IL EXISTE UN BLEU DONT JE MEURS

for soprano, mezzo-soprano, and sixteen instruments

(Volume 1 of 2: Analysis)

by

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Il existe un bleu dont je meurs is a musical composition inspired by the poem L'âme by René François (Sully) Prudhomme (1839-1907). My goal in this work is to represent, as much as possible, through musical and timbral means, the semiotic qualities of the poem. The composition draws its form, timbre, rhythm, and pitch information from literary and phonetic qualities found in the text, as well as spectral and temporal information extrapolated from the analysis of emotive vocal timbres. The premise for this process is that timbre, and more specifically vocal timbre, acts powerfully as a medium for expression and emotion and that these concepts can be extrapolated into compositional material.

Résumé
Il existe un bleu dont je meurs est une composition musicale inspirée par le poème L'âme de René François (Sully) Prudhomme (1839-1907). Mon but dans cette œuvre est de représenter autant que possible, par des moyens musicaux et spécifiquement de timbre, les qualités sémiotiques du poème. La composition tire sa forme, son timbre, son rythme et ses hauteurs de qualités littéraires et phonétiques relevées dans le texte, ainsi que d'informations spectrales et temporelles extrapolées à partir de l'analyse du timbre d'une voix récitant le texte avec différentes émotions. Ce processus de création part de la prémisse selon laquelle le timbre, et plus spécifiquement le timbre vocal, agit puissamment en tant que moyen d'expression du sentiment et de l'émotion et que ces concepts peuvent être extrapolés afin de générer des matériaux et processus musicaux.
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INTRODUCTION

The connection between text and music, and the use of text to inspire and form compositions, is the focus of this thesis. The use of *ekphrasis* (from the Greek *ek* and *phrasis* 'out' and 'speak') as a compositional tool, builds upon the idea that historical practices such as program music, word painting, leitmotifs, and timbral manipulations, can be used together effectively when the goal of the composition is to translate the semiotic qualities of the text into musical parameters, and thus to create *ekphrasis*.

Chapter 1 is an overview of the historical associations of text and music, and ekphrasis as a compositional tool. Chapter 2 is a review of my methodology and the significant elements and parameters that informed my pre-compositional process. Chapter 3 discusses the form of the composition and how the text and timbre of the instruments play integrals role in the formal organization. Chapter 4 is an overview of the formal application of the poetic material, a movement–by–movement narrative. In conclusion, Chapter 5 reviews the document and discusses possible future research.
CHAPTER 1  
WORDS AND MUSIC

Timbre and Text Expression as Compositional Resources: Creating Ekphrasis

The link between words and music is as old as music itself, since the first instrument was, after all, the human voice. Whether a text itself is set to music or the music is purely instrumental, there is a long-standing tradition that outlines their connection. There are also two distinct points of view of the validity of programmatic music versus absolute music. Does music, as an expressive art form, have a meaning and/or the ability to convey something other than itself? Rather than choose one side in this debate that spans a few centuries, I prefer to look at the tools that composers have used to inspire their creations and to infuse their music with meaning. This approach can lead to a better understanding of the communication tools that the composer uses and the message that he is trying to convey. If a text informs multiple dimensions of the music’s architecture, then I argue that the text has become an integral part of the composition, whether or not it can be perceived by a listener. When a text becomes thus incorporated into the music, such that multiple elements of the text have been transformed into musical materials, this can be labeled as ekphrasis.

1.1 Ekphrasis

Research into the expression of text through music is well served by the rhetorical device of ekphrasis, the transformation or translation of one artistic medium into another. Heffernan (1991) calls ekphrasis “the verbal representation of graphic representation” (p. 299). However, it can be used when describing the creative process of turning text into music.

Siglind Bruhn (2000, 2001, and 2008), one of the foremost researchers on the subject of the musical context of ekphrasis, gives a thorough overview as well as a detailed analysis of what she calls musical ekphrasis (Bruhn, 2000). She defines what must be present in order to create musical ekphrasis:

1. a real or fictitious scene or story,
2. its representation in a visual or a verbal text, and
3. a rendering of that representation in musical language. (Bruhn, p. 8)

However, her definition then narrows down the difference between musical ekphrasis and program music, saying that “musical ekphrasis, by contrast [to program music], narrates or paints a fictional reality created by an artist other than the composer of the music: by a painter or a poet” (p. 28). This
-definition over simplifies the distinction. As Bruhn (2001) herself argues that the principle feature that
defines an instance of *ekphrasis* (versus an instance of program music) is the re-presentation of one
form of artwork into another, therefore – I believe – this should not discriminate against a composer
who might have written the original text that he is setting\(^1\). I also argue that there are many *ekphrastic*
works by composers that have not been labeled as such in the standard musical literature; that is, the
programmatic elements have been applied to the compositional elements so cleverly and originally, that
the music now exists as a re-presentation. Orrey (1975) claims that:

> It is now generally acknowledged that under suitable conditions instrumental music
can be descriptive, can tell a story, or at least help to render the details more vivid; and
that it can throw an illuminating light on the sister arts of painting and literature. (p. 15)

### 1.2 Program Music and Ekphrasis

The use of ekphrasis as a compositional tool is preconditioned by the concepts of programmatic
music. Ekphrasis embodies all the elements of the available programmatic elements, creating many
models from which to build a composition. “One of the tasks of … ekphrasis is to ground how a
musical composition might be understood in relation to the preexistent literary word that it references,
revisits, or revises, and upon which it reflects” (Dougherty, 2008, p. 106). Bruhn (2001) goes on to
explain that the difference between program music and musical ekphrasis in this case is the difference
between representation and re-presentation of the text, respectively.

The goal of program music is to create a connection between the thematic, and as such, the
programmatic elements of the text. Kurtzman (2008) describes the way in which Verdi carefully
crafted his music to fit and to do justice to Shakespeare’s dramatic use of words in *Otello*.

When Guiseppe Verdi began composing *Otello*, he was obviously fully aware of
Shakespeare’s manipulation of words to achieve the goals of his drama. But with the
drastic reduction of words in Arrigo Boito’s libretto, and with words being less clear
when set to music, another means, a particularly musical means, was required to
accomplish the same transformation in Otello as Shakespeare had achieved with
words. The solution, as some scholars have gradually noted in the last thirty years, was
to create a musical language for Iago, a different musical language for Otello, and then
cause Iago’s musical language to invade and transform that of Otello in a manner
directly analogous to the way in which Shakespeare uses words. (p. 71)

\(^{1}\) For the purposes of this paper, and because of the different stance I am taking, I will not use her neologism of “musical ekphrasis” but will instead simply use the term of *ekphrasis*. 
And Zbikowski (2008) further explains the connection(s) between music and language in relation to the text:

According to current theory, mappings between language and music rely on image-schematic structures that are common to the two domains. Music will tend to instantiate such structures dynamically, while language will call them up through reference … Combinations of music and text such as those created through the compositional technique of text painting thus represent a kind of laboratory for the study of image-schematic structure. (p. 520)

Liszt describes program music as a device wherein the composer uses a particular descriptive text to “...direct [the listener’s] attention to the poetical idea of the whole or to a particular part of it” (as cited in Scruton, 1983, p. 41). Antonio Vivaldi’s The Four Seasons, Beethoven’s Symphony No. 6, and Berlioz’s Symphonie Fantastique are among many such examples of programmatic pieces that draw their inspiration from text.

According to Niecks (2009), the “three main divisions are easily distinguishable [in programmatic music] – the predominantly descriptive, the predominantly emotional, and the predominantly symbolical” (p. 4). Composers use these affectations as compositional material.

The matter of vocal music as program music can be a subject of contention. In theory, vocal music should be the ideal programmatic music, but in actual fact, the music often becomes subservient to the voice as just an accompaniment. An important feature of twentieth century music is the use of text setting that, in contrast to its original poetic setting, is used in different ways, and not strictly set.

Brown (1948) discusses how in a way “all vocal music is programmatic, for the words carry with them ideas outside the music, and if there is to be any connection between text and music, the music must in some way be concerned with the ideas expressed in the text” (p. 209).

In a vocal composition, the presence of text is inevitably expected to convey meaning. While we typically think of this relationship in vocal works in terms of the original poetic text, it can be argued that vocal pieces set in various languages can also elicit strong affects from listeners despite language barriers, and that the timbre of the vocal performance, as well as the instrumental and/or orchestral writing, plays a significant role in this type of affect. A vocal piece can use all the programmatic elements available in a text to create *ekphrasis* and not rely on the semantics of the sung words as a crutch for delivering meaning.
The following are just some of the techniques composers use to ‘program’ a concept or text into their music:

1.2.1 Word Painting

Word painting is a compositional device that is used to allude to imagery or an emotional state. Bruhn (2000) emphasizes that:

Music, while resembling verbal texts in that it develops in time, at the same time ‘paints.’ Like the media of visual art, it conveys to its audience the sensual experience of colors and textures, rather than referring to them as language does. Both its range of register and its compositional textures (polyphony above all) create a spatiality to which literary modes can only allude. (p. 26)

In its most simplistic use, words such as “high” or “low” might be sung thus in the vocal tessitura, while the word “climb” could be sung with an ascending melisma. Carter (2009) examines Renaissance theorists’ points of view regarding word painting: “according to Joachim Thuringus (Opusculum bipartitum, 1624) there are three categories of words that may be ‘expressed and painted’ by means of music, including ‘words of affection’ (‘weep’, ‘laugh’, ‘pity’), ‘words of motion and places’ (‘leap’, ‘cast down’) and ‘words of time and number’ (‘quickly’, ‘twice’).” This compositional device can easily become trite; however, composers are often adept at implementing the idea in innovative ways, and so the tradition of word painting remains popular. Zbikowski (2008) describes text painting as:

