

Studies in Instrumentation and Orchestration
and in the Recontextualisation of Diatonic Pitch Materials
(Portfolio of Compositions)

by

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Abstract:

The present document examines eight musical works for various instruments and ensembles, composed between 2007 and 2011. Brief summaries of each work's program are followed by discussions of instrumentation and orchestration, and analysis of pitch organization. Discussions of instrumentation and orchestration explore the composer's approach to diversification of instrumental ensembles by the inclusion of non-orchestral instruments, and redefinition of traditional hierarchies among instruments in a standard ensemble or orchestral setting. Analyses of pitch organization detail various ways in which the composer renders diatonic musical lines atonal, or situates diatonic pitch materials in contexts of greater chromaticism.

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1. Introduction

1.1. List of works and prefatory comments

The works comprising the accompanying portfolio reflect the specific research interests of a four-year period, from autumn 2007 to spring 2011. There are eight compositions in total, for various instruments and instrumental ensembles: *Doubling* (2007) for flute, clarinet, cello and piano (11 min.); *Concertino* (2008) for two keyboard soloists with percussion ensemble (8 min.); *After Schumann* (2008) for solo piano (10 min.); *Gott Lebet Noch* (2009) for solo harp and orchestra (16 min.); *Schumann Scenes* (2009) for string orchestra (8 min.); *Silver Threads among the Gold* (2009) for orchestra (14 min.); *Der Tag mit seinem Licht* (2011) for flute, clarinet, violin, cello, percussion and piano (12 min.); and *Coyote Soul* (2011) for orchestra (16 min.). The total duration of these works is 95 minutes.

The contents of this document represent both a consolidation of ideas extant at the outset of the period of study, as well as a pursuit of new ideas and approaches. Four years ago, I would not have predicted the shift towards working with diatonic materials in my approach to pitch organisation. This shift resulted in part from the experience of teaching an undergraduate survey that brought me into contact with materials of 20th century music (diatonic modes and other aspects of tonality) I would not likely have engaged with otherwise. Similarly, the experience of teaching elementary and advanced courses in orchestration stimulated my thinking about the normative roles of instruments in chamber and orchestral settings, and in the possibilities of diversifying the body of instruments I write for.

1.2. Recontextualisation of diatonic pitch materials

For several years, I have appropriated the music of other composers as source material for my own work. This is, of course, an old practice. The key characteristics of my approach include fragmentation of a work's surface features (melodic, harmonic, rhythmic and gestural) and modification of its content through various finite operations. In this way, a shadow of the original music remains in a new and often unforeseeable context. By working in this manner with variables that are "known" or "familiar," I attempt to create, in part, a music I have not yet heard, or perhaps, could not have heard otherwise.

What has remained consistent in my work throughout this period is the use of melodic "threads" that run throughout a piece, from which secondary materials may be extrapolated. What has changed is the range of music I draw from (including both popular music and classical music) and the manner in which "threads" are created.

I have long been preoccupied with finding ways of "rendering" diatonic music as "atonal" music, while preserving elements of the original music's outline (contour) and temporal proportions. More recently, I am interested in working directly with diatonic materials (melodies, pitch collections, harmonies) in partitions that can be recontextualised in syntaxes other than the tonic-dominant harmonic framework (of the common practice period). This change in focus reflects an ongoing interest in expanding the vocabulary (and syntax) of what has always been an eclectic and (hopefully) personal musical language.

1.3. Studies in instrumentation and orchestration

A major preoccupation throughout this period has been the search for a distinctive approach to instrumentation and orchestration. In this document, the term “instrumentation” may refer to the collection of instruments in a given work, the rationale for their selection, or the manner in which they are used individually (performance idiom). The term “orchestration” refers to the specific temporal deployment of instruments in a given work: at the microscopic level, this affects timbre and texture; at the macroscopic level, this affects form.

Beginning in 2005 with a work for cello and chamber orchestra, *Otogi No Kuni E*, I have attempted to redefine traditional hierarchical relationships among instruments in chamber and orchestral settings. This has been achieved in part by reconsidering their normative function (performance idiom) and their prevalence in a given work. Additionally, the introduction of non-orchestral instruments into various ensembles further destabilises the archetypical hierarchies among instruments established during the history of the western orchestra.

In contrast with the practice of many contemporary composers, the instrumental writing in these works almost entirely avoids so-called “extended techniques.” A point of reference for my approach may be found in the work of Witold Lutosławski (1913-1994) who likewise favoured traditional performance idioms, achieving effects of timbre and texture through carefully-chosen juxtapositions and superimpositions of “normative” instrumental sonorities, and by their strategic temporal deployment. By contrast, the use of non-orchestral instruments (prepared piano, toy piano, almglocken) in my own work creates a very different sound world than what one finds in the music of Lutosławski.

The chapters for each individual work, particularly the works for large ensemble and orchestra, will describe in detail (in the *Instrumentation and orchestration* sections) factors such as rationale for instrument selection, hierarchical relationships, performance idiom, temporal deployment and the formal implications of each of these.

1.4. Thesis format

I will examine each of the portfolio's works individually, in their chronological order of completion. A brief overview of each work's background or program will be followed by detailed discussions of the approach to instrumentation and orchestration, and developments in pitch operations; musical form will be addressed largely through its relationship to these areas of study. The second chapter summarises my process for rendering diatonic music atonal, to facilitate pitch study discussion in subsequent chapters.

It is beyond the scope of this text to analyze every section of every work in detail; rather, selected sections from each work will be examined if they are deemed to have contributed something new to the ongoing research. The work *Doubling* will receive a privileged focus as the summation of the processes of chromatic alteration, partitioning and partial complementation. *Silver Threads among the Gold* and *Coyote Soul* will similarly receive privileged focus for their numerous examples of diatonic pitch material recontextualisation.

2. Atonal rendering of diatonic musical lines

2.1. Introduction

The current chapter describes the process by which I create atonal renderings of diatonic musical lines. From the purview of music theory, the assertions are subjective, the methodology, attained through trial and error.

I use the term “diatonic music” as opposed to “tonal music” as I cannot exclude the possibility that one or more pitches or pitch classes may project a degree of centricity or focus within a musical texture otherwise labeled “atonal”. Therefore, “diatonic music” or “diatonic tonality” will refer to the language and syntax of music associated with the common practice period. The term “musical line” addresses the fact that I usually only work with one “voice” or “part” in a diatonic musical texture, deriving harmonies and other textural details from the line itself.

2.2. Chromatic Alteration and Partitioning

To render a diatonic musical line atonal, the underlying pitch collection and characteristic sequences of melodic intervals must be modified. A critical first step involves making chromatic alterations, the purpose of which is twofold: 1) to forestall repetitions of pitch classes; and 2) to disrupt patterns of melodic intervals readily recognisable as diatonic.

Part b) of example 2.2.1 shows the application of chromatic alterations (hollow noteheads) to a diatonic musical line, the first measure of Bach’s C-major *Two Part Invention* (part a). The

example succeeds in the first criterion of forestalling pitch (class) repetitions, but fails to conceal successions of intervals strongly suggestive of diatonic tonality.

Example 2.2.1.a) J.S. Bach; *Two Part Invention*, I, beginning, b) chromatically-altered rendering of a)

The first four notes of the example represent the fundamental building block of the diatonic scale, pitch set [0245]. The pairing of the semitone with two adjacent whole tones yields a characteristic hierarchy of interval successions. To dismantle this hierarchy, I try to achieve (through chromatic alteration) a more equitable emphasis of adjacent semitones and minor thirds (and the enharmonic equivalents of these intervals).

In example 2.2.2, the chromatic alterations of part b) succeed in forestalling pitch (class) repetition, and in concealing successions of intervals strongly reminiscent of diatonic tonality.

Example 2.2.2.a) Bach; *Two Part Invention*, I, beginning, b) chromatically-altered rendition of a) emphasising minor 2nd and minor 3rds (and their enharmonic equivalents)

Other diatonic subsets (such as pentatonic sets) must be treated in a similar manner. In general, inversionally symmetric sets (including the whole tone scale and its subsets or the semitone scale) require little or no chromatic alteration.

In a longer musical line, pitches (or pitch classes) inevitably must recur. To describe those chromatically altered line fragments within which no pitch or pitch class recurs, I use the term *partition*. Part a) of example 2.2.3 shows the first two measures of Bach's invention. Part b) shows the chromatic alterations (hollow noteheads) and partitions (brackets).

Example 2.2.3.a) J.S. Bach, *Two Part Invention*, I, mm. 1-2, b) chromatically-altered version of a)

The sequence of intervals in example 2.2.3 b) favours minor seconds and minor thirds (and their enharmonic equivalents). The perfect fifth, C-G, at the beginning of the second partition, would seem (counterproductively) to emphasise C as a central pitch. However, partitioning of the musical line provides a means (to be discussed presently) for interpolating additional pitch material, which itself may be used to destabilise tonal centres, and to intensify the “atonal” nature of a musical line.

2.3. Partial Complementation

The process I describe as *partial complementation* provides a means of interpolating pitch material between two adjacent partitions.

