

THE SOLO PIANO MUSIC OF OLIVER KNUSSEN

by

LAURIE A. MIDDAUGH

AMANDA PENICK, CHAIR
DR. SUSAN C. FLEMING
DR. LINDA CUMMINS
DR. CRAIG FIRST
DR. TRICIA MCELROY

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ABSTRACT

Oliver Knussen is one of Great Britain's most prominent composers of our day. He has been a presence on the contemporary music scene since the age of fifteen when he was thrust upon the stage to conduct his own *First Symphony*. He has written in just about every genre from large orchestral works to chamber ensembles, operas to art song.

His introduction into the contemporary music scene in America was during his first trip to New York City and Boston in the late 1960s to study composition at Tanglewood. He has had a longstanding relationship with Tanglewood both as a student and as the Head of Contemporary Music Activities there from 1986 to 1998.

Knussen enjoys as much success as a conductor as he has as a composer. His discography boasts recordings of contemporary music of many historic figures of contemporary music with Knussen at the podium.

Painstaking attention to detail is a hallmark of Knussen's scores. Dynamics, phrasing, articulation, rhythmic relationships, and, in his piano music, pedaling is all very scrupulously marked. He wants his music played the way he has conceived it. The instrumentation he uses for his orchestral works is imaginative and colorful. This same attention to individual lines and textures is evident in his compositions for solo piano. There are currently three solo piano pieces published by Faber Music Limited in London: *Sonya's Lullaby*, Op. 16, (1979), *Variations for Piano*, Op. 24, (1989) and *Prayer Bell Sketch*,

Op. 29, (1998). Each of these pieces was composed in honor, by commission, or in memory of someone in his life. *Sonya's Lullaby* was written in celebration of the birth of his daughter, *Variations for Piano* was commissioned by the renowned pianist Peter Serkin and *Prayer Bell Sketch* is in memory of his friend and mentor Toru Takemitsu. A fourth solo piano piece has been completed, *Ophelia's Last Dance*, Op. 32, which was commissioned by the Gilmore International Keyboard Festival in 2010, premiered and recorded by Kirill Gerstein on Myrios Classics.

Through his prolific activities as both composer and conductor, Oliver Knussen is a major contributor to the ongoing tradition of British contemporary art music and a tireless advocate of new music.

DEDICATION

I could not have done any of this work at the University of Alabama without the support of my family—for my daughter and husband who have patiently endured with me and in spite of me. I have to also thank my parents, Brenda and George Lewis for encouraging my passion for music and always being the loving, supportive parents I've been so fortunate to have.

Dad, here's another tassel for your wall!

ACKNOWLEDGEMENTS

I would like to thank my committee, Mrs. Amanda Penick, Dr. Linda Cummins, Dr. Susan Fleming, Dr. Tanya Gille, Dr. Tricia McElroy and Dr. Craig First. I want to specially thank Mrs. Penick for believing in me even when I didn't believe in myself, in Dr. Cummins for making my first semester at the University of Alabama a positive experience with Intro to Graduate Study and for her patience, Dr. Gille and Dr. Fleming for encouragement over the last eight years and Dr. Tricia McElroy for being on my committee without ever having met me. I would also like thank Dr. Todd Westgate for his friendship and for recommending Dr. McElroy. I also thank Dr. Craig First for being on my committee and for making set theory understandable.

I would also like to take this opportunity to thank the professors with whom I've had classes over the years, especially Mrs. Penick, Dr. Fleming, Dr. Cummins, Dr. Joanna Biermann and Dr. Margaret Butler.

Great thanks goes to my dear friend Dr. Joseph Landers at the University of Montevallo not only introduced me to the music of Oliver Knussen but was very helpful in the research process.

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Introduction

Oliver Knussen is considered by his peers, new music enthusiasts, and critics to be one of the preeminent British composers of our day. Though more well known for his larger forms, such as his three Symphonies, and two chamber operas, *Where the Wild Things Are* and *Higglety-Pigglety Pop!*, Knussen has written many fine works for small chamber ensembles and solo instruments. He is a gifted orchestrator and has a seemingly limitless ability to put together groupings of instruments to create unique timbres. His writing for voice in his songs, as well as in his two chamber operas, makes excellent use of extended vocal technique. His excellence as an orchestrator is undoubtedly due in part to his early exposure to the sounds of the instruments of the orchestra, but also as a result of his prolific experience as a conductor.

Knussen was born in Scotland in 1952, but the family soon moved to London early in Knussen's life where his father, Stuart, was principal double bassist of the London Symphony Orchestra. Knussen spend much of his childhood and adolescence backstage at LSO rehearsals. This early exposure to the sounds of the instruments of the orchestra, both individually and as a whole, is very evident in the colorful orchestration of Knussen's music. His use of the different timbres of individual instruments and how they work together is very imaginative. This ear for orchestration is apparent in all of his

compositions including his solo piano works. He explores all the possibilities of the piano through use of all three pedals and extreme dynamic contrasts.

Knussen is easily as well known for his conducting as for his composition. His development as a conductor began with his first Symphony at the age of fifteen when he stepped in as a last-minute replacement for an ailing conductor. He first conducted the London Sinfonietta in 1981 and made music director of that ensemble in 1998. Knussen was named chief guest conductor of the Residentie-Orkest, The Hague, in the 1990s and has appeared as guest conductor for many of America's leading orchestras. He has also made many prize-winning recordings and has recently signed an exclusive recording contract with Deutsche Grammophon. He is a champion of contemporary music, having conducted recordings of the music of such composers as Goehr, Britten, Carter, Davies, and Takemitsu. The Aldeburgh Festival named him as artistic director from 1983 to 1998, and he was in charge of contemporary music activities at the Tanglewood Music Center from 1986 to 1993.

By most accounts Knussen began composing around the age of six and studied composition with John Lambert in London between 1963 and 1969. With his first Symphony, written and conducted at the age of fifteen, he came to prominence not only in London where the piece premiered, but also in America where he conducted the first two movements at Carnegie Hall.

This early success did not come without its disadvantages. In an interview with Paul Griffiths for his book *New Sounds, New Personalities*¹ Knussen reflected on the benefits and

¹ Paul Griffiths, "Oliver Knussen," *New Sounds, New Personalities: British Composers of the 1980s*, 54.

challenges of receiving accolades so early in his career. On the one hand, he says that he learned about orchestration from hearing his own music played by an orchestra and was able to hear in performance what had initially been in his head. He also received several commissions from that event, chiefly the *Concerto for Orchestra*. One of the major challenges was what he called the “PR hype” that surrounded such a young composer and resentment from colleagues whom Knussen characterized as actually “deserving those performances.” Bayan Northcott writes in *The Musical Times* that the attention Knussen’s *First Symphony* received created a “journalistic backlash.” It was suggested that “undue influence was being exerted upon Knussen’s behalf to bring his music to performance at all.” As a result performances and commissions dwindled over the next few years.² Knussen decided to go somewhere else and start over.

In 1970 he came to America for the first of many times. Between the years of 1970 and 1976 Knussen spent a great deal of time in the United States, during which time he studied composition with Gunther Schuller both privately in Boston and at Tanglewood. He has maintained a connection to the latter throughout his lifetime. His time in America introduced him to a variety of influences that would transform his compositional life. He has said that it was during his first trip to New York City that he came upon the music of Elliot Carter. He bought the two-piano score of Carter’s *Piano Concerto* and *Double Concerto* and studied these scores carefully. He told Paul Griffiths that he discovered how Carter put together these pieces, specifically the basic materials from which they were built, pulses and intervals, and how he treated pairs of intervals.³ The influence of Elliott

² Bayan Northcott, “Oliver Knussen,” *The Musical Times* 120, No. 1639 (Sep. 1979), 729.

³ Griffiths, 56.

Carter can be seen in much of Knussen's work. This influence is seen primarily in his frequent use of metric modulation and the all-interval tetrachord.

The all-interval tetrachord is a collection of four pitch classes from which all six intervals classes can be derived by various inversions. There are only two possible all-interval tetrachords. In set theory notation these are [0,1,4,6] and [0,1,3,7]. It is an effective and efficient way to use a very recognizable sound source as a way to generate the materials of a piece. This set of pitches gives the maximum intervallic profile from the minimum number of pitches. This is ideal for Knussen's music because his goal as a composer is to generate the most possibilities for development from a small cell theme. This is particularly evident in *Variations for Piano*.

Metric modulation is a change, or modulation, from one time signature or tempo to another by making a particular note value of the first time signature/tempo is equivalent to another note value of the subsequent time signature/tempo. It is a way to regulate changes in pulse so that those changes don't interfere with the ability to recognize the surface events, such as the harmonic and melodic cell development. Through metric modulation the cell remains identifiable at any tempo. Elliott Carter has been credited with developing this rhythmic compositional device. This is one of the aspects of Carter's compositional style that Knussen found so fascinating when he first began studying the scores of Carter's music.

The following is an excerpt is from measure 66 of Elliott Carter's *Night Fantasies* showing one of the earliest examples of metric modulation.

Figure 1.1

Figure 1.1 shows a musical score for measure 66 of Elliott Carter's *Night Fantasies*. The score is for piano and features a 3/2 time signature. A red box highlights a tempo change annotation: "← ♩ = ♩ →, ♩ = 67.5". Another red box highlights the final measure of the excerpt, which is marked with a 12/8 time signature. The score includes dynamic markings such as *f marc.* and *f marc.*

Figure 1.2, measure 72 Knussen's *Variations for Piano*

Figure 1.2 shows a musical score for measure 72 of Knussen's *Variations for Piano*. The score is for piano and features a 4/4 time signature. A red box highlights a tempo change annotation: "← ♩ = ♩ → ♩ = c.48 sostenuto". The score includes various dynamic markings such as *mp*, *ppp*, *mf*, and *sub. p*, as well as performance instructions like *(Ped.)*, *mf tolling*, and *III Ped.*

While Knussen was influenced by many composers he also began to influence other composers while still in his teens. In his interview with Paul Griffiths for his book *New Sounds, New Personalities: British Composers of the 1980s*, Simon Bainbridge was asked by Paul Griffiths if he knew much about contemporary music before he went to the Royal Academy of Music in London. Bainbridge replied that he was and that he had Oliver Knussen to thank for that. He speaks of meeting Knussen at the Central Tutorial School for Young Musicians where they were both students. The first thing Knussen said to Bainbridge was, “Do you like Schoenberg and Stravinsky?” to which Bainbridge simply replied, “Do you like Tosca?” It was then Bainbridge began his tutorial in contemporary art music through listening to Knussen’s extensive record collection. He said to Griffiths that he had a lot to learn about contemporary music and it was “a great opportunity to hear so much of it for the first time.”⁴

Knussen’s compositional influences are wide-ranging from Ives, Berg, Copland, Messiaen, Carter, Britten, to Schuller. He has said though, that his approach to composition, and the system he uses harmonically, texturally, rhythmically and otherwise, is determined by the particular piece on which he is working. He regularly uses twelve-tone systems and small-cell development. The particular sound associated with his writing has remained in Knussen’s work throughout his compositional life. In his article, “Harmonic Practices in Oliver Knussen’s Music since 1988: Part 1,” Julian Anderson observes the following about Knussen’s compositions to that date:

At age 50 Oliver Knussen has an output of formidably accomplished works behind him, composed at consistently high levels of invention and imagination, instantly

⁴ Griffiths, 39.

recognizable both for their harmonic language and their clear, resonant instrumentation.⁵

I have studied the scores for several of his other pieces including *Songs Without Words*, *Third Symphony*, *Whitman Settings*, and *Flourish with Fireworks*. There is a continuity in his compositional style that puts his compositional fingerprint on the music. This fingerprint is Knussen's unique combination of harmony, rhythm, theme development, texture and sound. The orchestration, timbres and assortment of chamber ensembles, have all been utilized in such a way to bring the best out of the music.

