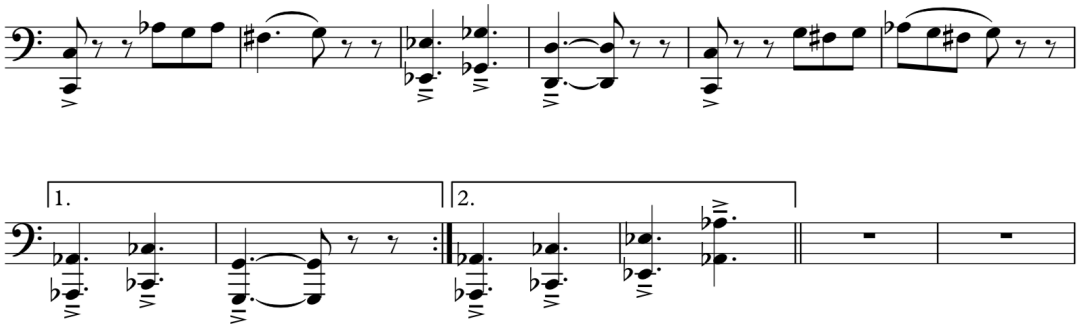


Figure 1.4.3a unused middle section/B-theme sketch 1 (*Bewere!*)

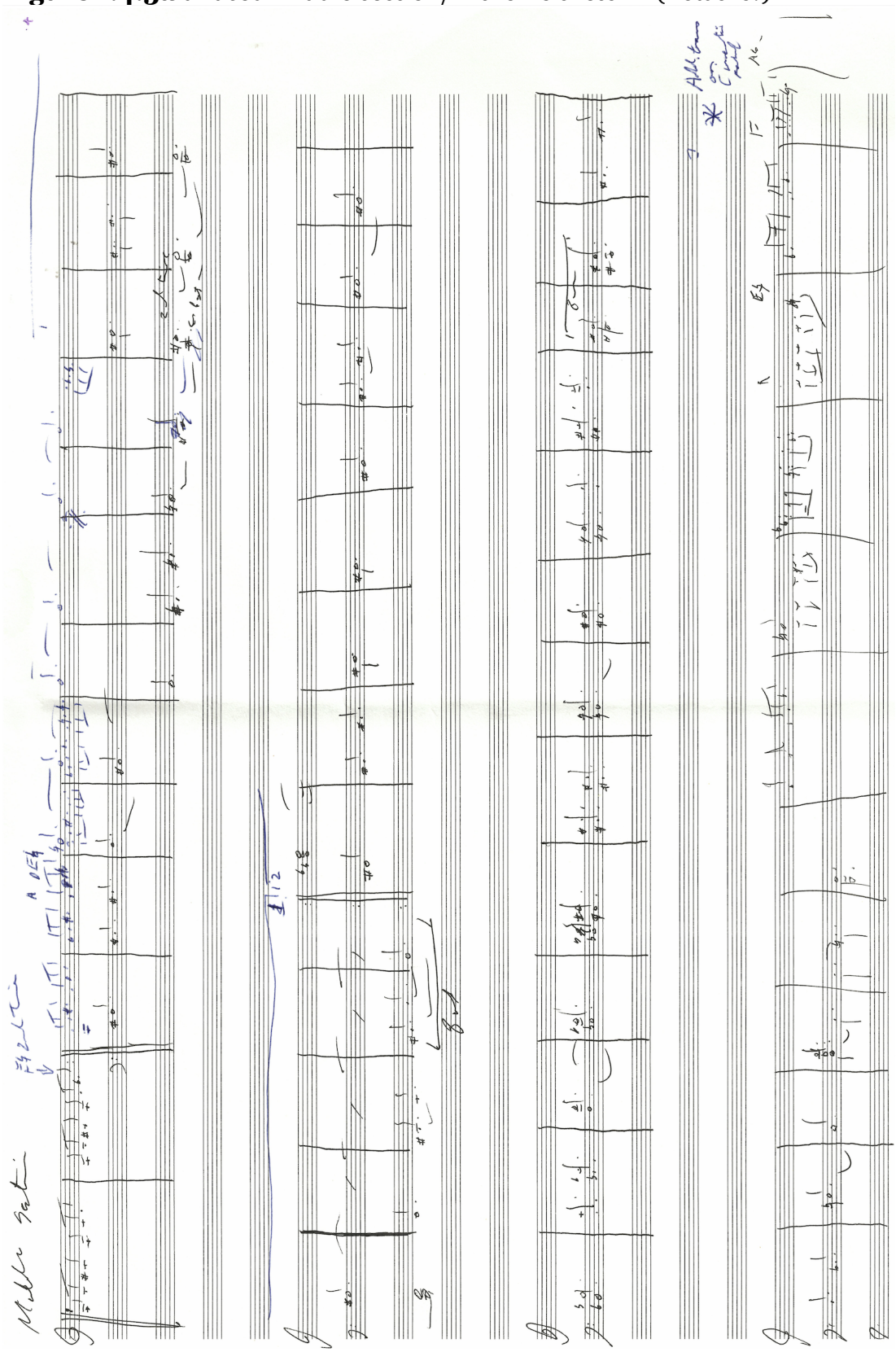
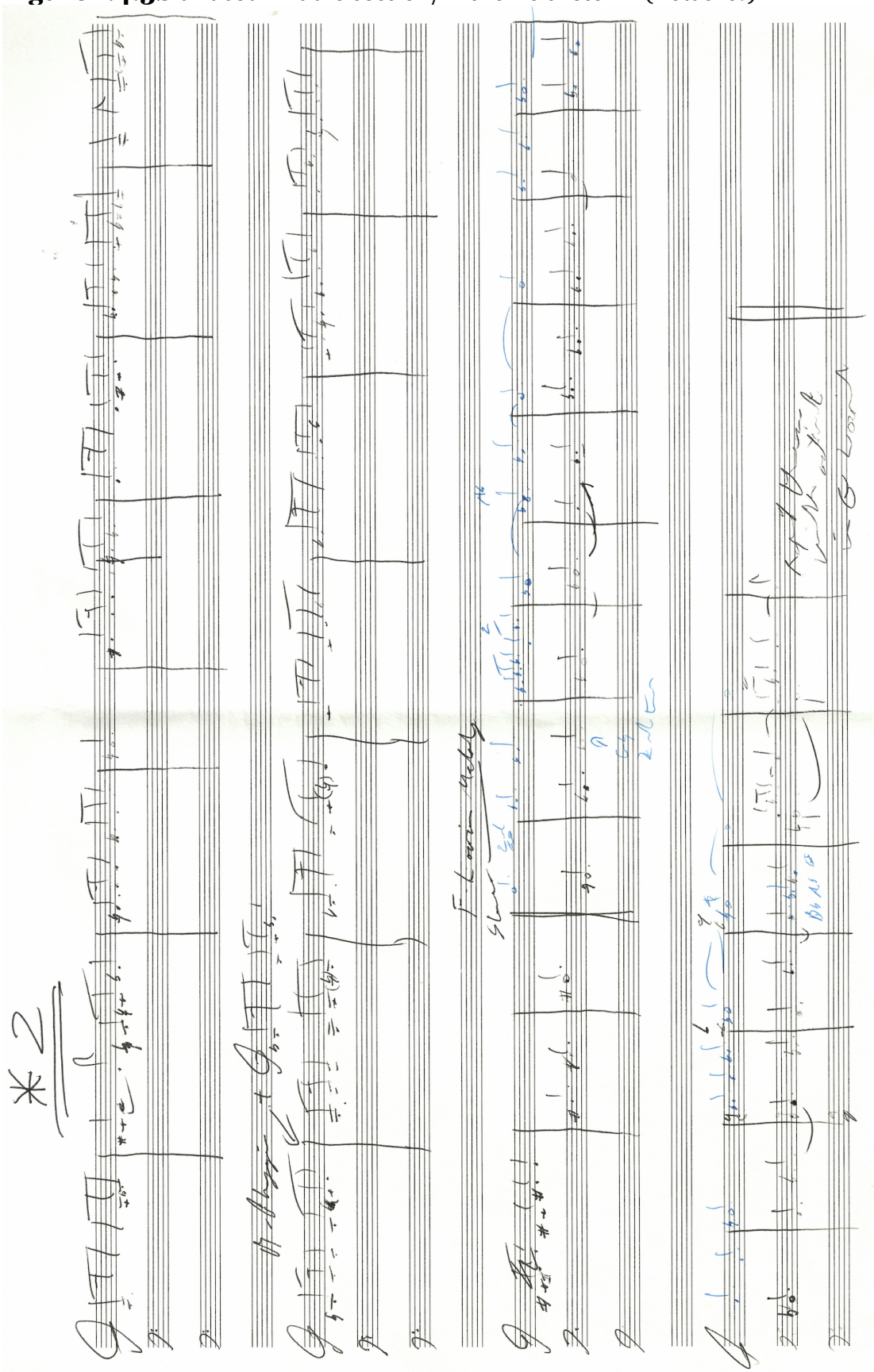


Figure 1.4.3b unused middle section/B-theme sketch 2 (*Bewere!*)



At the end of October 2018, I decided to impose a seven-day deadline, which immediately shifted the dynamic of composition. The implication of a short deadline led me to make a number of strategic decisions that objectively outlined and, to an extent, further constrained the composition of the work by more rigorously defining its boundaries and what was creatively achievable within this timespan. The first of these was to define the instrumentation. As it had offered a versatile colour palette, while also being compact enough for me to MIDI realise effectively and quickly within the confines of my own technological resource, I decided to use a similar orchestra to that used in *The Polar Express Rescore/Christmas Rush* (2017/8), *The Expendables* (2017) and *Flailing Trees and Assailing Weeds* (2018) (table 1.4.1).[9] Furthermore, the experience I had gained by using a similar orchestra in these previous projects did mean I had some acoustic orchestration techniques that I could deploy confidently, knowing they would work in MIDI production as well. Figures 1.4.3-1.4.5 extract some of these techniques from *Bewere!* and some of the previously mentioned works.

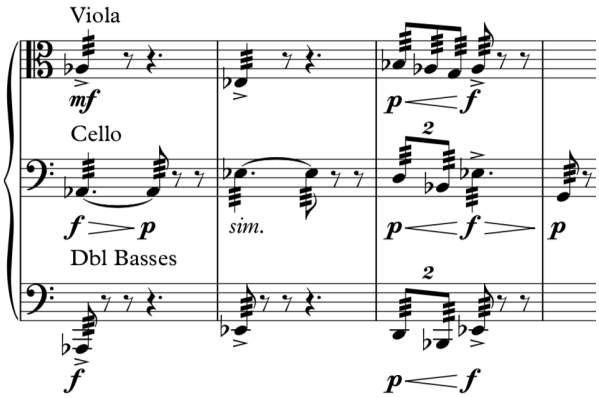
[9] I do not discuss *Flailing Trees and Assailing Weeds* (2018) on its own in this commentary. Rather, for concision, it is discussed alongside *Bewere!* whereby many of the compositional and orchestration techniques are developed, leading to *Bewere!*. *Flailing Trees* also boasted similar contextual aspects, surrounding its composition, but these occurred from the beginning rather than part way through. For example, *Flailing Trees and Assailing Weeds* was composed as a demo submission that developed into a concert work. *Bewere!* was selected as it offered, at least for the purposes of writing this commentary, clearer compositional and contextual insights.

Table 1.4.1 instrumentation choices in several orchestral compositions

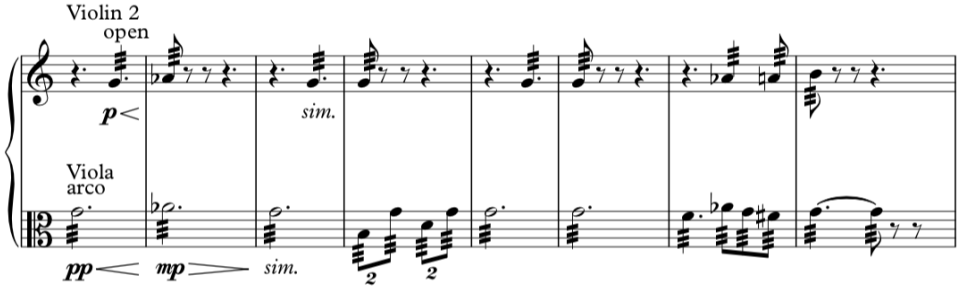
Instrument Families	***The Expendables* (Concert)**	***The Polar Express Rescore* (Film)**	***Flailing Trees.* (Concert)**	***Christmas Rush* (Concert)**	***Bewere!* (Concert)**
Woodwinds	Flute Oboe Clarinet Bassoon	Flute Oboe Clarinet Bassoon	Flute Oboe Clarinet Bassoon	Flute Oboe Clarinet Bassoon	Flute Oboe Clarinet Bassoon
Brass	F. Horn Trumpet	F. Horn Trumpet	F. Horn Trumpet	F. Horn 1 F. Horn 2 Trumpet	F. Horn 1 F. Horn 2 Trumpet
Percussion, Keys and Voice	Timpani	Timpani 1 Perc. Celesta Piano	Timpani 1 Perc.	Timpani 1 Perc. Celesta Piano	Timpani 1 Perc. 1 Keyboards Choir
Strings	Violin I Violin II Viola Celli Basses	Violin I Violin II Viola Celli Basses	Violin I Violin II Viola Celli Basses	Harp Violin I Violin II Viola Celli Basses	Harp Violin I Violin II Viola Celli Basses

Figure 1.4.4 similar instrumental doublings, emphasising dynamics and articulations

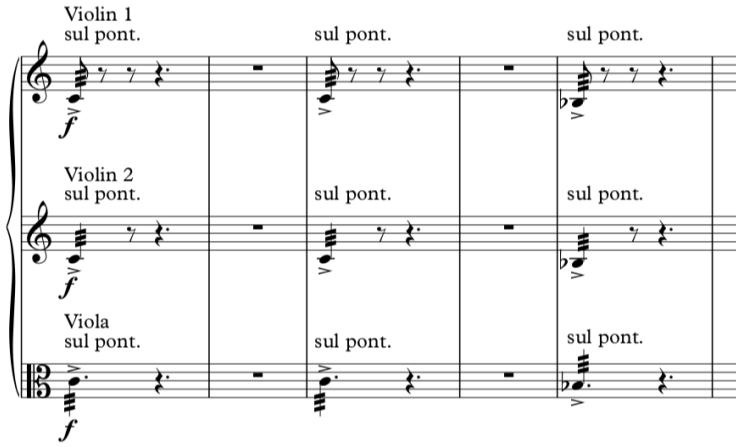
a) tremolo strings (*Bewere!*, bar 45-48)



b) tremolo strings (*Flailing Trees and Assailing Weeds,* bar 33-40)



c) tremolo strings (*Flailing Trees*, bar 74-78)



d) muted horns (*Christmas Rush*, bar 46-47)

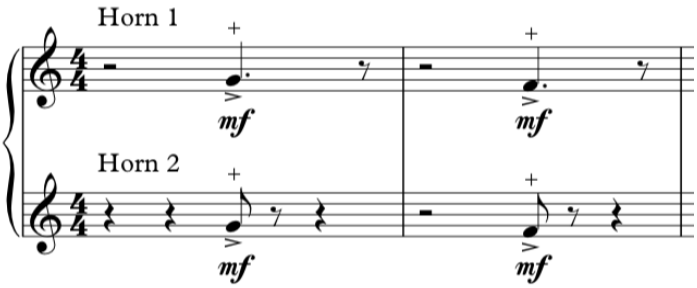
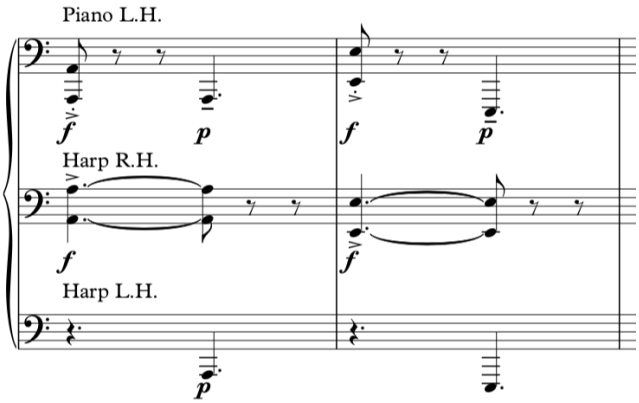
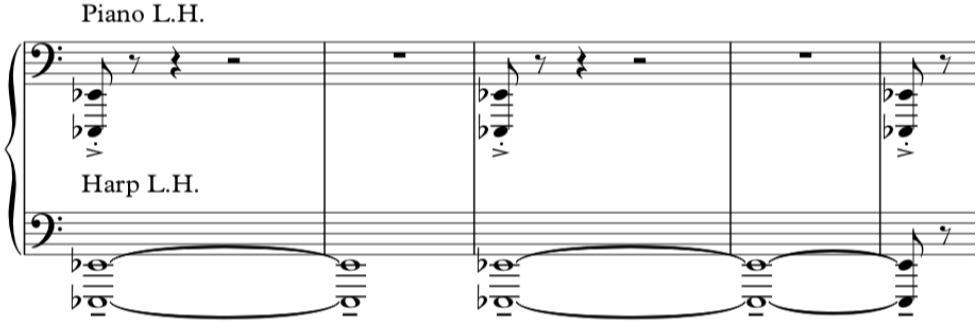


Figure 1.4.5 weight and colour of orchestration to accentuate articulations

a) piano and harp, (*Bewere!*, bar 53-59)



b) piano and harp (*Christmas Rush,* bar 42-46)



c) horn & trumpet to muted horn, (*Christmas Rush,* bar 57-60)

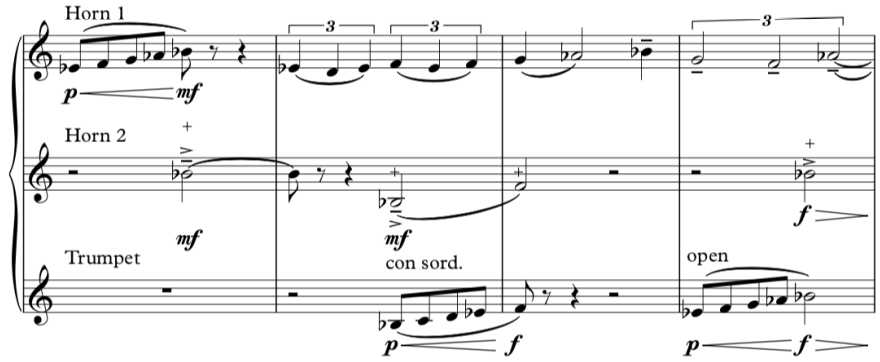
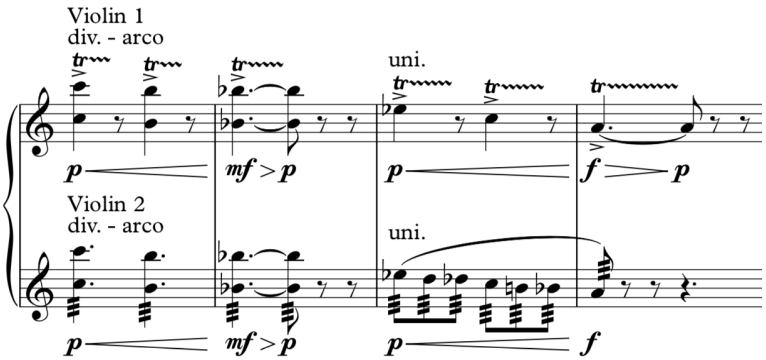
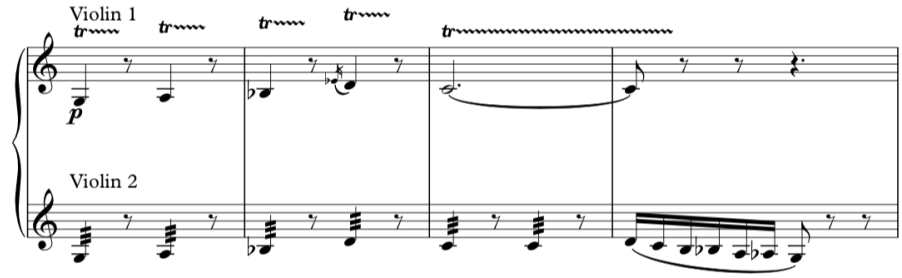


Figure 1.4.6 trill vs tremolo

a) Bewere!, bar 60-63



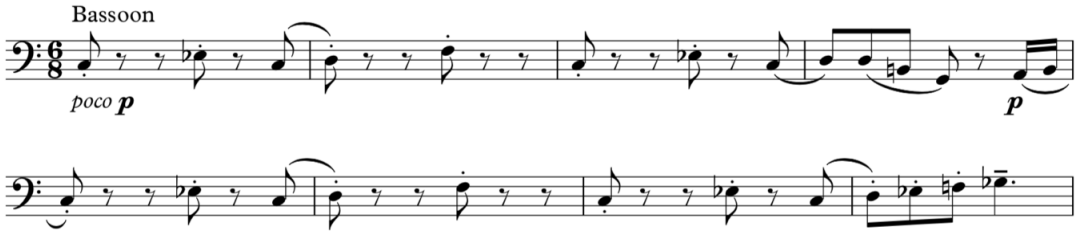
b) Flailing Trees and Assailing Weeds, bar 46-49



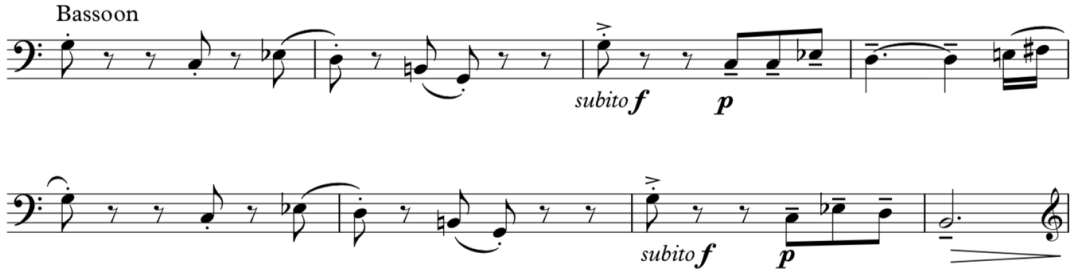
In addition to defining the instrumentation, at the outset of the self-imposed deadline, I also initiated a form of audit on the existing sketches. It was at this point that the two sketches in figures 1.4.3a and b were cut as they were too tangential for the final shape and scale of the composition. Moreover, I looked towards a compositional technique that emerged late in the composition of *Flailing Trees and Assailing Weeds*, which proved effective in providing an efficient means of extending and expanding the existing thematic material.[10] This was the composition of a second theme in counterpoint to the first, so that they can be presented climactically together at the end. In *Flailing Trees* this technique is less clinically deployed and, instead, uses the antecedent (figure 1.4.7a) and consequent (figure 1.4.7b) portions of its main theme, before using the secondary theme (figure 1.4.8) in a brief moment of counterpoint with the main themes. Figure 1.4.9 offers an annotated reduction of this passage.

Figure 1.4.7 *Flailing Trees*, main theme

a) antecedent, bar 9-16



b) consequent, bar 17-24



[10] One can identify a similar, simpler version of this strategy in *The Expendables* (score included in portfolio), which deploys the A-theme, in its recapitulation, against imitative fragments of itself in counterpoint bar 41-56.

Figure 1.4.8 "subsidiary" theme (*Flailing Trees*, bar 33-40)

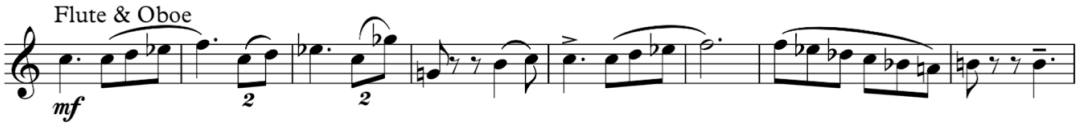
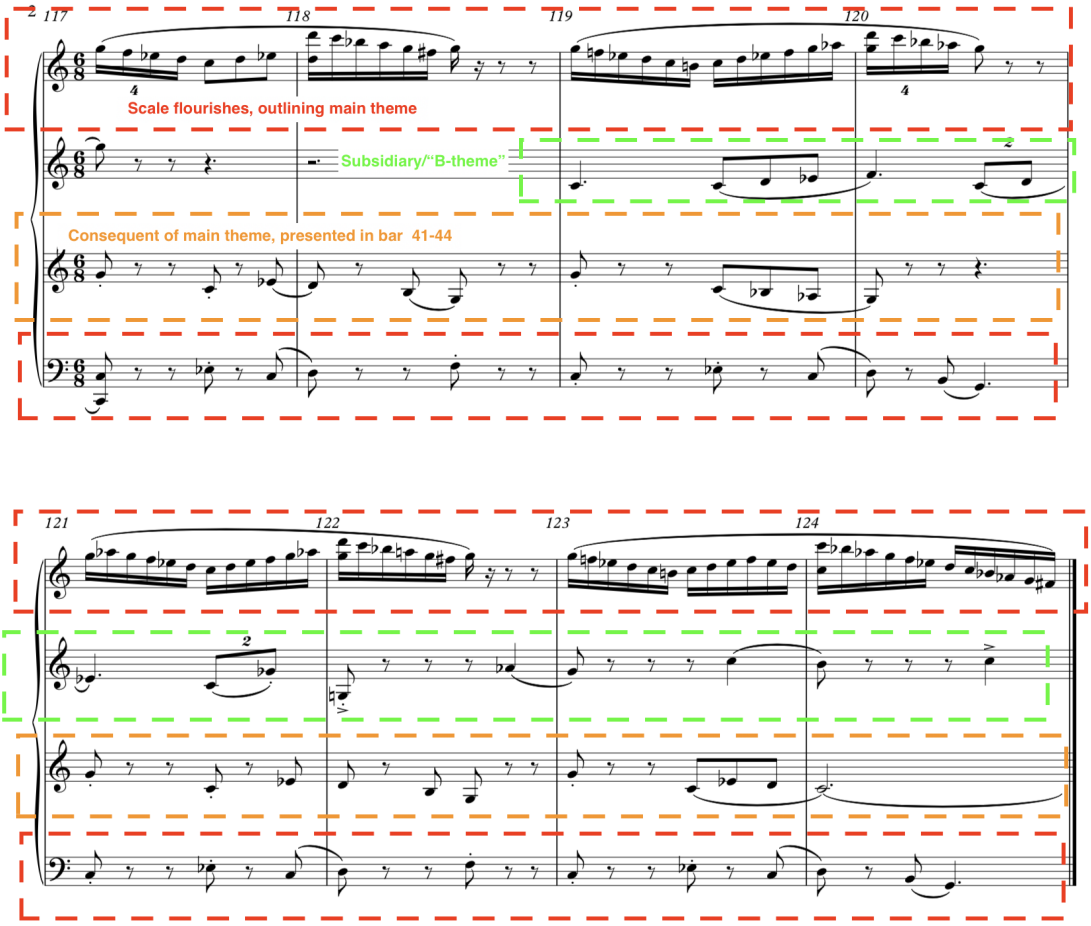


Figure 1.4.9 final section (annotated), (*Flailing Trees*, bar 117-124)



Bewere! used this technique as a means of generating a secondary theme (figure 1.4.10) that, when presented for the first time, is interchanged with a counter-melody that remains in C-minor while the secondary melody starts in A-flat minor. When the woodwinds take over the secondary melody they all move up a minor-3rd so that the secondary theme is in C-minor and the

counter-melody is in E-flat minor. This was so that I could break new harmonic ground without being too expansive, falling into a similar, potentially tangential, situation that the two cut themes had presented (figures 1.4.3a-b). Furthermore, the sudden shift, with bi-tonal pairings, was a jarring change that suited the work's initial inspiration, the video-game *Gare au Garou!*. The secondary theme is presented in its original form, in counterpoint with the main theme in the penultimate section of the work (figure 1.4.11).