Not a matter of simple mimesis, in which music, through its resemblance to a natural sound, represents that sound, but of a more complex process through which music represents the image-schematic structure of some event or situation. (p. 514)

1.2.2 Leitmotifs

A leitmotif is a recurring musical theme meant to hold a symbolic connection to the text and plot (where applicable). In large-scale works such as an opera, leitmotifs are an important element that add to the cohesiveness of the form and imbue dramatic effect. According to Niecks (2009):

If aptly and sparingly used, [leitmotifs] are valuable enrichments of the resources of the art … Although not the inventor of the contrivance, Wagner was the originator of its systemization as we find it in his later music-dramas, where these recurring characteristic motives play an important part both as means of expression and in the texture of the style, where indeed musical composition assumes more and more the form of a network of [l]eitmotive. (p. 343)
1.2.3 Timbre and Mnemonics

There are multiple dimensions to the perception of sound; music is performed in a physical space, but it then creates an imaginative space inside our minds. To remember a piece of music is to remember an impression of its temporal quality, its horizontal dimension and its vertical dimension, which is pitch and harmony (Baumann, 2011). As well, there is a third dimension of perceived characteristics that causes sounds, through dynamic and timbral manipulations, to appear closer or further away: for example, a muted trumpet at mezzo-piano which plays the same melodic line as a trumpet at fortissimo will produce a very different perceived quality of closeness or distance. Lerdahl (1992) believes that “the best music utilizes the full potential of our cognitive resources [and] arises from an alliance of a compositional grammar with the listening grammar” (p. 255–56). Sculpting the musical elements that create these perceptual qualities is part of composing the musical space.

Mnemonic attributes of an instrument’s timbre can be used as compositional and orchestrational tools to enhance the affect and effect of the music. For example, the trumpet, which can be played outdoors (in many types of weather), can sound “far and away” or “mountainous.” However, the cello, with its delicate wooden construction (it cannot get wet or be in direct sunlight), can sound “indoors” or “inside” at the “heart” of the orchestra (Rea, 2009). As Swain (1997) explains, “these practical realities are unavoidable [for composers], for they cannot write a single note without deciding what instrument will play it, and that single phonological decision already biases the semantic range of whatever follows” (p. 78). Culturally learned symbols of musical space carry much significance; traditionally a listener hears a certain instrument in a certain space or context (e.g. military exercise, campfire, or concert hall), and this role is then exploited by Classical and Romantic composers, i.e. the intimacy of a string section versus the abrasive intensity of brass and percussion. These musical allusions are important sources of programmatic compositional material.

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2 Timbre is a structured set of auditory attributes that characterizes many aspects of sound events and contributes collectively to sound source identity (Hajda, Kendall, Carterette & Harshberger, 1997; Handel, 1995; McAdams, 1993; Risset, 2004). Included in such attributes are various aspects of tone colour such as brightness, richness, hollowness, and other textural aspects such as roughness, inharmonicity, spectral fluctuations and attack quality. Of these attributes, many vary in pitch and dynamics within a particular source of sound, and certain attributes can be tied to temporal, spectral and spectrotemporal acoustic parameters. Instrumentation encompasses the properties, possibilities, constraints and uses of a given instrument.

3 Yates (1992) describes the use of spatial techniques to aid memory.
1.2.4 Spectral and Timbral Analysis

In the early 1970’s, aided by an advance in technology, composers were able to analyze the harmonic spectrum of discreet sounds and to use their discoveries as compositional material. The founding members of the group *l’Itinéraire* – Gérard Grisey, Tristan Murail and Hugue Dufourt, among others – used techniques that were grouped under the label ‘Spectralism’. These composers analyzed the timbre of instruments and/or any sound emitting object, and then used the pitches from the resulting analysis to build their musical material. This tradition has continued to the present day. Composer Jonathan Harvey used a software-assisted approach in his piece *Speakings* (Nouno et al 2009), and Peter Ablinger used transcriptions for human voice in his Quadraturen series (1997-2004). Philippe Leroux used spectral analysis to form the pitch material for his piece *VoiRex* (2002), and described using “models of models [where] it seemed natural to [him] to morph patterns from one domain to the other” (as discussed in Vassilandonakis, 2008). By having more control over the harmonic and temporal spectrums, these composers imbued their compositions with extra-musical material, and were arguably able to craft the symbolic content even more carefully than composers of the past.

1.3 Combining Elements

Using *all of* the tools described above as ways to extrapolate compositional materials expands the semantic range of the programmatic elements. As Langer (2009) describes it, since “the forms of human feeling are much more congruent with musical forms than with the forms of language, music can reveal the nature of feelings with a detail and truth that language cannot approach” (p. 236).

The goal of the compositional process, in this case, is to re-present through musical means the semiotic qualities of the poem. By using the expressivity of the textual elements, the timbre of these elements (when sung or spoken), and their semantic weight as musical source material, the text becomes music, and *ekphrasis* is achieved. In his article *Listening with Imagination*, Walton (1994) explores the concept of music as fiction, that if painting or writing can create a fictional world, why can’t music? “It is the auditory experiences, not the music itself, that generate fictional truths” (p. 60).
2.1 Recording and Capture
The pitch materials for my composition were derived from spectral analyses of two singers speaking and singing the text. The soprano and mezzo-soprano were recorded into the editing program Logic Pro X using an AKG C414 microphone, with a Millennia HV-3D-4 preamp and RME Fireface800 soundcard. Each singer then recorded fragments of the poem, first spoken, then sung on pitches Bb4 and D5, both in straight tone and in vocal belting style. These particular pitches were chosen because of their place in the tessituras for both the soprano and mezzo-soprano, respectively. The prosodic quality of the spoken element was analyzed to create rhythmic material (see Chapter 3.1.2).

2.2 Timbral Analysis and Transcription
From the vast amount of sung material (96 words multiplied by two singers, reciting on two different pitches, performed in two different vocal styles), I reduced the elements to be analyzed to the syllables of the first lines of stanza one and stanza two: J’ai dans mon cœur and Partout scintillent les couleurs. The excerpts were edited and extracted into .wav files, and were then imported into the Orchidée software developed at IRCAM (Carpentier et al. 2010). Orchidée works by analyzing spectral features of a selected sound sample and comparing it to a database of recorded orchestral instruments. The software then attempts to replicate, through re-orchestration and re-instrumentation, the harmonic spectrum and timbre of the original audio sample. The instruments used in each analysis can be chosen from a complete list of all orchestral instruments. Once the analysis is complete, the results can then be auditioned and compared with the original sound file. More importantly, the accompanying

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4 “Belting is very often considered as a technique of loud singing commonly found in non-classical singing, with a voice quality similar to a yell. However, a few authors consider it nowadays as a vocal register on its own, and thus it seems that it is worth mentioning here. It could be produced by males and females, but only female voices have been studied up to now. Considered as an extension of chest register into the upper part, its frequency range goes from E4/G4 (about 330 Hz) to D5 (540 Hz). Belting sounds are produced with high subglottal pressure, long closed phase of duration greater than half of the fundamental period, high SPL, and great harmonic richness. A tuning of the first formant with the second harmonic has been observed on open vowels” (Heinrich 2006, p.11). This style is usually performed in traditional or popular music. A study by My (2007) explored the differences when classically trained singers sing normally and when they belt.

5 The full text of the poem and the translation are found in Chapter 3.1

6 l’Institut de recherche et coordination acoustique/musique
2.3 Pitch

2.3.1 Modes and Matrices; Extracting Pitch From Timbral Analysis

Of the numerous Orchidée analyses of the soprano and mezzo-soprano provided, I found the analysis of the word *dans* to have particularly salient horizontal and vertical qualities. This analysis was fitting to use as part of a primary mode for my composition because of the symbolic quality of the word *dans* (here, within). The notes derived were \([F, \text{Db}, \text{Eb}, \text{Bb}, \text{C}]\) (see Figure 1).

To complete the mode (hereafter called Mode 1 or \(P_0\)), I used the program Melodyne\(^8\) to create another analysis of the mezzo-soprano speaking the words *J'ai dans mon cœur*. This provided me with the melodic line \([\text{Bb}, \text{Eb}, \text{Eb}, \text{Db}]\) (see Figure 2). Because the intervallic relationships of this melody are also within Mode 1, I decided to use the intervals \([P5, M2]\) and transpose the melody using the remaining pitches of \(\text{Eb}\) and \(\text{Db}\) as a tonic center: from \([\text{Bb}, \text{Eb}, \text{Db}]\) to \([\text{Eb}, \text{Ab}, \text{Gb}]\) and to \([\text{Db}, \text{Gb}, \text{Fb}]\) (See Figure 3). The \(\text{Ab}, \text{Gb}, \text{and Fb (E)}\)

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\(^7\) However, Orchidée does not show the envelop of the instrumental timbre, the changing of its timbre over time; it analyzes the entire sample and averages out the frequencies.

\(^8\) Nouno et al. (2009) summarizes the use of Melodyne as a pitch extractor: “… a better way to extract melodic pitch information on speech, and in order to be coherent with the inner-structure, is to extract melodic contours on the level of syllabic segmentations… that automatically performs syllabic segmentations” (p. 2).
are not found in the original mode, and therefore became useful extra pitch material that could be incorporated into Mode 1. I decided to add them to the row in the order [Gb, Ab, E] to create a retrograde of the opening three notes [F, Db, Eb], which have the intervals of m6 and M2. As well, these pitches provided the important and salient melodic interval of a tritone. Mode 1 is as follows: [F, Db, Eb, Bb, C, Gb, Ab, E].

I then incorporated the mode into a matrix (see Figure 4) to create a reservoir of pitches and intervals, and so did not employ a traditional serialist approach. Instead it provided me with clear transpositions, retrogrades, and inversions.