Example 2.3.1 a) and b) show the (ordered) pitch sets from each of the partitions in example 2.2.3 b) as solid noteheads, and their (unordered) complements as hollow noteheads. Notes with an asterisk denote pitch classes common to both complementary pitch sets; these pitch classes form the partial complement for both partitions.

The image contains three musical staves labeled a), b), and c). Staff a) and b) each have four measures. Solid noteheads represent the pitch sets from example 2.2.3 b). Asterisks above the staff indicate pitch classes common to both sets. Staff c) shows the same partitions as a) and b) but with hollow noteheads for the complements, illustrating the partial complement.

Example 2.3.1.a) and b) Partitions from example 2.2.3 and their complement, c) Partitions from a) and b) with partial complement.

Partial complementation (as opposed to dodecaphonic complementation) provides a means of expanding the numbers of pitch classes in a musical line, without saturating the twelve-note chromatic. The composer is free to use this interpolated material as per his/her wish, in ways that support or contradict the continuity of the surrounding musical line.

Example 2.3.2 shows the final reworked version of Bach's invention (mm. 1-2) as it appears at the beginning of my work *Concertino* (to be discussed in chapter 4). The rhythms and metres have been changed, contributing to the de-emphasis of tonal centricity. In this new version of Bach's line, the formerly stable association between C-G is offset by the descending quasi-octatonic scale (the partial complement) preceding it.

The image shows a musical staff for mm. 1-5 of the solo keyboard part from Concertino I. The staff uses a treble clef and includes various rests and note heads representing the quasi-octatonic scale mentioned in the text.

Example 2.3.2. *Concertino*, I, mm. 1-5, solo keyboard part.

2.4. Secondary operations

Atonal renderings of diatonic musical lines produce melodic “threads” that run throughout many works in this portfolio such as *Doubling*, *Concertino* and substantial parts of *After Schumann*, *Gott Lebet Noch* and *Silver Threads among the Gold*. These “threads” may present as self-sufficient “unadorned” musical material (analogous to “underpainting” in the visual arts) or may be elaborated through secondary pitch operations (or orchestration). The chapters for each individual work will examine such secondary operations in detail, and will trace the parallel development of new approaches to pitch organisation that do not involve the techniques of chromatic alteration or partial complementation.

3. *Doubling* (2007)

3.1. Introduction

Doubling was commissioned by the University of British Columbia for the Nu: BC Collective Ensemble, who gave the work its premiere at the Scotia Dance Centre, Vancouver, on March 8, 2008. Based on J.S. Bach's *Goldberg Variations*, the work's form comprises twelve quasi-continuous sections in which chromatically-altered renderings of Bach's melodic material pass through different models of instrumental doubling.

3.2. Instrumentation and orchestration

Though composed for an ensemble of only four instruments (flute, clarinet, cello and piano), the impetus for the work's form stemmed from the study of orchestration. The title alludes to the technique in orchestration whereby two or more instruments (or instrumental groups) share individual notes or musical lines in unisons, octaves, or octave multiples, for dynamic reinforcement or for considerations of timbre. (When instrumental lines are paired at other intervals, such as thirds, I will use the term "coupling," which may be further characterised as "chromatic" or "diatonic.")

Each of the work's sections features a particular doubling model. Many details impact upon the timbre and textural quality of each model: the specific pairings or groupings of instruments; the pitch interval (unisons, octaves or octave multiples); articulations; dynamics (individual dynamics, or dynamic envelopes); and register.

A doubling model may be said to be “uniform” when such details are shared by all instruments; “stratified” when they are not. To illustrate: the opening section pairs flute and clarinet in the unison doubling of a flowing legato line, at a *p* dynamic; in section A, cello and piano likewise share a unison line, but with a jagged contour and staccato articulation, at a *f* dynamic. The doubling models in these two sections are “uniform,” while the doubling model of section B is “stratified” as a result of the contrast between the flute and clarinet’s octave-doubled legato line, and the punctuated skips between the two adjacent octaves in the piano.

Subsequently, different doubling models serve to “distort” what had predominantly been a monophonic texture. Section C recalls the work’s opening in its flowing legato lines, now presented in a closely-spaced unison canon. Couplings are introduced in section D where the flute and piano’s unison-doubled upper line is partially duplicated a major tenth lower. In section E, fragments of non-doubled, unison-doubled or octave-doubled material (with contrasting articulations and instrument pairings) are juxtaposed in rapid succession, creating the effect of *Klangfarbenmelodie*. Sustained pedal tones in section F (clarinet and cello) further transform the monophony through textural stratification.

Sparingly used in the early sections, the piano gains in prominence as the work unfolds. By section J, the piano has almost acquired the status of a soloist, while flute, clarinet and cello provide mere timbre shadings in the former’s long decaying notes. Piano dominates the work’s final section (L) where the block-chord coupling of a diatonic line derives its pitch materials from simultaneities of the line itself (to be discussed further in the pitch study section). In the final measures, flute, clarinet and cello have all but disappeared.

3.3. Pitch study

Much of the work's pitch organization utilises the techniques of chromatic alteration, partitioning and partial complementation. Each section draws, in whole or in part, from a movement of Bach's *Goldberg Variations*. More often than not, a single voice (part) is isolated from Bach's texture; secondary voices and harmonies (when present) derive from this part, in its original or modified form.

A clear instance of partitioning with chromatic alteration may be found at the work's opening, in the flute and clarinet's unison line. Example 3.3.1 a) shows the first four measures of Variation XII from Bach's *Goldberg Variations* (right hand only). Example 3.3.1 b) shows the beginning of *Doubling*, where chromatically-altered partitions of Bach's original line are interspersed with added rests, agogic accents and other modifications to the original rhythm.

The image contains two musical staves, labeled 'a)' and 'b)', each consisting of four measures. Staff 'a)' shows the original melodic line from Bach's Goldberg Variations, XII, mm. 1-4, right hand only. The line is divided into four partitions by brackets above the staff, labeled 'i)', 'ii)', 'iii)', and 'iv)'. Staff 'b)' shows the partitions from 'a)' with chromatic alterations, added rests, and agogic accents. Measure 1 starts with a rest followed by a sixteenth-note pattern. Measure 2 begins with a rest, followed by a sixteenth-note pattern, then a eighth-note rest, and finally a sixteenth-note pattern. Measure 3 starts with a rest, followed by a sixteenth-note pattern, then a eighth-note rest, and finally a sixteenth-note pattern. Measure 4 starts with a rest, followed by a sixteenth-note pattern, then a eighth-note rest, and finally a sixteenth-note pattern.

Example 3.3.1. a) Partitioning of Bach's original melodic line (*Goldberg Variations*, XII, mm. 1-4, right hand only). b) Partitions from a) with chromatic alterations, added rests and agogic accents (*Doubling*, mm. 1-5).

The chromatic alterations adhere to the principles described in chapter two: repetitions of pitch classes are forestalled; minor seconds and major seconds (and occasionally augmented seconds) alternate so as to avoid diatonic interval class sequences; the perfect fifth and perfect fourth in measures 1-2 are substituted with a diminished fifth and augmented fourth

respectively; specific pitch-class sequences do not recur in adjacent octaves (and hence, do not establish modality).

The work continues with a clear example of chromatic alteration, partitioning and partial complementation in section B. Example 3.3.2 a) shows the first three measures of Variation I from Bach's *Goldberg Variations* (left hand only). Bach's active bass line is divided into four partitions, bracketed and labeled i) through iv). In example 3.3.2 b), chromatic alterations are applied within each of the four partitions. The intermediary pitch materials, marked with a dashed bracket, derive from the "partial complement," the pitch complement common to any two adjacent partitions, i) and ii), ii) and iii) or iii) and iv).

Example 3.3.2 consists of two musical staves. Staff a) shows the original bass line from Bach's *Goldberg Variations*, Variation I, mm. 1-3, left hand only. The line is divided into four partitions, labeled i), ii), iii), and iv) above the staff. Staff b) shows the same music with chromatic alterations applied within each partition. Dashed brackets indicate the "partial complement" between adjacent partitions: i) and ii), ii) and iii), and iii) and iv). The music is in 3/4 time, with various key changes indicated by key signatures.

Example 3.3.2. a) Partitioning of Bach's original bass line (*Goldberg Variations*, I, mm. 1-3, left hand only). b) Partitions from a) with chromatic alterations, partial complementation and added rests.

Each "partial complement" is treated as an unordered pitch-class set. Although the ordering of pitch classes remains at the composer's discretion, the same principles regarding interval succession guide their selection. While the contours within the chromatically altered partitions are determined by the source material (Bach), the composer shapes the contour applied to each partial complement's pitch materials. In this instance, scalar lines were chosen to contrast with Bach's angular contours.

Several of the work's subsequent sections apply embellishments to the underlying chromatically altered lines as a means of elaborating the pitch language. In section F, the coupling of notes with major sevenths or minor ninths (as opposed to unisons or octaves) emerges as a feature of harmony rather than doubling. The chromatically altered line in section J may be said to be "thickened" or "darkened" by the addition of semitone trills (chromatic neighbour notes). In section I, parallel triads, played by flute, clarinet and cello, likewise emerge as a feature of harmony (with a flirtatious reference to diatonic harmony).

