

## ABSTRACT

### TOOLS FOR STORYTELLING: EXPLORING THE COMPOSITIONAL TECHNIQUES CRUMB EMPLOYS IN

#### *VOX BALAENAE*

By

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George Crumb's *Vox Balaenae* (Voice of the Whale) is one of his most well-known works for flute. In this project report, I analyze George Crumb's extra-musical indications, use of quotation, and extensive use of extended techniques and timbre to reveal how they help to tell the story of the piece. Crumb's work is organized in three large sections, the opening "Vocalise (...for the beginning of time)," the "Variations on Sea-Time," and the "Sea-Nocturne (...for the end of time)," and will be examined in order. For each section, I will explain the extended techniques indicated in the score. This will include an explanation of how to perform the technique, a description of the type of timbre it produces, and a summary of how that timbre affects the mood and forward momentum of the piece. I will also explore how the three instrumental lines interact with each other and demonstrate how Crumb layers the lines to bring the piece to its climax. In conclusion, it is only after an in-depth study of *Vox Balaenae*, such as this,

that an informed and exhilarating performance can take place. This work ought to be included in every advanced flutist's list of standard repertoire.

TOOLS FOR STORYTELLING: EXPLORING THE COMPOSITIONAL  
TECHNIQUES CRUMB EMPLOYS IN

*VOX BALAENAE*

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## PREFACE

George Crumb, one of the most innovative composers of the twentieth century, has written for every standard orchestral instrument and all ensemble sizes including solo, chamber, and orchestral.<sup>1</sup> One of Crumb's most renowned chamber works for flute, *Vox Balaenae* (Voice of the Whale), was written in 1971 for flute, cello, and piano, all amplified. In it he presents the song of the humpback whale and chronicles the history of the earth by taking the listener on a journey of variations through the earth's major geological time periods. This paper investigates Crumb's use of extended techniques to produce timbres that convey different moods throughout the piece. Understanding the background of *Vox Balaenae* and focusing on Crumb's use of the flute throughout the piece lays the foundation for an engaging and inspiring performance and greatly improves the performer's ability to teach the piece to future generations.

One can uncover how Crumb cleverly communicates the unique story in *Vox Balaenae* by employing various methodologies. An exploration of the reception history of the piece will reveal not only how the piece was accepted in its premiere performances, but also how the general attitude toward the piece has evolved over time.

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1. Theodore Baker, "Crumb, George," in *Baker's Biographical Dictionary of Musicians*, 8th ed., rev. by Nicolas Slonimsky (New York: Schirmer Books, 1992); Edith Borroff, "Crumb, George," in *The New Grove Dictionary of American Music*, ed. by H. Wiley Hitchcock and Stanley Sadie (New York: Grove's Dictionaries of Music, 1986); David Cohen, *George Crumb: A Bio-Bibliography* (Westport, CT: Greenwood Press, 2002); Richard Steinitz, "Crumb, George," *Grove Music Online, Oxford Music Online* (Oxford University Press), accessed 20 November 2013, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/06903>.

Examining Crumb's goals in writing *Vox Balaenae* by using a biographical approach will reveal why Crumb chose to write for electric flute and why he chose to represent a whale with the flute. Lastly, a narratological and analytical approach will expose how Crumb communicates the story of the earth through musical techniques. This approach will also reveal how Crumb's quotation of *Also Sprach Zarathustra* enhances the music, why he chose it, and what he was hoping to accomplish by using it in *Vox Balaenae*.

This paper examines the timbres and techniques Crumb employs for each of the instruments. Crumb's inspiration for *Vox Balaenae* was a tape recording of humpback whales.<sup>2</sup> He references this tape in the opening "Vocalise" and throughout the rest of the piece when he includes other sounds found in the recording: an underwater echo, explosions in the water, boat noises, and various whale sounds. The piece is structured in three large sections, and Crumb uses the opening "Vocalise" section, the whale song, as a departure point for the rest of the piece. Throughout the other two sections, the "Variations on Sea-Time" and the ending "Sea-Nocturne," Crumb uses timbre to move the story along and even imitates other instruments such as the trumpet, timpani, and Aeolian harp.<sup>3</sup> This paper will methodically guide the reader through each variation explaining for each instrument the aim of the extended or compositional technique Crumb employs and how it affects or conveys the mood.

The purpose of this paper is to gather and compile information that will ultimately impact one's performance of *Vox Balaenae*. It aims to uncover how Crumb uses timbre

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2. George Crumb, *Vox Balaenae for Three Masked Players* (New York: C.F. Peters Corporation, 1971), 3.

3. Kenneth Timm, "A Stylistic Analysis of George Crumb's *Vox Balaenae* and an Analysis of Trichotomy" (DM diss., Indiana University, 1977), 27.

to create different moods throughout the piece, ultimately telling a story. Researching the compositional intent and technique of such a highly programmatic piece honors the composer and future students, and greatly enhances one's own performance.

CHAPTER 1  
BACKGROUND

*Vox Balaenae* was written by George Crumb in 1972 during his thirty-two year tenure teaching at the University of Pennsylvania. Some of Crumb's best-known works were written during these years, including *Ancient Voices of Children*, *Lux Aeterna*, and *Makrokosmos, Volume 1*.<sup>4</sup> *Vox Balaenae* was inspired by a recording of humpback whale vocalizations recorded by biologist Roger Payne and his colleagues and released in 1969.<sup>5</sup> Crumb composed the work not to imitate the whales' sounds, but rather to suggest and represent them and invite the listener into their world.<sup>6</sup>

*Vox Balaenae* was commissioned by the New York Camerata and premiered at the Library of Congress in Washington D.C. on March 17, 1972. The work was received extremely well at its premiere, as Joan Reinthaler reported in the *Washington Post*:

There are very few pieces of new music to which I would be willing to commit myself without reservation. They could be counted on two or three fingers, but I heard one last night. It is, George Crumb's 'Vox Balaenae.'<sup>7</sup>

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4. Cohen, 12.

5. Crumb, *Vox Balaenae*, 3; Frank Watlington, *Songs of the Humpback Whale*, recorded in 1970, BGO Records BGOCD526, 2001, CD-ROM.

6. George Crumb, interview by Julie Hobbs, 28 May 2003, in "Voice of Crumb: George Crumb's Use of Program in the Chamber Works for Flute," by Julie R. Hobbs (DMA diss., Northwestern University, 2006), 162.

7. Joan Reinthaler, "Voice of the Whale," *Washington Post*, 18 March 1972, B11.

While this may not be representative of the entire audience's reaction, the number of subsequent performances indicates that audiences were at the very least intrigued by the work. After its premiere, *Vox Balaenae* was performed between two and four times every year for the next six years in well-known halls throughout the country, including Carnegie Hall in New York and the University of Colorado music hall in Boulder.<sup>8</sup>

*Vox Balaenae* is written for flute, cello, and piano, all amplified. Crumb's choice of instrumentation was governed by the makeup of the New York Camerata, which consisted of flute, cello, and piano. It was also the New York Camerata who suggested that Crumb use the tapes of humpback whale sounds as part of the piece, either as a concrete musical element or as inspiration. After listening to the tapes, Crumb was "fascinated" and decided to use them as a "point of departure" for the piece.<sup>9</sup>

#### Extra-Musical Indications

In addition to his many specific directions in the score, Crumb gives some directives concerning extra-musical aspects of the performance of *Vox Balaenae*. He writes that each of the performers ought to wear a "black half-mask" and that these masks, "by effacing a sense of human projection, will symbolize the powerful impersonal forces of nature (nature dehumanized)."<sup>10</sup> Crumb makes it clear that he wants the audience to feel less of a connection to the performers than they might during other pieces. In an interview Crumb comments that he introduced the use of masks because

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8. Cohen, 50.