Mode 2, a contrasting (subordinate) mode, was created by augmenting and diminishing each interval in Mode 1 to its closest harmonic (rather than enharmonic) neighbour: m6 to M6, M2 to m2, P5 to TT, etc., to create a quality exchange. The intervallic content was also an important developmental tool, because of the melodic salience of intervals such as the major/minor sixths and major/minor seconds: [m6, M2, P5, M2, TT, M2, and m6] as Mode 1, the “prime row,” P0, and [M6, m2, TT, m2, P5, m2, and M6] as Mode 2, or 2P0. Both these modes and their matrices gave me a logical structure of sets of pitches from which to draw inspiration (see Figure 5). In particular, Modes 1 and 2, when reduced into their prime forms, had Dorian and Phrygian qualities that were useful in the compositional process.

<table>
<thead>
<tr>
<th>Mode 1</th>
<th>Mode 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>I0 F Bb Db Eb C Gb Ab E R0</td>
<td></td>
</tr>
<tr>
<td>I9 F D Bb Db Eb C Gb Ab E R0</td>
<td></td>
</tr>
<tr>
<td>I8 A F G D E Bb C Ab R4</td>
<td></td>
</tr>
<tr>
<td>I7 A Bb Eb F G Db E B R7</td>
<td></td>
</tr>
<tr>
<td>I6 Bb Gb Eb F Bb D A R5</td>
<td></td>
</tr>
<tr>
<td>I5 Bb Gb Eb F Bb D A R5</td>
<td></td>
</tr>
<tr>
<td>I4 C A Bb E F C Db B R7</td>
<td></td>
</tr>
<tr>
<td>I3 C A Bb E F C Db B R7</td>
<td></td>
</tr>
<tr>
<td>I2 E C D A B F G Eb R11</td>
<td></td>
</tr>
<tr>
<td>I1 E C D A B F G Eb R11</td>
<td></td>
</tr>
<tr>
<td>I0 D Bb C G A Eb F D Bb R9</td>
<td></td>
</tr>
<tr>
<td>I9 F D Bb Db Eb C Gb Ab E R0</td>
<td></td>
</tr>
<tr>
<td>I8 A F G D E Bb C Ab R4</td>
<td></td>
</tr>
<tr>
<td>I7 A Bb Eb F G Db E B R7</td>
<td></td>
</tr>
<tr>
<td>I6 Bb Gb Eb F Bb D A R5</td>
<td></td>
</tr>
<tr>
<td>I5 Bb Gb Eb F Bb D A R5</td>
<td></td>
</tr>
<tr>
<td>I4 C A Bb E F C Db B R7</td>
<td></td>
</tr>
<tr>
<td>I3 C A Bb E F C Db B R7</td>
<td></td>
</tr>
<tr>
<td>I2 E C D A B F G Eb R11</td>
<td></td>
</tr>
<tr>
<td>I1 E C D A B F G Eb R11</td>
<td></td>
</tr>
<tr>
<td>I0 D Bb C G A Eb F D Bb R9</td>
<td></td>
</tr>
</tbody>
</table>

\[9\] Both intervals are labeled as if they appear in ascending order, rather than within an octave
2.3.2 Vowel Leitmotifs

I constructed leitmotifs for every vowel in the poem by taking melodic cells from both modes. These leitmotifs are primarily used in the second and fourth movements, and their presence unifies the setting of the text. Each melodic cell is labeled with one of Allen Forte’s pitch class sets, which I used to organize my melodic material and to help prevent repetition; each vowel has a unique melody (see Figure 6). These leitmotifs were then coloured by the timbral treatment of the instrumental technique (see Figure 10 below).

In the IPA vowel chart (Figure 7) there are four quadrants: front, back, close, and open. The melodic cell for each vowel was chosen based on how the intervals in the cell would benefit from the vowel position. For example, for /a/, f4-z29, (la, amours, apporment, anime, etc.), the opening four notes of the cell, the rising melodic quality of the cell, with the openness of the M6, work well with the vowel open position. For /u/, f3-2, (sous, doutent, partout, d’où, contours, bouche, etc.), the close-backness of the vowel works with the minor third and minor second intervalllic qualities. And for /e/ f4-14 (J’ai, les, des,

\[\text{Figure 5 – Modes 1 and 2 in their horizontal/melodic forms}\]

\[\text{Figure 6 – Some of the leitmotifs from Movements II and IV}\]

10 They were also chosen by ear; one of my future projects can include more analysis to verify these intuitions

11 I use the ‘f’ in front of the pitch class sets: e.g f4-z29 or f3-5. I did this for ease of labeling and organizing; i.e. not having to write pitch=class set 4-z29 or pitch-class set 3-5.
delice, etc.) the openness of the upwards leaps of the perfect fourth and minor third reflect the front position, and the minor second reflects the close position.

2.4 Timbre
2.4.1 Instrumentation
The instrumentation for *Il existe un bleu dont je meurs* is flute (+piccolo, +alto flute), oboe (+English horn), clarinet in Bb (+bass clarinet in Bb), bassoon, horn in F, trumpet in Bb, trombone, two percussion, piano, harp, soprano, mezzo-soprano, two violins, viola, cello, and contrabass. It was important to have a wide variety of timbras possibilities, so I chose to compose for a wide variety of instruments.

2.4.2 Instrumental Technique as Timbral Continuum
I created a “timbral continuum” of various instrumental timbral techniques to vary the sound of the timbres of the instruments; varying the spectral centroid – e.g. *sul tasto* to *sul ponticello* – and varying spectral flux\(^\text{12}\) – e.g. *non vibrato* to *molto vibrato*. Figure 8 details some of the conceptual transformations, and Figure 9 shows one of the possible applications.

2.4.3 Phonetics and International Phonetic Alphabet (IPA)
Another part of the pre-compositional process was the transcription of the text into IPA, followed by the isolation of each vowel and consonant. I attempted to replicate the sounds of the consonants by extrapolating their timbral changes, i.e. their timbral envelope, into aspects of the instrumental techniques and timbral continuum described above. After creating a spreadsheet of the IPA chart for

\(^{12}\) “spectral centroid (representing the relative weights of high and low frequencies and corresponding to timbral brightness or nasality: an oboe has a higher spectral centroid than a French horn… spectral flux (the degree of evolution of the spectral shape over a tone’s duration which is high for brass and lower for single reeds.” (McAdams, 2012, p. 41)
consonants, I plotted the qualities of each instrument and its speech-like qualities\textsuperscript{13}. Figure 10 shows the IPA chart for fricatives and my instrumental interpretation of their timbral envelope\textsuperscript{14} (See Appendix 5 for full chart). These choices were made based on the similarity between the voice and the instrumental technique to determine which technique could best replicate the timbral envelope. The most salient effects were usually combinations of instruments. For example, to recreate /s/, a fricative\textsuperscript{15} and an unvoiced coronal (alveolar), I chose to orchestrate the flute using a wind-tone, along with the brass blowing air through their instruments in a quick crescendo, and the strings playing \textit{molto}\textit{ sul ponticello}. These timbral effects are meant to replicate or reinterpret the timbre of the consonant /s/.

\textsuperscript{13} Although it is possible to question the effectiveness of semantic comprehension when inferring timbral similarities, the objective is to use these transformations as part of the re-presentation of the text, and to use musical ekphrasis as a composition tool.

\textsuperscript{14} These choices were made by ear, not by spectral analysis.

\textsuperscript{15} “Fricatives are produced with a very narrow constriction in the oral cavity. A rapid flow of air through the constriction – the position of which depends on the particular fricative! creates turbulence in the flow, and the random velocity fluctuations in the flow act as a source of sound. English fricatives are usually grouped into four classes according to their place of articulation: labiodental /f,v/, interdental /\textit{Y},\textit{Z}/, alveolar /\textit{s},\textit{z}/, and palato-alveolar /\textit{b},\textit{c} /” (Jongman et al. 2000, p. 1252).
2.4.4 Inspirations From Ring Modulation

Ring modulation is a common technique used by spectral composers. Gilmore (2007) describes how a:

A ring modulator takes two signals as input and produces a signal containing the sum and difference of their respective frequencies. If, for example, the inputs are two sine waves of 200Hz and 300Hz, the output from the ring modulator will be two frequencies of 500Hz (300Hz+200Hz) and 100Hz (300Hz–200Hz) – the sum and difference tones respectively. (p. 5)
The fourth movement (and parts of the fifth movement) of my composition use as a point of departure the homorhythmic aspect of Claude Vivier's *Lonely Child*, and some of the frequency modulation techniques that he used to create his harmony, which he called his ‘colours’ (*couleurs*)\(^{16}\); Gilmore (2007) called it ‘quasi-ring modulation’ because Vivier only used the sum combinations\(^{17}\). The leitmotifs of my fourth movement were used as the pitch material to build my own ‘*couleurs*’ orchestrated into the strings. For example, using the first two pitches from the melodic cell [Ab, G, Db, C /R0, F4-8] associated with the vowel /õ̃/ (*sons, frissons*), the frequency 415.3hz (Ab4) is used as the carrier and 392hz (G4) as the modulator. The result is a sum frequency of 807.3hz (G#5 minus 49 cents)\(^{18}\). This is then added to the carrier frequency, 415.3hz, creating 1222.6hz (D#6 minus 31 cents), and the process is repeated to create one vertical sonority. To make each successive vertical sonority the next note in the cell becomes the modulator (see Figure 11).

