

**“Grey Matter”:
The Challenge of Maintaining Harmonic Consistency
and Thematic Ambiguity in the
Age of Artificial Intelligence**

**by
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B.G.S., Simon Fraser University, 2008

Project Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Fine Arts

in the
School for the Contemporary Arts
Faculty of Communications, Art and Technology

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SIMON FRASER UNIVERSITY
Summer 2018

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Abstract

“Grey Matter”, a forty-two minute, 4-movement suite for string quartet and Disklavier (Yamaha’s automated piano), ambiguously explores themes of aging (and the body’s attendant neural/psychic deterioration and social alienation) in the age of automation, digital technology and artificial intelligence. Another thematic layer implies the following questions: will the roles of creative and performing artists become obsolete, like so many other professions are feared to become, with accelerating automation and artificial intelligence? Is technology bestowing upon us a utopian or dystopian future?

Conceived with symmetrical harmonic processes, the work layers and juxtaposes sequentially diminishing harmonies (and diminishing performance personnel) with contrapuntal procedures. Alluding to a wide range of historical sources as disparate as Joseph Haydn, Robert Schumann, Béla Bartók, Charlie Chaplin, Kurt Vonnegut, Lee “Scratch” Perry and Spike Jonze, *“Grey Matter”* culminates with a collage of Bachian and Lisztian materials feeding back and reverberating through circular 4-channel electroacoustic diffusion.

Keywords: music composition, interactive technology, Disklavier, musical symbolism, symmetrical harmony, multichannel electroacoustic

Acknowledgements

I would like to thank Professor Arne Eigenfeldt for his guidance and patience and for granting me permission to use his Disklavier; Professor Judy Radul and Assistant Professor Eldritch Priest for further academic guidance; the performers of my “Grey Matter” project:

- Tina Park, violin
- Ken Lin, violin
- Genevieve Mackay, viola
- Laine Longton, cello

Finally, I would like to thank my brother and his family for their love and considerable patience over the years. We’ve been through a fair bit...

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Introduction

The early 21st century has arguably been a time of increased thematic ambiguity in the arts, a process that was well under way with the advent of postmodernism in the previous century, in which the objective nature of determinism, rationalism and absolutes inherent in modernism was increasingly doubted or at the very least questioned (Born 63). Contentious historical questions, particularly those of the Second World War, a conflict once seen as one of absolute black and white, have been increasingly addressed and explored by creative artists and have thus contributed to more nuanced (and imaginative) depictions of historical complexities, the realization that a lot of things are not as simple and clear cut as they seem. Composers such as Bernd Alois Zimmermann and Alfred Schnittke had also been proponents of thematic ambiguity through their polystylistic tendencies, incorporating materials as seemingly incongruous as rock, Jazz and tango gestures and embedding them into or juxtaposing them with both tonal and atonal/serial musical materials as collage textures. Indeed, the latter composer, who clearly appreciated and respected his own son's rock music leanings, drew a parallel between the seductive nature of popular culture and the seductive nature of evil (a term he arguably used as a stand-in for "totalitarianism") (Schnittke and Ivashkin 22-23). Schnittke, an avid reader of Theodor Adorno's works (Westwood 47; Kronos Quartet CD liner notes) was evidently informed by Adorno and Horkheimer's views on the Enlightenment's role in facilitating the rise of 20th century totalitarianism in their work "*Dialectic of Enlightenment*" (Paddison 146; Adorno and Horkheimer, *The Adorno Reader* 157, 161, 172). And while the often ambiguous circumstances of military conflict, genocide and totalitarianism have long been a prime area of interest in literature, film and music, the theme of the dichotomous utopian/dystopian aspects of automated technology and artificial intelligence is another area of concern being increasingly addressed both in the arts (perhaps most presciently in Kurt Vonnegut's first novel "*Player Piano*", first published in 1952 and more recently in films such as Spike Jonze's "*Her*") as well as in the sciences (most recently and prominently by the late Stephen Hawking (Hern), shortly before his passing).