9. Crumb, interview by Julie Hobbs, 161.

10. Crumb, *Vox Balaenae*, 3.

“the normal way of performing music was becoming too fixed, stuffy, routine.”<sup>11</sup> The masks also help the audience to enter into a different world more easily; they are able to imagine this story occurring in a distant place and time.

In addition to the detail about the masks, Crumb writes that the piece “can be performed under a deep-blue stage lighting, if desired, in which case the theatrical effect would be further enhanced.”<sup>12</sup> This seems to be more of a helpful suggestion than a requirement; however, the color blue immediately brings to mind the ocean and its inhabitants, specifically the whales after which the piece is named. Therefore, by incorporating this color into the performance the listener is able to enter more easily the underwater scene that begins the piece.

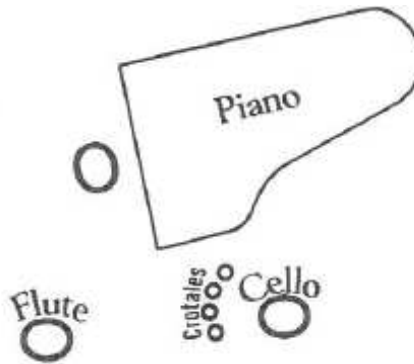


FIGURE 1. Diagram of stage setup, page 3. George Crumb: *Vox Balaenae*. Copyright 1971 by C.F. Peters Corporation.

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11. Edward Strickland, *American Composers: Dialogues on Contemporary Music* (Bloomington, IN: Indiana University Press, 1991), 169.

12. Crumb, *Vox Balaenae*, 3.

The third stage indication Crumb gives concerns the placement of the instruments. He includes a diagram in the score specifying where each player ought to be positioned (see Figure 1). The pianist is positioned between the flutist and cellist and, due to the size of the piano, a few feet behind. This setup ensures that all players are visible at any given time and communicates to the audience that this trio consists of three equal parts. There is no distinction between soloist and accompanist; all are equal.

Lastly, Crumb writes that all instruments are to be amplified using traditional microphones. The amplification not only raises the volume level of the entire piece, but also changes the timbre to a more “electronic” sound. This helps to distance the players from the audience even more. Crumb indicates that there ought not be any distortion, that the volume of the microphones ought to be set at a place where the “forte passages are quite powerful in effect,” and that the amount of amplification should not change during performance.<sup>13</sup> Each of these non-musical directives is purely to help the audience more easily enter the world Crumb has created and to understand and relate to the piece better.

Understanding the background and reception history of this piece is an important and necessary part of studying the work as a whole. This knowledge allows the performer to convey better the whole song that opens the piece, and to approach the piece with the respect it deserves even if the performer does not understand everything about the piece. Furthermore, knowing the performance directives Crumb gives in the score ensures that the performer is aware of the distance Crumb desires between the performers and audience and the other-worldly mood he creates even before the first note is played.

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13. Crumb, *Vox Balaenae*, 3.

An in-depth study of the music itself can only take place after this foundation has been laid.



## CHAPTER 2

### “VOCALISE (...FOR THE BEGINNING OF TIME)”

*Vox Balaenae* is structured in three large sections: the opening “Vocalise,” the “Variations on Sea-Time,” and the closing “Sea-Nocturne.” The “Vocalise” opens with an extended flute solo representing the song of the humpback whale, the inspiration for the piece.<sup>14</sup> Chapter 1 discussed Crumb’s emphasis on dehumanizing the performers from the audience through his choice of costuming, lighting and amplification; however, it is worth pointing out that he then puts forth significant effort to “humanize” the whales’s sounds. Crumb refers to the whales’s sounds as “songs,” not merely “vocalizations” and makes the “Vocalize” a central part of the piece, a striking contradiction to his earlier intention of distancing the piece from the audience. Crumb notes in his article “Music: Does it Have a Future?” that “the singing of the humpback whale is already a highly developed ‘artistic’ product: one hears phrase-structure, climax and anticlimax, and even a sense of large-scale musical form!”<sup>15</sup> The “Vocalise” Crumb writes incorporates each of these characteristics. The phrases are written in such a way that each one clearly relates to and builds on the previous one. There is a definite climax that occurs when Crumb quotes *Also Sprach Zarathustra*, and the form can easily be

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14. Crumb, *Vox Balaenae*, 3.

15. George Crumb, “Music: Does it Have a Future?,” in *George Crumb: A Profile of a Composer*, ed. Don Gillespie (New York: C.F. Peters Corporation, 1986), 19.

characterized as A-B-Coda. The A section consists of the portion of the “Vocalise” in which the flutist must sing and play simultaneously. The B section is characterized by the Strauss quotation and the flute’s repeated triplet motive which gradually diminuendos into the Coda section. The Coda is made up of motives taken from the A section, however, these are played *ordinario* on the instrument, with no singing required.<sup>16</sup> One can easily sense the shape and forward momentum built into this first section.

Crumb indicates that this solo ought to be “wildly fantastic; grotesque,” and begins the listener’s journey through timbre with the flute’s very first notes.<sup>17</sup> Crumb writes a double-staved flute part, one staff for playing, one for singing. The singing and playing effect creates a bizarre, distorted sound, an appropriate representation of a humpback’s song when compared with this description of the whales’ singing: “At times singing humpback do not sound heavenly. The low tones of their songs can be especially eerie and haunting.”<sup>18</sup>

Included in this opening section is Crumb’s first emphasis of the tritone, which will continue throughout the “Sea Theme” and all its variations. It appears between several of the grace notes and the first note that follows. For instance, at the end of the first line on page three of the score, Crumb writes a grace note D followed by an A flat. On this same page in the fourth line he writes this interval as a grace note D to G sharp

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16. Robert Vernon Shuffett, “The Music, 1971-1975, of George Crumb: A Style Analysis” (DMA diss., Peabody Institute of the Johns Hopkins University, 1979), 69.

17. Crumb, *Vox Balaenae*, 6.

18. Lois King Winn and Howard E. Winn, *Wings in the Sea: The Humpback Whale* (Hanover, NH: University Press of New England, 1985), 92.

four different times (see figure 2). These prominent tritones help achieve the “grotesque” mood Crumb indicates.

For most of this solo the singing and playing lines are identical in pitch and duration, however, there are times when the lines deviate from each other. One such instance occurs during the first line of the piece and introduces a second timbre. Crumb writes a long, sustained note with a plus symbol above it in the vocal line indicating that the player is to use the lips to cover completely the embouchure hole of the flute and sing through the instrument. In addition, Crumb writes rapid fourths in the instrumental line that are to be fingered while singing. This combination allows for the sustained note to be most prominent, but the rapid changing of fingerings causes the pitch and timbre to alter slightly as different combinations of holes are covered and uncovered.

The image shows a musical score for E. Flute (E. Fl.) with two staves. The upper staff contains a melodic line with a grace note D and a G sharp. The lower staff contains a corresponding line with dynamic markings and performance instructions. Key markings include 'ffz ppsub.', 'mf', 'pp', '(slow gliss.)', '(dolefully)', '(molto accel...)', and 'Flzg.' (flutter-tonguing). The score is marked with a '3' in a box, indicating a triplet. The tritone between D and G sharp is highlighted in the caption.