Figure 1.4.10 secondary theme and counter-line (*Bewere!*, bar 45-59)

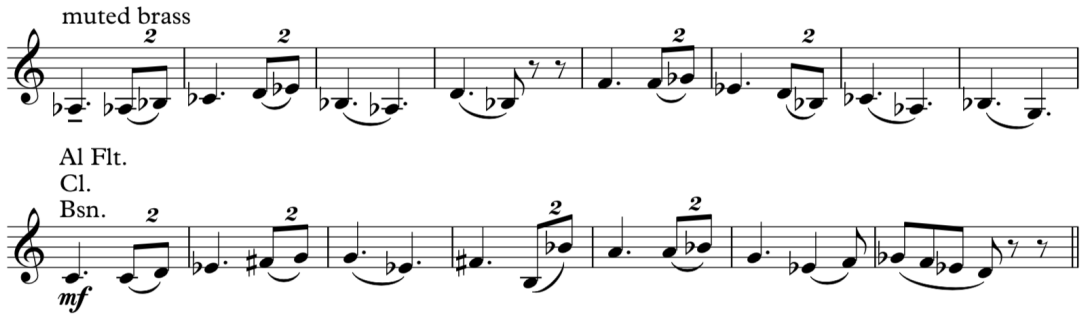
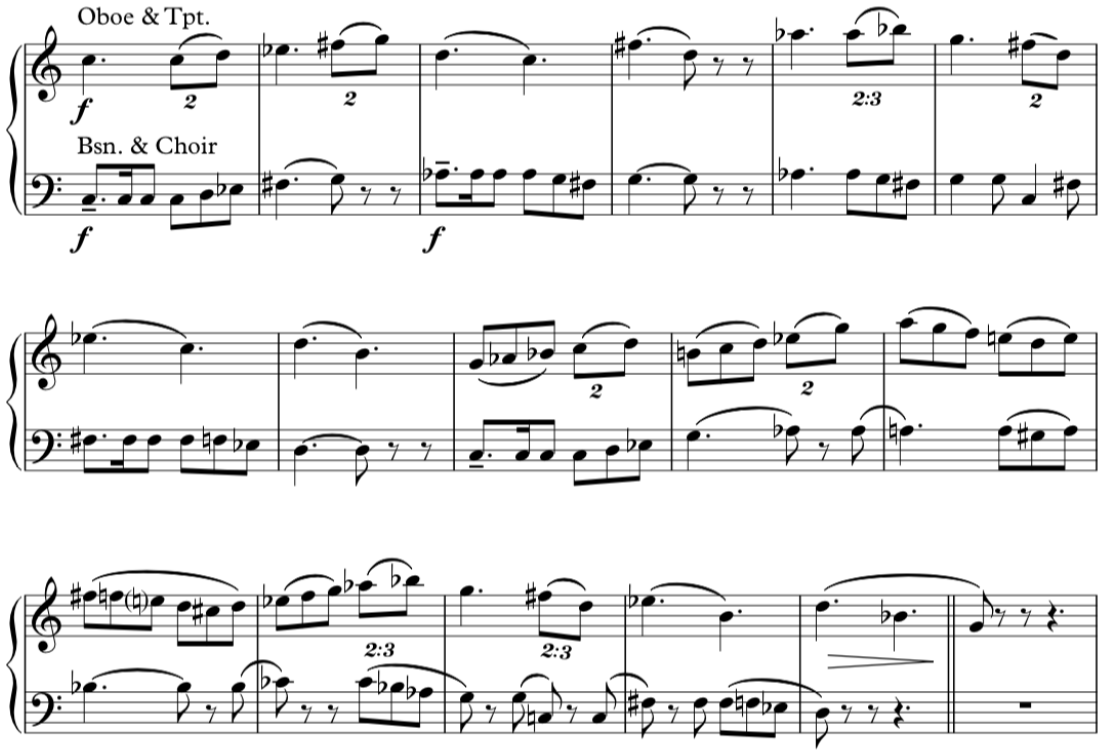


Figure 1.4.11 penultimate section with themes in counterpoint (*Bewere!*, bar 117-132)



1.5 *Fanfare and Lyric* (2019)

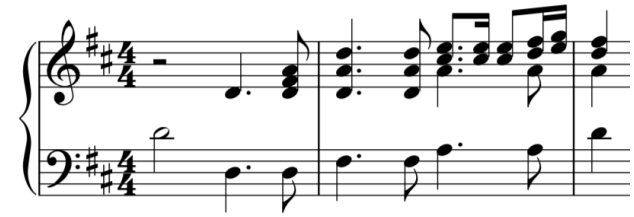
This work was composed for my wedding ceremony, which provided a clear deadline for the work (end of May 2019) and four constraints: (1) it had to be suitable for the ceremonial occasion, (2) suitable for the location (small village church), (3) would not be performed live and (4) be suitable for its intended audience. For this reason, I used a brass ensemble, for its ceremonial qualities, and avoided aleatory as I was unconvinced that I would be able to realize it effectively.[11] Similar to *Bewere!*, the compositional process involved a period of intuitive composition that was followed by a process of assimilation and the imposition of structures and design to advance the composition of the work.

As the title suggests, the work consists of two sections. The opening fanfare section was the first material to be composed and its development was inspired by two short passages from Handel's *Royal Fireworks Overture* (HWV351; figure 1.5.1a and b). I have long found the subtle change in texture and motion, resulting in greater bass line independence and a subtle change in harmony captivating. For this conceptual reason and also the aesthetic suitability of this musical reference, I wanted to explore the use of subtle changes in motion in *Fanfare and Lyric*, which resulted in the composition of a succinct, two-bar phrase (figure 1.5.2).

[11] Due to truly unruly sample instruments that seemed to crack on any sustained note or when expression/modulation automation was applied, I had an incredibly difficult time attempting to mock this piece up and eventually decided to settle for using NotePerformer to realise the track. (NotePerformer is a sample library designed for use within engraving, rather than sequencing, software.)

Figure 1.5.1 *Royal Fireworks Overture*, Handel (HWV 351) (reduction)

a) similar bass motion, bar 1-3



b) contrary bass motion and resultant passing tones, bars 7-9

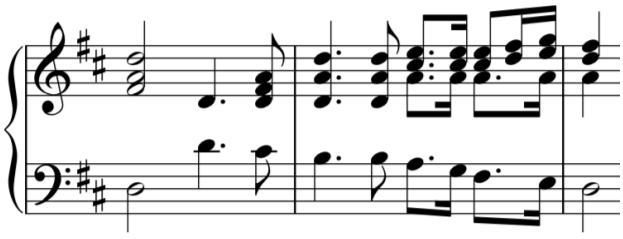
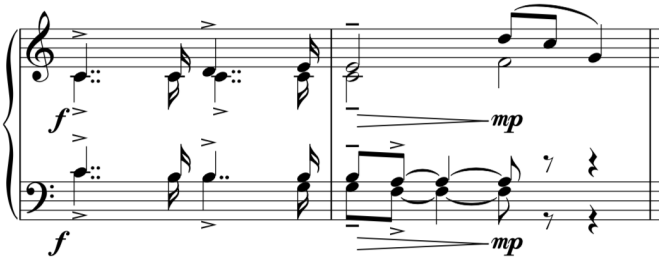


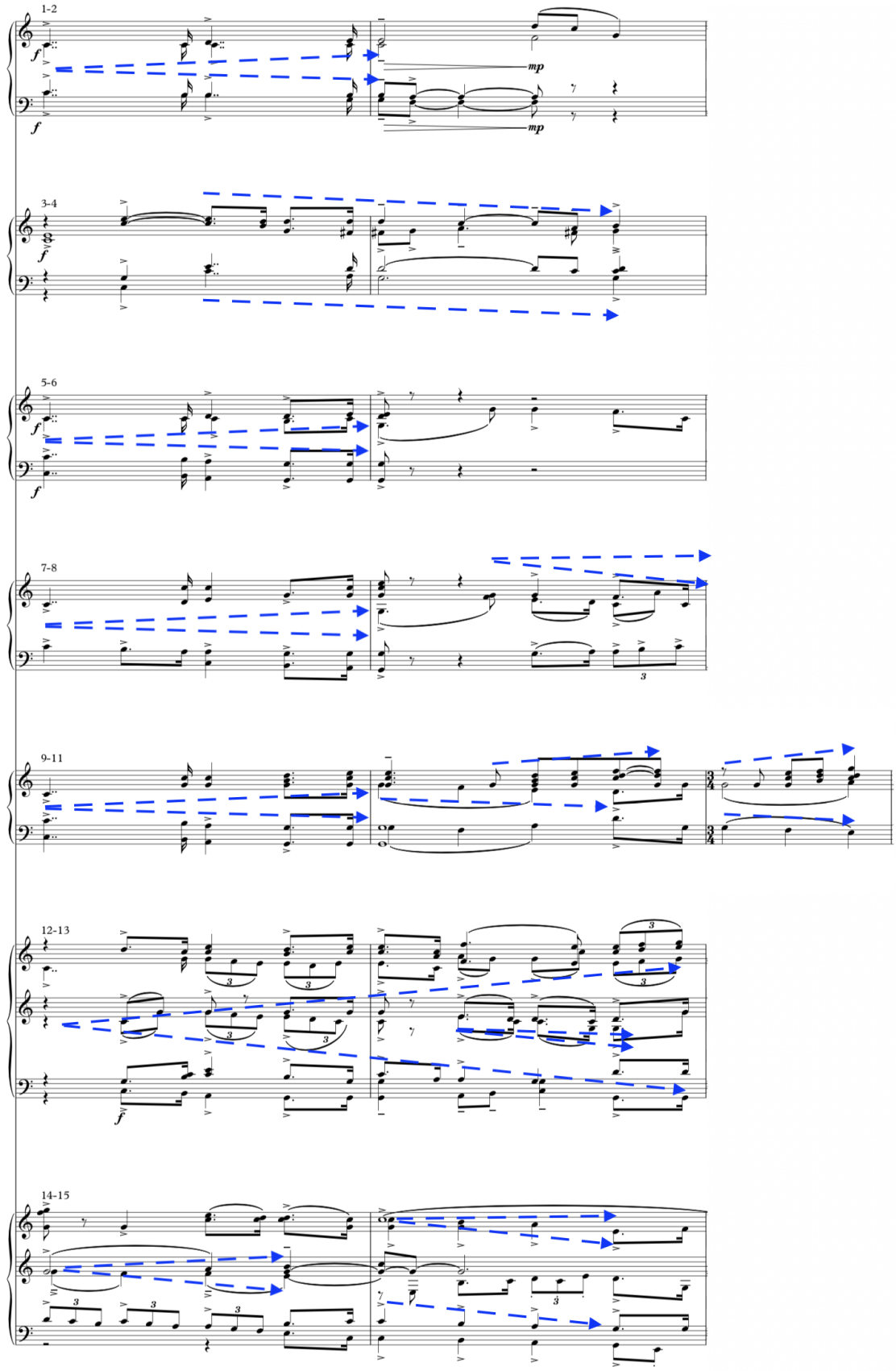
Figure 1.5.2 fanfare idea (*Fanfare and Lyric*, reduction, bar 1-2)



The outer fanfare sections are constructed from permutations of the two-bar cell in figure 1.5.2. The permutations themselves look to maintain the punctuated nature of the phrases while maintaining the, predominantly, contrary and step-wise motion of the lines. Figure 1.5.3 aligns the modules vertically, with annotations highlighting their motion. Spanning out from middle-C, except for the final module, the rate at which lines step upwards or downwards subtly alters the harmony. For example, bar 1 reaches a diatonic cluster on beat 3, with B in the root, while the bass line in bar 5 takes an extra step down to A, creating a D7/A chord without the 3rd. Similarly, in bar 7 the

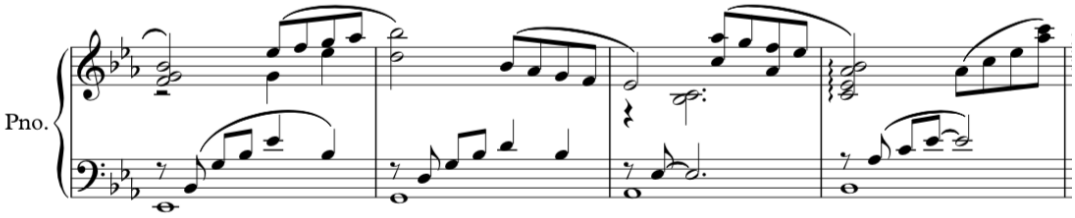
same initial steps are taken but an Am/C chord is reached as the upper, turned middle, line takes an additional step upwards.

Figure 1.5.3 bar 1-15 arranged vertically in two bar cells (*Fanfare and Lyric*)



In contrast to the fanfare theme the decision to have a more songlike, lyrical theme was made. My wife, a big Disney fan, had decided to come down the aisle to Alan Menken's *Tale as Old as Time*, from *Beauty and the Beast* (1991). For this reason, I wanted to draw a musical connection between *Fanfare and Lyric*, which ended the ceremony, and *Tale as Old as Time*, which opened it. However, rather than quote a theme, as I did not want the connection to be explicit, I decided to use a core harmonic progression (I-iii-IV-V) (figure 1.5.4) from the original song. This offered me a harmonic framework on which to impose my own ideas while creating a connection with *Tale as Old as Time*. It also proved, in combination with the recap of section A, a straightforward means of bringing the composition to a succinct, coherent end.

Figure 1.5.4 borrowed harmonic progression, I-iii-IV-V/Eb-Gm-Ab-Bb (*Beauty and the Beast,* 1992)



1.6 *The Expendables* (2017)[12]

The origin of *The Expendables* (2017) is unique in this portfolio, emerging from one of the video-game projects in this portfolio. While *Bewere!* was only inspired by a game, *The Expendables* originates from *Six Sided Slime from Outer Space* (2017).[13] Therefore, it will be important to recount some details of *Six Sided Slime* here. For instance, sketching for *Six Sided Slime* started in late 2016, well in advance of the project's more focused life span as part of tranzfuser (April – September, 2017), and *The Expendables* eventual completion in late 2017. The reason being, *The Expendables* sketches were not right for *Six Sided Slime*. However, upon completing work on *Six Sided Slime*, in September 2017, I decided to revisit the unused musical material I had created over the last 10-12 months. I hoped to find something that might provide inspiration and a basis upon which to create a short composition fast. *The Expendables* gave me this through a highly defined stylistic background and an area of study: major mode harmony, that few projects had allowed me to explore around that time.

As I was communicating with the developer via email, defining what kind of game *Six Sided Slime* was going to be took time and unfolded incrementally with each email providing a little more detail. The excitement of a project, especially early on, can be inspirational and motivational.[14] I, therefore, started to sketch material based on fragments of information that did not paint

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[12] Positioned here, *The Expendables* should, chronologically, be before *Bewere!*. Previously omitted, I decided to add a section for it at the last minute. Therefore, its positioning here is more to preserve the delicate numbering system I had already created for the figures, tables and sub-sections, in this section so far.

[13] It could, for this reason, be worthwhile to read section 3.1 first, as *Six Sided Slime,* is discussed in greater detail there.

[14] Film composer Patrick Doyle explains this experience very well in *The Hollywood Reporter: Composer's Roundtable*. He talks about how the process is all about managing information coming from different locations and how 'your imagination starts to fire up', even when you might only be having the first conversation regarding a potential project (Soundtrack Specialist, 2014:15'04").

a whole picture of what Six Sided Slime was going to be. For example, broader details emerged early on, such as sci-fi being the game's genre. However, establishing what kind of sci-fi sub-genre it was going to be came much later. These vague pieces of information, early on, led me to believe the game was possibly going to be like *Star Trek* or *Star Wars*: a swashbuckling, space opera, if not set in space, then certainly with fantastical, futuristic elements. I, therefore, started to compose sketches in a similar vein to those kinds of film: lyrical, heroic melodies in an uplifting tone. Figure 1.6.1 shows a page which contains a pair of early sketches. It also demonstrates how early on conversations for *Six Sided Slime* were taking place as they share a page with sketches for *Bowhead* (2016/7), which I composed in October-November 2016.

Unlike *Bewere!*, *The Expendables* sketches were not revisited in the interim. Moreover, when revisited, the time spent working on *The Expendables* was short, a matter of days. The composition's brevity and simplicity are a likely result of the short period of work spent on it, especially when one considers the eventual A-section melody, its development and its origin in the sketches. For example, if we compare figure 1.6.1 to figure 1.6.2, which provides a reduction to the A-section of *The Expendables*, we can see how those two sketches are combined to create the final melody. The bottom sketch, with its upward leaping contour and rhythmic framework, is revised to use the upper sketch's chromatic, modal colourings. The A-melody that this creates (figure 1.6.2 bar 5-12) is then used to derive the other units of the outer sections. Table 1.6.1 provides a structural breakdown of the work, which demonstrates how

the sections, including the middle B-section, and sub-sections use two, simple, 8-bar themes.

Figure 1.6.1 *The Expendables* sketches, late 2016
(see overleaf)

Figure 1.6.2 *The Expendables* A-section, reduced

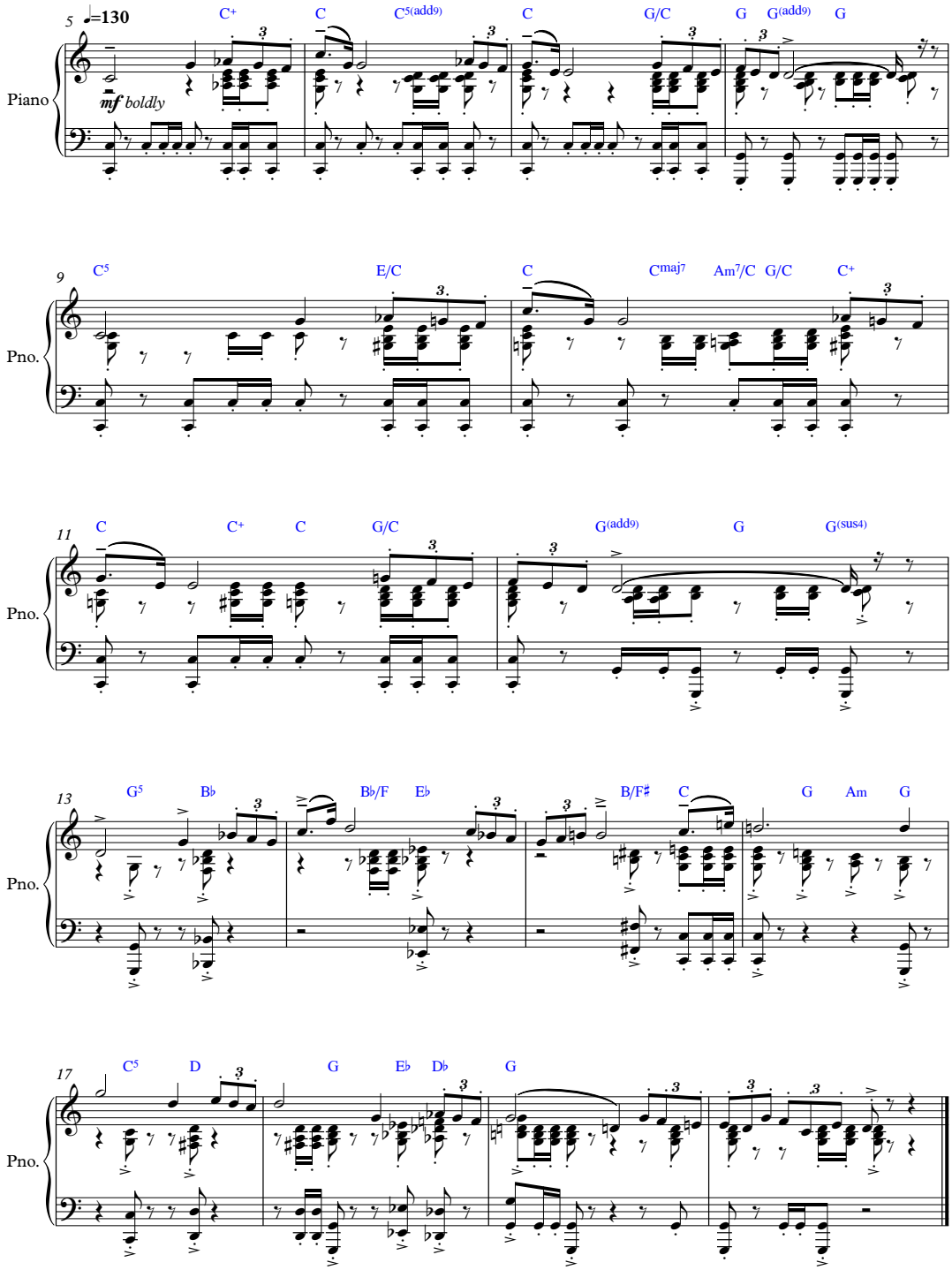


Figure 1.6.1 *The Expendables* sketches, late 2016

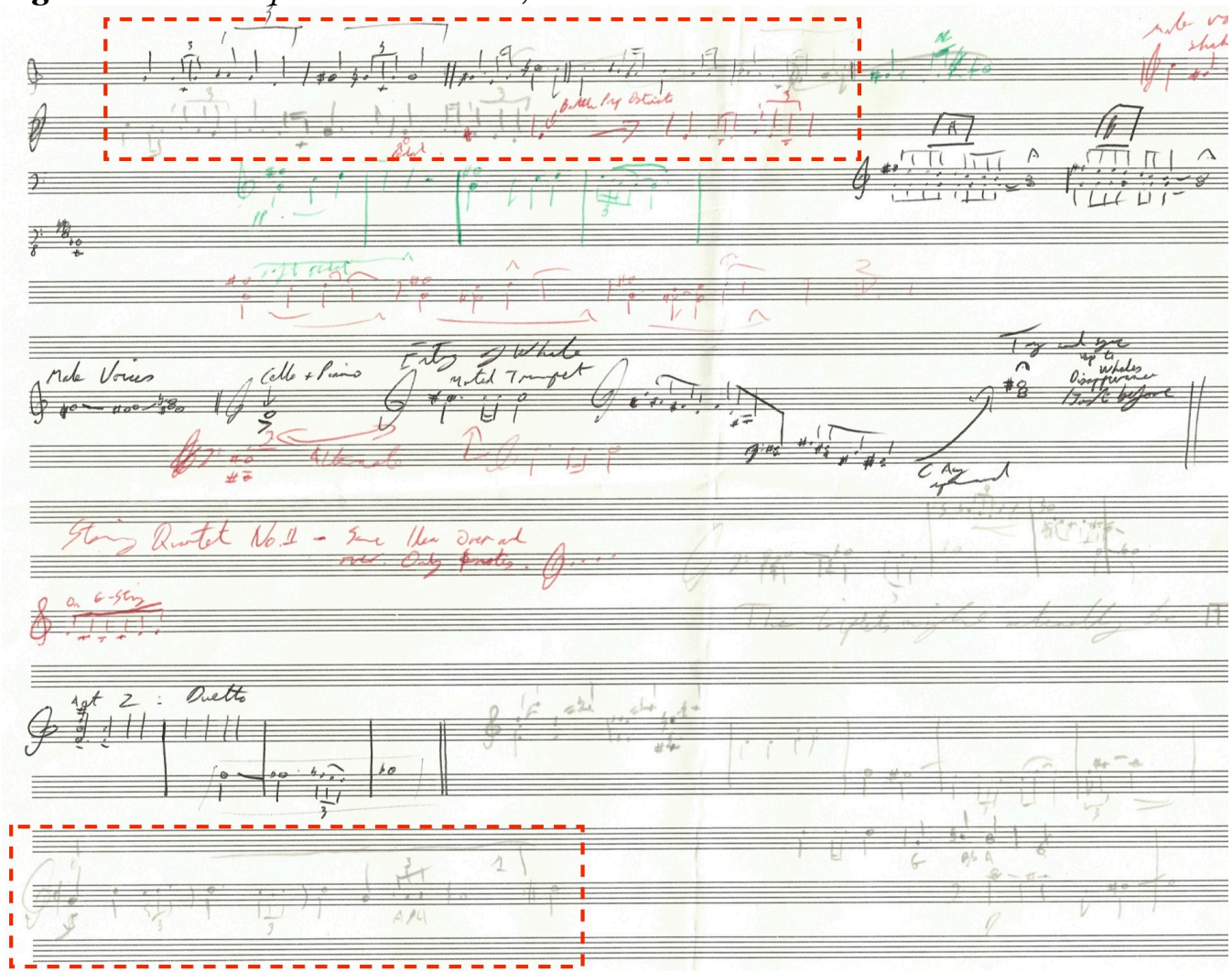


Table 1.6.1 *The Expendable*, structural overview

Bars	Section Details
1-5	Introduction; march like, irregular rhythmic quality;
6-12	A-theme, exposition; uses introduction march like figures as accompaniment texture.
13-20	A-theme, variant.
21-28	B-theme, exposition.
29-36	B-theme, variant.
37-40	Transition from middle section; fragments of B-theme.
41-48	Transition into recapitulation of A-theme. V-pedal.
49-56	A-theme recap.; melodic variation; imitative fragments placed in counterpoint.
57-68	A-theme, variant: increased upward leap and span of melody.
69-79	Codetta, fragments of A-theme

Constrained by the pre-existing sketches and a clear understanding of its underlying stylistic qualities, there was a framework and rich aesthetic tapestry from which to develop and rationalise creative decisions quickly and decisively. Explored with greater rigour in *The Expendables,* despite its simple larger-scale structure, major-tonality harmony and scale/modal inflexions became a key area of exploration, further guiding composition. For example, the use of the flat-6 in the melody extends the harmonic possibilities of what otherwise would have been a diatonic C-major scale. Moreover, in the varied repeat of the theme, the use of the 2nd scale degree as a departure point and the B-flat abruptly shifts the tonal centre. Arguably, there is a momentary switch of tonality and centre. However, there is no tonicisation, so the effect is more one of modal interchange, as opposed to modulation, to G aeolian. Crucially, my compositional objectives were the driving point here, and they were plain: to create instability and incorporate modal and chordal relationships that I had seen in other similar scores.

Further contributing to the instability of this passage, and the interest of the whole section is the harmonic rhythm, which is different between phrases. In contrast to scores of this kind, which are usually for heavily financed blockbusters, the orchestras are extensive, having large sections. I decided, for ease of production, similar to many other MIDI produced projects in this portfolio, to keep the orchestra smaller: I did not want to have to spend a great deal of time realising the work when there was no purpose beyond its intrinsic learning opportunities. I think this self-imposed limitation contributes to this focus. Not only is there inherent agility and lightness to a smaller ensemble, which come across in the subtle harmonic and ostinati changes, but there are also fewer timbral options. Therefore, creating interest in a work where distinguishing colours are not so vast, and there is less time to create more sweeping melodic variations, harmony, density and harmonic rhythm become the primary means of eking out musical interest. A constraint in one or more areas forces ingenuity in others.

2. The Film Projects

This section of the commentary will focus on the six animated film projects. I will examine how some constraints were unique to one specific project while other constraints applied to more than one work, and to works in the other context groups. The films are placed into four closely related but distinguishable groups, based on identifiable contextual differences, which I use as sub-sections to structure this section of the commentary:

1. *Half Empty* (2016) was affected by two factors: (1) its deadline, which impacted the composition and production of the work and (2) the presence of the film in completed form, which was used to compose directly to picture.
2. *Bowhead* (2017) is distinct from *Half Empty* as its composition allowed enough time for me to put together an ensemble to record the scores live. This, naturally, affected composition and production considerations differently from *Half Empty*, which was produced using MIDI orchestration. Moreover, the project itself, and the collaboration, presented artistic freedoms that I used to compose the work as both a film and standalone concert work.[15]
3. *Curiosities of the Mage's Sanctum* (2016) and *Exposure* (2016) differ from the other works, as they were composed before completion of the films. To complete the scores I had to engage in discussions with the animators in order to understand, and define, the genre aesthetics

[15] I consider many of my media compositions, in this portfolio, suitable for concert performance. (Although, some might require some rearrangement.) The difference here was that the nature of the project and my decision to score the film with music that could function as an out and out multi-movement concert work was much more conscious and, thus, influenced the composition's aesthetic.

pertaining to each film. From this I then identified relevant compositional techniques that I was keen to explore, grounding composition in the exploration of those techniques.

4. *Polar Express* (2017) and *Sputnik* (2018) present a pair of film score projects I undertook as independent practice projects. Therefore, the distinguishing factor here is the lack of a collaborator. Moreover, these projects were initiated by my identification of compositional techniques to explore, as with *Curiosities* and *Exposure*—but in a slightly different order, as I viewed the films first and then perceived learning/composing opportunities, which served as the primary stimulus for undertaking the compositions.

2.1 *Half Empty* (2016)

Half Empty was the individual project of an animation student at Hull School of Art and Design. The film's narrative was about a student suffering from mental illness, the subsequent decline and eventual recovery of her psychological well being. There was a preliminary meeting in late 2015 to discuss the film project, but the time allowed for the actual composition and production of the film's score was only two days near the end of May 2016. This short period led to the score being entirely MIDI orchestrated in production, as I needed to deliver a completed audio track for the director to then edit into the final version of the film. Time limitations and the film's narrative led to the imposition of two self-imposed constraints as a means of focussing and directing the composition immediately. These were the limitation and defining of instrumentation and a harmonic/tonal pre-design, paralleling the film's narrative.

In limiting the instrumentation to string quintet and piano, the efficiency of composition and production was aided in one fundamental way: the score comprised only seven lines (counting the piano staff as two). In production the reduction of lines is most quantifiable as the number of instruments that needed mocking up and mixing was simply less, reducing the amount of time it took to realise them all. In composition, the same is partly true, but it was rather the condensed size, ensemble homogeneity, and also the versatility that characterises solo strings, which gave the music I was writing focus.

Furthermore, the number of lines enabled me to write directly for the ensemble into Sibelius speeding up the process further.[16]

In the production and composition of the music, MIDI orchestration was further considered. The reason for this was that my own and the University's orchestral sample libraries at the time were limited to East West Symphonic Orchestra: Platinum. This is an older library where legato, velocity, expression and modulation controllers are more limited and it is more difficult to effectively realise sustained notes with dynamic shifts. However, for shorter articulations, the round-robin[17] system makes the production of passages containing *staccato* and *pizzicato* notes simpler to produce, as the triggering of a different sample each time negates the mechanical, unrealistic effect that a single, repeating sample will create without extra consideration and programming.

The harmonic design of the film traces the deterioration and eventual recovery of the main character's mental health. Moreover, the abstract, animated imagery that is used to tell the character's story presents a kind of first-person, psychosis-hallucinatory experience; this evokes the surreal, particularly as the character's mental health reaches its lowest point. To parallel the narrative arc I employed a concept that is defined by some scholars as 'leit-harmony' (McFarland, 1994), identified in Igor Stravinsky's *The Firebird* (1910) ballet, which adopts a harmonic schema inspired by 'Rimsky-Korsakov's *The Golden*

[16] This was a contrast to my usual working practice in composition. Depending on a project, such as its deadline and the style of music required, my preferred starting point in composition is with pencil and paper, with technology such as notation and sequencing being used to refine and elaborate on initial or more developed ideas.

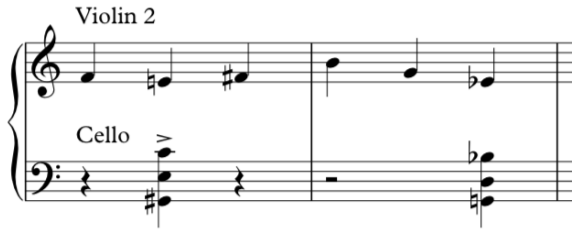
[17] Round-robin is a technique that involves the cycling of different sample recordings on the same note. A lot of modern sample libraries have this as an option so as to improve realism. East West Symphonic Orchestra has a round robin option for many of the shorter articulations.

Cockerel (1907)' whereby 'the human element was associated with diatonic themes and the magical element with chromatic arabesques' (White, 1984:187). In *The Firebird* 'much of the atmosphere of these magical sections is evoked by a harmonic palette mixed from artificial scales and chromatics' (Walsh, 1988:22).

