

MUSICAL FRAGILITY: A PHENOMENOLOGICAL EXAMINATION

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Abstract: While fragility is typically defined as ‘the quality of being easily broken or damaged’, within a musical framework the term can be understood through a myriad of causal lenses. One must consider what can be ‘broken’ or ‘damaged’ in a musical context, and secondly how this sense of impairment might present itself. This article offers an extensive categorisation of musical fragility, and a characterisation of it in its numerous forms across the works of a broad range of composers. Through classification, a distinction between local and large-scale fragility emerges. A typology of fragilities makes it possible both to identify them in works that might not necessarily be considered fragile and to identify works that use combinations of fragility types. This classification involves ten types, with compositions from new and experimental acoustic music offered as examples.

The sound of the piano decays.
It cannot be sustained. I let it loose time and again.
It appears by disappearing; starting to disappear just after the attack.
In disappearing it begins to live, to change.
The piano: an instrument, that allows me to hear how many ways sound
can disappear.
There seems to be no end to disappearance.
The sound of piano!
I can hear, how listening becomes the awareness of fading sound.¹

Fragility is typically defined as the quality of being easily broken or damaged.² When something is fragile, one often imagines a physical break within an object which is made of breakable material (perhaps glass), one which may already have cracks in it, or a material which is thin and can easily be misshapen. When one mails a package or letter in the post which has bendables or breakables inside, it is stamped with the word ‘FRAGILE’, large, in all caps, and usually in bright red or orange providing a visual opposition to the material which lies inside the mailer. But sound is not physically visible to the eye.

¹ Eva-Maria Houben, *Presence – Silence – Disappearance: Some thoughts on the perceptions of ‘nearly nothing’*. Edition Wandelweiser website, www.timescraper.de/_eva-maria-houben/texts-e.html#Houben_Presence (accessed 25 February 2016).

² Properties of fragility are often argued by philosophers in discussions of dispositions. In particular, the focus has been on whether a disposition is causally relevant, i.e. whether fragility is causally relevant to breaking. See Jennifer McKittrick, “Are Dispositions Causally Relevant?”, *Synthese* 144, no. 3 (2005), pp. 357–71.

As Don Ihde writes, 'No matter how hard I look, I cannot see the wind, *the invisible is the horizon of sight*'. An inquiry into the auditory is also an inquiry into the invisible',³ and so to imagine sound being broken can require a metaphorical or philosophical approach. Similarly, one can speak of psychological or emotional fragility when one is seemingly on the edge of sanity, or when one's stable state is in threat of becoming unstable. Much discourse about political, economic or religious dispositions may also be described as fragile, when they can be (and sometimes are) broken, dismantled, or there is a threat of such happenings.

To accept the idea that sonic fragility depicts a state in which breakage is possible demands a simultaneous acceptance that – even if still only figuratively or metaphorically – *there is something in sound to break or which can break*. A fragile object or state lacks absolute stability and, by extension, so does a fragile sound or music. Stability in sound may be established when a component seems as if it should or will continue in some way, be it a more local element such as timbre, or a more global element such as structure.⁴ Instability emerges through a failure to reach or sustain stability. A possible break, or a level of instability, within a sonic context can suggest that a component decays, disappears, or is even eliminated. Ihde states,

Through the creation of music humans can manipulate the mysteries of being and becoming, of actuality and potentiality, and through the vehicle of music they can legislate the schedule of a phenomenon's passage from its total being to its absolute annihilation.⁵

Material, timbre, duration, structure and the presence of sound itself can all be unstable or impermanent. Fragility, then, offers a sonic experience where both the possibility of stability and the possibility of its obliteration have been demonstrated.

Despite many works being described as fragile, such as those by Morton Feldman, Luigi Nono and Salvatore Sciarrino, there has been surprisingly little writing relating specific musical elements to fragility, or asserting and defining musical or sonic fragility as legitimate terms.⁶ One of the most detailed works defining/investigating musical fragility comes in Oliver Thurley's 2015 article 'Disappearing Sounds: Fragility in the Music of Jakob Ullman', in which he analyses Ullman's *Solo III* and *A Catalogue of Sounds* demonstrating performative, aural, structural, and notational forms of fragility found in these pieces.⁷

³ Don Ihde, *Listening and Voice: Phenomenologies of Sound*, second edition (Albany: SUNY Press, 2007), p. 51.

⁴ However, a stable element does not need to be a constant.

⁵ Ihde, *Listening and Voice*, p. 223.

⁶ Instances of the term 'fragility' found in writings on music include Boutwell's description of the texture in Morton Feldman's *Four Instruments* (Brett Boutwell, "'The Breathing of Sound Itself': Notation and Temporality in Feldman's Music to 1970", *Contemporary Music Review* 32, no. 6 (2013), pp. 531–570); Harrison's discussion on the work of Aldo Clementi as 'certain quality of fragility' (Brynn Harrison, 'The Tempo of Enclosed Spaces: A Short, Personal Reflection on the Ensemble Music of Aldo Clementi', *Contemporary Music Review* 30, no. 3–4 (2011), pp. 269–274); and Frasch's depiction of the structural architecture of her piece *the silence that reigns ...* as 'too fragile to exist in the physical world'. (Heather Frasch, *the silence that reigns ...* (2011). Unpublished Manuscript and Programme Note, <https://heatherfrasch.wordpress.com/2012/09/29> (accessed 22 March 2017)). Although without reference to a specific piece, Schroeder's article on 'networked listening' focuses on a discussion of the fragility of the performative body and of the listening experience (see Franziska Schroeder, 'Network[ed] Listening—Towards a De-centering of Beings', *Contemporary Music Review* 32, no. 2–3 (2013), pp. 215–229).