FIGURE 2. Tritone found between grace note D and G sharp, page 6, beginning of line 4. George Crumb: *Vox Balaenae*. Copyright 1971 by C.F. Peters Corporation.

Crumb introduces a third timbre toward the bottom of the first page when he adds flutter-tonguing to the simultaneous singing and playing. This changes the sound of both the sung and played notes to be rough and harsh. The solo continues with these sounds until just before the piano enters. It is also important to note that throughout the entire

opening “Vocalise” the score instructs the pianist to hold down the damper pedal. When asked why he included this, Crumb explains that “the piano wouldn’t necessarily pick up any audible sympathetic vibrations, but the depressed damper pedal gives a kind of luminous quality to the sound.”<sup>19</sup>

At this point, Crumb interrupts the whale’s song with a quotation from Richard Strauss’s *Also Sprach Zarathustra* bringing the climax of the opening section and the first entrance of the piano. He writes in the score that the flute should strive to “emulate brass timbre” as, in fact, Strauss gives this motive to the trumpet section in his original scoring. Crumb, on the other hand, places his quotation in the vocal line indicating that the flutist again must cover the embouchure hole completely with the lips and rapidly finger fourths while singing the Zarathustra motive (see figure 3).<sup>20</sup> This quotation is incredibly obvious. Crumb even indicates in the score that this is a “parody of ‘Also Sprach Zarathustra.’”<sup>21</sup> Apparently, he wants the performers to know how deliberate it is and how easy it ought to be for the audience to hear. When asked about this use of *Also Sprach Zarathustra* Crumb explains, “I quote a little of the Strauss to symbolize the advent of man.”<sup>22</sup> This quotation introduces one of the themes of the piece: the tension between man and nature.

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19. Crumb, interview by Robert Vernon Shuffett, 10 June 1977, taken from an interview included in Appendix E of Shuffett’s dissertation.

20. Crumb, *Vox Balaenae*, 7.

21. Ibid.

22. George Crumb, *Vox Balaenae*, quoted in Hobbs, 107.

Just as a new character has come into the picture, so does a new timbre: the piano.<sup>23</sup> The piano enters to finish the Zarathustra quotation by imitating the timpani part in Strauss's original composition. During this first entrance the listener will notice not only the *ordinario* sound of the piano but a second muted timbre as well. Crumb instructs that the pianist ought to mute some strings with the fingertip while playing on the keys. The muted strings and the low, alternating A flat and F make for a foreboding, almost threatening mood further enhanced by the glissando which occurs directly after. This glissando is performed not on the keys but inside the piano with the fingertips on the strings creating a low wash of sound as the foundation for the flute's next entrance. This glissando of ominous quality combined with the "timpani" minor thirds that precede it make it clear that the advent of man is not a joyful event. After a second iteration of the Zarathustra motive the sounds of the piano fade away and the flute closes out this opening section.

The image shows a musical score for two staves: E. Fl. (English Flute) and E. Pno. (English Piano). The flute part features a series of triplets and a quintet, with dynamics ranging from ppp to fff. The piano part includes a 'rapid gliss. over strings (fingertips)' and a 'come sopra' section with 'muted strings' and 'gliss. over strings (come sopra)'. Performance instructions include '(hold Ped. down --)', '(foco)', '(come sopra) (on keys)', and 'allarg. ---'. Dynamics range from ppp to fff.

FIGURE 3. Quotation of *Also sprach Zarathustra*, page 7, line 2. George Crumb: *Vox Balaenae*. Copyright 1971 by C.F. Peters Corporation.

23. Hobbs, 109.

The flute ends the “Vocalise” by introducing a new register and a new timbre. Crumb writes triplet sixty-fourth notes in the flute’s third octave and indicates that they ought to be played in a “harried, frenzied” manner.<sup>24</sup> If we take the Strauss quote to represent man, then this agitated, frenetic section which immediately follows the quotation appears to be a reaction to man’s presence. Crumb communicates the frenetic mood not only through the speed of the notes but also through tessitura. Up to this point, the flute has been heard only in its lowest octave and always with some type of effect (singing and playing, flutter-tonguing), but now there is a striking difference in pitch and timbre. For the first time the audience hears the “normal” sound of the instrument. Crumb does not employ any extended techniques or special effects for the rest of the “Vocalise.” These hurried triplet figures gradually drop in register until the flute arrives in its lowest octave to conclude with the opening motive. This time, however, there is no singing, only playing. It should also be noted that throughout these triplet patterns the piano adds *pianissimo* on-the-strings glissandi exactly like the ones played during the Zarathustra quotation. Since these glissandi are part of the piece’s presentation of the Strauss quotation, which Crumb has said connects to “man,” their continued presence illustrates that though man may not be immediately visible, he is still near.

The whale’s song of the “Vocalise” effectively thrusts the listener into Crumb’s story. Examining Crumb’s use of the tritone, extended techniques, quotation, and a variety of timbres reveals that he employs each of these to bring the opening section to a climax and to keep the listener fully engaged. This opening section fully captures the

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24. Crumb, *Vox Balaenae*, 7.

listener's attention and brings him to the edge of his seat as he anticipates what Crumb will do in the next section.

CHAPTER 3  
“VARIATIONS ON SEA-TIME”  
“Sea Theme”

In the second section of *Vox Balaenae*, Crumb presents the “Variations on Sea-Time,” a theme and variations comprised of the “Sea Theme” and five variations cleverly named after geologic time periods. Whereas the flute sounded the opening “Vocalise”, the cello and piano open this next section with the “Sea Theme.” Crumb writes that the mood of this section ought to be “solemn, with calm majesty.”<sup>25</sup> This section is a welcome contrast to the opening “Vocalise.” While the “Vocalise” was rather loud and boisterous, the “Sea Theme” is marked *pianissimo* for its entirety, sounding stately and much less threatening. It opens with the cello playing harmonics and the piano and cello pass this material back and forth. One will notice that for much of this piece Crumb alternates instrumental timbres as opposed to layering them. In this way each instrument has its own identity and purpose separate from the other two and the score gives the listener ample time to appreciate the unique timbres of each. It must also be noted here that throughout the entire work the cello is tuned *scordatura* (“mistuning,” different than standard tuning) per Crumb’s indication in the program notes (see figure 4). The C and G strings are tuned down a half step to B and F sharp, respectively, and the D string is

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25. Crumb, *Vox Balaenae*, 8.



tuned up a half step to D sharp. This allows the extended techniques to sound better and play easier than with standard tuning.



FIGURE 4. Scordatura tuning of cello, page 3. George Crumb: *Vox Balaenae*. Copyright 1971 by C.F. Peters Corporation.

Each time the cello plays during the “Sea Theme” it alternates between various pitches (A5, B5, C sharp 6, D sharp 6, E sharp 6, or F sharp 6), all played in harmonics. The harmonics create an ethereal, other worldly mood allowing the audience to enter into the whales’ world and observe their timeless beauty and grace. When the piano plays between the cello’s entrances it once again has glissandi on the strings, but this time the glissandi have a slightly different timbre as the pianist silently depresses three different keys before strumming the strings. Crumb names this the “Aeolian harp” effect (see figure 5).<sup>26</sup> An Aeolian harp is an instrument played not by a person but by nature itself. Sound is produced as wind blows through the strings, which are stretched over a wooden box containing bridges on both top and bottom. The strings can be tuned to different pitches or all to the same pitch.<sup>27</sup> This is a very fitting effect to include in a piece centered around nature because the Aeolian harp can only be played by nature itself.