### 2.4.5 Timbral Techniques

The use of the following timbral techniques are inspired by my research assistantship at the Music Perception and Cognition Lab (MPCL) at McGill University, under Professor Stephen McAdams and PhD candidate Meghan Goodchild. The project’s goal, titled the *Orchestration and Perception Project*, is to work toward a theory of orchestration that is founded in the psychological domains of timbre perception and auditory scene analysis (McAdams & Goodchild, 2014). This project has clarified and organized orchestral techniques and highlights the use of timbre as a key factor in the application of such techniques. I applied these timbral concepts to my compositional and orchestral decisions, and this clarification of timbral uses aided my goal of manipulating timbre to create and develop thematic elements. McAdams’ and Goodchild’s organization and use of these labels in particular helped to elucidate a conceptual framework that otherwise would have been more abstract in comprehension and application. Here is a list of the primary uses of timbre in their theory:

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\(^{16}\) Gilmore 2007, p.5-8

\(^{17}\) No difference tones are used

\(^{18}\) Which gets interpreted as a G quarter sharp
<table>
<thead>
<tr>
<th>Timbral Augmentation</th>
<th>One or more instruments embellishes or augments another, with the timbre of one of the instruments being more dominant.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progressive (or dynamic*) Timbral Augmentation</td>
<td>The embellishing instruments change over the course of a phrase (see also timbral modulation see below).</td>
</tr>
<tr>
<td>Timbral Emergence</td>
<td>The creation of a new timbre through the combination of established instrumental timbres (Sandell 1995).</td>
</tr>
<tr>
<td>Progressive Timbral Emergence</td>
<td>Similar to progressive timbral augmentation, it involves an emergent timbre in which the instrumentation changes over the course of a phrase (see also timbral modulation see below).</td>
</tr>
<tr>
<td>Textural Integration</td>
<td>A blend that is perceived as being more than a single instrument (i.e. emergence or augmentation), but less than two segregated layers, and wherein none of which emerges as a primary element.</td>
</tr>
<tr>
<td>Segregation</td>
<td>Clearly distinguishable voices with nearly equivalent prominence or salience, scored contrapuntally, with equally salient lines and rhythmic independence.</td>
</tr>
<tr>
<td>Stratification</td>
<td>Two or more different layers of musical material, separated into more and less prominent strands (often foreground, middleground and background).</td>
</tr>
<tr>
<td>Timbral variations/shifts</td>
<td>Musical materials are re-iterated with varying orchestrations.</td>
</tr>
<tr>
<td>Timbral modulation</td>
<td>A succession of gradually changing blended or integrated timbres that are capable of unifying all the transitional timbres into a coherent grouping.</td>
</tr>
</tbody>
</table>

Next, these large-scale, coordinated instrumentation changes (Orchestral Gestures) act as one coherent gesture that occupy one formal function (Goodchild, 2013):

<table>
<thead>
<tr>
<th>Gradual addition or orchestral crescendo</th>
<th>Adding instrument after instrument until all of the instruments of the orchestra are engaged, also known as an orchestral crescendo.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradual reduction or orchestral decrescendo</td>
<td>The reverse process of the gradual addition, also known as orchestral decrescendo.</td>
</tr>
<tr>
<td>Sudden addition</td>
<td>Creates a sudden blast of full forces.</td>
</tr>
<tr>
<td>Sudden reduction</td>
<td>The timbral contrast from full forces to a smaller subset of instruments or a soloist, (drop-off).</td>
</tr>
</tbody>
</table>
CHAPTER 3
FORM – TEXT AND TIMBRE

3.1 Role of Text Within the Piece

L’âme

J'ai dans mon cœur, j'ai sous mon front
Une âme invisible et présente:
Ces qui douteront la chercheront;
Je la répands pour qu'on la sente.

Partout scintillent les couleurs,
Mais d'où vient cette force en elles?
Il existe un bleu dont je meurs,
Parce qu'il est dans les prunelles.

Tous les corps offrent des contours,
Mais d'où vient la forme qui touche?
Comment fais-tu ces grands amours,
Petite ligne de la bouche?

Partout l'air vibre et rend des sons,
Mais d'où vient le délice intime
Que nous apportent ces frissons
Quand c'est une voix qui l'anime?

J'ai dans mon cœur, j'ai sous mon front
Une âme invisible et présente:
Ces qui douteront la chercheront;
Je la répands pour qu'on la sente.

– René François (Sully) Prudhomme
(1839-1907)

The Soul

I have in my heart, I have in my head
A soul, invisible and present:
Those who doubt will search for it;
I open it wide so it may be felt.

Colours shine all around,
But where does their power come from?
There is a blue that is killing me,
For I find it in a pair of eyes.

All bodies have contours,
But what is it that truly touches us?
How is it that the small line of a mouth can
Create such great loves?

All around the air vibrates and gives sound
But how is it that just a voice
May cause us to shiver so and
Give us such intimate delight?

I have in my heart, I have in my head
A soul, invisible and present:
Those who doubt will search for it;
I open it wide so it may be felt.

19 translated by Sarah Helene Johnston, 2014
The contextualization of musical modes, motifs, and harmonic areas are all signs wherein interpretation lurks. A focus on the sign, its correlation to an object, and how that correlation makes sense helps ground the complex interaction between music and a pre-existent literary text. (Dougherty, 2008, p. 118)

The narrative and form of Prudhomme’s five-stanza poem inspired my compositional form. The penultimate stanza reveals the sonic, and therefore musical, qualities inherent in Prudhomme’s ponderings on the soul: l’air vibre et rend des sons and c’est une voix qui l’anime. These served as my inspiration to “animate” this poem for voice and instruments. Using the prosodic and paralinguistic qualities of the literary content, the timbres of the voice and of the instruments were extrapolated into compositional tools that then informed many aspects of my compositional decisions. My choice of instruments (sixteen individual instruments with two voices) created a very complex palette that I used to express qualities of the soul through the medium of sound.

In my composition the poem is set both literally and dramatically. I looked for many elements in the text and built a reservoir of musical materials based on qualities in the text that could be represented in the music, programming enough textual qualities into the piece to create ekphrasis. Specific words from each stanza captured important qualities and suggested to me motivic and expressive elements for my setting of the text. The two main thematic elements found in the poem are ‘the heart’ (cœur), and ‘invisible and present’ (invisible et présente). I used the symbolism behind these words, and their qualities of significance to the ‘soul’ (âme), as building blocks in my composition.

Figure 12 – A screenshot of the ‘timeline’ from the software program Sibelius 7.5. There are additional markers showing the movement boundaries and the form.

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20 Insofar as it the term is used in the context of this paper: that the goal is using ekphrasis as a compositional tool.
The form of the piece is ABACAD (see Figure 12), which contrasts with the form of the poem [ABCDA]. However, the movements are inspired by each stanza from the poem: movement I [AB], movement II [A'], movement III [C], movement IV [A''], and movement V [D], which functions primarily as a coda. This form is also derived from the modes used in each movement: the [B] section uses Mode 1, while [A] sections contain Mode 2. The [D] section has elements of Mode 1. The intervals found in each mode give colour, character and identity to the melody and vertical sonority.

3.1.1 Modes
The use of the two modes as primary pitch material is meant to represent the duality inherent in the poem – the soul, with its invisible and present (visible) qualities. Because of Mode 1’s connection to the word ‘within’ (dans)\(^{21}\), it is meant to symbolize the inner workings of the mind and soul. Mode 2, with each of its intervals having its quality exchanged, is the ‘visible’ (présente) and acts as a musical antonym to Mode 1, both symbolically and musically.

3.1.2 Rhythm
The rhythmic elements of the composition were derived from two factors; the rhythm of the prosody and an interpretation of the heartbeat. The heart (coeur) is represented literally by the heartbeat motive (see Figure 15). Both macro and micro rhythmic organization in the sung and instrumental music are based on qualities found in the text. The inter-relationships of syllabic rhythmic differences found within the five stanzas emphasize the metric versus asymmetric parameters; for example, in the second stanza the first two lines have seven syllables and the next two have eight. I extrapolated these relationships into tuplets (e.g. 7 against 8, 5 against 4).

3.1.2.1 Prosody
Rhythmic analysis of the prosodic qualities\(^{22}\) of the entire poem resulted in two interpretations. Figure 13 shows the simplest triplet interpretation. The second interpretation, Figure 14, shows the tuplets, quintuplets and septuplets that build upon the first interpretation yet bring the prosodic qualities to a more rhythmically precise interpretation of everyday speech (see also Appendix 7).

\(^{21}\) Spectral analysis of the word dans provided the pitch material for this composition (see above).

\(^{22}\) Prosodic qualities of soprano and mezzo-soprano speaking and singing.
3.1.2.2 Heartbeat

The analysis of the heartbeat, another important programmatic element in my composition, is derived from an auditory (by-ear) analysis by the medical community (Field, 2010, p. 2074). In Figure 15, there are ten heartbeat rhythms shown. I used segments of these rhythms throughout the percussion and instrumental parts, in both their natural, diminished, and augmented forms (see Figure 16 & 17). I also used the dynamic elements of the medical interpretation (Figure 17).
3.1.3 Title, Mood Markings, and Performance Practice

By using programmatic elements in the form of the title of the composition, the movements, and the mood markings, I build *ekphrasis* by making a path from creation to interpretation. The titles of each movement are drawn from the text. The first and second movements have titles that are taken from the first line of the stanza. As Prudhomme wished to set the stage for the poem, I used this to remind the musicians of how each movement needed to be represented. The third, fourth, and fifth movement titles are drawn from within their respective stanzas.

In most of the composition, I did not use conventional mood markings (as is often the case in my compositions). Instead, I quoted markings from Debussy’s Preludes, or used parts of the text. Consider the difference (with regards to my musical intent): the opening quarter note at 122 BPM could have been marked *Allegro*, but instead I used *Dans une brume doucement sonore*, which informs the interpretation (relating to the symbolism of ‘*j’ai dans*’). In the third movement, *Comme un tendre et triste regret*, I wanted to affect the semantic interpretation, and to try to recreate the melancholic pining for ‘*d’où vient la forme qui touche*?’.  