⁷ Oliver Thurley, 'Disappearing Sounds: Fragility in the Music of Jakob Ullman', *TEMPO* 69 (2015), pp. 5–21.

What remains to be established is a more comprehensive and objective categorisation of musical fragility, and a characterisation of it in its numerous forms across a broad range of composers' works. Through classification, a distinction between local and large-scale fragility emerges. A typology of fragilities makes it possible both to identify them in works that might not necessarily be considered fragile and to identify works that use combinations of fragility types.

To introduce the discussion, it is first necessary to identify the agents of fragility: who or what factors contribute(s) to and/or produce(s) fragility. The following five principal agents will lead this discussion: sound, material, performer, listener and composer. These agents will be the precipitators, instigators and activators of fragility. At times, multiple agents will contribute to musical fragility; at times the fragility is more purely formed having a single agent.

I now begin a categorisation through which types of fragility, their agents and their levels of concentration can be further scrutinised.⁸ This classification involves ten types, with compositions from new and experimental acoustic music offered as examples. It is important to keep in mind that many of the pieces involve more than one form of fragility, and that fragility types are often interconnected. Last, it must be asserted that a discussion of sonic fragility involves both perceived fragility and actual fragility. In the examination that follows many types of sonic fragility are profoundly reliant upon the listener's observation and experience.

1. PERFORMATIVE FRAGILITY; [local]

The most logical deduction of what can be broken in sound is the presence of sound itself. Fragility can be the result of a performer attempting to produce sound which may not speak, or using a technique that is particularly difficult to maintain because of conditions, duration or context. The performer must accept that sound, or sound quality, may suffer or stop at various moments without her intention.

An example of performative fragility may be found when the composer intentionally instructs the performer to use a technique that can, but sometimes will not, speak in a sound event. This may be an extremely slow and light bow drawn across a string producing a sound slight in dynamic and barely present. Owing to the bowing technique, sound will waver in and out of audibility.

Another type results when a performer attempts a technique (regardless of dynamic level) that has within it the potential of failure. Failure in this sense points to an inconsistency in type, character, or colour of sound, where the performer faces the inability to produce or sustain a sound quality. For example, a composer may instruct the performer to sustain a scratch tone on a string instrument over a prolonged period. The scratch tone is notated as sustaining however, with certain bow angles/pressure the scratch may be less articulate or may even momentarily cease. Another instance of this brand of fragility may come within a fast or moderately paced tempo where a wind instrument moves from or into a difficult-to-speak multiphonic, which requires more time to reveal itself fully. Fragility comes as a by-product of a technique used for specific sound production.

⁸ Note that I will use the terms sonic fragility and musical fragility interchangeably.

2. MATERIAL FRAGILITY; instrument/performer; [local/global]

Material fragility occurs when the object or instrument used in sound production is damaged in such a way that it can no longer successfully carry out its function as sound-maker. This may be the result of circumstance, or environment (climate qualities such as dry, moist, hot, cold) altering the way a performer connects to an instrument, or the way an instrument reacts to this connection. An incapacitation gives the performer less control of certain sounds or actions.

Material fragility may arise within a piece where the performer or the instrument is somehow disabled, rendering the instrument or the process of sound production difficult, limited, or impossible. In Kunsu Shim's *Second Skin*, sound is produced from ripping apart clothing and garments.⁹ The instrument itself, a garment, is damaged by playing itself, i.e. ripping it apart, leaving it at a certain point incapable of being ripped any further, and therefore incapable of making anymore sound. In his piece *honey*, for solo violin, Casey Anderson indicates that the performer begins the piece by applying honey to the bow.¹⁰ After each sonic gesture, the violinist applies more honey. The result in sound realisation ranges from difficult to near impossible, where the sound may become unrecognisable or cease altogether.

In Kunsu Shim's *Apart*, everyday objects (pens, packs of gum, toothpaste tubes, cassette tapes, heads of lettuce, radios) or instruments, are taken 'apart' or disassembled, and each fragment laid out on the floor in any geometric form.¹¹ The objects are intentionally damaged through the process of performing the piece, and, as Shim adds, sounds 'arise unexpectedly during execution, but are welcome'.¹² The process of performing the piece actively destroys its own ability to continue to be performed.

We may also consider the material's inability to successfully make sound owing to restrictions imposed upon the performer. Performer material fragility arises when a composer's instructions are such that they intentionally restrict the abilities of the performer to either produce sound in a specific way or to produce any sound at all. The performer is made physically incapable of her role through instructions in the score. Alwynne Pritchard's *Objects of Desire* begins with the clarinetist repeatedly wrapping scarves around her instrument to the point that the instrument becomes incapable of standard sound production techniques. Pritchard's instructions read:

[W]rap firmly around the clarinet bit at a time, after each wrapping from open B flat, play one chromatic scale descending, leisurely pace, repeat wrap, then play until clarinet completely swaddled, snug, unable to produce a sound.¹³

Later in the piece, a bandage is wrapped around the clarinet and cello (as well as the two performers of these instruments), rendering them 'impossible for them to play'. She adds, 'bound frigid stopped'.¹⁴

For the past six years, Megan Beugger's compositions have focused on a particular type of performer fragility which she terms 'constriction'.¹⁵ Within her practice, she deals with three different types of constriction: that which is activated by another person, by oneself, and by one's

⁹ Kunsu Shim, *Second Skin* (2012), Düsseldorf, Germany. Unpublished Manuscript.