Musical Materials and Methods

An overarching harmonic process unifies the four movements of “*Grey Matter*”, creating consistent gestures and overall tone. Harmonies are constructed symmetrically using pairs of a given interval (minor third in the first and third movements, Major third in the second and fourth movements) and new harmonies are derived from the chromatic spreading apart or overlapping of the intervallic pairs around a chordal axis. For example, the opening harmony of Eflat Gflat (cello) F Aflat (viola) Bflat Dflat (the 2d violin tuned a minor third lower) and C Eflat (1st violin) (resulting in an octachord of the following semitone structure: 2 1 2 2 2 1 2) is initially chromatically altered to D F F Aflat A natural C C Eflat then eventually to C# E F# A G# B C# E, resulting in a semitone structure of 3 2 2 1 2 2 3. These introductory harmonies are performed by the strings using double stops (and quadruple stops played by the cellist in the final movement) and serve as a backdrop to two-voice counterpoint performed by the Disklavier and as pitch material for contrapuntal, harmonic and monodic performance by the strings in the various movements. The variable transition from diatonic harmonies to atonal becomes apparent with this process, one that parallels Béla Bartók’s use of symmetrical pitch sets and György Ligeti’s observation that his own musical output was “neither tonal nor atonal” (Ligeti in Griffiths 367), an observation that is most strikingly apparent in his works “*Lux Aeterna*” (1966) and “*Lontano*” (1967). Harmonies sequentially diminish in size with each movement, beginning with an octachord in the first movement, followed by a hexachord in the second movement and then subsequently by a tetrachord in the third and fourth movements with a concomitant reduction in performance personnel (a parallel with the final movement of Joseph Haydn’s “*Farewell Symphony*”). The challenge of balancing both variety and consistency becomes apparent with such diminishing pitch materials. Indeed, the much smaller pitch sets of the third movement necessitated more creative use of permuted figuration in the uptempo middle section. Additionally, the challenge of maintaining strict harmonic symmetry with intervallic pairs in the final solo cello movement is somewhat relinquished, with the chords’ inner G-E Major 6th dyad remaining stationary although the chords’ outer voices, played on the C and A strings, nonetheless still moving in contrary motion. In terms of tempo and texture, all four movements are generally in rough ternary form (ABA), with the introductory and closing sections (A) in slow tempo and with a fast middle (B) section.

Programming and Electroacoustics

All Disklavier algorithms and electroacoustic elements were programmed in the Max visual programming language (<http://www.cycling74.com>). Circular 4-channel diffusion of the microphone signals is achieved through cross-fading the generated envelopes (of a length of 12 seconds for each channel using the “line~” object) of each speaker’s audio, slightly echo-delayed. Disklavier performance is achieved through sequencer playback of MIDI (Musical Instrument Digital Interface) files. In the final movement, algorithmic procedures such as Markov chains are used to generate additional collage layers of Disklavier performance, such as permutating several cells as units of material derived from J.S. Bach’s “*Two-Part Invention #8*”, transposed to four different keys, and rapid Lisztian chordal gestures in first inversion, alternating between scalar and cadential motion, the triads chromaticized with a fourth pitch near the end. In the final movement’s climax the microphone signals are fed back with periodically augmentational echo decay rates (the opposite process of typical echo decay), a technique inspired by dub reggae mixes by legendary Jamaican producer Lee “Scratch” Perry, whose long-term influence is perhaps most clearly heard on The Clash’s “*Sandinista*” album. The climactic echo feedback of the final movement of “*Grey Matter*”, layered with granular synthesis of an earlier diatonic theme from the first movement, is enhanced by the use of the Disklavier’s sustain pedal.

Contextualization

Symbolic signification of both the musical material and technological elements can be readily inferred. In music, one of the oldest and archetypal examples of symbolic signification is arguably descending chromatic stepwise melodies, generally agreed upon as conveying intense grief with the attendant shedding of tears and reinforced as a form of word painting in vocal music, better known as lament chanting (Rosenfeld 144). Musical motifs, such as the one mentioned above or the opening ascending melodic figures of Schnittke's "*Cello Concerto #1*" (1986) (viewed by some as a questioning of the Divine, followed by a lament motif) arguably convey meaning. However, as Jean Molino illustrates with his nonsensical statement "The toothbrush is to God as Verdi is to the Italians" (which can nonetheless elicit humorous analysis) the logical structuring of material such as text or musical motifs (even if devoid of logical meaning) inevitably elicit reflexive cognitive analysis with the implication that meaning is not received from the producer by the receiver but rather is constructed (Molino in Nattiez 10-12).

