'A Core and Yet Absent' [1]: Using Electroacoustic Technology to Mediate between String Quartet and an Ancient Text

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ABSTRACT

Different Islands, *for dancer, string quartet and live electronics, began as a project to investigate creative approaches to an Old English text known as* Wulf and Eadwacer. *By embedding the untranslated text within disparate elements of musical composition, dance and live electronics, the project seeks to explore the text through its thematic content, sound, and structure. In choosing not to present the text in its translated form, the project intends to focus on the ambiguous, layered and fragmentary nature of the poem. Rather than presenting a definitive translation, the creative re-presentation of the poem allows it to remain open to different interpretations. In developing this project, the analogy of the text as a fossil provided a useful starting point. Electroacoustic technology, in the form of analyses and live electronics, provides the medium into which the textual 'fossil' leaves its imprint. This paper focuses on the development of the composition and electronics.*

1. INTRODUCTION

'A poem around which music has crystallized can be, like a fossil, both recognizable and unrecognizable – both a core and yet absent' [1]

The idea of a poem dissolving into the structure and form of an instrumental work epitomizes one aspect of a modernist approach to music and text. Considering that the original article by Boulez (quoted here in a later translation) was first delivered in a lecture in 1962, questions are inevitably raised concerning the relevance of these ideas to twenty-first century practice. What can contemporary composers and sound artists usefully add to a philosophical discussion that Boulez sought to address in many of his text-inspired works? In this respect, technological developments play a crucial role. The proliferation of innovative technologies, combined with the evolution of live electronics, have vastly extended the tools and techniques available for musical creativity in response to text. Viewed from a contemporary perspective, Boulez's striking image of the text as a fossil, simultaneously present and absent at the heart of a musical work, seems to hint at technological possibilities that would have been unimaginable in the 1960s. Closer scrutiny of the fossil simile suggests still more analogies with the use of text in music. A fossil is not simply an imprint left by a decaying organism in sedimentary rock. Fossils can include traces of preserved material such as shells and bones, as well as organic matter that has been transformed into rock during the fossilisation process. In stretching the analogy almost to breaking point, intriguing possibilities are suggested. What would happen if electroacoustic technology, including both recorded sound and live electronics, were to become the medium in which a poem left its imprint? How might the resulting 'fossil' inform the composition process? What would be the musical outcome of this work, and would it bear any meaningful relation to the poetic text on which it was based?

In discussing the creation of *Different Islands* for dancer, string quartet and live electronics, this paper will address the questions mentioned above. At the time of writing, *Different Islands* is a work in progress. As such, the conclusions presented here relate to the process of creation and analysis, rather to the work which is as yet unfinished. By presenting the work in its malleable and evolving state, it becomes possible for the outcomes of this paper to inform the ongoing process of composition and experimentation. Although *Different Islands* is a work for dancer, string quartet and live electronics, the discussion of the work's choreography exceeds the remit of this paper. The work's choreography, and the interrelationships between dance, music, text, and electronics will be the subject of future published discussion.

A central theme of *Different Islands* concerns the project's relationship with poetry. More specifically, this relationship is focused on the use of an enigmatic, untranslated, early medieval text at the centre of the composition process. In many ways, this text is analogous to Boulez's poetic fossil; it represents an artefact from a distant culture, in an obscure language that is no longer spoken in daily conversation. The use of such a text raises inevitable questions. How can the composer escape the criticism that such a text 'is probably a defence mechanism against a society from whose abhorred contact the composer can escape by this magical means'? [1] Rather

than permitting a certain naïve archaism, this paper proposes that the use of an untranslated text, when embedded within the compositional and electroacoustic fabric of a work, can facilitate a type of ahistorical archaeology, allowing the multifaceted, layered nature of a text to be more fully explored.