¹⁰ Casey Anderson, *honey* (2015), Düsseldorf, Germany. Unpublished Manuscript.

¹¹ Kunsu Shim, *Apart* (2000), Duisburg, Germany. Unpublished Manuscript.

¹² Shim, *Apart*.

¹³ Alwynne Pritchard, *Objects of Desire* (2010), Berlin: Verlag Neue Musik.

¹⁴ Pritchard, *Objects of Desire*.

¹⁵ Megan Beugger, *Daring Doris* (2012). Unpublished Manuscript and Programme Note.

instrument.¹⁶ About her piece *Daring Doris* scored for cardboard trifold with two players, she writes:

[A]ttempting to perform the action for these long durations causes the performer to fatigue, and while they attempt to produce the same sound throughout the entire time bracket, the impossible physical nature of the act causes the sound to break down and reflect the condition of the physical body.¹⁷

The composer's intention is to restrict the sound maker's ability through bodily exhaustion.

3. ACOUSTIC FRAGILITY; orchestration/psychoacoustics; [local/global]

'Listening makes the invisible *present* in a way similar to the presence of the mute in vision'.¹⁸ When one hears, the eardrum is picking up vibrations from pressure waves in the air. The human ear is capable of hearing frequencies between 16 Hz and 20 kHz and amplitude between 0.05 dB and 130 dB.¹⁹ In those for whom loud sound has been a major part of their experiential life, portions of their hearing spectrum may be lost quite easily, and at a young age. Therefore, music exists that is above and below human's capacity to hear, but it is also possible (indeed, probable) for audibility to be subjective, in that sound may be simultaneously audible to some and inaudible to others due to an individual's hearing state. Hence, both objective and subjective acoustic fragility are possible. One of the more seemingly obvious attributes of a sonic fragility may arise as a result of a low-level dynamic field. A piece may offer a moment of sound that is barely 'there' or, equally, this dynamic level may be present throughout the whole of a work. In either scenario, it is the proximity to silence, the nearness to inaudibility that makes its existence ambiguous and wavering.

Peter Ablinger speaks of acoustic fragility through discussing audibility in his music. He writes,

My material is not sound.
My material is audibility.

While others work with sound
perhaps set a sound and than a pause
I set audibility then inaudibility.²⁰

In Eva-Maria Houben's *pismo beach* for percussion, piano and flute, acoustic fragility exists on both a local and global level.²¹ The piece, made up of quiet and sparse sonic events, calls for the percussionist to play only two sound events. Both sound events are markedly sustained, but are also 'nearly inaudible',²² During the piece, this nearly inaudible percussion sound will be layered with aperiodic entries of piano events, sometimes loud and sometimes quiet. In both cases, the piano sound events render the percussion completely inaudible, and although the audience may see the percussionist continue to make sound, they may not hear this sound. Here, then, fragility is a result of multiple instruments playing simultaneously, where the

¹⁶ Beugger, *Daring Doris*.

¹⁷ Beugger, *Daring Doris*.

¹⁸ Ihde, *Listening and Voice*, p. 51.

¹⁹ Pauline Oliveros, *Sonic Meditations* (Baltimore, MD: Smith Publications, 1974), p. xxii.

²⁰ Peter Ablinger, *English Texts*, <http://ablinger.mur.at/engl.html> (accessed 20 February 2016).

²¹ Eva-Maria Houben, *pismo beach* (2007). Berlin: Edition Wandelweiser.

²² Houben, *pismo beach*.

sound of one instrument may make another disappear altogether.²³ Further examples of orchestrational acoustic fragility might occur when one sound produced at the same time as another generates a third type of sound.

Similarly, psychoacoustic phenomena are emblematic of acoustic fragility for their inconsistency. Some phenomena demonstrate fragility in their inability or difficulty to be strictly controlled, but also because of the challenge of their detection. For both the trained and untrained ear, discerning psychoacoustic phenomena can be an arduous endeavour. Often it requires an effort and a familiarity with the prospect of its occurrence for one to perceive these effects: 'Moments of awareness are not complete awareness, just as moments of blindness are not completely blind'.²⁴

Maryanne Amacher's work and research was almost entirely focused on psychoacoustic phenomena, specifically concentrating on auditory distortion products, or otoacoustic emissions,²⁵ a phenomenon in which, with certain conditions, the ears actually produce and perceive other sounds, or as she phrased it 'music streaming out from their head, popping out of their ears, growing inside of them and growing out of them meeting and converging with the tones in the room'.²⁶ Her 1999 album entitled *Sound Characters: Making the Third Ear* features seven tracks, for example 'Head Rhythm 1', which exemplify this phenomena.²⁷

The work of the composer and visual artist Chiyoko Szlavnic stems from her line drawings, free-hand horizontal lines which may intercept, or interact with one another in their angles, intersections, or close proximity.²⁸ Her compositions often feature acoustic instruments layered with sine tones; through a translation of her line drawings into sound – sustained tones (often microtonal and with glissandi) – what surfaces is beating, when two frequencies almost in unison produce pulsation. In Szlavnic's works, the speed and regularity of beating is unstable and consistently fluctuating because of the slowly moving pitch glissandi which just slightly shifts the distance between tones.

