(In)Determinacy:

Incorporating Openness in Programmed Music and Performance

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IV WILLS

extracted

Introduction

Theories

IV WILLS is a multi-media, multi-disciplinary performance piece based on ideas of four classic critical theorists: Arthur Schopenhauer, Friedrich Nietzsche, Sigmund Freud, and Victor Frankl. The piece was written for violinist Hollas Longton and pianist and singer Claire O'Brien, and choreographed by two dancers, Inma Pavon and Maria Sinnecker. The concept of the piece came from a very personal search for meaning and purpose in a materialistic, highly capitalistic Western world. In business, academia, and art, a thought, concept, skill, or item seemingly has no worth other than its current or potential monetary return.

I believe that in order to live a satisfying, meaningful life, one must nurture one's intellectual and emotional needs as well as one's bank accounts. In the USA, one of the most materially well-off countries in the Western world, suicide is the leading cause of injury-related deaths, surpassing homicides and car crashes.[1] While some of these cases surely stem from very real personal dilemmas such as poverty, illness, or loss of loved ones, I believe many cases stem from what Frankl terms an existential vacuum, or a general, pervasive sense of meaninglessness,[2] despite having all basic physical needs met. As Frankl states, citing Nietzsche: even in the most dire of circumstances, those who have a why to live can bear almost any how.[3]

Historically, religion and community provided morality, spirituality, and human connection to individuals, giving them a sense of a higher purpose than the monotonous

obligations of their own daily routine.[4] Today, communities are more wide-spread. Through the use of modern technology, human communication involves less one-to-one contact, but covers a wider distance and a more expansive range of perspectives. We are just as, if not more, likely to ask advice from sources on the internet as we would from a family member or neighbor.

As one born outside of any strong religious tradition, in a highly populated, ethnically and culturally diverse area, with full access to information on a wide range of beliefs, religion has for me always been a thing freely and personally chosen or not chosen. Every religion is just one of many: all have good and bad tenets, and all are of seemingly equal standing. Therefore, religious zealotry seems absurdly self-righteous and stubbornly ignorant of the millions of other people on the planet and the thousands of other religions that they follow. From the outsider's perspective of an atheist, religious purism seems to do more harm than good, breeding and justifying xenophobia, homophobia, and sexism.

Like an increasing number of others,[5] I view organized religion with suspicion, yet still feel a need for a sense of spirituality that connects me to the world I live in and those I share it with. I seek to find a better morality and sense of community, free of residual oppressive dogma born in archaic societies based on the realities of today. Therefore, theorists such as Schopenhauer, Nietzsche, Freud and Frankl appeal to me, as they cover broad philosophical and moral standpoints from a more or less secular position, stemming from the field of individual psychology. Though each theorist is not without flaws, and some of these texts were written over a century ago, they cover universal human issues that are still relevant today. Unlike many modern texts, they seek to provide frameworks within which to

think, rather than to determine narrowly defined absolute truths. They read more like thought processes rather than scientific theories, and the theorists often turn back and contradict themselves later. I believe these dialectics and contradictions are important to intellectual pursuit: a debate often reveals more truth in the argument than in the conclusion.

Structure

I create works that employ multiple creative materials and methods unified via technology, as I believe this is the best means to represent the multifaceted world in which we live. It gives us access to the the forms of information and communication that we use in our daily lives, and it enables us to combine analog and digital forms; the physical and intangible; the old and the new. I seek to create networks between creative mediums: between dance and video, video and audio, live instrumentals and imagery, a collage in which each element acts upon, reacts to, and informs the other. I play with the instability of such networks in a live performance setting, intentionally programming indeterminacy into the behaviors of the digital media and exploring variable parameters through trial and error.[6]

My directing methods correspond with my media-making methods: I create structures via sound, image, space, topic, and time, and let the performers' agency serve as variable parameters within these structures. Working within additional randomized media parameters, the performers are unable to fully settle into routine, and become more indeterminate in their actions. Each performance is fresh and unique, with an energy and determination that can only be achieved through uncertainty. Through *IV WILLS*, I sought to create a balance between structure and chaos.

The main structural elements of *IV WILLS* are space and time. The piece is structured in fours, to lend stability and structure to a piece created on unstable theories, using unstable technology. Four provides architectural stability: four rectangular walls, four sides to a window, four sides to a door. Nature is divided by fours: there are four seasons, four classical elements, and four cardinal directions. Religions abound with the number four: the Buddhist four noble truths, four bases of power, and four stages of enlightenment; the Christian four gospels and four horsemen of the apocalypse; the four books of Islam.

IV WILLS is divided into four acts, based on Schopenhauer, Nietzsche, Freud, and Frankl, in chronological order of when they lived and worked. Each act is sixteen (four times four) minutes long.

For rehearsals, I secured four separate weeks of development time dispersed across six months in the Corcadorca Theatre Development Centre (TDC), in Cork, Ireland: the week of December 1st, 2014; and the weeks of February 23rd, April 6th, and May 11, 2015. We developed one act per development week, in sequential order. I developed the musical concepts, structure, and themes before meeting with the performers. We discussed these at length, and then I let the performers interpret these guidelines as they wished, interfering only if needed, during the development process for the sake of continuity and interaction design. The final show ran June 30th - July 4th, 2015 in the Granary Theatre in Cork.[7] We had a full week of tech in the performance space preceding the show.

Technical Devices

Four Wills was performed in a square space, with the audience positioned along all four walls, facing the performance space in the center. A projection screen was placed

covering the majority of each wall, above the audience, spanning 6 by 3 meters each. The audio system consisted of four speakers and two subwoofers. Each performer was assigned a corner of the room as their home base (see figure 5).

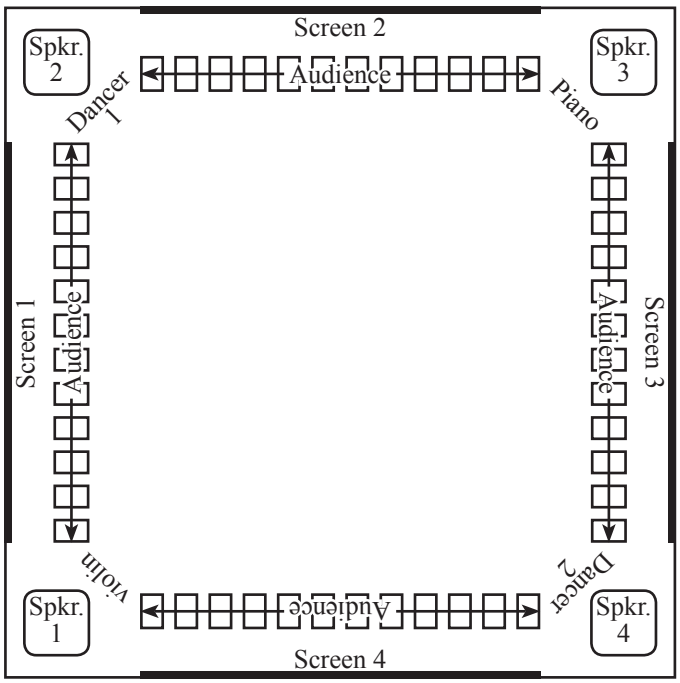

Figure 5

Hollas's violin was input to the central computer and amplified via a crude piezo pickup microphone secured on his instrument with tack and run through a pre-amp pedal. Claire was set up with an electric piano, set to silent and sending MIDI to a nearby computer via USB, and a Shure SM58 microphone. The dancers each had LilyPad Arduino boards embedded in their shirts. Accelerometers attached to their wrists picked up x, y, and z data from the dancers' arm motions, which was transmitted wirelessly to the central computer via XBee radio modules.[8]

