



## ASPECTS OF THE VIRTUAL AND THE REAL: REPETITION, MEMORY AND THE INTEGRATION OF RECORDED SOUND IN MY RECENT MUSIC

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**Abstract:** This article reflects on my subjective position in relation to the ways in which time passes in two recent works, *Dead Time* (2019) and *Towards a slowing of the past* (2023). I consider how each of these pieces relates to my interest in musical time and demonstrate how the inclusion of pre-recorded materials has allowed me to explore aspects of memory and repetition in new ways. A Deleuzian model of difference and repetition is considered and used to illustrate how *becoming* might be observed in the mind and body of the perceiver as much as in the materials themselves. I reflect on the complex relationship between the virtual and the real by examining differences in perception between performed events and pre-recorded versions of those same events that are incorporated into musical works as part of the real-time experience. I discuss the ways in which sampled material integrated within the performances of these works might evoke different temporal states, such as *metaxis*, in which we are simultaneously engaged with aspects of pastness and presentness.

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### Introduction

All the music I have written over the past 25 years has drawn on my interest in musical temporality. Works up to 2018 such as *Repetitions in Extended Time* (2008), *Vessels* (2012), *Receiving the Approaching Memory* (2014) and *Piano Quintet* (2017) explore repetitive materials over long durations, drawing out differences between events by placing emphasis on localised musical materials that gradually unfold. Difference, in this context, is constituted by changes in the materials themselves or by changes in the listener. What I attempted to evoke in these pieces is a sense of *becoming*, in which repetition is conceived as a vital act of change. This is supported by the structure of these works, which attempt to transport the listener from one listening state to another, from, for example, the perception of repetitive materials operating at a speed and density that cannot be easily apprehended to slower states in which materials take on new perspectives.

Memory plays an important role in the perceptual aspects of these works. Memory is both the mechanism by which a sense of recall in the repeated gesture is invoked and the means through which each

repeated figure is actualised as a unique entity. Listeners have described the process of identifying these successions of repetitions as one of first encoding the same information then, later, through a process of gradual entrainment, observing difference within the repeated figure over time. Observing difference may create a sense of expectation or anticipation in the listener. Since all experiences of listening encapsulate not just experience in the moment but also aspects of memory and expectation, perceiving a piece as it unfolds through time draws upon three simultaneous modes of temporality: the past, the present and the future. Jonathan Kramer summarised this eloquently, saying that the present is not simply the place where perception happens but is also ‘the meeting ground for memory and anticipation, both of which colour our perception’.<sup>1</sup>

In *Parables for the Virtual*, Brian Massumi describes experiencing the present as a transitory act, making comparisons to the blurring effect of oscillation in a sound wave’s frequency:

The present smudges the past and the future. It is more like a doppler effect than a point: a movement that registers its arrival as an echo of its having just passed. The past and the future resonate in the present. Together: as a dopplered will-have-been registering in the instant as a unity of movement. The past and future are in continuity with each other, in a moving-through-the-present in transition.<sup>2</sup>

This notion of the past and the future fluctuating within the transitory present contains echoes of Edmund Husserl’s model of passive synthesis, through which the window of moving-through-the-present retains traces of the immediate past as well as the projection of the immediate future. Husserl describes the immediate past as a *retention* and the immediate future as a *protention*. From this perspective, memory is not seen as a sight for nostalgia, but as a vehicle for *issuing forth what is to become*.

In the music I have written since 2018 I have attempted to challenge these notions of time passing, either obsessively repeating short fragments of material or including static material. *First Light* (2018), a 40-minute work commissioned by Transit Festival, Leuven for the choir De3DeAdem, has two moments where a single chord is held for several minutes and a sense of movement (within an already relatively inactive harmonic field) comes to rest. *Dead Time* (2019) is characterised by an exceptionally high level of repetition and ends with a three-bar coda, in which each bar is repeated 84 times. These three bars last over ten minutes, almost half the overall duration of the work. *Towards a slowing of the past* (2023) includes a frozen moment in which a single digitally created chord is held, unchanged, for two minutes at a point halfway through the composition. The piece ends in a virtual space in which the live performance material is superseded by repetitive digital samples. Such acts, prompted in part by concepts illustrated in Lisa Baraitser’s *Enduring Time* (2017), attempt to complicate both the experience of time passing and the ways in which memory operates. This complex relationship between movement and stasis, becoming and unbecoming, is the subject of this article.

<sup>1</sup> Jonathan D. Kramer, *The Time of Music: New Meanings, New Temporalities, New Listening Strategies* (New York: Schirmer, 1988), p. 367.

<sup>2</sup> Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation* (Durham, NC: Duke University Press, 2002), p. 200.

### Integration of Recorded Sound

Over the past eight years I have been fortunate to be able to test ideas with performers in the early stages of the compositional process and I have welcomed their advice and the sense of congeniality that this situation fosters. I have found it beneficial to listen back to recordings made during these rehearsals and these in turn have guided the development of the work. I have become interested in incorporating some of these recorded materials, tried and tested during rehearsal, back into the composition, often juxtaposing or interleaving recordings with the materials performed live. Much of the material written for the piece *Dead Time*, for instance, developed through close collaboration with the players of Wet Ink ensemble, for whom the piece was written. After initial development sessions in New York in 2019, I was able to assess the relative merits of using pre-recorded materials as well as sampled loops that would be played back during performance.

