The Experiment

from

*Hopscotch**

David Rosenboom, Music

Erin Young, Text

Collected Score Materials

*a mobile opera for 24 cars
produced by
The Industry
Yuval Sharon, conception and direction

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Notes

This composition sets a scene in which a principle Hopscotch opera character, Jameson, reaches a personal crisis. In his desperate search to understand the meanings of heaven and hell and the liminality of imagination and reality, Jameson pursues the path of a mad scientist—he is also referred to as The Doctor in this scene—, probing for illusive clues in the brain and mind, which he believes will answer his dilemmas. Audience members have the opportunity to don headbands that can pick up features in their brainwaves that are common to particular states of mind, especially those that might indicate agitation, alert shifts of attention, and a meditative focus mediating reactions. When Jameson poses question to the audience, features detected in the sum of their group brainwaves call up a mix of pre-recorded responses, sung or chanted with extraordinary dexterity by a soprano in three distinct styles, again representing the presence of agitation, alert shifts of attention, and meditative focus. In this way the states of the minds hearing the questions determine (anonymously) the mix of vocal replies heard in the resulting collage of song. The brain responses direct which ones will become momentarily dominant in an ever-shifting musical landscape. Finally, when Audience members' brainwaves exhibit significant and sudden changes all at the same time, a special chord sounds to signal the group mind shifting. From this, Jameson derives his answers. Ironically, his blind determination dooms him to declare the conclusions most consistent with the substance of his own imagined reality.

Performers: 1) Baritenor voice (Jameson), 2) Tenor voice (Boatman), 3) Actor (Technician), 4) Electronics-software performer, and 5) four Audience members who wear brainwave monitoring devices and perform as active imaginative listeners. Note: Answer texts shown in the score were written for a soprano with a very wide range. These have been pre-recorded and imbedded in performance software. It is possible to develop a live concert performance in which these parts are sung by thee sopranos. In this case they should be located somewhat remotely and sing with microphones, so that the mix of their voices, which is controlled by the Audience members brainwaves, is clearly evident to the general audience. In such a concert performance, Audience performers might be located creatively in the performing space, separate from general audience.

The following images and diagrams are intended to give a general idea of how the work was realized for the original Hopscotch opera performances in 2015. Performances could also be realized creatively in a variety of ways, using other technical resources and performers, while always adhering to the spirit of the music in the score.

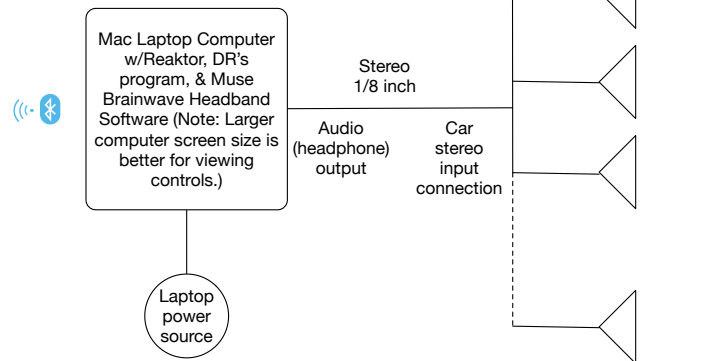# *The Experiment*
from
Hopscotch
Tech Diagram for 2015 Premiere Performances in Los Angeles

Version using MUSE™ brainwave monitoring headbands from InterXon, Inc.

AUDIENCE HEADBANDS
MUSE™

NOTE: The headbands will need to be recharged via USB connections periodically. They cannot be used while they are recharging. This may mean that multiple USB connections to a power source are needed. Note also that many USB hubs with multiple connectors do not provide power. After recharging, headbands must be re-linked to the computer and software.

Car Stereo System

Mac Laptop Computer w/Reaktor, DR's program, & Muse Brainwave Headband Software (Note: Larger computer screen size is better for viewing controls.)

Stereo
1/8 inch

Audio
(headphone)
output

Car
stereo
input
connection

Laptop
power
source

NOTE: To avoid Bluetooth interference, all Bluetooth devices nearby may need to be powered down, including audience cell phones. No other Bluetooth connections should be active in the car.