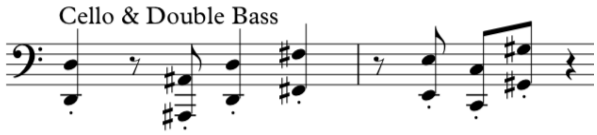
In adopting a similar strategy to Stravinsky and Rimsky-Korsakov I decided to emphasise synthetic scales (Persichetti, 1961:43) and chromatic structures in the first portion of the film, shifting to a diatonic G-major tonal area in the final section when the main character appears to be making a recovery. In writing the composition I did not explicitly define the specific synthetic scale structures to be used and/or where to use them. Instead, I adopted a smaller scale emphasis on augmented triadic structures as a means of quickly and intuitively achieving an unstable, chromatic sonority (figures 2.1.1a-d). While these were instinctual decisions at the time, augmented chords have been connected to such phrases as "dream", "surreal" and "magic" (Schopf, 2018:211), which offers some retrospective validity.

Figure 2.1.1 augmented interval extracts (*Half Empty*)

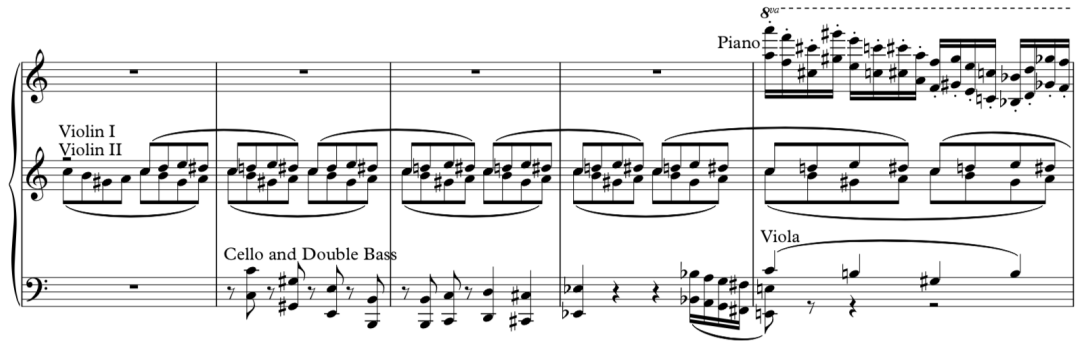
a) bar 33-34



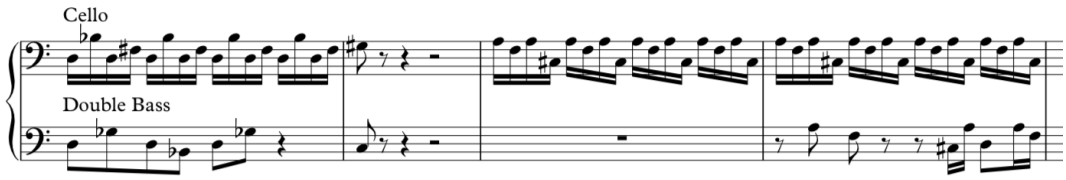
b) bar 93



c) bar 105-109



d) bar 114-117



2.2 The *Bowhead* Films/*The Icebreaker Cycle* (2016/7)

The creative freedom in this project was extended not only by the collaboration, but the film itself and what it was for, enabling me to write a score that I view not only as a functioning film score (*Bowhead*) but, also, an absolute concert work (*The Icebreaker Cycle*). Directed by Robin Diaper, a curator at the Hull Maritime Museum, the three films, animated by a student at Hull School of Art and Design, were independently scored by four student composers at the University of Hull, for Hull City of Culture 2017. The music aesthetic was left to each of the composers as a means of cultivating multiple, different, responses to the films. As the animation was in the process of being completed, each of the composers worked to an animated storyboard; I have included this in the portfolio and have also dubbed in my scores. After delivering the audio files to the animators, they applied the music to the final films.[18]

The *Bowhead* films extended creative freedom as they were silent, lacking both dialogue and sound design, leading to a perceptible but ambiguous narrative that is communicated by the onscreen actions of the Bowhead Whale(s). I interpreted the narrative both cyclically and linearly. Linearly, as they were numbered in the delivery of the storyboards: 'I. Cadenza', 'II. Duetto', and 'III. Coda'; the films present a trajectory of a whale's life from adolescence/young-adulthood to motherhood. Cyclically, as one could easily reorder the films, thus making 'III. Coda', the first film, leading one to question if the lone whale in Cadenza is, in fact, the mother or the calf. This ambiguity led me to the three

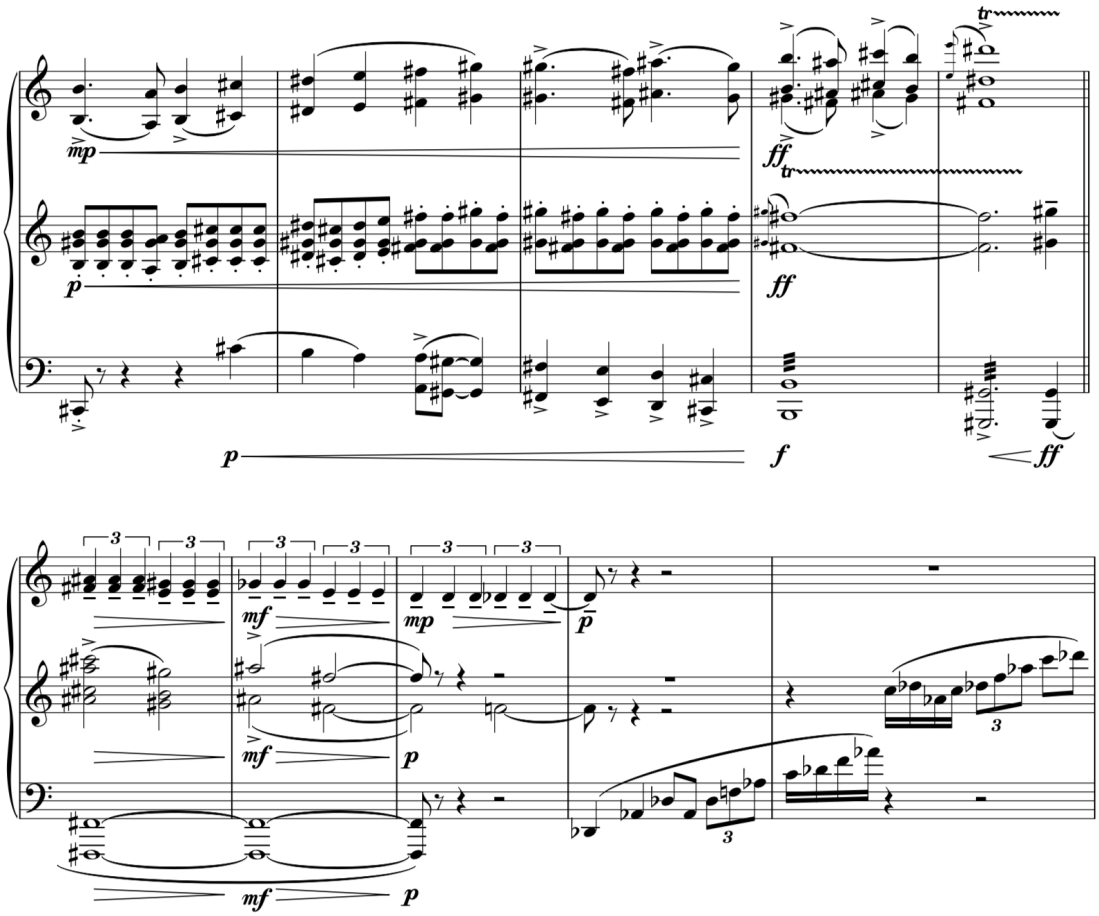
[18] I believe some minor changes to the animation were made so as to aid synchronization in places. However, various constraints, such as time and technology, limited the scale of these edits.

following self-imposed constraints, which offered direction for the composition:

1. The formation of a live ensemble (‘The Hullywood Scratch Orchestra’; George Marshall, 2018).
    - The formation of the Scratch Orchestra, via a call for players, led to a concise timbral palette, 10-players strong, that I could write for, directly into open score. It also imposed technical considerations and limitations (e.g. player skill, rehearsal and recording time, and recording technique and practice).[19]
2. Using the whales’ proximity to the audience perspective as a means of informing textural density.
    - Loosely applying a principle of 'audio-visual counterpoint' (Schiffrin, 2011:4) I paralleled some of the actions of the whales. For example, if the whale came particularly close to the audience's vantage point I would often increase the number of instrumental lines, dynamic volume and textural span. Figure 2.2.1 presents a reduction of the passage that underscores the whale's off-screen approach to the screen in ‘I. Cadenza’, where it appears to pause and stare back at us momentarily before moving, peacefully, away.

[19] In section 4 of this commentary I focus on the two Hullywood Scratch Orchestra projects in greater detail, explaining how they impacted composition and orchestration of the music for *Bowhead* and *Haunted Emotions* (ongoing/2018).

Figure 2.2.1 underscoring the approaching Bowhead ('I. Cadenza', bar 52-61)



3. Paralleling what I perceived as an ambiguous narrative in each film and across the series.
    - Similarly to 2, but on multiple levels, this led to structural considerations on how to make the work a coherent whole and this was in part shaped by the decision to treat the composition as a multi-movement concert work. These structural considerations led to the larger scale use of tonality between the films to support the cyclical quality of the narrative (Table 2.2.1). This larger tonal schema is reinforced by its recursive use on a smaller scale. To do this it takes the major-minor relationship between B-flat to G and

B-flat to G-flat (enharmonic of F-sharp) and embeds it into the harmonic and melodic material. Figure 2.2.2a-c demonstrates its use in the melodic content, which features a scalic descent, typically starting by a minor-2nd step down and then either a major (a) or minor (b and c) rising third in the last bar of each extract. The 'II. Duetto' extract (figure 2.2.2a) was the earliest material written, in response to the pairing of two, presumed, mates, becoming the *Bowhead* motif that features throughout the work. figure 2.2.3 presents an annotated score to the final section of 'III. Coda'. Here the harmony and thematic material culminates in a rich ending to the film/movement, in F-sharp, with the tonality split between major and minor until the very end (figure 2.2.4). One can also see the abundance of oscillations between major and minor 3rds.

Table 2.2.1 *The Bowhead Films/Icebreaker Cycle's* tonal design

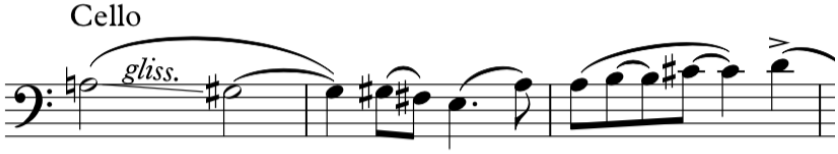
Movement	**Starting tonality**	**Ending tonality**
I. Cadenza[20]	F#	Bb
II. Duetto	Bb[21]	G
III. Coda	G	F#

[20] The musical titles of the films are not ones I gave the films but rather the titles of the video files that were delivered to me. While I used them as they had been assigned these titles by the director, they have no deliberate relationship with the music of each film/movement.

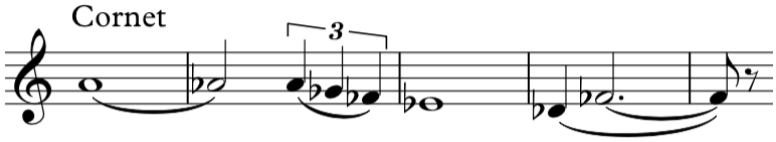
[21] I actually undermine this, to a certain extent, by opening with a G-minor chord. The imposition of B-flat is made by the inverted pedal, which sits on top of an oscillation between the two other core pitch centres: G and F#.

Figure 2.2.2 extracts of the *Bowhead* motif/melodic material

a) 'II. Duetto', bar 55-57



b) 'I. Cadenza', bar 10-12



c) 'I. Cadenza', bar 60-62

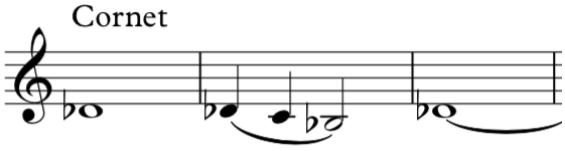


Figure 2.2.3 see overleaf

Figure 2.2.4 reduction of the final chord, ('III. Coda', bar 66-7)

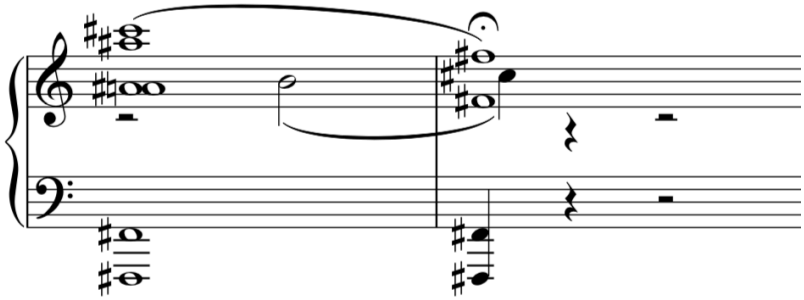
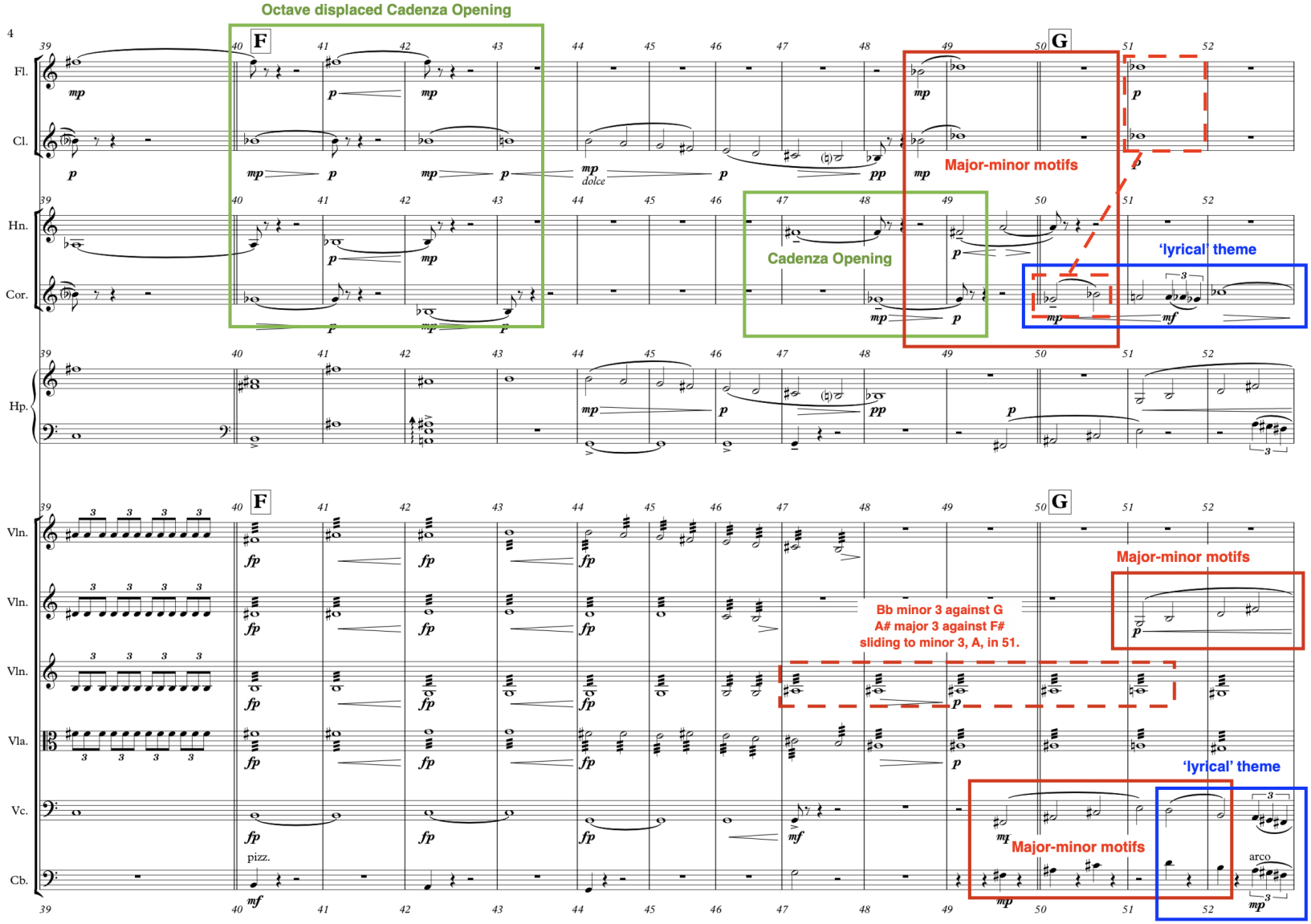
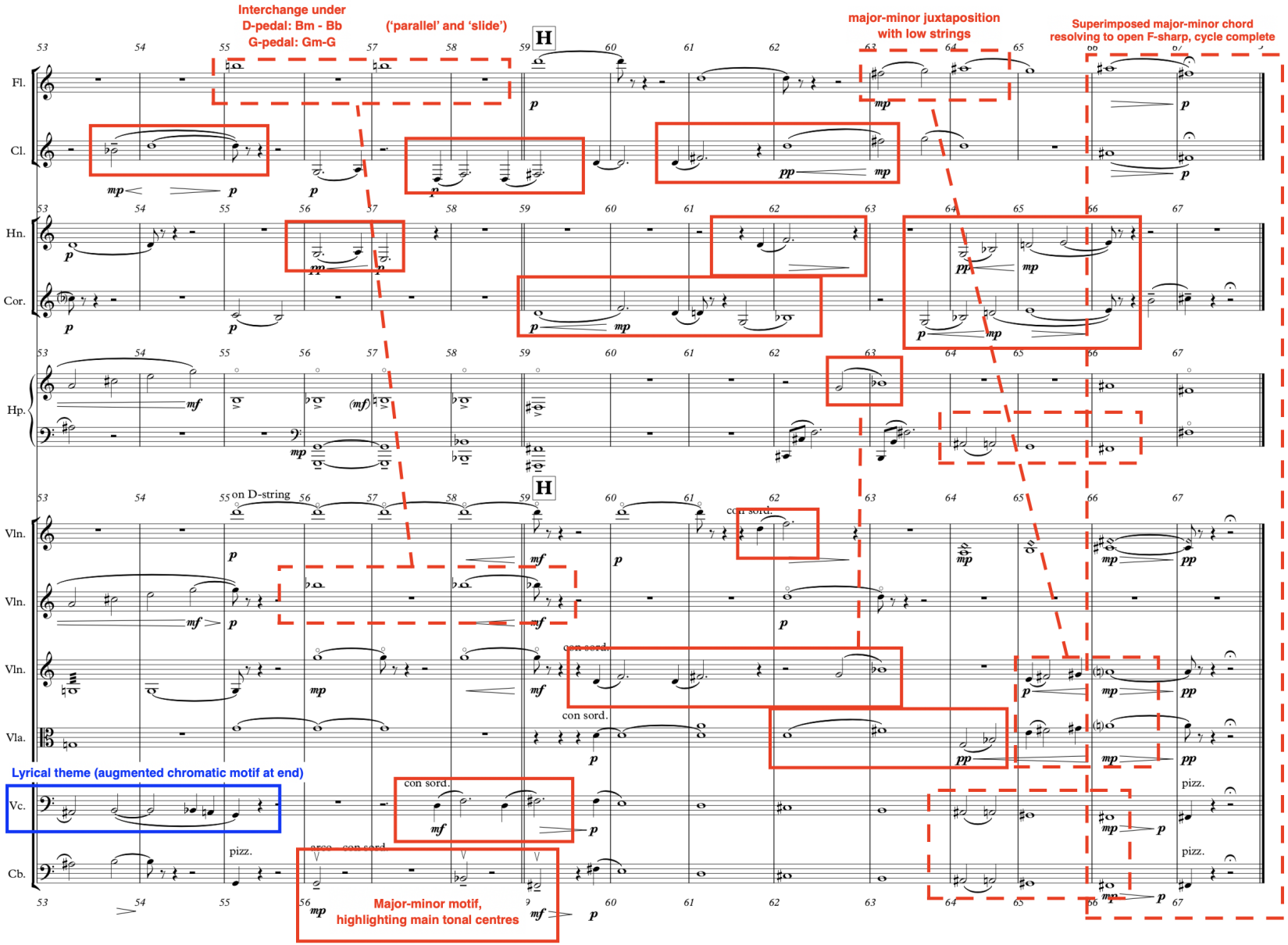


Figure 2.2.3 ending section, annotated ('III. Coda', bar 39-67)




Interchange under
D-pedal: Bm - Bb
G-pedal: Gm-G
('parallel' and 'slide')
major-minor juxtaposition
with low strings
Superimposed major-minor chord
resolving to open F-sharp, cycle complete
Fl.
Cl.
Hn.
Cor.
Hp.
Vln.
Vln.
Vln.
Vla.
Vc.
Cb.
on D-string
con sord.
pizz.
arco
Lyrical theme (augmented chromatic motif at end)
Major-minor motif,
highlighting main tonal centres

2.3 *Curiosities of the Mage's Sanctum* (2016) and *Exposure* (2016)

Exposure and *Curiosities of the Mage's Sanctum* are a pair of projects by different students from Hull School of Art and Design, undertaken before *Half Empty*. Both are demonstrative films, after initially being intended as gameplay demos, on the students' work creating video-game environment and object designs. For each of these projects the music was written first, meaning I approached them similarly to concert work *Bewere!* but with the knowledge that they were for pieces of media. Therefore, in order to conceptually ground each composition, I combined the stylistic aspects of each video synopsis with what I deemed suitable thematic and harmonic language that was ripe for exploration.

Curiosities presented the homestead of an unseen mage character, in an art style that one might find in a Fantasy Role Playing Game (RPG). Filled with interesting and curious objects such as coats of arms, cauldrons and leather-bound books, the scenario is mystical.

Using a theme that I composed in 2014 (George Marshall, 2014), for an unused project, the A-theme of *Curiosities* (figure 2.3.1) shares qualities similar to Edvard Grieg's *In the Hall of the Mountain King* (Op.46; figure 2.3.2). I use this thematic material as the basis for harmonic exploration in the work, which aimed to synergise my contrapuntal writing style with more expansive, tonally centred harmony; I also use the theme to impose (direct-modulation) and superimpose (bitonality) tonal areas. Figure 2.3.3, annotates a short passage to demonstrate this.

Figure 2.3.1 A-Theme (*Curiosities,* bar 11-14)

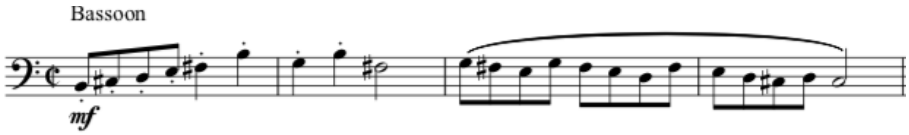


Figure 2.3.2 *In the Hall of the Mountain King* (Grieg, Op.46, bar 2-5)

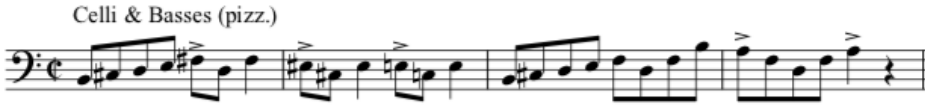
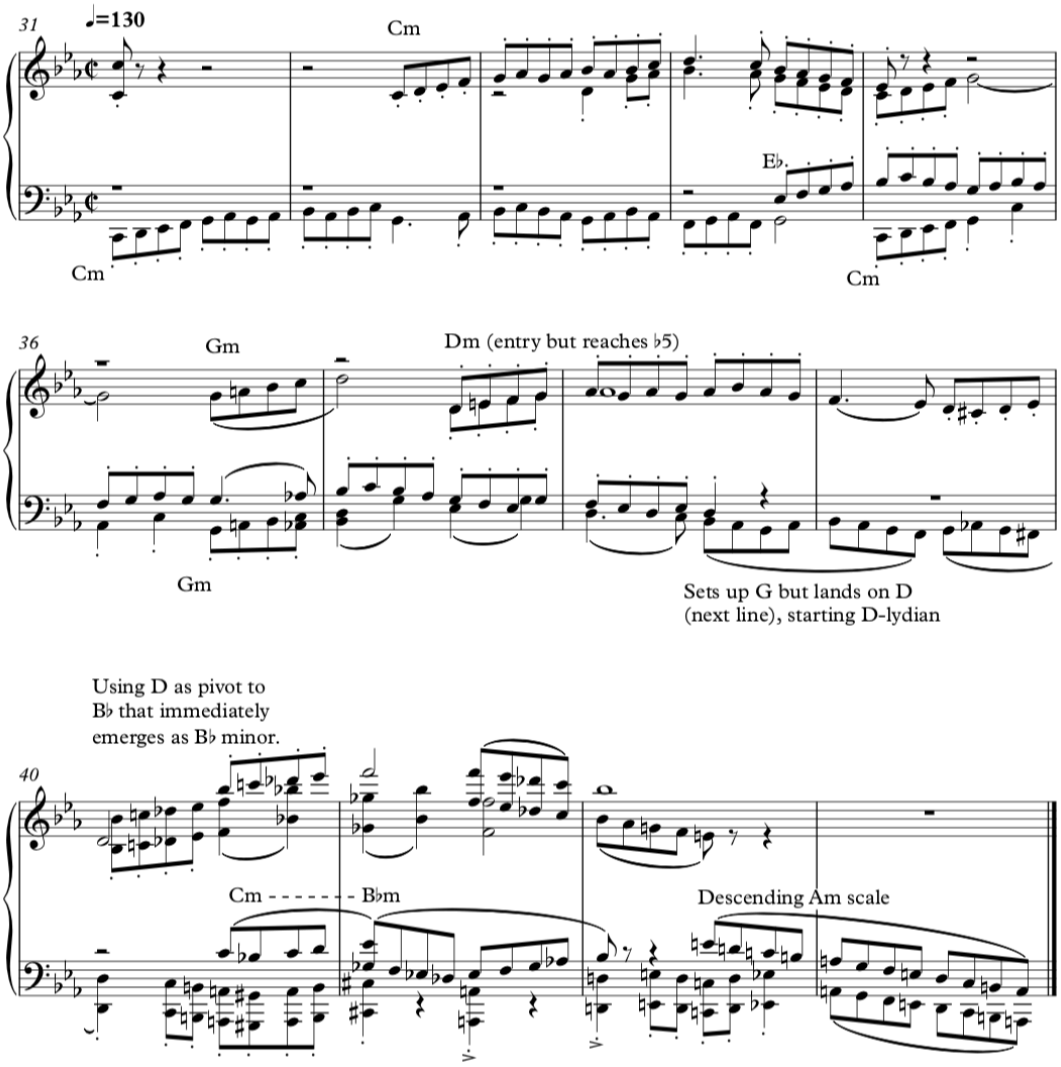


Figure 2.3.3 harmonic reduction highlighting the use of thematic material to impose tonal areas (*Curiosities of the Mage's Sanctum,* bar 31-43)



The B-theme (figure 2.3.4) is a short, fragmentary quotation from Bedrich Smetana's *Vltava* (T. 111; figure 2.3.5). The development of a second theme served as an efficient means of deriving a B-section that could, in combination with the A-theme, be arranged and expanded quickly. Basing the themes on Smetana and Grieg was an intuitive response to the style and story presented by the film, but I was also aware of the common trope of drawing on late 19th century musical language when composing scores for films which are set in magical and mythological worlds.

Figure 2.3.4 B-theme, (Curiosities, bar 3-6)

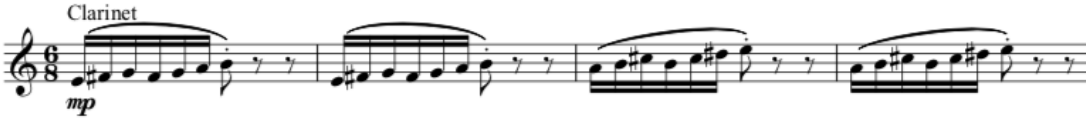
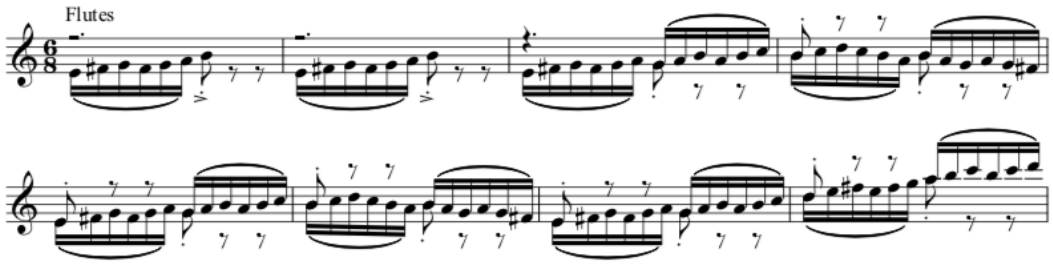


Figure 2.3.5 *Vltava* (Smetana, T.111, bar 1-8)



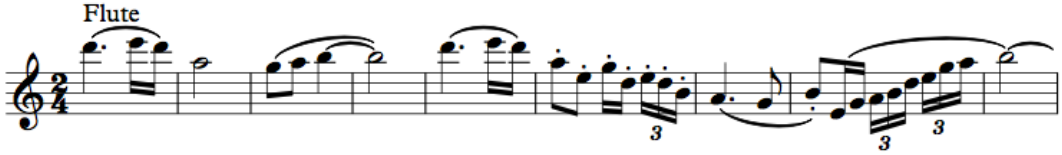
Exposure presents a vast mountain range that is stylistically opaque as it could be the setting for many films of varying styles. However, on viewing the film, the landscape reminded me of the North American Appalachian Mountains, which in turn led me to think of Copland and orchestral folk music of the 20th century. I was particularly drawn to this style as I believed it presented an opportunity to experiment with an array of harmonic structures such as

'modes', 'pentatonic and hexatonic scales', 'chords by fourths' and 'pedal' and 'parallel harmony' (Persichetti, 1962:5-6).

