

Rotations and Resonances

[Part One – Acoustic]

For string quartet

Ian Percy

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Commissioned by the Rodewald Concert Society

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Violin 1
Violin 2
Viola
Violoncello

Duration: ca. 14 minutes

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(Funding from Arts Council England)

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This is a single movement composition for string quartet composed during 2012. It is the first part of a triptych of pieces sharing the same name and materials: Part One – Acoustic, Part Two – Electroacoustic and Part Three – Acousmatic.

During a period of lectures taught on twentieth century American classical music: specifically, the music of Elliott Carter and Steve Reich, the composer noticed how Reich's music often influenced his own in many subtle ways, mostly on a subliminal level and seemingly only ever recognised in retrospect. This quartet consciously refers to the music of gradual process from Reich's early years within a passage of rotation and repetition where the rhythm gradually alters to create a stream of pulsing melodic fragments, shifting-beats, contrapuntal rhythms and displaced accents.

Whilst the rhythmic structure refers to the phasing music of Reich, the pitch content and organisation refers to the work of Elliott Carter and specifically his All-Triad Hexachord (ATH): 012478. The hexachord (C – C[#] – D – E – G – G[#]) can be heard in various guises throughout the piece and became the primary pitch material for the string quartet parts.

Carter's All-Triad Hexachord (ATH): Carter Hexachord 35, Forte 6-17 [6-z17b]

0	1	2	4	7	8
C	C [#]	D	E	G	G [#]

A hexachord is any sequence of six notes laid out in a scalic pattern. This hexachord takes its name from the fact it contains all twelve of the prime-form triads only once (within the octave):

012	013	014	015	016
024	025	026	027	
036	037			
048				

Alongside these two referential characteristics, this quartet also continues the composer's own practical research using heterodyning frequencies to shape contrapuntal textures and resonant vertical harmony. These theories are used to colour, dilute, and abandon the pitch-content of the All-Triad Hexachord (ATH) and help to establish a coherent form within the movement.

The combined and difference tones for all registers (frequencies) of A^b (chosen as the 'prime' pitch within the hexachord) were calculated and used to produce the many variables explored within the textures of the string quartet. The following example can be transposed by the octave for all registers of A^b. In theory and although never physically present, A^{b4} (middle A^b) is an omnipresent 'invisible' pitch sympathetically produced by each of the heterodyning pitch-pairs:

Heterodyning frequencies (pairs) of Ab4 [415.30]:

Difference tones: Combined tones:

The image displays two staves of musical notation. The top staff is labeled 'Difference tones:' and the bottom staff is labeled 'Combined tones:'. Both staves show a sequence of notes, primarily quarter notes, with some eighth notes. The notes are arranged in a way that illustrates the relationship between the difference tones and the combined tones. A dashed line labeled '8va' is drawn above the first few notes of both staves, indicating an octave relationship. A vertical dashed line is drawn between the two staves, aligning a specific note in the 'Difference tones' staff with a corresponding note in the 'Combined tones' staff. The notes in the 'Difference tones' staff are mostly in the treble clef, while the notes in the 'Combined tones' staff are in the bass clef.

Brief Synopsis:

Rotations and Resonances [Part One – Acoustic] is a serious piece exploring a highly dissonant and (at times) quite aggressive soundworld. The part-writing focusses upon intricate micro units of pitch rotations, rhythmic process, repetition and phasing, which combine across the textures of the quartet to produce close-interval vertical harmony and linear counterpoint. The serious and aggressive soundworld is certainly not catering to popularist tastes, but the moments of release grow more influential as the piece progresses and (of course) the composer remembers to 'let the instruments sing' in lyrical linear counterpoint and interact with more consonant heterodyning harmonies in the latter stages of the work. The movement closes in a near modal pitch language with a texture reminiscent of a retrospective plainchant SATB setting.

Acknowledgements:

Thanks go to the Rodewald Concert Society and the Arts Council England for commissioning this work. Further thanks go to violinist-musicologist (and friend) Dr Alberto Sanna for recording the primary sound material from which the concrete parts were composed for Part Two – Electroacoustic and Part Three – Acousmatic of this triptych. Final thanks go to fellow composer James Wishart for initially proposing this project.

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♩ = 60 ... and so the journey begins ... in tranquility ...

A ... an instinctive direction ...

Musical score for string quartet, measures 1-16. The score is written for Violin I (Vln.), Violin II (Vln.), Viola (Vla.), and Violoncello (Vc.). The time signature is 4/4. The key signature has one flat (B-flat). The music features a variety of articulations, including slurs, accents, and dynamic markings such as *p* (piano). The first violin part includes a triplet in measure 15. The overall mood is tranquil and contemplative.



Musical score for string quartet, measures 17-24. The score continues from the previous page. It includes dynamic markings such as *mp*, *mf*, *p*, and *pp*. The first violin part features a triplet in measure 17 and a *rubato* marking in measure 20. The viola and cello parts have complex rhythmic patterns, including triplets and quintuplets. The score includes specific trill instructions: "[variable speed tone trill]" and "[tone trill]". The music concludes with a final triplet in measure 24.

poco rit.

[♩ = 52]

poco rit.

[♩ = 48]

B ♩ = 52 ... a tranquil resonance: the end of the beginning ...

28

Musical score for piano, measures 28-37. The score is written for four staves: Treble Clef (Right Hand), Bass Clef (Left Hand), and two additional staves below the Bass Clef. The key signature has one flat (B-flat). The tempo is marked 'poco rit.' with a metronome marking of [♩ = 52] for measures 28-31 and [♩ = 48] for measures 32-37. A section marker **B** is placed at the beginning of measure 32. The score includes dynamic markings: *p* (piano) at measure 28, *p* (piano) at measure 32, and *pp* (pianissimo) at measure 33. The instruction *expressive rubato* is written above the staff in measure 32. The score features various musical notations including slurs, ties, and a triplet in measure 33. The piece concludes with a fermata over a whole note chord in measure 37.