2. TEXT AND CONTEXT

2.1 'People May Easily Separate That Which Was Never Joined, Our Song Together' [2]

A woman sits alone, on an island surrounded by marshes. A man, Wulf, is on a different island that seems to be inhabited by an enemy tribe. The woman's family will try to kill Wulf he comes with a troop of soldiers. The woman describes how she used to sit, sorrowful in the rain, remembering Wulf's embrace that was both joyful and hateful to her. She cries out to Wulf, telling him that her grief for him has made her ill. Although she and Wulf have had a baby, the child has been taken away to the woods. The unnamed female narrator ends with the poignant words that are quoted in the heading to this paragraph.

   The precis given here is just one of many possible interpretations of the enigmatic Old English poem known as *Wulf and Eadwacer.* Its ambiguity led one scholar to comment that it is 'generally acknowledged as the most perplexing poem in the [Old English] language' [3]. The manuscript offers no clues as to the identity of the narrator, or the context that she describes. Even the title, *Wulf and Eadwacer*, is anachronistic, since the manuscript folio does not make a distinction between it and the preceding and following texts. One of the few unambiguous aspects of the text is the gender of the voice that speaks it. Word endings such as the 'u' of *reotugu* (sobbing) show that the subject is female [2]. How might a composer even begin to approach a textual artefact which seems so obscure and enigmatic?

2.2 Musical Approaches to Ancient Texts

A brief consideration of other composers' responses to the same question reveals many possible approaches. The idea of exploring an untranslated text in music is not new; neither is it confined to twentieth-century and contemporary music. Pertinent examples include François-Bernard Mâche's *Safous-Mélè* [4] and *Trois chants sacrés* [5], and Stef Conner's *Hord Songs* [6]. These examples point to a specific approach to ancient text, drawing on the text's metrical structure and phonetics to establish sophisticated correlations with sung vocal material. In writing about his composition *Safous-Mélè,* Mâche described his use of an Ancient Greek text as a kind of 'sound cryptogram' [7]. Similarly, Stef Conner proposed that her use of Old English text could also be seen as practice-based research into early poetry [8]. In comparison, works such as Kaija Saariaho's *Lonh* [9] and *L'Amour de loin* [10], and Jonathan Harvey's *Wagner Dream* [11] demonstrate a more extensive use of electronics in conjunction with ancient text. However, in all of these examples, the composers'

decision to set the text to music places the poetic source in the foreground of the composition. In *Different Islands,* the decision to explore the fossil analogy through the medium of electronics, as described in the introduction, points towards more abstract sonic results. A work such as Natasha Barrett's *…The Fetters of a Dream…* [12] seems closer to the idea that residual traces of an ancient text might be trapped within an electroacoustic medium. However, Barrett's use of untranslated Old Norse poetry is combined with other environmental and vocal sound sources, such that the Old Norse text becomes one element of a larger whole. If *Different Islands* was to develop the fossil analogy more fully, a combination of textual analysis, electroacoustic transformation and musical abstraction could yield fruitful results.

3. TECHNOLOGY AS MEDIUM

3.1 Analysis

Following the examples of Mâche and Conner, the source text, *Wulf and Eadwacer*, was analysed to determine its metrical, structural, and sonic patterns. Comparison with the vast body of Old English scholarship shows that *Wulf and Eadwacer* follows many of the conventions of Old English poetry, as described by theorists such as Mitchell and Robinson [13]. As with most Old English poetry, *Wulf and Eadwacer* consists mainly of a structure in which each line is divided into two halves, separated by a caesura. Each half contains two syllables with primary stress and any number of unstressed syllables, as illustrated by the first line of the poem:

/ x x   / x   x x x x / / x
Lēodum is mīnum   swylce him mon lāc gife;