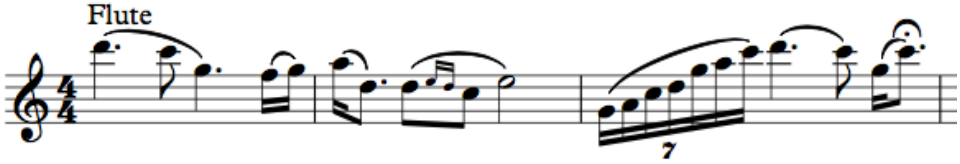
The harmonic experimentation drove this aspect of composition in combination with the folk influence, which informed textural and orchestration decisions. The following figures (2.3.6-8) extract some examples of harmonic and orchestration from folk works by Ralph Vaughan-Williams, Aaron Copland and John Williams that were a key influence on *Exposure*.

Figure 2.3.6 pentatonic solo melodies

a) solo flute melody (*Exposure*, bar 21-29)



b) solo flute, 'Dartmoor 1912' (John Williams) from *War Horse* (2011, Spielberg)



c) solo violin, *Lark Ascending* (1914) - Vaughan Williams, bar 3

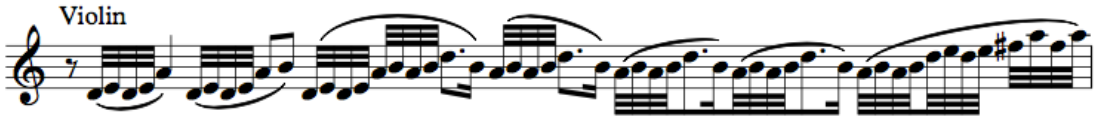
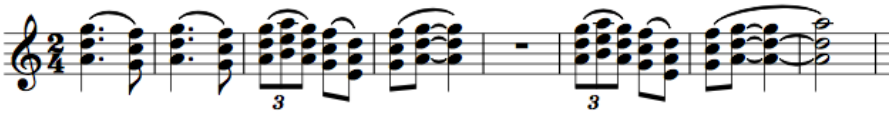
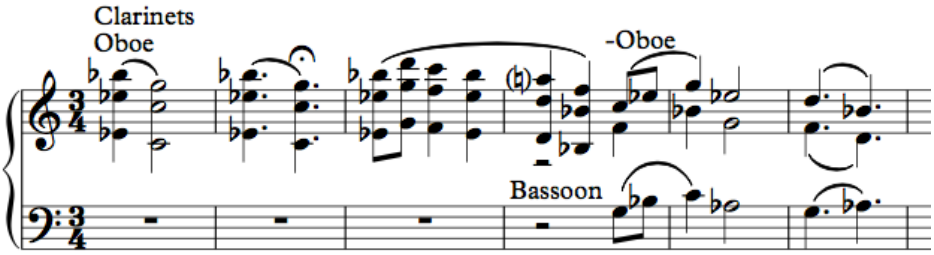


Figure 2.3.7 parallel and quartile/quintal harmony

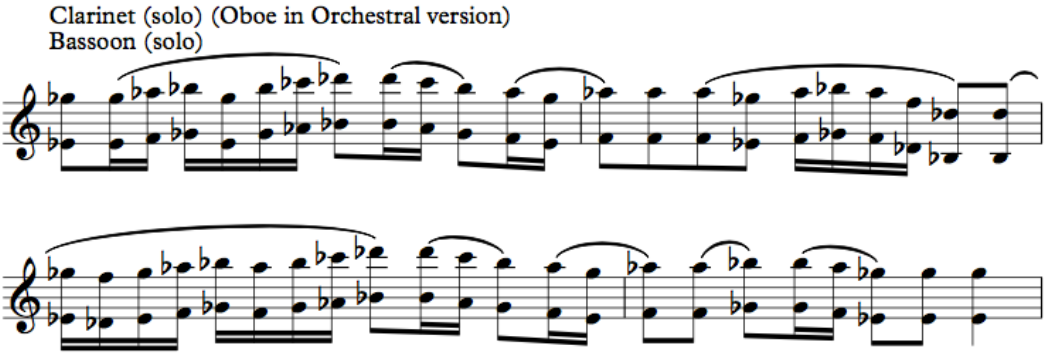
a) quartile parallel harmony, (*Exposure*, bar 41-48)



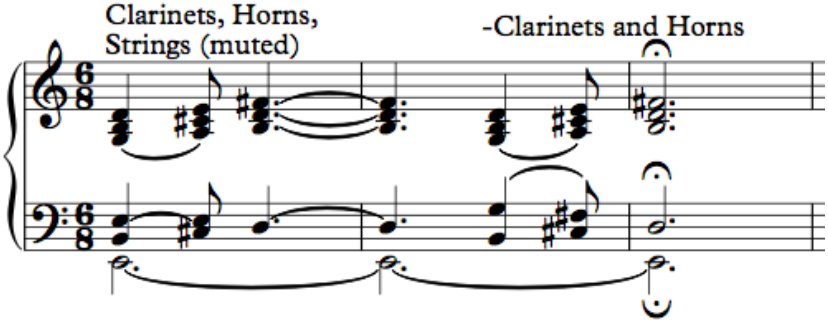
b) quintal and quartile parallel harmony (*Billy the Kid: Ballet Suite* (1938), Copland, bar 1-6)



c) parallel harmony in 3rds (*Appalachian Spring* (1944), Copland, rehearsal mark 57)



d) parallel triads (*Lark Ascending* (1914) – Vaughan Williams, bar 1-3)



e) parallel 1st inversion triads (*Pastoral Symphony* (1921) - Vaughan Williams)

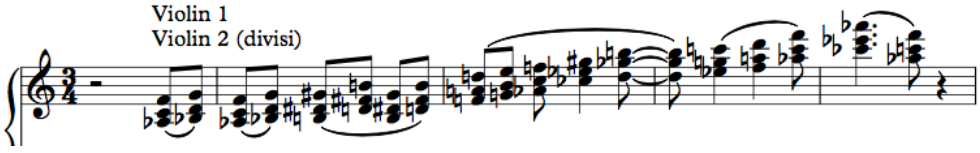
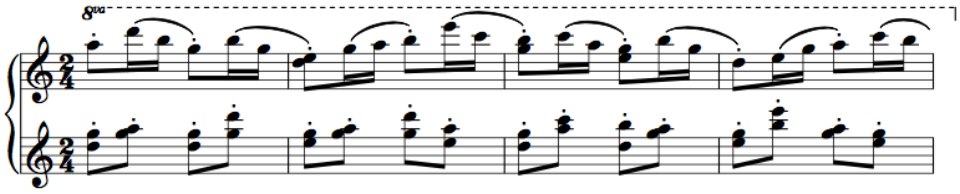
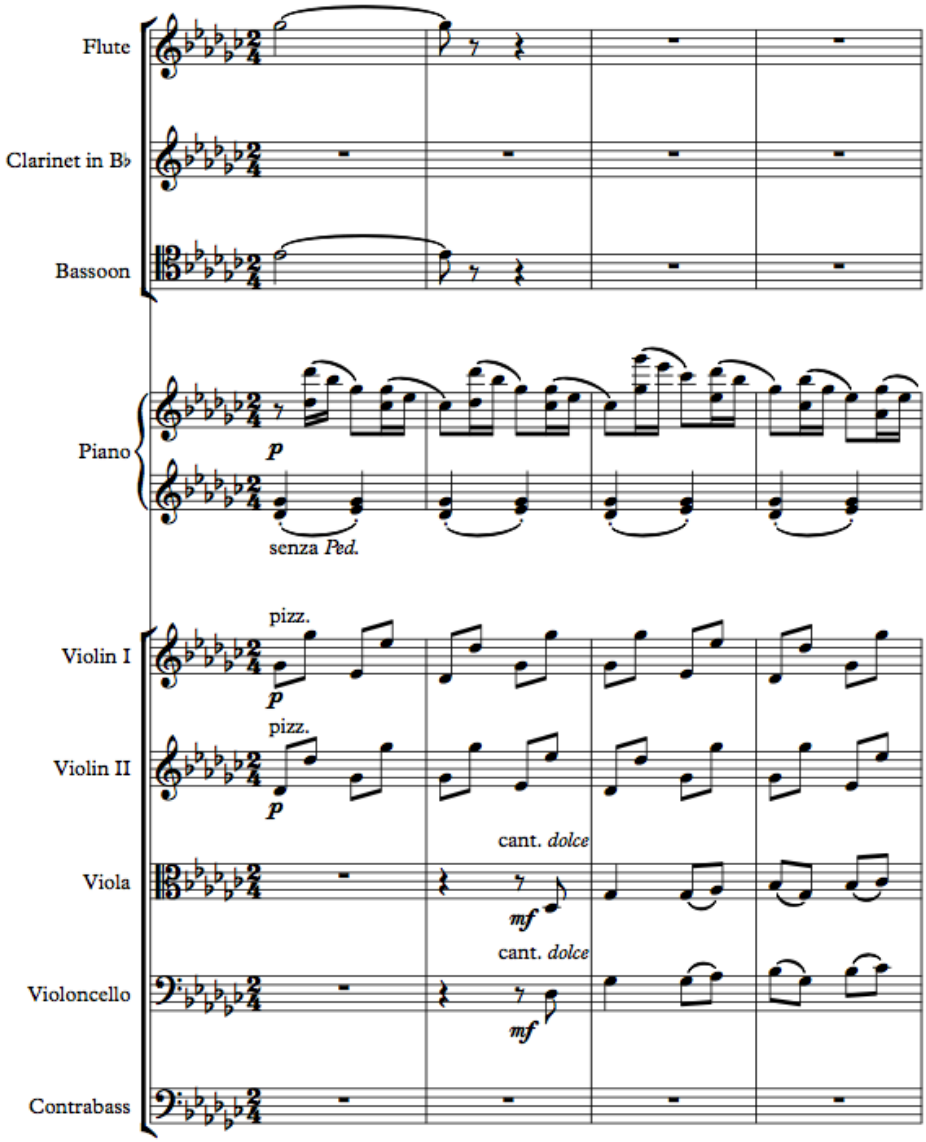


Figure 2.3.8 similar orchestration devices

a) *Exposure*, piano part, bar 79-82



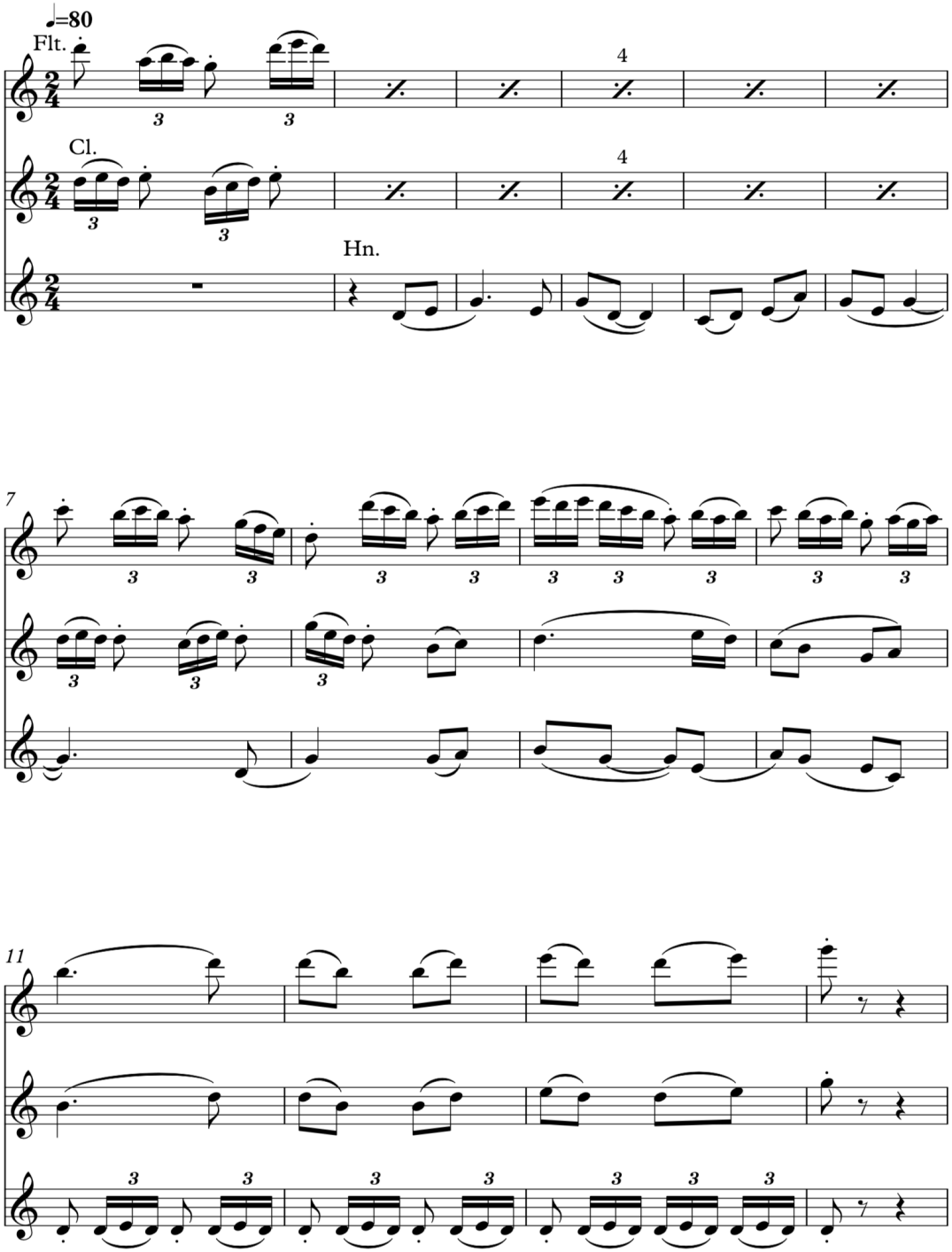
b) *Appalachian Spring* (1944) – Copland, rehearsal mark 59



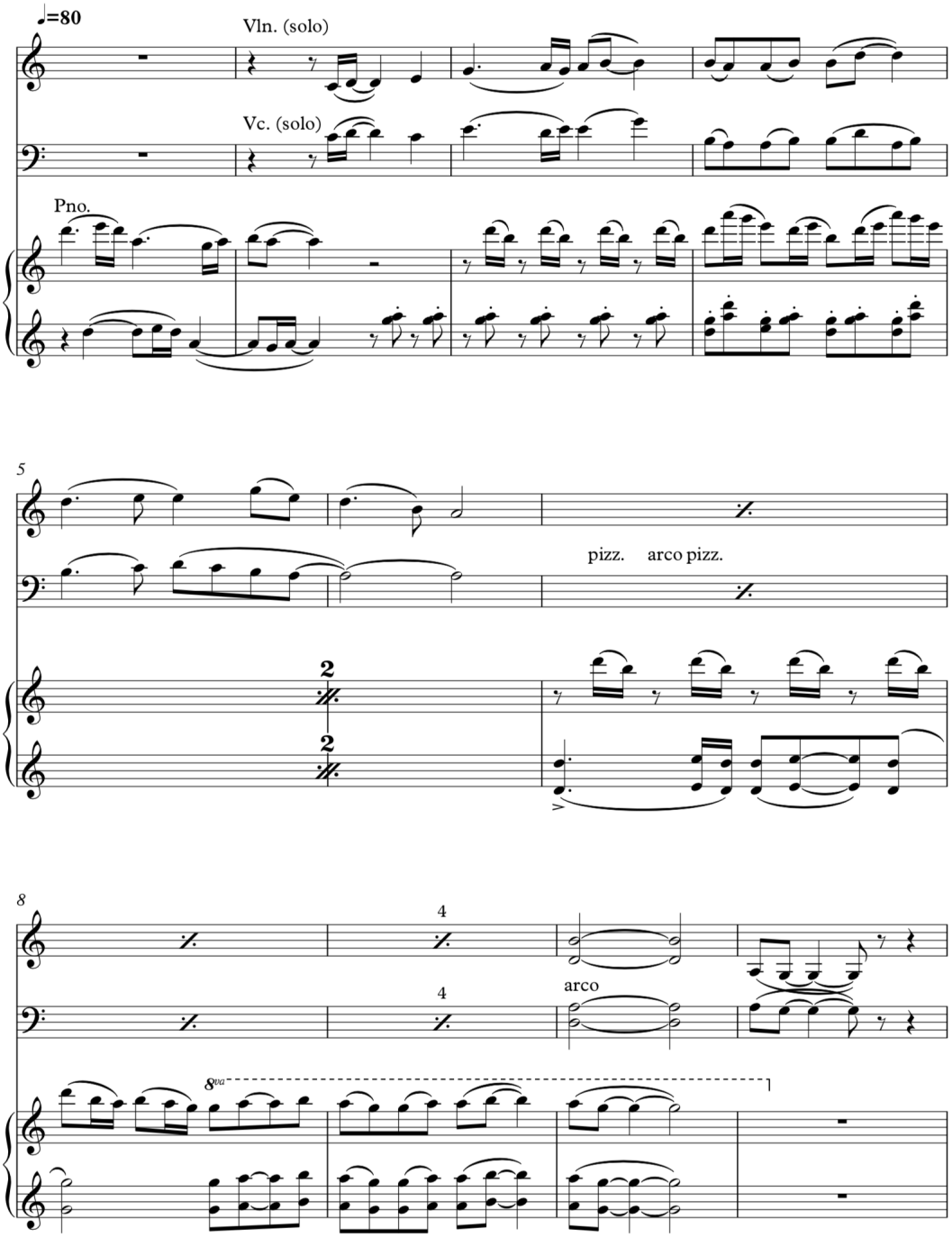
In addition to this, as *Exposure* was the first of the Hull School of Art design projects that I worked on, the project was initially intended as a small video-game demonstration (as opposed to film). I, therefore, initially sketched materials that might work in a simple music system for the video-game, before it changed part way through to a film demo. This entailed the composition of smaller cells that I planned to have the music system play back based on a variety of parameters within the demonstration. The contextual shift from game to film is important, as the composition and production of the short cells proved a useful means of trying out ideas, experimenting with techniques, as well as being an efficient means of then selecting those that I thought worked well and expanding them for the longer form film. Figure 2.3.9a-c extracts some of these short cells and illustrates where they can be found in the score of *Exposure*.

Figure 2.3.9 initial sketches for video-game demo, with reference to rearrangement into final cue of *Exposure*

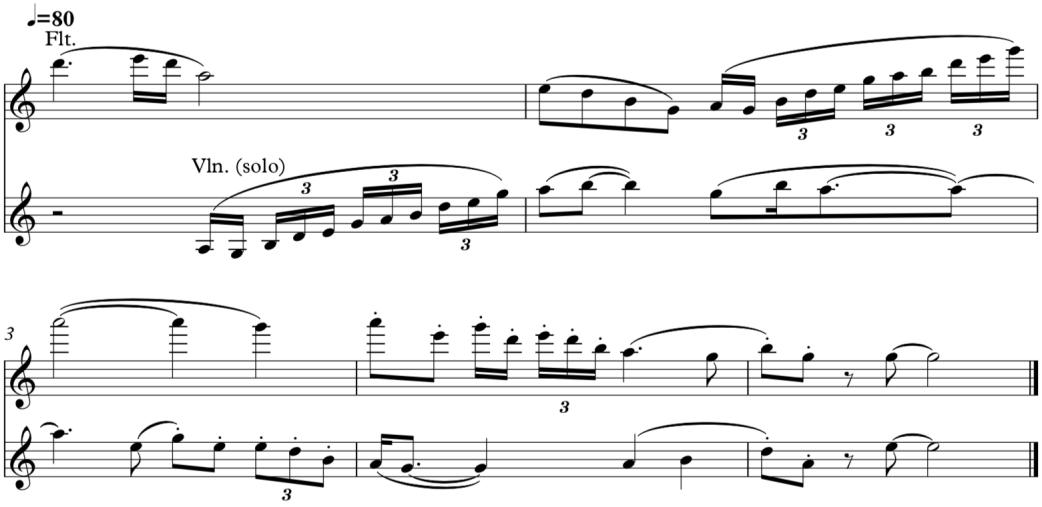
a) melodic fragments; textural similarity to piano and winds at bar 91-98



b) melodic fragments; textural similarity in piano at bar 99-110;



c) Flute and violin interplay, developed into opening of *Exposure*



2.4 *Polar Express Rescore/Christmas Rush* (2017/8) and *Sputnik* (2018)[22]

Polar Express Rescore and *Sputnik* were both solo practice projects. I decided to score the films as they presented an opportunity to develop specific areas of compositional technique, which other projects had not facilitated. For *Polar Express Rescore* this was to develop techniques of more ornate orchestration; in *Sputnik*, this was the opportunity to compose textural, rather than thematically driven material.

Sputnik is a film about an alien life form on the moon, which finds a small spacecraft that has been broken while exploring the lunar surface. I took the instinctual decision to use the film as an opportunity to explore textural composition. The austere setting together with the style of sci-fi and animation presented are what I consider the likely influencing factors in this decision.

In scoring the film I constrained myself to a limited harmonic and thematic palette, focussing, instead, on textural width and density. This was partly inspired by a desire to experiment with a concept called 'neutral suspense' (Schiffrin, 2011:91) that I felt would serve the film well. This is, typically, achieved via a pedal octave that is present but 'transparent'[23] (ibid.). Figure 2.4.1 demonstrates a reduction of the work, omitting the single theme that recurs intermittently (figure 2.4.2), highlighting the emphasis on texture. Each point where a chord is presented marks a significant moment within the film (figure 2.4.1).

[22] I also used Sputnik as an opportunity to practice scoring a film in my DAW, using piano roll.

[23] Schiffrin does not explain what he means by this term. I took it to mean a form of innocuous, plain texture that, if you were not paying attention, could easily slip under the viewer's conscious awareness.

Figure 2.4.1 harmonic reduction, with timecodes (*Sputnik*)

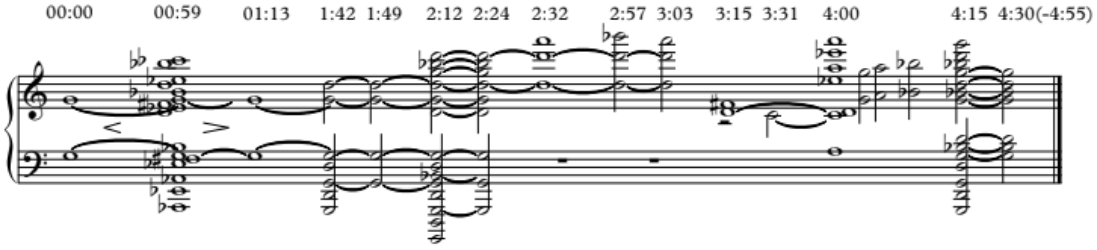
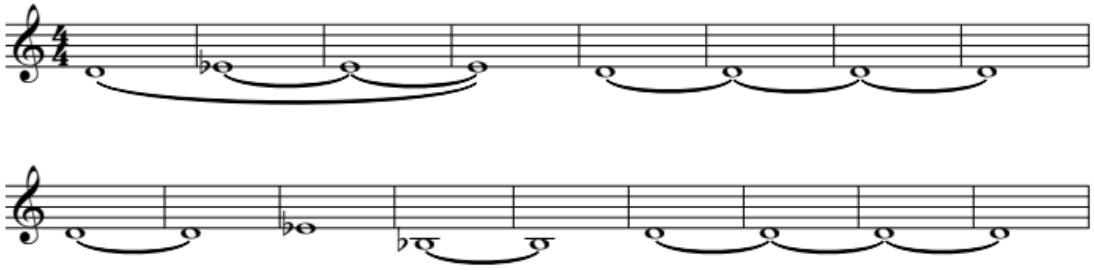


Figure 2.4.2 recurring theme transcribed (*Sputnik*)



The *Polar Express (2004)* scene used for this rescore exercise, is the one where Christopher the Hero Boy (the film's protagonist) drops and loses his train ticket out of the carriage window. Floating further and further away, encountering, and then being carried by, various wildlife, the ticket, miraculously, makes its way back to the Polar Express.

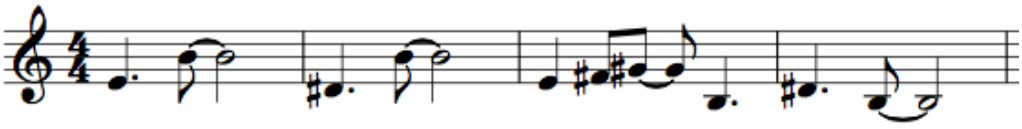
Although I did not enter the competition that the film scene was presented for, it was a competition rule that one must use a motif or theme from the original score. Taking this as a useful starting point, I selected a part of the theme *Believe* (2004, figure 2.4.3a-b), which is itself similar to another Christmas film theme from John Debney's score for *Elf* (2003).[24] While this served a

[24] The passage I am referring to can be found in the 'Main Title' of the soundtrack at approximately 0'55".

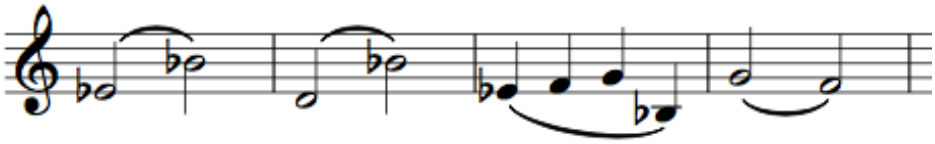
similar use to other musical borrowing in my work, the primary stimulus for scoring the film was to explore more ornate orchestration technique.[25]

Figure 2.4.3 'Believe' thematic quotation in *Polar Express Rescore*

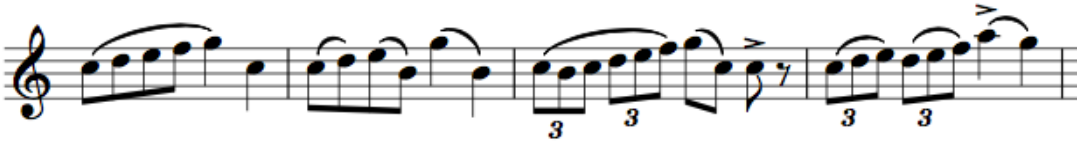
a) 'Believe' by Alan Silvestri and Glen Ballard, bar 1-4 (2004)



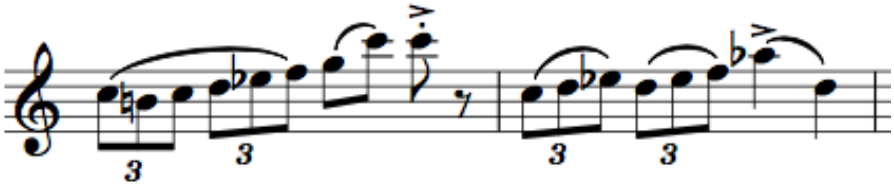
b) *Polar Express Rescore*, bar 57-60



c) *Polar Express Rescore*, embellished, bar 5-8



d) *Polar Express Rescore*, embellished, bar 85-6

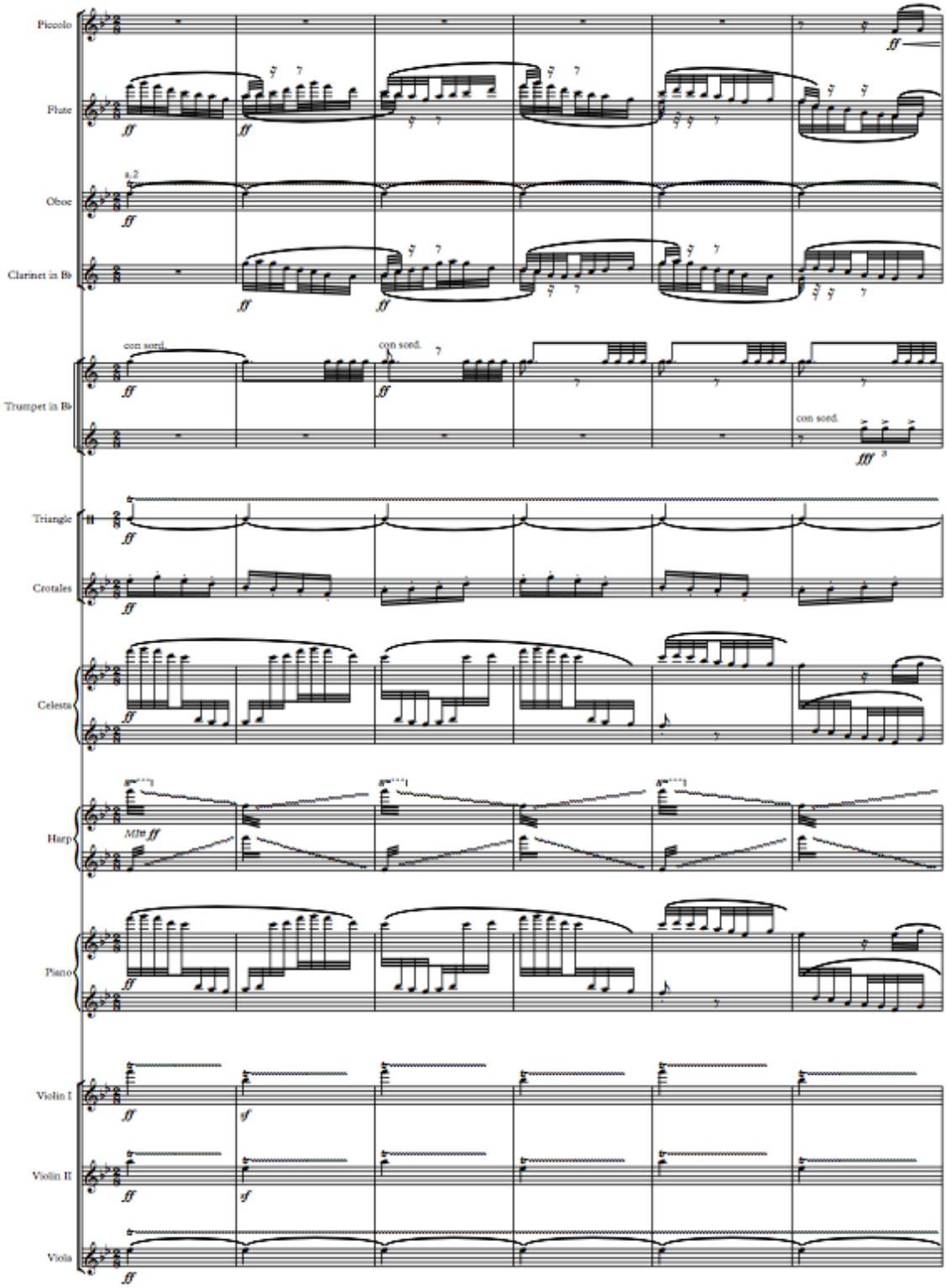


[25] Competition rules were also the stimulus for my *Polar Express Rescore*'s rearrangement and, in places, re-composition, as I submitted the work (as *Christmas Rush*) in to a MIDI orchestration competition that limited tracks to 2-minutes in length. This rule led me to remove a short section and to give the piece one constant tempo that was slightly higher than those in *Polar Express Rescore*.