⁵ Julian Anderson, "Harmonic Practices in Oliver Knussen's Music since 1988: Part 1," *Tempo*, New Series, No. 221 (July 2002), 2.

General Characteristics of Knussen's Music

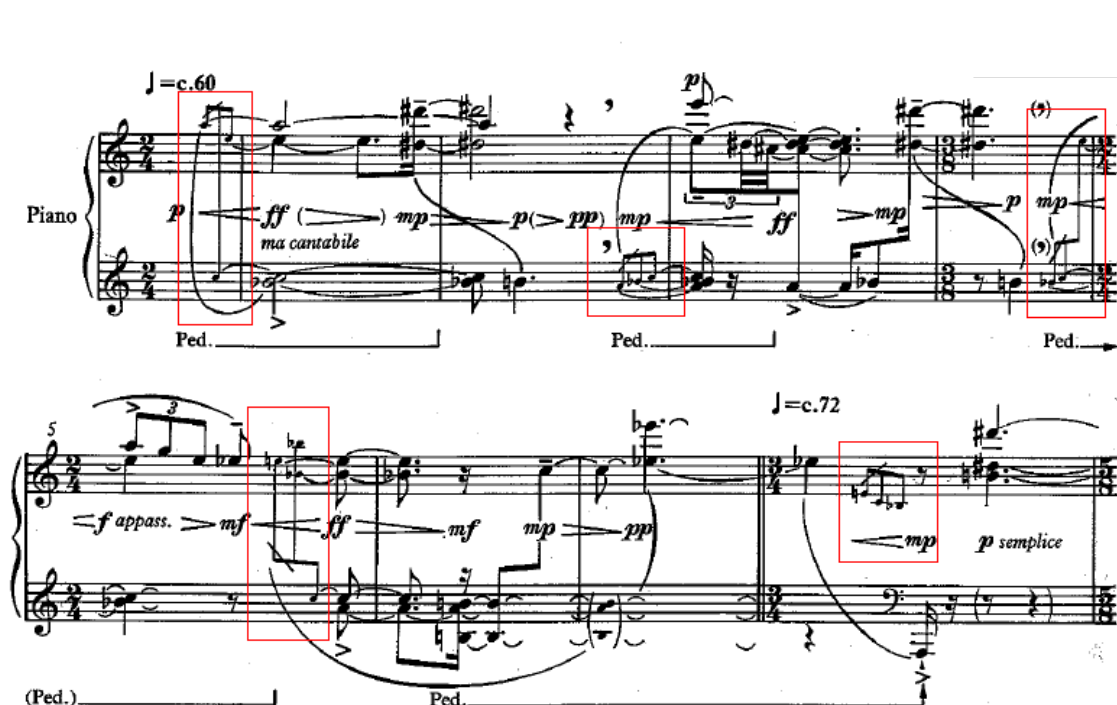
All composers deal with the basic elements of music: rhythm, melody, harmony, texture, dynamics, and timbre. A composer's personal stamp, what makes Mozart sound like Mozart, and Beethoven sound like Beethoven, is the characteristic way in which the composer puts these elements together. When a musician begins preparing a piece of music each of these elements must be considered and analyzed. Knussen has several different ways in which he assembles these elements.

The rhythmic component in Knussen's compositions is generally very complex. Metric modulation and frequent meter changes are present in the majority of his pieces. These two compositional devices serve to keep the rhythm always moving, never standing still. This is true even in slow pieces such as Prayer Bell Sketch. The tempo indications, metronomic markings and rubato markings are very meticulously detailed.

Melodies and melodic material are frequently disjunct with wide leaps and covering a large range span. This is not as great a challenge for the piano as it is for many other instruments, particularly voice.

The harmonic language of Knussen combines the more twelve-tone aspects of serial treatment of small cells of pitches, while at the same time retaining a sense of a tonality. One can hear a general tonal center but it would be difficult, if not impossible, to assign a label of major, minor, or any one of the church modes to any of his works. The tritone is to Oliver Knussen what the perfect fifth was to Mozart. It is the fulcrum on which he bases his tonality. It is his own particular blending of diatonicism and chromaticism that creates the sound of his harmonic language. He often uses grace notes to frame a chord.

Figure 2.1, *Variations for Piano*, measures 1 - 8



The texture of Knussen's compositions is always clear and concise. All voices are clearly heard. In general he has a bass line foundation, a harmonic structure and a melodic

component. All voice lines are treated to some form of development. His pieces are generally in a three part form. He puts together interesting combinations of instruments in his orchestral and chamber works and uses extended techniques and special effects in order to get as many colors out of the instruments as possible.

Knussen's scores are meticulously marked in great detail. There are very few details left to interpretation. He wants his music to be played as he has conceived it and makes every effort to use both traditional music symbols as well as copious performance notes both within the score and at times in performance notes in the preface of the score.

The Solo Piano Music

In this paper I focus on three pieces, each composed in a different decade spanning the twenty-year period between 1977-1997. Though I expected to see a change of some kind in these pieces that would delineate different compositional periods for Knussen, I did not find this to be the case. There are many similarities between the pieces, mostly related to the harmonies employed by Knussen and his developmental style, and also in the technical demands required of the pianist.

In the early stages of learning a piece of music a pianist must make decisions regarding when and how to use the pedals on the piano, especially the damper pedal. In music of the past, where pedal markings in the music are likely to have been chosen by an editor, the pianist has to make judgements about where the pedals should be used to best convey the musical intent of the composer. The performer may consult several editions, listen to recordings, and research performance practice to make appropriate choices. Knussen has taken the work on himself rather than leaving it up to the pianist. The pedal markings for his piano pieces is detailed down to the very beat upon which a pedal or combination of pedals is to be depressed and released. Liberal use of the damper and una corda pedals is a part all three pieces, but in *Variations* he uses all three pedals, occasionally at the same time. This presents a challenge to the pianist to become fluent

with all three pedals separately and in combination. Most people who have played piano at all are familiar with the functions of the damper and una corda pedals but the sostenuto pedal is not used with such regularity. It also requires that the instrument on which the pieces are to be played have three functioning pedals. It is not uncommon for a piano to have a damper and una corda without the center pedal. This pedal allows the pianist to sustain a particular key, usually in the lower part of the keyboard, while the remaining keys are not affected. The sostenuto pedal is used frequently in *Variations for Piano*.

One of the greatest challenges to the pianist preparing to perform music such as Knussen's is making the decision about memorizing. It has become standard performance practice with contemporary works to have the score at the piano during the performance. This is largely due to the difficulty of memorizing that contemporary music presents, with its frequent use of less familiar tonal systems and complex rhythmic and melodic material. It is not advisable to be dependent on the score, however. The frequent wide leaps from one end of the keyboard to the other and frequency of both hands being at opposite ends of the keyboard at one time make it necessary to have a large portion of the music memorized. The pianist will need to "spot" the location on the keyboard where the hand(s) will go next before reaching for that point. If large portions of the music are not memorized the pianist runs the risk of losing his/her place looking back and forth from the score to the keyboard. Where to be focused on the printed score and where to be focused on the keyboard are decisions which need to be made during the preparation process. This is a factor to be considered in learning Knussen's solo piano works where the pianist's hands are frequently at opposite ends of the piano. It is certainly appropriate to have the

music at the piano during performance but this should not be perceived by the pianist as a crutch but rather an aid in rendering the most polished performance possible.

Rather than discuss the pieces in chronological order I will begin with *Variations*. It is the longest, most complex, and most technically demanding of the three pieces and will be the point of comparison with the other two works. I have included three appendices with pitch inventories, interval content, meter, and metric modulation information as a visual representation of the shape of the form of each piece. This ternary shape is a common thread among these pieces and I believe a study of his works in other genres would reveal a similar shape. I created these charts as an analytical tool for myself but found them so revealing that I believe it is important to include them, and the information they provide, as part of this paper. (See Appendices B, C, and D.)

Variations for Piano, Op. 24, (1989)

Variations for Piano, Op. 24 is dedicated to Peter and Regina Serkin. The piece was composed for Mr. Serkin and has been recorded by him for both Virgin Records and BMG Records. In the liner notes for the 1993 Virgin Classics recording Knussen states that “the variations of Stravinsky, Copland and Webern provided intimidating models for richness of design and character in extreme concision.”⁶ In my telephone conversation with Serkin he said that in preparation for the composition of *Variations for Piano* he studied Beethoven’s *Diabelli Variations*, Bach’s *Art of the Fugue*, and *Goldberg Variations*, Webern’s *Piano Variations* and Copland’s *Piano Variations*.⁷

Knussen’s are a set of twelve variations on a theme of six notes in a three-part formal design. The first five are character variations, followed by four variations with a passacaglia, then three more “etude-like” variations which serve as a coda to the piece. The variations move seamlessly from one to the next during which Knussen explores the timbral possibilities of the piano. Each variation has its own rhythmic pattern, but the

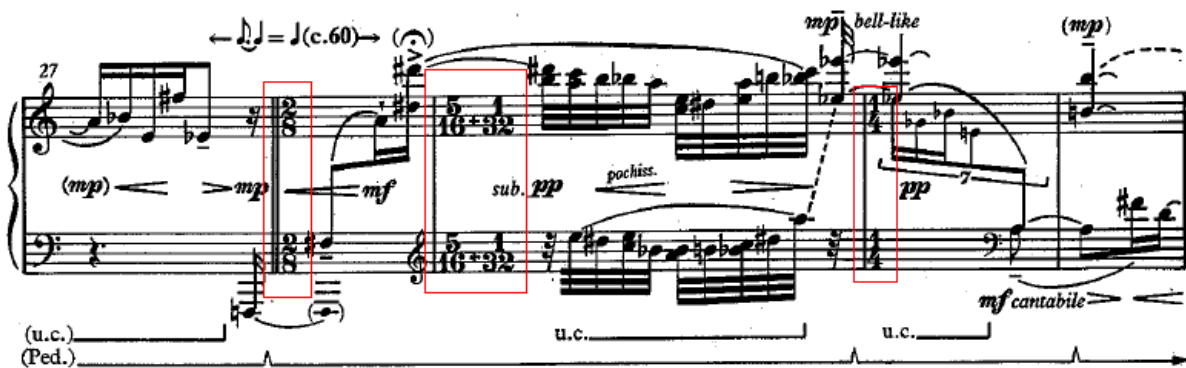
⁶ Oliver Knussen, The Chamber Music Society of Lincoln Center, Virgin Classics, 1993. 0 777 59308 2 5

⁷ Peter Serkin, telephone call, Friday, March 25, 2011, 10:30 a.m.

movement of each variation into the next is facilitated with extensive use of metric modulation. This creates a sense of fluidity considered to be a characteristic of the continuous variation form. This fluidity makes it difficult to hear the division between individual variations on first and even subsequent hearings, as there is no audible definite point of transition in several of the variations.