The following table lists the sections of *Doubling* (by rehearsal letter) with the corresponding movements of Bach's *Goldberg Variations* from which their pitch material derives. Also provided are further identifying details of the specific excerpted parts (voices) and their measure range.

Beg:	Variation XII (right hand, upper voice, mm. 1-14)
A:	Variation I (left hand, mm. 1-16)
B:	Variation VII (right hand, mm. 1-17)
C:	Variation II (left hand, complete)
D:	Variation IV (right hand, upper and lower parts, complete)
E:	Variation XXVII (left and right hand in alternation, mm. 1-30)
F:	Variation XIX (left hand, lower part, complete)
G:	Variation IX (left hand, complete)
H:	Variation XXII (left and right hand, mm. 17-32)
I:	Variation IV (right hand, upper or lower part, complete)
J:	Variation XVIII (right hand, upper and lower parts, mm. 1-16)
K:	Variation VII (right hand, mm. 1-15)

The work's final section (L) departs from the pitch organization models of previous sections. Here, Bach's musical line retains its original diatonic content, while chromatic elements emerge as a result of a diatonic block harmony (coupling) which moves in parallel with the diatonic line.

The image contains two musical staves, labeled a) and b). Staff a) shows a melodic line in 8/8 time with a treble clef, divided into seven partitions (i) through vii) by brackets above the staff. The melody consists of eighth-note patterns. Staff b) shows the same time signature and clef, but the melody is recast as chords. Each partition from a) is represented by a chord in b), maintaining the original pitch contour. The chords are widely spaced vertically. Measure iv) includes a 'loco' (locally) instruction with a 8va (octave up) dynamic. Measures v) and vi) also have 'loco' instructions.

Example 3.3.3. a) Bach's original melodic line (*Goldberg Variations*, VII, mm. 1-4, right hand only). a) Partitions from a), with simultaneities moving in parallel with the original melody.

Example 3.3.3 a) shows the first four measures of Variation VII from Bach's *Goldberg Variations* (right hand only). The melodic line divides into partitions of two, three and four notes, bracketed and labeled i) through vi). In example 3.3.3 b), the pitch-class collection for each partition is recast as a widely-spaced chord that follows the original pitch contour in parallel motion.

The treatment of diatonic material in this way contrasts sharply with the results of chromatic alteration in the work's previous sections. As unexpected as the approach may be in the coda of *Doubling*, it nonetheless points towards future experiments with diatonic materials, and will be found in abundance in the orchestral works *Silver Threads among the Gold*, and *Coyote Soul*, to be discussed in chapters 8 and 10.

4. *Concertino* (2008)

4.1. Introduction

Concertino was composed for the McGill Percussion Ensemble, who premiered the work under the direction of Aiyun Huang at McGill University’s Pollack Hall on April 3, 2008, with pianists Julia den Boer and Xenia Pestova.

4.2. Instrumentation and orchestration

The significance of a work for percussion ensemble (eight percussionists) with two solo “keyboardists” (as opposed to two solo pianists) is borne out in this instance by the specific collection of instruments entrusted to the two soloists: equally tempered piano, non-equally tempered piano¹, prepared piano², celesta and toy piano³.

The work’s four movement structure is underlined (through timbre) by the emphasis of a specific keyboard instrument (or keyboard instrument combination) in each movement, as follows:

¹ The tuning of the non-equally tempered piano does not follow any standard system, relying instead on a series of minute arbitrary deviations from the equal temperament of each pitch, emphasizing an overall microtonal “colour.”

² The prepared piano provides a resonant and predominantly inharmonic timbre, achieved by inserting metal screws (in the middle register) and plastic wall plugs (in the lower register) between the first and second strings of selected pitches.

³ The toy piano’s sound production mechanism consists of a series of thin steel rods struck by plastic hammers. The pitch range is F4-F7.

I: non equally-tempered piano

II: prepared piano

III: toy piano, equally-tempered piano, celesta

IV: non equally-tempered piano, equally-tempered piano

The percussion ensemble is likewise entrusted with instruments favouring microtonal and inharmonic sonorities such as tubular bells, almglocken (tuned Swiss cowbells) and tuned gongs. The chosen instrumentation (for both soloists and ensemble) foreshadows the constitution of concertino groups in the orchestral works *Gott Lebet Noch*, *Silver Threads among the Gold* and *Coyote Soul*.

The percussion ensemble plays a restrained role, articulating key moments in the work's structure, or providing subtle gradations of "light and shadow" to the keyboard material. The presence or absence (or pervasiveness) of particular percussion instruments in any given movement serves to elucidate the overall form in a manner analogous to the soloists' pairings or combinations of instruments.

In movement I, tubular bells, almglocken and vibraphone punctuate but a few notes in a texture otherwise dominated by solo non-equally tempered piano; two pulsating tuned gongs (D4) provide a steady rhythmic underpinning for the prepared piano in much of movement II, with infrequent punctuations and partial doublings by celesta, marimba, vibraphone and almglocken; in movement III, tutti percussion (crotales, glockenspiel, vibraphone, tubular bells and almglocken) chords separate two frenetic episodes for equally-tempered piano,

celesta and toy piano, doubled first by vibraphone alone, then vibraphone with glockenspiel; small fragments of melodic material quickly swirl around the ensemble in a vertiginous *Klangfarbenmelodie* in movement IV.

4.3. Pitch study

The pitch material for each movement derives in whole or in part from one of Bach's *Two Part Inventions*, as per the following table:

I:	Invention 1: mm.1-12; right hand
II:	Invention 3: complete; right hand
III:	Invention 5; mm. 1-17; right hand
IV:	Invention 8: complete; right hand

The techniques of chromatic alteration, partitioning and partial complementation produce the underlying pitch material (“threads”) in all movements. Secondary pitch operations enrich the harmonic language in various places: the bass notes in mm. 18-19 and 33-34 of movement I are “virtual fundamentals” for the pitch-specific simultaneities in those measures; the prepared piano’s left hand part in mm. 53-57 offers a partial tritone coupling of the right hand part; in movement III, the chords are verticalisations (simultaneities) of chromatically-altered partitions, whose original pitch-class order may be “read” in each chord from bottom to top.

The appearance of root-position major chords at various times during movement IV mockingly references the practice of some early 20th-century composers (such as Hindemith) of using triads to achieve a feeling of “finality” in an otherwise atonal environment. However, triadic harmony will soon earn a place of privilege, even within predominantly atonal

environments of subsequent works, as will be discussed in the following chapters, beginning with *After Schumann*.

5. After Schumann (2008)

5.1. Introduction

After Schumann originated as a miniature, requested by the pianist Xenia Pestova. In anticipation of the bicentennial of Robert Schumann's birth, a short piece from the *Album für die Jugend, Erster Verlust*, was chosen as source material for a movement lasting less than a minute. Seven further miniatures followed, composed independently and subsequently fashioned into a quasi-continuous multi-movement work of approximately ten minutes' duration.

Each of the eight movements draws on a different piece from Schumann's cycle, in whole or in part. A variety of different techniques redefines the composer's materials – pitch, rhythm, gesture – while retaining varying degrees of similarity or dissimilarity to their original counterparts. In spite of the uninterrupted performance of these movements, their specific ordering emphasises strong contrasts in pitch language, gesture and motion.

5.2. Instrumentation and Orchestration

It may seem strange to discuss a work for solo piano in terms of instrumentation and orchestration. However, aspects of the piano writing in *After Schumann* strongly suggest orchestral texture (though not through the means typically associated with the keyboard repertoire of the 19th- and 20th centuries). Details of this will be addressed in the discussions

for individual movements in the pitch study section. (The corollary – reinterpreting the piano’s sustain pedal orchestrally - will be addressed in the discussions of instrumentation and orchestration for *Silver Threads among the Gold* and *Coyote Soul*.)

5.3. Pitch study

In contrast with the works described thus far, *After Schumann* explores a markedly eclectic pitch language. The contrasting approaches to pitch manipulation in each of the work’s movements suggest a series of character studies whose order nonetheless maintains a continuous musical flow. In addition to the continued use of partitioning, chromatic alteration and partial complementation, explicitly diatonic materials appear in the form of complete or partial quotations (from Schumann’s original music), triadic harmony and simultaneities of pitch-classes derived from diatonic melodies.

The following outlines salient features in each of the eight movements:

I: The first seventeen measures of Schumann’s *Stückchen* provide the diatonic melody heard throughout movement I. The harmony grows through incremental enlargements: one note per measure becomes two triads per measure, followed by four superimposed four-note chords per measure. In turn, each stage of enlargement yields a different quality of harmony: Phrygian modality (mm. 1-4), parallel triads (mm. 5-8) and a sequence of eight-note block chords (mm. 9-13), the latter sustaining further increase in density through register overlap of the left and right hand chords (mm.12-13).

Example 5.3.1. Harmonic growth through incremental enlargements in the first 13 measures of *After Schumann* (I).