ACT I: Arthur Schopenhauer - World as Will and Representation

Theories

The first act, Will to Live, is based mainly on Arthur Schopenhauer's texts *The World as Will and Representation*[9] and '*The Fourfold Root of the Principle of Sufficient Reason.*'[10] Schopenhauer's 'will to live' is a blind, animalistic desire to perpetuate oneself: to avoid pain and to procreate.[11] In *World as Will*, Schopenhauer maintains that the world is, for us, a lawless blind impulse, devoid of knowledge, absolutely free, entirely self determining endless striving: there is no God, and the world is inherently meaningless. The world is represented as being in a condition of eternal frustration. It endlessly strives for nothing in particular, goes essentially nowhere, and is beyond ascriptions of good or evil.[12]

Through *The Fourfold Root of the Principle of Sufficient Reason*, Schopenhauer defines four kinds of necessary connections that arise within the context of seeking explanations. Inspired by Aristotle's doctrine of the four basic kinds of explanatory reason, Schopenhauer correspondingly identifies four independent categories of objects in which explanations can be given: material things, abstract concepts, mathematical and geometrical constructions, and psychologically-motivating forces.[13]

Structure

Act I was temporally subdivided according to the aforementioned four themes defined by Schopenhauer.

0-4 minutes	4-8 minutes	8-12 minutes	12-16 minutes
Abstract Concepts	Psychologically Motivating Forces	Mathematical and Geometrical Constructions	Material Things

Table 2

The score I provided, for both dance and music, consisted of instructions within these guidelines. We discussed these topics at length, and collaboratively came up with ways to interpret these themes within the piece. The dancers worked on choreography independently after an initial discussion of each topic, before rejoining the full ensemble to work out ideas within the TDC space. The music for Act I was mostly devised through improvisation and trial and error between myself with the looping system and Hollas on violin during the residency.

I interpreted Abstract Concepts in relation to human experience to be the internal working of the mind. Relating the beginning to origin stories such as the Greek concept of chaos, I aimed for a trajectory of moving from stillness — a nothingness with the potential for all of existence — to an emergence into consciousness. For Inma and Maria this translated to moving from a deep, internal, meditative state, and slowly awaking into physical form. Hollas and Claire were instructed to remain silent for the first four minutes.

Linking Psychologically Motivating Forces with human will, in this section both the dancers and musicians become less passive, and start to interact and work with each other and the performance space. The dancers were instructed to gradually wake up from their previously meditative space, and begin to explore and interact with the space and with each other. Hollas was instructed to blend the violin with the white noise audio static, slowly evolving into light harmonics, over the course of the next four minutes. Claire was instructed to match Hollas on vocals, singing tones that were similar to or consonant with those that Hollas played. To create sounds which emulate static, Hollas bowed the violin body and bridge in various ways. Claire gently breathed and blew into the microphone to produce static-like sounds.

During Mathematical and Geometrical Constructions, I instructed the dancers to become more rigid and structural, playing with ideas of pattern and symmetry. I asked Hollas to move from the harmonics he had previously been playing to consonant tones, using a steady, firm bowing with a consistent pitch, mainly on open strings. Claire continued to consonantly harmonize with Hollas.

For Material Things, I instructed the dancers to consider materiality, particularly resources: topics discussed were wanting things but not being able to have them, and conflict over resources. Hollas was instructed to slowly move from strong, consonant tones to become more dissonant, within his own tones, and against the samples which played back over the speakers. Claire continued to harmonize with Hollas, less consonantly, matching the feel of the piece.

Technical Devices

During the first TDC development week, through trial and error, Hollas tried a few violin tunings based on Just Intonation. Hollas, as a joke, tuned the violin to harmonics of a 50 Hz buzz that was coming from the sub-woofer due to faulty wiring of the pickup microphone attached to his violin. The resulting tuning became the basis for the tuning of the entire show.

The violin tuning for Act I was:

string	Hz	note	Harmonic Partial
G	100	G+35C	2
D	300	D+37C	6
A	350	F+4C	7
E	400	G+35C	8

Table 3

The soundscape for the first four minutes, Abstract Concepts, was created entirely in Max for Live: a white noise generator was passed through a resonant bandpass filter with gain, center frequency, and Q variable parameters. The initial center frequency was set at 10000 Hz, and the Q at 100, the widest possible width.

The master volume controlling this noise generator was gradually raised from silent to full volume over the course of one minute. At two minutes, the control of the volume and Q parameters changed slowly from a fixed number to a variable range between slowly changing upper and lower parameters. The input from the accelerometers on the shirts determined

where within these upper and lower parameters each variable was at any given point in time. The up and down motions of Inma's two arms were averaged into one variable, as were the forward and back rotation of the arms. The up/down motion controlled the volume of the static, while the forward/back rotation controlled the Q.

From two to four minutes, the lower parameter of the volume lowered from full volume to a quarter of the maximum volume, and the lower parameter of the Q lowered from 100 to 10. The upper parameters remained the same until the 8 minute mark, where they, too, were lowered to .25 and 10 over the course of the next 8 minutes, once again closing the range to a fixed variable. Over the first four minutes, video static slowly fades in, uniformly, on all four projection screens.

One noise generator with the above parameters was assigned to each of the dancer's arms, making four noise generators in total between the two dancers. As the dancers began Act I facing opposite directions, each noise generator was assigned to the speaker in front of the dancer closest to the arm from which parameters were being received.[14]

A 50Hz sine tone faded in between 3.5 and 4 minutes, cuing Psychologically Motivating Forces, fading out again over the next four minutes. At four minutes, identical Max for Live looping devices are initiated on both violin and voice.[15] The device begins recording the incoming signal in 15 second intervals: four samples per minute. For each of the four audio channels, a random number is chosen from the number of available recorded clips, and the corresponding clip is chosen to be played. Parameters for playback duration and time between clips are also randomly generated, with the parameters becoming tighter as time progresses. At four minutes, clip duration is chosen between 0 and 15 seconds,

becoming 0 and 8 seconds over the course of four minutes. Similarly, the upper range for time between clips shortens from 15 to 0 seconds over the course of 8 minutes. In this way, the looping playback is more sparse in the beginning, and gradually becomes more dense. A light reverb is put on all four channels.