The time signatures used in this piece not just the standard 4/4, 3/4, 6/8, 3/8 and so on, but also more specific counting directions such as 5/16+1/32 and 1/4. This is yet another method used by Knussen to set up a continuous rhythmic motion.

Figure 4.1, measures 27 – 31, *Variations for Piano*, Op. 29



Knussen's orchestral sound is clearly evident in the layering of chords, punctuating flourishes, and long bass notes. He uses the full capacity of the piano in both timbral considerations as well as registral contrasts. There are at times three layers of sounds going on at the same time. Each variation has its own character with the theme either spread out into transpositions, rhythmically augmented, or with the full expanse of the keyboard. The music is written on two to three staves depending on the ranges of the

notes and the arrangement of the voicing of the harmonic and melodic elements. This is very helpful to the pianist in reading the music. Time signatures are changed with great frequency.

The detail with which Knussen prepares and marks his scores is illustrated with figure 4.2. Dynamic markings are in yellow, rhythmic markings are in blue and pedal markings are in pink. The music is scored onto four staves, three treble staves and one bass staff. By scoring the music this way he creates a less cluttered score, accommodates his numerous markings, and clearly exposes the textural layers.

Figure 4.2, measures 53-55, *Variations for Piano*

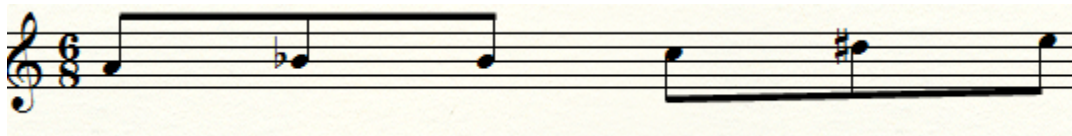
The image shows a musical score for measures 53-55 of 'Variations for Piano'. The score is written on four staves: three treble staves and one bass staff. The music is in 6/8 time. The score is annotated with various markings:

- Dynamic markings (yellow boxes):** ff , f , mf , ffz , f , ff , ff , mf , ffz , f , ff , ff , mf , ffz , f , ff .
- Rhythmic markings (blue boxes):** $5j:3j.$, 8^3 , 3 , 2 .
- Pedal markings (pink boxes):** (Ped.), III Ped., Ped.

The score includes various musical notations such as slurs, accents, and dynamic hairpins. The first staff has a treble clef and a key signature of one flat. The second staff has a treble clef and a key signature of one flat. The third staff has a treble clef and a key signature of one flat. The fourth staff has a bass clef and a key signature of one flat. The score is divided into measures 53, 54, and 55. The first staff has a measure rest in measure 54. The second staff has a measure rest in measure 54. The third staff has a measure rest in measure 54. The fourth staff has a measure rest in measure 54.

The six-note theme, or cell, is built on the pitches A, C, E, B-flat, D-sharp, and B-natural.

Figure 4.3 *Variations for Piano*, Theme in order:



These six pitches are divided into two partitions: the first four pitches, A, C, E, B-flat, are stated in what I will call a “flourish” theme, and the remaining two pitches, D-sharp and B, a major third. The first four pitches create the all-interval tetrachord found in so much of Knussen’s works. The major third of the second partition was criticized by Anthony Pople in his review of *Variations for Piano* as being “Brahmsian” and a weakness in the harmonic makeup of the piece.⁸ I disagree with this assertion as I believe the second partition of the theme is of equal importance to the first partition and requires development as well.

The first variation presents the theme in arpeggiated vertical sonorities with detailed pedaling indications to guide the pianist to connect the sonorities so they eventually sound together without having to be approached at the same time. Knussen puts this opening variation together in a very clever way making use of both vertical sonorities and linear movements. The aforementioned chord of a major third with the doubling is punctuated by quickly articulated strings of notes. Knussen is successful in presenting the thematic material in enough ways that the listener’s ear has begun to

⁸ Anthony Pople, *The Musical Times*, Vol. 132, No. 1784, (Oct 1991), 503.

recognize this theme just in time for the developmental treatments to which it will be subjected.

In the following examples the first partition of the theme is shown in the red and the second partition is shown in the blue.

Figure 4.4, measures 1 – 7, *Variations for Piano*

The image displays two systems of musical notation for a piano piece. The first system is marked with a tempo of $\text{♩} = c.60$ and a 2/4 time signature. It features two staves with various dynamic markings: *p*, *ff*, *ma cantabile*, *mp*, *p*, *pp*, *mp*, *ff*, *mp*, *p*, and *mp*. The second system is marked with a tempo of $\text{♩} = c.72$ and a 2/4 time signature. It also features two staves with dynamic markings: *f*, *appass.*, *mf*, *ff*, *mf*, *mp*, *pp*, *mp*, and *p semplice*. Red boxes highlight specific musical phrases in both systems, and blue circles highlight others. Pedal markings are present at the bottom of each system.

In the following portion of the third line of the first variation you will notice that the theme, both partitions, has been transposed to Transpositions 11, 9, and 5 respectively. You can also see the first of many metric modulations showing the tempo relationship from the first variation to the second.

Figure 4.5, measures 9 – 11, *Variations for Piano*

The image displays a musical score for measures 9 through 11 of the first variation of 'Variations for Piano'. The score is written for piano and consists of two staves: a treble clef staff on top and a bass clef staff on the bottom. The key signature is one sharp (F#), and the time signature is 3/8. The music is divided into four measures. Measure 9 starts with a piano (*mp*) dynamic. Measure 10 features a mezzo-piano (*mp*) dynamic. Measure 11 is marked *p dolce* (piano dolce). Measure 12 begins with a piano (*p*) dynamic, followed by a mezzo-forte (*mf*) dynamic. The score includes various musical notations such as slurs, accents, and dynamic markings. Pedal points are indicated by 'Ped.' markings with arrows pointing to the right. Blue boxes highlight the first and third measures, and red circles highlight the second and fourth measures. A tempo change is indicated by a double bar line with a new time signature of 6/8 and a tempo marking of $\text{♩} = \text{♩}$.

The second variation presents much the same material in much the same divisions, but in a more linear fashion with fewer and less dense vertical sonorities, and metrically faster. As in many of the following examples, there is also transposition.

Figure 4.6, measures 12 – 14, *Variations for Piano*

The image shows a musical score for measures 12 to 14 of the second variation of 'Variations for Piano'. The score is written for piano and bass staves. The tempo is marked as $\text{♩} = c. 96$. The key signature has two flats (B-flat and E-flat). The score includes various dynamic markings such as *mf*, *mp*, *p*, *pp*, *poco sf*, *f*, and *(p)*. There are also performance instructions like *(Ped.)* and *poco sf*. The score features several triplets and slurs. Annotations include blue boxes highlighting specific passages in both staves, a red circle around a note in measure 13, and a red triangle pointing to a note in measure 14. The bass staff has a *poco sf* marking in measure 13 and a *(p)* marking in measure 14. The piano staff has a *mf* marking in measure 12, a *mp* marking in measure 13, and a *mf* marking in measure 14. There are also *p* markings in measures 13 and 14. The score is annotated with various musical symbols, including slurs, triplets, and dynamic markings.

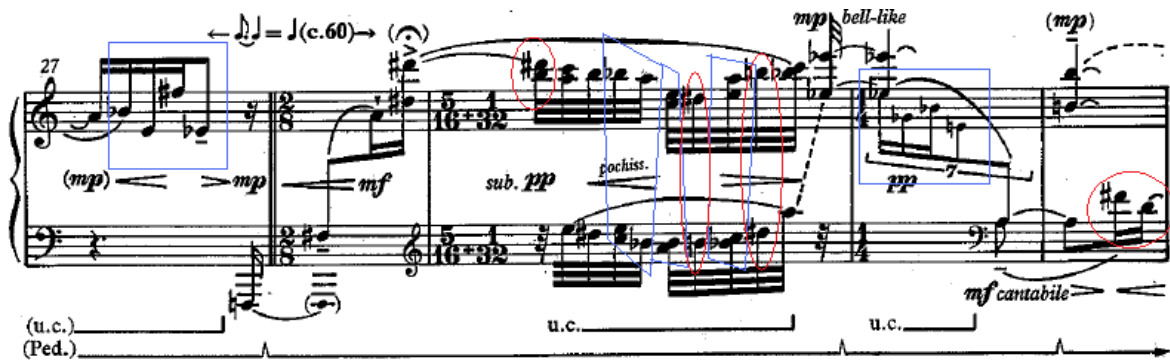
The third variation is longer and draws the thematic material out over a longer metrical space in its linear presentations and introduces a new figuration with close arrangements of the pitches with very clear articulation markings, first smooth and fluid, then with a more detached articulation, and many dynamic levels. It also states the six-note them in transposition. The low bass portion of the texture is not very active in this variation.

Figure 4.7, measures 22 – 25, *Variations for Piano*

The image shows a musical score for measures 22 to 25 of 'Variations for Piano'. The score is written for piano and consists of two staves: a treble clef staff and a bass clef staff. The tempo is marked 'p' (piano) and the tempo is 'andante ma calmo'. The time signature is 7/16. The tempo marking is '♩ = c. 60'. The score includes dynamic markings: *pp* (pianissimo), *mp* (mezzo-piano), and *p* (piano). There are also markings for 'Ped.' (pedal) and 'u.c.' (una corda). The score is annotated with blue boxes and red circles. The blue boxes highlight specific melodic lines in the treble staff. The red circles highlight specific notes in the treble staff. The bass staff has a few notes and rests, with a *pp* marking and a 'u.c.' marking.

In measure 29 of the following portion of variation three several statements of the theme occur in quicker rhythmic durations and very close together.

Figure 4.8, measures 27 – 30, *Variations for Piano*



Measure 41 of this variation is another example of several presentations of the theme in close succession. Notice in the first rectangle that both the first and second partitions of the theme are present in the two chords.