Startup operation involves: 1) establishing Bluetooth connections, 2) starting Muse I/O program and verifying data flow via OSC to DR's Reaktor, program, 3) putting headbands on audience members, and 4) operating DR's Reaktor program in coordination with performers. If Bluetooth connectivity remains solid, the system can remain in operation while headbands are moved from one set of audience members to the next. This would minimize downtime in between groups. A recharging cycle will need to be determined after testing.

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# Software Instrument Control Panels (Hopscotch 2015)

Panel Close-ups

EEG Filter-Followers

This unit receives raw EEG data from four sources via OSC, filters each one into three selected frequency bands—(for example, Theta, Alpha, Beta or other bands)—and follows the amplitude contours of the changing energy in these bands.
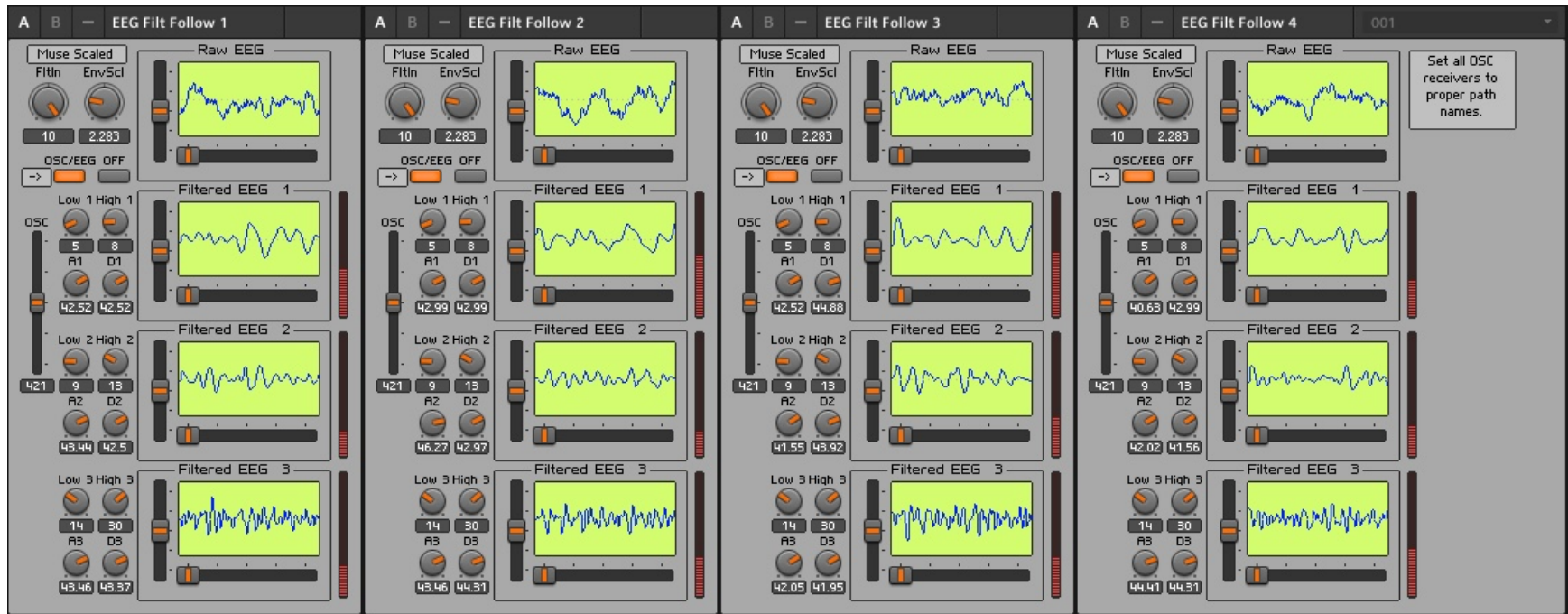
Voice Mixer, Limiter, and Brainwave Average-Delta Threshold Triggers-Coincidence Detector