4. STRUCTURAL FRAGILITY; energy/process; [global]

Describing 'Modern Silence', David Metzger discusses fragmentation as a method of creating an ephemeral realm, or what I will refer to as structural fragility, of silence, near-silence, and the possibility of silence in Webern, Nono and Sciarrino.²⁹ Structural fragility may result from a work based on fragmentation and discontinuity where the listener's sense of directionality or directed energy is diverted. This energy can be stimulated and immobilised by numerous and

²³ In his *Rauschen* (white noise) series, Peter Ablinger explores this through varying levels of white noise that sometimes eclipses the acoustic instruments' sound, while at other times equally shares the acoustic space, or shadows the instruments.

²⁴ Agnes Martin, 'Writings', in *Agnes Martin: Writings*, ed. Dieter Schwarz (Stuttgart: Cantz, 1993), p. 31.

²⁵ Maryanne Amacher, 'Psychoacoustic Phenomenon in Musical Composition: Some Features of a "Perceptual Geography"', *Arcana III: Musicians on Music*, ed. John Zorn (New York: Hips Road, 2008), pp. 9–24.

²⁶ Amacher, *Liner Notes to Sound Characters: Making the Third Ear*. Tzadik, 1999.

²⁷ Stefany Anne Golberg, 'Sound Envisioned', *The Smart Set*, <http://thesmartset.com/article07111401/> (accessed 14 March 2016).

²⁸ Chiyoko Szlavnic Website, www.chiyokoszlavnic.org/journey4.html (accessed 25 February 2016).

²⁹ David Metzger, 'Modern Silence', *The Journal of Musicology*, 23 (2006), pp. 331–74.

layered musical elements, including phrasing, tempo, melodic contour and so on.

In the following two examples, directionality is repeatedly established and suddenly halted. In Bernhard Lang's *Differenz/Wiederholung Series*, and more specifically in *Differenz/Wiederholung 1.2*, fragments of musically disparate gestures pass by one after another, each having been repeated various numbers of times.³⁰ In the score, each gesture is marked with a repeat sign and the number of repetitions written above, which in some cases is as little as twice and, elsewhere, up to 13 times. The gestures each embody a particular teleological impulse and, when stuck in a looping pattern, subsequently expose a system, or moving structure, breaking down. Eric Wubbles deploys this same process in his *This is This is This is*, though intensified, since here some fragments do not repeat at all, while others repeat up to 61 times.³¹

Structural fragility can also occur when the process or system that a composer designs for a piece has the possibility of failing or breaking, or coming near to this point. In the following examples, this fragility arises from interactivity between performers. In Jürg Frey's *More Or Less Normal*, each performer begins the piece freely and at a different section (of the 19 sections) of the piece.³² Each section, in its own tempo, instructs the performer to play slow, pitched pulsations; sometimes the notes themselves are quite lengthy, and also appear with long rests between pulsations. With each pulse at such a slow tempo (tempi include crotchet = 40, crotchet = 42, crotchet = 48), and with pulsations sometimes lasting up to 20 crotchet beats long, a player's sense of tempo will likely be influenced by the many other layers of very slow pulsations sounding simultaneously. Performers can fail at the process (rather than at a sound, as in performative or material fragility) clearly laid out in the score, and the composer is aware of this probability, leaving the listener with a fragility of structure.

Similarly, Pauline Oliveros's *Sonic Meditation XVI* initiates a procedure that can be broken through the act of performing the work.³³ In the piece, participants are asked to sing any pitch as a long-tone (full breath length). After listening to each other's long-tones, they individually identify the pitch centre of the group. Singers then adjust their long-tone pitches with each subsequent long-tone being a step (perhaps a microtonal step) closer to their understood pitch centre. The exercise is completed when all participants are singing the same pitch. The process can easily be fractured by way of different participants imagining different pitch centres, and, hence adjusting their long-tones towards these different endpoints. Likewise, perhaps the long-tone that a participant is moving toward also changes in pitch, and she can no longer use that note as a pitch movement guide. The exercise can easily become a continuous shifting mass of pitches where each voice moves toward an unfixed anchor.

In James Saunders's *choose who tells you what to do*, performers are given a set of instructions of sonic events which they will each speak out loud during the performance.³⁴ Throughout the piece, each player

³⁰ Bernhard Lang, *Differenz/Wiederholung* (2002). Vienna: Zeitvertrieb. Available at www.youtube.com/watch?v=AaBOZ8iOlbQ (accessed 23 February 2016).

³¹ Eric Wubbles, *This is This is This is* (2009–10), www.wubbelsmusic.com/pieces_Thisis.html (accessed 19 February 2016).

³² Jürg Frey, *More or Less Normal* (2005–07). Berlin: Edition Wandelweiser.

³³ Oliveros, *Sonic Meditations*.

³⁴ James Saunders, *Choose who tells you what to do* (2014). Unpublished Manuscript.

acts as an instructor, speaking instructions at various times, and also as a receiver of instructions, by choosing which player to listen to for instruction. Because of the duality of roles, a performer can choose to listen to a player who in turn does not instruct for a substantial time, therefore making the first player silent for that period. This scenario can also be more widespread enabling the sonic structure to break easily. The threat of the piece becoming a long stretch of silence is plausible at nearly any point in the performance of the piece.