Figure 4.9, measure 41, *Variations for Piano*



The fourth variation is the climactic point of the first section. Knussen is building up the tension dynamically, rhythmically, and texturally, sending the pianist all over the keyboard, with more intensity, only to bring it back down at the end of the variation with a foreshadowing of the passacaglia with an almost ostinato bass line moving down from D-flat, up to F, then down to C. This seems to set up a tonicization of C briefly which leads the bass line of the fifth variation right into the statement of the ground bass at the beginning of the sixth variation. You will see also many allusions to the theme; sections which look like the fanfare, but have a minor third rather than a major third in the first partition.

Figure 4.10, measures 50-52, *Variations for Piano*

The image shows a musical score for measures 50-52 of *Variations for Piano*. The score is written for piano and consists of three staves: piano (top), treble (middle), and bass (bottom). The tempo is marked as $\text{♩} = c.96$. The key signature has one flat (B-flat). The time signature is 2/4. The score includes various dynamics such as *f*, *poco f*, *ff*, *sf*, *f*, *mf*, *sf*, *ff*, *p*, *mf*, and *loco*. There are also performance markings like *(Ped.)*, *Ped.*, and *loco*. The score features complex rhythmic patterns, including triplets and sixteenth notes. A blue box highlights a section in the piano staff, and a red circle highlights a section in the treble staff. The score is annotated with various symbols and markings, including a circled '8' and a circled '1'.

Figure 4.11, measures 53 – 55, *Variations for Piano*

Variation five has a bass line (the aforementioned foreshadowing of the ground bass), which consists of the pitches of the first partition of the theme. This is labeled in the music with “tolling”.

Figure 4.12, measures 71 – 73, *Variations for Piano*

The ground bass line, consisting of five of the six pitches of the theme, is the stabilizing factor for these next four variations. The first partition is the main portion of the bass line. As would be expected in a passacaglia, the ground bass is heard alone at the beginning. It remains steady while the rhythmic activity in the upper register is varied with first sixteenth notes, then triplet eighth notes. This is done at a steady pace. Many of the figurations have the shape of the fanfare, but again, aren't quite intervallically correct.

Figure 4.13, measures 82 – 89, Variations

82

ppp

pp

$\text{♩} = \text{c.}60$

u.c.

Ped.

(III Ped.)

NB the moving line always *poco rubato*, the bass relatively steady (*pp*)

87

pp

p espr.

non troppo

pp

pp

p

Ped.

(III Ped.)

Ped.

Triplet eighth-note figurations begin in variation seven, which then slows between variations seven and eight to clear the palette for the restatement of the thematic material.

Figure 4.14, measures 96 – 98, *Variations for Piano*

The image displays a musical score for measures 96 to 98 of *Variations for Piano*. The score is written for piano and includes both a treble and a bass staff. The key signature is one flat (B-flat major or D minor), and the time signature is 3/4. The piece is marked with a tempo of *mp* (mezzo-piano). The score features several annotations and markings:

- Measure 96:** The treble staff begins with a triplet of eighth notes marked *p* (piano). A blue box highlights this triplet. The bass staff has a half note chord marked *pp* (pianissimo) with a pedaling instruction *(Ped.)*.
- Measure 97:** The treble staff continues with a triplet of eighth notes marked *mp*. A red box highlights a specific eighth note within this triplet. The bass staff has a half note chord marked *pp* with a pedaling instruction *(Ped.)*.
- Measure 98:** The treble staff features a triplet of eighth notes marked *p* with the instruction *chiaro* (clear). A blue box highlights this triplet. The bass staff has a half note chord marked *pp* with a pedaling instruction *(Ped.)*.

Additional markings include a fermata over the first measure, a *mp* dynamic marking above the treble staff in measure 97, and a *pp* dynamic marking above the treble staff in measure 98. The bass staff includes a *pp* dynamic marking in measure 97 and a *pp* dynamic marking in measure 98. Pedaling instructions *(Ped.)* are present at the beginning of measures 96, 97, and 98, with a *III Ped.* instruction spanning measures 97 and 98. A copyright symbol *©* is located below the bass staff in measure 98.

The theme is stated with both partitions at the beginning of variation eight. This variation begins with the chordal statements of the theme then moves to sixteenth and thirty-second note runs interspersed with more chordal statements.

Figure 4.15, measures 107 – 110, *Variations for Piano*

The image shows a musical score for measures 107 to 110 of *Variations for Piano*. The score is written for piano and bass. The tempo is marked "a tempo" with a quarter note equal to approximately 60 beats per minute ($\text{♩} = c.60$). The key signature has one flat (B-flat). The score includes dynamic markings such as *ff*, *mf*, *f*, *mp*, and *sffz*. There are also performance instructions like "l.v." and "8." with a dotted line. The score features complex rhythmic patterns, including sixteenth and thirty-second note runs, and is annotated with blue boxes and red circles highlighting specific musical elements.

Figure 4.16, measures 111 - 117, *Variations for Piano*

The image displays two systems of musical notation for measures 111-117 of *Variations for Piano*. The first system (measures 111-113) is written for the left hand (bass clef) and includes dynamic markings such as *p*, *pp*, *mp*, *mf*, *poco f*, and *molto mp*. It features a large slur over measures 111-113 and a smaller slur over measures 114-117. Performance instructions include "(Ped.)", "III Ped.", and "(perhaps 1/2 Ped.)". The second system (measures 114-117) is written for the right hand (treble clef) and includes dynamic markings such as *mp*, *p calmo*, *mp*, *mf*, *mp*, and *p*. It also includes performance instructions like "(Ped.)". Both systems contain various musical notations including slurs, accents, and dynamic hairpins. Red circles and blue boxes highlight specific musical features in both systems.

In variation nine the uppermost part of the texture is a meandering line of pitches in triplet sixteenth note figurations which moves down through the texture at which point it alternates between the upper and middle parts of the register where it becomes doubled in measure 133 through 140 and then stops suddenly for a stately *maestoso* final presentation of the ground bass before resuming an acceleration into the third and final section of the piece, the etude-like coda variations. The two parts of the theme are presented in many figurations and transpositions throughout.

Notice also that Knussen uses all three pedals of the piano in order to achieve the desired tonal effects throughout this variation. The bass line is held by the sostenuto pedal at some points and slightly blurred by the damper pedal in other places. He has indicated these very clearly in the score.

Figure 4.17, measures 127 – 130, *Variations for Piano*, showing pedal markings in green.

The image shows a musical score for measures 127-130 of 'Variations for Piano'. It consists of three staves: a grand staff (treble and bass clefs) and a separate bass line. The music is in 3/8 time. The grand staff features a complex melodic line with triplet sixteenth notes and dynamic markings such as *mf*, *p*, *f*, and *poco f*. The bass line provides a steady accompaniment with dynamic markings like *ppp* and *pp*. At the bottom of the score, there are four green boxes indicating pedal markings: '(Ped.)', 'III Ped.', 'Ped.', and 'III Ped.', which correspond to the sostenuto and damper pedals. The score also includes various performance instructions like *mf*, *p*, *f*, *ppp*, *pp*, and *poco f* (R.H.).

Figure 4.18, measures 135 - maestoso section of variation nine, *Variations for Piano*

The image shows a musical score for measures 135-138. At the top, it is marked with a tempo of $\text{♩} = 60$ and the instruction "maestoso". The score is in 2/4 time and features a grand staff with treble and bass clefs. The first system (measures 135-136) is marked "molto f sonore" and includes dynamic markings of *sf* and *ff*. The second system (measures 137-138) is marked "p" and includes *ff* and *sfz*. A "Ped." line is shown below the first system. Red circles highlight specific chordal textures in measures 135 and 136, while blue boxes highlight melodic lines in measures 137 and 138.

There is an increase in both tempo and harmonic rhythm in these final three measures of variation ~

Figure 4.19, measures 141 - 143, *Variations for Piano*

The image shows a musical score for measures 141-143. It begins with a tempo of $\text{♩} = 60$ and an "accel." marking. The score is in 2/4 time and features a grand staff with treble and bass clefs. The first system (measures 141-142) is marked "pp" and includes dynamic markings of *p*, *mp*, and *mf*. The second system (measures 143) is marked "f" and includes *ff* and *sfz*. A "Ped." line is shown below the first system. Red circles highlight specific chordal textures in measures 141 and 142, while blue boxes highlight melodic lines in measures 142 and 143. The tempo is indicated to increase to $\text{♩} = \text{c.}80$ by the end of the section.

The piece becomes decidedly more virtuosic at this point. The rhythmic values have become faster, the dynamic levels have increased to *fff* before slowing and becoming quieter before the final variation. Notice in the following excerpt of the first four measures of Variation X that we have mostly thirty-second notes, louder dynamics, but also the soft low notes in the third measure which Knussen has marked (gong). The theme is also stated in very quick succession.

Figure 4.20, measures 144 – 147, *Variations for Piano*

The image shows a musical score for measures 144 to 147 of 'Variations for Piano'. The score is written for piano and consists of two staves. The key signature is one sharp (F#) and the time signature is 6/16. The music is characterized by rapid sixteenth-note passages. Measure 144 starts with a forte (*f*) dynamic and includes a triplet of sixteenth notes. Measure 145 features a fortissimo (*ff*) dynamic with the instruction 'brillante'. Measure 146 has a mezzo-forte (*mf*) dynamic. Measure 147 begins with a fortissimo (*ff*) dynamic and includes the instruction 'loco'. A 'gong' effect is indicated in the bass staff at the end of measure 147, marked with a circled 'P' and 'B'. The score includes various performance markings such as accents, slurs, and dynamic changes. Blue boxes highlight specific rhythmic patterns in the right hand across all four measures. A dashed line above the first measure indicates an 8-measure phrase. The score concludes with a pedal point and a rightward-pointing arrow.

Variation ten also contains two measures in which all twelve pitches are represented. These are successive statements of the theme continuously moving up from the baseline beginning in measure 163 up to the up register in measure 166 where it moves directly into variation eleven.

Figure 4.21, measures 163-165, *Variations for Piano*

The image shows a musical score for measures 163-165 of *Variations for Piano*. The score is written for piano and consists of two staves. The tempo is marked as $(\text{♩} = c. 80)$. The key signature is one sharp (F#). The score begins at measure 163 with a dynamic marking of *sfz*. The music features a complex, chromatic texture with many accidentals. Dynamic markings include *mp*, *mf*, and *f*. The phrase *mf sempre* is written below the first staff. At the end of the passage, there is a marking for the third pedal: *III Ped.* with a wavy line and an arrow pointing to the right.