This unit determines the mix of voices singing Answer texts A, B, and C, triggers envelopes to shape the Answer texts musically in response to changes (set by Delta Thresholds) in the brainwave frequencies of audience members (Theta, Alpha, Beta or other selected frequencies), and detects significant, coincident shifts in brainwave frequencies coming from all audience members simultaneously, which results in sounding a chord signaling a group mind shift.
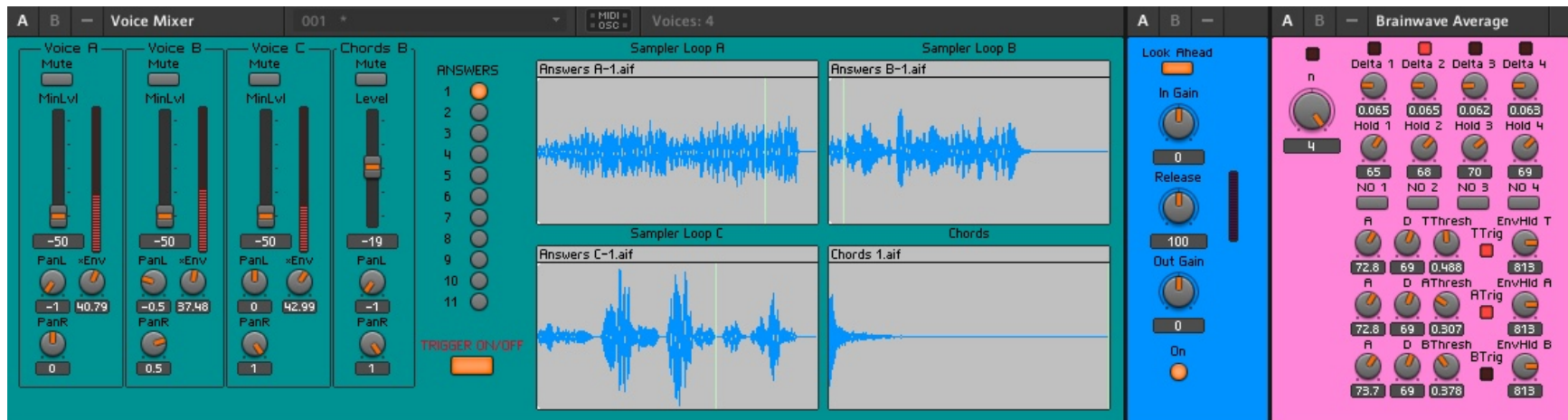
Accompanying Tracks Controls

This unit enables playback of an Ambiance track, a Crisis Track that accompanies Jameson in Part 1: Jameson's Crisis, a Beat track used in conjunction with various theatrical staging moves, and the Aria Chord used in Part 3: Jameson's Aria.

EEG Simulators for Testing

This unit is used for testing, tuning, and adjusting the other units when live EEG inputs are not available.

The Experiment

Part 1: Jameson's Crisis

David Rosenboom
Text: Erin Young

An ambiant music or sound environment plays inside the limosine as audience members (4) enter. A lab technician arrives with 4 wireless brainwave (EEG) monitoring headbands and prepares to attach them to the audience.

Jameson (spoken freely but musically):

I would like to graciously thank you all for agreeing to help me with this experiment. Your thoughts and the data I collect from them will be a great help in allowing me to discover the hidden secrets of our minds, the places we never knew existed.

While my technician helps you properly secure your headbands, let me explain what these devices will be reading.

As Jameson points to a display showing charts and graphs for the audience to see, a quasi hip hop/techno beat pattern starts, and he sings the score.

For the limosine version these two parts may be pre-programmed on a laptop.

Hip/Tech (M.M. ca. ♩ = 96)

Use *Leslie* effect, slow to medium rotation.