II: The whole of Schumann's *Kriegslied* (right hand, upper voice) provides a sequence of pitches to be transformed by chromatic alteration with juxtaposed partial complementation in the second movement. The constantly changing irregular metre destabilises the original compound triple metre, as does the simultaneous asynchronous sequence of irregularly-spaced accents and octave skips.

III: The opening four measures of Schumann's *Melodie* appear in the form of interspersed fragments cut from both the left and right hand parts, each separated by a resonant pause. Some fragments are treated by chromatic alteration, while others appear as successive transpositions of four-note simultaneities; the closing fragment is a direct quotation. The sustain pedal, which remains down throughout the movement, provides harmonic overlap (and abstraction) between each fragment.

IV: Chromatic alteration and partial complementation transform the right hand material of Schumann's *Kleine Fuge* in a manner similar to movement II. An otherwise continuous

stream of octave-doubled semiquavers is interrupted by irregularly placed semiquaver rests, while sporadic contrasts in register provide a secondary layer of formal articulation within the movement.

V: Here, the gestures of Schumann's *Jägerliedchen* are easily recognizable, in spite of modifications to the original pitch and metre. A melodic tritone (C3-F#3) replaces the original melodic perfect fourth (C3-F3); these pitches (played by the right hand) sound respectively (and simultaneously) as the 7th and 10th, and 5th and 7th harmonics of the low coupling pitches D0-G#0 (played by the left hand). Example 5.3.2 shows the spectral relationships between the right and left hand pitch material.



Example 5.3.2. "Spectral" relationship between left hand and right hand melodic tritones in hunting motive, movement V.

The "fusion" effect created by the spectral mapping of left and right hand pitch materials in the hunting motive contrasts with the free atonal lines in the intervening passages. Example 5.3.3 shows the transformation of Schumann's original melodic material (part a) by selectively adding or subtracting a semitone to or from the melodic intervals, while preserving the original contour (part b).

a) Interval classes:
[5,4,3,5,5,2,2,3,4,2]

b) Interval Classes
[6,3,4,4,6,3,4,3,3]

Example 5.3.3. Alteration of Schumann's original melodic material by the addition or subtraction of a semitone from each of the original intervals.

VI: Each of the first sixteen measures of Schumann's *Kleine Studie* appears as part of a succession of six-note chords (six-note simultaneities representing the pitch content of each measure). Chromatic alterations ensure no vertical doubling of pitch classes, and minimal pitch repetition in each individual voice. The assignment of these chords to the low register (and concomitant use of sustain pedal) creates an ambiguity between functional harmony and texture, while the sudden drop in tempo and minimization of activity signals an abrupt change in the work's macrorhythm.

The image contains three musical examples labeled a), b), and c).

- a)** Shows a piano score with two staves (treble and bass) over six measures. The treble staff consists of eighth-note pairs, and the bass staff consists of eighth-note triplets.
- b)** Shows the same piano score as in a), but with chromatic alterations applied to the bass line, creating a more complex harmonic texture.
- c)** Shows the bass line from example b) expressed as simultaneous chords. The bass staff has two staves, and the top staff shows chords in the bass register. A dashed line at the bottom indicates the continuation of the bass line.

Example 5.3.4. a) Schumann: *Kleine Studie*; mm. 1-16; b) Example a) with chromatic alterations; c) Example b) expressed as simultaneities (chords) assigned to the piano's lowest register.

VII: The melodic contour and rhythm of Schumann's *Erster Verlust* are preserved in movement VII. The illusion of two textural layers arises from the continual rearticulation of an octave-doubled G (G3-G4), played *ff*, alternating with longer, chromatically altered melodic lines, played *pp*. The use of sustain pedal throughout creates an abstraction between melody and texture, analogous to the abstraction of harmony and texture in movement VI.

VIII: The first sixteen measures of Schumann's untitled 30th piece (reinterpreted at one-quarter the original tempo) provide the framework for the final movement, which winds down

slowly over the course of two minutes (nearly one-quarter the work's total duration). At the outset, melodic and harmonic pitch materials are both drawn from and chromatically altered, with the harmonic materials evaporating towards the end. The register transposition one to two octaves higher than the original enhances the quality of textural dissipation, as does the continuous, uninterrupted use of the sustain pedal. The work ends with a naïve affectation: a recapitulation of movement I's opening eight measures.

6. *Gott Lebet Noch* (2009)

6.1. Introduction

Gott Lebet Noch for solo harp and orchestra was commissioned in 2008 by the Esprit Orchestra. The work is dedicated to harpist Erica Goodman, composer/conductor Alex Pauk, and the Esprit Orchestra, who gave the work its world premiere in 2009 at the Jane Mallett Theatre, Toronto.

Gott Lebet Noch is based on the harmonised chorale of the same name (number 234, Riemenschneider edition) by J.S. Bach. Several unusual features influenced the choice of this particular chorale as source material: its substantial length (thirty-eight measures); the relative absence of thematic repetition; and the extremely angular bass line.

Throughout the work, various treatments of Bach's chorale - reharmonisation, fragmentation, chromatic alteration, retrogrades of individual phrases, layering of canons, registral displacement and extreme changes in tempi - provide a multiplicity of recontextualisations of the original material, while preserving the aura of Bach's original chorale.

6.2. Instrumentation and orchestration

The crux of the work's instrumentation, in addition to the solo harp, is a concertino group of the type established in the work *Concertino*: piano, prepared piano, celesta, toy piano, and several percussion instruments including almglocken, vibraphone and tubular bells. The place of privilege afforded the concertino group is further emphasised by the absence of brass and

double-reed instruments; woodwind sonority is thus provided solely by flutes and clarinets (the latter doubling bass and contrabass clarinets in the work's final section).

In my earlier orchestral works, strings played an important role both as carriers of foreground material, and as providers of “light and shadow” within the orchestral palette, through natural and artificial harmonics. In *Gott Lebet Noch*, strings figure very sparingly in the instrumentation, as sporadic providers of pedal tones or sustained chords. It is only in section O (the work's penultimate section) that they are entrusted with a melodic role, in a long, angular line played at first by one solo violin, building to a unison texture of four solo violins. Even here, the sonority is thin and edgy as a result of the players' use of practice mutes.

Despite its near-continuous presence, the harp is seldom treated as a soloist. After delivering an unaccompanied quotation of Bach's complete harmonised chorale in the opening section, the harp immediately assumes a secondary role as one of the more prominent members of the percussion-based concertino group. In this context, the harp provides a central “thread” that draws other instruments through various texture types. Non-concertino orchestral instruments provide further graduations of colour, but in a much more limited way than in my earlier orchestral works. The chromatically-altered version of the chorale melody in the work's closing sections relegates the harp to its (previously neglected) lowest register, where its overlapping resonances (and the resonances of low plucked piano strings) creates an abstraction between melody and texture.

6.3. Pitch study

The treatment of pitch in *Gott Lebet Noch* marks a departure from the freely atonal approach favoured in earlier works, particularly in its overarching progression from a predominantly diatonic or modal pitch language, to a freely atonal one. A clear baseline for diatonic tonality is established by the harp's solo statement of Bach's music at the outset, lasting approximately a minute and a half.

The image displays four staves of musical notation for harp, arranged vertically. The top staff begins at measure 21, featuring a treble clef, a key signature of one flat, and a common time signature. It consists of six measures of music. The second staff begins at measure 22, also in common time and one flat. The third staff begins at measure 23, in common time and one flat. The fourth staff begins at measure 24, in common time and one flat. The notation includes various note heads, stems, and bar lines, with some notes having horizontal dashes indicating pitch.

Example 6.3.1. Bach's chorale harmonisation.

The orchestra responds with a grotesquely reharmonised quotation of the first 30 measures from the same melodic material, illustrated in example 6.3.2.

6.3.2. *Gott Lebet Noch*, reharmonised version of the first 30 measures of the original chorale melody.

The reharmonisation consists largely of parallel harmony: close- and open-voiced first inversion major triads; root position major and diminished triads; root position minor and diminished triads; open-voiced root position triads with chromatic alterations; close-voiced second inversion minor and augmented triads; second inversion major triads; consecutive diminished trichords or dichords; and ultimately, a return to F-major.

The following sections use non-chromatically altered material in reorderings that subvert their underlying diatonic function. Sections A and D present each of the chorale's successive phrases in retrograde: section A deals solely with the melody; section D with a close-voiced facsimile of the original harmony associated with each melody note.

Example 6.3.3 shows the chorale melody partitioned by phrase, where each phrase is bracketed and labeled a) through g).

The musical score consists of three staves of music in common time (indicated by '4'). The melody is composed of eighth and sixteenth notes. The phrases are labeled as follows:

- a)** The first measure.
- b)** Measures 2-4.
- c)** Measures 5-7.
- d)** Measures 8-10.
- e)** Measures 11-13.
- f)** Measures 14-15.
- g)** Measures 16-17.

6.3.3. Original chorale melody, partitioned by phrases.

In example 6.3.4, the notes of each partition appear in retrograde, with subtle changes in metre and rhythm.

The musical score consists of three staves of music. The phrases are labeled as follows:

- a)** Measures 1-2.
- b)** Measures 3-5.
- c)** Measures 6-7.
- d)** Measures 8-10.
- e)** Measures 11-13.
- f)** Measures 14-15.
- g)** Measures 16-17.