Final measure of variation ten moving into variation eleven:

Figure 4.22, measures 166 – 167, *Variations for Piano*

The image shows a musical score for measures 166 and 167 of the *Variations for Piano*. The score is written for piano and includes a tempo marking of $\text{♩} = c.96$ *tumultuoso*. The music is in 3/4 time and features a complex texture with multiple voices. The first staff (treble clef) begins with a *piu f* dynamic and transitions to *ff*. The second staff (bass clef) features a prominent bass line with octaves and triplets. The score includes a *Ped.* (pedal) marking and a *(III Ped.)* marking. Several measures are highlighted with blue boxes, indicating specific musical features or transitions. The notation includes various ornaments, slurs, and dynamic markings such as *sf* and *ff*.

The twelfth and final variation ends the piece much the same way it started. The chords of major thirds with octave doubling have returned. This variation is almost entirely chords in slow triplet sixteenth note groupings. The dynamic level decreases through the variation. The last two measures of the piece are almost humorous in the statement of the chord containing both the intervals of major second, major third, and tritone, in much the same figuration as the beginning with a quick crescendo to fortissimo, only to end on a final soft major third with an octave doubling. Peter Serkin said that originally Knussen had marked the dynamic level for this variation as fortississimo and later changed the dynamic level to the very quiet dynamics of its completed form.

The following figure is the entire twelfth variation. Not only has the dynamic plan of this variation been simplified but the harmonic activity has been simplified as well. There are only a few appearances of the four note flourish and it is not in its original intervallic form. The major third is the focus of this variation. Rhythm, harmony, texture and timbre have all settled almost to the point of dissipation until the final flourish in the last measure.

Figure 4.23, measures 176 – 180, Variation 12

The musical score for Variation 12, measures 176-180, is presented in two systems. The first system (measures 176-178) is in treble clef, and the second system (measures 179-180) is in bass clef. The tempo is marked as $(J=c.60)$ and the mood as "calmo ma andante". Dynamics include *mp dolce*, *pp*, *p*, and *mp*. The score features several four-note flourishes circled in red, and other musical elements are highlighted with blue boxes. Pedal markings "(Ped.)" are located at the bottom of both systems.

Figure 4.24, measures 183 – 188, Variation 12

Appendix B is a chart of a measure-by-measure pitch inventory given in integers, as well as the metric modulations and meter changes occurring in the piece. When the pitches of each measure are given in order it is evident that the melodic and harmonic makeup of the piece is almost entirely made up of major seconds, minor seconds, and major thirds. The tritone harmony is created by the distribution of these pitches in the various vertical chord structures and linear moving rhythmic figures. The metrical modulations and meter changes which allow for the flow of one variation into the next is also included on this chart.

Sonya's Lullaby, Op. 16 (1979)

Sonya's Lullaby is described by his publisher, Faber Limited, London, as being “an intuitively composed sequence of variations around a three-chord refrain.” On Faber’s website Knussen himself says that the term lullaby is “used in the sense of an incantation to sleep.” He said Sonya, his daughter, was an insomniac four-month-old when he began to sketch the piece in October of 1977.⁹ The piece was written for and premiered by Michael Finnessy. The premiere was at the Galerie Schwarzes Kloster, Freiburg-in-Breisgau, on October 10, 1977.¹⁰

Julian Anderson has said about *Sonya's Lullaby* that it is “one of Knussen’s only intuitively composed pieces,” and that “the pitches sound logical, inevitable and coherent, however freely chosen.”¹¹ A closer look at the piece reveals the same painstaking work in putting this music to paper as with all of his other compositions. *Sonya's Lullaby* is the middle movement of a three movement piece; the first movement is *Autumnal*, for violin and piano, the third movement is *Cantata* for oboe and string trio. The pieces were originally composed separately before Knussen decided to combine them for a triptych of chamber pieces; however, the movements are published as separate pieces and Knussen himself has encouraged their performance apart from the other movements.

⁹ <http://fabermusic.com/Repertoire-Details.aspx?ID=1175>

¹⁰ Knussen, Oliver, Faber Music Ltd., (1979)

¹¹ Julian Anderson, “The Later Music of Oliver Knussen. Catching Up With Knussen During his 40th Year,” *The Musical Times*, Vol. 133, No. 1794, (August 1992), 394.

Knussen told Paul Griffiths in an interview that the form of the piece is a “sequence of seven different arcs spun out between repetition of a chordal refrain.”¹² This spinning out is achieved through the means of using the pitch content of the three chords to create the melodic material of the episodes. The first episode uses the pitches from the second chord, the second from the third, and so on, eventually using the pitches of all three chords for the melodic material. The score includes a page of detailed performance notes from the composer. The tempo is very slow and tranquil with a metronome indication of circa forty-eight to fifty-two to the quarter note. This piece never gets in a hurry. It begins with the three-chord refrain which with the bass line and the tri-tone ostinato include all twelve pitches. The ostinato of B and F is found throughout most of the piece, creating a rocking, berceuse-like quality which connects the refrain chords with the melodic arcs. The refrain is found in measures one, six, twelve, twenty-five, thirty-five through thirty-six, forty-eight, and fifty-one through fifty-four. The chordal refrain is treated to variation as well. It begins simply enough by the statement of the three chord, a bass line which, being Knussen, consists of a major third and tritone, ostinato figure. This is repeated exactly in measure six. The refrain in measure twelve is treated to a little rhythmic variation in the ostinato figure. The subsequent presentations of the chordal refrain are split up in various reorderings of the pitches of the chords and in more complex rhythmic variations.

¹² Griffiths, 63.

The following excerpt shows the first two three-chord refrain outlined in blue, the first two statements of the melodic material which makes up the “arcs” outlined in red, and the ostinato that continues through the piece and connects the refrains and arcs in green.

Figure 5.1, measures 1 – 8, *Sonya’s Lullaby*

The image displays three systems of musical notation for the first eight measures of *Sonya's Lullaby*. The tempo is marked **Molto tranquillo** with a metronome marking of $\text{♩} = \text{ca. } 48-52$. The score is for Piano and voice.

- System 1 (Measures 1-2):** The piano part features a steady eighth-note ostinato in the right hand and a similar pattern in the left hand. The vocal line begins with a melodic phrase. A blue box highlights the first two three-chord refrains. A red box highlights the first statement of the melodic material. A green box highlights the ostinato. The tempo marking is $\text{♩} = \text{ca. } 48-52$. The word **Piano** is written on the left. The word **Ped.** is written below the piano part.
- System 2 (Measures 3-4):** The piano part continues with the ostinato. The vocal line has a melodic arc. A blue box highlights the second three-chord refrain. A red box highlights the second statement of the melodic material. A green box highlights the ostinato. The tempo marking is $\text{♩} = \text{ca. } 48-52$. The word **Piano** is written on the left. The word **Ped.** is written below the piano part.
- System 3 (Measures 5-8):** The piano part continues with the ostinato. The vocal line has a melodic arc. A blue box highlights the third three-chord refrain. A red box highlights the third statement of the melodic material. A green box highlights the ostinato. The tempo marking is $\text{♩} = \text{ca. } 48-52$. The word **Piano** is written on the left. The word **Ped.** is written below the piano part.

Additional annotations include dynamic markings (*ppp*, *p*, *mp*, *poco sf*, *sub. ppp*), articulation marks (accents), and performance directions (*gently rocking*, *no cant.*).

Figure 5.2, measures 9 – 13, further development of all three components.

Figure 5.2 shows musical notation for measures 9-13. The top system (measures 9-11) features a piano staff with dynamics *mf*, *mp*, and *mf*, and a bass staff with *pp*. Performance instructions include *Pochiss. calando* and *A Tempo*. The bottom system (measures 12-13) features a piano staff with dynamics *pp*, *p*, and *mf*, and a bass staff with *pp*. Performance instructions include *Fantastico* and *[quasi rall.]*. Pedal markings (Ped.) are present below both systems.

Figure 5.3, measures 23 – 26, further development of refrain and arcs. The third chord is now the pitch material for the ostinato.

Figure 5.3 shows musical notation for measures 23-26. The top system (measures 23-24) features a piano staff with dynamics *mf*, *p sensibile*, and *mp*, and a bass staff with *p* and *mp*. Performance instructions include *calando* and *A Tempo*. The bottom system (measures 25-26) features a piano staff with dynamics *sub. più pp*, *estatico*, *mp*, and *p*, and a bass staff with *pp* and *mp*. Performance instructions include *poco a poco più capriccioso, ma ben in tempo*. Pedal markings (Ped.) are present below both systems.

The treatment of the variations of the both the refrain and the episodes is very similar in shape and rhythmic patterns as those of the *Variations for Piano*. Note values are made quicker and more rhythmically complex with changing groupings of notes and thickening of the texture and layering. Metric modulation is again employed to keep the momentum of the piece without ever giving an actual meter. Both the refrain and the episodes are treated to several types of variation; the vertical chords are pulled out to linear lines in several measures. The ostinato figure is given more rhythmic complexity as well as pitches being added to it. There is compression in both the presentation of the melodic material and in the refrain to such a point that measure twenty-three is a combination of the chords in the refrain as well as the melodic line compressed into the space of one measure. The ostinato continues to gain a fuller texture while the melodic material is presented in quicker note values. The climax of the piece begins in measure thirty-four with a thickening of the texture in the melodic material, the ostinato figure, and the bass line to a point where they begin to blend with large chords leaping from the low end of the bass clef to the high end of the treble clef. The development also includes a dynamic apex to its loudest point at measure forty after which point the compressed parts of the texture begin to fall away from each other and become less complex, ending the main body of the piece in measure fifty.

In the following excerpt you will notice several of the hallmarks of Knussen's compositional fingerprint. There is the dynamic contrast outlined in orange, the use of the *una corda* and damper pedals, outlined in pink. Notice in particular at the beginning of measure 41 the fortissimo dynamic marking in the first eighth count with the *una corda*

pedal marked to depress in the very next eighth count of the first beat. This is a very sudden change of dynamic and tone color.

By creating the three refrain with all twelve pitches Knussen is able to develop the chordal and the melodic material simultaneously. This creates a great deal of harmonic tension which is relieved by the coda.

Figure 5.4
Further development toward end of main section, just prior to coda.

The image displays a musical score for two systems of music, measures 41-50 and 44-50. The first system (measures 41-50) is divided into three sections: measures 41-43 marked 'molto dim e calando', measures 44-46 marked 'A Tempo', and measures 47-50 marked 'Maestoso ma molto tranquillo'. The score includes various dynamic markings such as *mf*, *sub. mp*, *p*, *pp*, *sfz*, and *ppp*. Performance instructions include 'Ped. u.c.' and '8va'. The second system (measures 44-50) continues the musical development with dynamic markings like *dim.* and *pp*. The score is annotated with blue and green boxes highlighting specific musical elements.

There is a very distinct coda beginning in measure fifty-nine. At this point there is more of a rhythmic ostinato with chords at either extreme of the keyboard. The notes of the ostinato, B and F, are heard in their original position on the keyboard in about every

two or three measures. The dynamic level descends to the quietest level of the entire piece, including a *pppp* indication in the antepenultimate measure. There is also an octave symbol of *15va* for “quintecima” which means to play the written pitches two octaves higher.