Blues
Organ

Electronic

Make a beat with improvised variations.

mf

Beat

mf

The Experiment

Lyrics:

These head-bands are spe-cif-ic-'ly de-signed to read the chan-ges in the E E G da-ta ga-ther'd

from the fron-tal lobe of your cor-tex. This da-ta will al-low us to in-fer as-pects

of your men-tal fo-cus re-sponse ag-i-ta-tion and a-rou-sal. Ev-'ry thing you think will be trans-ferred in-to a

Jameson (Baritenor): set of read-a-ble da-ta as you can see here. I'll be ask-ing you a ser-ies of ques-tions and your ans-wers will be man-i-fes-ted from the in-ter-pre-ta-tion of this da-ta. There are

Freely *cantabile,* floating expressively over the meter . . .

things in-side of us that we ne-ver knew ex-ist-ed. Dark things, light things, and what are they real-ly?

The Experiment

Jameson (Baritenor): I spent half my life stu-dy-ing the hea- vens _____ and skies a - bove when it was here all a-long.

Half whispered/gravelly and half sung,
with just enough pitch to be clear

Jameson (Baritenor): U - ni - ver- ses trapped in our minds U - ni - ver- ses trapped in our minds. And to - night we're go - ing to bring them

cresc.

Jameson (Baritenor): *ff* out. *f* Af-ter I ask each ques-tion , I want you to think clear - ly a - bout your ans -

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The Experiment

Part 2: Jameson's Questions

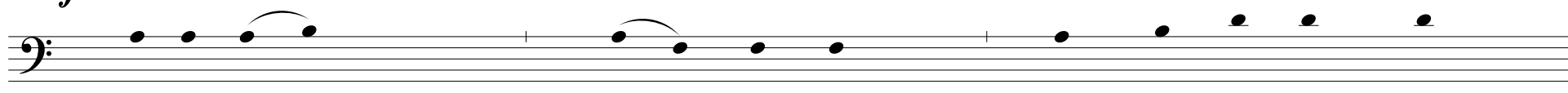Music: David Rosenboom
Text: Erin Young

These are declarative questions. Each one is articulated by a specific chord, sometimes containing only a few notes, like bugle calls, sometimes lyrically chromatic. After posing each question to the audience, Jameson stops and listens to a vocal collage of answers sung in response. The collective brain states of the audience members control a mix of three distinct types of vocal responses, corresponding to states of agitation, shifting attention and/or alertness, and a singular focus exhibiting minimal shift in brain state. After listening for a time appropriate to allow each response collage to be experienced musically, Jameson interrupts with the next question. The questions progress in darkness and aggressiveness. Though it is possible to vary the order of the questions in response to how the audience reacts, this general progression should be maintained. Question 11 should always be the last one.

Place breaths as needed. Work with natural rhythms of speech. Black and white notes indicate only relatively shorter and relately longer durations. The music is not metric, rather flowing with the rhythms of the thoughts. Interpret freely and expressively. Graphic spacing suggests speeding, slowing, notes close or separated. Syllables may be sustained between notes.

The Experiment

3 mf If you could save the hours you've was - ted, mp would you rea - ly

f be sa - ving them?

4 mf Have you e - ver watched the grey o - cean

mp on a pla - cid mor - ning? mf Did you ask it some - thing? f Did it an - swer?
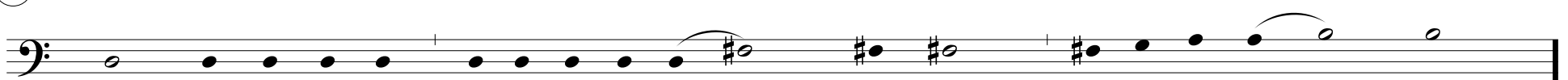
5 mf Does twi - light scare you, that mo - ment be - tween light and dark where the earth tran - si - tions?

6 mf If you wake up be - fore your a - larm, do you stare___ at the cei - ling wai - ting? subito p

⑦

f How do you feel when the blare from an am - bu - lance si - ren

wakes you up at night? Would you feel dif - f'rent if it were a fire en - gine? A po - lice - car?

ff

⑧

mf Can you i - ma - gine cru - shing a blood orange in your hand,

f

the rough ex - ter - i - or cav - ing in un - til the sti - cky red juice runs down your arm?

rit.

ff

⑨

mf Have you e - ver felt the weight of ash - es *mp* in your palm? Did you let the a - shes run through your fing - ers

mf

Did you cry?