Notable changes include different time signatures (e.g., 2/4, 3/4, 4/4) and various note heads (eighth and sixteenth notes).

6.3.4. Retrogrades of original chorale melody's phrases, with alterations to metre and rhythm.

In retrograde, the chromatic alterations in applied chords (secondary dominants) produce odd effects of cross-relation. When presented at three times the original tempo, the underlying diatonic order seems to be reborn as a strange breed of Stravinskian pandiatonism, and the music's original processional quality recast as a disjunctive (perhaps dysfunctional) dance.

In sections B and C, the specific reordering of non-chromatically altered material was suggested in part by the idea of “cubism.” In the visual arts, cubism attempts to portray an object (or objects) from multiple viewpoints. As a musical analogue, each of the seven phrases of Bach’s chorale is partitioned into small units (one or two notes/chords) and presented in rotation (with its corresponding durational value) in rapid succession. The exercise itself is ironic in that music is fully capable of presenting several “aural” viewpoints simultaneously.

The image shows a musical score for a single melodic line in G major, 3/4 time. The melody consists of 17 numbered notes. The notes are grouped into seven phrases labeled a) through g). The notes are numbered sequentially as follows:

- a)** 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.
- b)** 1. 2. 3. 4. 5. 6. 7.
- c)** 8. 9. 10. 11. 12. 13. 14. 15. 16. 17.
- d)** 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.
- e)** 1. 2. 3. 4. 5. 6. 7. 8.
- f)** 9. 10. 1. 2. 3. 4. 5. 6. 7. 8. 9.
- g)** 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Example 6.3.5. Original chorale melody, partitioned into phrases (a-g), notes within each phrase numbered sequentially.

The image shows the same musical score as Example 6.3.5, but with the notes rearranged according to a specific “cubist” reordering. The notes are labeled with their original positions (a.1, b.1, etc.) above them, and new labels below them indicating their new order. The labels include:

- a.1 b.1 c.1 d.1 e.1 a.2 b.2 c.2 d.2 a.3 b.3 c.3 d.3 f.1 g.2 a.4 b.4 c.4 d.4 e.2

Example 6.3.6. “Cubist” reordering of chorale melody.

Sections E and F transform small partitions of the original chorale melody in ways that will be discussed in the chapter for *Der Tag mit seinem Licht*, as a transition towards the work’s second half, where chromatically altered pitch material predominates. Even in the later freely atonal sections, vestiges of diatonic tonality may be found, as in the descending fifths of section H, or the coupling in parallel perfect fifths in section J.

7. Schumann Scenes (2009)

7.1. Introduction

Schumann Scenes was commissioned by the Canadian Music Centre as part of their New Music for Young Musicians program, with the support of the Norman Burgess Memorial Fund. The work received its premiere on April 5, 2011 at the Royal Conservatory of Music in Toronto, by the Earl Haig Secondary School Junior Strings under the direction of Alan Torok.

7.2. Instrumentation/Orchestration

Schumann Scenes is scored for string orchestra, with the intention that its music should be playable by secondary school musicians. Unlike much 20th century music for string orchestra, its *divisi* writing is limited to two parts per section, with the exception of occasional solo parts suited to more advanced students. The string writing eschews all forms of “extended techniques,” and at times, contrary to the stated research objectives regarding instrumentation and orchestration, evokes stylistic archetypes of some 20th century composers, such as Bartók or Schnittke.

7.3. Pitch study

Schumann Scenes continues the eclectic approach to pitch material organisation established in *After Schumann*. Like the former work, *Schumann Scenes* draws in whole or in part from various pieces in Schumann’s cycle *Album für die Jugend* to produce a quasi-continuous six-movement work.

A significant feature of the work's pitch language (and one that does not frequently figure into the pitch organisation of the other works discussed here) is the use of fixed pitch fields, precipitated in part by the need to write technically practicable figures for young string players. (For string players, chromatic music is facilitated by the use of open strings, with less frequent changes of left hand position.) The following are four examples of fixed pitch field use, as found in movements I, IV, V and VI.

I: Example 7.3.1 a) shows the opening two measures of Schumann's *Melodie*. The first four notes produce a cell which transposes at successively descending perfect fifths, resulting in the non-octaviant scale shown in part b).

The image contains two musical staves. Staff (a) shows the opening two measures of Schumann's *Melodie* for the right hand. The first measure consists of four eighth-note pairs (two pairs per beat). The second measure consists of six eighth-note pairs. Both measures are labeled "Interval classes [2,2,1,2]" above them. Staff (b) shows a non-octaviant scale derived from the first five notes of staff (a). This scale is presented in three groups of three notes each, separated by vertical brackets and labeled "[2,2,1,2]" above each group. The notes descend in pitch. The third group is followed by a "sim." (similar) instruction. The staff concludes with a bass clef and a dashed line, indicating the continuation of the scale.

Example 7.3.1. a) Schumann: *Melodie*, mm.1-2, right hand only , b) non-octaviant scale derived from first five notes of (a).

Schumann's original melody (in quotation) continues to unfold as the synthetic scale descends in steady crotchets. Each successive transposition of the five-note cell adds one new note to the melody's C-major pitch collection.

IV: Example 7.3.2 a) shows the first five measures of Schumann's *Wilder Reiter*. Part b) shows the same passage with chromatic alterations, yielding a pitch field that emphasizes whole tones between in the lower region, and minor-seCONDS and minor-thirds in the upper region, without octave duplication of pitch classes.

The image contains two musical staves, labeled a) and b). Both staves are in common time (indicated by 'C') and use a treble clef. Staff a) consists of five measures of music for the right hand, starting with a dotted quarter note followed by eighth-note pairs. Staff b) shows the same five measures but with different pitch assignments, specifically altering the notes to emphasize whole tones and minor intervals.

Example 7.3.2. a) Schumann: *Wilder Reiter*; mm. 1-5 (right hand only), b) chromatically altered version of a).

A similar process presents in example 7.3.3. Part a) shows the first four complete measures of the middle section of Schumann's *Wilder Reiter*; part b) shows its chromatic alterations. The resultant pitch field emphasises minor-seCONDS and minor-thirds throughout, and likewise avoids any duplication of pitch class.

The image contains two musical staves, labeled a) and b). Both staves are in common time (indicated by 'C') and use a bass clef. Staff a) consists of four measures of music for the left hand, featuring eighth-note pairs. Staff b) shows the same four measures with chromatic alterations to emphasize minor seconds and minor thirds.

Example 7.3.3 a) Schumann: *Wilder Reiter*; mm. 8-12 (left hand only), b) chromatically altered version of a).

V: Movement V situates a diatonic melody within a sequence of spectral pitch fields. The melody, from Schumann's *Eine Chorale*, appears in example 7.3.4.



Example 7.3.4. Schumann: *Eine Chorale* (right hand, upper voice).

The annotated reduction of example 7.3.5 illustrates the transformation and recontextualisation of Schumann's chorale melody. The melody itself remains, though heard primarily as a sequence of two-note simultaneities. Each phrase's pitch field maps onto a harmonic spectrum, which in turn furnishes the remaining notes in each pitch field. The root-progressions (fundamental-frequency progressions) from one spectrum to the next consist exclusively of major and minor thirds (C, A, F, D-flat, B-flat).

Example 7.3.5. Schumann *Scenes*, V (reduction).

VI: The pitch field of movement VI derives from two superimposed modes on G. Example 7.3.6 a) shows the first sixteen measures of Schumann's *Soldatenmarsch* in its original G-major diatonic tonality. In part b) the G-major pitch collection of the original has been changed to G-Phrygian in the left hand, and G-Phrygian with a raised 6th in the right hand. An eight-note isorhythmic pattern substitutes for the original march rhythm, displacing the pitches in terms of their alignment with the beginnings and endings of phrases.

a)

b)

Example 7.3.6. a) Schumann: *Soldatenmarsch*, mm.1-16 ; b) Schumann *Scenes, IV*, mm.1-5, reduction b).

8. *Silver Threads among the Gold* (2009)

8.1. Introduction

Silver Threads among the Gold was commissioned by the Montreal Symphony Orchestra with financial assistance from the Canada Council for the Arts, and is dedicated to conductor Kent Nagano. In conceiving a concert with Japanese culture as its focus, Mr. Nagano suggested that this new work might in some way allude to the internment of Japanese Canadians during the Second World War.

In 1981, Japanese-Canadian author Joy Kogawa published her first novel, *Obasan*, a semi-autobiographical account of her family's internment, and the subsequent struggle for official redress. The novel's protagonist finds solace in the few possessions her family has been able to retain during the war, notably, the gramophone, and an old recording of a popular 19th century American song, "Silver Threads among the Gold." Composed in 1873 by Eben E. Rexford and Hart Pease Danks, this song provided the point of departure for my new work.

8.2. Instrumentation and Orchestration

Silver Threads among the Gold calls for a standard symphony orchestra: triple winds and brass, keyboards, percussion, harp and strings. The concertino group of *Gott Lebet Noch* returns in a near-identical form (piano, prepared piano, celesta, almglocken, vibraphone, tubular bells, harp, and on occasion, crotales, glockenspiel and marimba); formal articulation

arises from its temporal deployment, particularly as a result of the presence or absence of its “inharmonic” instruments.