The symbolic signification of chromaticism has had multiple interpretations. A prominent one is Adorno's assessment of Arnold Schoenberg's term "the emancipation of dissonance" as the

disguised representation of everything that has had to be sacrificed to the taboo of order. It substitutes for the censored instinctual drive and includes, as tension, a libidinal moment as well, in its lament over enforced renunciation. (Adorno in Jameson 21)

clearly an observation of the immutable tension throughout Western cultural history between imposed objectivity from without by "a machine of power" (to use Jacques Attali's term) (17) and subjective expression of the individual.

The ambiguity of the title "*Grey Matter*" can be easily inferred when the musical material and the totality of performance is assessed. Taking the title into account, the widening of symmetrical harmonies can imply various symbolic interpretations: the slipping away of neural/psychic/cognitive faculties; social alienation, perhaps as a result of the former, such as in Robert Schumann's experience (indeed a prominent motif from Schumann's "*Piano Trio #3*" served as musical inspiration for some of the gestures in "*Grey Matter*"'s third movement, for violin, cello and Disklavier); and social stratification

in terms of income, as a result of mass unemployment as a consequence of automation, an industrial process that periodically “promises” economic prosperity for the masses. The symbolism of the musical material is mirrored and reinforced by the symbolism of the diminishing performance personnel. Indeed, the pitting of the individual versus a larger collective entity such as society (or a “machine of power”) is a self-evident trope in much of Western music, particularly in concertos (Jacobson 5), especially those composed by the postwar avant-garde (such as those by Elliott Carter).

Automated instruments such as the Disklavier have considerable potential for symbolic application in live performance, particularly with interactive solo acoustic performance where the symbolically dystopian setting of the human versus the mechanical (or, again, political entities deemed “a machine of power”) is evident. The player piano’s potential for facilitating polyrhythmic complexity (and political symbolism) was perhaps best realized by exiled American composer Conlon Nancarrow (who had fought against Franco’s forces during the Spanish Civil War) (www.nancarrow.de/chronology.htm) whose aesthetic of progressive experimentation arguably reflected the American ethos of freedom and innovation despite living in exile in Mexico to avoid political blacklisting by the U.S. government. I use the Disklavier in two diametrically opposite symbolic approaches: either as conveying a dominant, highly cultured yet authoritarian political entity hostile to The Other, the latter conveyed by a melodically and timbrally expressive instrument or alternatively a ghostly presence (perhaps of The Other), conveyed by the visibly automated pressing of the Disklavier’s keys. Whether the Disklavier’s performance in “*Grey Matter*” signifies the former or the latter, or even both, is up to the listener, -the receiver-, to construct. It is worth mentioning that the invention of the piano (of which the Disklavier is a late 20th century mechanized extension) and its subsequent mass production was a product of early 19th century industrial capitalism, conceived for middle class consumption, an economical reduction of the orchestra (Attali 119). However, it goes without saying that rather than creating mass unemployment among musicians the invention of the piano facilitated the expansion of chamber music repertoire and one could argue that the same process of labour dynamics is occurring, for better or worse, with interactive technology.

The ambivalence of interactive technology’s potential for both emancipatory and dystopian applications, the latter both symbolic and literal, can be noted. British musician and academic Georgina Born observed in “*Rationalizing Culture*” (1995), her

ethnographic study of IRCAM (Institut de Recherche et Coordination Acoustique/Musique, based in Paris and founded by Pierre Boulez in the late 1970s), that some of its prototype interactive systems were sought and funded by French armament firms (30). Additionally, she raised ethical questions surrounding the composer/programmer hierarchy, the dominant model of intellectual labour at IRCAM, versus more D.I.Y. and artisanal modes of labour (210-212). In my work, I have generally chosen to do my own computer programming and technical supervision as I have found it to be a more gratifying approach and as a means of asserting my independence. Regardless of the optics of where a composer/technician chooses to sit in relation to his/her performers (often determined by technical limitations of the equipment), the composer and/or conductor is/are inherently in a position of authority in regards to the interpretation of strict musical notation and thus must temper that authority with respectful interaction. Perhaps such a relationship between composer and performer is also fraught with ambiguity, one that was explored, albeit in stark symbolism, in Federico Fellini's *"Orchestra Rehearsal"* (1978), as a metaphor for wider national and international political history.