3.1.4 Text and Timbre

Minute changes in the timbre of a voice carry much significance. Brown (1948) describes the way in which the mind processes words so that “in speech we distinguish one tone from another entirely by its timbre. We instantly distinguish between such words as *sit, set, sat, soi, sate, soot, suit, seat*, and *site*, yet these words differ from one another only in the timbre of the vowel” (p.32). This highlights the need to consider the semantic value of change in instrumental timbre – a timbral morphology – that timbral
shifts and timbral augmentations can be used to imbue expression into a musical setting (see Figures 18 and 19). This is why I established an outline of a timbral continuum for instrumental techniques. It can be argued that timbre is understood by the brain as a proto-language; if the prosodic characteristics and changes in speech carry such expressive and semantic weight, then instrumental techniques should as well. Brown continues by saying that “when a poem is read, we have two aspects of timbre to consider: the quality of the voice itself, and the quality of the particular speech-sound which is being pronounced at any given time” (p. 38). In the context of this composition, these qualities are used as tools of expressivity, exploiting the paralinguistic inferences of instrumental and vocal timbres.

Through the use of orchestrational techniques, wherein specific combinations of instruments at different pitches and dynamics are used to achieve a particular sonic goal, I used timbre to define and shape musical structures and to express emotive qualities. The orchestration of this piece was part of the composition;
it was not written on a piano and later orchestrated, each orchestrational choice was part of the composing process. My choice of instruments for this piece symbolically expresses many qualities of the text, and through the medium of their timbres and mnemonic and expressive qualities, I set the stage for the narrative to unfold.

3.1.4.1 Orchestration – Large-Scale Gestures

Figures 20 & 21 show examples of how I used large-scale timbral effects to create a dramatic arc and form. Figure 20 highlights the sudden reduction of mm. 16 where the entire ensemble cuts off and leaves the first violin playing solo. Figure 21 show the gradual addition and gradual reduction that is the musical goal of Movement III.
3.1.5 Word Painting

Text painting is, admittedly, a somewhat rarified compositional technique. It nonetheless points to the basis for metaphorical descriptions of music and gives some sense of how the conceptual domain of music might participate in metaphorical mappings. (Zbikowski, 2008, p. 516)

I took as many words as possible from the text to use as source material for construction of the musical architecture of my composition.

For example, the idea of ‘invisible et présente’ (invisible and present) permeates all aspects of the piece and informs many of the creative decisions. Clear, present, individual timbres contrast with the textural integration/saturation of multiple timbres. And the use of ‘j’ai sous mon front’ (I have in my head/what is inside me) represents the underlying texture and harmony, beneath what is apparent and what we hear. It provides the inspiration for the timbral modulations and shifting that pervade the piece. More poetic and symbolic applications are discussed in Chapter 4.
4.1 Movement I – *J'ai dans mon cœur*

This opening section creates the musical setting for “I have in my heart, I have in my head.” The piece begins with Mode 2 (transposed to 2P8), followed by Mode 1\(^{23}\), taking the listener from the ‘outer’ thematic quality to the ‘inner’ of each mode, respectively, and showing what is in the ‘heart’ (*cœur*) of the composition and what is beneath the ‘surface’ (*front*).

The opening of the piece, until B\(^{24}\), is therefore a transition from Mode 2 to Mode 1 as well as a move from full ensemble to solo violin. Mm. 1–10 include layered fragments from 2P8. The woodwinds, brass, piano and harp present 2P8 melodically. The strings

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\(^{23}\) See matrix of modes in Chapter 2.3.1

\(^{24}\) Rehearsal B
present the opening vertical sonority (see Figure 22). In mm. 10 and 11 there is an elision of the two
modes: the flute plays the full Mode 2 in ascending motion and the harp plays a glissando using Mode
1. From here until B, an orchestral crescendo leads up to a sudden reduction in texture and dynamics
in parallel with a rapid sustained fortissimo glissando performed with the fingertips\(^{25}\) inside the piano
that converges onto a high Bb6 in Violin I. The juxtaposition of the sudden reduction from the full
ensemble to the solo violin creates the sense of having gone ‘inside’ (sous mon front).

![Figure 23 – Solo violin at Rehearsal B](image)

![Figure 24 – mm. 37-38](image)

### 4.1.2 Une âme invisible et présente

From the solo violin passage, at B until C, contrasting elements of dynamic versus sustained lines, and
timbral clarity versus timbral blur, are used to elucidate the duality of the ‘invisible and
present’ (invisible et présente) (see Figure 16). In mm. 21–24, the word âme is segmented by time and
timbre: the soprano sings /a/ while the mezzo-soprano sings /m/. At C the piano plays fragments of
Mode 1: [P0, I3, P4], representing another element of ‘invisible and present’. At D the mode P\(_0\) shifts
a semitone to P\(_1\) with the arrival of the E natural on m. 36. From here, the timbral blur\(^{26}\) (see Figure
18) created by the marimba and vibraphone becomes the canvas upon which the next section is built.
The singers stretch out ‘j’ai’ in a soft but noisy whisper-like quality, while the flute makes a wind-tone;
by incorporating these noise elements the ambiguity and duality of the pitches present is increased (see
Figure 25).

\(^{25}\) The performance notes indicate to do this “à la George Crumb” referring to the composers frequent use of this effect.

\(^{26}\) A saturation of the harmonic spectrum so that no clear pitch can be distinguished.
4.1.3 Ceux qui doutent la chercheront; je la répands pour qu’on la sente

From E until the end of the movement there is a gradual orchestral crescendo using fragments of Mode 1. As the texture becomes more dense, the crescendo represents the ‘putting forth’ (la répands) so that the listener can sense it. This leads towards an unexpected sudden cutoff (sudden reduction) and the attacca into the second movement.

4.2 Movement II – Scintillent les couleurs

This movement is structured primarily using Mode 2. It marks the first regular appearance of vowel leitmotifs. There is pervasive use of the Orchidée analyses as important arrival points (see Figure 26). The textural integration and the surface rhythmic activity represent the ‘scintillating colours’ of the text.

4.2.1 Partout scintillent les couleurs

Movement II marks a return to the outer symbolism of Mode 2, here in its 2P₈ transposition. The word ‘partout’ (everywhere) is separated and dispersed into its component vowels and consonants: the instruments imitate the consonants and the vocalists sing the vowels. The plosive /p/ is iterated by the attacks of the flute (with /p/ IPA indicated), with the snare and tubular bell, in addition to the Bartok pizzicato of the strings. The /a/ vowel is sung in its melodic cell. Flutter-tongue in the flute and flutter-growl in the trumpet and trombone infer the /t/. The inflection of the /t/ is less accented; only the flute has an accented attack (with the direction to use the /t/ consonant). The /u/ cell is echoed in other instruments. To add intensity, the orchestration of the belted syllable of ‘tout,’ analyzed twice using Orchidée (in belted and normal tone, TOUT1 and TOUT2, respectively) is inserted first in m. 103 (see Figure X/TOUT1), and then transformed into the second analysis (see Figure X/
TOUT2). The timbral treatment of the word *scintillement* is similarly analyzed and orchestrated, representing the /s/ via the wind tone in the flute, the crescendo of air in the brass, and the *molto sul ponticello* in the strings. Mm. 111 and 114 respectively contain two more Orchidée analyses, one for each of the syllables ‘scin’ and ‘tillent,’ and m. 118 contains two timbral treatments, for both the /l/ of ‘les’ and the /k/ of ‘couleurs.’ In the timbral treatment of ‘vient’ in mm. 129–30, /v/ is represented by the strings’ movement from *sul ponticello* to *sul tasto*. Mm. 148–151 have recurring TOUT1 and TOUT2 analyses. This treatment creates contrasts with the singers’ timbres and their respective Orchidée analyses.

![Figure 26 – Orchidée analysis](image-url)
4.2.2 D’où vient cette force en elles?

At J there is an acceleration of surface rhythmic activity to build tension (see Figure 27). This illustrates two instances of word painting, representing ‘Scintillent les couleurs’ (the title of movement), and metaphorically answering the question ‘D’où vient cette force en elles?’ which began at measure 121.

An important thematic moment occurs from mm. 170 to 172 where the ‘belted’ Orchidée analyses give way to the a capella soprano and mezzo-soprano at a major 2nd interval (see Figure 28). This contrast is part of the “invisible and present” element. This is a shifting point between rehearsals J and K where the motoric quality transfers from the strings to the woodwinds; this symbolizes the move from inner, strings (see above), to outer, winds, expressing the ‘force from within’ (forces en elles).
4.2.3 *Il existe un bleu dont je meurs*

The main objective of this section, which begins at K, is to build the mystery of the title text, ‘*Il existe un bleu dont je meurs,*’ into musical qualities. This is achieved through the use of textural integration of the arpeggiated strings (Figure 29) and timbral augmentation of the unison melody of winds and sung melody (see Figure 30). In addition, this marks the first time a full sentence is sung in the piece; this is especially significant as it is the title of the poem. From measure 193 to rehearsal M, the timbral modulations of the strings shifting rapidly from *sul ponticello* to *sul tasto,* and the brass slowly muting and unmuting, are symbolic of the complexity and depth of the beautiful blue colour of the eyes, as described in the text. The piano pedal is held to collect spectral and dynamic energy of all instrumental timbral changes and to hold onto this ineffable moment for as long as possible. Prudhomme seems to imply this perceived affect in his text when he asks: ‘*Mais d’où vient cette force en elles? Il existe un bleu dont je meurs, Parce qu’il est dans les prunelles*’ (But where does their power come from? There is a blue that is killing me, For I find it in a pair of eyes).

![Figure 29 – String texture](image)

4.2.4 *Parce qu’il est dans les prunelles*

The section from rehearsal M to the end of the movement represents a descent into the complexity of what lies behind the eyes: the descending piano line held aloft by the high C#6<sup>27</sup> representing the ‘iris’ (*prunelles*), and the spectral blur<sup>28</sup> of the low piano (Figure 31) representing the mystery behind the eyes, the soul (*âme*).