In the work’s opening section, the concertino seems to “materialise” from a canvas of silence, beginning with single notes in the prepared piano (rearticulated by the harp) in measure 8, followed by piano in measure 15, marimba in measure 17. and finally, almglocken and vibraphone in measure 31. Hereafter, each appearance of the concertino’s “inharmonic” subgroup (in any given section) is separated by an increasing number of sections in which these instruments do NOT appear, as per the following list of sections by rehearsal letter (larger rehearsal letters in bold indicate the presence of the inharmonic subgroup):

Beg.+A **B** **C** **D E** **F** **G H I** **J** **K L M*** **N O*** **P**

In those sections whose rehearsal letter is marked with an asterisk, fleeting appearances of one or more inharmonic instruments occur in a predominantly non-inharmonic context. Section P carries special significance as the only instance where inharmonic instruments are not doubled or paired with string sonorities.

8.3. Pitch Study

Developments in the pitch language of *After Schumann*, *Gott Lebet Noch* and *Schumann Scenes* laid the groundwork for their further application in *Silver Threads among the Gold*, notably, the use of quotation, block chord harmonies and further applications of chromatic alteration.

Example 8.3.1 shows Hart Pease Danks's original tune. This melody is heard explicitly several times throughout the work, in various settings and contexts, though always in the absence of its original harmonisation. (A block-chord harmonisation of the melody does in fact appear in sections J and K, but in contexts that render it unrecognisable, as shall be discussed later.)



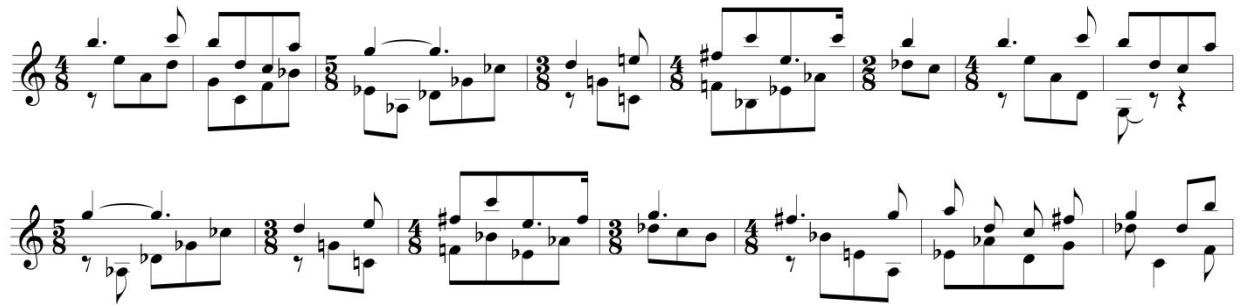
Example 8.3.1. *Silver Threads among the Gold* (1873); original melody by Hart Pease Danks.

The first clear statement of Danks's melody appears in section D (example 8.3.2) supported by a variegated harmony that vacillates between different modal and synthetic scales. In the first eight measures, the starting note of each phrase serves as a kind of “tonic” for different modal scales: B-Locrian, D-Phrygian (raised 6th). (The modified D-Phrygian scale may also be interpreted as a C-melodic minor scale starting on D.) In the tenth and eleventh measures, modal scales are replaced by a synthetic eight-note scale built on tetrachord [1,2,2].

Example 8.3.2. *Silver Threads among the Gold* (2009), section D, mm. 77-88, reduction.

The “root” movement between each of these scales is always in thirds (B-D-B-D-B-flat-G-B-flat). The melody itself remains within the modality of the G-major scale, resulting in polyharmony when heard against the shifting tonalities (and modalities) of the accompaniment.

A second rendering of Danks’s tune occurs much later in the work in section O, against an accompaniment of descending perfect fifths and ascending perfect fourths (in the first twelve measures) and alternating fifths, fourths and tritones in the subsequent three measures. The sequence of open fifths and fourths relates to the modal harmonization of the theme in section D (a diatonic scale’s pitch set is the same set obtained from a sequence of seven descending or ascending perfect fifths or fourths).



Example 8.3.3 *Silver Threads among the Gold* (2009), section O, mm. 274-288, reduction.

As in example 8.3.2, the first note of each melodic phrase serves as a focal pitch, initiating the accompaniment's pitch sequences in the first twelve measures. At the beginning of each sequence, the accompanying pitches relate closely to the melody's G-major pitch collection, but as the sequence progresses, the relationships become increasingly remote, effecting a linear intensification of dissonance.

Embedded statements of Danks's original melody also occur, as in section M, where short fragments of the tune (rendered as harmonics in the harp and strings) are interspersed with short fragments of whole tone or synthetic scalar material in the keyboards and percussion. In section H, each note from the original melody is succeeded by single or multiple melodic whole tones or minor thirds, in a stream of semiquavers passed between bassoons and clarinets.

Chromatically-altered versions of the original melody's pitch series provide material for many early sections in *Silver Threads among the Gold*. Examples 8.3.4 a) and b) show the original and one of several chromatically-altered versions of the series.

The image contains two musical staves, labeled 'a)' and 'b)', each consisting of eight measures. Staff 'a)' shows a pitch series with notes primarily on the A, C, D, E, G, and B strings of a guitar. Staff 'b)' shows a chromatically-altered version of the same series, where notes are shifted to include additional sharps and flats, such as F# and Bb.

Example 8.3.4. *Silver Threads among the Gold* (2009); a) Pitch series of original melody, b) chromatically-altered version of a).

At the work's outset, melodic fragments plucked from the original series gradually evolve into a continuous statement of the chromatically-altered series. In section B, a heterophony of three flutes with vibraphone unfolds the chromatically-altered pitch series in the melody's original rhythm, with interpolated semitone neighbour-note vacillations in semiquavers throughout. Other chromatically-altered versions of this series inform the pitch language of sections C, E and G.

As mentioned previously, a block-chord harmonisation of the original melody appears in disguise in sections J and K. Example 8.3.5 shows this harmonisation, wherein three- and four-note chords were chosen for their individual sonority, regardless of concern for voice leading.

The image shows three staves of music. The top staff is in common time (indicated by '4') and has a key signature of one sharp (F#). It consists of three measures of block chords. The middle staff is also in common time and has a key signature of one sharp. It consists of three measures of block chords. The bottom staff is in 8/8 time and has a key signature of one sharp. It consists of three measures of block chords.

Example 8.3.5. Block chord harmonisation of original melody.

In section K, these block chords appear in a close four-part pitch and rhythmic canon (played by 16 solo violins with practice mutes) at successively descending semitones, with each part's entry separated by a quaver. The chromatic whole becomes quickly saturated, allowing only vague glimpses of the melody's original contour to be perceived. In the preceding passage at section J, the sequence of chord types from the block harmonisation remains the same, but the pitches change as a result of mapping (transposing) the bass note in each chord to "middle-D," as shown in example 8.3.6 b).

The image contains three musical staves labeled a), b), and c). Staff a) shows a sequence of 13 chords in G major. Staff b) shows the same 13 chords, but each bass note has been transposed to a middle-D (A4). Staff c) shows the chords from b) with imitations of each individual chord at upper or lower perfect fourth or fifth.

Example 8.3.6. a) First 13 chords of block-chord harmonisation. b) Chords in a) transposed so that each bass note maps onto "middle-D." c) Imitations of each individual chord in b) at upper or lower perfect fourth or fifth.

One final operation involves imitation of the transposed chords in b) a perfect fifth or fourth higher or lower, as seen in part c). The close of this passage seems to reach a diatonic tonality of G-major, the melody's original key, previously unheard.

The "attainment" of the G-major tonality at measure K signals a turn in the piece, where expressions of the original diatonic melody, in whole or in part, come more frequently, and in less ambiguous contexts (including the "circle of fifths" rendering described previously). A shadow of the melody lingers in the restatement of the modal and synthetic scale accompaniment from section D in the work's closing section.

9. *Der Tag mit seinem Licht* (2011)

9.1. Introduction

Der Tag mit seinem Licht was commissioned by the Transmission Ensemble, who gave the work its premiere at the Chapelle Historique du Bon Pasteur in Montreal on April 29, 2011. The title is drawn from a chorale melody of the same name in the *69 Chorale Melodies*, published together with J.S.Bach's *371 Harmonized Chorales* (Schirmer edition).