At four minutes to eight minutes, the previous video static fades out. Halfway through, at six minutes, a new video static begins to overlay the first. This static is not uniformly dispersed as is the previous static, but is generated via javascript acting on the jit.gl.sketch object.[16] It receives parameters for particle density (number of pieces of static per screen), as well as low and high range values for particle width, height, fill alpha, and stroke alpha. This static is designed to be white particles on a black background, and is mixed with the underlying video via the co.negate.jxs shader at maximum opacity. At six to eight minutes, as the other static continues to fade out, this new static emerges with particle density increase from 0 to 1000 over two minutes, with fixed width and height of one pixel, and a fill and stroke alpha range of 0-1, with 1 being fully opaque. At eight minutes, the static particles have become more individually defined and more sparsely dispersed.

Eight minutes marks the beginning of Mathematical and Geometrical Constructions. This is cued to the performers via sine tones, slowly fading in and out, as had the previous 50 Hz tone. These tones, however, are tuned to be consonant with the open strings of the violin: 1000Hz, 400Hz, 350Hz, 300Hz. Each tone fades in over thirty seconds and out over thirty seconds, making one complete circle around all four speakers per minute, each beginning from one speaker to the right of the previous tone. It takes four minutes for all four tones to complete.[17] The digital sine tones served as a reference for Hollas, and created some very

satisfying beating patterns and fluctuations with the rougher, more imperfect tones of the amplified violin. The looping mechanism continued to play back samples from both violin and voice.

At eight minutes, the width and height range of the static expanded to four pixels maximum diameter over the next four minutes. Underlying pre-recorded close-up imagery of the dancers' hands, feet, and shoulders began to fade in and out underneath the static, which had at this point evolved to be reminiscent of old film dust. Due to variances in Jitter shaders with which I combined videos during the week of the show, the underlying videos were sometimes more and sometimes less apparent in each show.

Twelve minutes marked the beginning of Material Things. At this point the height parameter of the 'film dust' is set to elongate from 4 to 400 pixels over the course of the next three minutes. The resulting particles begin to look like rain.

The overall sound became louder and more layered, as more samples are played back, and the tones become more discordant. At 14 minutes, one last sine tone slowly came in over the course of 30 seconds at 17000 Hz. This tone was held for 30 seconds, and then at 15 minutes, the tone slides from 17000 Hz to 0 Hz over the course of the remaining minute. This tone served as a cue to the musicians and dancers to wrap up what they were doing, and to finish with the glissando. From 15 to 16 minutes, the particle count of the rain was reduced from 100 to 0, fading it out, and the volume of the loop feedback was reduced from full volume to 0.

Summary

The overall trajectory of Act 1 was to move gradually from an inner world to an outer world, exploring human will and its manifestations on an individual level. Audio and visual static was used to portray chaos, the stillness from which everything emerged, interpreted physically through dance as the stasis of a meditative state. This static/stasis is gradually given form. The audio static is first given form through the motions of the dancer, then enhanced by pure sine tones and the timbre of violin and voice. The video static slowly morphs into film dust, overlaying images which could be read as past, present, or future imagery seen from the mind's eye. The film dust finally emerges into rain, a real-world, physical form, loaded with symbolism of cleansing and renewal, life and death, and the power of nature over human affairs. The increasingly textured and layered nature of the musical landscape, enhanced by digital looping, is meant to portray a journey from the inner mind and personal will to a more layered engagement with personal experience, memory, and the outside world.

ACT II: Friedrich Nietzsche—The Will to Power

Theories

Act II: Will to Power is mainly based on Friedrich Nietzsche's text of the same name.[18] Moving from Schopenhauer's individualistic approach to will—a primordial will to live and perpetuate oneself—Nietzsche's Will to Power moves to a more inter-social, societal level. Nietzsche posits that nothing has existence and meaning outside of the "game" of

power relations. Power, according to Nietzsche, exists only in relation to other powers, and is a dynamic striving to expand itself: a constant effort towards self actualization.[19]

Nietzsche emphasizes structure and the lack thereof, organization and chaos, as key principals in the Will to Power. Chaos is seen not just as a burden to be overcome, but a stimulant for our creative power.[20] Organization, in science and society,[21] makes the whole stronger than any individual element or person. Organization, which is never complete, is a process in which the most successful organization is shown to come out stronger, and the less successful organization becomes a function or functionary of the greater.[22]

Nietzsche was a vehement atheist, in a particularly anti-monotheistic sense, and spent his life in an effort to replace Christian morality with secular ideology revolving around philosophy, music, and art.[23] These concepts of religion, morality, and power struggles drive the themes of Act II.

Two further writings have played a large role in the structure of this movement: Douglas Rushkoff's descriptions in *Present Shock: When Everything Happens Now* of how time has evolved as a construct in the minds of humanity according to the methods with which it was measured,[24] and Karen Armstrong's descriptions in *A Short History of Myth* of how humans have historically viewed myth, and consequently, religion. Armstrong explains various myths and how they related to various ways of life, and how they were continually altered and changed once they had outlived their use.[25] Act II follows Armstrong's chronology and the idea of transformation that runs through the text.

Structure

Act II is broken down into sections according to historical periods discussed in *A Short History of Myth*:

Timing (minutes)	Period	Audio	Video
0-3	Paleolithic	Generative Bells	Constellations
3-5	Neolithic	Bell Phase	Constellations out
5-5.5	Axial	Chimes/Toll	None
5.5-8	Post Axial	Wood Sounds	Additive Architecture
8-16	Great Western Trans-formation	Morse Code Music	Additive Architecture

Table 4

As in Act I, the scores for the dancers were broken down into themes within time durations. We collectively discussed how these themes could be translated into dance, and then Inma and Maria worked on choreography together before we came back together in the TDC residency to streamline interactions within the media and as a group.

Musically, the first eight minutes were generative or pre-recorded electronics. The last eight minutes was a traditionally notated composition for instruments and electronics created from rhythms derived from Morse Code. These rhythms were derived from a quotation from Nietzsche's *The Will to Power*:

> If we affirm one single moment, we thus affirm not only ourselves but all existence. For nothing is self-sufficient, neither in us ourselves nor in things; and if our soul has trembled with happiness and sounded like a harp string just

> once, all eternity was needed to produce this one event—and in this single moment of affirmation all eternity was called good, redeemed, justified, and affirmed.[26]

This eight minute section is meant to portray a journey from smaller to larger societies, and the struggle between the wills and desires of opposing forces that drives, creates, dismantles, and rebuilds them.

Technical Devices

Act II utilizes accelerometers in the dancers' shirts to trigger audio and video events. During the first section, the dancer's shirts were programmed to send a trigger once an arm ascends to a given vertical threshold. Each arm triggers a note from a bank of notes consisting of Bb, A, G, and D, which gradually descends four octaves over the first three minutes, and are then randomly played on one of the four speakers.[27] When the bells are triggered, so is a video representation of a constellation in the night sky, also randomly on one of the four screens.

These dancer-triggered bells are replaced after three minutes by a bell phase generated in Max for Live. This bell phase works off of similar principles to the techniques Reich used in 'Piano Phase.'[28] The generator consists of three notes controlled by three metronomes, which change as each set of tempos resolve.[29]

For example, in phase one three metronomes are set to trigger a bell at a given interval in milliseconds. Phase one takes 24000 milliseconds (24 seconds). In that time, a tempo set at 1500ms would send a trigger 16 times. One set at 800 would trigger 30 times.