This coda creates an atmosphere of the piece drifting off to sleep as one would expect from a lullaby. The pitch inventory, in set theory notation, shows the number of pitches involved is decreasing as the harmonic tension is being released and the piece comes to a close.

Figure 5.5, measures 58 – 69, of coda. *Sonya's Lullaby*

The musical score for measures 58-69 of the coda of *Sonya's Lullaby* is presented in three systems. The first system (measures 58-61) begins with a tempo marking of *Ben in tempo* (♩ = ca. 48-52) *al fine*. The music is in 3/4 time. The first system includes dynamics such as *pppp* and *ppp*, and octave markings of *8va* and *15va*. The second system (measures 62-65) and third system (measures 66-69) continue the piece with dynamics like *ppp* and *p*, and include *15va* and *8va* markings. Pedal points are indicated at the end of each system.

Figure 5.6, measures 70 – 74, *Sonya's Lullaby*

The image displays two systems of musical notation for measures 70-74 of *Sonya's Lullaby*. The first system covers measures 70 and 71, and the second system covers measures 73 and 74. Each system consists of a piano (p) staff and a bass (b) staff. The piano staff is marked with a dynamic of *pp* and features a melodic line with triplets and slurs. The bass staff is marked with a dynamic of *pppp* and features a more complex rhythmic accompaniment with triplets and slurs. Performance instructions include "Ped." (pedal) and "u.c." (unaccompanied). A red box highlights a *pppp* dynamic marking in the bass staff of measure 71. The score is marked with "15va" at the top and "8va" at the bottom. A vertical bracket on the right side of the second system is labeled "[S.A.K. *13.6.77]".

The pitch inventory found in Appendix C bears out the form of this piece as a sort of ABA. The form can be seen in the increase in pitch content, texture of the three layers, the rhythmic complexity of the note values, and the dynamic level from the beginning of the piece up to the B section at measure twelve with the first appearance of the direction of “Fantastico”. The episodes in this first A section have between two to seven pitches and very few tempo directions to the B section, where the pitch content increases to an average

of eight to eleven pitches consistently with many tempo directions. The graph clearly shows the significant decrease in pitch content from the coda beginning at measure fifty-nine and a single tempo indication, *ben in tempo (quarter = ca. 48-52) al fine*.

Prayer Bell Sketch, Op. 29 (1997)

In the Programme Notes for this piece on Faber's website Knussen talks about a conversation he had with his friend and mentor, Japanese composer Toru Takemitsu in May of 1988. They were discussing a recital being planned by Peter Serkin of entirely new compositions for which both Knussen and Takemitsu had been asked to submit a piece. Knussen said that Takemitsu always started a piece with a title first. Takemitsu told Knussen that he would compose a piece for the title *Prayer Bell*. When the recital later took place the piece submitted by Takemitsu was not *Prayer Bell*, but rather was a piece written to the title *Les Yeux Clos II* (Eyes Closed). Knussen asked him a few years later why he did not write the piece *Prayer Bell*. Takemitsu replied that he felt *Prayer Bell* would be too difficult. After Takemitsu's death in 1996, Knussen said he spent a lot of time thinking of writing a *Prayer Bell* in memoriam of Takemitsu. He decided that yes, it probably was too difficult. So he instead wrote *Prayer Bell Sketch*, a piece of recollections and rearrangements of bell sounds, which to Knussen reminded him of Takemitsu. *Prayer Bell Sketch* was commissioned by Ms. Masako Okamura and Mr. Motoyuki Nakagawa in memory of Takemitsu. It was written expressly for Peter Serkin who premiered the work at the newly built Takemitsu Memorial Concert Hall in Tokya Opera City in September of 1997.¹³

In an interview with Daniel Jaffe of CompositionToday.com, Knussen talked about the composition of *Prayer Bell Sketch*. He said particularly that he "took a chord that he

¹³ <http://fabermusic.com/Repertoire-Details.aspx?ID-3124>.

used in virtually every one of his pieces in the '80s and I took a title that he hadn't used."¹⁴ That chord was the SEA chord which was a part of his waterscape compositions of the 1980s, which consists of E-flat (known as 'es' in German), E, and A. This created a three-note ascending motive consisting of a minor second and a perfect fourth. Takemitsu spoke of these pitches as being a "sea of tonality from which many pantonal chords flow".¹⁵ At this point in Takemitsu's composition life, the last twenty years of his life, he had begun to accept the Japanese musical heritage he had rejected earlier in his life, using such Japanese characteristic harmonies as pentatonic harmonies. Knussen took this chord and reinterpreted in his own harmonic language. He begins the piece with a simple statement of the pitches B-flat, D, and E.

Figure 6.0, measures 1-3, *Prayer Bell Sketch*
 "SEA" chord outlined in blue

These pitches contain the intervals of a major second and Knussen's favorite, the tritone. The harmonies and articulations indicated in the score evoke the sound of distant

¹⁴ http://cpositiontoday.com/artivles/oliver_knussen_interview.asp

¹⁵ Peter Burt, *The Music of Toru Takemitsu*. Cambridge University Press, Cambridge (2001), 181.

bells. As with *Variations*, and *Sonya's Lullaby*, *Prayer Bell Sketch* is also in a ternary form. The division between these three sections is less subtle in *Prayer Bell Sketch* than the other two pieces. The first twenty-two measures of this piece state the initial cell of B-flat, D, and E, embellish and transpose those pitches, until he brings it to an abrupt end with a quick crescendo to a sforzando chord of the pitches D, E, A-flat, a transposition of the original three pitches.

At measure twenty-three he begins a section with an entirely different aesthetic. The pitch content of this section is very compact; four pitches for most of the forty-two measure making up this section. The most common pitches in this section are B-flat, D, E, and A-flat. The combination of these particular four pitches contains the intervals of M3, M2, M3. However, B-flat to E, and D to A-flat (or g-sharp) creates two tri-tones. In fact, there is not a single measure in this piece that doesn't contain at least one tri-tone. There is harmonic ostinato in this section created by the repetition of these pitches between the two hands in two tri-tone chords. The measures which contain more than the four pitches are those in which a melody sneaks out from the outer voices taking the intervals from larger intervals to smaller intervals, then back to the tri-tones. It is in this section that we find the only chords which include an interval of a perfect fourth. Measures twenty-nine (0,3,8,9,T), thirty-five, thirty-six, forty-two (0,5,6,T), and fifty (0,3,8,9,T), contain the pitches necessary to contain both a minor second and a perfect fourth, the very intervallic content created by Takemitsu's "SEA chord." This section is the most unique among these three pieces. Neither of the other pieces spends so much time creating a sound just for the sake of the sound. This is characteristic of Takemitsu's approach to timbre. He did not like the strict rules of formal set theory and sought to explore organized sound.

You will notice in figure 6.1 the very soft dynamics outlined in orange, the marking for two pedals (damper and una corda) marked in green, and the asterisk directing the pianist to see the note at the bottom of the page. The note is shown in figure 6.2.

Figure 6.1, measures 23 -31, B section, *Prayer Bell Sketch*

The image shows a musical score for measures 23-31 of the B section of 'Prayer Bell Sketch'. The score is written for piano and consists of two systems of staves. The first system covers measures 23 to 26, and the second system covers measures 27 to 31. The tempo is marked as $\text{♩} = c.192$ ($\text{♩} = 48$). The dynamics are *ppp* *sempre, senza accenti, quasi legatissimo*, which is highlighted in orange. A green box contains the instruction '2 Peds. →' under the first system, and another green box contains '(2 Peds.)' under the second system. An asterisk is placed above the first note of measure 23, with a line pointing to a note at the bottom of the page (not shown here).

All three pedals are used beginning in measure 42. Because the damper and una corda pedals are working in tandem here the pianist will have to solve the problem of how to manipulate these three pedals.

Figure 6.2, measures 42 – 45, *Prayer Bell Sketch*

The image shows a musical score for measures 42-45 of 'Prayer Bell Sketch'. The score is in 4/8 time and features a complex harmonic texture with multiple voices. A green box highlights the pedal markings at the bottom of the page, which include '(Ped. III)' and '2 Peds.' with arrows indicating the duration of the pedal effects.

*NB. Between C and D accidentals apply for a whole bar,
And the middle voice (alternating A-flat and B-flat) should be brought out a little

In measure fifty-four begins a transition from this harmonic theme back to the more chromatic harmonies more familiar in Knussen's compositions. Knussen has composed a piece memorializing his friend and mentor with the aural stamp of the "SEA chord", while still maintaining his own musical voice. This is a characteristic of Knussen's that works in his favor. He is able to absorb the craftsmanship from his role models what without resorting to imitation. It is one of Knussen's strengths as a composer that he is able to keep his personal sound through not only three piano pieces each written for a different occasion and in each case with a particular person in mind. This is achieved through combining the various characteristics he admires from his models with his own sense of rhythm, form, harmony and his own imaginative sense of sound.

Conclusion

Oliver Knussen is the most commanding figure of contemporary music at this time. Through his prolific activities as both composer and conductor, he is a major contributor to the ongoing tradition of British art music and a tireless advocate of new music. This prolificity is borne out in his compositional catalogue, his many conducting engagements and his prestigious recording contracts. The solo piano pieces of Knussen's are very fine examples of his compositional skill and craftsmanship. They are compact articulations of the facility he has shown in his larger works without sacrificing any of the detail and structure inherent therein. The originality of his orchestration, the meticulous detail of his scoring, his rhythmic structure and his harmonic language are appealing to the 21st century pianist who is looking for more contemporary pieces to add to the recital repertoire.