5. NOTATIONAL FRAGILITY; [global]

Notational fragility concerns both the quality and permanence of a score. Considering the score as object, it is easy to conceive of the potential of it being damaged or broken: scores are generally notated on paper, and paper is quite breakable. A score that may begin to deteriorate, or whose notation may become difficult to decipher over time, may grant the performer different abilities and levels of ease in the performance experience. A score may become completely illegible, incapable of accomplishing its purpose of transmitting information to the performer. This impermanence, or fragility, though, may be common to all paper scores.

The fragility in the work of the visual artist, Eva Hesse, is related to the quality of materiality. Her works would disintegrate and decay over time because of the delicate quality of the material, though, this disintegration, Denise Birkhofer asserts, was unintentional.³⁵ The artist did not create the works so that they would decay over time, but the material the artist chose was simply not durable.

Unlike Hesse's unintentional fragility of material, ephemeral scores are similar to Tibetan Buddhist sand paintings, the construction of which includes the intention of their impermanence. A score purposefully designed by the composer to last for only a short time can be found in Michael Baldwin's *Ephemeral Series*.³⁶ In Baldwin's *Ephemera* #6,³⁷ ink, written on lamination pouches instead of paper, is smudged on the score, first by the composer before it is given to the performer, and then smudged and/or completely deteriorated by the performer during the performance process. Baldwin writes, '[a] performance of the score ends once the entire surface has been wiped away leaving only the score's ontological trace: title, name, and the location of creation'.³⁸

Argentinian composer Ellen C. Covito instructs the performer(s) to find any notated score, or what she refers to as a 'found score'³⁹ and glue its pages together before performance in *Composed Improvisation G*.⁴⁰ While performing, the player must rip her pages apart to read the music. Due to this destructive procedure, parts of the notation are rendered unclear or unreadable altogether.

³⁵ Denise Birkhofer, 'Eva Hesse and Mira Schendel: Voiding the Body – Embodying the Void', *Woman's Art Journal* 31, no. 2 (2010), pp. 3–11, here p. 7.

³⁶ Michael Baldwin, *Reflections on Ephemerality and Notation in My Recent Work* (Master's Research Thesis, University of Huddersfield, 2012).

³⁷ Michael Baldwin, *Ephemera* #6 (2012). Unpublished Manuscript.

³⁸ Baldwin, *Reflections on Ephemerality*, p. 6.

³⁹ You Nakai and Elizabeth Hoffman, 'The Music of Ellen C. Covito: An Interview with You Nakai', *Perspectives of New Music* 51, no. 1 (2013), pp. 5–20, here p. 8.

⁴⁰ Ellen Covito, *Composed Improvisation G* (2014). Available at www.youtube.com/watch?v=wvPFdPwRpow (accessed 14 March 2016).

6. PSYCHOLOGICAL FRAGILITY; performer; [global]

A work displaying psychological fragility explores the frailty and or instability of a performer's psychological state. One category of psychological fragility can occur when the complexity or difficulty of a composition makes the performer's failure to fully realise the instructions of the score an integral part of the piece. In *The Crutch of Memory*, Aaron Cassidy deconstructs the choreography involved in producing sound on an instrument, in this case any non-fretted, bowed string instrument.⁴¹ Typically, when realising a piece, a string player immediately and automatically translates a notation of pitch/rhythm into a choreography involving decisions of which string to play a note on and with which finger, based on factors of context and colour. In Cassidy's work, choreography is given, but not the resulting sound. Elements of choreography including string selection, finger spacing, finger selection and hand position are stratified into three separate tablature staves. For a player, the inputting of all of this information at once is overwhelming, to say the least. One aspect that makes inputting the notation so difficult is that, unlike traditional musical notation, there is 'no hierarchy of importance specified between the staves or parameters'.⁴² The performer concedes to the anxiety of this particular realisation, accepting that although she will attempt an accurate performance, she will most likely fail at observing all of the simultaneous choreographic directions at a given time.

In Mieko Shiomi's *Mirror Piece No. 2*, performers are instructed to walk backwards across a stage scattered with instruments/objects using only a hand mirror to aid in avoiding stepping on objects.⁴³ Holding their mirrors as if they were a car's rear view mirror, performers cautiously traverse backwards across the stage, fearing that they may fail at their goal and collide with a, perhaps very expensive, instrument.

Another form of psychological fragility is realised through the characterisations a composer may give to a performer. A performer's character may be on the verge of mental stability, nearing a breakdown, or showing unstable emotional output. Though vocal characterisation is easiest to imagine, this unstable encounter can also be instrumental. A perfect vocal example may be found in Peter Maxwell Davies' *Eight Songs for a Mad King*, but other examples of vocal psychological fragility do abound. George Aperghis characterises the solo soprano's role in *Shot in the Dark*⁴⁴ as a 'fluctuating woman who slides from one state of consciousness to another',⁴⁵ leading the ensemble in and out of a number of different emotional manifestations, from loud, cacophonous, and raucous, to still, slowly moving microtonal shifts alongside her fits of whispers.

7. TEMPORAL FRAGILITY; performer/listener; [local/global]

A piece exploring temporal fragility uses time or durational expanses to displace, disconnect or destabilise the perception of structure,

⁴¹ Aaron Cassidy, *The Crutch of Memory* (2004). Buffalo: Aaron Cassidy/ASCAP.

⁴² Mieko Kanno, 'Prescriptive Notation: Limits and Challenges', *Contemporary Music Review* 26 no. 2 (2007), p. 251.