One set to 1000 would trigger 24 times. All metronomes would send a trigger, all at the same time, at 24 seconds, for the first time in that duration since the initial trigger. The last phase fades to silence over the course of 54 seconds, making the total time of the phase 120,000 millisecond, or two minutes.

Time in which all timings resolve (ms)	Phase 1 24000	Phase 2 28000	Phase 3 14000	Phase 4 54000
Note	**Bb3**	**Bb3**	**Bb2**	**Bb2**
Timing (ms)	1500	700	700	500
Note	**A3**	**A3**	**A3**	**G3**
Timing (ms)	800	800	400	400
Note	**G3**	**D3**	**D3**	**D3**
Timing (ms)	1000	1000	1000	1000

Table 5

During this process, all notes are given a small random delay, introducing a level of chaos to make them seem less mechanized. At the entry of the bell phasing the stars become animated, and begin to move and disperse, leaving blank screens at the end of the last phase.

After the last phase is faded out, a Just Intonation version of the Westminster Quarter chimes comes in, triggered at one note per second, Bb G A D, rest, D A Bb G, rest, repeated twice, followed by a D bell toll. Thirty seconds in, the toll begins to fade out over the next thirty seconds.

As the clock toll fades, the shirts are then set to send a trigger once the dancers' arms descend to a certain vertical threshold. When the shirts trigger, a woodblock hammering sound is set to play randomly from one of the four speakers. On each hit, a frame from a predetermined frame-by-frame animation is set to update on a randomly chosen screen.

From here, at the eight minute mark, we move into the precomposed score based on Morse Code. Text was input and converted to MIDI via Robert Ecker's web application.[30] Different rhythmic patterns were created throughout the piece using various ratios for dit, dash, and dot, keeping it in 4/4 at 120 bpm for the entire piece, with intermittent use of triplet and sextuplet subdivisions.

The resulting monotone rhythms were imported as MIDI files into Ableton Live, originally with three lines: piano hand 1, piano hand 2, and violin. Once the rhythms were satisfactorily arranged in Ableton, I assigned pitches to the notes, roughly based on G Major and g minor chord structures, though the final score remained without a defined key.

After a few months of practice, this arrangement proved to be too difficult for the musicians to play. Because of this, I wrote new lines for violin and piano, adding a metronome beat to some sections and extra harmony, and converted the previous violin and piano parts to MIDI synthesizers. I distributed these across speakers 2 and 4: piano hand 1 and 2 on separate speakers, and the original violin part on both. Hollas's amplified violin continued to be played through speaker 1, directly behind him, and Claire's piano was played through speaker 3, directly behind her. Claire's new part mainly served to delineate the otherwise obscure 4/4 rhythm of the piece, grounding the irregular rhythmic patterns of the Morse Code. Hollas's new part served as harmony to the electronic tones.

Even with drastically easier parts, Hollas and Claire still had trouble keeping time, as the rhythm of the electronics was erratic. To help with this, I added a click track, including spoken measure numbers with a one-bar lead-in to cue the musicians in after long rests.

For Act II, as I wanted to stay true to the previous tuning, but I also wanted to write for piano, I devised a 12-note tuning system based on Terry Riley's tuning for 'Cactus Rosary,' using the original 100 Hz G+35C as the root. In order to convert the piano to this tuning, I turned the piano's volume to silent, and sent its MIDI to a nearby computer. The MIDI was re-tuned through Scala,[31] and sent to Ableton Live using a polyphonic eight-voice setup. This was then output to the speaker behind the piano.

All electronic voices were similarly converted in this manner. For the purpose of Scala, I set 'middle C' to 400Hz, two octaves above Hollas's low G (see table 6).

Here is a sample octave:

Note	Ratio	Tuning	Standard	Cent Difference
G	1/1	400	392	+35
G#	49/48	408.33	415.3	-29
A	9/8	450	440	+39
A#	7/6	46.67	466.16	+2
B	5/4	500	493.88	+21
C	21/16	525	523.25	+6
C#	11/8	550	554.37	-14
D	3/2	600	587.33	+37
D#	49/32	612.5	622.25	-27
E	13/8	650	659.25	-24
F	7/4	700	698.46	+4
F#	15/8	750	739.99	+23

Table 6

Hollas's violin remained tuned in the same manner as the previous act. His part was written to be easily played in that tuning, mainly on open strings. The piano voice was set to match its electronic Morse Code counterpoint, using a simple Ableton Live sine-wave synthesizer reminiscent of early electronics. As the piece was meant to move forward through history, from ancient to modern, this choice of synthesizer was meant to bring the piece forward in time to an era to which the audience can relate, while not clashing with the 'ancient' sound of the bells.

Summary

Act II was designed to move thematically from smaller to larger civilizations, from ancient to modern times, portraying power struggles. It roughly follows Armstrong's phases of human existence, with references to Rushkoff's historical account of time, as first being non-existent, then cyclic, then linear, and then fragmented,[32] which matched Armstrong's accounts.

From Armstrong's categorization, the initial, human-triggered bells and constellations correspond with the the reliance on and interaction with nature in the Paleolithic hunter-gatherer period. The bell phasing corresponds to the Neolithic, farming communities, who began to organize and cultivate land, and the early civilizations who began to organize and cultivate cities. The Westminster Chimes, the first distinct melody introduced in the piece, corresponds with the Axial age, determined by Armstrong as the beginning of religion as we know it,[33] and by Rushkoff as the beginning of time as a linear rather than cyclical progression.[34] As these bells are usually rung in church towers and clocks, including that in Big Ben in London, as a timekeeping device, this melody elicits imagery of religion, government and time, and the orderliness that these instill.

The building scene, consisting of wooden sounds reminiscent of hammering, was meant to portray humanity's ability to construct and re-construct its surroundings. The composed Morse Code scene is meant to elicit the idea of larger and larger societies and power structures, and their communications: Morse Code itself has a strong military history, playing a vital role in World War II, which was a culmination of and the downfall of many of

the more problematic ideas of power that Nietzsche and many of his German counterparts held at the time of his writing.

In this act, Morse Code was used as a metaphor for the codes and signifiers humans construct for communications purposes, and how they can be restructured over time.

ACT III: Sigmund Freud—The Pleasure Principle

Theories

Act III was based on Sigmund Freud, collage, and the pleasure principle. As Act II was fairly active, Act III winds back from exertive force into the internal mind, to portray inner psychological struggles.

Freud's pleasure principle posits that humankind's main motivation is the seeking of pleasure and avoidance of pain.[35] Freud also spoke extensively on juxtaposition and the psychology thereof, which influenced the Dadaist and Surrealist arts of collage.[36] Act III is a collage of videos, compositional phrases, and movements based on common themes found among public domain films from the '40s and '50s.

I find collage to be highly representative of the often chaotic, non-linear thought process of the human mind. Thoughts appear, unsolicited, from apparently nowhere, are easily sidetracked, and are often repetitive.