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Appendix A

Performance Notes for *Sonya's Lullaby*

- (1) These notes should be held down by R.H. when the pedal is lifted at the beginning of bar 12. page 3, bar 12
- (2) Throughout bars 13–24 the rhythmic relationships between L.H. pulse and R.H. figuration should be audibly apparent, and not smoothed over. page 3, bar 13
- (3) As if interrupting the chord-sequence gently but firmly. page 4, bar 22
- (4) [= play with left hand (m.s.); | = play with right hand (m.d.) page 4, bar 21
- (5) The sforzando (lowest B–E) must not be loud, but should resemble a very distant detonation; the ‘shock waves’ (reverberation) colour the quiet music which follows (without caesura). page 6, bar 42
- (6) Upper stave should appear to vanish, as if continuing in the same tempo after the ‘chord-sequence’ commences. page 7, bar 57
- (7) The grace-note groups should be executed *molto rubato* within the indicated durations. Bar 59 should follow bar 58 without caesura. page 7, bar 58
- (8) The durations must be pointed but not exaggerated (always in tempo), like the drowsy perception of a quite simple rhythmic pattern. page 7, bar 59

Appendix B
Pitch Inventory
Variations for Piano, Op. 24 (1989)

measure	Pitches	Metric Modulation/Meter	
		quarter = c. 60	
1	0,1,3,6,7	two/four	Var. I
2	1,2		
3	1,3,4,6,7		
4	1,2,3,6,7	three/eight	
5	0,1,3,6,7,T	two/four	
		quarter = c. 72	
6	0,1,2,3,7		
7	0,2,3,6		
8	0,1,2,3,6,7	three-four	
9	0,1,2,4,5,6,9,T	five/eight	
10	0,4,5,6,8,9,T	two/four	
11	1,3,5,6,7,8,T	seven/sixteen	
		dotted 16th = 16th, 8th = c.96	
12	0,1,2,3,6,7,9	four/eight	Var. II
13	0,1,2,3,6,7	three/eight	
14	0,1,2,3,4,5,6,7,9,T	four/eight	
15	2,3,4,5,6,9,T	three/eight	
16	0,1,3,6,7,E	two/eight	
17	0,5,6,7,T	five/sixteen	
18	0,3,4,5,6,7,8,9,T,E		
19	0,1,2,3,4,5,6,7,9,T,E	three/eight	
20	0,1,2,5,7,E	four/eight	
21	0,2,3,5,6,E	five/eight (8th = c. 60)	
22	0,1,6,7,8,9,T	seven/sixteen dotted 8th = quarter = c. 60	Var. III
23-26	0,1,6,7,8,9,T		
27	1,6,7,8,9		
		dotted 8th,quarter=quarter (c.60)	
28	0,6,9	two/eight	
29	1,2,3,6,7	five/sixteen+one/thirty-two	
30	0,1,6,7,E	one/four	

31/32	2,5,6,8,9,E		
33	0,1,6,7,8,9,E		T6
34	0,6,7,T		
35	0,2,5,6,8,9,E		
36	2,6,7,9,E		
37	01,4,T		
38	1,6,7,9		
39	0,1,2,3,5,6,7,9,E		
40	0,1,2,3,4,5,6,7,9,T,E		
41	0,1,2,3,4,5,6,7,8,9,T,E		all 12 pitches
42	0,3,5,6,9,E		
43	1,2,7		
44	2,5,6		
45	01,34567,9,E		
46	01,6,9,T		
47	1,2,3,6,7	three/eight	P0
48	6,7,8,9,0,1	three/four quarter = c.72	
49	1,2,3,4,5,6,7,8,9,E	five/eight	
50	0,1,2,3,4,5,6,7,8,T,E	two/four	
51	0,1,2,3,5,6,7,9,T,E	nine/eight dotted quarter=c.96	Var IV
52	0,1,2,3,5,6,7,8,9,E		
53	0,1,2,3,5,6,7,9,E		
54	0,1,2,4,5,6,7,8,T,E		
55	0,1,2,3,4,5,6,7,8,9,T,E	six/eight	all 12 pitches
56	0,1,2,3,6,9,T,E	three/four	
57	0,1,2,3,5,6,7,9,T,E	five/four	
58	0,1,5,6,7,8,9,E	six/eight (dotted quarter =96 sempre!)	
59	0,1,3,4,5,7,T	eleven/sixteen	
60	1,2,3,5,6,7,9	five/eight	
61	0,1,2,3,4,6,7,9,E	nine/sixteen	
62	1,2,3,6,7,8,9,E	two/four	
63	3,5,6,8,9	seven/sixteen	
64	4,6,9,T,E	three/eight	
65	2,3,5,6,9	five/sixteen	
66	0,5,9,E	two/eight	
		16th = 32nd	
67	2,4,5,6,8	two/four quarter=c.72	
68	2,4,5,6,8		
		16th,quarter=quarter=c.60	
69	2,3,4,5,6,8,9		

70	1,2,3,6,7,8,9	three/four	
71	0,1,4,6,7,8,9	two/four	
		16th=16th (5let)quarter+c.48	
72	0,1,2,3,4,6,7		Var V
73	0,1,3,4,6,7		
74	1,4,6		
75	1,2,3,4,6		
76	0,1,2,3,6,7,T		
77	2,3,4,6		
78	1,3,7,T		
79	0,1,2,3,6,7,9,E		
80	0,1,2,3,7,8,9,T		
81	0,1,6,7,8,9,T		
82	0,2,6,T		
83	1,2		
		5let8th=8th, quarter=c.60	
84	0,1,2,6,7	Passaglia	Var. VI
85	0,1,2,6,7		
86	0,1,2,6,7		
87	1,2,3,6,7		
88	0,1,3,4,6,9,T,E	three/four	
89	0,2,5,6,7,E	two/four	
90	0,1,2,5,6,8,E		
91	0,1,2,6,7,8,9,T		
92	0,1,4,5,E		
93	1,4,5,6,7,9,T,E		
94	0,1,2,5,6,7,8,E	three/four	
95	0,1,2,3,4,6,9,T,E	two/four	
96	0,1,2,3,4,5,6,7,8,T		
97	0,1,2,3,4,5,6,7,8,9,T,E		Var. VII, all 12
98	1,2,3,5,6,7,8,9,T,E	three/four	
99	1,2,3,4,5,6,7	five,eight	
100	0,1,2,3,4,5,6,7,8,9,T,E	two/four	
101	1,2,3,5,6,7,8,9,T,E		
102	0,1,2,3,5,6,7,8,9,E		
103	0,1,2,3,4,5,6,7,8,9,E		
104	1,2,3,4,5,6,7,8,9,T,E		
105	1,3,4,5,6,7,8,T,E	three/eight	
106	1,2,3,5,6,7,9,E	two/four	
107	1,2,4,5,6,8,9,E		
		a tempo (quarter=c.60)	

108	0,2,4,6,7,8,9		Var. VIII
109	1,2,3,6,7,8		part of P0
110	0,1,2,3,6,7		P0
111	1,2,3,6,7,8	five/eight	
112	0,1,2,3,4,5,6,7,9,T	three/four	
113	0,1,2,3,4,5,6,7,8,9,E		
114	0,1,2,3,4,6,7,8,9,T,E	two/eight	
115	3,4,5,6,7,9,T	two/four	
116	1,2,3,4,5,7,8,9		
117	0,1,2,3,6,7,8,9,T,E	three/eight	
118	0,1,2,3,4,5,6,7,8,9,T,E	three/four	all 12 pitches
119	0,1,2,4,5,6,7,8,9,T,E	five/eight	
120	0,1,4,5,6,7,9,T,E	two/four	
121	0,1,2,6,7,8,9,T	three/eight	
122	0,1,3,4,5,6,7,8,9,T,E	five/eight	
123	1,2,3,6,7,8,9	two/four	
124	0,3,4,5,6,7,9,T,E	three/eight	
		quarter=dotted quarter	
125	0,1,2,3,4,6,7,T	six/eight	Var. IX
126	0,1,2,3,4,5,6,7,T,E		
127	0,1,2,3,6,7,9,T,E		
128	0,1,2,3,4,5,6,7,T		
129	0,1,2,3,5,6,7,8,9,T,E		
130	0,1,2,3,5,6,7,8,9,T,E	nine/eight	
131	0,1,2,3,4,5,6,7,8,9,T,E	six/eight	
132	0,1,2,4,6,7,9		
133	0,1,2,5,6,7,8,9,T,E		
134	0,1,2,3,4,5,6,7,9,T,E		
		dotted quarter = quarter, maestoso (quarter=60)	
135	1,6	two/four	
136	0,1,2,3,4,6,7	five/eight	
137	0,1,2,3,6,7	three/four	P0
138	0,1,3,6,7,T	two/four	
139	0,2,3		
140	3,6		
141	0,1,2,3,6,7,8,9,T		
142	0,1,2,3,6,7,8,9,E		
143	0,1,2,3,6,7,9,E	quarter =c.80, quarter=dotted quarter	
		quarter=dotted 8th (dotted 8th=c.80)	
144	0,1,3,7,9	six/sixteen	Var. X
145	0,1,3,7		

146	0,1,2,3,6,7		P0
147	0,1,3,7		
148	0,1,3,6,7		
		(8th = 8th)	
149	1,3,6,7	three/eight	
150	1,3,6,7		
151	0,1,2,3,6,7		P0
152	1,3,6,7		
153	0,1,3,4,6,7		
		(8th =8th)	
154	0,4,6,7	six/sixteen	
155	0,4,6,7		
156	0,4,6,7,8		
157	0,4,6,7,T		
158	0,1,4,6,7,9,T		
159	01,4,6,7,T		
160	0,1,6,7,T,E		
161	0,1,3,4,7,T		
162	0,1,2,3,7		
163	0,1,2,5,6,7,8,9,E	(dotted 8th = c.80)	
164	0,1,2,3,4,5,6,7,8,9,T,E		all 12 pitches
165	0,1,2,3,4,5,6,7,T,E		
166	0,1,2,3,4,5,6,7,8,9,T,E		all 12 pitches
		32nd=5let 3nd	
167	0,2,3,4,5,6,7,8,9,T,E	four/eight 8th = c.96 tumultuoso	Var. XI
168	3,5,6,7,9,T,E		
169	0,1,2,3,4,5,8	three/eight	
170	0,2,3,4,5,6,8,9,T,E	four/eight	
171	0,1,2,3,4,6,7,8,T	three/eight	
172	0,1,2,3,4,5,7,8,E	four/eight	
		5let 32nd = 32nd (8th = c.120)	
173	0,1,2,3,4,5,6,7,8,9,T,E	ten/sixteen	all 12 pitches
174	1,2,3,4,5,6,8,9,T,E	four/eight	
175	1,2,3,4,6,7,8,9	five/eight	
176	0,2,3,6,7,8,9,E	(quarter = c.60) calmo ma andante	Var. XII
177	0,4	seven/sixteen	
178	0,1,3,4,5,7,8,9,E		
179	1,3,4,5,7		
180	4,6,7,8,T,E		

181	0,1,3,5,7,8,9,E		
182	0,1,2,3,4,6,T		
183	1,3,5,6,9,T		
184	1,2,3,4,6,T,E		
185	1,2,3,5,6		
186	1,2,3,5,6,7,9		
187	01,3,5,7,9,E		
188	1,2,5,6,E	five/four	
189	1,5		