... an interlude: places and faces within cluttered surroundings ...

C ♩ = 60

rit.

[♩ = 48]

accel.



♩ = 60

rit.

[♩ = 40]

... the initial euphoria of new experiences ...

D [♩ = 40] *accel.* ♩ = 60

52

mp *mf* *mp* *mf*

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

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

pizz. *arco* *pizz.* *arco* *p* *mp*

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



E *accel.* [♩ = 76] *rit.* ♩ = 40 *poco rit.* [♩ = 72]

58

mp *mf* *mp* *p* *pp* *mp*

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

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

pizz. *arco* *pizz.* *arco* *pp* *ppp*

mp *mf* *p* *p* *p* *pp*

ricochet bow
muted strings

F ♩ = 40 ... a lyrical diversion: fluid and expressive ...

65

arco

rubato

p *mp*

p *mp*

arco

rubato

p *mp* *p*

arco

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



72

poco rit. [♩ = 72]

p *mp* *p* *mp*

p *mp* *p* *pp*

pp *p* *pp*

p *p*

G ♩ = 40 ... a passage of transition ...

H accel.

♩ = 60

80 *rubato*

Violin I: *mp*, *mf*, *mp*

Violin II: *p* → *mp*, *p* → *mp*, *p*

Cello/Double Bass: *p*, *mp*, *p*

Bass: *p*, *mp*, *mf*, *mp*



I ♩ = 60 ... fluid and positive: skippin' cycles ...

87

Violin I: *mf*, *mp*

Violin II: *mf*, *p*

Cello/Double Bass: *mf*, *p*

Bass: *arco*, *mf*, *p*

J ... evolving natural cycles, not synthetic repetition ...

Musical score for section J, measures 93-98. The score is written for four staves: Treble 1, Treble 2, Bass 1, and Bass 2. The key signature has two flats (B-flat and E-flat). The time signature is 4/4. The piece begins at measure 93 with a *mf* dynamic. The first staff (Treble 1) features a melodic line with eighth-note patterns and slurs. The second staff (Treble 2) has a similar melodic line. The third staff (Bass 1) contains a complex rhythmic pattern with slurs and accents. The fourth staff (Bass 2) has a melodic line with slurs. Dynamics include *mf* and *p*. A double bar line is present at the end of measure 96.



K ... changing landscapes and rejuvenating resources ...

Musical score for section K, measures 99-104. The score is written for four staves: Treble 1, Treble 2, Bass 1, and Bass 2. The key signature has two flats (B-flat and E-flat). The time signature is 4/4. The piece begins at measure 99 with a *mf* dynamic. The first staff (Treble 1) features a melodic line with eighth-note patterns and slurs. The second staff (Treble 2) has a similar melodic line. The third staff (Bass 1) contains a complex rhythmic pattern with slurs and accents, marked *f* and *pizz.*. The fourth staff (Bass 2) has a melodic line with slurs. Dynamics include *mf*, *f*, *pizz.*, and *p*. A double bar line is present at the end of measure 102.

L ... as smooth as glass ...

104

mf *mp*

mf *mp*

arco *mf* *mp*

M

110

mf *mp*

mf *p*

pizz. *f* *mf* *mp*

pizz. *mf* *mp*

N ... a continuous rhythmic stream trickles to a halt ...

poco rit.

Musical score for four staves, measures 116-123. The score includes dynamics (*mf*, *pp*, *p*), articulation (*arco*, *pizz.*), and performance markings (*poco rit.*). The notation features a continuous rhythmic stream of eighth notes in the upper staves, which gradually decays in volume. The lower staves provide harmonic support with arpeggiated patterns and chords. A double bar line is present between measures 119 and 120.

O ♩ = 40 ... a thematic interlude and transition ...

P

accel.

[♩ = 52]

Musical score for measures 124-131. The score is written for four staves: Violin I, Violin II, Viola, and Cello/Double Bass. The music is in 3/4 time with a key signature of two flats. It includes dynamic markings such as *mp*, *mf*, *p*, and *f*, and performance instructions like *pizz.* and *arco*. There are several triplet markings throughout the piece.

Q ♩ = 60 ... a scurry of activity: the beginning of the end ...

rit.

[♩ = 40]

poco rit.

[♩ = 72]

Musical score for measures 132-139. The score is written for four staves: Violin I, Violin II, Viola, and Cello/Double Bass. The music is in 3/4 time with a key signature of two flats. It includes dynamic markings such as *pp*, *f*, *p*, *mp*, and *ff*, and performance instructions like *pizz.*, *arco*, and *trill*. A "variable speed trill" is indicated in the Violin II part.

R ♩ = 60 ... a poignant reflection upon a sonic journey: heterodyning emotions ...

140

pp *p* *mp* *p*

p *arco* *arco*



poco rit. [♩ = 52] **S** [♩ = 52] *poco accel.* ♩ = 60 *poco rit.* [♩ = 40]

150

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

arco *arco* *arco* *arco* *arco*

... an epilogue: in reverence ...

T [♩ = 40] poco accel.

[♩ = 52] poco accel.

♩ = 60

163

p *mp* *mf* *mp*

p *mp* *mf*

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

pp *p* *mp* *mf* *p*

aggressive *soft & lyrical*



poco rit.

[♩ = 52]

rit.

U [♩ = 44]

poco rit.

[♩ = 40]

171

p *p* *pp*

mp *p* *pp*

expressive *mf* *mp* *mp* *p*

rubato *mp* *p* *pp*

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