Structure

The films chosen as source material for the video collage were *Of Human Bondage* (1934),[37] *My Favorite Brunette* (1947),[38] *My Dear Secretary* (1948),[39] *Tulsa* (1949),[40] *Beat*

the Devil (1953),[41] and *The Last Time I Saw Paris* (1954).[42] These films were chosen from a list of films that were in the Public Domain, to avoid potential copyright issues.

From these films, I selected scenes that depict four categories: celebration, gambling, finery, and excess. Each category accounted for four minutes of the act, and they were further divided into subcategories.

Celebration (4 min)	**Gambling (4 min)**	**Finery (4 min)**	**Excess (4 min)**
Fireworks	Horse Racing	Fancy Cars	Jealousy
Public Celebration	Car Racing	Fine Dining/Dancing	Tantrum
Bar Singing	Casino Signs	Fancy Parties	Violence
Drinking	Arm Wrestling	Parlor Singing	Car Trouble
	Dice Games	Limo Drinking	Sadness
		Fancy Drinking	Drunkenness
		Kissing/Romance	

Table 7

To create a musical score in accordance with the structure of the video, I took these same themes—celebration, gambling, finery, and excess—and asked local Cork composers to come up with musical phrases that portray the themes. The musical phrases were to be 1, 2, 4, 6, or 8 bars long, in 4/4 at 60 bpm, in the key of G Major or g minor, depending on the theme. Claire O'Brien, Hollas Longton, John O'Brien, Eamon Ivri and I each contributed phrases.

I then sorted through the compilation of musical phrases, grouping similar-sounding phrases into each category. Phrases meant for one category often fit better in another category, so the G Major/g minor separation dissolved. As the tuning was non-standard to

begin with, I made the decision to leave the phrases as they were and strip the entire piece of a key signature.

These phrases were then arranged in an 'In C'[43] style format, with each phrase marked to be repeated *ad libitum*. I instructed the performers to choose phrases at random, not necessarily in a linear fashion, and to play them 1, 2, 4, 6, or 8 times, at will.

I sent the instructions that I had sent to the composers to Inma, in order to keep her informed prior to our TDC week. Inma decided to treat the dance for that act as we had treated the video and music, and chose to take actions and motions from the videos and incorporate them into a dance collage. Rather than choosing from a selection at random each performance, as the music and video were structured to do, Inma and Maria used dice to determine what moves they would do, in what order, and how many times—1, 2, 4, or 8—they would repeat these moves. From this, they wrote down the results, and created choreography 'scores' for themselves.

Technical Devices

The selected film scenes for each category were broken down into 1, 2, 4, 6, or 8 second clips. These clips were chosen at random in Max/MSP/Jitter, independently on all four screens, according to the given timeframe of the subcategory. At times one scene from one movie is re-mixed across all four screens. Other times several scenes from several movies are juxtaposed. Layered on top of this randomly triggered video collage, the 'film' static from Act I is re-introduced to the screens.

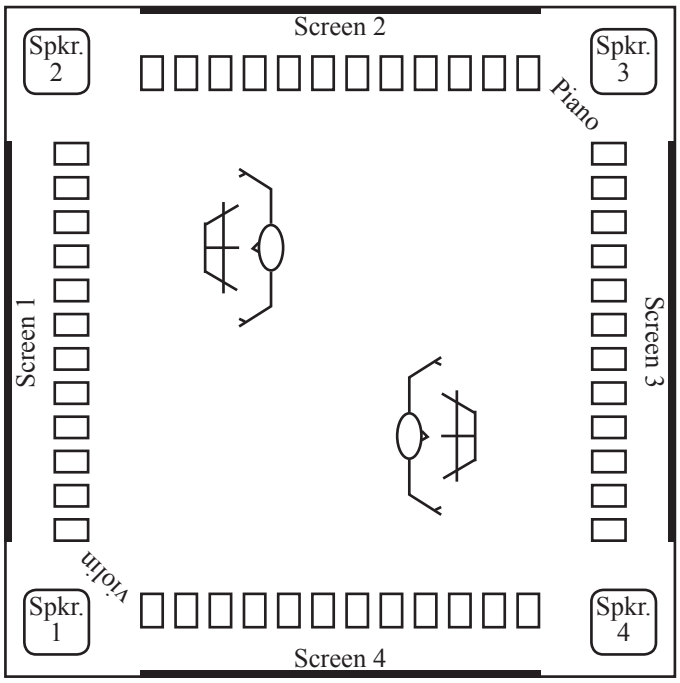

Figure 6

The timings of the videos and the music were specifically chosen to maintain the same rhythm. Since the melodies were all in 4/4 and at 60 bpm, most changes in audio and video would occur on a one-second beat. To reinforce this, and to keep the musicians in time, we introduced a click track to this act as well.

In the performance space, the dancers stood on opposing sides of the stage, facing opposing directions, with the scores on music stands in front of them for reference as they performed the predetermined moves. This was meant to further tie their actions in with those of the musicians, as both were performing repetitive gestures as notated through a score, and to emphasize the rooted, internal nature of the act (see figure 6).

For this piece, Hollas decided it would be easier to play in the Just tuning if he tuned his violin to the normal fifths, G D A E, only using the frequencies of the new tuning as

opposed to those of standard tuning. As re-tuning the instrument mid-show was not an option, we required a second violin, which remained un-amplified for this act. Claire's piano voice was changed to an acoustic-sounding piano instrument in Ableton Live.

Summary

Act III is a collage based on Freud's theories of psychoanalysis, illustrated via randomly juxtaposed themes derived from vintage movies. The un-amplified violin and acoustic piano, along with the black and white, vintage movies, is meant to give the piece a classic, retrospective feel. This, juxtaposed with the fragmented, repetitive imagery, creates a sometimes pleasant, sometimes stressful Freudian dreamscape of love, addiction, and tragedy.

ACT IV: Victor Frankl - Man's Search for Meaning

Theory

Act IV is based on Viktor Frankl's key text *Man's Search for Meaning*. Speaking from his experience both as a Holocaust survivor and a neurologist and psychologist, Frankl posits the search for meaning is our primary motivation in life: that a person needs 'something' for which to live.[44] Throughout his text, he reiterates a quotation originally written by Nietzsche: "He who has a *why* to live can bear with almost any *how*." In the concentration camps, those who knew there was a task waiting for them to fulfill were most apt to survive.[45]

Frankl describes what he terms an 'existential vacuum,' which he believed inflicted the Twentieth Century. According to him, at the beginning of human history, humankind lost

its animal instinct, through which an animal's behavior is embedded and secured. More recently, the traditions which previously buttressed human behavior rapidly diminished. Therefore, at present, no instinct tells us what to do, and no tradition tells us what we ought to do. We instead wish to do what other people do (conformism) or we do what other people wish us to do (totalitarianism). This existential vacuum manifests in a state of general boredom, or a kind of depression due to a lack of contentment in one's life. Frankl suggests that other wills, such as the will to pleasure, and the wills to power and money, are simply manifestations of a frustrated will to meaning.[46]

Frankl developed logotherapy as a means to help patients find meaning and purpose in their lives. He states that there is no one general meaning to life: the meaning of life differs from person to person, from day to day, and from hour to hour. Logotherapy therefore seeks to find the specific meaning of a person's life at a given moment.