Key to Symbols

x   unaccented syllable
/   accented syllable

Figure 1. Accent and stress in line 1 of *Wulf and Eadwacer.*

   When reading the text aloud, this structure results in a distinctive sonic pattern. Although the varying number of syllables mitigates against a regular rhythm, the pauses between each half line, combined with the stressed syllables, result in an audible periodicity to the text. Listening repeatedly to a recording of the spoken poem led to a reconsideration of the opening research question: what would happen if electroacoustic technology, including both recorded sound and live electronics, were to become the medium in which the poem leaves its imprint? As an initial response to this question, the sound of the live string quartet was filtered according to the amplitude of the spoken text. The amplitude filter activated resonant harmonic frequencies, based on partials derived from the fundamental frequencies of the speaking voice. As a result, the live processing of the quartet allowed electroacoustic resonances to emerge and decay in synchroniza-

tion with the prosody of the poem. However, to realise this idea in full, a number of additional analyses were required. The recording of the spoken Old English text was converted to MIDI note data using the audio to MIDI function in Logic Pro X. Rhythm and pitch quantisation and some manual editing allowed for the software's failure to recognize unvoiced consonants. This provided a basic approximation of the text's rhythm and fundamental frequencies.
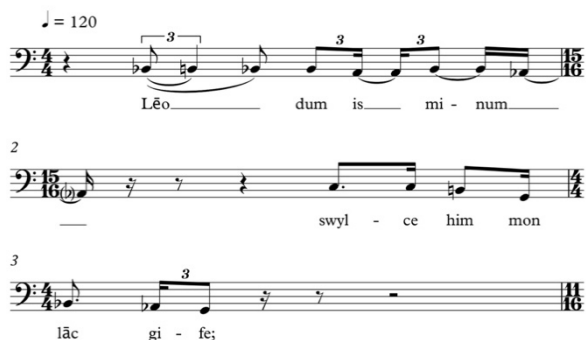

Figure 2. Transcription of the first line of the poem, based on audio to MIDI function in Logic Pro X.

A more detailed FFT analysis using Audiosculpt made it possible to observe subtle fluctuations in the fundamental frequencies, while also allowing sounds of indefinite pitch (such as unvoiced consonants) to be considered. The Audiosculpt file was used to generate a partial tracking analysis, based on the text's fundamental frequencies. This, in turn, was used to determine the centre frequency of eight resonant bandpass filters that were used to process the live sound of the string quartet.

3.2 Live Electronics

Created in Pure Data, the live electronics in *Different Islands* feature two specific processes: audio analysis; and audio processing. Firstly, in the audio analysis stage, an audio recording of the text being spoken has its amplitude tracked. A smoothing function is then applied to the detected amplitude values, with an attack and time of 300ms, so as reduce the overly erratic changes in amplitude inherent in the audio recording.

The audio processing stage is composed of eight resonant bandpass filters in four groups of two, with each group being sent to reverb, then to a quadraphonic spatialiser. The resonant filters have a Q ratio of 200 with each bank being tuned to the following frequencies: 147Hz and 185Hz; 247Hz and 277Hz; 294Hz and 339Hz; 440Hz and 466Hz. These pitches, also prominent in the string quartet writing, were utilized so as to create a pitched 'hue' effect onto the string quartet audio signal. A hard-knee limiter is placed before and after each filter in the signal chain to avoid distortion. The amount of string quartet signal sent to each filter is controlled by the amplitude tracking of the text reading. The sonic result of