When viewing the *Polar Express* scene for the first time, the dynamism that opens and closes the scene reminded me of Ottorino Resphigi's *Pini di Roma* (1924).[26] For this reason I took the work as a form of source material. However, in a bid to force adaptation and assimilation, as opposed to simple, direct quotation or copying, I constrained the instrumentation to single woodwinds. This forced me to rethink the dovetailing woodwind runs that open *Pini di Roma*. With this being the case, the strings became the preferred candidate, meaning the woodwinds and brass take up melodic or other roles (figure 2.4.4-6).

[26] I did actually go on to test this by playing the opening to the scene, along with *Pini di Roma*. This is a practice I have used in previous film works. Similar to a form of temp score, Schiffrin actually presents this as an exercise in his book *Music composition for film and television* (2011:3-4) suggesting the student observe how different music can change a scene.

Figure 2.4.4 *Pini di Roma* (Resphigi, 1924), bar 1-13 (continues overleaf)



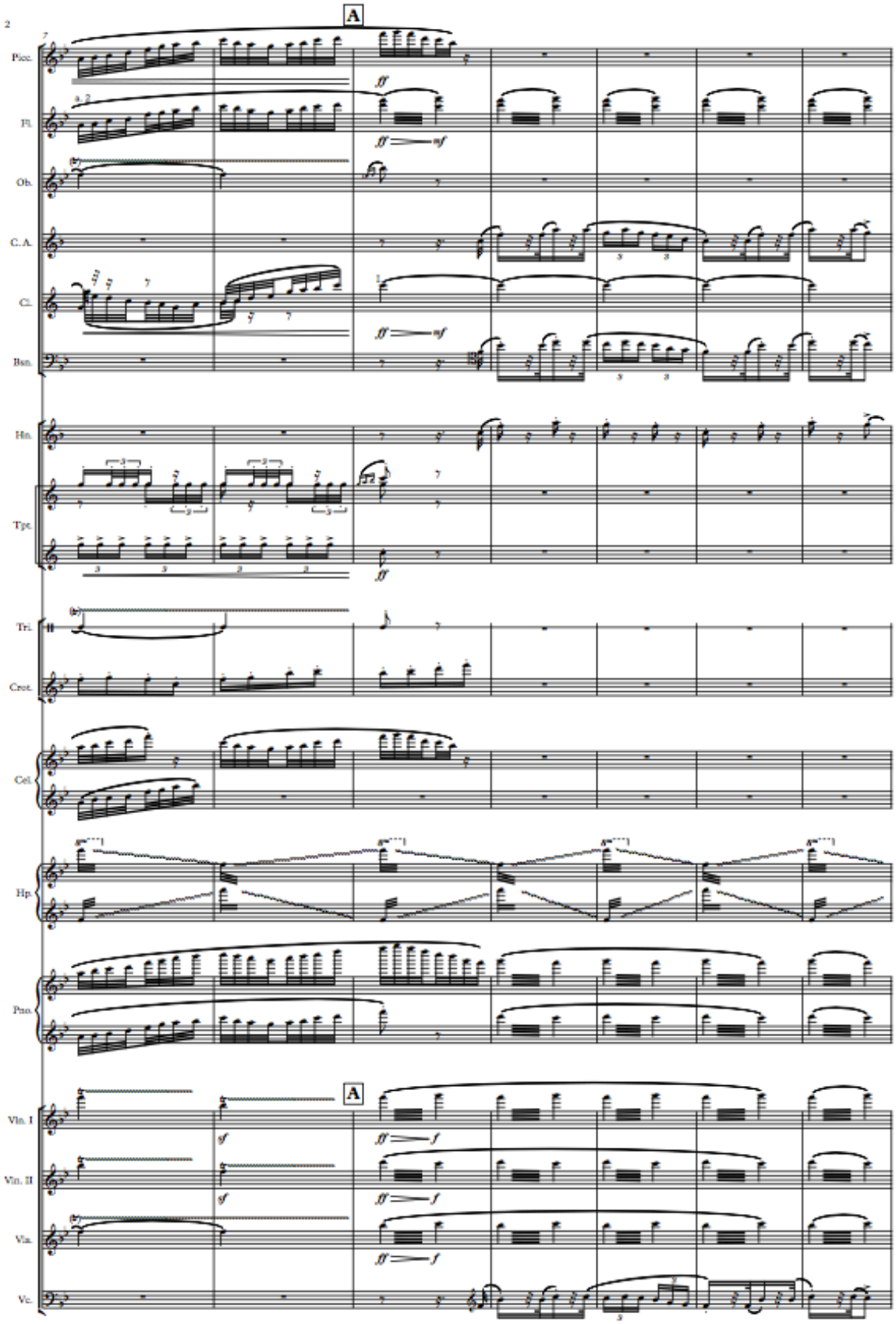

2
A
Picc.
Fl.
Ob.
C. A.
Cl.
Bsn.
Hn.
Tpt.
Tri.
Crot.
Cel.
Hp.
Pno.
A
Vln. I
Vln. II
Vla.
Vc.

Figure 2.4.5 *Polar Express Rescore*, bar 1-13

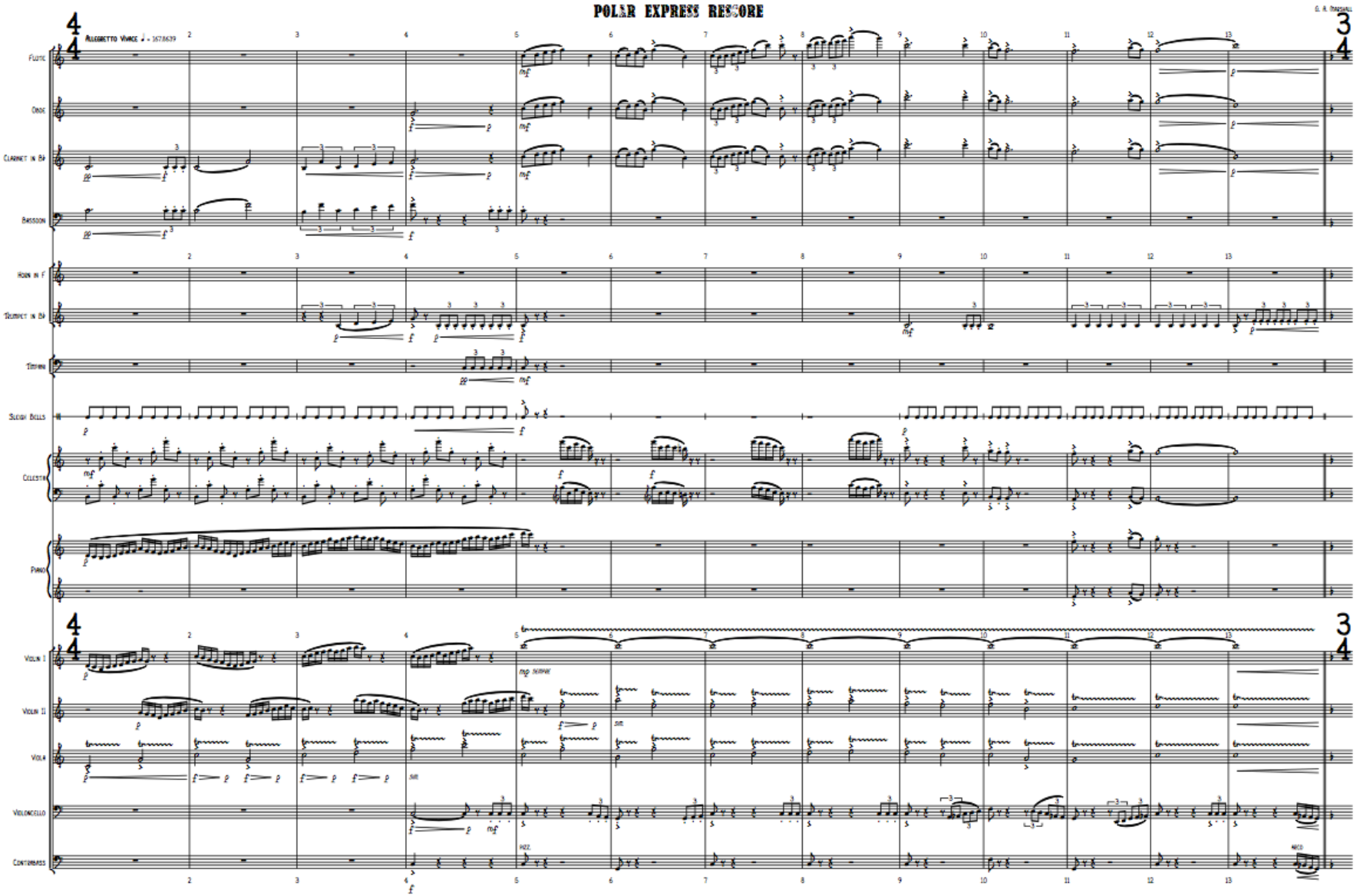
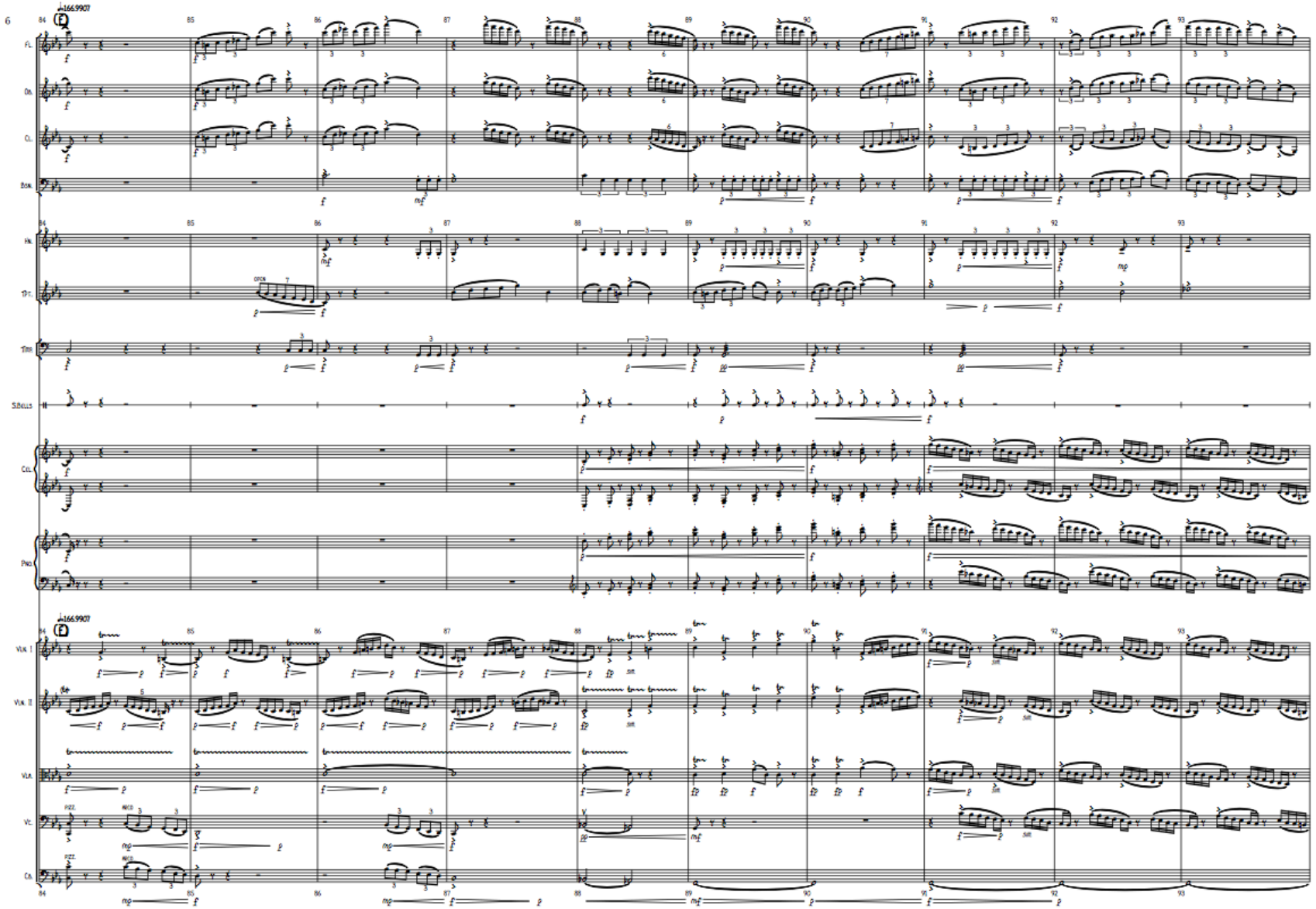


Figure 2.4.6 *Polar Express Rescore*, bar 84-93



3. The Videogame projects[27]

This section of the commentary focuses on the video-game projects within the portfolio: *Six Sided Slime from Outer Space* (2017), *DeCryptVR* (2017), *Robo-Basho* (2017, ongoing) and *Haunted Emotions* (2017, ongoing).

Except for *Haunted Emotions,* my role in these projects is characterised by my joining the teams very early in the development process. Joining the projects near the beginning presented a unique challenge as each project had next to no game to write to, at least not, in the same way, there had been in many of the film projects, which presented opportunities to compose to picture. This limitation led to forms of correspondence, often via electronic messaging services, whereby the objectives of the projects, the functional and stylistic aesthetics of the music, relating to the video games, were laid out. Albeit unsurprising in hindsight, it was interesting, as the skill make-up of different teams often led to them elaborating and supplementing their correspondence in ways that reflected their creative strengths. For example, the team working on *Six Sided Slime*, a group of artists, used pre-existing art and, eventually, original concept art relating to the aesthetic they were trying to create, as a means of communicating the music style that they were pursuing. BetaJester, who are the creators of *DeCryptVR* and *Robo-Basho*, are a team of programmers and, therefore, correspondence was very much word-based, with focusses being on game functionality and gameplay mechanics. In the case of *Haunted Emotions*, I joined the project later in the production process, meaning there were playable game builds and more substantially completed

[27] Unfortunately, none of the video-game projects, as of yet (20/11/2019) have been completed to point of release, with *Six Sided Slime* (2017) and *DeCryptVR* (2017) being indefinitely postponed; *Robo-Basho* and *Haunted Emotions* are still ongoing.

story elements, which were a fundamental part of the game, informing and impacting the composition.

I have created three sub-sections that pair *Robo-Basho* and *DeCryptVR* together. Created by BetaJester, these two projects demonstrate a different focus from *Six Sided Slime* and *Haunted Emotions*. While *Six Sided Slime* was art-oriented, due to its team of artists, *Haunted Emotions* focussed on story elements and the BetaJester projects on gameplay, functionality and mechanics. Therefore, each team's conversation centred around these areas of expertise, altering how the aesthetic attributes of each project were defined. Despite this, a distillation and conversion of the discussion into the abstract form of music needed to take place. Therefore, through these projects, I started to develop a means of doing this early in the compositional process by distilling the broader qualities and concepts of the games into a main musical theme. In writing the main theme, I would endeavour to produce a composition that encapsulated the project based on the materials and correspondence that had occurred. This approach also served as a means by which the development team could verify that my understanding and perceptions of the project were correct. Furthermore, should the composition be approved, it served as a starting point from which I could extrapolate and derive further material for the game with greater confidence.

3.1 *Six Sided Slime from Outer Space* (2017)

Developed by a team of game artists, for the Tranzfuser[28] scheme spanning May – September 2017, *Six Sided Slime from Outer Space* is a 'tower defence' (TD) and 'first person shooter' (FPS) hybrid video-game project that was being developed in Unreal engine. As the team was entirely made up of artists, this limited implementation capabilities as none of the team were specialist programmers meaning music designs had to be straightforward, with basic loop capabilities in the in-game tracks that allowed them to be dropped in with ease.[29] However, as artists, they frequently and richly supplemented their correspondence with imagery, which I found a potently efficient and effective means of communicating the style and story of the game.[30] For instance, Alex (lead developer) put together an impressive pair of mood boards on Pinterest (Padmue Eman, n.d. a & b)[31] that comprised the game's core inspiration and, thus, the core musical language the soundtrack needed to explore: 1940s-60s sci-fi movies and B-movies.

Starting with the main theme 'Viscous Viciousness' allowed me to focus on this core aspect without the worries of implementation. Instead the onus was on developing suitable material that encapsulated the film style that the game was based on and that could be later used as a guide for composing material for

[28] Tranzfuser is a UK Games Fund scheme/competition that is aimed at graduates who have a game concept and want to set up a game development studio. Initial funding is awarded for teams to create an early demo of their idea. The best demo(s) then receives further funding.

[29] As this reoccurs in the other games, albeit in different engines and due to slightly different circumstances, it is worth unpacking a little here. The 'simple music design' is something of a confusing title. While it makes implementation easy and does lead to music cues that have simple designs, it does leave the composer with a lot to consider with regards to the structures in their music as they relate to other cues and how best to get the most out of a cue without it being too distant from another that it might need to crossfade into. Using more sophisticated music designs, while more complicated, does mean one can traverse larger distances between cues with regards to tempo, rhythm, orchestration and tonal and harmonic shifts without creating a jarring experience. Fundamentally, the objective is to create a music design that does not draw attention to itself by being overly repetitious but, also, is as seamless as possible.

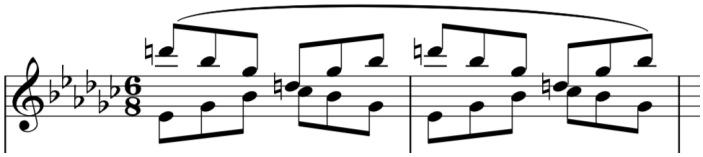
[30] In the portfolio I have been kindly allowed, by the team, to include some of the project's concept art, along with a video of the game's gameplay footage.

[31] I also include hyperlinks within the portfolio itself.

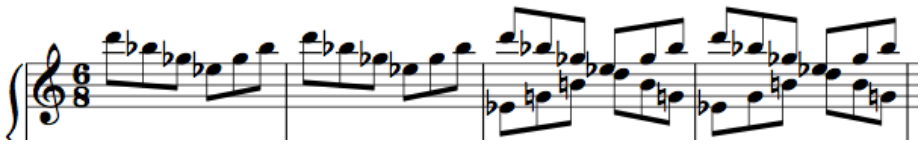
more specific in-game contexts. In the case of *Six Sided Slime*, this led to an interesting discovery that I felt would serve to ground the composition of the music conceptually while also creating a dichotomy ripe for exploitation. This was the similarity of compositional language and techniques in the soundtracks of 40s-60s psychological and sci-fi thrillers, but also the broader thriller genre. A shared appreciation, by myself and Alex, was for Bernard Herrmann's *Vertigo* (1958) soundtrack. For this reason, I decided to use a direct quotation from the *Vertigo Suite* score (Bartje Bartmans, 2016) as a starting point for the main theme (figure 3.1.1a). However, in quoting the *Vertigo* strings, I looked to extend the harmony by juxtaposing the upper minor, major 7th triad against an augmented lower triad (figure 3.1.1b). An inflection that was influenced by my own use of augmented triads in *Half Empty* (2016), to underscore the surreal, psychological facets within its narrative.

Figure 3.1.1 *Vertigo* quotation

a) opening tremolo string ostinato, reduction (*Vertigo*, 1958)



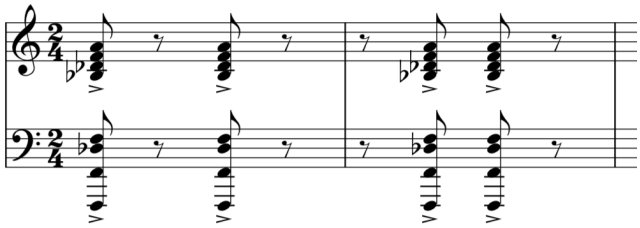
b) *Vertigo* quotation, reduction ('Viscous Viciousness', bar 1-4)



Vertigo itself is not a sci-fi thriller but a psychological thriller. This genre of film tends to 'revolve around a character with some sort of psychological

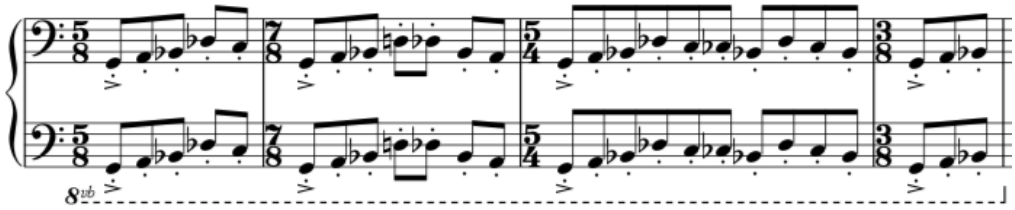
defect, usually amnesia and the film use[s] this psychological element to help build suspense' (Pendergast, 1992:68). (In a sci-fi thriller suspense is, instead, frequently built around the threat of an/the alien.) Furthermore, the *Vertigo* strings (figure 3.1.1a) outline a minor major-7th chord, also known as the "Hitchcock chord" (Hill, 2017:16), which opens the *Psycho* film score suite (figure 3.1.2). In adopting small units of such iconic works, the intent was to effectively communicate the stylistic reference the whole game was trying to create.

Figure 3.1.2 *Psycho* chords, reduction (bar 1-2)



It is also for this reason that I decided, within the main theme, to juxtapose the *Vertigo* quotation with a texture and orchestration (solo staccato piano, figure 3.1.3) similar to that of the B-section in Bernard Herrmann's *The Day the Earth Stood Still: Soundtrack Suite* (Soundtrack Fred, 2011:1'51"). My decision to do this was grounded in the conceptual rationale for the soundtrack that derived from the early correspondence with Alex, the team and the mood boards they presented: the idea of harnessing the similarities between psychological and sci-fi thriller scores.

Figure 3.1.3 B-section piano part extract ('Viscous Visciousness', bar 45-49)



Building on these similarities, the psychological thriller score, *Spellbound* (1945) by Miklós Rózsa, utilised the "alien timbre" (Hill, 2017:60) of the theremin along with a chromatic harmonic language. Hill concisely highlights many of the relationships I have discussed between Rosza's score for *Spellbound*, specifically the "Dementia" theme, Herrmann and sci-fi film scoring of this time:

> The theremin…floats over a bed of dark brass clusters and harps arpeggiating a G diminished seventh chord. There are nods to atonality in such gestures as the sudden augmented chord. … None of these things are gratuitous: they all serve a dramatic purpose, and despite the clichés, the effect is still disturbing. It's interesting to note that…Herrmann utilized a similar (albeit far more eccentric) palette six years later in his score for the sci-fi classic *The Day the Earth Stood Still* (2017:61).

Cognizant of this I decided the theremin could take on a unique role within *Six Sided Slime*, acting as a signifier to the presence of The Slimes. In the in-game tracks the theremin is present only in those tracks where Slimes will also be present. For example, 'Gungee Jump' was intended for a cinematic sequence that would show The Slimes falling from the sky, to Earth. It is also present in 'Viscous Viciousness', which I envisaged doubling as a score, like 'The Day the Earth Jiffled Incessantly', for the phases where the player mounts their defence of the planet. 'Quantum Mechanic' does not utilise a theremin as there

are no Slimes present during this phase of the game, where the player prepares his defences.

3.2 *DeCryptVR* (2017) and *Robo-Basho* (2017, ongoing)

DeCryptVR and *Robo-Basho* were my 3rd and 4th collaborations with BetaJester. Both games were being developed in their favoured game engine, Unity. Implementation is, ordinarily, less of an issue for this team. They regularly embrace the challenge, as programmers, of employing more advanced programming techniques and could accommodate more complex music designs into their projects. However, they asked me to keep music designs, similarly to *Six Sided Slime*, simple and implementable via a Unity Audio Manager plug-in they had because of time constraints relating to the events and funding body deadlines for which they were creating the games. This limited me to simple cross-fades and loops. However, in this section of the commentary I want to focus more on the collaborative relationship with this team, the importance of initial correspondence and how this was used to compose material for their games, despite the lack of original game materials.

Before and between these projects I had collaborated with BetaJester on *Here There Be Monsters* and a project called *Antiphase* (2017), which was something of a precursor to *Robo-Basho*. This was valuable as I was forging a much stronger relationship with this team and starting to learn how best to communicate with them to obtain important information from them, relating to the projects. As BetaJester are a team of programmers, correspondence was predominantly word based, focusing more on descriptions of mechanics and gameplay. *Robo-Basho* also had a very simple but playable version of the game early in development. Below I offer a textual distillation of what I understood each game to be, following correspondence with BetaJester.

- ***DeCryptVR***: A sci-fi, cyberpunk game, where the player is a prisoner in a virtual escape room. Interacting with the environment, solving puzzles against the clock, the players must escape the futuristic cell they find themselves in.
- ***Robo-Basho:*** A multiplayer arena game based on the sport of Sumo-Wrestling.[32]

In each of the above summaries I have underlined what I considered to be important defining terms for each. All of these phrases are important as they determine the direction of the compositions. For example: "sci-fi", "cyberpunk" and "futuristic" each define the genre and style of the game and its possible soundtrack, while "escape room" and "against the clock" suggest a measured sense of time and the tension that can come with that. For *Robo-Basho*, "Sumo-wrestling" suggests a location (Japan), weight and physicality. "Multiplayer arena games" tend to produce frenetic, dynamic gameplay due to their often compact, competitive nature. The early build BetaJester provided of the game helped to back up this assumption of such games.

In the case of these two projects I used the main themes as a means of defining the timbral palette, devising the session template in my Digital Audio Workstation (Logic X). For *DeCryptVR* this meant designing synthesised instruments. Writing the main theme allowed me the opportunity to watch tutorials on synthesis (imamusicmogul, 2014 & 2016a; MusicTechHelpGuy, 2014) and wider production techniques (imamusicmogul, 2015 & 2016b;

[32] In a brief demonstration as to how dynamically games can change in the course of development, *Robo-Basho* was originally called *Sumo Slammers*, with human Sumos. Shortly after completing the tracks included in this folder the game changed to robot characters. The tracks still function well in my opinion, however, I do have plans to revisit the music should the game progress as, while technically ongoing, it is on hiatus meaning any alterations currently lack a purpose.

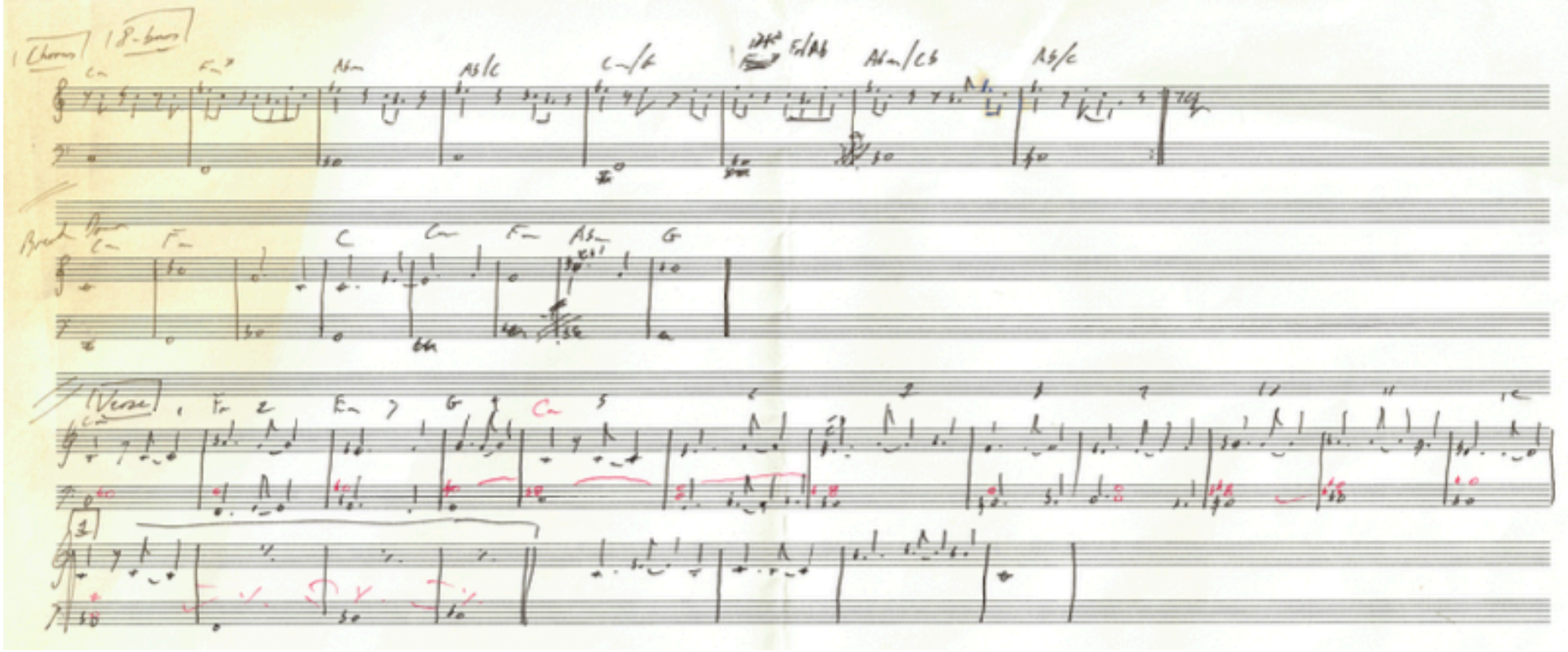
Reverb, 2016); I wanted the main theme to utilise EDM and popular music idioms as I felt they were both the most suitable production techniques for the soundtrack and an opportunity to diversify my own production skills. Often I would copy settings, using them as the departure point for my own experimentation. This method helped rationalise compositional decisions within a style of composition I was less familiar with.