Frankl describes three areas in which we can discover meaning in life: courage, or the attitude we take toward unavoidable suffering; love, which we can find by experiencing something (goodness, truth, beauty) or encountering someone; or purpose… creating a work or doing a deed. Adversely, Frankl defines that which causes people to fall into despair as the *tragic triad*: pain, guilt, and death.

Structure

Act III is structured by the tragic triad followed by the aforementioned areas where we can find meaning in spite of these. Each topic accounts for two minutes in duration,

bookended by a two-minute intro and a two-minute outro, resulting in eight sections totaling sixteen minutes.

2min	**2min**	**2min**	**2min**	**2min**	**2min**	**2min**	**2min**
intro	pain	death	guilt	courage	purpose	meaning	outro

Table 8

The musical aspect of the piece was partially improvised, and partially scored. Claire's vocal part consisted of quotations taken from Frankl's text meant to correspond with each section. Underlying the full duration of the piece is an electronic drone created with a Shepard-Risset glissando generator with variable parameters.

The first quotation, which enters at measure 55 (3:40), is "That which does not kill me makes me stronger,"[47] which Frankl quotes from Nietzsche. This coincides with and is meant to inform the 'pain' section.

For the beginning of 'pain,' Hollas was instructed to perform similarly to the beginning of Act I: making sounds like those he previously used to blend with the static.

The second quotation enters at measure 71 (4:44): "Set me like a seal upon thy heart, love is as strong as death."[48] Frankl quotes the Song of Solomon after explaining how the memory of his wife and his mental conversations with her helped him get through particularly dark times in the concentration camp. He tells of how love extends the physical person of the beloved, and finds its deepest meaning in his spiritual being, his inner self. He did not know if his wife was alive or dead, but she was still with him.

As in the first act, Hollas once again moves from chalky static-like sounds to harmonics, and then to more steady tones, mostly on open strings. At the eight minute mark, or the halfway point, to reinforce the idea of a mood shift, Hollas's part becomes notated. His part was meant to portray a feeling of forward momentum, of hope and progress, and to reinforce Claire's vocal melody.

The next quotation begins at measure 25 (8:20): "The angels are lost in perpetual contemplation of an infinite glory." Again, Frankl quotes this regarding his love for his wife, and how, in the most miserable conditions, when he had been stripped of everything, he could still find bliss in her memory.

The last quotation, "what you've experienced, no power on earth can take from you," comes at measure 181 (12:04). Frankl explains that in the concentration camp, despite having lost all worldly possessions, one's experiences, skills, education, memories, accomplishment, and mistakes, cannot be taken no matter what is done to your physical being: having been is also a kind of being, and perhaps the surest kind.[49] This ties in with his earlier explanation of regressing into memories, such as those of his wife, as a defense mechanism in unbearable circumstances, and is a reminder that despite having nothing, we are still ourselves, and can rebuild our lives with the experience and knowledge we have gained through our past.

Around the middle of 'meaning,' Hollas begins improvising light, quick harmonics, gradually playing quieter until the tones return to chalky static, and fading out with the end of the piece.

Section	Vocals: Quotation	Violin
Intro **00:00-02:00**	none	none
Pain **02:00-04:00**	That which does not kill me makes me stronger	quiet, static-like sounds
Death **04:00-06:00**	Set me like a seal upon thy heart, love is as strong as death	quiet, static-like sounds to lightly bowed harmonics
6-8 Guilt **06:00-08:00**		harmonics to steady tones on open strings
8-10 Courage **08:00-10:00**	The angels are lost in perpetual contemplation of an infinite glory	Notated score begins
10-12 Purpose **10:00-12:00**	none	Notated score
12-14 Meaning **12:00-14:00**	what you've experienced, no power on earth can take from you	Notated score to light, airy improvisation with harmonics
14-16 Outro **14:00-16:00**	none	fade out

Table 9

The dance instructions, for the first few sections of this piece, were more literal than in previous acts. For the first few minutes, I instructed the dancers to move slowly in circles, in the opposite direction of recorded video shadow versions of themselves moving similarly in a more vigorous fashion. I instructed Maria to lie down as if she had died around the four minute mark, and Inma to catch up to her, and mourn her loss. This was meant to coincide with Frankl's accounts of the concentration camps, giving an image of incarceration, suffering, and death. I suggested that the memory of Maria could revive Inma. The remaining

sections were again left largely to interpretation by Inma and Maria after a collective discussion about the theories and topics.

Technical devices

The two main technical devices used for Act IV were several variations of a specialized voice recording and playback Max for Live instrument,[50] and two instances of a Shepard-Risset glissando generator Max for Live instrument.[51] Hollas returned to the violin with the tuning used for acts I and II. Both vocals and violin were once again amplified in this piece.

To create a background soundscape, I created an instrument in Max for Live that synthesizes an adjustable Shepard-Risset glissando. A Shepard-Risset glissando is an auditory illusion in which a tone is perceived to continually ascend or descend eternally. This is achieved by fading in a new glissando exactly one octave above or below an existing one, while fading the previous tone out.

The Shepard-Risset glissando in my instrument consists of sixteen tones, each 1/16th of an octave apart. Of these, every fourth tone is allotted to one speaker: tones 1, 5, 9, and 13 to speaker one; 2, 6, 10, and 14 to speaker two; 3, 7, 11, and 15 to speaker three; and 4, 8, 12, and 16 to speaker four. The instrument receives parameters for base frequency and frequency range, the speed and direction of the glissando, as well as volumes for each overall speaker output, as well as an option to rotate the speaker location according to the glissando timing: one full rotation per gliss cycle. I then duplicated this instrument within the Ableton Live set, in order to create denser texture.

At the beginning of the fourth act, the primary instrument is initialized at a low frequency of MIDI value 31, or G0, with a range of 48, or four octaves, creating a high MIDI value of 79, or G4. The glissando is set to -250 seconds (a negative time value creates a downward glissando). The instrument is slowly faded in, first on speaker 2, over the course of one minute, then on speaker 4 over the course of the next minute, and then the remaining two speakers over the course of the third minute. At the start of the third minute, the speed of the glissando is set to slow down from -250 to -1000 seconds over the course of the next two minutes.

At the beginning of the third minute, a secondary Shepard-Risset glissando Ableton instrument is brought in to create a deep rumble underneath the primary instrument. It is initialized at a base frequency of MIDI 19, or G-1, also with a range of MIDI 48, or four octaves, making the upper range G3. The gliss cycle of the second instrument is set to -0.1. The resulting sonority is a low, undulating rumble, which is faded in under the initial tone over the course of one minute.

As the first half of the act is about the tragic triad, and the second half is about finding meaning, at the eight minute halfway point, the timing of the gliss changes from -1000 seconds to 1000 seconds, changing it from a downward to upward glissando. Also, beginning at eight minutes, over the course of the next six minutes, the range of the primary instrument's glissando expands from 4 to 6 octaves, and the underlying rumble of the secondary instrument fades out. At fifteen minutes, the main instrument fades out: channels 1 and 3 over the course of sixty seconds, and 2 and 4 over the course of 45 seconds.

