

Natural Resonance

An exploration of acoustic heterodyning frequencies

For string quartet

Ian Percy

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- I. Light
- II. Sound
- III. Colour

Approximate Duration: 9-10 minutes

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2004/10

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This three-movement score for string quartet was initially composed in 2004, but revised within the boundaries of its original format in January – February 2010 and then formally revised later that year. The piece was originally conceived as a compositional study: a practical research exercise exploring the acoustic phenomenon of natural resonance.

Natural resonance seems to describe the timbral characteristics of a string quartet quite accurately. It implies an organic phenomenon: acoustic vibration. It is as old as nature and is often discussed in relation to space and time, even the origins of the universe itself.

In literal terms, natural resonance refers to the additional sympathetic tones that can be generated when sustained resonances vibrate with and against each other. These heterodyning frequencies can be produced above the pitches, as combination tones (the sum of the two frequencies), or as difference tones (the difference between the two), they can also generate acoustic multiphonics in wind instruments and produce escalating dynamics reminiscent of contemporary guitar feedback.

This quartet, with form, tempi and proportion influenced by the Golden Ratio, could be described as an ambient dreamscape. It is true that the music is quite static and reductive, but it maintains a fluid sense of 'slow motion'. The three movements explore the same material in very similar ways, but each movement retains its own individual characteristics and subtle distinguishing features.

Natural Resonance is a peaceful, meditative and ambient sonic journey, a developed compositional sketch through which the composer first opened the door into this ancient and eternal acoustic realm. 2010 revisions added more sustained resonant harmonies and adjusted pitch content in order to balance multiple heterodyning relationships and extend elements of vertical harmony. The addition of more tangible musical units (phrase, melody and motif) helped to turn the initial study into a valid and coherent performance piece.

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I. Light

Ian Percy

... coloured resonance and lamentable melodic statement ...

1

♩ = 40 *accel.*

♩ = 60

poco rit.

♩ = 50

Musical score for the first system, measures 1-12. The score is written for four staves: Violin I, Violin II, Cello/Double Bass, and Bass. The key signature has one flat (B-flat). The tempo starts at 40 bpm with an acceleration, then changes to 60 bpm, and finally decelerates to 50 bpm. Dynamics range from *pppp* to *mp*. The Violin I part features melodic lines with triplets and slurs. The Violin II part has sustained chords and triplets. The Cello/Double Bass part includes a section marked 'con sord.' (con sordina) and features sustained chords. The Bass part consists of a steady accompaniment of chords.

poco rit.

♩ = 40 **A** *accel.*

♩ = 60

13

Musical score for the second system, measures 13-18. The score continues from the first system. Dynamics range from *pppp* to *f*. The Violin I part has melodic lines with slurs and dynamics ranging from *p* to *f*. The Violin II part features a section marked 'senza sord.' (senza sordina) and 'pizz.' (pizzicato), with triplets and slurs. The Cello/Double Bass part includes a section marked 'pizz.' and features triplets and slurs. The Bass part continues with a steady accompaniment of chords.

poco rit. [♩ = 50] poco rit. [♩ = 40] **B** accel. [♩ = 60] accel. [♩ = 92]

23 pizz. arco

mf \longleftarrow f mp p PPP \longleftarrow p \longrightarrow PPP PPP \longleftarrow mp \longrightarrow PPP f

PPP \longleftarrow p \longrightarrow PPP pizz. mf

f mp p mp p mp f

p p f PPP \longleftarrow mp f

accel. [♩ = 120] accel. [♩ = 160] rit. **C** ♩ = 60 rit. ♩ = 40 attacca

33 arco pizz.

ppp \longleftarrow p ff fff

f ff fff ppp \longleftarrow p

ff fff arco

ppp \longleftarrow mp

ff \longleftarrow pp

75

p *mf* *pp* *mp* *f* *ppp* *p*

ppp *mf* *mp*

ppp *mp* *ppp* *mp* *mf* *pp* *mf* *pp* *mp*

p *ppp* *mp* *ppp* *mf* *ppp* *mf* *ppp* *mp*

con sord.

flageolet tone

89

ppp *pp* *ppp* *p* *ppp* *mp* *ppp* *mp* *ppp*

pizz. *mp* *mf* *f* *ff*

ppp *p* *ppp* *mp* *ppp* *mf* *ppp* *mp*

pizz. *mp* *mf* *f*

♩ = 60 accel.

[♩ = 80] rit.

♩ = 40

attacca

senza sord.

102

mp

arco

p *ff* *ppp* *mp* *ppp* *p* *mf*

ppp *mp* *ppp* *p* *ppp* *mp*

f *mp* *p* *ppp* *mp*

3 6 3 3 3 3 3

arco

111

pppp *p* *ppp* *p* *mp* *mp* *mp* *mp* *mp* *mp*

pppp *p* *ppp* *p* *ppp* *mp* *ppp* *mp* *ppp*

pppp *p*

G ♩ = 40 accel. [♩ = 60] rit. ♩ = 40

123

mp *mf* *f* *mf* *mp*

ppp *mp*

mp *ppp* *mp*

ppp *mp* *ppp* *mp* *ppp* *p*

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