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26. Crumb, *Vox Balaenae*, 8.

27. Stephen Bonner, “Aeolian Harp,” *Grove Music Online, Oxford Music Online* (Oxford University Press), accessed 19 February 2015, [http://www.oxfordmusiconline.com.mcc1.library.csulb.edu/subscriber/article/grove/music/46545?q=aeolian+harp&search=quick&pos=1&\\_start=1#firsthit](http://www.oxfordmusiconline.com.mcc1.library.csulb.edu/subscriber/article/grove/music/46545?q=aeolian+harp&search=quick&pos=1&_start=1#firsthit).

Through Crumb's naming of this effect, he reminds the performers that nature is the true author of this story. The quiet and stillness of the "Sea Theme," due in large part to the Aeolian harp effect, flows *attaca* into Variation I.

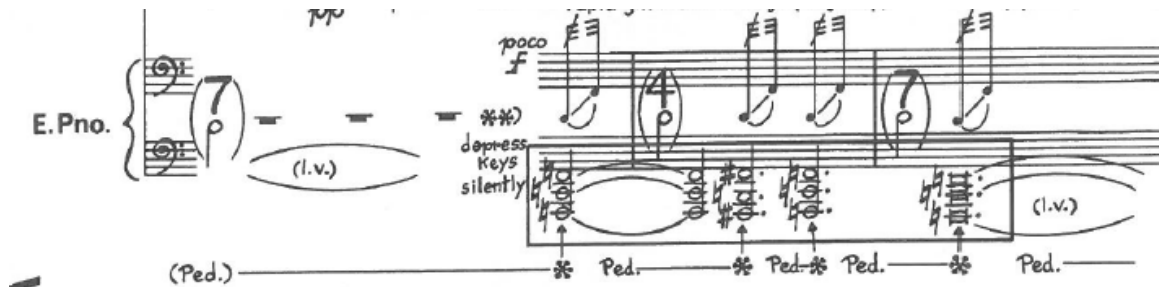


FIGURE 5. "Aeolian harp effect," page 8, line 1. George Crumb: *Vox Balaenae*. Copyright 1971 by C.F. Peters Corporation.

#### Archeozoic (Variation I)

After presenting the Sea Theme, Crumb spends much of the rest of the piece presenting five different variations. However, Crumb does not write this theme and variations in the typical fashion. Hobbs writes,

What follows the Sea-Theme are not variations on the Sea-Theme itself, but rather variations on what Crumb calls *Sea-Time*. The variation principle employed in *Vox Balaenae* does not pertain to recurring musical elements (such as pitches, motives, harmonies, rhythms) found in traditional theme and variation form. On the contrary, Crumb varies the instrumentation to create new textures and timbres that unfold throughout the work over time, supporting the idea that the section is...not a variation on a *theme*, but rather a variation on the programmatic idea of *time* itself.<sup>28</sup>

Though the variations are named after different geologic time periods, they do not necessarily correspond with what was occurring during those time periods. The titles of each variation are more accurately a clever way of notating the forward motion of the piece. Crumb notes of the titles that,

28. Hobbs, 112.

These are purely whimsical. The piece was, in fact conceived as a set of variations. For example, in one variation—the Archeozoic—I include the “seagull” effect, when in fact, there was no form of life in existence during that period.<sup>29</sup>

Though it may be tempting for the performer to take the titles of the variations in *Vox Balaenae* literally, Crumb did not intend for this piece to be studied or performed in this way. Therefore, this examination of *Vox Balaenae* is not a discussion of the scientific characteristics of each labeled geologic era, but rather an interpretation of them as a means to illustrate the progression of the piece as a whole.

Variation I seamlessly flows out of the Sea Theme and continues to use only cello and piano. This variation is slightly louder than the theme but still quiet overall; dynamics do not rise above a *mezzo piano*. Crumb indicates that this variation is to be “timeless, inchoate.”<sup>30</sup> It opens with the cello playing the “seagull effect” (see figure 6).<sup>31</sup> The “seagull effect” is created when the cello performs a slow harmonic glissando. Crumb writes in the score that when the cellist lightly places a finger an octave above the bottom note of the glissando and keeps this finger position and tension the same while traveling down the neck of the instrument, the effect will be “produced automatically.”<sup>32</sup> Here Crumb begins introducing other elements found in a typical seascape. Along with the whale sounds on the recording, there are other non-whale sounds that can be heard such as the underwater echoes and explosions, and boat noises. While seagulls may not

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29. Crumb, interview by Robert Vernon Shuffett, 14 April 1977, taken from an interview included in Appendix E of Shuffett’s dissertation.

30. Crumb, *Vox Balaenae*, 8.

31. Ibid.

32. Ibid.

necessarily be able to be heard in an underwater recording it does not seem a far stretch to include such sounds in a piece centered around the humpback whale.

The image shows a musical score for two instruments: E. Vc. (Electric Violoncello) and E. Pno. (Electric Piano). The E. Vc. part is divided into three staves: 'act. sound' (top), 'sul [A]' (middle), and 'play' (bottom). The 'act. sound' staff features a series of notes with 'x' marks above them, indicating a 'Seagull effect'. The 'sul [A]' staff has a long note with a glissando line and the instruction 'poco accel.-rit.'. The 'play' staff has a 4-measure rest. The E. Pno. part is in the bass clef and includes a 'chisel-Piano' effect, marked with '\*\*\*'. A tempo marking of [♩=72, but very free] is present. The piano part includes a 'chisel on string (A4) (sempre gliss.)' instruction, a 'pizz. (f.t.)' instruction, and a dynamic marking of 'mp (hold Pedal down)'.

FIGURE 6. “Seagull effect” in cello and “chisel-piano” in piano, page 8, end of line 2. George Crumb: *Vox Balaenae*. Copyright 1971 by C.F. Peters.

After the cello’s seagull effect the piano enters, playing with a chisel (page 8, end of line 2) (see figure 6). This involves applying a chisel to the string of the note indicated in the bass clef at the point on the string where the first note in the treble clef is produced when that string is plucked. Next, the pianist must slide up and down the string producing a glissando between the pitches indicated (usually up to a second or third above the starting pitch). At times Crumb combines this chisel effect (labeled “chisel-piano” in the score) with accelerating and decelerating notes on a single pitch in the left hand played on the key (page 8, beginning of line 3). The “chisel-piano” combined with the seagull effect in the cello give the impression of a beginning. The empty feeling present in the “Sea Theme” begins to be replaced with life and activity when the piano’s

rhythms become more complex and the note values shorten from half note or longer in the “Sea Theme” to mostly eighth notes in Variation I, leading the listener to Variation II.

#### Proterozoic (Variation II)

The second variation is the first time in the piece that all three instruments play. Crumb indicates that this variation ought to be “darkly mysterious” and continues to introduce new timbres to the audience in it.<sup>33</sup> He also continues to alternate instrumental lines on top of the soft, low drone in the piano. The piano begins this variation with the aid of a paper clip. Here Crumb indicates that a paper clip ought to be placed alternately on two B natural strings while the string is plucked. This creates a metallic buzzing sound and sets the stage for the flute to enter.