Layered on top of this underlying drone, vocals help to delineate each section. The first quotation was recorded live, each word to a separate buffer. The words were then played back, in sequential order, with each word randomly assigned to one of the four speakers. After Claire finishes the second quotation, the first quotation is once again played back, this time randomly re-ordered, and diffused to a randomly chosen speaker.

These devices are not used again, until the last quotation: “what you’ve experienced, no power on earth can take from you.” This quotation is again recorded, each word into a separate buffer, and repeated twice; first in sequential order, randomly across all four speakers, and then again, more quietly, and randomly re-ordered.

A click track was vital for this piece in order to keep Claire and Hollas both in tune, in Just Intonation against the glissando drone, and in time. A note at the intended frequency was given slightly before the downbeat, to allow Claire to match the frequency with her voice. A high pitched tone was given at the beginning of each topical section, to help both Hollas and Claire keep time.

At the point at which Hollas’s part becomes notated, a metronome beat is introduced. However, to maintain a sense of fluidity — to match the sliding background drones — the click track is only given in rest beats. This cues him in and helps him to keep count when he is not playing, while allowing him to play more fluidly and naturally, off of the beat, during the notated parts.

The video for this piece was programmed similarly to that of Act III, in which videos were randomly chosen on all four screens from particular video banks according to a timeline. It begins with short clips of shadowy figures of Inma and Maria walking in circles,

then longer clips of struggling; first as a long shot perspective, then as a medium shot perspective. These videos were recorded by Enrique Carnicero in the Granary Studio under my direction. I then edited these to look like shadows on a white wall. This struggle then fades to a long video of clouds which I shot, taken from the perspective of an airplane window. These clouds then fade with the glissando at the end of the piece.

Summary

Act IV was meant to portray despair and the struggle to emerge from it. The Shepard-Risset glissando is meant to portray the sense of endlessness and futility that accompanies despair, with the downward glissando portraying sinking into despair, and the upward glissando portraying rising from despair. The quotations from the text serve to illustrate Frankl's ideas and to temporally segment the piece, providing relief from the Glissando drone.

The shadow figures walking in circles are meant to further portray a sense of despair and futility. This imagery was inspired by prison yards, in which prisoners walk in orderly circles. The shadow filter obscures the identities of the figures, and gives them an ethereal aesthetic. These figures could be shadow versions of the dancers, perhaps from another time, or they could portray the outside world, moving at odds with the characters on the stage. The struggling figures directly point to Act II, as the choreography is the same. This reinforces the idea that the shadow imagery might portray the memories or pasts of the dancers. The clouds are meant to illustrate freedom: Frankl mentions clouds frequently, representing the beautiful world out of reach from the concentration camp. Cloud imagery is also associated with religious notions of heaven and angels: these notions are very comforting to some.

IV WILLS: Reflections

As this project was my most ambitious to date, there were several things we partially developed but were unable to finish due to time restraints. One of the main things I had hoped to do, and almost successfully completed, was to track the two dancers from above, using a Kinect Camera. Using a modification of Zachary Seldess's KVL Kinect Tracker,[52] combined with basic distance formulas, I created a patch that was meant to track two dancers, and their distances from each screen and from each speaker. This data was to be used in act I, II, and IV to spatialize audio aspects in accordance to the dancer's locations, and in all acts to localize video elements in a similar fashion.

Due to limited available in-space tech time, my programming of the Kinect in regards to performance elements was completely hypothetical and conceptual until the time we mounted the camera on the ceiling in the Granary, a few days before the show opened. Once the camera was mounted, the two-dancer tracking system was working smoothly. However, I had mapped the input data to the wrong OpenGL video coordinates. Due to the rush of tech week and the complicated nature of the show, I decided it would be best to streamline what we already had, rather than spend time fixing the tracking and then reprogramming the show to accommodate the newly available data. This camera-tracking element is something that I intend to continue working with in future versions of this show, and in other future endeavors.

Additionally, I would like to continue to work with and refine the LilyPad Arduino sensor shirts worn by the dancers. The data input was unstable and fluctuated frequently. I

intend to continue experimenting with fabrication techniques, in order to stabilize the circuit connections and power sources. For the final rendition of the shirts, I used conductive thread insulated by lightweight iron-on interfacing fabric. The connections to the LilyPad were created with knots, secured by glue. The next version would include a mix of conductive thread and flexible conductive fabric. This would allow me to use thinner thread, which would have better grip and form more secure knots.

For a power source, I used a 9V battery, as recommended in various online sources.[53] I soldered these directly to the micro-controller. Despite this, as well as the addition of stitched reinforcements to secure the wires and prevent them from bending, this arrangement could not hold up to the dancers' movements, and frequently disconnected. The dancers found these batteries heavy, awkward, and difficult to work with. In the next fabrication I intend to use lithium-ion batteries, which are stronger and thinner.

I also intend to program better calibration methods into the software to be used before each performance. As it stands, the data input is crude, and the parameters triggering media elements are imprecise. Ideally I would add two more accelerometers to the arms, so that I would have independent data on both the upper arm and forearm. In Act II, I set the bells and constellations to trigger when the arms were fully raised, as if they were reaching for the sky. As I had no reference for the upper arm's relation to the rest of the body, the bells triggered even when the arms were bent and close to the body. This, in conjunction with the imprecise calibration, resulted in the motion-to-media relationship becoming lost to the audience.

Further developments would also include motion data and audio waveform pattern recognition. In this manner, I could not only trigger according to certain body positions, but

also according to certain predetermined dance patterns and choreographies. This ability would further enable me to create more meaningful motion-media relationships.

According to performer feedback, this was a productive and creatively satisfying collaboration for all involved. I wrote the piece specifically for the chosen performers and their specific interests and abilities, leaving much of it as an open work[54] to be further developed by the performers. While for the most part the performers liked working this way, one restriction we encountered was the time, space, and equipment to workshop various sections.

Due to the modified tuning of the piano and violin, in order for Claire and Hollas to practice together, good amplification was necessary in order to hear and work with the proper tuning. Logistics of piano and audio system availability and transport severely limited practice time, leaving just the TDC residencies and tech week in the Granary for available full set-up practice time. These tech weeks were further divided among lighting, dance, and programming, limiting practice time further.

Similarly, the dancers were unable to solidify the choreography until we were in the final performance space, due to drastic differences between practice environments to the Granary Theatre. The TDC space was half the size of the Granary, and had a cold cement floor which limited the dancer's capabilities. Inma and Maria additionally workshopped in Inma's studio, which, though the temperature and floor construction were better for dance, was also much smaller than the Granary stage. Regardless of these limitations, we worked with what we had to do what we could to the best of our abilities.

Following conversations with several advisors, the issue of extricating one's intellectual property from collaborations arose in relation to previous collaborations of mine, such as my media work with the company Eat My Noise Productions, which consists of two composers and a producer. Roles such as composer and director traditionally hold greater academic intellectual integrity than roles such as technician, engineer, or designer. However, the projects I tend to work on tend not to be directed or composed in the traditional sense. Eat My Noise is co-directed and co-composed, with equal standing between Peter and David in both roles. The two shows I worked on, *A:Volution* and *Moiety*, included large sections of un-notated improvisation by select musicians. In that collaboration, there is no one person with an overall control of the outcome.