⁴³ Mieko Shiomi, *Mirror Piece No. 2* (1966), in *Fluxus Performance Workbook. Performance Research* e-publication, ed. K. Friedman, O. Smith, L. Sawchyn. (2002).

⁴⁴ George Aperghis, *Shot in the Dark* (2011), <https://vimeo.com/45924688> (accessed 12 February 2016).

⁴⁵ Aperghis, *Composer's Notes: Shot in the Dark* (2011), www.aperghis.com/etc./archives/01-2016 (accessed 21 February 2016).

teleology or the sense of a unified piece. This can be within a local or global level – an extremely slow movement within a piece, fleeting sounds, or a consistent displacement of beat or attack point. It may also be exemplified by a piece that is spread over a long period, so long that the piece may no longer seem like a single object. Manfred Werder's *stück 1998* is a 4000-page score whose entire performance will ultimately take 533 hours and 20 minutes, though never in one sitting, nor by the same group of performers.⁴⁶ The piece is performed in order, but in sections whose duration is decided upon by each performance situation. The object of a single performance of *stück 1998* is not to present a complete version of the piece, but rather to become part of a collective of performances which spans over multiple years involving many different performance venues, personnel, and instrumentation. To enter into a performance session of the piece is to join a performing history.⁴⁷ The work is never heard in full by a set of listeners, conveying a piece constructed to be broken apart. The degree to which a listener can imagine each section heard in a performance as part of a larger whole facilitates an assembling and disassembling of a perceived fragility.

Another layer of temporal fragility becomes clear in Werder's own discussion of the piece, where he writes,

The absolute but empty structure of *stück 1998* allows us to consider music to essentially consist in its condition occurring in place: a musician touches a sound source and at a time at a place produces a sound or not. This set lets the precise condition of each situation, regarding our proposed structure, occur as intrinsic reality of the situation. I propose this to be already enough: the intrinsic reality of a situation.⁴⁸

Werder's example of temporal fragility also draws attention to the ephemerality of the performance structure. A specific performance moment, involving *these* players, *this* space, *these* listeners and *these* conditions can never be repeated.

One Instrument, Series by Jürg Frey for solo performer, contains a list of times within a day, at which to make sound.⁴⁹ Each of the nine short sound events is no more than five minutes in duration, and the times between sound events range from five minutes to four hours. Frey's work exhibits vast amounts of silence in between shorter instances of sound. While the sounds of the piece come and go over a 15-hour period of performance, so will its audience. Frey welcomes the notion that the piece may not have an audience for any of its prescribed sonic time points. The listener imagines the rest of the piece, imagines the sounds and silence that have been made already, and are yet to come. Temporal fragility divides the structure into seemingly separate pieces and it is, again, the tension of the listener's or the performer's need to unite or separate the heard and imagined parts of the piece that demonstrate fragility.

⁴⁶ Manfred Werder, *stück 1998* (1998). Berlin: Edition Wandelweiser. This is reminiscent of John Cage's *Organ²/ASLSP* for which the composer has left the instruction 'as slow as possible', and, hence, the piece's duration, open to interpretation. It is currently in the midst of a 639-year-long performance in Halberstadt, Germany.

⁴⁷ The performer must contact the composer indicating the duration of the intended performance to obtain the next pages of the score, and instruction to begin at the point in the score where the last performance left off. Thus far sections have been performed over 17 years, beginning in March 1999.

⁴⁸ Werder, *Note on stuck 1998 seiten 1–4000*, <http://manfred-werder-archives.blogspot.com/2012/07/note-on-stuck-1998-seiten-1-4000.html> (accessed 24 February 2016).

⁴⁹ Jürg Frey, *One Instrument, Series* (1999). Berlin: Edition Wandelweiser.

8. TUNING FRAGILITY; [local/global]

Tuning fragility occurs where the pitch content shifts away from equal temperament, the standard in Western music for over 250 years, in a way that triggers a perceptual disconnect from what our ears are accustomed to. Although microtonality is abundant across many streams of twentieth- and twenty-first-century music, it can still hold within it a sense of the breaking of scalar or tuning identity.

Musicologist and composer Pascale Criton's works centre around her interest in microtonality as a way of destabilising the listener's perception of scale. Dividing the scale into small microtonal increments, she introduces material that obscures the listener's ability to perceive a change in pitch.⁵⁰ Many of her compositions are for detuned string instruments revealing this effect, as in *Chaoscacci* for solo cello,⁵¹ where the four strings of the cello are tuned so that they are 1/16th tone apart from one another.

A secondary type of tuning fragility occurs when both equal tempered and another tuning system are presented simultaneously exhibiting the tuning conflict between them. A clear example of this is featured in Harry Partch's 'The Rose' from his *Seventeen Lyrics of Li Po*. This work employs a just intoned marimba and guitar, layered with an equal tempered vocal line.⁵² The effect is a sort of bitonality where two fields of comfort (or tunings) work consistently to unhinge one another across the length of the song.

9. SPATIAL FRAGILITY; performer/listener; [global]

When a composer spatialises sounds in an acoustic work, questions of sound directionality, placement and interaction are raised. Spatial fragility can reveal itself both through the ways performers interact across or throughout space, and in the ways sound interacts with and reaches the listener.