Composer/programmer/trombonist George Lewis, ostensibly one of the anonymous subjects in Born's study, uses interactive technology symbolically to address the complexities of the African-American experience in relation to the dominant white culture. In devising his Voyager software system he states that "it's happy to listen to you... but the conceptual aspect of it is that it's pretty autonomous. You can't tell it what to do" (Lewis and Parker 85), essentially a computerized evocation of emancipated independence in an interesting reversal of roles (a personal anecdote: one of my professors at UC Irvine recounted Lewis' contention that "telling a computer what to do is a master/slave relationship"). Indeed, one can ask whether the cacophonous collage of algorithmic Disklavier gestures that culminates *"Grey Matter"* is a figurative emancipation or an ultimate impoverishment of creative and performing artists, the work's string quartet struggling to keep up with the Disklavier, "a machine of power" throughout the work's four movements.

What constitutes "music" and "noise" often depends on the perspective of those with and without political/economic power. Lewis observes that historically "virtually every extant form of black music has been characterized as "noise"" (Lewis, *Too Many Notes* 33-34). He cites Jon Cruz's observation that slave owners' tendency "to hear only

noise is tantamount to being oblivious to the structures of meaning that anchored sounding to the hermeneutic world of slaves" (Cruz in Lewis 34). Lewis defines an aesthetic of multidominance as "the multiple use of colors in intense degrees, or the multiple use of textures, design patterns or shapes" prevalent in African music, visual art and "rhythmatized textiles" paralleling the use of hemiolas or polyrhythms in African music (34). Clearly there's a technical parallel with Charles Ives and Alfred Schnittke's polystylistic simultaneity in their own music as well as with, I would argue, the cacophonous Disklavier collage that culminates "*Grey Matter*". In terms of my work's symbolism, one could ask: Is it the hollow triumph of 21st century capitalism? Of the culture industry as viewed by Adorno and Horkheimer? Is it delirium? Is it all of the above? Again, it is up to the listener, -the receiver-, to construct meaning. As some of my composition professors have admitted over the years, whether in a lecture setting or privately, sometimes the creative agent is not aware of the meaning of his/her creation until halfway through the creative process, or even after the work is completed (a famous example is Krzysztof Penderecki's "*Threnody For the Victims of Hiroshima*" (1960)). Clearly, the creative process is often a subconscious one. In addition, one should not underestimate the considerable importance of sensory stimuli, an integral dimension of the human experience, to the creative process.

The granular synthesis that ends "*Grey Matter*" can also be interpreted in various ways. I see a parallel between my use of granular synthesis as a symbol for ghosts/memory and hauntological art as theorized and influenced by Jacques Derrida and later elaborated by the late Mark Fisher. Hauntology can be described as a "pining for a future that never arrived" (Stone Blue Editors) or as stated by Fisher himself "a refusal to give up on the desire for the future" (Fisher, *Ghosts of My Life*). While I do juxtapose and layer elements of nostalgic pastiche with more contemporary techniques such as polytonality and electroacoustic elements, I see the inclusion of the latter as a sonic signifier for "a pining for the future that never arrived" as well as the present-day acknowledgement of the ghosts of the past, essentially a representational simultaneity of the past, present and future, a view that has affinity with B.A. Zimmermann's concept of "spherical time", in which one is equidistant from all points in historical time (Ubuweb). Fisher, who was also known for contextualizing Fredric Jameson and Slavoj Žižek's statement, "It is easier to imagine an end to the world than an end to capitalism" in "*Capitalist Realism: Is There No Alternative?*" was arguably concerned with the tension

between the promise of progressive technology and regressive practices and policies of the neo-liberal capitalist system of the early 21st century, in which a growing number of people, at least in the Western world, seem to be adversely affected.