During this section, Crumb introduces the “speak-flute” timbre utilizing extended techniques and contrasting with the “sing-flute” of the “Vocalise”.<sup>34</sup> “Speak-flute” is created when the flutist fingers the note indicated (in this case D5) while whispering the syllables “ko-ki-ka-ku-ka-ki-ko” (see figure 7). This produces a mostly percussive sound, however the fingered note can be faintly heard underneath the whispering. The subtlety of the D combined with the accelerating and decelerating rhythm illustrates the world beginning to come to life. Like the revving of an engine, it requires more than one attempt, but soon the three distinct instrumental lines will work together as intricate parts of the same whole.

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33. Crumb, *Vox Balaenae*, 9.

34. Ibid.

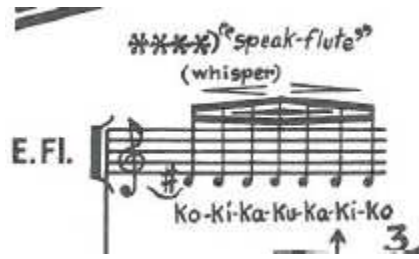


FIGURE 7. “Speak-flute,” page 9, beginning of line 2. George Crumb: *Vox Balaenae*. Copyright 1971 by C.F. Peters Corporation.

At this point the cello enters the conversation with yet another new timbre to add to the mix. The cellist is instructed to “strike string sharply with fingertip (percussive fingering!); then slide to the next pitch(es)” and for the next few notes to “pluck string with fourth finger while stopping with first; then slide to next pitch(es).”<sup>35</sup> The cello continues in the same vein as the flute by also adding an appropriately percussive sound. Each successive entrance responds to or builds on the same instrument’s previous statement. It becomes very clear that the flute and cello are having a conversation with each other, facilitated by the call and response. The flute begins with a small statement, there is a pause of a few seconds, the cello responds, another pause, and then the flute contributes a counter response to the cello. The two continue this dialogue on top of the piano drone until ready to move to the next variation.

The piano’s pizzicato plucking combined with the flute’s speak-flute and the cello’s percussive pizzicato make this variation different from anything thus far. The note-lengths are much shorter (the flute begins with thirty-second notes) and the attacks are harsher (*fortes* and *sforzandos*) than those in both the “Sea Theme” and the first variation. This serves to illustrate that the conversation between the instruments is

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35. Crumb, *Vox Balaenae*, 9.

changing, becoming more complex both rhythmically and dynamically. Here there are more swells, *fortes*, *mezzo-fortes*, and even a few *sforzandos* (page 9, from the end of line 1 to line 3). Time forges ahead, the language changes, activity increases, and the third variation begins.

### Paleozoic (Variation III)

Variation III continues to offer the listener new timbres and instrumental combinations. Aside from a few pedal tones in the first two variations, this variation marks the first time any two instruments play simultaneously. For much of this variation the musical line continues to be tossed back and forth between instruments; however, the texture changes as the flute is always paired with the cello. Whereas Variation II was a conversation between the flute and cello while the piano stayed in the background, in Variation III the piano finds its own voice, joining in the discussion. The flute and cello are on one side, the piano on the other and each phrase is interrupted by the next. Unlike Variation II, there are no silent pauses between phrases.

This third variation opens with a *fortissimo sforzando* in the piano part, making for a much more dramatic opening than that of Variation I or II. Crumb labels this variation as “flowing” and conveys this mood through the quintuplet pattern found in all three parts, which carries through the entire variation and breaks only four short times for the cello to interrupt with a glissando.<sup>36</sup> The music becomes busier as each instrument plays only five to thirteen eighth notes (with a tempo of half note equals fifty) before the next instrument interrupts.

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36. Crumb, *Vox Balaenae*, 10.

This variation is filled with interesting timbres. Both the flute and cello play entirely in harmonics (except for the few glissandi in the cello part) and the piano also plays a harmonic at one point. This marks the first time that the listener has heard flute harmonics in this piece. The harmonics hearken back to the “Sea Theme” and first two variations where so much of the cello part employs this technique. The increasing complexity shows itself in the thickening texture. The addition of flute harmonics paired with the cello harmonics, smaller rhythmic values than the first two variations, and the *fortississimo sforzandos* are evidence of the increasing activity and serve to keep the listener engaged.

Now the piano becomes part of the conversation. Hobbs notes that this variation marks the first time all twelve pitches have been used in succession in a single line. The piano part looks like a twelve tone row.<sup>37</sup> For instance, the piano’s second entrance consists of a descending line, first down a major seventh, then up an augmented fourth (see figure 8). In order, the notes are B, C, F sharp, G, C sharp, D, G sharp, A, D sharp, E, B flat, B, F. Each of the twelve pitches appears exactly once in this short phrase, except the B which appears twice. Crumb’s emphasis on the tritone continues in this variation.<sup>38</sup> The tritone appears not only in this descending piano line, but also in the flute/cello line. The first flute/cello phrase consists of the flute alternating between A sharp and E (diminished fifth) while the cello alternates between D sharp and A (diminished fifth), and each successive entrance by the pair consists of the same interval

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37. Hobbs, 123.

38. Ibid.



even though the specific notes change (see figure 8). As the line sets up expectations of resolution and then thwarts them, the mood becomes slightly more uneasy, but the piece maintains forward momentum as it thrusts the listener into Variation IV.

FIGURE 8. Piano line using all twelve pitches and flute/cello line playing harmonics, page 10, line 1. George Crumb: *Vox Balaenae*. Copyright 1971 by C.F. Peters Corporation.

#### Mesozoic (Variation IV)

Through these first three variations, the piece has become increasingly loud, the rhythmic values have shortened, and the tempo has increased. Following this pattern, the fourth variation naturally flows out of the third. This variation is labeled “exultantly!” by the composer and moves at a swift speed of quarter note equals 140.<sup>39</sup> The fourth variation is a piano feature and through Crumb’s inclusion of the glass rod technique, the piano adds yet another color to the ever-expanding mosaic of sound. Between the third

39. Crumb, *Vox Balaenae*, 10.

and fourth variations, Crumb instructs the pianist to lay a glass rod over the strings to produce a “percussive, ‘jangling’ sound.”<sup>40</sup> For all of variation four the glass rod is in place inside the piano, giving a metallic quality to the sound. The piano is also instructed to play “poco mecanico” (“a little mechanically.”)<sup>41</sup> The glass rod aids immensely in achieving this mood because the jangling, tinny sound that emerges from the piano reminds the listener of the metal that comprises something robotic or mechanical.

This variation again pairs the flute and cello. Not only do they play at the same time and in the same rhythm, as they did in the last variation, but they also play the same pitches (in octaves) for the entirety of the variation. Crumb instructs that this shared line is to be played “broad, with passion!”<sup>42</sup> The flute plays in the highest octave possible and the flute/cello line contains many long, sustained notes. The octave distance combined with the *fortissimo* dynamic and long note values makes for an assertive, unyielding mood. The listener has no choice but to listen as the sound is all-encompassing.

The piece becomes even more intricate in this variation. The piano part contains many more complicated rhythms than have yet been heard and the independence of the piano line is a new phenomenon as well.<sup>43</sup> Until now each line has been similar to the others, like a single phrase divided up between the instruments, but now there are two distinct lines. Though they fit together wonderfully, they are vastly different in character. The flute/cello line consists of many long, sustained notes (mostly quarter, half, and

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40. Crumb, *Vox Balaenae*, 10.

41. *Ibid.*

42. *Ibid.*

43. Hobbs, 127.

dotted half notes), is punctuated by fast ornaments, and overall communicates a stately demeanor. Meanwhile, the piano line consists mostly of eighth and sixteenth notes. This ensures that Variation IV continues to have forward momentum despite the lengthy notes of the flute/cello line. Like a clock, the piano line robotically ticks along seemingly unaffected by the flute/cello line, ushering the listener into Variation V.