9.2. Instrumentation/Orchestration

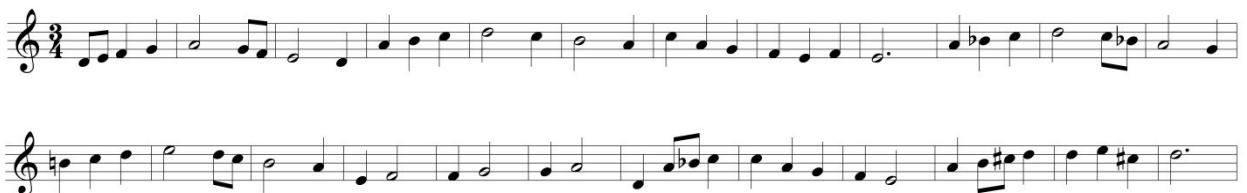
The instrumentation for *Der Tag mit seinem Licht* comprises flute (doubling piccolo), clarinet (doubling recorder), violin, cello, percussion (crotales, vibraphone, toy piano) and piano (doubling celesta). The absence of those instruments rich in inharmonic timbre (prepared piano, almglocken, tubular bells) creates a very different sound world from those established in *Gott Lebet Noch* or *Silver Threads among the Gold*. Nonetheless, piano and vibraphone (and on occasion, violin) remain the principal carriers of musical lines, as in the earlier works; flute, clarinet and/or cello double such lines, often in a fragmentary way, mostly for concerns of colour.

To the extent that piano and vibraphone may be considered prominent instruments, it should be noted that there are very few instances when any single instrument dominates the texture. Various means ensure this result: selective or sparing use of instruments; partial doubling of lines; thin textures; quiet dynamics; use of regular mutes and practice mutes in strings; and use of brittle sonorities (low celesta, low piccolo and low recorder). Exceptions to this principle include the celesta solo in the opening section, and the piano solo in section E, while the increase in dynamics and density of activity in the

latter part of section G (mm. 210-236) and all of section H, deliberately bring the work to its climactic point.

9.3. Pitch study

Following the example of *Gott Lebet Noch, Der Tag mit seinem Licht* opens with an explicit statement of the material on which it is based. Example 9.3.1 shows the original chorale melody.



Example 9.3.1. Chorale melody as source material for *Der Tag mit seinem Licht*.

This melody appears in the opening section as a two-voice pitch canon at the octave, and as a series of simultaneities (two- to five-note chords) in the work's closing section. These two sections, as the work's only clear settings of the melody's d-minor modality, frame ten intermediary sections, each of which explores different means of recontextualising its original pitch material.

Chromatically-altered renderings (of the type established in previous works) play almost no role in *Der Tag mit seinem Licht* (with the exception of section A). Rather, the unaltered melody itself contains the “information” governing its own potential transformations. In some instances (sections B, C and the first part of G), the technique of partitioning allows for small units of melody to be isolated and repeated, wherein minute changes of pitch in each reiteration expand the underlying pitch collection. In other instances (sections D, E, F, the second part of G, and H), complete quotations of the melody appear in contexts whose surrounding pitch structures absorb the melody's “diatonicism” into a greater chromatic whole.

Section C utilises a process of partitioning and transposition to expand the music's chromaticism, while maintaining the original interval sequences within each partition and emphasising a clear tonal centre. Example 9.3.3 a) shows the original chorale melody partitioned into groups of three notes; b) shows these partitions transposed to begin on D-natural. The bracketed numbers represent intervals (as semitone multiples).

Example 9.3.3. Three-note partitions of original melody, transposed so that each begins on D-natural.

The application of a 5-note isorhythm to b) (in the manner of a talea) produces the following musical line, played by violin and doubled in part by the piano in mm. 60-89 of *Der Tag mit seinem Licht*.



Example 9.3.4. *Der Tag mit seinem Licht*, violin line, section C, mm. 60-67.

In mm. 90-109, the violin continues its melodic line in running semiquavers, with a different underlying treatment of pitch material. Example 9.3.5 a) shows the original chorale melody's pitch series partitioned into groups of two, three, four and five notes. In example 9.3.5 b), the pitches have been changed by means of "interval substitution," where minor seconds replace major seconds (and vice versa), minor thirds replace major thirds (and vice versa), and perfect fourths and fifths become tritones.

a) [2,1,2,2] [2,1,2] [2,1,2] [1,2] [3,2,2,1] [1] [1,2,2] [2,1,2]

b) [1,2,1,1] [1,2,1] [1,2,1] [2,1] [4,1,1,2] [2] [2,1,1] [1,2,1]

Example 9.3.5. a) Partitioning of original pitch series into groups of two, three, four and five notes, b) interval substitution for pitches in a).

In example 9.3.6, each of the partitions from 9.3.5.a is echoed in its “interval substitution” form (9.3.5.b) a perfect fifth higher or lower. The solid noteheads represent the original partitions, while the empty noteheads represent their “echo.” Additional notes (open strings) are added as necessary to facilitate string crossings for the violin.

Example 9.3.6. *Der Tag mit seinem Licht*, violin line, section C, mm. 90-109, showing original diatonic partitions and “echoes” using “interval substitution” and transposition.

As an example of quotation, section E proposes an unusual recontextualisation of the original melody, one that retains the flavour of diatonic harmony (with its emphasis on the triad) while creating a syntax that disorients the listener’s perception of pitch centricity or tonal centre.

C: V-I E-flat: V-I C: IV-I C: IV-I A: IV-I C: V-I F: IV-I D: IV-I F: V-I B-flat: IV-I

Example 9.3.7. *Der Tag mit seinem Licht*, section E, mm. 134-143, piano part.

Two-note partitions are harmonised in V-I or IV-I diatonic relationships, and set to iambic rhythm. As a result of the rhythmic (durational) emphasis, every second melody note behaves like a temporary “tonic” or pitch centre. On the other hand, dynamic emphasis of the first chord in each group (the quaver) contradicts the rhythmic emphasis of the second note in each group (the crotchet), calling into question whether any given partition is a V-I or IV-I progression. Differences in chord inversion or melodic progression lend further ambiguity, while the absence of a true bass line does nothing to clarify the issue. The emphasis on “root” movement in thirds ensures frequent chromaticism as a result of the abrupt shifting between distant tonalities.

Numerous other examples of work with diatonic partitions (and quotation) abound in *Der Tag mit seinem Licht*, reflecting a newfound preference for this approach. Many of the techniques developed during the work on *Der Tag mit seinem Licht* will find a place in the orchestral work *Coyote Soul*, the final instalment in the portfolio.

10. *Coyote Soul* (2011)

10.1. Introduction

Coyote Soul was commissioned by the Esprit Orchestra, who premiered the work at the Royal Conservatory of Music's Koerner Hall in Toronto on May 15, 2011.

Popular music has provided source material for several of my compositions including *Midnight with the Stars and You* (1999) for violin and piano, based on a 1930s dance band song of the same title, and *Silver Threads among the Gold* (2009), discussed in chapter 8. In both cases, extra-musical references influenced the selection of source material: a film by Stanley Kubrick in the former (*The Shining*, 1980) in which the original song is heard (as if from a distance); a novel by Joy Kogawa in the latter (*Obasan*, 1982). In the case of *Coyote Soul*, the selection of the popular song, *Close to You*, by American songwriter Burt Bacharach (a former student of maverick composers Henry Cowell, Bohuslav Martinu and Darius Milhaud) reflects, apart from any extra-musical reference, a fascination with several of the song's idiosyncratic musical features (to be discussed in detail in the pitch study section) as progenitors of material for my own work.

10.2. Instrumentation and orchestration

Coyote Soul, like the orchestral works *Gott Lebet Noch* and *Silver Threads among the Gold*, makes use of a concertino group emphasising keyboards and percussion, with a concomitant subgroup of inharmonic instruments. The concertino group differs slightly from the model of the earlier works in its instrumentation (which now includes two detuned harps) and in its

temporal deployment. (Of particular note is the absence of the inharmonic subgroup's instruments for the work's first three minutes, until the appearance of tubular bells in section B.) Three members of the concertino make conspicuous first appearances in each of the following sections: prepared piano in section C; toy piano in section D; and detuned harps in section E. From this point on, the deployment of these instruments is less formally determined than in *Silver Threads among the Gold*, although the inharmonic subgroup appears less frequently than the other instruments in the concertino.

Several specific instrumental sonorities appear briefly early in the work, then reappear only towards the work's end, as a portent of the impending finish: the single bass drum stroke that caps off the end of section B recurs three times to articulate section Q; the toy piano's sole appearance in section D recurs during the final bridge passage of the Bacharach arrangement (coda); the recorders, having disappeared along with the toy piano in section D similarly reappear in the work's final measures, playing mostly the same pitches they played in the opening, in a completely metamorphosed environment.

As regards the remainder of the orchestra, there is a relatively equal distribution of "active" material to the woodwinds and strings. String provide "light and shadow" to various textures, not only through sustained sonorities (such as harmonics), but also through sharply articulated chords (section J) and vigorously bowed passages (section O). Brass play a critical role in emphasising the work's climax, but likewise contribute "light and shadow" through sustained sonorities (sections C and K).

10.3. Pitch study

The song *Close to You* (1963) by Burt Bacharach (with lyrics by Hal David) was first recorded by the actor Richard Chamberlain in 1963, and subsequently, by many of the most notable singers associated with Bacharach throughout the 1960s, including Dionne Warwick and Dusty Springfield. It was not until the release of the 1970 recording by the Carpenters that the song gained widespread popularity. Example 10.3.1 shows Bacharach's melody in a transcription reminiscent of Richard Carpenter's "slow shuffle" arrangement.

Example 10.3.1. Melody from Burt Bacharach's *Close to You* (1963).