Conclusion

It is clear that in the digital information age, with the current and ever-growing plethora of global musical material, readily accessible and downloadable, the temptation and potential pitfall of using a wealth of source material in one's work cannot be overstated. There is something to be said for Nadia Boulanger's advice to her composition students to set pre-determined constraints on their own musical material for each specific work (Quincy Jones radio interview). New musical possibilities arise from such self-imposed constraints, no matter how strictly or loosely adhered to. It is also clear that digital and automation technologies (of which new music technologies such as interactive systems, automated instruments and sample banks are an extension) are creating both new opportunities and potential misfortune for various professions (including performing artists). Such complex issues indeed require nuanced and even ambiguous exploration in the arts.

Video documentation of the performance can be viewed at:

<https://www.youtube.com/watch?v=mA02Ptfoel8>

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Appendix A.

“Grey Matter”: Video Documentation

Videographer: Stephanie Gagne

Editor: Carl Winter

File Names: GreyMatterMvt1.mp4

GreyMatterMvt2.mp4

GreyMatterMvt3.mp4

GreyMatterMvt4.mp4

Description: Documentation of performance:

Date: May 16, 2018

Location: Simon Fraser University, School for the Contemporary Arts,
Vancouver, British Columbia

Appendix B.

Exploring Authoritarian Exploitation of Musicians in "Ghost Fugues", a Solo, Interactive, Multi-instrumental Performance

Paper written by Carl Winter in partial fulfillment towards Master of Fine Arts degree at the School of Contemporary Arts, Simon Fraser University, Vancouver, BC, Canada.

This paper will explore the social, political and economic conditions of musicians through recorded western music history through an examination of an upcoming polystylistic, solo interactive work, tentatively entitled "Ghost Fugues", performed sequentially on multiple instruments with interactive electronics/video. Musicians and visual artists have historically been courted by various regimes to legitimate their authoritarian rule, such as the Roman Catholic Church in the Middle Ages to absolutist monarchical rule during the Enlightenment to the emergence of totalitarianism in the 20th century. Such exploitive relations will be explored symbolically in "Ghost Fugues", through the use of archetypal musical materials and interactive procedures. Various potential symbolic applications of interactive technology will be explored as part of the continuum of musical signification (beginning with an exploration of eastern European lament chanting) throughout western music history.

Descending chromatic stepwise melodic motion, clearly one of the oldest and most archetypal examples of musical signification in western music, is generally agreed upon as conveying intense grief with the attendant shedding of tears and reinforced as a form of word painting in vocal music, its roots found in Balkan lament chanting by women, written descriptions of which predate western music notation by several centuries. The early Church, in the dying years of the Roman Empire and subsequently through the Middle Ages generally condemned lament chanting as vulgar, shameless exhibitionism of "Bacchic women" and threatened "lamentatrices" (some of whom were paid for their professional service) with excommunication although such threats generally fell upon deaf ears, as evidenced with the continuation of lament chanting in parts of eastern Europe to this day (Rosenfeld 144-146), although sometimes practiced by men. However, it is conceivable that lament chanting was appropriated by Church composers (146), making them considerably less chromatic. Regino of Prüm observed the basic intervals of lament chanting, essentially two descending semitones followed by a minor third and the similarity of the melodic contour of laments and cadential phrases of "Ut Queant Laxis" in the 10th century (146) which became the first notated Gregorian chant, transcribed by Guido d'Arezzo in the early 11th century (Grout and Palisca 78). Indeed, György Ligeti attributed his inspiration for the ending of his "Horn Trio" to his exposure as a child to Hungarian and Romanian lament chanting and concert works such as Bach's "Mass in B Minor" and Purcell's "Dido and Aeneas", each of which have their own lament chant settings (Bauer 175).