this is harmonic undulations that reflect the underlying rhythmic motion of the recorded text. Finally, each
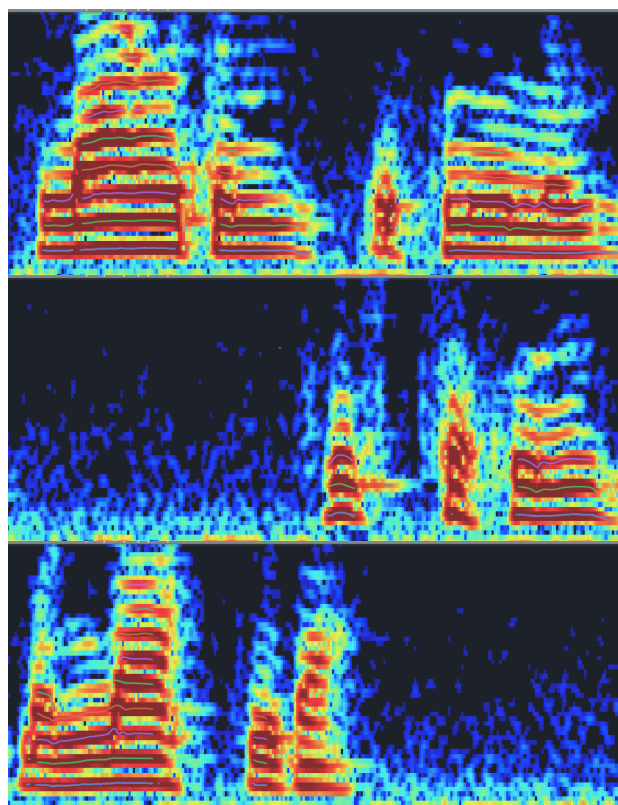

Figure 3. FFT analysis, using Audiosculpt, of the first line of the poem.

filter bank is sent to its own reverb effect and quadraphonic spatialiser. The spatialisers are pre-programmed so as to pan the sounds erratically around the loudspeaker array.
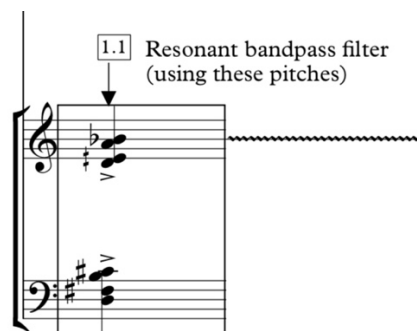

Figure 4. Detail from the score, showing pitch settings for the 8 resonant band pass filters derived from analysis of the spoken text.

In addition to filtering and panning, the live electronics facilitate an interpretation of the poem's themes of memory and reflection by recording and playing back fragments of the string quartet's performance. Shortly before the main climax of the piece, the live electronics fall silent as the string quartet plays fortissimo, rapid ma-

terial. This is followed immediately by loud, spatialised playback of the previous section, accompanied by a high, solo 'cello line. In effect, the solo 'cello forms the centre of an electroacoustic vortex, providing a sonic counterpart to the solo dancer at this point in the piece. From this moment onwards, the electronics take an ever more proactive role, often playing back filtered, transformed samples of the string quartet's material from the first half of the piece. Rather than simply reacting to the string quartet's material, the electronics begin to instigate sounds, like echoes from earlier in the piece, to which the string quartet responds.

4. COMPOSITION

Thus far, the focus on analysis and live processing might imply that the string quartet's musical material is of secondary importance. However, by providing the musical substrate for live electronics processing, the string quartet plays a crucial role in allowing the text to be both present and absent, like a fossil, encased within the electroacoustic medium. With this in mind, the development of notated material for the string quartet points back to a question that was raised in the introduction: how might the resulting 'fossil' inform the composition process?

Returning to the preliminary analyses of the spoken text provided a useful starting point to answer this question. By treating the analyses as reservoirs of rhythm and pitch, it was possible to generate vast quantities of musical material that were organically related (via the medium of electroacoustic technology) to the recited poem. At the most basic level, transcriptions created using MIDI note data in Logic Pro X could be assigned to different instruments. Pitches obtained from partial tracking analyses could be recombined to create harmonic fields, providing an overall harmonic framework for each section of the piece.

The development of a harmonic trajectory facilitated the composition of both homophonic and contrapuntal material in accordance with the harmonic plan. Earlier transcriptions of the spoken text aided the development of both linear material and global structure. In addition to using untransformed transcriptions of the text, it was possible to scale up the text's patterns of sound and silence, creating temporal frameworks with durations ranging from a few seconds to several minutes. These frameworks, based on the durations of spoken phrases, could provide a further means to structure material in a way that was responsive to the ebb and flow of the spoken text.