The main theme for *Robo-Basho* was used to set up a session and experiment with non-western,[33] predominantly Asian and Japanese, instruments. Furthermore, I decided an emphasis on percussive instruments (taiko, surdo, chinese kettle drums etc.) would reflect the physicality of the sport the game was based on; and larger, bass instruments (larger taikos, rag dun, double Bass and Swiss alpine horn) would reflect the weight of Sumo wrestlers.

To further stimulate and direct composition I decided to impose structures within each main composition. This was more rigorous in *DeCryptVR* where I imposed structures on multiple scales. In 'The Clue is in the Title', this was the overall structure: intro-verse-chorus-bridge-verse-chorus-outro. From this design I devised chord progressions that I could then develop melody and bass lines for (figure 3.2.1) and then, also, tempo shifts (table 3.2.1), which I felt reflected the 'time' aspect of the game as well as adding distinction to the track as a whole and its sections.

[33] I do use some Western instruments such as double bass and the Swiss alpine horn. Although I typically used these as a means of layering with the other sample instruments, to give them extra presence and improve the slurred articulation of the upward octave leap in the opening of *Robo-Basho*'s 'Main title' track.

Figure 3.2.1 sketch of section melodies, bass line and chord progressions (DecryptVR, The clue's in the title) [34]



[34] In composing the wider score in Logic, from this sketch, melodic and harmonic content was altered and/or embellished.

Table 3.2.1 tempo map (*DecryptVR*, 'The clue's in the title')

Section	**Bar**	**BPM (crotchet=)**
Intro	1	106
Verse	17	116
	29	120
Pre-Chorus	33	126
Chorus	35	130
Bridge	54	106
Verse	74	116
Pre-chorus	86	126
Chorus	94	130
	102	106
	106	116
Outro	110	126
	114	106

For *Robo-Basho*, I imposed the use of Logic's MIDI FX: Arpeggiator controller as a means of constraining and fixing rhythmic patterns in the percussion parts by creating a form of technical resistance that made altering the rhythms more difficult within my digital audio workstation. This constraint forced me to consider, not only, how I might create music for a percussion oriented ensemble, with Japanese influences and a physicality reflective of the game, but with the added focus of how I might achieve this within the confines of using the arpeggiator. It is through this added focus that three other experiences came into play, directing the creative process.

The first experience was a performance by three Japanese percussionists that I had witnessed earlier in the year. A broader observation I made of this performance was their use of call and response, which was often counterpointed with passages or larger sections of unison playing. I use similar

structural counterpoint in the main title track of *Robo-Basho*, which is achieved through the hard panning of duplicate tracks to opposing speakers, and various combinations of these paired tracks in call and response with themselves and/or other types of instrument (Table 3.2.2).

Table 3.2.2 overall structure and use of rhythmic and melodic materials (*Robo-Basho* - 'Main title')

Section	Sub-section	Melodic Material	Percussive Elements
A	A1	None;	Call and response; Between instrument types: wooden idiophone and membranophones.[35]
	A2	(1) Rag-dun, alpine horn & double-bass	Unison between instrument types; subtle differences between left and right.
B	-	(2) Shakuhachi & koto	Call and response; irregular 2-bar split between wooden idiophones only.
A1	A2	(1) Rag-dun, alpine horn & double-bass	Unison pattern on membraphones **&** call and response between wooden idiophones.
	A1	None; Octaves;	Same as sub-section A1.
Codetta	-	Octaves;	Unison between instrument types;

The second experience was from *DeCryptVR* and its use of tempo to define sections in the main title cue, 'The clue's in the title'. In the main title track to *Robo-Basho*, I slightly increase the tempo of the middle section, from 120 to 126 crotchet beats per minute, which is accentuated by a more rhythmically dynamic and an irregular call and response phrase between two bamboo stick tracks. The rhythmic dynamism is emphasised further by a switch in the

[35] Wood idiophones: bamboo sticks and taiko drum sticks. Membranophones: taiko, chinese kettle drums, conga and bongo drums. The track does also include metallic idiophones such as Gongs and Buddha Bells. They are not mentioned in the table, as their role is more for effect.

melodic instrumentation from bass (Rag dun, alpine horn etc.) to treble (Koto and Shakuhachi), and a subtle change in the metrical division from 4/4 to 2/2, which is brought about by a combination of these various changes.

The third experience was that of *Six Sided Slime* and its use of extended and reduced bar lengths, which were deployed to create metric uncertainty. For example, 'Quantum Mechanic' extended (bar 28-9 & 31) and reduced (bar 35 & 39) its prevailing 4/4 metre, in several bars, by one crotchet beat, as a means of achieving a subtle form of metric tension. In *Robo-Basho*'s main title track, it makes use of this kind of reduction as a means of transition. For instance, the track makes use of a 2/4 bar transition into the middle section of the work (bar 16: ca.0'32") and then a 3/4 bar to return to a recapitulation of the opening section (in reverse order; see table 3.2.2; bar 24: ca.0'47"). It does this again (3/4) at bar 40 (ca.1'20"), to transition into the codetta. The track also makes use of an additional 3/4 bar as a means of adding a subtle variation and effectively traversing the reordered repetition of the opening's sub-sections, at bar 32 (ca.1'03"). I think the conscious recycling of compositional techniques here, in combination with my recent and personal experience of Japanese music, was used as a means of injecting myself into the work, while still composing original music within the functional, aesthetic and self-imposed creative confines of the project.

Rather than extrapolate thematic and harmonic ideas *per se*, the extrapolation of ideas from the main title tracks of *DeCryptVR* and *Robo-Basho* is the re-application, or breaking, of these constraints in the following tracks. For example, 'Break or Break' and 'Level #1' in *DeCryptVR*'s soundtrack use the

same core group of synthesiser sounds and instruments. Moreover, the emphasis on non-Western percussion persists in the ‘Main Battle Track’ and ‘Sudden Death Track’ of *Robo-Basho*. In the ‘Main Battle Track’ the use of Logic’s MIDI FX: Arpeggiator to restrict rhythmic diversity over the material persists. However, in an attempt to create tension appropriate to of the sudden death situation, within the ‘Sudden Death Track’, while still using the MIDI FX: Arpeggiator, I decided to manipulate its use via automation and track addition so as to cultivate a simple subtractive rhythmic structure that created rhythmic tension via the following metre change pattern: ||: 15/16, 14/16, 13/16, 12/16 :||. Similar to the middle section of ‘Main Title’, the lack of fixed and clear beats and beat divisions are what give the work a feeling of irregularity and rhythmic tension, along with its increase in tempo and rhythmic dynamism, which emphasises the semi-quaver. This was a significant decision, which is reflective of the 'Sudden death track's' own importance. I had to consciously work to break the self-imposed creative constraint, distinguishing it conceptually from the other tracks that operate within the confines of the MIDI arpeggiator more consistently. It is this juxtaposition of conformity and unconformity that, in part, helped rationalise this creative decision. I hoped the conceptual tension this presented from my perspective would accentuate the role of the track as a high-tension (sudden death) cue within the game.

3.3 *Haunted Emotions* (2017, ongoing)

There is much to say about *Haunted Emotions*[36] as a project. Here, though, I want to focus on how I use the main theme to derive musical material for the rest of the score, in relation to gameplay and narrative facets that were gradually revealed through email communication with the developer.

As a narrative point-and-click game, being developed in Unity, early correspondence was richly supplemented by synopses and fragments of script. In addition to this, as the game had been in development a year before I joined there were game-builds, blog posts and video-gameplay examples (Drafted Time Studios, n.d. a and b).[37] Below, I offer a distillation similar to that of the games, *DeCryptVR* and *Robo-Basho*, in section 3.2.

- Haunted Emotions is a narrative point-and-click game. You play as Albert, a ghost who has not fully passed on, and his new acquaintance and eventual friend, Mya. Dying young, a century ago, Albert was, much to his father's distaste, an aspiring young composer and pianist. Scaring away renovators, so he can search his family home freely with Mya, the player must find clues to trigger flashbacks that help Albert recall his past.

The solo developer initially suggested the music of Danny Elfman, specifically his scores for Tim Burton's macabre, gothic films: *A Nightmare Before Christmas* (1993), *Edward Scissorhands* (1990) and *Corpse Bride* (2005).

[36] I mention this in passing later, but it is worth noting here that the scores for this game were produced similarly to that of *Bowhead* (2016/7). Using University of Hull student volunteers to perform and engineer the soundtrack, they were recorded in the University's Duality Studio (George Marshall, 2018).

[37] Freddie Reynolds, the developer, has kindly allowed me to include some of these materials in the portfolio.

However, it is also worth noting that the developer has allowed me great freedom to suggest and test concepts both musical (theme, aleatory and musical design)[38] and theoretical (diegesis and audio-fidelity)[39] for the game.

It is through all this that I devised and imposed a simple, broader concept for the music of the game: I wanted all the music, stylistically, to sound as if Albert could have composed it, or be a product of his musical imagination. However, as with *Robo Basho*, I also did not want the music to be too historically authentic as the game does not present itself aesthetically, in its art style and story, as hyper-realistic. Therefore, the composition of the main theme offered a chance to devise, explore and experiment with musical material, seeking a quasi-period score.

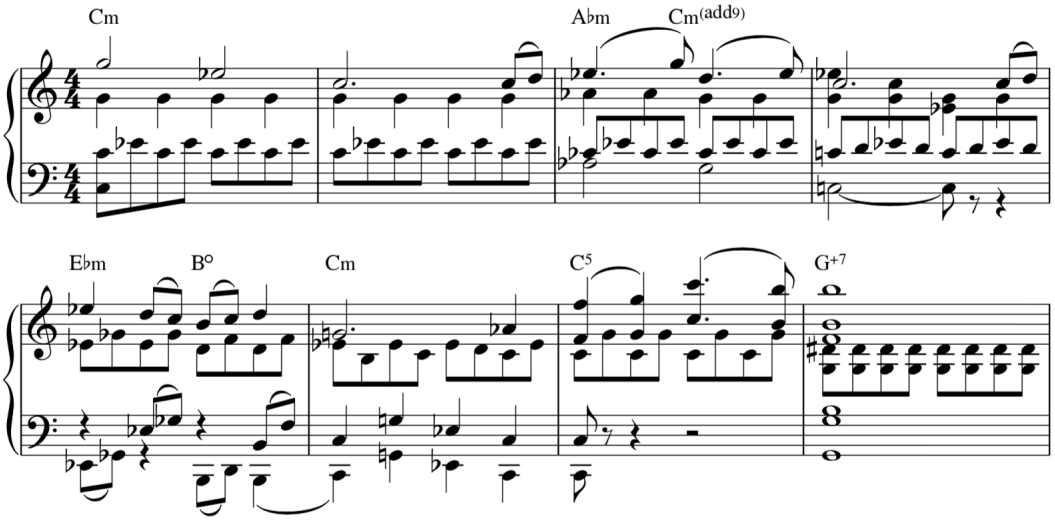
These explorations and experimentations led me to place emphasis on triadic harmonic structures and mediant relationships, which I felt struck a balance between the already similar language of Elfman, and the Romantic 19th century style that progressed into the 20th century. For example, chromatic-mediant relationships are documented in the work of many, prominent, mid to late 19th and early 20th century composers, as well as film composers; with the romantic emphasis on 'chromatic-third relations' being a key distinction from the preceding classical and 'common-practice tonal music' where 'root movement by a fifth prevailed' (Rodrigues, 2014:9). Figure 3.1.1 demonstrates this use of harmony in *Haunted Emotions*, via an annotated extract of the

[38] 'Aleatory' and 'musical design' pertain to parts of the score that are not included within the portfolio or this commentary. Primarily because they have not yet been implemented to the same extent as other parts of the score.

[39] We are currently experimenting with implementation. For example, we are considering the use of the old gramophone present in Albert's house as a means of triggering the music, which I have created alternate masters for—using Izotopes 'Vinyl' plug-in (Izotope, n.d.), so that it is present within the game world.

opening to the main theme 'Deadly Ignorant' that moves immediately to the chromatically altered sub-mediant chord from the tonic and back again in bar 3.

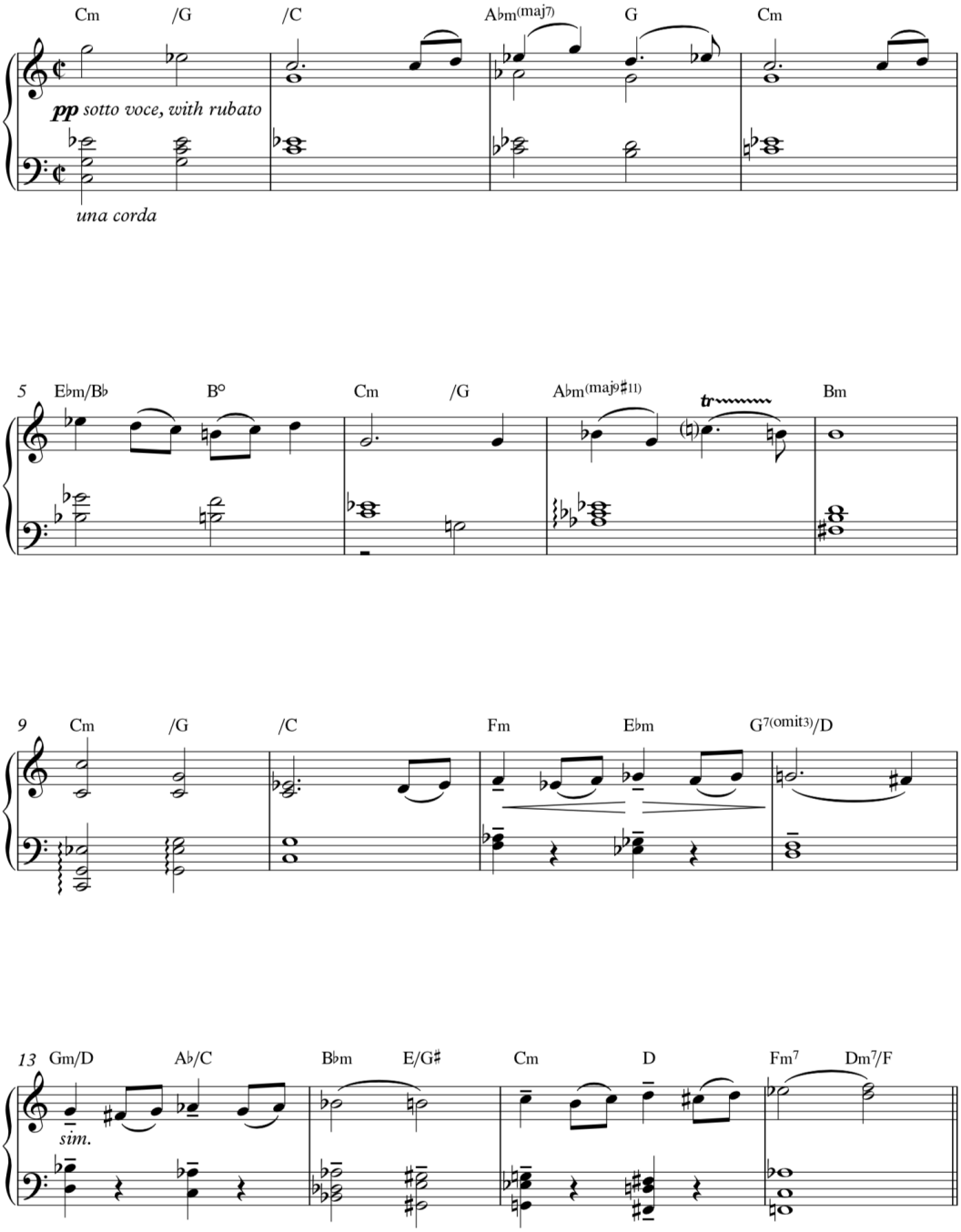
Figure 3.3.1 'Deadly Ignorant' (*main title*), piano reduction, bar 2-10



In the wider score, 'Nocturne'[40] (figure 3.3.2), this kind of harmony is pushed more, making greater use of major-minor juxtapositions and superimpositions and chromatic mediant relationships. The reasons for this are mixed. One reason is that the music is intended as an original composition by Albert, which he performs in the game; secondly the ease of rewriting and re-recording a solo piano work would be easier than reorganising the music for the larger scale recording as was done for *Haunted Emotions* which, similarly to *Bowhead*, used *The* Hullywood *Scratch Orchestra 2.0* (George Marshall, 2018). Therefore, the risk of experimenting and expanding the harmony in 'Nocturne', outweighed the risk of having to recompose or reproduce the track.

[40] The portfolio includes two performances of this cue. One was recorded specifically for the game, the other was video recorded by pianist, Anna Sutyagina, as a prize for a composition competition.

Figure 3.3.2 'Nocturne', annotated, bar 1-16



The composition of the theme, which is present in both 'Deadly Ignorant' and 'Nocturne', was largely inspired by the sadness of Albert's story. Thinking about how, in media and stage composition, certain intervals and trajectories parallel the on-screen visuals, the decision to open with a descending minor triad encapsulates the kind of despairing sadness that characterises Albert's

short life. For example, in a test that used a repeated minor chord going from soft to loud, 'all of the participants chose the description "sorrow turns to anger"' (Schopf, 2018:206). Furthermore, Schiffrin defines the minor third interval as expressing "sadness, nostalgia, and troubled memories" (2011:33). While I did not think as objectively as this in creating the theme, it is these broader, subjective facets, that I interpret as pervading the wider culture and which carry communicative value, that influenced my thinking and means of rationalising the thematic writing.

The importance of the main/Albert's theme can be extended further within the score, as it forms the starting point for the three 'Sneak Finale' themes (figure 3.3.3). Each of the 'Sneak Finales' is a miniature, self-contained expansion of a different part of the main melody. Figure 3.3.4a-c demonstrates where each theme originates, juxtaposed with an example of it from the relevant 'sneak finale': 'Sneak Finale no. 1' explores the opening 4-bars of Albert's theme; 'Sneak Finale no. 2' is an inverted and transposed version of those opening bars, followed by an alteration of bar 5 from 'Deadly Ignorant'; 'Sneak Finale no. 3' uses the tonality (E-minor) and theme of the second section of 'Deadly Ignorant'. The rationale behind this approach was a mixture of efficiency and continuity. They provided easily rationalizable starting points, while also being consistent since they were derived from the existing music.

Figure 3.3.3 B-theme, 'Deadly Ignorant', bar 46-53

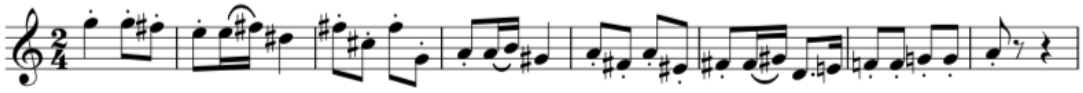
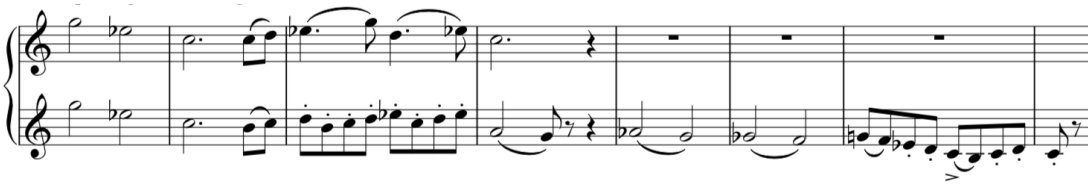
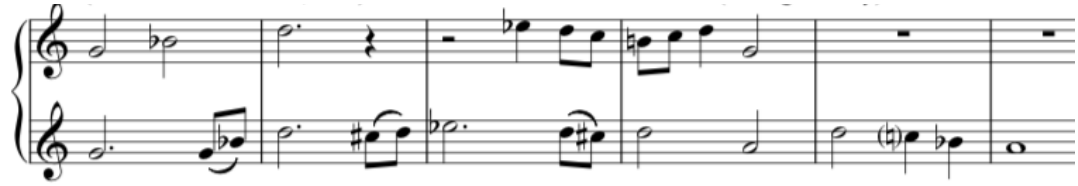


Figure 3.3.4 'Sneak Finales' and their origins in the main theme

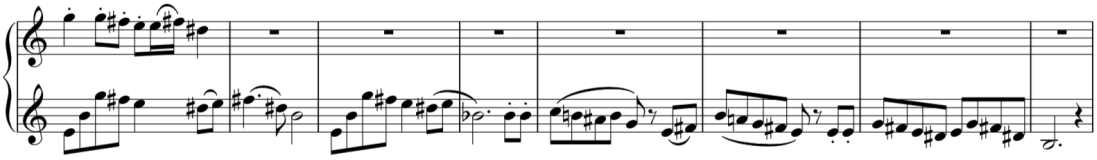
a) 'Sneak Finale No.1' (bar 3-10) and 'Deadly Ignorant' (bar 3-6)



b) 'Sneak Finale No. 2' (bar 59-66) and 'Deadly Ignorant' (bar 3-4, inverted and transposed, and bar 7-8)



c) 'Sneak Finale No. 3' (bar 114-121) and 'Deadly Ignorant' (bar 46-47)



Albert's 'Flashbacks' were not composed this way, although they do extract fragments and ideas from the main thematic material. These cues were intended to underscore cinematic sequences, where the tone and function of these sections was different; furthermore, they introduced more characters from Albert's life. For this reason the initial effort was to create a different sonority for these parts of the score and then inflect them with Albert's thematic material, where appropriate. To make these decisions I was given a series of synopses (Table 3.3.1), as the developer wanted to edit the scenes to the music.

Table 3.3.1 the 'Flashback' cut scene synopses (text sent to me by the developer; continues overleaf)[41]

No.	Act	Date	Characters (age)	Memory Sequence Details ("Title")	Location	Memory Instigator	Estimated Length (mins)
1	I	1908	- Albert (6) - Florence (12)	**"The Little Mozart"** - Albert learns how to play piano with his elder sister, Florence. - Florence hands him a book of manuscript paper.	Parlor	Playing Piano	1
2	II	1914	- Albert (10)	**"Need one more clue"** - Albert stands by the tree (by the lake) - He seems to be tracing with a charcoal pencil	Forest (by lake)	Piece of manuscript paper	
3		15/10/1914	- Albert (12) - Florence (18) - Lilian (9)	**" Onto something..."** - Albert sits alone by the tree (by the lake), manuscript next to him on the grass. - Albert is sad about something (find out later it's about Flori leaving). - Florence comes and sits down next to him. - She reads the manuscript and praises Albert's work. - They carve the date and initials into the tree to commemorate before Albert was "famous" in Flori's words. - Lilian (Albert's younger sister) shouts that dinner is ready.	Forest (by lake)	Carving in tree (by the lake)	2-3
4	III	15/10/1914	- Albert (12) - Florence (18) - Lilian (9) - Father - Mother	**"Dinner surprise"** - Albert's family are eating at the dining table. - Florence announces her intentions of becoming a nurse for the war effort. - The father becomes angry at this and how they don't want to follow in his footsteps. - Father takes it out on Albert and rips work out of his notebook. - Albert hides the remaining manuscript underneath a floor board, where it will be in the game.	Dining room	Something in the dining room?	2-3

[41] No music was required for sequence no. 2. Therefore, the 'Flashback no. 3' pertains to no. 4/"Dinner surprise" in this table and 'Flashback no. 4' to no.5/"Florence's send off"

No.	Act	Date	Characters (age)	Memory Sequence Details "Title"	Location	Memory Instigator	Estimated Length (mins)
5	III	19/10/1914	- Albert (12) - Florence (18) - Lilian (9) - Father - Mother	**"Florence's Send off"** - Florence says her goodbyes before leaving to become a nurse in the war. - She asks Albert to not be discouraged by their Father. - She gives Albert her music box (she got given the music box by a patient she was treating) as a reminder to always keep working and follow his dream as she is.	Albert's room	Manuscript book	1-1.5

In order to create a distinction between the flashbacks and the rest of the score I decided, along with simple changes such as slower tempos and longer note durations, to alter the harmonic language. The prevailing structure is still triadic, however, the triads make use of more extensions that would, frequently, yield chords of more quartile/quintal structure (figure 3.3.5; 3.8.6b). This was, primarily, a result of 'Flori's' theme, which, due to the character's presence and importance, is used in each flashback (figure 3.3.6a-d). It is characterised by a stepwise idea that, in relation to the underlying harmony, rises or falls from, or to, a point of harmonic tension, such as an 11th, 9th or 7th.

Figure 3.3.5 quartile structure ('Flashback no. 1', bar 9-11)

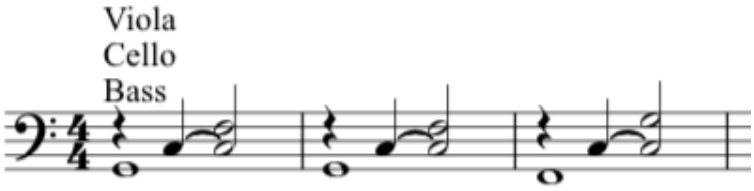
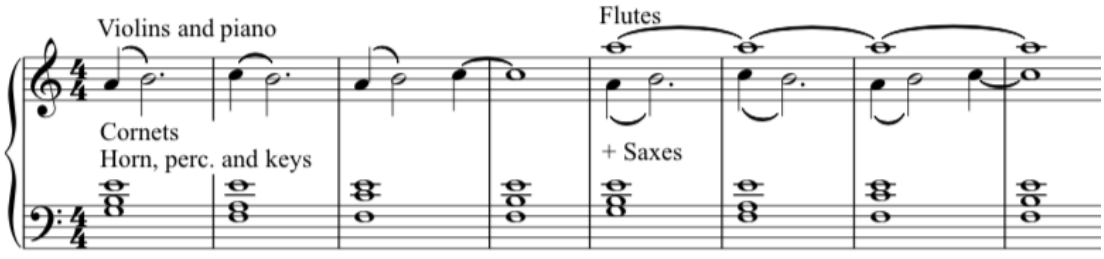
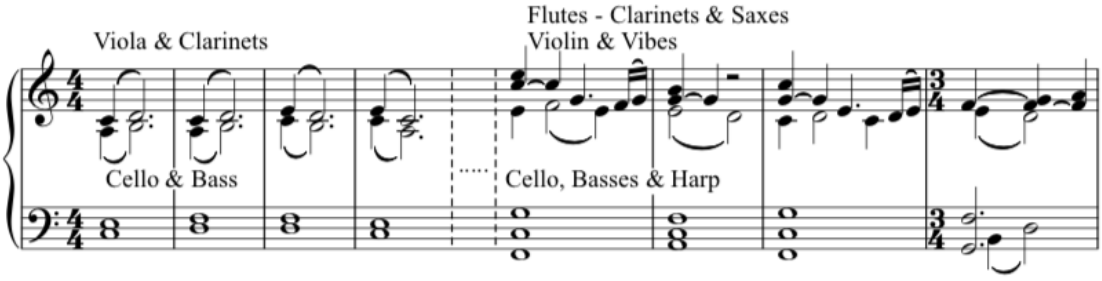


Figure 3.3.6 Flori's theme in the 'Flashback' cues

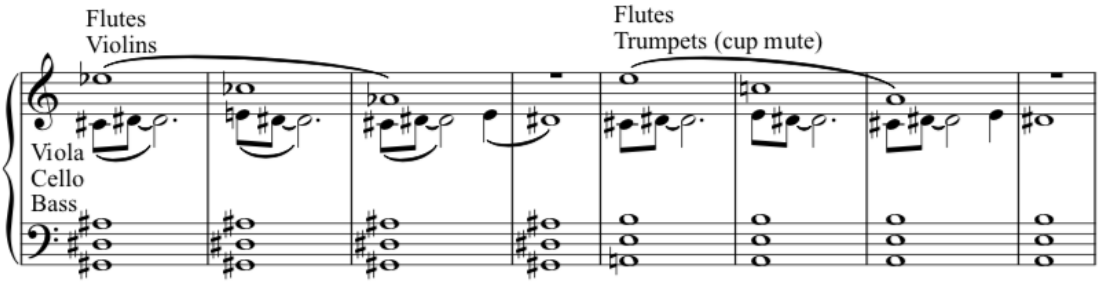
a) 'Flashback No. 1', bar 1-8



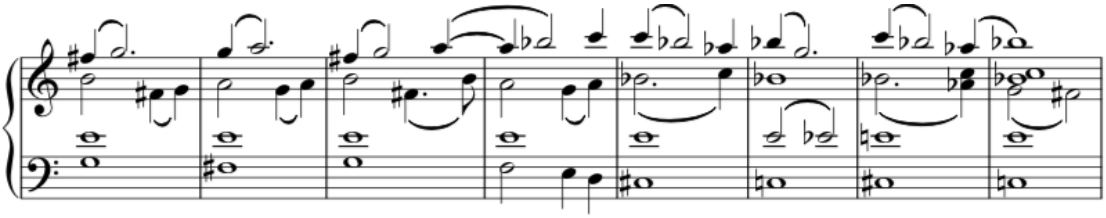
b) ‘Flashback No. 2’, bar 34-37; 46-49[42]



c) ‘Flashback No. 3’, bar 79-86



d) ‘Flashback No. 4’, bar 132-139

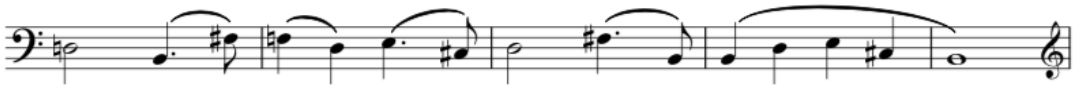


In ‘Flashback No. 3’, composed for the ‘Dinner Surprise’ scene, I also try to acknowledge the importance, albeit abusively negative, of Albert’s Father by creating a theme specific to his character. The use of chromaticism and the aleatoric, micro-tonal harmony accompanying it are intended to highlight these character attributes (figure 3.3.7). Moreover, the decision to present the theme on a weightier, bass instrument (bass clarinet) was done to give it both weight and a sense of power, reflecting the influence the Father has on Albert’s childhood. With hindsight I would have liked to have deployed more aleatory

[42] In the scores bar numbers carry on between each Flashback and Sneak Finale cue. This was because I grouped each set of cues within Pro-tools sessions as well, enabling quicker changes between cues.

here. However, this feeling developed after the studio/project experience recording these tracks gave me, which I think is reflective of what many of us feel when working on any project, particularly those that push our experience and skill boundaries: “if only I knew at the beginning, what I know now.” Of course, paradoxically, it is this prospect of discovery that makes creative projects so exciting and rewarding.