Regardless, I had never assumed the role of director before *IV WILLS*, and I wanted to try my hand at it. For this show, I undertook the roles of Director, Composer, and Media Designer. Due to limited means, I also took up the role of Costume Designer, Set Designer, Producer, and Marketing.

This was a lot to take on. In retrospect, at minimum, I wish I had brought in a co-director. Even in the most loosely structured devised theater ensembles, in which all participants hold creative agency, the role of the director is to maintain an outside viewpoint and provide feedback to the performers and technicians, as they are unable to see the larger picture from within. I found it difficult to extricate myself from my own tasks in order to see the whole picture, and at times I was too preoccupied with my own endeavors to give the performers the attention and direction they needed.

I believe some of these issues could potentially be fixed by creating the majority of the music and media structure first, before bringing performers into the collaboration and the collaboration into a workshopping environment. However, this would make the work less open, and leave less room for the performers to contribute to the piece. I would find this unfortunate, as the performers' individual talents and creative input were great assets. If I were to pre-compose the next version of this show, I would still want to leave room for performer agency within whatever structures I create.

I view my choice of performers and collaborators as another aspect of the overall collage: I choose them because I admire their aesthetic and because I think their aesthetics and personalities would work well with each other's and with mine. By creating structures and then allowing the performers freedom to work within these, we are all more free to improvise and make adjustments to accommodate the input of others: Inma and Maria with dance, Hollas and Claire with music, and myself with programmed live audio-visual environments. When programming interaction design, I do not know the full scope and limitations of the technology I create until I put it to use in a live performance setting. As with any scientific or creative endeavor, trial and error is vital to the process. If I were to make the scores or instructions too rigid, I would stifle opportunities for this.

Overall I am content with the final outcome of the performance run. The show sold out one night and came close to selling out several other nights, and we received many positive responses from the audience. This is a piece that I could continue to work on with the previous performers if available, or, if not, that I could re-construct and re-devise under similar guidelines and structures with future collaborators. Regardless, I intend to continue

working on the technical and thematic aspects of the performance, as well as to streamline these collaborative methods of composition and devised multi-medium performance.

Notes

1. See Pappas: “Suicide: Statistics, Warning Signs, and Prevention.”

2. See Frankl, pages 128-130.

3. See Frankl, page 126.

4. See de Botton, *II. Community* (21-66).

5. See Neil Brown on the increase of Atheism (26-30).

6. See Olson, *Exploiting Chaos* (34-37)

7. See Wicks, under *4. The World as Will*.

8. On the accompanying USB drive, see IV WILLS/video/IVWILLS.mov for show documentation.

9. On the accompanying USB drive, see IV WILLS/showdocs/Audio/MASTER01 Project/ Presets/MIDI Effect/Max MIDI Effect/Lilypad_calibrate.amxd

10. See Wicks, under *2. The Fourfold Root of the Principle of Sufficient Reason.*

11. See Wicks, under *5.3 Asceticism and the Denial of the Will-to-Live.*

12. See Wicks, under *4. The World as Will*.

13. See Wicks, under *2. The Fourfold Root of the Principle of Sufficient Reason.*

14. On the accompanying USB drive, in IV WILLS/showdocs/Audio/MASTER01 Project/ Presets/Instruments/Max Instrument/ see rStatic1.amxd, rStatic2.amxd, rStatic3.amxd, rStatic4.amxd, for four voices of white noise generators corresponding with each of the two dancers’ arms.

15. On the accompanying USB drive, in IV WILLS/showdocs/Audio/MASTER01 Project/ Presets/Audio Effects/Max Audio Effect see looper_vioce.amxd and looper_violin.amxd.

16. On the accompanying USB drive, see IV WILLS/showdocs/video/IVWILLS/code/static04.js and its use within IV WILLS/showdocs/video/IVWILLS/IVWILLS.maxproj.

17. On the accompanying USB drive, see IV WILLS/showdocs/Audio/MASTER01 Project/Presets/MIDI Effect/Max MIDI Effect/ToneGen.amxd

18. See Nietzsche, *The Will to Power*

19. See Aydin, page 26.

20. See Aydin, page 27, in relation to *Thus Spoke Zarathustra.*

21. In Nietzsche's Will to Power, Third Book: in *I. The Will to Power in Science* (231); the most valuable knowledge consists of methods: in *III. The Will to Power as Exemplified in Society and the Individual* (341); a multitude will do what an individual will not; the State, or the *unmorality* organized, is the will to war, to power, to conquest and revenge.

22. See Aydin, page 31.

23. See de Botton, 283, ironically describing Nietzsche's stance in relation to his inability to gain the institutional backing of German academia, which was his downfall as an academic within his own lifetime, during which he was in 'nomadic exile.'

24. See Rushkoff, *Digiphrenia: Breaking up is Hard to Do* (69-129), particularly *Time is a Technology* (76-87).

25. See Karen Armstrong, *A Short History of Myth,* table of contents and *i. What is Myth?*

26. See Nietzsche, 532-533.

27. On the accompanying USB drive, see IV WILLS/showdocs/Audio/MASTER01 Project/Presets/MIDI Effect/Max MIDI Effect/W2P_Bells.amxd

28. See Reich for score. This phasing technique was explained earlier in the chapter *Paranoia,* pages 7-8.

29. On the accompanying USB drive, see IV WILLS/showdocs/Audio/MASTER01 Project/Presets/MIDI Effects/Max MIDI Effect/W2P_BellPhase.amxd for theoriginal Max for Live file used to create the sound file used in the show.

30. See Ecker's *Morse Code: MIDI & Text Generator* web application.

31. See Scala, and Curtis MacDonald, whose instructions were invaluable.

32. See Rushkoff (76-87).

33. See Armstrong (79).

34. See Rushkoff (77).

35. See Freud, page 7.

36. Stokes explains this through the works of Max Ernst (199-204).

37. See Of Human Bondage

38. See My Favorite Brunette

39. See My Dear Secretary

40. See Tulsa

41. See Beat the Devil

42. See The Last Time I Saw Paris

43. See Terry Riley, In C.

44. See Frankl (121-122).

45. See Frankl (126).

46. See Frankl (128-130).

47. See Frankl (103).`

48. See Frankl (58).

49. See Frankl (104).

50. On the accompanying USB drive, in IV WILLS/showdocs/Audio/MASTER01 Project/ Presets/Audio Effects/Max Audio Effect see voiceLoops.amxd and voiceLoops_random.amxd.

51. On the accompanying USB drive, in IV WILLS/showdocs/Audio/MASTER01 Project/Presets/Audio Effects/Max Audio Effect see shepardGliss1.amxd and shepardGliss2.amxd.

52. See Zachary Seldess.

53. See DIY: Audience Jacket. This tutorial was my main guideline in fabrication of the dancer's sensor shirts.

54. See Umberto Eco (169).