#### Cenozoic (Variation V)

Crumb labels the fifth variation as “dramatic; with a sense of imminent destiny,” aptly describing the way this section feels.<sup>44</sup> This variation has a profound sense of forward motion: it is obviously traveling toward something specific. Though it continues at the *fortissimo* dynamic that ended the last variation, it quickly winds down to a *pianissimo* by the end. The three lines have more independence in this variation than any of the others. Except for some brief overlap between the cello’s glissandi and the flute part, each instrument plays alone.

Whereas Variation IV features the piano, Variation V features the flute. Crumb includes a great deal of flutter-tonguing in the flute part at the beginning of this variation, which helps communicate the dramatic mood. The flutter-tonguing might even make this variation feel a little hectic. Throughout this variation Crumb inserts a recurring motive from the opening “Vocalise”, the piano’s dramatic repeated minor thirds followed by the flute’s hurried triplet motive. The piano’s repeated thirds were first heard immediately after the flute and are part of the quotation of *Also Sprach Zarathustra*, however, this time the cello joins the piano. These “timpani” notes refer back to the “Vocalise” where the Strauss quotation first appeared. As mentioned earlier, the composer uses this

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44. Crumb, *Vox Balaenae*, 12.

quotation to represent the “advent of man.” Therefore, by interpreting the return of the Strauss material in a similar manner, one can interpret the *forte* dynamic that crescendos to *fortississimo* here as a reminder that “man,” just like the loud dynamic, cannot be ignored. Though his presence may have been overwhelmed by the shifting focus to the “Variations on Sea-Time,” man wants to be sure his presence is known. The fact that the piano/cello interval is a minor third adds a foreboding feeling to this dramatic climax of the piece. Once again, the flute reacts to the unsettling minor thirds of the piano/cello line through its hurried triplet motive first heard in the “Vocalise.” Crumb is careful to indicate that the flute’s line ought to be played “come sopra” (“as above”) or in a similarly “harried, frenzied” manner.<sup>45</sup>

Immediately after presenting this motive, Crumb finally instructs that the glass rod can be removed from the piano. The piano is restored to its condition from the beginning of the piece, however, this does not mean that there is nothing new to be heard. Crumb adds whistling and antique cymbals (*crotales*) as new colors at the end of this variation. The cellist is instructed to strike a *crotale* while the flutist whistles. The flutist is instructed to whistle D sharp 6 and E6, but the E must be whistled a quarter tone flat. The whistling is part of what brings calmness back to the variation so rapidly and the *crotale* adds the sensation of simply floating, one can begin to rest as the activity lessens. It is as if evening has come. The sun sets, darkness encroaches, and tranquility approaches.

In this second large section of *Vox Balaenae* concluding with Variation V, Crumb introduces new timbres and layers instrumental lines in such a way that he slowly builds

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45. Crumb, *Vox Balaenae*, 7, 13.

from the “Sea Theme” all the way to Variation V. Crumb continues to stretch both performers and listeners alike through his use of extended techniques, experimentation with timbre, and lack of meter in this entire section. Ending the section with the climactic and raucous fifth variation brings the listener to the edge of his seat in anticipation of what will come next.

## CHAPTER 4

### “SEA-NOCTURNE (...FOR THE END OF TIME)”

Just as the “Vocalise” opened *Vox Balaenae*, the “Sea-Nocturne” closes it. This third and final section brings the story to an end. Crumb chooses to illustrate this even through his choice of title: “nocturne,” a piece depicting night or a scene occurring at night. Perhaps it is the end of a day, maybe of an era, but something is drawing to a close. Crumb writes that this section is to be “serene, pure, and transfigured” and his compositional style makes it easy to convey these moods throughout.<sup>46</sup> The “Sea-Nocturne” is filled with a sweet melody which is gently passed between flute, cello, crotales, and whistling. Just as the fifth variation ends with whistling, so the “Sea-Nocturne” begins with a whistled rendition of the Sea-Theme, creating a seamless transition from the fifth variation to the “Sea-Nocturne” and referring back at the same time to the very beginning of the variations.<sup>47</sup>

The main melody of the “Sea-Nocturne” begins on G sharp 6 and ends on D sharp 6 a perfect fourth below. The descending shape of this melody communicates conclusion, the piece is coming to an end. The piano punctuates each iteration of the melody with *pianississimo* chords and glissandi. This ending “Sea-Nocturne” contains phrases in which all three instruments play simultaneously, in fact, much of the middle of

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46. Crumb, *Vox Balaenae*, 13.

47. Hobbs, 132.

it is a beautifully-written trio; however, the beginning and ending contain no overlap between parts. The fact that so much of this “Sea-Nocturne” is scored as a trio illustrates that as nature’s story is ending each of the characters is working together in complete harmony with the others.

Crumb utilizes timbre to communicate further this serene and peaceful mood. Whereas the whistling in the fifth variation was a little eerie because of the one-quarter tone flat second that is indicated, the whistling that begins this “Sea-Nocturne” is calming and docile thanks to the more harmonious intervals of a major second and perfect fourth. A few phrases later Crumb introduces the “shimmering” effect in the flute.<sup>48</sup> This effect consists of the flute playing a single tied note by switching between two harmonics and the “real” fingering of the note. For example, the first shimmering passage consists of D sharp 6, but it is produced by alternately fingering G sharp 4, D sharp 4, and D sharp 6 without stopping one’s air. This allows the audience to hear slight differences in the timbre and intonation of the D#6, but it is slight enough that the overall pitch remains the same. Just as a still lake slowly ripples after a pebble skips across its surface, so the flute’s shimmering preserves the peaceful nature of the “Sea-Nocturne” and moves the music once again toward silence.

Throughout the “Sea-Nocturne”, Crumb’s choice of tessitura and use of a strong major tonality also help communicate serenity. He writes each instrumental line in the extremes of its range, usually high. He writes the flute part entirely in its third octave, writes the cello part in treble clef, and writes the piano part, at times, in three staves, two of which are in treble clef. This is also the only section in which Crumb includes a key

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48. Crumb, *Vox Balaenae*, 14.

signature. Crumb voices the “Sea-Nocturne” in the key of B major, contrasting with the rest of the piece because it is the only section in which any accidentals carry through. In the performance notes Crumb writes that all accidentals apply only to the notes they precede except for in the “Sea-Nocturne.” To emphasize the major tonality, Crumb writes a B pedal tone in the piano part for nearly the entire “Sea-Nocturne.” Also, throughout this section Crumb heavily emphasizes the tonic-dominant relationship by writing open fifths in the left hand of the piano part. This contrasts greatly with the inherently unstable tritone emphasized in much of the rest of the piece and gives stability and a sense of conclusion to the piece.

The piano also contributes to the mood through an ostinato pattern of various triplet, quintuplet, sextuplet, and octuplet figures. Since the tempo is quite slow (sixteenth note equals sixty) this ostinato pattern allows the listener to relax into the repetition. Toward the end of this section Crumb again includes the Zarathustra motive in the piano, serving as a reminder that man is still present and that his influence may not be well-received by other characters in the story. The minor third communicates a foreboding mood, but it is quickly forgotten when the cello enters playing the melody in harmonics. As the cello finishes, the flutist moves to the crotales to play the whistle motive that opened the “Sea-Nocturne” three times in a diminuendo, echoing the whistling not only in pitch but in timbre as well. The piano ends the piece by continuing the diminuendo through its ostinato figure. In fact, Crumb indicates that the piano’s last iteration ought to be played in pantomime, giving the impression that the piano is playing so softly the audience cannot even hear the instrument, though in fact the player is not playing at all. There are four pauses between each ostinato that gradually increase in



duration (three seconds, four seconds, five seconds, seven seconds) until finally the listener is left where he began: complete silence.