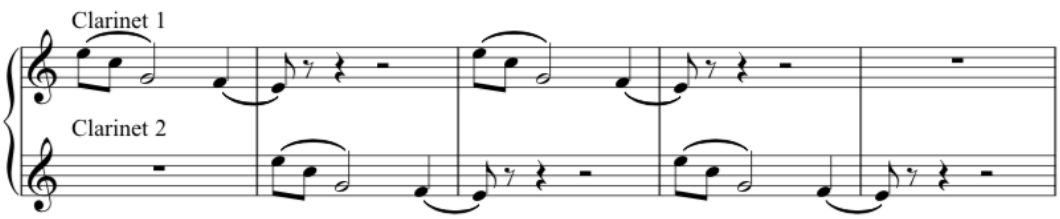
Figure 3.3.7 Albert’s Father’s theme (‘Flashback no. 3’, bar 95-99)



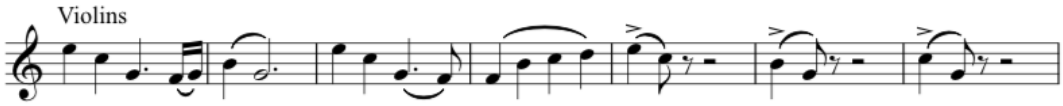
Albert’s own theme features prominently in the flashback cues. In contrast to its presence in the main theme and ‘Nocturne’, in the initial two flashback cues (figure 3.3.8a-b; 3.3.6b, bar 46-49) the minor triad that characterises his theme is altered to be a descending major triad instead. These flashbacks are happier memories, where Albert is reminded of his older sister, whom he looks up to. A melodic shift to emphasise major tonal qualities seemed like an effective means of communicating this.

Figure 3.3.8 examples of Albert’s theme, in major tonality (‘Flashbacks no. 1’ and ‘no. 2’)

a) ‘Flashback no. 1’, bar 9-12



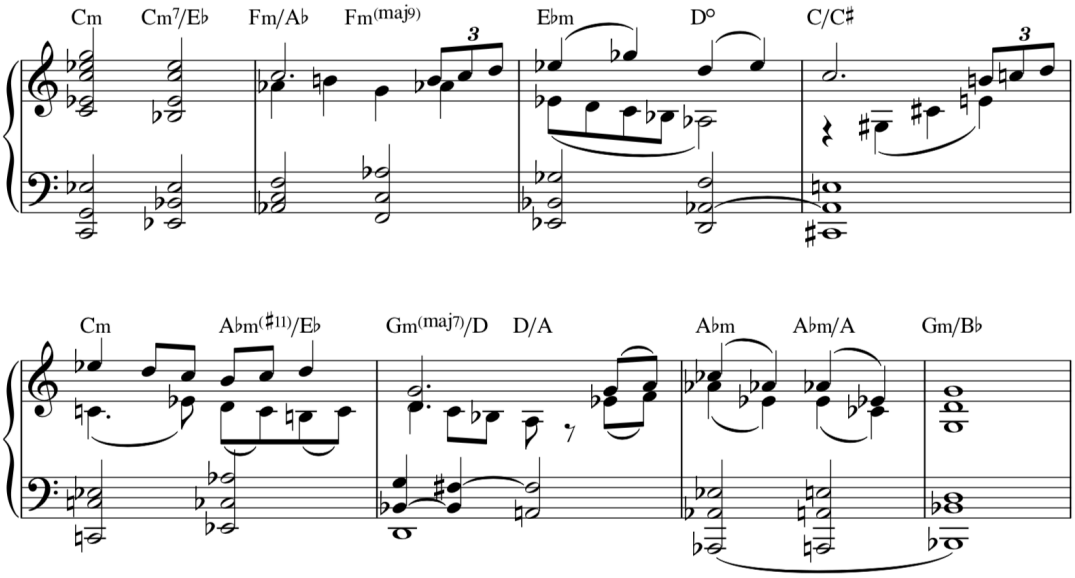
b) ‘Flashback no. 2’, bar 42-46



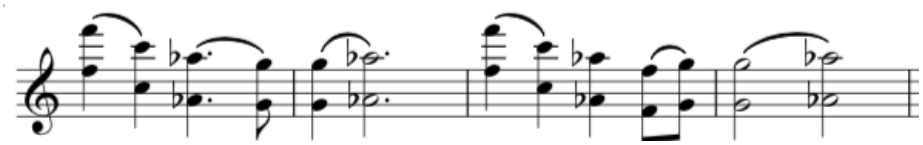
In ‘Flashbacks no. 3’ and ‘no. 4’ the melody resembles its primary, minor tonality form. ‘Flashback no. 3’ presents a re-harmonized recapitulation of the melody (figure 3.3.9a), intended to emphasise Albert’s fear of his Father as he tries to save his manuscript book and preserve his identity as a musician. In ‘Flashback no. 4’, the theme is paired with a motif from Flori’s theme. The intention here was to reflect Albert’s anguish at the reality of his sister Flori’s departure to help in the War effort (figure 3.3.9b).

Figure 3.3.9 examples of Albert’s theme, in minor tonality, from ‘Flashback no. 3’ and ‘no. 4’

a) melodically very similar, reharmonised (‘Flashback no. 3’, bar 106-113)



b) blended with Flori’s m2 motif (‘Flashback no. 4’, bar 140-143)



4. Hullywood Scratch Orchestra and Hullywood Scratch Orchestra 2.0

In this section of the commentary, I will discuss two projects for which I used live musicians to record the music for *Bowhead* and *Haunted Emotions*. The intent in these projects was to replicate the experience of using live musicians in a more realistic setting, like that of a professional recording studio session, but for projects that were financially constrained and could not have used this method of production had I not been doing this PhD, which gave me access to the music facilities and resources at the University of Hull. There are two main factors that this case study highlights: logistics, recording and orchestration; and player ability, recording method and orchestration.

I formed Hullywood Scratch Orchestra in November 2017 and Hullywood Scratch Orchestra 2.0 in November 2018 for two different projects: *Bowhead* and *Haunted Emotions*. It entailed a call for musicians from the University of Hull and my circle of friends. Using the university's music students emailing list and social media, I put out a call for performance and music technology students. I had no idea how many students would respond and what instruments they might play. Fortunately, plenty of students did respond: 14 for *Bowhead* and 18 for *Haunted Emotions*. Table 4.1 lists the instrumentation and musicians of each project.

Table 4.1 Each Hullywood Scratch Orchestra's instrumentation

Hullywood Scratch Orchestra	Hullywood Scratch Orchestra 2.0
1 Flute	2 Flutes (2nd dbl. piccolo)
1 Clarinet	2 Clarinets (2nd dbl. bass clarinet)
	1 Alto Saxophone
	1 Tenor Saxophone
	1 Baritone Saxophone
1 French Horn	1 French Horn
1 Cornet in Bb	2 Trumpets (both dbl. cornet)
1 Harp	
3 Violins	4 Violins
1 Viola	1 Viola
1 Cello	1 Cello
1 Double bass	2 Double basses
2 Recording Engineers	2 Recording Engineers
1 Mixing Engineer	

The instrumentation for each project, particularly for *Haunted Emotions*, is intriguing. Each group presents a balance between more standardised, balanced cohorts, with peculiarities emerging through certain additions, absentees and their overall combinations. For example, there were no double reeds, but three then four violins[43] and two double basses for *Haunted Emotions*. Furthermore, the emergence of the Sax trio for *Haunted Emotions* was a welcome addition that gives *Haunted Emotions* a unique sonority within my portfolio. What makes them intriguing, in my opinion, is that it is unlikely that I would have chosen these ensembles myself, giving them a unique character within the portfolio.

[43] The use of the violins as multi-tracked solo parts and a section became something I experimented with more in *Haunted Emotions*. An example of this can be found in Flashback No. 1, where the violins alternate between soli and solo melodic lines.

Logistics, recording and orchestration

The ensembles, for each project, were broken into smaller units, centred around the "cohorts" I identified in the previous paragraph. Split into two the ensemble became a quartet of winds (flute, clarinet, french horn and cornet) and strings (harp; violin 1, 2, 3; viola; cello; double bass) for *Bowhead*. Figure 4.2 shows several details about the recording and rehearsal plans for *Bowhead*, including this splitting of the instrumentation in recording and the scheduling and layout of the instrumentation in the University's Duality Studio Live Room. One change we did make to this while setting up was to put the harp in one of the isolation booths.

There were many reasons for this approach, but mostly they were theoretical judgements on a perceived balance between efficiency and certain qualities that took into consideration the facilities, time and people available. I felt that splitting the ensemble into two parts, for the recording, would offer a balance between reducing the chance of error; increasing editing potential and preservation of a live ambience while also not requiring more than two sessions. Logically, to me at least, dividing the ensemble in this way helped reduce the chance of error by reducing the number of parts that were playing simultaneously. Firstly, four or six musicians are less likely to make a mistake than fourteen musicians. Secondly, spotting a mistake is easier when you are listening to four or seven parts, instead of fourteen. This is especially true for *Bowhead* as I was also conducting, and this was the first experience I had of doing this.

Figure 4.2 Bowhead recording schedule and ensemble layout

Rehearsal

23-Nov	**Start**	**End**
Full	9am	11am

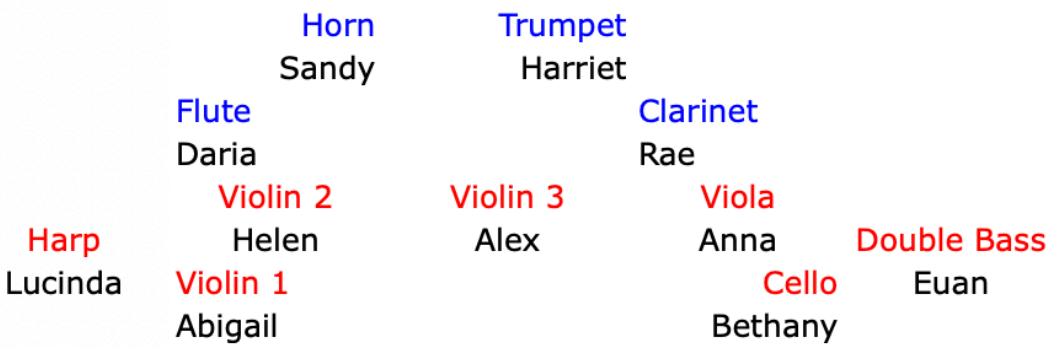
Session Set-up

26-Nov	**Start**	**End**
Set-up	6pm	9pm
27-Nov		
Winds	9am	1pm (1:30pm)
Break	c. 1pm	2pm
Strings	2pm	6pm (6:30pm)

Sectional Session Schema

Minutes	**Action**	**Film**
70	Record	Duetto
10	Break	-
70	Record	Candenza
10	Break	-
70	Record	Coda

Full Orchestra Layout/Floorplan



Although attempting to preserve a live ambience was something of an aesthetic, subjective choice. In that, I felt that I wanted the recording to have the quality of sounding like a live performance as opposed to a multi-tracked

studio recording. I felt that having groups of players together in a room would support this. However, there were underlying time restrictions and benefits to such an approach as well. For example, figure 4.2 exhibits the difficulty of getting 14 volunteers together into one space and at one time. Being students, each volunteer had obligations of their own, which restricted their availability. Furthermore, there is limited spaces within which to gather 14 musicians and run a rehearsal. Therefore, there was only time for one two-hour rehearsal and the decision to do brass first and strings second, though unimportant in the grand scheme of things, was a result of some of the volunteers' time constraints. The advantage to splitting the ensemble into two groups, for two four-hour sessions[44] meant that the recordings could all take place on one day.

For *Haunted Emotions,* I did things differently to *Bowhead*, and this was in response to both having had the experience of *Bowhead* and an increased number of musicians. Informed by *Bowhead,* many of the different decisions were purely out of curiosity. For instance, the decision to use more of the Duality Studios isolation booths, to multi-track all the parts, was in direct response to not doing this for *Bowhead*. My hopes were that this would provide me with the knowledge of both methods, informing future production decisions with greater certainty. Moreover, *Bowhead* was a film project; *Haunted Emotions* was a video-game project. At this time the implementation of the music, for *Haunted Emotions*, was not fixed. Multi-tracking and isolating each part would give the music greater flexibility at a later stage. For

[44] Neither session needed 4-hours, instead lasting about 3. I think I was being overly cautious.

example, each stem can be bounced, imported and then controlled in the game engine individually, making vertical remixing possible.

The use of isolation booths, to multi-track the music, played a significant role in deciding to break down the ensemble into five smaller units. The Duality studio can record simultaneously in seven isolated locations: the live room, three booths, two ensemble rooms and the nearby Middleton Hall. However, I decided to use only the adjacent spaces: the live room and booths, which limited capture to four lines at a time. The reasons for this were time and security. Similar to *Bowhead*, the recording engineers were volunteers as well, meaning the scheduled set up time had to work for them. Limited to the evening before the recording, this meant the equipment had to be left over two nights securely. The whole of Duality Studio can be securely locked at its outer door, providing security for the equipment and reducing disruption for other music students who could still access the other facilities that I was not using.

Hypothetically, had budgetary considerations been an issue and had the players been professionals I may have done things differently. Would the advantage of isolated parts outweigh the expense of having so many more separate sessions? Such considerations would likely have changed my approach again, affecting what will be discussed in the next section as well. For example, speaking hypothetically still, it is likely that I would hybridise both approaches: using both the booths to isolate three solo lines and then the live room for the ensemble. I could see this having benefits in scoring a video-game, where one could still maintain some flexibility in the orchestration, for vertical remixing, later in the process, while also being more cost-effective.

Therefore, such considerations would impact composition and orchestration earlier on.

Player ability, recording and orchestration

Figure 4.3 is the schedule I made for the recording and rehearsal sessions of *Haunted Emotions*. It demonstrates the increased number and smaller "cohorts" of the ensemble. Using instrumental families as a way of organising the recording sessions, I divided the ensemble into Woodwinds (flute 1 & 2: 2 doubling piccolo; clarinet 1 & 2: 2 doubling bass clarinet), Saxophones (alto, tenor and baritone), Brass (french horn; trumpet 1 & 2: both doubling cornet), Violins (1, 2, 3 and 4) and Lower Strings (viola; cello; double bass 1 & 2).

Figure 4.3 *Haunted Emotions* rehearsal and recording schedule

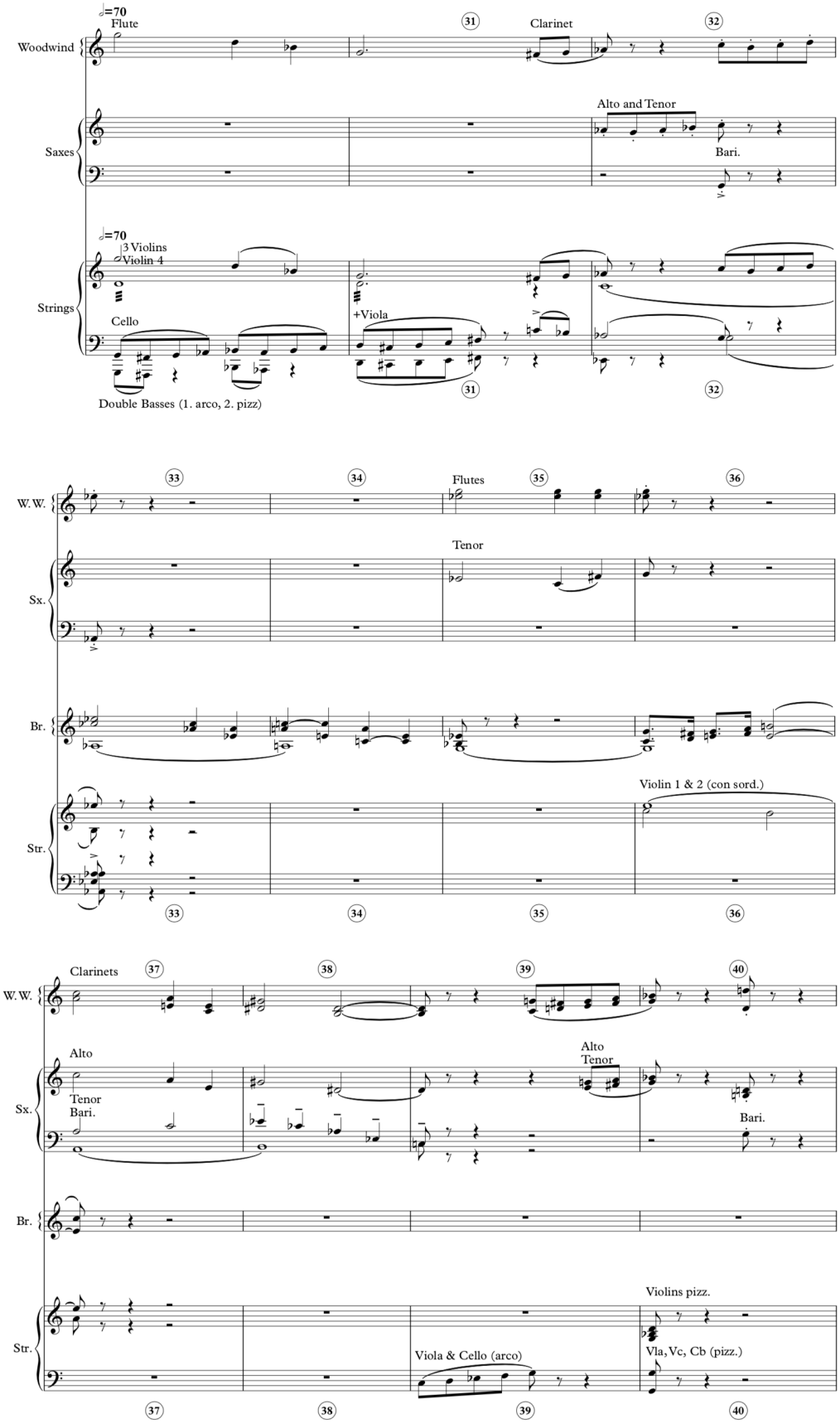
25/01/2018 Rehearsal day		Room	27/01/2018 Recording Day		28/01/2018 Recording Day	
09:00			09:00		09:00	
09:30			09:30		09:30	
10:00	Low Strings	ER2	10:00		10:00	Brass
10:30			10:30		10:30	
11:00	Violins	ER2	11:00	Violins	11:00	
11:30			11:30		11:30	
12:00	Saxes	ER2	12:00		12:00	
12:30			12:30		12:30	
13:00			13:00		13:00	Saxes
13:30			13:30		13:30	
14:00			14:00		14:00	
14:30			14:30		14:30	
15:00			15:00	Low Strings	15:00	
15:30			15:30		15:30	
16:00			16:00		16:00	Woodwinds
16:30			16:30		16:30	
17:00			17:00		17:00	
17:30			17:30		17:30	
18:00			18:00		18:00	
18:30			18:30		18:30	
19:00	Brass	ER1	19:00		19:00	
19:30			20:00		19:30	
20:00			20:00		20:00	
20:30			20:30		20:30	
21:00			21:00		21:00	

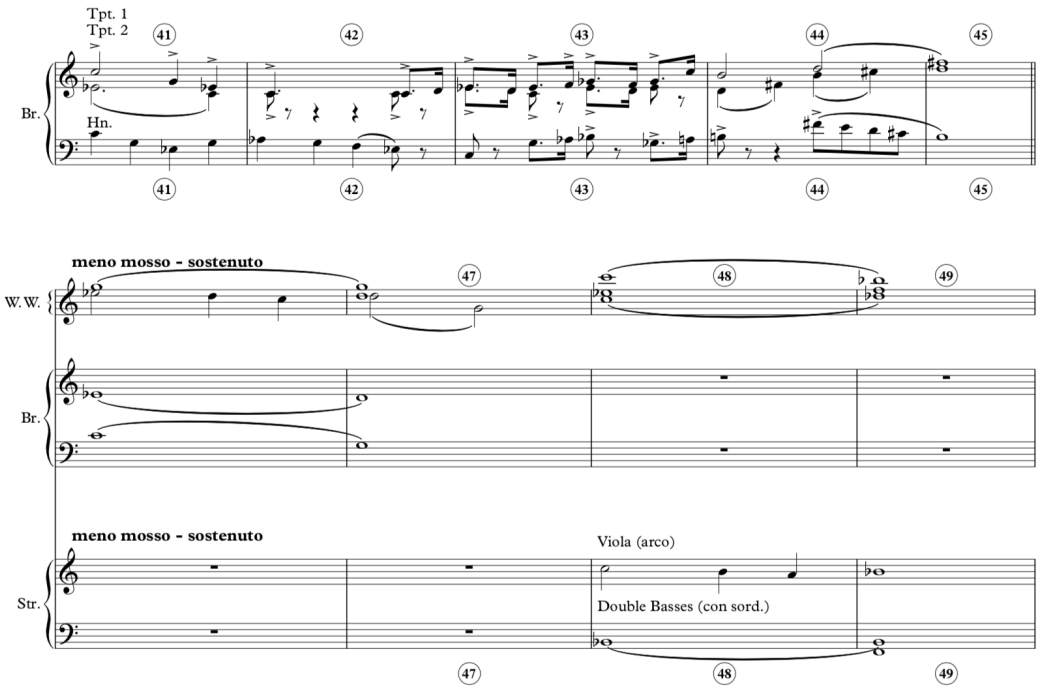
The organization of the ensemble into these recording units worked well for the most part and is something—if I were to repeat the process—that I would think about doing again in future projects. The reason it worked well here was

that the bias toward grouping the sessions around instrumental families extends into my orchestration. I tend to deploy periods or cells of music to particular, often homogeneous, idiosyncratic groups within an ensemble. I do this because the timbral distinctions of different families can clearly denote structural juxtapositions within my music compositions and the use of idiosyncratic groups usually provides balance within those parts. Figure 4.4 draws out a reduced example of this approach to orchestration within *Haunted Emotions*. In this example I further break down the woodwinds, separating flutes and clarinets.[45]

[45] A form of *Klangfarbenmelodie* is prominent in scores of *Haunted Emotions*' ilk, particularly those by Danny Elfman where one will hear the parts of melody and accompanying figures often switching between different instruments of the orchestra. For example, the song 'According to Plan' from *Corpse Bride* (2005) and 'Overture' and 'This is Halloween' from *The Nightmare Before Christmas* (1993) rely on juxtapositions of motifs, often call and response, across multiple parts of the orchestra giving the works a great deal of colour and energy. These scores, as I mention in section 3.3, were influential on *Haunted Emotions*.

Figure 4.4 *Haunted Emotions* and *Bowhead* orchestration reduction (continues overleaf)





In addition to this approach to orchestration, I have a tendency to picture or imagine how a live musician might perform a particular passage, in my head, gesturally.[46] I also tend to think about how the proximity of musicians within a larger ensemble might contribute to an improved performance by the players (should they exist) as they might be able to form visual, gestural links with one another in performance or recording. Similar to my perceptions regarding the preservation of live qualities in *Bowhead,* I think this technique can be particularly potent in large orchestrations as it diversifies the expressive impacts that music can have. For example, to have the sheer mass of an ensemble tutti juxtaposed with more intimate moments that are typical of chamber music performances is something I admire in orchestrations of other composers.[47] Although these links could not be made in the recording sessions

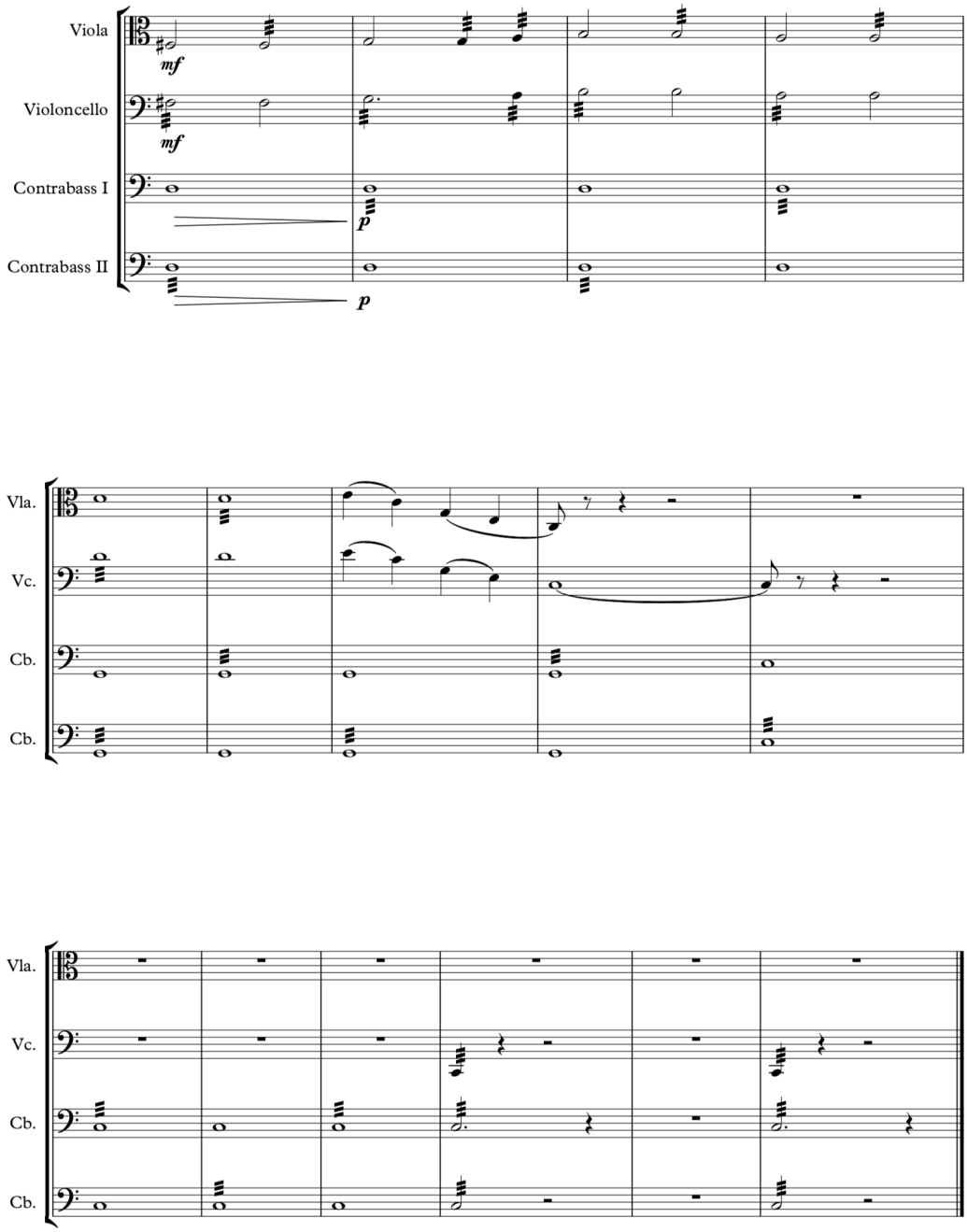
46 This being said, I don't expect these imaginings of player gestures to always transfer into real life and I do readily, particularly with string players, tell them to do what they feel is natural to them.

47 I find Mahler, Stravinsky, Shostakovich and Lutoslawski's music to be intriguing, in this regard, extracting and exploring smaller combinations of instruments within their, often large, orchestrations. Michael Giacchino's "Jyn Erso & Hope Suite" for *Rogue One: A Star Wars Story* opens and revisits a compelling series of solo combinations and passages. Elgar (*Introduction and Allegro for Strings*, Op. 47) and Ralph Vaughan-Williams (*Fantasia on a*

for *Haunted Emotions*, because of the use of the recording booths, I hoped this quality might (and does) come through the composition alone. Figure 4.5 presents an extract from *Haunted Emotions* where I tried to make a simple passage more engaging through these relationships, interchanging tremolos on held, shared notes between the cello and viola, and two double bass parts.

Theme of Thomas Tallis), explore and directly juxtapose and superimpose small (string quartets) and larger (string orchestras) ensembles in performance. Concerning this, I also find Ralph Vaughan-Williams' *Dives and Lazarus Variations*, which combine and blend sections, divisi, solo and particular solo string sonorities to be fascinating.

Figure 4.5 *Haunted Emotions* - 'Flashback No. 2' viola, cello and double bass 1 & 2 interchanges at rehearsal mark G



The dividing of the ensemble for logistical purposes was effective in the sessions as players were rarely sitting not doing very much. In a financial sense, had a budget existed, this would have been valuable, as you do not want to be wasting budget on musicians who are not playing for extended periods

of time. In a way, this still applied, but rather than being budgetary it was a matter of ensuring the musicians felt fulfilled. They had all given up their time for me, so I did not want to waste their time. Therefore, having smaller groups who largely played as units kept players busy for more of the sessions. Furthermore, just like with *Bowhead*—where this also applies, but to a lesser degree—this often gave clearly defined sections of music that I, and the musicians, could focus each take on, making it easier to identify any errors.

