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The Butterfly Effect

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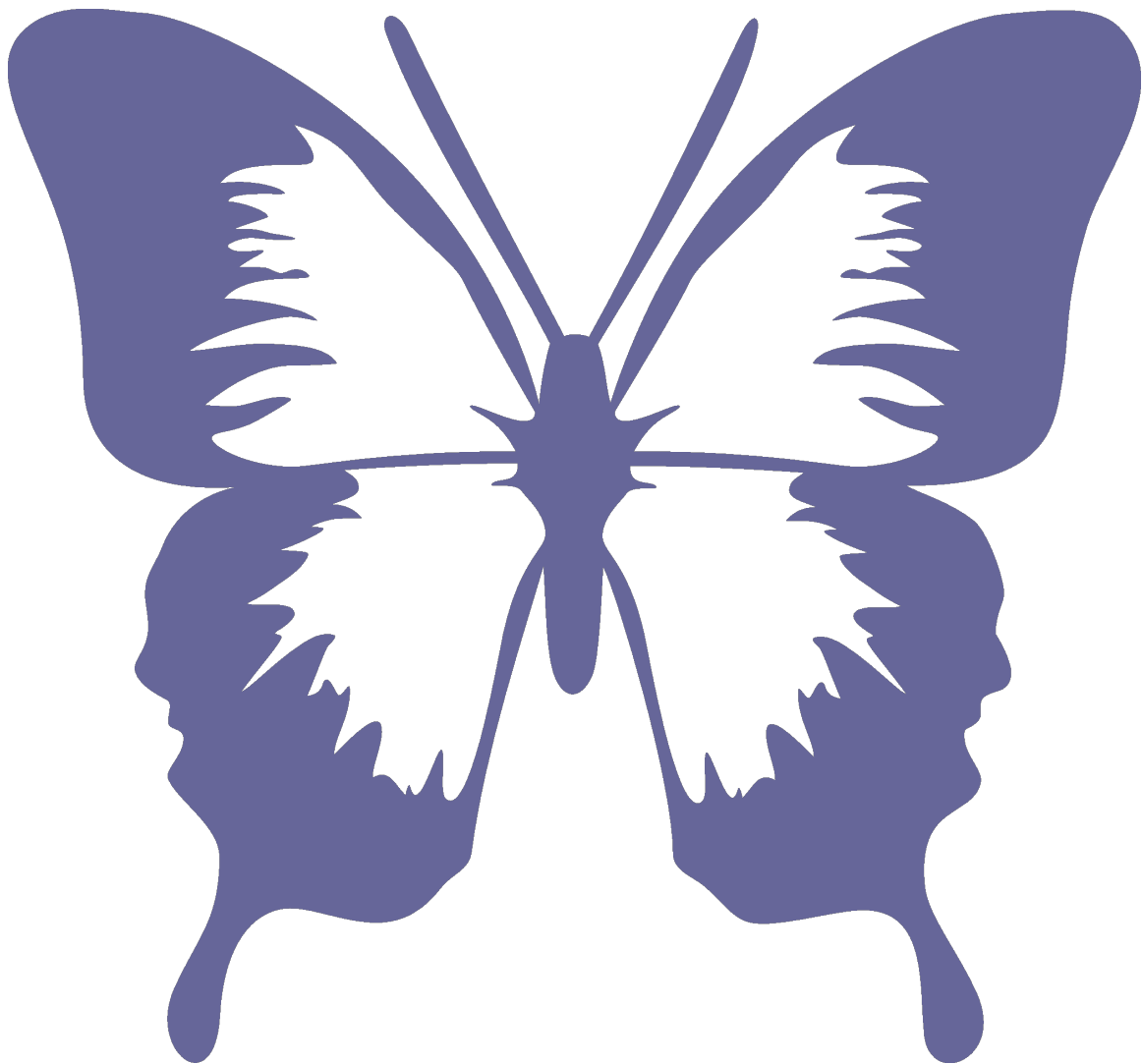
Mallonée, Caroline

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CAROLINE MALLONEE

The Butterfly Effect



Ink to Paper
2014

Caroline Mallonee

The Butterfly Effect

INSTRUMENTATION*

Violin I

Violin II

Viola

Cello

Distant ensemble**

4-8 rainsticks

*The piece may be performed by a string quartet or string orchestra.