In this third and final section, Crumb gives the listener some much needed repose. It is a welcome contrast to the brash “Vocalise” and the wandering “Variations on Sea-Time.” The listener has journeyed to some strange places throughout the course of this work and the “Sea Nocturne” feels like coming home. *Vox Balaenae* is a magnificent work of art that showcases Crumb’s unique compositional style and technique. This work is sure to be performed by and for many more generations.

## CHAPTER 5

### CONCLUSION

After analyzing *Vox Balaenae* and specifically Crumb's unique use of timbre throughout, it becomes obvious that this piece communicates specific ideas and references particular animals in an extremely organized manner, always building on previous sections. As the title indicates, whales are a tremendous inspiration for the piece and served as a catalyst, or departure point for the rest of the piece. It becomes clear that though the piece does not imitate these animals it does refer to them. The work's inclusion of other underwater sounds and even seagull noises make it clear that this piece is not only inspired by nature but seeks to recreate many different scenes that may be found in nature. It also becomes clear that Crumb's quotation of Richard Strauss's *Also Sprach Zarathustra* is meant to be recognized by performers and listeners alike. If one interprets this quotation as a representation of man, as I have throughout this paper, it causes one to think about his relationship to nature and how man might peaceably cohabitate on this planet with the plants and animals that also make their home here.

Researching *Vox Balaenae* will greatly enhance any flutist's preparation and performance of the piece. An in-depth look at the piece exposes how each section relates to and builds on the others. Investigating Crumb's compositional technique helps the performer to understand his musical language better, translate that to the flute, and more accurately tell the story. Pieces such as *Vox Balaenae*, which may seem less easily

accessible to people (musicians' and non-musicians alike) at first, require more effort and examination to bring about an informed and exceptional performance. Studying and performing this piece proves useful not only to those who love newer music, but also to those who do not. Incorporating the extended techniques found in *Vox Balaenae* into practice and performance will greatly enhance any flute player's technique, provide the player with a greater array of tone colors, and expand the player's musical palette.

Analyzing *Vox Balaenae* also greatly enhances a flutist's ability to teach the piece to students. Examination of the piece allows the flutist to instruct students about not only the flutist's role in the ensemble, but also that of the cellist and pianist, and provides the flutist with a comprehensive knowledge of how to teach the extended techniques that are involved. Lastly, and perhaps most significantly, an in-depth investigation of this monumental work for flute gives any teacher the means to help students appreciate not only this piece, but George Crumb as a composer and new music in general.

APPENDIX  
RECITAL PROGRAM

Program

Sonata in A Minor, H. 562 for Solo Flute.....C.P.E. Bach (1714-1788)

Poco Adagio

Allegro

Allegro

Sonata No. 3 for Flute and Piano .....Mike Mower (b.1958)

Moraine

Escarpment

Plateau

Scree

INTERMISSION

Vox Balaenae (Voice of the Whale).....George Crumb (b.1929)

Vocalise (...for the beginning of time)

Variations on Sea-Time

Sea Theme

Archeozoic (Var. I)

Proterozoic (Var. II)

Paleozoic (Var. III)

Mesozoic (Var. IV)

Cenozoic (Var. V)

Sea-Nocturne (...for the end of time)

Kembang Suling ..... Gareth Farr (b.1968)

## BIBLIOGRAPHY

## BIBLIOGRAPHY

- Alburger, M. "Day of the Vox Crumbae: An Ancient, Angelic Interview with the Phantom Gondolier." *Twentieth Century Music* 4, no. 4 (1997):10-18.
- "Alice Tully Hall." *Music Journal* 31 (Annual 1973): 24.
- Baker, Theodore. "Crumb, George." In *Baker's Biographical Dictionary of Musicians*, 8<sup>th</sup> ed., revised by Nicolas Slonimsky. New York: Schirmer Books, 1992.
- Bass, Richard. "Models of Octatonic and Whole-Tone Interaction: George Crumb and His Predecessors." *Journal of Music Theory* 38 (Autumn 1994): 155-186.
- Bonner, Stephen. "Aeolian Harp." *Grove Music Online. Oxford Music Online*. Oxford University Press, accessed 19 February 2015, [http://www.oxfordmusiconline.com.mcc1.library.csulb.edu/subscriber/article/grove/music/46545?q=aeolian+harp&search=quick&pos=1&\\_start=1#firsthit](http://www.oxfordmusiconline.com.mcc1.library.csulb.edu/subscriber/article/grove/music/46545?q=aeolian+harp&search=quick&pos=1&_start=1#firsthit).
- Borroff, Edith. "Crumb, George." In *The New Grove Dictionary of American Music*, edited by H. Wiley Hitchcock and Stanley Sadie. New York: Grove's Dictionaries of Music, 1986.
- \_\_\_\_\_. *Three American Composers*. Lanham, MD: University Press of America, 1986.
- Bruns, Steven Michael. "'In Stilo Mahleriano': Quotation and Allusion in the Music of George Crumb." *American Music Research Center Journal* 3 (1993): 9-39.
- Bruns, Steven, Ofer Ben-Amots, and Michael D. Grace. *George Crumb & the Alchemy of Sound: Essays on His Music*. Colorado Springs: Colorado College Music Press, 2005.
- Cohen, David. *George Crumb: A Bio-Bibliography*. Westport, CT: Greenwood Press, 2002.
- Crumb, George. Interview by Bruce Duffie. "Composer George Crumb: A Conversation with Bruce Duffie." 27 August 1988, accessed 8 December 2013, <http://www.bruce duffie.com/crumb2.html>.
- \_\_\_\_\_. Interview by Frank Little. "Conversations with Crumb." 27 May 2003. Panel discussion. Evanston, IL.

- \_\_\_\_\_. Interview by James M. Keller. "Conversation with Crumb." 27 September 2002. Panel discussion. New York, NY.
- \_\_\_\_\_. Interview by Robert Duckworth, John Harvey, and Julie Powell. 3 January 1999, accessed 26 March 2015, <http://glitchslaptko.blogspot.com/1999/01/george-crumb-as-interviewed-by-robert.html>.
- \_\_\_\_\_. Liner notes to *Vox Balaenae*. Naxos, accessed 20 November 2013, <http://csulb.naxosmusiclibrary.com.mcc1.library.csulb.edu/sharedfiles/booklets/NUC/booklet-8.559205.pdf>
- \_\_\_\_\_. *Voice of the Whale*. Black Box Music Limited BBM1076, 2002. CD-ROM.
- \_\_\_\_\_. *Voice of the Whale (Vox Balaenae) for Three Masked Players*. Columbia Records M32739, 1974. LP.
- \_\_\_\_\_. *Vox Balaenae for Three Masked Players*. New York: C.F. Peters Corporation, 1971.
- De Dobay, Thomas Raymond. "Small-Scale Structural Principles in the Chamber Music of George Crumb." PhD diss., University of Southern California, 1979.
- Deviney, Chris, "Focus on Performance: Interview with George Crumb." *Percussive Notes* 28, no. 4 (1990): 61-64.
- Gatenby, Greg. *Whales, A Celebration*. Boston: Little, Brown, 1983.
- Gillespie, Don, ed. *George Crumb: A Profile of a Composer*. New York: C.F. Peters Corporation, 1986.
- Gray, Patricia, Craig Hultgren, and Anthony Brandt. "Vox Balaenae: For Three Masked Players (Electric Flute, Electric Cello, and Electric Piano.)" Luna Nova, accessed 3 December 2013, <http://www.lunanova.org/WhaleFlash/whaleflash.html>.
- Gregory, Catherine. "George Crumb's *Vox Balaenae* (Voice of the Whale): Performance Practice Perspectives and the Roles of Imagery, Symbolism and Imagination." MM thesis, Griffith University, 2009.
- Grimes, Ev. "Conversations with American Composers: George Crumb." *Music Clubs Magazine* 66, no. 2 (1986): 37-39.
- Henahan, Donal. "Crumb, The Tone Poet: Crumb." *New York Times*. 11 May 1975.
- \_\_\_\_\_. "Music: Crumb's Touch: 'Vox Balaenae,' New Work, Harnesses the Song of Whales and Sonorities." *New York Times*. 12 October 1972.