Appendix C
Pitch Inventory
Sonya's Lullaby, Op. 16 (1979)

measure	Pitch Inventory	Metric Modulation and tempo
1	0,1,2,3,4,5,6,7,8,9,T,E,	all 12 pitches
	quarter = dotted quarter	metric modulation
2	5,9	
3	3,5,6,7,9	
4	1,5,6,7,E	
5	2,5,9,E	
	dotted quarter = quarter	metric modulation
6	0,1,2,3,4,5,6,7,8,9,T,E,	all 12 pitches
	quarter = dotted quarter	metric modulation
7	3,5,7,9,E	
8	1,5,6,7,E	
9	1,3,4,5,6,7,8,9	
10	1,3,5,7,8,E	
11	3,5,6,8,E	
	quarter = dotted quarter	Fantastico
12	0,1,2,3,4,5,6,7,8,9,T,E,	all 12 pitches
13	1,2,3,5,6,7,8,9,E	
14	1,4,5,8,T,E	
15	2,4,5,6,7,9,E	
16	1,2,3,4,5,6,8,T,E	
17	0,2,3,4,5,6,8,T	
18	0,1,3,4,5,6,7,8,9,T,E	
19	1,3,4,5,6,7,8,9,T,E	
20	0,2,3,4,5,6,8,9,T,E	pochissimo calando
	dotted quarter = quarter	a tempo
21	0,2,3,5,6,8,T	
	quarter = dotted quarter	Fantastico

22	0,2,3,5,6,7,8,T,E	
23	0,1,2,3,4,5,6,7,8,9,T,E,	all 12 pitches
24	2,3,4,5,6,7,8,9,T,E	calando
	dotted quarter = quarter	a tempo
25	0,1,2,3,4,5,6,7,8,9,T,E	all 12 pitches
	quarter = dotted quarter	poco a poco, etc
26	0,1,2,3,4,5,6,7,8,9,T,E	all 12 pitches
27	0,2,3,4,5,6,7,8,T,E	
28	0,1,3,4,5,6,7,8,9,T,E	
29	0,2,4,5,7,8,9,T,E	quasi accel. To quasi rall.
30	0,1,3,4,6,7,9,T,E	
31	0,1,3,4,5,6,8,9,T,E	
32	0,1,2,3,4,5,6,7,8,T,E	
33	0,2,3,5,6,8,9,T,E	
34	0,1,2,3,4,5,6,7,8,9,T,E	all 12 pitches
35	0,1,2,3,4,5,6,7,8,9,T,E	all 12 pitches
36	0,1,2,3,4,5,6,7,8,9,T,E	all 12 pitches
37	0,1,2,3,4,5,6,8,9,T,E	
38	1,2,4,5,6,7,8,9,T,E	
39	0,2,3,4,5,6,7,8,9,T,E	
40	0,1,2,4,5,6,8,E	
41	1,2,3,4,5,6,8,E	
	dotted quarter = quarter	a tempo
42	0,2,3,4,5,6,7,8,9,T,E	
43	0,1,2,3,4,5,6,7,8,T	
44	1,2,3,5,6,7,8,9,T,E	
45	0,1,2,3,4,5,6,7,9,T	
46	0,1,2,3,5,6,7,8,9,T,E	
47	0,1,3,4,5,6,7,9,E	
48	0,1,2,3,4,5,6,7,8,9,T,E	all 12 pitches
49	0,2,4,5,7,8,9,T,E	
50	0,1,2,3,4,5,6,7,8,9,T	
51	0,1,2,3,4,5,6,7,8,9,T,E	all 12 pitches
	dotted quarter = quarter	a tempo, quarter = ca.48-52
52	0,2,3,5,6,7,8,9,T	
	quarter = dotted quarter	liberamente ma andante
53	0,1,3,4,5,6,7,8,9,T,E	

54	0,1,2,3,4,5,6,7,8,9,T,E	all 12 pitches
55	0,1,3,5,6,7,9,T	
56	0,1,2,3,5,6,7,8,9,T,E	
57	0,2,3,4,5,6,8,9,T,E	
58	0,2,3,6,7,9,T	
	quarter = quarter	Ben in tempo (quarter = ca. 48-52) al fine
59	1,3,5,6,7,9,E	
60	0,1,2,3,4,5,6	
61	1,3,5,7,E	
62	1,3,5,6,7	
63	1,3,4,5,6,7,9,E	
64	3,5,6,7,9,E	
65	1,3,4,5,6,7,9,E	
66	3,5,9,E	
67	1,3,5,6,7,9,E	
68	1,3,4,5,6,7,9,E	
69	3,7,9,E	
70	1,3,4,5,6,7,9,E	
71	1,3,4,5,6,7,9,E	
72	1,3,5,6,7,9,E	
73	1,3,4,5,6,7,9,E	
74	3,6,9,E	

Appendix D
Pitch Inventory
Prayer Bell Sketch, Op. 29 (1997)

Measure	Pitches	Intervals	P4
1	0,4,6	M3,M2	
2	0,6,9	A4,m3	
3	0,4,6,9	M3,M2,m3	
4	0,2,4,6,9	M2,M2,M2,m3	
5	0,2,4,6,9,T	M2,M2,M2,M2,m3,m2	
6	0,4,6,9,T	M3,M2,m3,m2	
7	0,1,3,4,6,9,T	m2,M2,m2,M2,m3,m2	
8	0,3,4,9,T	m3,m3,m3,m2	
9	0,3,6,9	m3,m3,m3	
10	0,1,4,6,7,T	m2,m3,M2,m2,m3	
11	0,1,2,6,7,9,T	m2,m2,M3,m2,M2,m2	
12	0,2,3,4,6,8,9,T,E	M2,m2,m2,M2,M2,m2,m2,m2	
13	0,2,3,4,6,8,T	M2,m2,m2,M2,M2,M2	
14	0,2,3,4,6,8,T	M2,m2,m2,M2,M2,M2	
15	0,2,3,4,6,7,8,T,E	M2,m2,m2,M2,m2,M2,M2,m2	
16	0,2,3,4,6,7,8,T	M2,m2,m2,M2,m2,m2,M2	
17	0,1,3,4,5,6,7,8,T,E	m2,M2,m2,m2,m2,m2,m2,M2,m2	
18	1,2,4,5,6,8,T,E	m2,M2,m2,m2,M2,M2,m2	
19	1,2,5,7,8,E	m2,m3,M2,m2,M2	
20	0,1,2,3,5,6,7,8,9	m2,m2,m2,M2,m2,m2,m2,m2	
21	1,3,4,5,6,7,8,9,T	M2,m2,m2,m2,m2,m2,m2,m2	
22	0,3,4,6,9,T	M2,m2,M2,m3,m2	
23	0,4,6,T	M3,M2,M3	
24	0,4,6,T	M3,M2,M3	
25	0,4,6,T	M3,M2,M3	
26	0,4,6,T	M3,M2,M3	
27	0,4,5,6,T	M3,m2,m2,M3	
28	0,4,5,6,7,8,T	M3,m2,m2,m2,m2,M2	
29	0,3,8,9,T	m3,P4,m2,m2	P4
30	0,4,5,6,7,T	M3,m2,m2,m2,m3	

31	0,4,6,T	M3,M2,M3	
32	0,4,6,T	M3,M2,M3	
33	0,4,6,T	M3,M2,M3	
34	0,4,6,T	M3,M2,M3	
35	0,5,6,T	P4,m2,M3	P4
36	0,5,6,T	P4,m2,M3	P4
37	0,4,7,T	M3,m3,m3	
38	0,4,7,T	M3,m3,m3	
39	0,4,7,T	M3,m3,m3	
40	0,4,7,T	M3,m3,m3	
41	0,4,5,6,7,T	M3,m2,m2,m2,m3	
42	0,5,6,T	P4,m2,M3	P4
43	0,5,6,T	P4,m2,M3	
44	0,4,6,T	M3,M2,M3	
45	0,4,6,T	M3,M2,M3	
46	0,4,6,T	M3,M2,M3	
47	0,4,6,T	M3,M2,M3	
48	0,4,5,6,T	M3,m2,m2,M3	
49	0,4,5,6,7,8,T	M3,m2,m2,m2,m2,M2	
50	0,3,8,9,T	m3,P4,m2,m2	P4
51	0,4,5,6,7,T	M3,m2,m2,m2,m3	
52	0,4,6,T	M3,M2,M3	
53	0,4,6,T	M3,M2,M3	
54	0,1,4,6,T	m2,m3,M2,M3	
55	0,1,4,6,T	m2,m3,M2,M3	
56	0,1,5,6,8,T	m2,M3,m2,M2,M2	
57	0,1,5,6,8,T	m2,M3,m2,M2,M2	
58	0,1,5,7,8,T	m2,M3,m2,M2	
59	0,1,4,7,8,T	m2,m3,m3,m2,M2	
60	0,1,4,6,7,9,T	m2,m3,M2,m2,M2,m2	
61	0,3,4,7,9	M2,m2,m3,M2	
62	0,4,6,7,T	M3,M2,m2,m3	
63	0,3,6,9,T,E	m3,m3,m3,m2,m2	
64	Rest	Rest	
65	0,1,2,3,5,6,7	m2,m2,m2,M2,m2,m2	
66	1,2,3,4,5,8,T	m2,m2,m2,m2,m3,M2	
67	0,1,2,3,4,5,6,7,8,9,E	m2,m2,m2,m2,m2,m2,m2,m2,M2	
68	1,2,3,4,6,7,8,9,T,E	m2,m2,m2,M2,m2,m2,m2,m2	
69	1,2,5	m2,m3	

70	0,1,2,3,5,6,7,8,9,E	m2,m2,m2,M2,m2,m2,m2,m2,M2	
71	1,3,5,6,7,9,E	M2,M2,m2,m2,M2,M2	
72	0,1,2,3,4,5,6,7,8,9,T,E	all 12 pitches, all half-steps (m2)	
73	0,1,2,3,5,6,7,9,E	m2,m2,m2,M2,m2,m2,M2,M2	
74	0,2,4,6	M2,M2,M2 (whole tone)	
75	0,2,3,4,6,7,8,T	M2,m2,m2,M2,m2,m2,M2	
76	0,2,3,4,6,8,T	M2,m2,m2,M2,M2,M2	
77	0,2,4,6,8,T,E	M2,M2,M2,M2,M2,m2	
78	0,2,4,6,7,8,T,E	M2,M2,M2,m2,m2,M2,m2	
79	0,2,3,4,6,7,8,T,E	M2,m2,m2,M2,m2,m2,M2,m2	
80	0,2,3,4,6,8,T	M2,m2,m2,M2,M2,M2	
81	0,2,4,6,7,8,T,E	M2,M2,M2,m2,m2,M2,m2	
82	0,2,3,4,6,8,T	M2,m2,m3,M2,M2,M2	
83	0,2,3,4,6,7,8,T	M2,m2,m2,M2,m2,m2,M2	
84	0,4,6	M3,M2	
85	0,2,4,6,8,T,E	M2,M2,M2,M2,M2 (whole tone)	

Bruce MacRae [Bruce.MacRae@fabermusic.com]
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Bruce MacRae
Contracts and Licensing Manager
Faber Music Ltd
Bloomsbury House
74-77 Great Russell Street
London WC1B 3DA
T: +44 (0)20 7908 5327
F: +44 (0)20 7908 5339
E: bruce.macrae@fabermusic.com