Theodor Adorno observed that "The concept of a genuine style becomes transparent in the culture industry (which, in its overly polished refinement, he later adds, appears as "a synthesis of Beethoven and the Casino de Paris") (Adorno and Horkheimer *Dialectic of Enlightenment* 107) "as the aesthetic equivalent of power...The unity of style of not only the Christian Middle Ages but of the Renaissance expresses different structures of social

coercion in those periods" (103), ultimately the products of the socio-political superstructures in which they originate (Jameson 4). To illustrate, harmonic minor seconds and tritones, likely the subject of what the Council of Trent referred to as the "impure or lascivious" (Grout and Palisca 319) (later deemed as the "Diabolicus in musica") were largely avoided for centuries (although Gesualdo's dissonant madrigals in the 16th century employed much chromatic stepwise movement) (271-272). Indeed, what Schoenberg termed "the emancipation of dissonance" was viewed by Adorno as the

disguised representation of everything that has had to be sacrificed to the taboo of order. It substitutes for the censored instinctual drive and includes, as tension, a libidinal moment as well, in its lament over enforced renunciation. (Adorno in Jameson 21)

clearly an observation of the unwavering tension throughout Western cultural history between imposed objectivity by "a machine of power" and free, subjective expression of the individual. Late medieval contrapuntal techniques such as Fauxbourdon, in which a cantus firmus is harmonized a diatonic fourth and sixth below (a precursor to functional harmony later found in Lutheran chorales), was likely developed in part upon Church urgings for the discernibility of sung sacred texts (Grout and Palisca 177, 328). Palestrina's understated music is said to reflect the Church's conservative stance during its Counter Reformation (322). While there is no evidence of overt Church intimidation of artists, one could argue that self-censorship was perhaps widely practiced given the former's coercive and even violent treatment of scientists and whom they deemed heretics. Medieval "jongleurs" or troubadours, who often mocked nobility in their satirical songs were often threatened with imprisonment by their objects of derision (Attali 15). It has been widely suggested that functional tonality (in which the tones of the diatonic scale gravitate towards the tonic) emerged in the Baroque period as a reflection of monarchical hierarchies, "the established...music of powerful interests" as observed by academic John Shepherd (in Martin 138, 140). In addition, in contrast to Stravinsky's objectivity, Schoenberg's symbolic subjective tendencies nonetheless gave way to technical objectivity through his development of dodecaphony (or 12 tone serial system), a reflection of emergent totalitarianism (Jameson 36-37) but clearly not an endorsement (needless to say given he was a Jewish, avant-garde artist fleeing Nazi Germany).

Adorno suggests that truth is only attainable through the avoidance of style; however, he adds "Yet it is only in its struggle with tradition, a struggle precipitated in style that art can find expression for suffering". He adds:

Compositional spontaneity itself is overwhelmed by the prohibition placed upon pathos in expression: the subject which is no longer permitted to state anything about itself... must content itself with the hollow echo of objective musical language. (Adorno in Lippman 475).

One could argue there is a historic parallel between Church condemnation of the emotionality of women's lament chanting and conformity to emotional objectivity in some contemporary music, be it expected stylistically in contemporary vogue or by both authoritarian and benevolent regimes alike. To add to Jalal Touffic's assertion that the withdrawal of tradition past a surpassing disaster should be responded with a resurrection of tradition (15) I would posit that tradition can be made more truthful, if I can be permitted to further use Biblical imagery, by the open symbolic display of deep,

metaphorical wounds. Like George Lewis' assertion that the idiomatic/non-idiomatic divide in improvisation discourse is largely a racial one (Lewis and Parker 86) one could ask whether the frowning upon in some circles of extreme expression in music is rooted in cultural, classist and neurotypical biases. To paraphrase Jean-Francois Lyotard's elaboration of "the sublime" versus that of "beauty", the former does not assume a "common sense" of taste" or produce a "shared feeling of pleasure" (Woodward 125). One could argue that the search for "the sublime" is the unveiling of the complexity of the human condition and experience. Whether the framing of such realities is universal or culturally specific is open for debate.