(10)

mf Have you e - ver seen eyes com - plet - ly still as they stare back **f**

subito **p** in - to yours?

(11)

f Im - a - gine a bur-ning house, white paint mel-ting un - der the lick - ing tongue of the fur - i-ous heat,

f de - struc - tion weigh - ing on the fee - ble frame. Are you burn - ing too, your skin boil - ing?

mf Will you die or be forced to live? **f** **ff**

After Question 11, the vocal collage response transitions to a voice/proccesed-voice sound environment from which Jameson's Aria will emerge in Part 3.

The Experiment

Part 2: Answers (A) Agitation

Music: David Rosenboom
Text: Erin Young

Pitched chanting/speaking, always with a sense of urgency, agitation, alarm, rhythmically incessent, with a quick, exigent sense of time and rapid tempo.

(Soprano/Mezzo-soprano)

1 **Agitated** (M.M. ♩ = c. 76)

It waits it waits it waits for you it waits for you. Loom‑ing loom‑ing loom‑ing be‑neath loo‑ming hid‑den

loo‑ming be‑neath or hid‑den with‑in loo‑ming be‑neath or hid‑den with‑in wait‑ing wait‑ing for you wait‑ing for you to scream.

This section mightalso accompanied by an instrumental ripping sound, like claws ripping fabric.
(Violin overpressure could be used.) This is optional.

The park the park the park can't hide the park can't hide the park can't hide you the park can't hide you. The ci - ty

the ci - ty the ci - ty will ex - pose the ci - ty wil ex - pose the ci - ty will ex - pose you the ci - ty will ex - pose

you. The ci - ty will creep the ci - ty will creep the ci - ty will creep in - to you the ci - ty will creep in - to you.

It will leave it will leave it will leave you it will leave you it will leave you to die it will leave you to die.

The moun - tains the moun-tains will the moun-tains will spy on you. They will they will judge they will judge you and they won't

and they won't help and they won't help you and they won't help you es - cape. You can't you can't you can't es - cape you can't

es - cape you can't es - cape the ci - ty you can't es - cape the ci - ty lights.

③

What was left   what was left af‑ter eight   what was left af‑ter   eight hours   what was left af‑ter eight hours of my day   fol‑low‑

ing   fol‑low‑ing the for‑ty   fol‑low‑ing the for‑ty hours   of my day I could ne‑ver re‑co‑ver?   What did I do   what did I do then, wast‑ing in li‑quid

Repeat these two cells continuously
and permute them in random orders.

wast‑ing in li‑quid ccour‑age for a night? I did‑n't need cour‑age be‑cause what did I do?   What did I say?   Who did I meet?

④

Repeat all these cells continuously
and permute them in random orders.

When can   I   leave?   What do   I   have to   do?   Does   it   mat‑ter?   When will   this   end?

When   will   it   be‑gin?   Is   there   a   way   out?   Is   there   a   way   in?

⑤

The dim the dim room in the dim room the dy - ing the dy - ing sun the dy - ing sun - light split by the slats of

the blinds, ev - 'ry - thing was black ev - 'ry - thing was black and grey ex - cept this orange ex - cept this orange light fal - ling

light fal - ling u - pon your bo - dy like pri - son bars. You you you you wai - ted you wai - ted for your sen - tence you wai - ted for your sen - tence of dark - ness.

⑥

3x's
five fif - ty se - ven

5x's
five fif - ty eight

3x's
five fif - ty nine

7

Find them find them find them on the con - crete on the con - crete con - crete con-crete con-crete.

Repeat and permute the ordering of this group of cells freely in
continuous phrases, each as long as a single breath will allow.
Pause between breaths and repeat this process 2 or 3 times as desired.

Their limbs stretched out. One leg for - ward, one arm back. Hair a fan be - hind their head.

2x's

Brea - thing op - tion - al. Heart - beat fad - ing.