Bacharach's melody bears several striking features: of the twenty-three melodic intervals, seventeen are skips, four are steps and two are unisons; almost all of the stepwise movement occurs in the second measure, while melodic skips predominate everywhere else; the melody itself never emphasises the tonic of the underlying G-major tonality, hence, no feeling of closure; all of the melody's notes may be interpreted as chord factors (predominantly 7th and 9th chords), hence, no passing tones. These unusual features manifest in many of the textural outlines and contours in *Coyote Soul*, and likewise suggest potential interpolations or extrapolations of secondary pitch material.

Coyote Soul begins with a slow monophony of five pitch-classes. Example 10.3.2 a) shows the first fifteen notes (including repeated notes) of Bacharach's melody, partitioned into groups of two, three and four notes. The hollow notehead in each group (usually the highest and most prominent note) is extracted and arranged (in sequence) to form the work's opening five-note subset in the first partition of example 10.3.2 b). Four additional permutations of this subset's ordering are juxtaposed to create a 25-note series.

The image contains three musical staves labeled a), b), and c). Staff a) shows a single line of 15 notes on a treble clef staff. Staff b) shows a single line of 25 notes on a treble clef staff. Staff c) shows a multi-line staff with 25 notes, arranged in a pitch canon at the lower perfect fifth and major ninth. Chords with asterisks (*) indicate unison doublings replaced by chromatic alterations.

Example 10.3.2. a): Pitch series (showing repeated pitches) from Bacharach's melody. b): Secondary five-note pitch series derived from a), permuted to create a twenty-five-note series. c) 25-note series from b) presented as pitch canon at the lower perfect fifth and major ninth.

The opening of *Coyote Soul* uses the first fifteen notes of the 25-note series, first in a monophony of two recorders, then a heterophony of two recorders, low piccolo, flute and slide whistle. In section A, three solo strings play the full 25-note series in a pitch canon at the lower perfect fifth and major ninth, as shown in example 10.3.2 c). (Chords with an asterisk indicate that a unison doubling has been replaced with a chromatic alteration in one of the voices.) Woodwinds and brass return in section C with alternating fanfare figures expanding downward in perfect fifths (an extension of the canon in section A) and block chord melodies (simultaneities of the original melody's partitions).

As previously noted, one of the distinctive features of Bacharach's tune is the preponderance of melodic skips (often large skips) and the relative paucity of stepwise motion. Scalar material in *Coyote Soul* derives primarily from stepwise interpolations (E-Aeolian modality) within the melodic skips of each two, three and four-note partition, illustrated in example 10.3.3. Chromatic alterations in part c) produce a modified version of b) with minimal pitch-class repetition between adjacent partitions; the inversion of c) appears in part d).

The image contains four musical staves, labeled a), b), c), and d), each representing a different scalar interpolation pattern. The staves are in G clef and common time.
 - Staff a) consists of a series of eighth notes connected by vertical stems, mostly on the A and C strings.
 - Staff b) adds small chromatic alterations, such as half steps, between the notes of staff a).
 - Staff c) adds more significant chromatic changes, including several half steps, between the notes of staff b).
 - Staff d) is the inverted form of staff c), showing a different sequence of notes.

Example 10.3.3. Scalar interpolations of original pitch series.

The first use of this scalar material occurs in its inverted, chromatically-altered form in section D, in the toy piano's trepidatious line, followed by permutations of its original, non-chromatically altered form in the harps' hocketed “eddies” in section E. The original, non-chromatically altered scale appears again in section F, partitioned into two-note groups, set to iambic rhythm, and harmonised in a sequence of i-vii relationships (similar to the IV-I, V-I chord progressions in section E of *Der Tag mit seinem Licht*).

Scalar material may also derive from secondary interpolations or extrapolations. In example 10.3.4, ascending whole tone scale fragments (hollow noteheads) are “affixed” to each of the

pitches in Bacharach's original melody (solid noteheads). This material manifests in the semiquaver skirmish of section M, propelled by the inharmonic instruments (prepared piano, tubular bells, almglocken plus harps) and doubled by hocketed fragments in the brass and winds.



Example 10.3.4. *Close to You*, original pitch series with whole tone scale interpolations.

The pitch material of section N arises from a process of extrapolation and imitation, as illustrated in example 10.3.5. Part a) shows the first eleven notes of Bacharach's original tune, partitioned into elided two-note groups. In part b) the melodic interval is repeated (from the second note) yielding a third note (linear representation). Each three-note group from b) appears in part c) with imitation a perfect fifth lower. The final musical line, as it appears in *Coyote Soul*, is shown in example 10.3.6.

a)

b)

c)

Example 10.3.5. Multiplication of melodic intervals with canon at lower fifth.



Example 10.3.6. *Coyote Soul*, Section N, piano part.

Two passages of quiet, slow-moving chords (sections K and P) provide relief from the activity of the continuous section blocks that precede them (H through J, and L through O respectively). In section P, the harmonies derive from a simple process of verticalisation and interpolation. Example 10.3.7 a) shows the first twelve notes of the original pitch series (without repeated pitch classes) partitioned into elided two-note groups. Part b) shows the two-note groups (solid noteheads) with the pitch, or pitches (linearly-written hollow noteheads) that divide the interval equally. Part c) shows the resultant simultaneity of each of two-note partition with its “midpoint” interval (or intervals) as an openly-voiced chord.

a)

b)

c)

10.3.7. *Coyote Soul*, section P, “midpoint” harmony.

The tranquil simplicity of this harmony is aggressively interrupted by the violent climactic twelve-note chords of section Q (example 10.3.8). Bacharach’s melody provides the bass note

for each chord, which in turn pairs with a coupling pitch a minor third, major third or tritone higher. The remaining pitches in each chord derive from the spectra of these two bass notes (fundamentals). (All chords are notated linearly for clarity.)

Example 10.3.8. *Coyote Soul*, section Q, climactic chords.

A brief transitional passage (section R) leads to the work's coda, an arrangement of most of Bacharach's song (after the arrangement of Richard Carpenter). The melody's saturation with inharmonic instruments (prepared piano, tubular bells, almglocken) creates textural abstraction within the homophony, exemplifying the fact that every note in Bacharach's tune may be interpreted as a factor of its harmony. The homophony's pitch content may in turn be interpreted as a factor of the cluster harmony (first heard at the coda's outset) whose resurgence ultimately serves to "swallow up" the musical texture and bring the work to its close.

12. Conclusion

The previous chapters provide an overview of developments in both the pitch language and approach to instrumentation and orchestration of the eight works comprising the accompanying portfolio. The examples given elucidate key additions to the pitch language throughout the period of research, but are by no means a measure of the total number of experiments undertaken, many of which did not result directly in musical representation. The emphasis on pitch study, useful as a means of comparing and contrasting the accompanying scores, likewise does not address developments in my thinking regarding other parameters such as rhythm and form (although aspects of these parameters were at times affected or influenced by work related to pitch).

In future research, I anticipate continued work with the types of pitch operations previously described; chromatic alteration and partial complementation remain indispensable tools, while partitioning offers a means of searching for new modalities or harmonies through simple resituation. The opening section of *Coyote Soul* has stimulated my interest in chains of operations that permute a small amount of pitch material into long lines and chords. In the domain of instrumentation and orchestration, I am currently most preoccupied with writing for large ensembles. Further diversification of instrumentation in such ensembles remains a viable path, with an eye towards finding alternatives to the “inharmonic” subgroup as the primary agent for achieving this goal. To this end, diversification of instrumentation may require not simply an enlargement of resources, but a closer and more intimate look at the subtleties within.

13. Appendix

13.1. Recording details

Doubling (2007)

Nu: BC Collective Ensemble

Paolo Bortolussi: flute, Christopher Inganti; clarinet; Eric Wilson; cello; Corey Hamm; piano
Recorded May 17, 2011

Roy Barnett Recital Hall, University of British Columbia
Recording Engineer: David Simpson

Concertino (2008)

McGill Percussion Ensemble
Julia den Boer and Xenia Pestova; keyboards
Aiyun Huang; cond.

Live concert recording, April 3, 2008
Pollack Hall, McGill University, Montreal
Pollack Hall archival recording

After Schumann (2008)

Xenia Pestova; piano

Live concert recording
February 25, 2011
MacKay United Church, Ottawa
Recording engineer: Scott Wilson

Gott Lebet Noch (2009)

Esprit Orchestra
Erica Goodman; harp
Alex Pauk; cond.

Live concert recording (CBC)
May 1, 2009
Jane Mallett Theatre, Toronto
Producer: David Jaeger
Recording engineers: Doug Doctor, Wayne Richards

Silver Threads among the Gold (2009)

Montreal Symphony Orchestra
Kent Nagano; cond.

Live concert recording
March 2, 2010
Salle Wilfrid Pelletier, Place des Arts, Montreal
Martha de Francisco; engineer

Coyote Soul (2011)

Esprit Orchestra
Alex Pauk; cond.

Live concert recording (CBC)
May 15, 2011
Koerner Centre for the Performing Arts, Toronto
Producer: David Jaeger
Engineers: Steve Sweeney, Frank Finistauri