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<sup>27</sup> also the opening note of composition

<sup>28</sup> The low piano notes, sustained with pedal and repeated at a fast rate, create a blurred spectrum where no clear pitches are discerned.
4.3 Movement III – Les grands amours

In contrast to other movements, the text is freely set in this middle, slow movement. Still it is clearly enunciated, drawing upon the rhythm of the prosody in the poem. As well, the prevalence of the heartbeat rhythm represents the idea of the heart in “great love” (les grands amours). This movement builds a melancholic tension between the Dorian mode, the Phrygian qualities of Mode 1 [0,1,3,7], and the Lydian qualities of its conversion to [0,4,6,7], as the qualities shift from minor to major. Thus the 3rd movement drives towards this surprising moment. The English horn is prominent because of the expressiveness of its timbre\(^\text{20}\) and its contrast to the mezzo-soprano, which is the predominant voice in this movement.

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\(^{20}\) Adler (2202, p. 199) describes the low range of the English horn as “Deep, rich, intense,… mellow, reedy, sonorous.”
4.3.1 *Tous les corps offrent des contours, mais d'où vient la forme qui touche?*

The G Dorian qualities of the /u/ cell [0,2,3] (Forte code 3-2) and the A Phrygian qualities of its inversion [0,1,3] are the intervallic materials that shape this movement, both horizontally and vertically. The piano pulses the pitch A, a modal center, employing excerpts of the augmented heartbeat rhythm for almost the entire movement, whereas the vocal melody emphasizes another modal center of G Dorian (see figure 32 & 33).

![Figure 32 – Mezzo-soprano /u/melodic cell [0,2,3] mm. 219-222](image1)

![Figure 33 – Piano augmented heartbeat motive, mm. 231-234](image2)

4.3.2 *Comment fais-tu les grands amours, petite ligne de la bouche?*

The section coming out of the cello solo and building from mm. 285-291 is the question, ‘*Comment fais-tu les grands amours?*’ sung by soprano and mezzo-soprano. The question in the poem is posed to the line, the shape, of the lips. This delicate line is addressed musically by the intertwined relationship of [0,1,3,7] mode to its inversion [0,4,6,7]. This reshaping is meant to show how musical meaning can be affected: the change of minor/Phrygian to major/Lydian creates a distinct perceptual change; moving from minor to major, inner to outer, dark to light. The relationship between the [0,1,3,7] and the [0,4,6,7] helps enhance this effect. From mm. 292-297 the transposition of the [0,4,6,7] follows the intervallic relationship of the two first intervals of Mode 2, [M6/m3, m2] (see Figure 34). The heartbeat motive returns for the last few measures of the movement.

![Figure 34 – Piano at mm. 291-300 showing the change from [0,1,3,7] to [0,4,6,7] and the transposition of [M6/m3, m2](image3)
4.4 Movement IV – *Apportent ces frissons*

In movement IV the vocal melodies are reinforced for most of the movement, creating a predominance of a homorhythmic texture between the singers’ melodies (vowel leitmotifs) and their instrumental accompaniment. The timbres stratify out of the homorhythm into foreground and background elements by way of the arpeggiation of a melodic cell; chromatic or diatonic pitch material then fill in the intervals from the vowel cells (see Figure 35).

As well, there is a similarity to timbral combinations found in movement II wherein specific instruments re-create specific consonants.

4.4.1 *Partout l'air vibre et rend des sons, Mais d'où vient le délice intime*

By using quasi-ring modulation to create portions of the harmony, the words *l'air vibre* (the air vibrates) are represented by the harmonic beating that occurs between these dissonant intervals. *Rend des sons* (gives sound) is represented by the melodic quality of the vowel leitmotifs, which are used consistently throughout this section.

4.4.2 *Que nous apportent ces frissons Quand c'est une voix qui l'anime?*

The arrival of the opening motives at mm. 358 leads into a passage for the solo voices. Here, the a cappella voices shift the quality of representation from symbolic to direct through the literal aspect of *voix qui l'anime*. The *frissons* (chills) are expressed in the tension and release of the consonant and dissonant intervals between the singers. Finally, rehearsal X marks a return to the opening [A] section, in abbreviated form.

---

30 “that just a voice may cause us to shiver so and give us such intimate delight?”
4.5 Movement V – *Invisible et présente*

Movement V functions as a coda, and recapitulates the use of all the permutations of rhythms. As well, it gives a different musical perspective on the opening stanza.

### 4.5.1 J’ai dans mon cœur, j’ai sous mon front Une âme invisible et présente

At mm. 375, the winds and brass each are given only three repeated pedal-like notes [D,E,F] (see Figure 36), the importance of which comes from the historical and sacred use of the number three, the Holy Trinity, in musical settings; relating to the ‘âme’ (soul) theme of the text. ‘J’ai dans’ is reexamined through the use of the rhythms from the rhythmic analyses layered on top of one another (distributed throughout the instruments), creating the textural integration that is the ‘*invisible et présente*.’ Another recapitulation-like element is the recurrence of the use of quasi-ring modulation, again as part of the ‘j’ai dans’ theme (see Figure 37).

![Figure 36 – mm. 375-378 - Winds](image)

![Figure 37 – mm. 376-378 Mezzo-soprano on the 'j’ai dans mon cœur' melody](image)
CHAPTER 5

CONCLUSION

5.1 Conclusion and Future Research
The connection between text and music is not a new concept; however, the knowledge and use of elements such as timbre and spectral analysis as tools to develop form have only begun to be explored. With the use of the voice in particular, listeners are immediately aware of the relationship between text and music, as the text itself, often poetry, has meaning on many levels. If the text cannot be clearly understood by the listener, as is the case with many modern vocal compositions, we must rely on musical cues to convey meaning. Thus, one can employ ekphrasis to translate the concept from text to music, as well as programmatic elements.

In this composition I not only used ekphrasis as a means to convey intentions, but I also used inspiration taken from vocal timbres to relate concepts from the voice to the instruments, and to make decisions regarding form, through use of the Orchidée software and timbral/spectral analysis. By infusing the piece with the spectral analysis of the singers who would perform it, I set out to create an internalization of the material, wherein the voices created the instrumental material. Like a seed, their timbres sprout in the horizontal/time and vertical/moment of the piece of music.

The materials with which I provided myself through analysis of the text gave me ample musical material upon which to construct my composition. The trick was to use this reservoir of ideas tastefully and purposefully. The modes provided me with clear pitch material, and the structure of McAdams’ and Goodchild’s framework for their theory of orchestration and timbre gave me a platform upon which to deliver my composition. I was thus able to orchestrate effectively for an ensemble of this size, creating an overall sound that appeared larger than the ensemble.

The unique qualities of my compositional approach for this project was the combined use of the various aforementioned programmatic elements to create form and to imbue substance and meaning, and in so doing to use musical ekphrasis and timbre as compositional tools.

My previous experience setting Prudhomme poems to music (Ce Qui Dure for choir and Hora Prima for chamber ensemble and two singers), my experience as a research assistant in the Orchestration and Perception project, and the techniques I learned regarding spectral analysis through McGill’s Digital Composition Studio all provided me with the tools to build this composition, using the
rhetorical device of *ekphrasis* as a guide to form, and adding a meaningful dimension to the compositional process.

Future projects might include more detailed analysis of the leitmotifs and speech analysis from this composition, and use just some of the techniques I worked with here to build a whole piece with. As well, the timbral continuum of instrumental techniques could be compared with analyses of the timbral continuum of spoken and sung consonants, with perceptual experiments to validate these affects.
Appendix 1

Transcription and organization of IPA

L'âme
lɑm
J'ai dans mon coeur, j'ai sous mon front
ɘ e dà mɔ̃ kœ:r, ɘ su mɔ̃ fRõ
Une âme invisible et présente :
yn ɘm ɘvizibl e pRëzõt :
Ceux qui doutent la chercheront ;
so ki dut la ʃerʃõrõ ;
Je la répands pour qu'on la sente.
ɘə la Repõ : pUr ək la sû:t.

Partout scintillent les couleurs,
pərtu sëtii le kule:r, 
Mais d'où vient cette force en elles ?
mê du vjẽ set ʃãrsm õn-əl ?
Il existe un bleu dont je meurs,
il egziʃt ü blo ã dõ əəmœ:r, 
Parce qu'il est dans les prunelles.
pərsə kil ə dà le pRynel.

Tous les corps offrent des contours,
tu le kɔɾ ʃlR de kõtu:r, 
Mais d'où vient la forme qui touche ?
mê du vjẽ la ʃRm ki tuʃ ?
Comment fais-tu les grands amours,
kɔmũ fə-ty le ɡRãz-amu:r, 
Petite ligne de la bouche ?
pətɨt liŋ da lu buʃ ?

Partout l'air vibre et rend des sons,
pərtu ləR vibR e Rũ : de sõ, 
Mais d'où vient le délice intime
mê du vjẽ la delis êtim
Que nous apportent ces frissons
kɔ nuz-apɔRt se ʃrisõ
Quand c'est une voix qui l'anime ?
kũ ʂet-yn vwa ki lanim ?
Appendix 2

French IPA vowel chart, with words from the poem placed on it\(^{31}\).