8

Do you know what it feels like to squeeze some-thing? Do your teeth press in - to each-oth - er,

threat-'ning to crack un - der the pres - sure of your hatred, of your anger, of your fear, of your pain?

9 5x's

Dis - ap - pear - ing.

10 Repeat and permute the ordering of all the cells in this section
freely, making continuous phrases, each as long as a single breath
will allow. Pause between breaths and repeat this process as desired.

Life - less grey eyes. They still reach out for me. They still look for me.

Ar - gue with me. Blame me. Hunt me. Wait for me. Wait wait wait

11 Repeat as desired.

a wo - man scream - ing in a sing - ing voice

The Experiment

Music: David Rosenboom

Text: Erin Young

Part 2: Answers (B) Shift in Attention/Alertness

Speak each part like a newscaster delivering a suddenly breaking story. Use pitched speech on the notes of the chords indicated to create three versions of each numbered answer text. The first version should be on the lowest note of the chord. Slightly delay each subsequent version—second on the middle and third on the top note—by listening to each preceding voice and following that as quickly as the mind will alow to create a short human delay.
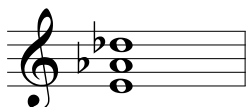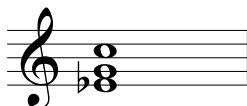
1

(Soprano)
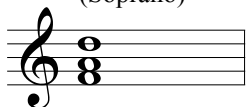
Don't close your eyes. The darkness in your mind is thicker than the darkness of the room.

2

The edge of the park, the beginning of the city, the roads, the streetlights, the concrete building, the door, the windows, the small apartments, the roof, the smog, the blue sky and the nothingness beyond it.

3

I forgot everything, every moment of sitting on my couch, hours of driving endless miles, every day I crouched over my computer. It became a colorless spot inside everything else that mattered, every fight, every kiss, every moment you smiled and I smiled, and we could see it.

4
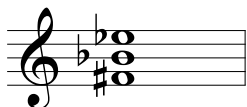
It told me to learn patience. I wanted to know more. It told me to wait, but I couldn't. It told me goodbye, and I left. It watched me leave. I never looked back.

5
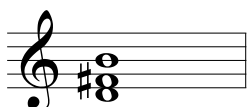
A shift, drifting in the rising current, falling in the crashing stream, the fading morning, the failing dusk, the coming morning, the birth, and the death, a cycle of creation and destruction.

6

You didn't rise. You watched the sun and your son and your partner, but you refused. I didn't wake. I listened to the cars and the buses and the whistle of the train, but I refused.
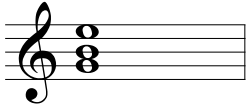
7
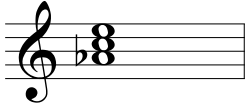
Blue…red…blue…red…blue…red…BLUE…RED…

8

Leaking down your arm, running down your chest to your navel.
It pours from your eyes and you taste the sweet, tartness that makes your mind tingle.
You like it. You want more. You always want more.

9
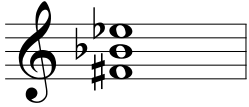
We forgot our places. We forgot our names. We lost our words. We lost our bodies.
We wondered if we too would become the forgotten, the lost.

10
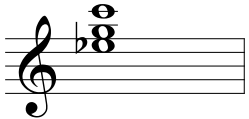
What do you want from me?
(Repeats getting increasingly more panicked)

11

A man screaming in a singing voice

Score

The Experiment

Part 2: Answers (C) No Reaction/Focus

Music: David Rosenboom
Text: Erin Young

Place breaths as needed. Work with natural rhythms of speech. Black and white notes indicate only relatively shorter and relately longer durations. The music is not metric, rather flowing with the rhythms of the thoughts. Interpret freely though thoughtfully. Graphic spacing suggests speeding, slowing, notes close or separated. Syllables may be sustained between notes. Dynamics are improvised and may be shaped in rehearsal or recording sessions.

(Ticks separate phrases/statments where pauses may occur. Accidentals hold through bars. Cautionary accidentals are used to assist.)