**The distant ensemble (1-12 players) may consist of plucked stringed instruments (e.g. string trio, string quartet, mandolins, banjos, guitars, harp, harpsichord), may be a live delay, or may be pre-recorded audio (provided by the composer).

PROGRAM NOTE

The title of this piece comes from chaos theory: the beating of a butterfly's wings in Brazil may cause a hurricane on the other side of the world; this may be extrapolated to imply that any action undertaken or any decision made may have unanticipated, far-reaching consequences.

The piece begins with a musical illustration of the beating of a butterfly's wings. Soft and fluttery, the music is delicate and intoxicating. After a journey (inspired by American and Scandinavian fiddling), the piece ends with the sound of rain. In addition to the sound of the strings playing pizzicato on stage, the music representing the rain is heard from afar (in the back of the hall, from a balcony, or off-stage) by live musicians or over speakers. Then distant rainsticks are heard and the effect of a far-off rainstorm is achieved.

NOTES ON THE SCORE

The entire piece should be played in just intonation, i.e. tuned to the G harmonic spectrum, and *senza vibrato*.

The seventh partial in the G harmonic series is 31 cents below an F in equal temperament.



The eleventh partial in the G harmonic series is 49 cents below a C-sharp in equal temperament (about halfway between a C-natural and a C-sharp).



In addition to the two adjustments above, all B naturals should be slightly (14 cents) lower than an equal tempered B.

The cellist is to retune his/her A string down one whole step, to G, to allow for natural harmonics. The passages played on this string are transposed in the part (i.e. written a whole step higher than sounding).

APPROXIMATE DURATION

The piece should last between 7 and 12 minutes.

SUMMARY OF SECTIONS

Section I: The Beating of the Butterfly's Wings

The cello begins the piece with the first cell. Cells are repeated; one may double back; one may rest between cells.

Section II: Journey

Violin I cues the second section with harmonics and begins the A section with the cello, who is to improvise his/her part, playing notes of the G harmonic spectrum, pizzicato. This should be an easy-going, walking bassline, mostly on the beat. The second violin joins the first violin in canon (1 bar apart). Then Violin I, Violin II and Viola play the B section in canon (at the half-bar). Violin I should play the B section once more, arco, as the others move to Section III.

Section III: Rain

In the third section, cells may be played in any order, and rests may be inserted between the cells. Everyone should end with the rolled chords, which do not need to line up with the other performers.

The distant ensemble enters (with the same Section III material) in the back of the hall or another space.

Alternatively, live electronics should sample the pizzicato cells and play back over speakers in the back of the hall, or pre-recorded audio should be heard over speakers in the back of the hall.

The rainstick performers begin using their rainsticks after the delay part has begun. The quartet diminuendos *al niente*. The delay and rainsticks are heard together for a bit, and then the delay fades out. The piece is over when the sound of the rainsticks stops.

♩ = 76 *Begin after the cello.*
Cells may be repeated; one may double back; one may insert rests in between cells.

ppp *pp* *p*

Text

tr

sul pont.

mp

Cue to begin Section II.

♩ = 72

Cells may be repeated; one may double back; one may insert rests in between cells.

$\text{♩} = 76$ *Begin after the cello.*

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

sul pont.

3 5 3

Move to Section II when Violin I has played the A Section once.

Cells may be repeated; one may double back;
one may insert rests in between cells.

I.

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VIOLA

$\text{♩} = 76$

pp Begin after the cello.

Continue playing these cells while the violins play the A Section of Section II.
When they begin the B Section, join them in canon.

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CELLO

**retune A string down to G*

I.