Performers are directed to situate themselves so far from each other that they cannot hear one another clearly, or at all, in Scott Cazan's *Intercept*.⁵³ Two violinists start on opposite sides of a large space (perhaps outdoors); their sounds are hardly audible to one another.⁵⁴ Each producing sound as they slowly walk towards one another, they eventually become able to hear each other's sounds. Finally meeting in the middle of the space (before exchanging initial places), each one is instructed to interact with the other's pitch material. Cazan uses spatial attributes to set up a context where both the relationship between sounds and their relationships with the listener are ambiguous. The sonic configuration establishes itself with one set of relationships, which later collide and are transformed into a new relationship. Only in hindsight, when the performers continue past their midpoint meeting and return to their distanced starting points, does it become clear that the 'new' relationship was only temporary.

⁵⁰ Pascale Criton, *Biography* (2007), www.pascalecriton.com/en/biography (accessed Retrieved 15 March 2016).

⁵¹ Pascale Criton and Deborah Walker, *Chaoscacci* (2013). Unpublished Manuscript.

⁵² Harry Partch, (1930/33). 'The Rose' from *17 Lyrics of Li Po*, available at www.youtube.com/watch?v=kOwu-feB11k 9 (accessed 23 February 2016).

⁵³ Scott Cazan, *Intercept for two string players and sine tones* (2015). Unpublished Manuscript.

⁵⁴ Cazan, *Intercept for two string players and sine tones*, available at <https://vimeo.com/152230520> (accessed 2 March 2016).

Traditionally, an audience member encounters music while remaining stationary and allowing sounds to approach her in whatever ways they may do so, with reference to her distance and angle from them. When a composition is designed so that a listener is unable to take in all of its sound from one vantage point, we also observe spatial fragility. In John Luther Adams's outdoor work, *Sila: The Breath of the World*, the listener is invited to move through the large ensemble, often of 80 players, whose members are spread out over a large space.⁵⁵ From different positions, some individual sound masses come into aural perspective, while others become buried and inaudible.

10. MULTIDIMENSIONAL FRAGILITY; [global]

The underside of the leaf
Cool in shadow
Sublimely unemphatic
Smiling of innocence
The frailest stems
Quivering in light
Bend and break
In silence⁵⁶

Within the categories of fragility outlined above, it is clear that some areas embody a greater degree of fragility than others. Still, other compositions adopt musical fragility as a more central element where types of fragility and fragility agents are often joined to form a multifaceted, layered or multidimensional fragility. In the following musical works, properties of perception combine with temporal, performative, structural and/or tuning fragility, interweaving local and long-term forms. These works may also garner a more pronounced sense of ambiguity with regard to the listener's experience.

An appropriate visual equivalent to this kind of musical fragility can be found in one of Agnes Martin's abstract works, for example *White Stone*.⁵⁷ In this monochromatic work, the lines of Martin's grid are drawn freehand; she allows and embraces these imperfections. Sometimes lines disappear, or are so faint, they just barely emerge: their presence is ambiguous. The white background gently absorbs a faint blue colour, or perhaps the other way around. In either case, there is a sense that colour and line are fleeting, ephemeral, transient, impermanent across the entire work. The chosen visual elements, shapes, how they are placed, and their ambiguities combine to form the effect.

One can imagine that, with many works demonstrating multidimensional fragility, a semblance of life (in the music) may be hardly detectable. Sonic energy may seem almost strenuously expressed. In Chaya Czernowin's *Adiantum Capillus-Veneris (1)* 'Etude in fragility for voice and breath', the voice is used in its barest sense, at times just varying levels of breath, and at others the quietest bit of pitch articulated.⁵⁸ It is as though the voice has hardly enough life in it to

⁵⁵ John Luther Adams, *Sila: The Breath of the World* (2014), www.youtube.com/watch?v=rUDjOyacZoU (accessed 10 February 2016).

⁵⁶ Agnes Martin, *Writings*, ed. Dieter Schwarz (Ostfildern: Cantz, 1991), p. 15.

⁵⁷ Agnes Martin, *White Stone*, www.guggenheim.org/artwork/2804 (accessed 22 February 2016).

⁵⁸ Chaya Czernowin, *Adiantum Capillus-Veneris (1)* 'Etude in fragility for voice and breath' (2015), <https://soundcloud.com/resonantbodies/jeff-gavett-czernowin-1> (accessed 23 February 2016).

produce pitch. The voice remains within an airy sound space and is able only at a few moments to muster up the energy to enter into a pitched sound space.

A composition which has an ongoing relationship to silence, stillness, and sparseness, Ryoko Akama's *acorn for a.pe.ri.od.ic*, epitomises spaciousness and quietness. Akama's score exhibits a kind of notational fragility showing just a few words spread across each of its ten pages, as if the fewer-than-200 words of the text score had been cut up and spread out. Akama instructs the performers to play as if 'inaudible', or 'audible', 'absent', or 'present', one note each minute of the 15-minute piece.⁵⁹ She adds that, in one of these minutes, the performer withholds from playing altogether. The sounds that make up the piece should be 'remote and delicate', with the last instruction stating 'almost here, almost hear'.⁶⁰

Catherine Lamb's *overlays transparent/opaque* offers a combination of temporal and tuning fragility. It explores a droned structure of sections containing slowly shifting microtonal/instrumental relationships. The score depicts each section's structure with a drawing of intersecting arcs, each line representing a single instrument. In each section, there is one instrument whose line is shown in bold depicting the subtle emergence of one tone or microtonal relationship over others.⁶¹ A listener's experience of the work involves listening to what seems like harmonic and orchestrational stasis, only to realise that, at various points, these configurations are actually incrementally morphing, or have already moved into new pitch and instrumental relationships.