(Soprano with wide range)

1

I know that dark - ness meant dreams. Dreams brought me clo - ser to you.

They brought me clo - ser to the things I could have and could ne - ver have.

2

The me - lo - dy of a gold - finch pas - ses on the wind.

A child laughts in the dis - tance. The mo - ment is fleet - ing. The time is de - sert - ing.

3

When you were un - der the sheets, your hand was on my chest, and your fin - gers were on my skin,

and I swore I wan - ted noth - ing more, noth - ing less.

4

The sound of the gen - tle waves flowed through me. I be - came my blood. The sand be - came my skin. I slept
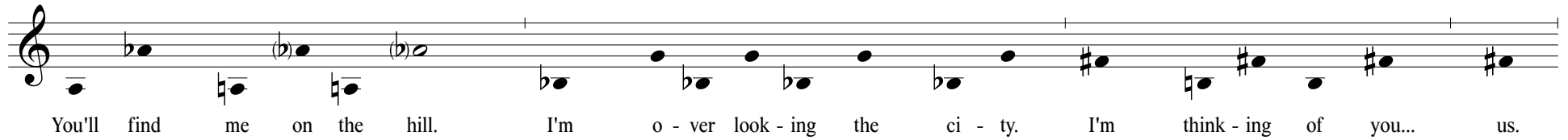
and my dreams be - came the cries of the grey birds a - bove me. My mind won - dered in the cloud - less sky.

If you're the o - cean, I am the sea foam, bu - bling and burst - ing on your shore.
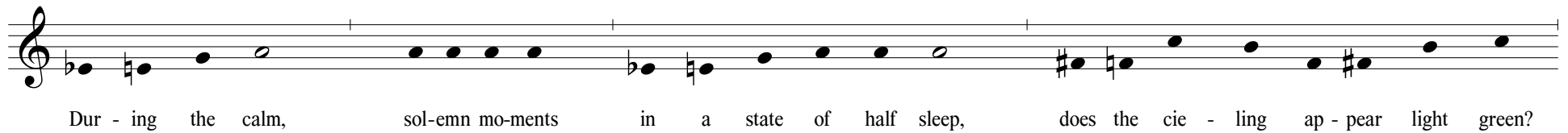
5 You'll find me on the hill. I'm o - ver look - ing the ci - ty. I'm think - ing of you... us.

Even . . . monotone . . .

I'm re - mem - b'ring, but try - ing to for - get. I'm wai - ting for the night and a dream - less sleep.
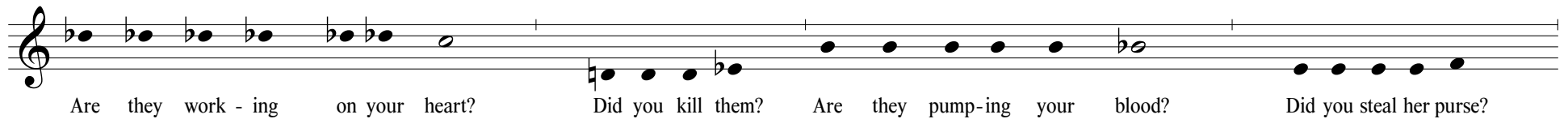
6 Dur - ing the calm, sol-emn mo-ments in a state of half sleep, does the cie - ling ap - pear light green?
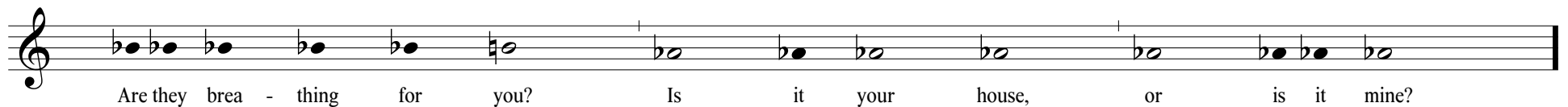
Is it the co - lor of a soft mea - dow? Do you know that the mea - dow will leave you? You can-not stay.