While my use of interactive technology is often symbolically dystopian as a critique of authoritarian expectations of conformity, such as in my work "Rosenstrasse" (which addresses the cultural complexities of the protest in Berlin by German wives of detained Jews against the Nazi regime (Stolzfus 1996) through the symbolic othering of clarinet by the Disklavier playing Bachian and Lisztian figurations) my use of the Disklavier in "Ghost Fugues" will allude more to the ghosts of musicians, such as those of Theresienstadt ghetto (or Terezin in the Czech language), not far from my father's birth village in what is now Czech Republic. Theresienstadt was essentially a concentration camp where many Jewish musicians were sent as a propaganda showcase to the visiting Red Cross to display purportedly "humane" treatment of Jews by the National Socialists (Adler 168). Tens of thousands perished from disease resulting from massively overcrowded conditions and severe malnutrition (466-468). In addition to postwar Germanic and Jewish literature such as by Günther Grass, W.G. Sebald, Ingeborg Bachmann and Paul Celan my interest in historical ambiguity and the intersection of geography and memory stems from my father's intermittent oral family history. He was born in the Sudetenland shortly after the beginning of the Second World War and admitted that that his parents probably supported the NSDAP (at least in the early days of the regime following the annexation of the Sudetenland in October, 1938) but also revealing that his mother was half-Jewish (a "Mischlinge" first degree according to the Nuremberg Race Laws) (Stolzfus 1996) and thus my grandfather had to fend off probing inquiries by the Gestapo, likely through bribery. In addition, there was some knowledge concerning their (likely violent) expulsion from Czechoslovakia and consequent displacement shortly after the official end of hostilities when my father was aged six.

As an aside, I feel that the blurry, hand-held quality of the tentative video component of "Ghost Fugues", derived from footage I took in rushed (although needless to say much safer) conditions in my father's birth village near Terezin, has an aesthetic and rhetorical affinity with the photography of 1980s wartime Lebanon as explored by Jalal Touffic (64-65). My interest in both western and eastern European music (such as lament chanting) stems from the interstitial condition of cultural life in parts of Bohemia (Cahnman 6-10), the birthplace of my father, where Czechs, Germans, Jews and Roma lived in proximity, intermarried and converted in the early 20th century. Having discovered through Holocaust survivor records that some Jews with the same surname as my paternal grandmother's maiden name had spent time at Theresienstadt the question of whether my possibly half-Jewish grandmother lost any Jewish relatives, whether close or distant, in the Shoah is a question that will probably never be answered given that much of our oral family history, some of which is disputed by my relatives, was lost with my father's untimely disappearance in 1999. Perhaps typical of the German wartime experience, perhaps their family secrets are to be taken to their graves.

The exploitation of musicians by the National Socialists at Theresienstadt and other concentration camps (as explored in one scene by Martin Amis in his Auschwitz novel "The Zone of Interest") is an extreme example of regimes courting artists to legitimate their oppressive rule. Joseph Goebbels initially supported avant-garde art (both rhetorically as Nazi propaganda minister and financially as a consumer) in 1934 despite largely being the mastermind behind the mass book burnings of the previous year (Ginder 2004) (as German Jewish poet/playwright Heinrich Heine presciently predicted over a century beforehand: "Where they have burned books, they will end in burning human beings" (Heine 16)). While some artists, such as Richard Strauss and Wilhelm Furtwängler, were opportunistic "delusional profiteers" in their dealings with the Nationalist Socialists (Petersen 37) (perhaps best explored in a theatre context in Klaus Mann's "Mephisto") the Nazi regime exploited both musicians and visual artists to legitimate their autocratic rule much in the same manner that purportedly "enlightened" absolutist monarchs exploited court musicians to legitimate their "Divine Right of Kings". In his book "Noise: The Political Economy of Music" Jacques Attali observed "The musician, then, was... bound to a machine of power, political or commercial, which paid him a salary for creating what it needed to affirm its legitimacy" (17). He adds:

"...music is used ... to make people *forget* the general violence;... to make people *believe* in the harmony of the world, that there is order in exchange and legitimacy in commercial power..." (19). While the Nazi leadership differed amongst themselves in their personal aesthetic preferences, official policy by 1937 deemed German avant-garde artists such as the Expressionists as "entartete" or "degenerate" (Ginder).