- \_\_\_\_\_. "Music: Inventive 'Voice of the Whale.'" *New York Times*. 7 April 1973.
- Hiemenz, J. "Aeolian Chamber Players." *High Fidelity & Musical America* 23, (Feb 1973): 16-17.
- Hobbs, Julie R. "Voice of Crumb: George Crumb's Use of Program in the Chamber Works for Flute." DMA diss., Northwestern University, 2006.
- Kahn, Sue Ann. "The Whale at the Conservatory." *The Flutist Quarterly*, Spring 2003.
- Keller, James M. *Chamber Music: A Listener's Guide*. New York: Oxford University Press, 2011.
- Kozinn, Allan. "Essay in D: The Critic's Cogitation About Titles." *New York Times*. 6 November 2008.
- Kuhns, Krystal R. "Organizational Principles in Two of George Crumb's Chamber Works with Flute: 'Madrigals, Book II' and 'Federico's Little Songs for Children.'" MA thesis, Kent State University, 2011.
- Lin, Hsiao-Chieh. "George Crumb's Chamber Music for the Flute: An Overview with an Analysis of 'An Idyll for the Misbegotten.'" DMA diss., University of Washington, 2009.
- Liner notes to *Beginnings: Eighth Blackbird*. Cedille Records: 2002. Naxos, accessed 20 November 2013, <http://csulb.naxosmusiclibrary.com.mcc1.library.csulb.edu/sharedfiles/booklets/CED/booklet-CDR90000-076.pdf>.
- Liner notes to *Butterfly Dance: Music By Americans*." Albany Records: 2006. Naxos, accessed 20 November 2013, <http://csulb.naxosmusiclibrary.com.mcc1.library.csulb.edu/sharedfiles/booklets/ALY/booklet-TROY882.pdf>.
- Marquez, Joshua T. "Incorporation of Humpback Whale Song in an Electroacoustic Piece." MM thesis, The University of North Carolina at Greensboro, 2013.
- Martinelli, Dario. *Of Birds, Whales, and Other Musicians: An Introduction to Zoomusicology*. Scranton, PA: University of Scranton Press, 2009.
- Moseley, Brian Christopher. "Integrating Analytical Elements Through Transpositional Combination in Two Works by George Crumb." MM thesis, University of Cincinnati, 2007.
- Mugge, Robert, dir. *George Crumb: Voice of the Whale*. Rhapsody Films, 1988. DVD.
- Ott, David Lee. "The Role of Texture and Timbre in the Music of George Crumb." PhD diss., University of Kentucky, 1982.

- Randel, Don Michael, ed. *The New Harvard Dictionary of Music*." Cambridge, MA: Belknap Press of Harvard University Press, 1986.
- Reinthal, Joan. "Voice of the Whale." *Washington Post*. 18 March 1972.
- Riis, T. "A Conversation with George Crumb." *American Music Research Center Journal* 3 (1993): 40-49.
- Salzman, Eric. "Crumb: *Voice of the Whale (Vox Balaenae), Night of the Four Moons*." *Stereo Review* 32 (April 1974): 110-111.
- Schweitzer, Vivien. "Flutist Evokes Poetry, Passion and Politics." *New York Times*. 11 November 2009.
- Segall, Alan. Liner notes to *George Crumb: Voice of the Whale*. Zuma Records, Inc. 1994. Naxos, accessed 20 November 2013, <http://csulb.naxosmusiclibrary.com/mcc1.library.csulb.edu/sharedfiles/booklets/ZUM/booklet-ZMA102.pdf>.
- Shuffett, Robert Vernon. "Interviews with George Crumb." *Composer USA* 10-11 (1980): 29-42.
- \_\_\_\_\_. "The Music, 1971-1975, of George Crumb: A Style Analysis." DMA diss., Peabody Institute of the Johns Hopkins University, 1979.
- Smith, Steve. "Under the Whale, Attuned to the Humpback's Song." *New York Times*. 20 May 2009.
- Starobin, Rob. *The Official George Crumb Website*. Last modified 26 February 2013. Accessed 29 November 2013. [www.georgecrumb.net](http://www.georgecrumb.net).
- Steenhuisen, Paul. *Sonic Mosaics: Conversations with Composers*. Edmonton: University of Alberta Press, 2009.
- Steinberg, Russell. "'Meta-Counterpoint' in George Crumb's Music: Exploring Surface and Depths in *Vox Balaenae* (Voice of the Whale)." In *George Crumb and the Alchemy of Sound*. Edited by Steven Bruns, Ofer Ben-Amots, and Michael Grace, 211-233. Colorado Springs: Colorado College Music Press, 2005.
- Steinitz, Richard. "Crumb, George." *Grove Music Online*. *Oxford Music Online*. Oxford University Press, accessed 20 November 2013, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/06903>.
- \_\_\_\_\_. "George Crumb." *The Musical Times* 119, no. 1628 (October 1978): 844-847.

- Strauss, Richard. *Tondichtungen*. Orchesterwerke 21. Reprint. Frankfurt: C. F. Peters, 1999.
- Strickland, Edward. *American Composers: Dialogues on Contemporary Music*. Bloomington, IN: Indiana University Press, 1991.
- Szoka, Marta. "George Crumb: Between Reflection Upon Nature and Contemplating It." Translated by Elzbieta Fesnak-Przybylska. *Interdisciplinary Studies in Musicology* 8 (2009): 203-215.
- Timm, Kenneth. "A Stylistic Analysis of George Crumb's *Vox Balaenae* and an Analysis of Trichotomy." DMA diss., Indiana University, 1977.
- Walsh, Michael. *An Idyll for the Misbegotten/Vox Balaenae/Madrigals/Books I-IV*. Liner notes by the author. New World Records, 1992. CD-ROM.
- Watlington, Frank. *Songs of the Humpback Whale*. Recorded in 1970. BGO Records BGOCD526, 2001. CD-ROM.
- Watson, Jeffery Allen. "The Contemporary Dilemma: A Performance Project." DMA diss., University of Maryland College Park, 1995.
- Williamson, John. *Strauss, Also sprach Zarathustra*. Cambridge: Cambridge University Press, 1993.
- Winn, Lois King and Howard E. Winn. *Wings in the Sea: The Humpback Whale*. Hanover, NH: University Press of New England, 1985.