Appendix 3

Modes 1 and 2 (left and right, respectively) analyzed using the row analyzer found at:

http://composertools.com/Tools/AnalyzeRow/ARInput.html
Appendix 4

Melodic cells and vowel leitmotifs

<table>
<thead>
<tr>
<th>Phrases</th>
<th>Mode</th>
<th>Vowel</th>
<th>Form Code</th>
<th>Prime Form</th>
<th>Inversion Form</th>
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<tbody>
<tr>
<td>F, A, B, G</td>
<td>First and last of 35</td>
<td>4.0</td>
<td>(5,3,6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F, D, E, A</td>
<td>1</td>
<td>a</td>
<td>4.09</td>
<td>(6,3,7)</td>
<td>(6,4,7)</td>
</tr>
<tr>
<td>A, B, F, G, A</td>
<td>2</td>
<td>b</td>
<td>4.7</td>
<td>(5,1,8)</td>
<td></td>
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<tr>
<td>B, E, F, G, B</td>
<td>3</td>
<td>c</td>
<td>4.8</td>
<td>(5,5,6)</td>
<td></td>
</tr>
<tr>
<td>B, F, E, A</td>
<td>4</td>
<td>d</td>
<td>4.10</td>
<td>(5,2,3)</td>
<td></td>
</tr>
<tr>
<td>B, A, B, F</td>
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<td>e</td>
<td>4.14</td>
<td>(5,3,7)</td>
<td>(5,4,7)</td>
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<td>A, G, B, D</td>
<td>First and last of 35</td>
<td>4.17</td>
<td>(5,4,7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G, B, D, B</td>
<td>Engaged</td>
<td>d</td>
<td>4.19</td>
<td>(5,1,8)</td>
<td>(5,3,8)</td>
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<tr>
<td>B, C, G, A</td>
<td>1</td>
<td>y</td>
<td>4.21</td>
<td>(5,2,6)</td>
<td></td>
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<tr>
<td>F, D, E, B, B</td>
<td>1</td>
<td>a</td>
<td>4.22</td>
<td>(5,2,3)</td>
<td>(5,3,7)</td>
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</table>

Appendix 5

List of consonants and possible instrumental techniques to replicate timbre

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<tbody>
<tr>
<td>nasal</td>
<td>m</td>
<td>n</td>
<td>ɳ</td>
<td>winds</td>
<td>brass</td>
<td>mute</td>
<td>mute</td>
<td>percussion</td>
<td>bowed vib., mar., glock., tam.</td>
<td>piano/harp</td>
<td>strings</td>
<td>legato</td>
<td>p.s.p., s.p.</td>
<td>s.p., m.s.p.</td>
<td></td>
</tr>
<tr>
<td>plosive</td>
<td>p</td>
<td>b</td>
<td>t</td>
<td>d</td>
<td>k</td>
<td>ɡ</td>
<td>winds</td>
<td>mfp, k.c.</td>
<td>breath accent</td>
<td>t voiced attack</td>
<td>k.c.</td>
<td>rfz, ffp</td>
<td>brass</td>
<td>&quot;</td>
<td>valve click</td>
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<tr>
<td>fricative</td>
<td>f</td>
<td>v</td>
<td>s</td>
<td>z</td>
<td>ʃ</td>
<td>ʒ</td>
<td>winds</td>
<td>pp breath, niente to mf</td>
<td>quick cresc.</td>
<td>wind tone, mf</td>
<td>breath</td>
<td>low pas</td>
<td>multiphonics</td>
<td>overblown</td>
<td>jet whistle, multiphonics</td>
</tr>
<tr>
<td>approximant</td>
<td>j</td>
<td></td>
<td>winds</td>
<td>brass</td>
<td>percussion</td>
<td>piano/harp</td>
<td>strings</td>
<td>trill</td>
<td>r</td>
<td>ᵃ</td>
<td>winds</td>
<td>flz., trill</td>
<td>flz., trill, flgrowl</td>
<td>brass</td>
<td>&quot;</td>
</tr>
<tr>
<td>lateral approximant</td>
<td>l</td>
<td></td>
<td>winds</td>
<td>brass</td>
<td>percussion</td>
<td>piano/harp</td>
<td>strings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NOTES

- *sharpest attack*
- *soft quick ending*
- *soft quick ending, mute right away*
- *little resonance*

- *NOTES

- *softer attack than p, but voiced*
- *sim to t*
- *sharpest attack, soft quick ending, mute right away*
- *sharpest attack, soft quick ending, mute right away*
- *noisy harmo.*
### Appendix 6

The sum combinations for the leitmotifs/melodic cells of specific vowels

<table>
<thead>
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<tr>
<td>139</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
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<td>1346.16</td>
<td>1796.16</td>
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<td>1346.16</td>
<td>1796.16</td>
<td>2226.16</td>
<td>2666.16</td>
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<tr>
<td>143</td>
<td>note</td>
<td>A6 minus 49 cents</td>
<td>A5 plus 26 cents</td>
<td>A6 plus 26 cents</td>
<td>A7 minus 8 cents</td>
<td>C7 minus 7 cents</td>
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<td>440</td>
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<td>440</td>
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<td>1578.46</td>
<td>2018.46</td>
<td>2458.46</td>
<td>2898.46</td>
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<tbody>
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<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
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<td>A0-1.5</td>
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<td></td>
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<td>159</td>
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<td>1346.16</td>
<td>1796.16</td>
<td>2226.16</td>
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<td>160</td>
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<td>1346.16</td>
<td>1796.16</td>
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<td>2666.16</td>
</tr>
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<td>A5 plus 26 cents</td>
<td>A6 plus 26 cents</td>
<td>A7 minus 8 cents</td>
<td>C7 minus 7 cents</td>
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<td>440</td>
<td>440</td>
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<td>164</td>
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<td>2018.46</td>
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<td>2898.46</td>
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</tbody>
</table>

46
Appendix 7

1st rhythmic analysis of singer’s prosody:

2nd rhythmic analysis of singer’s prosody:

Appendix 8

Word painting, generalized ideas:

<table>
<thead>
<tr>
<th>Word</th>
<th>Musical Interpretation</th>
</tr>
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<tbody>
<tr>
<td>Danse</td>
<td>From within the harmony, texture or timbre</td>
</tr>
<tr>
<td>Coeur</td>
<td>“seams” chords, beating heart, orchestral gestures and swells</td>
</tr>
<tr>
<td>Sous mon front</td>
<td>Underlying texture and harmony, beneath what is apparent, what we hear</td>
</tr>
<tr>
<td>Amour</td>
<td>Episodic, transitory, changes in output but not in pitch, rapidly changing timbre</td>
</tr>
<tr>
<td>Invisibles et Pratiques</td>
<td>Timbre blending, appealing and disappointing, invisable attacks/change attacks, covert transitions, augmenting and diminishing intervals</td>
</tr>
<tr>
<td>Scintillant les vagues</td>
<td>Dynamic swells, sudden additions/reductions, timbral shifts, building into textural integration with lots of inner motion/movement, silence, standing, fast beats, wide tremolo</td>
</tr>
<tr>
<td>(toujours cette) force en elles</td>
<td>Dynamic swells, sudden additions/reductions, orchestral ensemble</td>
</tr>
<tr>
<td>Contours</td>
<td>Wide sweeping melodies</td>
</tr>
<tr>
<td>Fonte qui tombe</td>
<td>Gearing a form with music that impacts the listener</td>
</tr>
<tr>
<td>Grand amours</td>
<td>Heartbeat, leg opening gesture in the music</td>
</tr>
<tr>
<td>Légendes</td>
<td>One line expanding into homophony</td>
</tr>
<tr>
<td>Last rites</td>
<td>Tremolo, oscillating but with less substance</td>
</tr>
<tr>
<td>Rend des sens</td>
<td>Write music</td>
</tr>
<tr>
<td>Index</td>
<td>Pull the listener in, intimate</td>
</tr>
<tr>
<td>Fusions</td>
<td>Vigorous, chilling, sweet anticipation, frictive, awe, sensation yet clarity</td>
</tr>
<tr>
<td>Vex</td>
<td>Vocalize, solo singers</td>
</tr>
<tr>
<td>Anime</td>
<td>Animating principle, vital spark, metaphorization, brought to life for this reason</td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY


Orrey, L. (1975). *Programme music: a brief survey from the sixteenth century to the present day*. Davis-Poynter.


IL EXISTE UN BLEU DONT JE MEURS

for soprano, mezzo-soprano, and sixteen instruments

(Volume 2 of 2: Score)
Il existe un bleu dont je meurs
for soprano, mezzo-soprano, and sixteen instruments

Kit Vaughan Soden (2014)
Il existe un bleu dont je meurs
for soprano, mezzo-soprano, and sixteen instruments
completed on October 3rd 2014
Approximate duration: 17:00
Premiered November 21st, 2014
by the McGill Contemporary Music Ensemble - Directed by Guillaume Bourgogne
Pollack Hall, Montreal, QC, Canada

Instrumentation:

Flute (+piccolo, +alto flute)
Oboe (+English horn)
Clarinet in Bb (+Bass Clarinet in Bb)
Bassoon

Horn in F
Trumpet in Bb
Trombone

2 Percussion:
I-3 timpani
I-Marimba
I-Triangle (Small, Medium, Large)
I-3 Suspended Cymbals (Small/Bright, Medium/Dark, Large/Dark)
I-Snare drum
I-Crotales
I-Bow
II-Vibraphone
II-Bass Drum
II-Tam-tam (Medium, Large)
II-3 Suspended Cymbals (Small/Bright, Medium/Dark, Large/Dark)
II-Tubular Bells
II-Glockenspiel
II-Bow

Piano
Harp

Soprano
Mezzo-Soprano

Violin I&II
Viola
Cello
Contrabass

Score in C (Piccolo, glockenspiel, crotales, and contrabass retain their octave(s) transpositions)

Suggested Stage Set-up

Percussion I

French Horn
Trumpet
Trombone

Percussion II

Flute
Oboe
Clarinet
Bassoon

Violin I

Flute
Oboe
Clarinet
Bassoon

Violin II

Flute
Oboe
Clarinet
Bassoon

Viola

Flute
Oboe
Clarinet
Bassoon

Cello

Flute
Oboe
Clarinet
Bassoon

Contrabass

Soprano
Mezzo-Soprano

Conductor
Program Notes:

My goal in this composition was to represent, as much as possible, through musical and timbral means, the semiotic qualities of a poem by Sully Prudhomme (1839-1907). L'âme. The composition draws its form, timbre, rhythmic, and pitch information from literary and phonetic qualities found in the text, as well as spectral information drawn from analyzed emotive vocal timbres. The premise for this process is that timbre, and more specifically vocal timbre, acts powerfully as a medium for expression and emotion. The narrative and form of the five-stanza poem inspired the compositional form. The penultimate stanza reveals the sonic qualities inherent in Prudhomme's ponderings on the soul: l'air vibre et rend des sons, and, c'est une voix qui l'anime. These served as my inspiration to “animate” this poem for voice and instrument.