Cells may be repeated; one may double back; one may insert rests in between cells.

(transposed; sounds a whole step lower) $\text{♩} = 76$

I

The cello should begin the piece with the first cell.

(transposed; sounds a whole step lower)

(transposed; sounds a whole step lower)

II

III

Move to Section II when Violin I cues.

II.

Throughout Section II, the cello is to improvise his/her part, playing only notes of the G harmonic spectrum, pizzicato. This should feel like an easy-going, walking bassline; the cellist should play mostly on the beat. First time: Violin I (with cello). Violin II and Viola may play cells from Section I. Second time: Violin II enters one bar later in canon with Violin I. Viola plays cells from Section I.

A $\text{♩} = 72$

Musical score for Section A, measures 1-8. The score is written for two staves. The top staff is in treble clef and the bottom staff is in bass clef. The time signature is 6/8. The tempo is marked as quarter note = 72. The key signature has one sharp (F#). The music consists of a melodic line in the upper voice and a pizzicato bassline in the lower voice. The piece ends with a repeat sign.

Violin I, Violin II, Viola play a canon at the half-bar. Cello continues its pizzicato bassline. Upper parts may pause between phrases in this section (i.e. the canon will begin at the half-bar, but may change over time). On the repeat, Violin I repeats the B section, arco. Violin II and Viola should play part of this page, pizzicato, and then move to Section III.

B

Musical score for Section B, measures 9-16. The score is written for five staves. The top staff is in treble clef and the bottom four staves are in bass clef. The key signature has one sharp (F#). The music consists of a melodic line in the upper voice and a pizzicato bassline in the lower voice. The piece ends with a repeat sign.

VIOLINS

III.

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*In this section, repeat any of these cells, in any order.
End with the rolled chords. Do not line up with the others in the quartet.*

♩ = 72

pizz.

*Vary the speed of the rolls.
Do not line up the chords with the other performers.*

After the delay part enters
and the rainsticks begin to play,
diminuendo *al niente*.

III.

VIOLA

*In this section, repeat any of these cells, in any order.
End with the rolled chords. Do not line up with the others in the quartet.*

pizz. $\text{♩} = 72$

*Vary the speed of the rolls.
Do not line up the chords with the other performers.*

After the delay part enters
and the rainsticks begin to play,
diminuendo *al niente*.

CELLO

*retune A string down to G

III.

In this section, repeat any of these cells, in any order.
 End with the rolled chords. Do not line up with the others in the quartet.

$\text{♩} = 72$
 (transposed; sounds a whole step lower)

III

(transposed; sounds a whole step lower)

(top line transposed; sounds a whole step lower) Vary the speed of the rolls.
 Do not line up the chords with the other performers.

(top line transposed; sounds a whole step lower)

After the delay part enters and the rainsticks begin to play, diminuendo *al niente*.

THE BUTTERFLY EFFECT

III.

*If possible, the piece should be played in just intonation, tuned to the G harmonic spectrum.

Both C-sharps should be tuned 49 cents lower than in equal temperament.

All three Fs should be 31 cents lower.

All three B's should be tuned 14 cents lower.

*The harp should be placed in the back or at the side of the hall or off-stage.

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Very Freely, Like Rain (♩ = 96)

Enter after the quartet has begun section III.

The musical score is written for Harp and consists of five systems of two staves each (treble and bass clef). The tempo is marked 'Very Freely, Like Rain' with a quarter note equal to 96 beats per minute. The dynamics range from *pp* (pianissimo) to *mp* (mezzo-piano). Measure numbers 7, 11, 15, and 19 are indicated at the start of their respective systems. The score includes various musical notations such as slurs, accents, and fingerings (e.g., 3, 5, 6).

THE BUTTERFLY EFFECT

2
23

Hp.

6 3

27

Hp.

mf *p* (Vary the speed of the rolls.)

33

Hp.

mp *p*

43

Hp.

53

Hp.

p

62

Hp.

pp

[approx. 3 minutes]