Being more aware of how much music I was orchestrating for each of these cohorts could have been helpful. The reason for this is that each of the groups had the same session lengths of three hours. Not all the groups needed that length of time as each section had different amounts of music to perform. For example, on the second day, none of the full three-hour sessions were needed and the scheduling of two and a half hour slots could have sufficed. Whereas, the two string sessions overran on the first day. Had budgets been a part of these projects it could have been financially costly. I should have, therefore, estimated better or orchestrated differently. I could have extended the string sessions[48] or redistributed their music into different parts.

[48] The standard length of a session is usually up to 3 hours before a longer break is required. For example, in the UK, the *Musicians' Union agreement with Producers' Alliance for Cinema and Television Ltd.* states that 'engagements for music recording…shall be for a minimum call of three (3) hours' and 'an extension of the session may be pre-booked to allow for a further one (1) or two (2) hour(s) following a break of thirty (30) minutes.' (n.d.:6). Composer Lalo Schiffrin backs this up, from his experience, by saying sessions are usually 3-hours in length, with recording time generally equalling 2.5 hours. For instance, in America a ten-minute break is mandatory every hour. In Europe, he says, the 3-hour session is often split into two 1.5 hour periods of recording and a 30-minute break in between (2011:20-21).

5. Types of constraint and their role in the composition process

Evaluating and reflecting on my work as a music composer while focussing on constraint has profoundly altered how I think about the craft of composition as a whole. When I create, I need to rationalise the creative decision. The solidity, depth or understanding of that rationalisation, particularly in the early stages of the writing process, does not always matter. However, I typically need a grounding for my ideas in some form or other in the process of composing. In combination with those constraints that I might impose, the awareness of contextual constraints has become a pivotal tenet in that rationalisation process. I have, therefore, begun to think about types of constraint and the forms they take in the process of composition, specifically those constraints that can be identified and harnessed with creative potential. The result of this is four labels, or types of constraint, that broadly define the underlying qualities and implications of different limitations. These four labels are: intrinsic, extrinsic, functional and aesthetic.

The intrinsic and extrinsic categories denote where constraints emerge, taking the perspective of the project (as opposed to the composer). Therefore, an intrinsic constraint is one that emerges and is imposed by the project, whereas an extrinsic limitation is imposed by myself, the composer. A functional limitation is typically more global, such as the definition of a project's instrumentation, budget, technical or technological boundaries: a composition could be dysfunctional if one fails to meet them, although this is not always the case. Aesthetic constraints emerge as a response to stylistic aspirations of a project, which tend to be broadly oriented by the "commercial-artistic"

(Baysted, 2017: 152) objectives of a composition. These, typically, impact the whole of the piece but do so by influencing and infiltrating the minutiae of its detail. I will discuss the concept of "commercial-artistic" objectives more when drawing out examples of aesthetic constraints from the portfolio and commentary.

A recurring functional constraint in my work is instrumentation, which occurs both intrinsically and extrinsically. For example, the commissions of both *Bach and the Sentry* (2016) and *Rhapsody for Violin and Piano* (2015) imposed ensembles as they were for specific musicians. These were intrinsic constraints as the project, rather than I, imposed them. Moreover, the limitations, while having some aesthetic implications, were fundamentally functional, as writing for different or more instruments would have made them inappropriate for the commissions.

In projects like *Half Empty (2016), Six Sided Slime from Outer Space (2017), Bewere! (2018), Fanfare and Lyric (2019)*, among others; I self-imposed the constraint of specific instrumentation. On this occasion, wider intrinsic limitations and aesthetic considerations came into play, such as the availability of sample libraries and the type of instrument suitable to the stylistic goals of the projects. However, the specific ensemble choice was self-imposed and, therefore, extrinsic. Furthermore, to function within that constraint I would have to write for the self-imposed ensembles. A result of a constraint being extrinsic is that the restriction is flexible and, thus, the consequences, for breaking the limitations, potentially, less severe. For example, breaking this limitation could have functional results: I needed to write for those

instruments; I needed to be able to produce, to a high standard, the music with my available MIDI instruments. To write for different instruments could have resulted in me being unable to produce the music with my available sample libraries.

Another functional constraint that impacted the entirety of the portfolio was the absence of a budget. These budget limitations typically restrict aspects of production, fixing them to whatever resources and facilities are available at that time. Therefore, I was unable to financially invest, as a direct result of a project, in anything that could have eased these restrictions, such as additional, specific sample libraries, recording musicians and recording facilities. However, I was, as a PhD student at the University of Hull, able to access specialist music recording resources, which enabled me to ease some of these functional restrictions. For example, the formation of the Hullywood Scratch Orchestra for *Bowhead* (2016) and Hullywood Scratch Orchestra 2.0 for *Haunted Emotions* (2018/ongoing) provided a different means of production to MIDI. I examine the inherent liberations and limitations of these different approaches in section 4 of the commentary and how different functional considerations come into play when recording rather than MIDI producing music. Briefly, the Hullywood Scratch Orchestras imposed functional constraints on me, such as the ensembles and performers. The skill and experience level of the players needed to be considered in correlation with the time available to practice and record, along with the recording methodology. If I was to compose something too difficult then the material might not have been recorded to a good enough standard.

Functional constraints can also come in the form of technological limitations. I was able to upgrade my home studio computer on two occasions. These upgrades made it far easier for me to MIDI produce my music. I was able to use better samples as it became worthwhile for me to subscribe to East West's Composer Cloud, which I saw as an immediate means of quickly and vastly expanding my sample libraries. Furthermore, without the need to take drastic measures, such as programming and bouncing tracks individually and then hoping they would come together ok in the mix session, the experimentation with more extensive ensembles/MIDI sessions became more feasible. For example, if we count each instrumental line from each project that used MIDI, chronologically, there is a notable, increase once I upgrade my computer:

Initial Macbook Pro 2010[49]	
Curiosities of the Mage's Sanctum	9
Exposure/Lake at the foot of the Mountain	8
Half Empty	6
Upgrade to PC[50]	
Six Sided Slime from Outer Space	19
The Expendables	12
Upgrade to iMac[51]	
The Polar Express/Christmas Rush	17
Flailing Trees and Assailing Weeds	19 (inc. solo string lines: 5)
Beware!	18

Although aesthetically informed by each project, each of the ensembles is an extrinsic functional limitation. The imposition of instrumentation is often a strategically self-imposed constraint in response to an additional restriction: the deadline. The strategic imposition of instrumentation as a constraint is something I discuss in greater detail when recounting *Bewere!* (section 1.4)

[49] MacBook Pro 2010: 2.4GHz Dual Core i5; HDD5500 (500GB); 8GB RAM (DDR3);
[50] PC: 3.2GHz Quad Core i5, SSD (500GB), HDD7200 (2TB); 8GB RAM (DDR3);
[51] iMac 2017: 4.2 GHz Quad Core i7; SSD (500GB), SSD (external, thunderbolt 500GB); 24GB RAM (DDR4);

and *Half Empty* (section 2.1). I have found defining the ensemble, and sometimes the imposition of further constraints focuses and speeds up my writing. The impacts are most straightforward to objectify when concerning production, where the reduction in lines means that it takes less time to produce the music overall. It is not a sure thing in composition, but I have found defining the instrumentation, like the imposition of other constraints such as a harmonic or thematic design, often speeds up my writing as well.

Aesthetic constraints are those that impose a style of writing: a particular harmonic language, melody or structural design for the work. They can occur intrinsically, emerging from the project, or be extrinsic. Projects will tend to be a mixture of many intrinsic and extrinsic aesthetic limitations, whereby our artistic inclinations and compositional practice, developed over time, are used to intuit or define, and overcome the aesthetic demands of a project. For instance, in writing *Bewere!* I used familiar harmonic material that I had already used in *Haunted Emotions* and *Flailing Trees and Assailing Weeds* because it felt appropriate for the extra-musical inspiration (the videogame, *Gare au Garou!*). I was, therefore, able to use my experience and knowledge, acquired in the previous projects, to create what I felt was aesthetically appropriate music. Extending this further, I refined a structural device that I had had success with when composing *The Expendables* and *Flailing Trees*. The technique involved the recapitulating of previous A and B themes in counterpoint with each other. What we start to see here, therefore, is a deep interaction between the composer and the project. The project imposes aesthetic demands, a creative tension, and the composer has to acquire or use their existing knowledge to resolve that creative tension.

Less direct and more subjective, aesthetic constraints require some interpretation. Whereas functional limitations delineate objective boundaries (budgets can only go so far; players and instruments only do so much), aesthetic constraints determine the form music should take within those boundaries, such as its structural order and units, a rhythmic or metric device, or a particular harmonic sequence. Moreover, aesthetic constraints can also occur implicitly, going unspecified in a project, while still dramatically influencing a work. The specificity of aesthetic constraints tends to be more a result of how and whether defining them is more or less valuable to the project itself. For example, in *Six Sided Slime from Outer Space*, the importance of determining stylistic tropes was significant. Intended as a loving parody of 1940s and 50s sci-fi films, the delineation, communication and exploration of relevant tropes were essential to the overall character of the game. Though communicated through worded email, there was also the use of mood boards and concept art to express these genre qualities. The adage that a picture speaks a thousand words rings true: a well-picked image or group of images can communicate a multitude of aesthetic information about a project. In this sense the aesthetic qualities were intuited, or felt, as opposed to being wholly defined in conversation. Discussed in more detail in section 3.1, the identification of the stylistic tropes of sci-fi B-movies resulted in a need to use a certain harmonic language and relationships. I, therefore, build much of the score around melodramatic thematic statements, semitone tonal shifts, the 'Hitchcock chord' (a minor-major 7th chord), and augmented-4th/tritone relationships between chords.

How aesthetic constraints arise and are defined, both in clarity and extent, varies, and is a result of the need to identify them explicitly as an early part of the process. For example, in video-game projects, like *Six Sided Slime from Outer Space*, the production process, and my joining the development process early often led to the determining of the genre and the stylistic tenets of the said genre to be more precisely and explicitly identified. The reason for this is that little of a video-game project tangibly exists early in the process. As a result, the visuals and gameplay, should they exist at all, do not communicate the end stylistic and genre objectives. Therefore, communication with the developer can be essential in establishing the direction of the game. In contrast to video-games, the scoring of a film often takes place closer to the end of the production process. Consequently, the film itself is usually capable of communicating what music is required, in some form or other, and the input of collaborators might elaborate, counter or confirm those observations.

Comparing *Half Empty*, *Haunted Emotions* and the concert works more generally will present very different collaborative relationships and, as a result, will demonstrate how aesthetic boundaries can take diverse forms. *Half Empty*, the film project, being closer to completion when I composed the music, inherently communicated the aesthetic requirements of the score. The director mostly confirmed my observations of the film and my ideas for the film score. Moreover, the opportunity to synchronise, a functional difference between film scoring and other kinds of composition, has aesthetic consequences, as the music needs to do what it needs to within a specific time frame. For example, the episodic progression of *Half Empty*'s narrative, combined with its slower-paced, on-screen activity, inherently imposed a

reduced number of creative options as, in the most general terms, you can score the picture how you see it or directly counterpoint that interpretation, to add a layer of subtext. Therefore, in combination with time-deadline constraints, which only gave me a few days to write and produce the music, I decided to mimic the film much more closely as I felt this would be easier for me to achieve. Consequently, I scored the film as one continuous cue and imposed a harmonic schema on the composition that I felt traced the narrative but could also unify the score. As a result, before being recut by the director, the music of *Half Empty* is similarly episodic in structure.

Another aesthetic consideration that impacted the score for *Half Empty* was the inherent 'commercial-artistic' objectives that the visuals and narrative presented. In proposing the concept of the 'commercial-artistic', Baysted discusses his work on the triple-A title, *Need for Speed Shift 2: Unleashed* (2017: 152). Unsurprisingly, a big-budget game, published by one of the biggest publishers in gaming, Electronic Arts—who grossed $5.1 billion revenue in 2017 (Takahashi, 2018)—artistic decisions had to be made with a much wider audience and a generalisation of their tastes in mind. Therefore, while the score could exhibit artistic qualities, it needed to contribute much more to the game's commercial objectives rather than operate within an artistic niche. In the case of *Half Empty* it positioned itself firmly on the artistic side of this spectrum. Animated and directed by one person, using more abstract, geometric imagery and a single, first-person narrator the film expressed artistic intimacy rather than commercial ambition. In creating the previously mentioned harmonic schema, I decided to use augmented and chromatic harmonic structures in the opening and middle sections of the film

before using more diatonic material at the end. Moreover, I saw the use of a more intimate contingent of traditional, classical music instruments (piano and string quintet) as an easy way of further cultivating artistic panache, while also providing the functional limitation that I discussed earlier in this section. I felt this would harmonically trace the narrative and the main characters psychological deterioration and eventual recovery while also positioning the film's score in a more niche and artistic position, reflective of its more artistic qualities.

In comparison to *Half Empty*, *Haunted Emotions* was a video-game project and relied much more on conversation, via email, with the developer. Early game builds, synopses and scripts were used to supplement the otherwise largely word-based and descriptive communication. This process helped establish broader and more specific details on its narrative or other qualities. Through this process, phrases about the story and characters could then be extrapolated and, as there was more time to compose on this project, be used to establish areas for music exploration. I have, therefore, found it a useful strategy, in all of the video-game projects, to compose a work, a kind of main theme, that encapsulates these discussions and its core qualities. Doing this establishes a musical language that has already abstracted the core identity of the game, its commercial-artistic objectives, providing a pool from which to extract and develop further music more rationally.

The process of creating a main theme from correspondence with the developer is essentially a process of conversion: converting the aesthetic constraints from worded instruction into abstract, musical ideas. Doing this imposes further

artistic restrictions in that it establishes the primary pool of musical language from which I can source more music for the project. It creates a microcosmic, conceptual space specific to the project, delineating the boundaries of exploration in musical form. For example, in writing the main theme for *Haunted Emotions*, I established a triadic, chromatic, predominantly minor tonality, harmonic language, that frequently used mediant relationships. I also created a short melody that featured a descending passage, outlining a minor chord, which became representative of Albert, the main character. These provided me with a grounding from which to base and more objectively make all other musical decisions. The two groups of cues created for the game, 'Scaredy Cues' and 'Flashback Cues', demonstrate this. For instance, the 'Scaredy Cues' borrow much more closely from the main theme: using minor tonalities, similar harmonic qualities and parts of the melodic material. The *Flashbacks,* on the other hand, detach themselves from this. They, instead, borrow thematic material but use different harmonic language. A conscious decision, I felt the change would carry significance, reflective of the expressive and narrative importance of these sections of the game.

Being developed by a single developer, *Haunted Emotions*, similarly to *Half Empty*, is an independent project. It, therefore, sits more on the artistic side of the commercial-artistic spectrum than the *Need for Speed* franchise. However, in my experience, the ease and opportunity of generating revenue for an independent videogame, from the mainstream market or investment, are more numerous than for an independent film, which led me to make some different decisions. Therefore, there is, generally, a more significant commercial incentive in any of the video-game projects. For example,

in *Haunted Emotions*, while harmonically complex, I decided to use what I considered to be a more palatable, distinguishable music style than what might have been, arguably, more historically accurate. I consider, particularly 'Nocturne', which operates as diegetic music within the game, more 19th-century in its harmonic qualities, as opposed to early 20th-century, when parts of the game take place. The reason for this is that early 20th-century music, excusing the overhang of romantic 19th-century musical styles and forms, is fragmented and disparate. Moreover, many of those styles have developed significant meanings in western media music. For example, genres of horror regularly use atonal music, serial technique and noise or soundscapes reminiscent of the futurists. I, therefore, felt a chromatic language, tonally grounded, would more clearly communicate the game's periodicity, especially in combination with its narrative themes such as death and sadness. It felt an adequate, balanced compromise that situated the game's score in a more approachable but still artistically gripping position.

One thing that does tie *Half Empty* and *Haunted Emotions* together is the abundance of intrinsic aesthetic constraints. All of the media projects in this portfolio imposed a vast number of aesthetic constraints. In comparison to this, the concert works, except for *Bewere!*, *Flailing Trees and Assailing Weeds* and *The Expendables*, which had origins and influences in videogames, often had few intrinsically imposed aesthetic constraints. Therefore, to provide a framework by which I could determine the appropriateness of the material, extrinsic-aesthetic limitations had to be imposed on each project. For example, in composing *Rhapsody for Violin and Piano,* I imposed a rigorous design on the work: ascribing several melodic qualities and harmonic structures to each

section, which, usually, themselves corresponded to another portion of the work. Subsequently, the design became the rationale for many of my creative decisions in *Rhapsody*: thematic material had to be a part of the prescribed structures.

The commercial-artistic concept, although centred on media composition, is not a wholly inappropriate idea to apply to concert music composition. At least, not as a means of discussing the thinking and reasoning that occurs while composing concert music. For instance, as a composer, I create not only because I want to, but because I also want my music to be enjoyed and listened to by people. Therefore, I write my music, for concert, film or video-game, in a way that I hope my audience, which I do not consider to be the same for each project, can access it intellectually and, hopefully, derive an experience from it that makes them want more. For example, in *Bach and the Sentry,* I revisited aleatory in the hope that it could attain future performances. I hoped that Trio Atem, the contemporary group workshopping the composition might, therefore, appreciate the work enough to consider programming it in the future. I did not use aleatory for *Rhapsody and Piano*, not because I did not think the performers would be able to perform it, but they might not appreciate it stylistically and, as a result, dislike a work that they had commissioned for themselves. Neither work attained a public performance and was therefore objectively unsuccessful in that regard. Nevertheless, what matters is that these underlying motivations occur in all of the projects where there are, more or less, definable audiences or opportunities.

It is this functional-aesthetic relationship that can be a significant and binding force in establishing the conceptual boundaries of a musical composition, and how these can stimulate and progress the creative process. Just as the battle with video-game music can be the abstraction of musical concepts from stylistic features of the game itself, the issue with concert music can be the lack of any conceptual basis, aesthetic information or functional purpose. Each of the concert works in my portfolio started with a degree of limitation, such as particular instruments and instrumentalists or a concept for a work. However, I often needed to establish details in another area for a composition to start taking any shape and direction. For example, *In Memory* had a conceptual starting point in approximately August 2014, but I did not complete a significant portion of the final music until January 2017. In early sketches, I toyed with different ensembles and aesthetic qualities that usually resulted in the use of pitch set harmony similar to *Rhapsody*. The problem here was the concept was too ambiguous, being both abstract and extra-musical. For myself, artistically, the number of large-scale decisions I had to make created too much doubt and there was no way for me to validate early sketches. Moreover, there was no purposeful end, which hampered motivation to dedicate too much time and energy in order to overcome those problems. The difference in January 2017 was the establishment of a solo piano as the instrumentation, with the objective of studio recording the work later in the year. Immediately, defining the purpose had imposed functional constraints. I could, therefore, start to sketch ideas within those boundaries, defining the aesthetic qualities, which started to come into focus—such as the use of music quotation—through those creative responses.

In comparison, projects like *Bewere!*, *Flailing Trees and Assailing Weeds* and *The Expendables* had significant amounts of their aesthetic qualities defined through their origins. Whereby the use of self-imposed limitations gave the composition's focus. Similar, to the video-game works, the aesthetic qualities they originated from boasted rich musical tapestries that could be accessed and explored as a conceptual basis for the compositions. The defining of the instrumentation and the decision to use simple ternary structures for each of these projects was a final way of focusing these explorations. Determining the instrumentation and overall structure provided two combined frameworks within which the composition must function. The structure delineated areas within which the exploration of each project's aesthetic qualities must unfold, while the instrumentation and the use of MIDI shaped the small and large-scale form and orchestration of those ideas.

Finally, aesthetic constraints can also go some way to explaining my use of quotation and musical borrowing. The borrowing and combining of musical styles are forms of aesthetic constraints. In composing the music for *Exposure* (2016), for instance, I explored 20th-century orchestral folk music. I did not quote any particular pieces but explored an array of musical works, using harmonic structures and textures I found in them. Similarly, with *Polar Express* (2017)/*Christmas Rush* (2018), the primary influence was just one work, at least for the outer sections of the compositions, where I modelled and adapted the orchestration from the opening to Resphigi's *Pini di Roma* (1924). One reason for this, as has been discussed, was to tap into their communicative value. I found the musical effect they created suitable for the imagery and narratives of the media. In this sense, they gave me something objective to

understand and attain from a learning perspective as well. I could, therefore, rationalise and, as a result, develop ideas with greater confidence as I could begin to ask simple questions such as "does this create the right effect, like *Pini di Roma* (or any piece), for the film (or any media)?" Whereas, without this borrowing the questions become less specific: "does this idea create the right effect?" While the less specific question can be enough; as I have found and discussed with *In Memory,* it can also be problematic.

Musical quotation is used similarly to more general forms of borrowing highlighted in the previous paragraph. It is used, at least in this portfolio, to realise underlying concepts and to communicate those to the piece's audience. For example, three of the four works that use quotation: *Bach and the Sentry*, 'Viscous Viciousness' and 'The Night the Earth Jiffled Incessantly' (*Six Sided Slime from Outer Space*) and *In Memory* had underlying concepts that quotation helped to communicate. *Bach and the Sentry* quoted Bach, warping fragments of the 'Prelude' from the *Cello Suite No. 1* (BWV 1007) to elucidate the texts underlying message: the experience of war and its potential impact on the poet-composer's (Ivor Gurney) love for music (see section 2.2). The two *Six Sided Slime* cues quote the well-known tremolo string arpeggio from Bernard Herrmann's score for *Vertigo* (1958). Not only did this help solidify the game's historical and stylistic influences, but it communicated my observations of the thriller genre and the shared musical vocabularies of its sub-genres, such as sci-fi, horror and psychological thrillers. Quoting Mozart's *Piano Sonata No. 16 in C Major* (K.545), *In Memory* used source material. It did this to represent a decay in health, primarily of the mind as it succumbs to Alzheimer's disease. Using the Mozart as source material, its

linear unfolding counterpoints *In Memory*'s. Using quotation of specific ideas from *K. 545*, *In Memory*'s developmental trajectory, while predominantly moving further and further away, does take occasional steps closer by presenting clearer quotations of the original work.

The fourth composition that uses quotation in the portfolio, *Curiosities of the Mage's Sanctum*, works similarly to the other three compositions. However, the conceptual basis for using quotation was not conceptually grounded. At least not consciously. In the case of *Six Sided Slime,* for instance, the use of the *Vertigo* quotation was intentional. I intended to draw out the musical similarities between 1950-60s thriller sub-genres as I found the relationship interesting. Whereas, while the same is implicitly true of *Curiosities,* the decision to quote Smetana's *Vltava* (T.111) and my previous work, which was influenced by Grieg's *In the Hall of the Mountain King* (Op. 46), was more intuitive. While the quotations draw a connection between the musical language of western romantic music and contemporary fantasy genres, this is a well-established trope (which probably goes some way to explaining why I intuited this). The use of these quotations in *Curiosities* was much plainer and mechanical. I needed material that suited the film stylistically; I had some material already but felt additional material would allow me to write much more quickly as I could counterpoint the larger sections of music to maintain interest. Therefore, in the case of *Curiosities,* the quotations provided a starting point, meaning my musical developments and explorations of them could be taken on a trajectory of their own, more confidently, while still being stylistically appropriate.

In some ways, therefore, *Curiosities* is also similar to *In Memory*. Only, again, while writing *Curiosities,* I was less cognizant of what was happening. In composing *In Memory,* the source material, while taking its developmental trajectory, also took on an independence of its own, whereby the musical ideas themselves encapsulated the underlying concept of the work. The musical quotations served to communicate the concept, but as the composition process progressed, rather than think about the concept, its meaning and how the music communicated this, I began to think about the music more and more in musical terms only. In other words, the development of musical ideas became the development and communication of the underlying concept. With *Curiosities*, as I was confident the musical material communicated the fantasy style that I wanted, I was confident that I could develop the material in musical terms with less chance of breaking that connection. In this way, for these works, while the quotations constrained me to use them as my developmental departure points, the development of them, itself, was liberated.

The exploration of constraints, combinations of them and their interactions could go on indefinitely. The discussion in this section of the commentary should, however, demonstrate how my awareness of them has developed and influenced my compositional practice and how they emerge from different contexts with a set of observable general qualities that can be useful when composing. I can find limitations within projects (intrinsic); I can also create and impose further restrictions (extrinsic). Limitations can delineate the working boundaries (functional), such as budgets, instrumentation and technology, or define the conceptual, artistic landscape (aesthetic). At the start

of projects, I search for constraints as a means of rationalising my creative decisions and their suitability on some level: 'good' music remains subjective, suitability less so.

Conclusion

The impact of constraint on my practice as a music composer is extensive and this commentary has demonstrated their variety of form and emergence in 33 compositions. For instance, a constraint is not only a compositional technique: a way in which a composer can help themselves make abstract creative decisions but, also, they can be crucial and, even, trivial implications of the composer's broader working contexts and the projects they are contributing to. However, despite their variety, it has been possible to identify underlying similarities and consistencies in the different constraints and how they arise. For example, in my practice, I have begun to think of my compositions more as a result of context. Therefore, self-imposed constraints such as design, or quotation and stylistic borrowing, which are not imposed by the project, have become forms of *extrinsic* limitation. Whereas, constraints like budget, players and styles, which are imposed by the project, are *intrinsic*. Furthermore, I have started to identify consistencies of type, such as *functional* and *aesthetic* restrictions. For example, functional constraints define the boundaries within which a composition must work, affecting more global aspects of composition; and aesthetic limitations impose stylistic decisions that might affect the form of the work on various, often multiple, scales.

Summarising each section of the commentary and its original contributions: section 1 postulates a lack of constraint imposed by concert works as a possible reason composing music of this kind is challenging. The use and number of self-imposed restrictions in those concert works that lacked project-imposed limitations suggested that there could be a correlation. For instance, while the

proverbial blank page was not empty, it was sparsely populated. Moreover, those limitations that existed were broader functional limitations. In other words, the constraints set the boundaries of the composition but what to do within these boundaries was unclear. For example, like for *In Memory,* the conceptual basis of the work was not inherently musical, instructing few aesthetic qualities of the music, making the composition process longer and more difficult. In comparison to this, *Bewere!*, *Flailing Trees and Assailing Weeds* and *The Expendables* flip this around. With a strong aesthetic foundation, taken from extra-musical sources, how to write was clear but what to write for them was not. In establishing some extrinsic, functional limitations the process of composition was much more straightforward.

The following sections of the commentary discussed the media projects for film, section 2, and video-game, section 3. Whereas many of the concert hall projects required me to create the foundations of the composition, the media projects often established many of the aesthetic demands of the music. Some projects also imposed some functional limitations, although these often had to be extrinsically imposed. The challenge in these projects, therefore, became: what do I create on these foundations? How do I weave together these constraints and turn it into music? Due to the distinct methods of production, between film and video-game scoring, different strategies emerge. For example, in the film projects writing to picture and deriving a temporal framework within which to write the music is both a possible and legitimate approach. Furthermore, due to synchronisation, there is an opportunity to score audio-visually, counterpointing the images frame by frame in varying degrees of motion: 'parallel' or 'contrary' (Schiffrin, 2011:4-5). Writing to

picture is an approach that I often took, but this approach would also be guided by an underlying concept for the score. In the video-game projects, due to my joining developers early in the process, writing to motion picture was not possible. Instead, music was composed to stand for things: concept art, narratives and worded descriptions of the games. For this reason, to try and establish stronger foundations, I sought to establish a musical language for the game. In other words, my immediate efforts were to distil all of the information into a musical form so that I could then use that as my material to derive or counterpoint further material.

In section 4, I examined the relationship between composition and production, and how the consideration of the recording process impacted compositional decisions. Mostly functional in nature, this section demonstrated how more global limitations could affect the finer details of the music. For example, the logistical organisation: time and space in the studio, had an impact on the orchestration of the music. The aspect of recording and the use of volunteer live musicians impacted the form of musical ideas and textures: as people were giving up their time I wanted the music to be engaging, but then it also needed to be captured to a high standard and, therefore, could not be too complicated. The delicacy and intricacy of constraints are at the foreground of this section. The functional, while imposing global restrictions that generally affect global aspects of the music, are shown to impact smaller details of the music as well.

The final section, section 5, switches the perspective of the previous parts of the commentary. It takes the viewpoint of constraints as opposed to the

projects, comparing and combining them to find consistencies and differences. In doing so, it establishes a practical approach to considering constraint in the act of composition, one in which I have and continue to develop in my practice as a composer. For example, the distinctions of intrinsic, extrinsic, functional and aesthetic restrictions provide me with a universal strategy for approaching projects as I can consciously identify and define limitations. Moreover, a lack of intrinsic limitations, functional or aesthetic, can make composing more difficult. I can, therefore, proactively, impose suitable, extrinsic constraints as a way of overcoming this should I need to write more quickly.

Moreover, in section 5, I also discuss and evaluate my use of musical quotation and borrowing. It demonstrates how these techniques fall into a form of aesthetic constraint that, typically, enriches and rationalises an underlying conceptual basis, or single concept, for each composition. In doing so, it shows how aesthetic constraints operate in a more mechanical way. In establishing a musical idea, in this case a quotation or borrowed style, the idea itself is constraining and liberating at the same time. It is constraining in that the musical idea is the basis for subsequent extrapolations and development of the material, but liberating because those extrapolations and developments are implicitly bound to their conceptual and aesthetic foundation. In other words, the musical material becomes the concept.

All in all, this commentary represents a significant contribution to our understanding of constraint in music composition: their intricacies, how they emerge contextually and how they infiltrate and shape the compositional process. It demonstrates a nuanced relationship between context, including

project and collaborators, composer and composition. The role and purpose of constraints in music composition are multi-faceted. Not only does this thesis provide an in-depth study into the influence of context on compositions, it provides insights into how understanding and using limitation, beyond the self-imposed, is a valuable compositional, if not pan-creative, strategy. Without foundation: on what can I enact my creative decisions? Without a frame: how can I present my picture?

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