L'âme - René-François SULLY PRUDHOMME (1839-1907)

I.
J'ai dans mon coeur, j'ai sous mon front
Une âme invisible et présente ;
Ceux qui doutent la chercheront ;
Je la répands pour qu'on la sente.

II.
Partout scintillent les couleurs,
Mais d'où vient cette force en elles ?
Il existe un bleu dont je meurs,
Parce qu'il est dans les prunelles.

III.
Tous les corps offrent des contours,
Mais d'où vient la forme qui touche ?
Comment fais-tu les grands amours,
Petite ligne de la bouche ?

IV.
Partout l'air vibre et rend des sons,
Mais d'où vient le délice intime
Que nous apportent ces frissons
Quand c'est une voix qui l'anime ?

V.
J'ai dans mon coeur, j'ai sous mon front
Une âme invisible et présente ;
Ceux qui doutent la chercheront ;
Je la répands pour qu'on la sente.
IPA summary (symbol/verse/word):

3  I. j'ai, j.e  II. je
4  I. dans, douent II. d'où, don, dans III. des, d'où, de IV. des, d'où, délice
m  I. mon, mon, âme, II. maïs, meurs III. mais, forme, comment, amours IV. mais, intime, anime
k  I. goeur, gui, gui'm III. corps, contours, gui, comment IV. guer, quand, qui
r  cœur
r  I. frônt, présente, checcheront, répands, pour II. Partout, couleurs, force, meurs, page, prunelles III. corps, offrent, contours, forme, grands, amours IV. Partout, l'aïg. vibre, rend, apportent, frisson
s  I. nous, nous, senti, II. scintillate, existe, existe, parle, forge, rage, pâire, sous, sens, délire, ges, frigaons, c'est
f  I. front III. force, offrent, forme, frais IV. frisson
n  I. uïe, II. euëllles, prunelles IV. nous, uïe, ânime
v  I. invisible II. viënt III. viën IV. viëre, viën, voïx
z  I. invisible, présent, II. existe III. grand-amour IV. nou-apportent
b  I. invisible III. bleu III. bouche IV. vibre
l  I. invisible, ja, la, la II. les, couleurs, elles, II. bleu, qu'il, les, prunelles III. les, ja, les, le, ligne, la IV. l'air, le, l'anime
p  I. présente, repand, pour II. partout, parce, prunelles III. petite IV. partout, apportent
l  I. présente, douent, sente II. partout, scintillate, cette, existe III. nous, contours, touche, ja, pettie IV. partout, intime, apportent, c'est'une
f  I. checheront III. touche, bougle
j  II. viënt III. viën IV. viënt
q  II. existe III. grands
η  III. ligne
w  IV. voïx
a  I. âme,
ā  I. dans, présente, répands, sente, II. en. III. comment, grands IV. rend, quand
ɔ  II. force III. corps, offrent, forme, comment, IV. apportent
ɔ  I. mon, mon, front, checcheroi, qu'an II. dont III. contours IV. sans, frisson
ε  I. checheront II. mains, elles, existe, prunelles III. mains, faïs IV. l'air, mains, c'est
ε  I. invisible, II. scintillate, viënt III. viën IV. viënt, intime
ε  I. j'ai, et, présente, répand II. les, III. les, les, des IV. et, des, délice, ces
ε  I. checheront, je II. je, parce III. petit, de IV le, que
ε  I. coeur II. meurs, couleurs.
ɛ  II. Un
ɔ  I. ceux II. bleu
u  I. sous, douent, pour II. partout, d'où, III. tous, d'où, touche, contours, bouche IV. partout, d'où nous
y  I. âne, II. prunelles III. tu IV. âne
i  I. invisible, qui II. scintillit, il, existe, qu'il III. qui, petit, ligne IV. viëre, délice, intime, frisson, qui, l'anime
a  I. la, la, la II. partout, parce III. la, amours, la IV. partout, apportent, voix, anime
Performance and Notation Legend:

All instruments:
Accidentals only affect the octave in which they occur, and are carried through the measure or boxed repeated figure
All trills are upward to the nearest semitone unless otherwise notated. Trills should last for the full duration of the note value.
All playing is con vibrato if not otherwise notated. After notated a passage of non vibrato to molto vibrato, return to con vib.
Quarter tones - raise or lower by a quarter of a semitone.
Timbral trill - use alternate fingerings to create timbral trill.
Dotted line - gradually change from one marking to the other
Vibrato - gradually change from non vibrato to molto vibrato
Gestural notation:

- Trills - denotes changes of frequency of trill
- Vibrato - denotes changes of intensity
- Glissandi - denotes change of pitch: glissandi, play approximate pitch relative to location on staff

Winds:
All woodwinds:
flz. - fluttrotone
air - breath/blow through instrument creating air noise – no pitch
k.c. - key clicks – press keys down to make percussive sound

Breath accent

Flute:
Sing while playing - sing lower part - play upper part with flute
Sing while playing - Sing lower part and trill upper part (trill on flute, not vocalization)

Inhale
Use this consonant, written in IPA, in air attack.

whisper written syllable while inhaling and key clicking
wd.t. - wind tone (flute) – create a pitched windy/breath sound

Clarinet:
Throat Growl – intense tremolo-type sound, follow graphic for intensity level
M (bass clarinet) - multiphonic, lowest note given, emphasize lower or higher partials as written.

Brass:
con sord. - with designated mute
con sord (plunger) - follow transition from closed to open
con sord. (felt bag) or (cup with felt bag) - use a felt bag to cover bell, with or without a mute as indicated
con sord. (hand) - mute bell with hand. - closed - open
flz. - fluttrotone or fl.gr. - fluttergrowl

transition from ord. to flz. or fl.gr.
air - breath/blow through instrument creating air noise – no pitch
k.c. - key clicks – press keys down to make percussive sound

Breath accent
Performance and Notation Legend (continued):

**Piano:**
Mute strings inside piano with fingers, and play the note on the keys.
Repeat notes as fast as possible, but with varying rhythms
Inside the piano, play a rapid glissando over strings with fingertips or fingernails (à la George Crumb)
Press notes down silently and hold pedal

**Harp:**
Bisbigliando
Thunder effect - open hand strike on lowest register
Whistling sound - slide fingers lengthwise on strings, either slowly or fast as indicated
P.d.t. - près de la table - near soundboard
Flux éoliens - Aeolians flux glissando over center of stings.
Flux en grêles - Falling-hail effect. Glissando over center of stings with back of fingernails

**Singers:**
Sing given IPA vowel or consonant
A very airy tone, as close as possible to whispering, but
Transition between a nasal and open sound on given IPA vowel

**Strings:**
vib. – vibrato
m.v. – molto vibrato
n.v. – non vibrato
ricochet - "throw" bow against strings
col legno tratto - bow with wood by dragging wood of the bow across strings
col legno battuto - hit the strings with the wood of the bow
bow placements:
ord. - ordinario position
s.t. - sul tasto
m.s.t. - molto sul tasto - (further up the fingerboard than sul tasto)
p.s.t. - poco sul tasto - (slightly towards the fingerboard from ordinario position)
s.p. - sul ponticello
m.s.p. - molto sul ponticello - (part of the hair of the bow is on the bridge and part of it is on the string, creating a noisy sound)
p.s.p. - poco sul ponticello - (slightly closer to the bridge than ordinario position)
poco arco grain - medium amount of bow pressure to create grainy sound
bow "hisse" sound - by muting the indicated string so that there is no defined pitch
bowed bridge - bow the bridge to create white noise-like sound
transition back and forth between given bow placement during the duration given
When slurred, the headless stems during a glissando are used to notate duration, and should not be re-attacked, unless there is an articulation marked
When not slurred, the headless stems mean play détaché during the glissando
Tenuto and molto vibrato accent
Il existe un bleu dont je meurs

I. J'ai dans mon coeur
Fl.

Ob.

B. Cl.

Bn.

Hn.

Tpt.

Tbn.

Timb.

Sus. Cym.

S

M

L

Pno.

Hsp.

E. B. D.

Ct.

S.

M-S.

Vln. I

Vln. II

Vla.

Vc.

Ch.
C

Fl.

Ob.

B. Cl.

Bsn.

Hn.

Tpt.

Tbn.

Timp.

Sus. Cym. M.

L.

Pno. (}

Hp. (}

S.

M-S.

Vln. I

Vln. II

Vla.

Vc.

Ch.
sing lower part (articulate given IPA)

* bow hiss sound - by muting the indicated string so that there is no defined pitch
* bow has sound - by muting the indicated string so that there is no defined pitch
** (will on flute, not vocalization)
II. Partout scintillent les couleurs
poco accel.

(continue holding pedal to create a resonance from the ensemble)
III. Les grands amours

Comme un tendre et triste regret \(=60\)

A. Fl.  
Eng. Hn.  
B. Cl.  
Bsn.  
Hn.  
Tpt.  
Tbn.  
Harmonie  
Vib.  
Pno.  
Hp.  
S.  
M-S.  
Vln. I  
Vln. II  
Vla.  
Vc.  
Ch.
IV. Appartent c'est frisson

Sonore sans dureté ≈140

(soft mallets)
* gliss with fingertips - going from highest note to as low as the bars in the piano will let you in one gesture