Such courting of artists by various regimes for their legitimation, whether by authoritarian or relatively benign administrations, can also be examined. The official Stalinist policy of socialist realism, of which Dmitri Shostakovich was a prime target, is worth mentioning. In an American context, more recent parallels include Ronald Reagan's unauthorized co-opting of Bruce Springsteen's "Born in the USA", a song clearly about the plight of neglected Vietnam War veterans, "Little Pink Houses" by John Mellencamp and most recently by Donald Trump's unauthorized appropriation of Neil Young's "Rockin' in the Free World", a song clearly about the plight of the homeless, during Trump's election campaign, all songs arguably critical at a certain level of capitalist neo-liberal economic policies. Given that Adorno considered the rise of totalitarianism as an inevitable outcome of the Enlightenment due to its excessive emphasis on objective rationality at the expense of critical, subjective self-reflection (Paddison 146) (Adorno and Horkheimer *The Adorno Reader* 172) all of the above examples of the political exploitation of artists and musicians for regime legitimation could be considered to be part of the same continuum, with Fascism and Stalinism being the most extreme manifestations (157, 161).

17th century court "hautboists" or oboe players were often expected to be reasonably proficient on multiple instruments such as violin, viola da gamba, bass viol, recorder, cornet, trumpet, trombone, bassoon and French horn (Attali 16) (some even also played dulcimer and organ) and had additional duties as servants to the court (Braun 131-133). German musicians were generally not as well paid as Italian ones and were often not paid for over half a year, resulting in massively accumulating debts and thus had to deal with ongoing financial hardship (Petzholdt 168). My graduating project will tentatively consist of a solo sequential performance on multiple instruments in an interactive setting to allude to pre-19th century generalist skills. Instrumental specialization became the dominant model of training with the emergence of increasingly complex music (Mahling 256-257), likely beginning with Beethoven's. I see the generalist skill set of the modern

day composer/performer/programmer as a continuation of the 17th century "hautboists" generalist multi-instrumental skills but also as an assertion of political and economic independence from the dictates of the culture industry. As Adorno observed, elaborating on Kant's definition, enlightenment is the attainment of sovereignty or autonomy (Paddison 143) (Adorno and Horkheimer *The Adorno Reader* 156). The instrumental sections of "Ghost Fugues", beginning with recorder, followed by cello and ending with clarinet and trumpet or French horn (with various sample accompaniment, such as harpsichord, as well as with Disklavier) will allude to sequential periods of history, much like in the manner of Alfred Schnittke's "polystylism".

As an aside, one could argue that Schnittke's term lacks a temporal dimension, from the potential perspective of a non-classically trained layman, so I suggest that perhaps an updated term be formulated. As Arthur Danto, in his elaboration on Hegel, surmised that the "End of Art" had occurred in the late 20th century with the emergence of "total pluralism" (7), the temporal specificity of styles, rather than their aesthetic and technical features, should be emphasized when they are alluded to in a rhetorical context. Given that much of Schnittke's music often begins with Renaissance, Baroque and Romantic musical tropes and it was well-known he was an avid reader of Adorno (Westwood 47), his allusions to earlier styles clearly have a rhetorical intent rather than a purely aesthetic one, such as alluding to German society's descent from the Enlightenment to the mass hysteria of National Socialism (Schnittke and Ivashkin 3).

My work "Reveille", performed here last May by trumpet player JP Carter is a deconstruction of military morning bugle calls using the descending chromatic motifs of eastern European lament chanting with circular multichannel diffusion to evoke encirclement. The scenario of musicians turning into soldiers and experiencing the carnage of war is one that evidently occurred (Zumbro 89) and is one that I may incorporate and further explore in "Ghost Fugues", perhaps with French horn, the instrument most associated with open land space (Schafer 45-46) through its historical use in hunting. Given that mass displacement was an inevitable result of lost territory, such an instrumental choice would perhaps be appropriate.

The intense yearning for a better future is a principal sentiment of "Ghost Fugues". In "An Unreal Place", one of Leo Strauss' cabarets at Theresienstadt, the narrator states that "They bear their sorrows just so, as if there were no sorrow-They talk of a better future, As if it were Tomorrow". (Peschel 241). Clearly, a brighter future couldn't arrive soon enough for the multitude victims of the Shoah.

Post-script: "Ghost Fugues" was performed and recorded mostly live in the Electroacoustic Studio of the School of Contemporary Arts (Simon Fraser University) over the Christmas holidays, 2017. The project can be heard at:

<https://carlwinter.bandcamp.com/album/ghost-fugues>

A video version of the project, using footage from Terezin and Janovice, Czech Republic and various locations in Germany can be viewed at:

https://www.youtube.com/watch?v=svET_rOqaQ8

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