5. PRELIMINARY OUTCOMES

Having considered the processes of analysis, live electronics and composition, one of the introductory research questions remains unanswered: what would be the musical outcome of this work, and would it bear any meaningful relation to the poetic text on which it was based? Although *Different Islands* is at present incomplete, it is apparent that the work depends on a synthesis of text, analysis, live electronics, composition, and dance. Initial rehearsals have demonstrated that the outcome is multifaceted, reflecting the ambiguous, layered nature of the text. In this sense, the outcome might be regarded as a process of transcription from the text's manuscript source into something multidimensional.

In many ways, the allusive and ambiguous quality of the resulting work mirrors longstanding arguments regarding the impossibility of translating poetry. If, as Dr Johnson suggested, 'the beauties of poetry cannot be preserved in any language except that in which it was originally written', *Different Islands* sidesteps this issue by embedding the text within the heart of the work, such that words and phrases are often simultaneously present and unrecognizable [14]. Adorno's statement that '[music] constantly poses a riddle, and yet, as nonsignifying language, never answers it' lends a poetic beauty to the idea that an enigmatic, untranslatable text is itself reappropriated by abstract art forms [15].

6. CONCLUSIONS

Electroacoustic analysis and re-presentation of a text can allow its different layers, multiple voices, and metrical sonorities to be experienced outside the linear temporal framework of a simple recitation. In this way, live electronics can act as a mediator between text and string quartet, functioning as the 'sediment' in which the text leaves its imprint. The text, 'both a core and yet absent' [1], can be viewed from different perspectives, almost as though it were a three-dimensional object. By extracting structural elements from the poem, while simultaneously building on the sound of the spoken text, live electronics create an exoskeleton that is placed over the acoustic sounds of the string quartet — bringing together 'that which was never joined'.

Wulf and Eadwacer [16]

Lēodum is mīnum   swylce him mon lāc gife;
willað hȳ hine āþecgan,   gif hē on þrēat cymeð.
Ungelīc is ūs
Wulf is on īege,   ic on ōþerre.
Fæst is þæt ēglond,   fenne biworpen.
Sindon wælrēowe   weras þǣr on īge;
willað hȳ hine āþecgan,   gif hē on þrēat cymeð.
Ungelīce is ūs.
Wulfes ic mīnes wīdlāstum   wēnum dogode;
þonne hit wæs rēnig weder   and ic reotugu sæt,
þonne mec se beaducāfa   bōgum bilegde,
wæs mē wyn tō þon,   wæs mē hwæþre ēac lāð.
Wulf, mīn Wulf,   wēna mē þīne
sēoce gedydon,   þīne seldcymas,
murnende mōd,   nāles metelīste.
Gehȳrest þū, Ēadwacer?   Uncerne earmne hwelp
bireð wulf tō wuda.
þæt mon ēaþe tōslīteð   þætte nǣfre gesomnad wæs,
uncer giedd geador.

Translation [2]

It is as though someone gave a present to my people;

They want to oppress him if he comes with a troop,
We are apart [or we are different / there is a difference between us].
Wulf is on an island, I on another.
That island is secure, surrounded by marshland.
There are cruel men on the island.
They want to oppress him if he comes with a troop.
We are apart.
I endured far-wandering hopes of my Wulf;
When it was rainy weather and I sat, mournful,
Then the one bold in battle laid his arms around me,
There was joy to me in that, but it was also hateful.
Wulf, my Wulf, my hopes of you caused me to fall sick,
Your infrequent visits, a mourning spirit, not at all lack of food.
Do you hear, Eadwacer? Wulf [or 'a wolf'] carries our wretched whelp to the wood.
People may easily separate that which was never joined, our song together.

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