7 Are they work - ing on your heart? Did you kill them? Are they pump-ing your blood? Did you steal her purse?

Are they brea - thing for you? Is it your house, or is it mine?

8

When did you be-come so hard to please? So in - de - struct - i - ble? You don't mind be-cause what you're crush - ing has no soul?

Is that what you think? Would you feel dif-f'rent - ly if the orange were a rab - bit? A kit - ten? A dog?

9

What are you now? Are you e - ven there? Can you hear me when I talk to you? Am I tru - ly a - lone?

When the wind how - ls through the trees, will that be you or an - oth - er ghost wait-ing to come in - to my life and then dis-ap-pear?

10

When did you be - come   so un - re - spon - sive?   Do you feel   the touch   of a cold hand u - pon your   skin?

When you blink   do you see black-ness   be-fore the   world?   When was the last time   love   af - fec - ted you?   You're not   o - kay.   You're not here.

You can't cry,   or scream,   or sleep,   or eat,   or wake,   or e - ven put   your   toungue   u - pon your lov – er's   bo – dy.

11   Repeat individual bars, whole section, whole section with permuted bars . . .

No   please,   I   won't   go.   I'm   not   rea - dy.   I'll   give   you   an - y - thing.

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The Experiment

Part 3: Jameson's Aria

Music: David Rosenboom
Text: Erin Young

Jameson's brief area brings a peak in intensity. The Aria consists of five numbered lines, which may be performed in the given order and repeated in varried orderings at will. A stark contrast between obsessive rhythmic frenzy and intense wailing lines, flipping back and forth, is intended. Whatever order and manner of repeating the lines is chosen, line (5) should always be the last one. Sharp puncuating chords are inserted improvisationally to interrupt Jameson unpredictably in specific lines. The Aria is also to be surrounded and accompanied by a countrapuntal collage of recorded voices made from the final Answers texts—A, B and C number (11)—from Part 2.

Place breaths as needed. Work with natural rhythms of speech. Black and white notes indicate only relatively shorter and relately longer durations. The music is not metric, rather flowing with the rhythms of the thoughts. Interpret freely and expressively. Graphic spacing suggests speeding, slowing, notes close or separated. Syllables may be sustained between notes.

3

Simile . . .

sffz

3xs

3/16

mf It lies

2xs

5/16

It lies in wait

3xs

7/16

It lies in wait for us,

f it   bides   its   time,

falsetto ad lib

4

cantabile

mf It burns slow, and in the end con - sumes.

f mf

Simile . . .

sffz

5

Slowly

Repeat as desired, fading away . . .

rit.

Hell is in the mind, wait - ing, wait - ing. Hell is in the mind, wait - ing, wait - ing.

p mp

Jameson repeats the last bar continuously as he attempts to run away, leaving his lab notebook behind, running aimlessly, possibly through a crowd. He collides with the Boatman, who interrupts.

The Boatman interrupts . . .

(Tenor)
Fast (M.M. ♩ = c. 146)

Some - times   we   come   for   you,   When   you   least   ex - pect   it.

f

Repeat continuously, like an emergency
siren, while disappearing.

ex - pect   it.   You   think   you   un - der - stand   it   all,   But   you   know   no - thing,   no - thing.

An ambiant music or sound environment returns as the Technician
debriefs the audience and retrieves their brainwave monitoring devices.

Technician (spoken):

(Looking out, after Jameson)
Doctor?
(Addressing audience)
**I apologize for that, everyone. I guess he's been under a bit of stress, but no need to worry. I do hope this experience has
been enlightening. You may exit as soon as I have your headband back, and again, we thank you for your help.**

(He takes the headbands back and escorts the audience away.)
**You know, the doctor is preforming the experiment because he believes that heaven and hell are part of our imagination.
Really, it's quite odd. I get that. Yet, he thinks these places are as real as anything before us. They just stay dormant in our
minds until our final moments. That's why he's been collecting this data, prodding around in your minds. That's what
you're helping him decide. He thinks some of us see a bright light, some of us see flames, and that last moment, before
you say goodbye, will either save you or haunt you forever… I wonder what he found.**