Klaus Lang's *Der Weg des Prinzen I (Die Sieben Boten)*, too, demonstrates multiple levels of fragility. The entire piece sounds as though it is on the verge of breaking, the sound dying. In it, extremely quiet, long-tones related microtonally among the seven instruments of the ensemble are presented, some moving very slowly through glissando, allowing for a sense of amorphous shifting.⁶² An elusive sonic landscape whose events are mostly masked, makes the listener almost unaware of the changing densities.

Rebecca Saunders' *Stirrings Still* shares similar elements to Lang's in that it involves a quiet landscape made up of microtonal relationships between instruments. Additionally, the ambiguity of low-level dynamic, unstable sound types and temporal fragility through masked entries of multiphonics and displaced beats create a sense of floating sound.⁶³

Michael Pisaro's *Fade* embraces the awareness of the ephemerality of sound. In the piece, he asks the solo pianist to play slow pulsations of a pitch, each pulse quieter than the last until the pulsation no longer produces sound from the piano.⁶⁴ The piece explores decay, or death of sound, both locally, through the natural envelope of a piano attack, and long-term where the pianist implements a decay by playing more and more softly to the end of each pulsation set.

⁵⁹ Ryoko Akama, *acorn for a.pe.ri.od.ic* (2015). Unpublished Manuscript.

⁶⁰ Akama, *acorn for a.pe.ri.od.ic*.

⁶¹ Catherine Lamb, *overlays, transparent/opaque* (2013). Unpublished Manuscript.

⁶² Klaus Lang, *Der Weg des Prinzen I (Die Sieben Boten)* (1996). Vienna: Zeitvertrieb Edition Partitur. Available at www.youtube.com/watch?v=x_vliyumDh0 (accessed 22 February 2016).

⁶³ Rebecca Saunders, *Stirrings Still* (2006). Recorded by Ensemble Musikfabrik on *Stirrings Still* (Wergo, 6694 2).

⁶⁴ Michael Pisaro, *Fade* (2000). Berlin: Edition Wandelweiser.

In concluding this inquiry into the many forms of sonic fragility and their agents, we may begin considering music itself, or sound as an entity, as fragile. Martin Knakkegaard asserts 'Music is only present in its transition, and the minute it is brought to a stop, it is gone'.⁶⁵ Music is breakable as it exists while we hear it, while it is being transmitted to us (outside of its living in our memory, or its being documented in recording), and while our ears input vibrations. But, when vibrations cease, sound no longer exists. Like architect Brian Chappel's discussion of structures built, acknowledged and then dismantled without leaving a trace of their original existence in his *Ephemeral Architecture*,⁶⁶ the physicality of sound is present only during its sounding, and leaves no imprint, demonstrating a purely ephemeral state of existence. Music itself dies, always dies to some extent, as sound will decay. It is merely a matter of when and/or how it will die, and if this will happen during our individual experience of it. Ihde writes, '[s]ilence is the unspoken background for sound'.⁶⁷ In music, sounds come 'from silence' and will 'return to' silence.⁶⁸ Finally, fragility also exists on a physical level within its sound waves, as they themselves are capable of being transformed by many exterior conditions.

The term fragility can often convey a sense of negativity. We imagine that which might break or cease to be helpless and lack the strength needed to continue. Strength is commonly regarded as a positive attribute, and one which we aspire to possess in our lives. The artist Mira Schendel regarded something impermanent in her artistic work as 'throw away', *Droguinhas*, something without import that not only lacks endurance, but isn't worth our effort to focus on.⁶⁹

On the other hand, something fragile may instead be viewed as unique and worthy of cherishing precisely for its constant state of near-death or its approaching non-existence. In this way, we cannot ignore the blatant parallels between fragility (instability, impermanence, ephemerality) and our existential experiences, our lives. Perhaps, then, a fragile entity needs more care in one's dealings with it, where there arises a sort of compassion for and/or a responsibility to treat it gingerly. Within a sonic realm, fragility may command a careful listening practice where one's awareness of the subtleties of sound's precise quality, movement, relationships, passage and abilities to interact with us become significant markers. 'The richness of sound is in its inherent instability, and the most unstable sounds are those which approach silence. At the border between sound and silence the ear is alive to change',⁷⁰ making the case that sonic fragility pulls the listener into a unique and transformative listening experience. With this view, fragility in sound can be interpreted as advantageous, and the presupposed characterisation of weakness can be replaced with appreciation for its rewarding perceptual possibilities.

⁶⁵ Martin Knakkegaard, 'The Music That's Not There', in *The Oxford Handbook of Virtuality*, ed. Mark Grimshaw (Oxford: Oxford University Press, 2013), p. 392.

⁶⁶ Brian Chappel, *Ephemeral Architecture: Towards a Definition* (2004), www.scribd.com/doc/44042590/Ephemeral-Architecture (accessed 27 February 2016).

⁶⁷ Ihde, *Listening and Voice*, p. 233.

⁶⁸ Ihde, *Listening and Voice*, p. 233.

⁶⁹ Birkhofer, 'Eva Hesse and Mira Schendel', p. 7.

⁷⁰ Michael Pisaro, *Time's Underground*. (1997). Edition Wandelweiser. See www.timescraper.de/_michael-pisaro/texts.html#Times_Underground (accessed 20 February 2016).