Similarly, when writing my string quartet, *Three Descriptions of Place and Movement* (2020), for Quatuor Bozzini, recorded material for the third movement was mocked up on my computer, allowing me to layer and test materials against one another. With this process I developed the double canon that is heard in the final movement of this piece, the live quartet playing against two pre-recorded versions of themselves. The most recent collaboration in which I have used recorded material is my two-piano work, *Towards a slowing of the past*, written for Mark Knoop and Roderick Chadwick of Plus Minus ensemble, in which I extend the exploration of digital playback by having the recorded material heard during the performance of the piece presented in reverse, and sometimes pitch shifted, or speed adjusted.

In this article I discuss two of these pieces, *Dead Time* and *Towards a slowing of the past*, from analytical and philosophical perspectives, drawing on key terms and concepts concerning repetition, duration and memory that I have come to identify with my music. My intention is to demonstrate how the inclusion of audio recordings has enabled me to question, in new and challenging ways, how time passes. Digital loops can evoke a sense of sameness or lead to feelings of immobility, redundancy or complete stasis. Is it possible, then, to still observe what social anthropologist Tim Ingold has referred to as the 'singular locus of creative growth within continually unfolding fields of relations'<sup>3</sup> when short, recorded loops eternally reproduce the same digital information? What might constitute a field of unfolding relations within this context? In the work *Towards a slowing of the past*, what happens when the listener is confronted by a static, digitally manipulated chord in the middle of the piece?

To help me make sense of difficult and often contradictory questions regarding the notion of time passing, I will draw on the Deleuzian philosophy of *Difference and Repetition*, which argues that it is not possible to repeat without generating difference. Deleuze's concept becomes complicated when discussing audio recordings, often considered as fixed representations of sonic events,<sup>4</sup> and, from an ontological perspective, recordings might be said to recall the

<sup>3</sup> Tim Ingold, *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill* (London & New York: Routledge, 2000), pp. 4–5.

<sup>4</sup> John Young, 'Inventing Memory: Documentary and Imagination in Acousmatic Music', in *Recorded Music: Philosophical and Critical Reflections*, ed. Mine Dogantan-Dack (London: Middlesex University Press, 2009).

same information, from the same place, in the same way. Arguments can be made, however, against viewing recorded sound from a fixed perspective, and I wish to suggest, like William Echard and others,<sup>5</sup> that each playback of recorded material, rather than evoking *the same*, has its own, changing characteristics. This is particularly evident when recorded materials are placed alongside or juxtaposed with instrumentally performed live material. It is the ontological complexity and the friction that arises from, on the one hand, the fixed/representative aspects of recordings, and, on the other, their 'live presence' that I find perceptually compelling.

### Deleuze's Concept of Difference and Repetition

In his seminal 1968 text, *Difference and Repetition*, Deleuze distinguishes between two forms of repetition. The first concerns generalities and laws that categorically set out rules for observing the thing itself and the repetition of that thing as being represented by the same concept. Essentially this is a form of repetition governed by exchangeability, where one thing can be swapped with another that has the same qualities without changing its attributes. Beneath these generalities, Deleuze argues, lies a second type of repetition that 'can be internal yet not conceptual', that 'unfolds as pure movement, creative of a dynamic space and time'.<sup>6</sup> This is a type of repetition, Deleuze states, that is found in the natural world, free from any kind of human imposition. It is a type of repetition that is fluid, mobile and temporal. It is this second form of repetition to which Deleuze gives his attention in *Difference and Repetition*, finding it to be the most 'profound' or 'genuine'.

Deleuze's argument for giving priority to this second form of repetition is that difference comes *before* identity. This runs counter to the long-held philosophical belief that difference is a characteristic subordinate to that of identity. Deleuze acknowledges that 'identity thinking' arises within the world but makes the claim that these identities come about *through difference*, rather than the other way around, turning on its head the traditional philosophical standpoint that posits identity as the primacy through which we understand difference.

Brian Hulse states that:

One of the most persistent claims in Deleuze's philosophy is his contention that the Western philosophical tradition fails to think real difference. In this tradition the consistent trend is to relate or mediate difference through some form of identity: identity as being in opposition to difference as well as there being an identity to difference itself.<sup>7</sup>

The main tenet of Deleuze's argument is that things and events cannot be reduced to their equivalents but exist as unique entities. From this standpoint the notion of 'the same', whether viewed from a logical or metaphysical standpoint, is contradictory since sameness requires something other with which to make a comparison.

<sup>5</sup> William Echard, 'Subjectivity to a Trace: The Virtuality of Recorded Music', in *Recorded Music: Philosophical and Critical Reflections*, ed. Mine Dogantan-Dack (London: Middlesex University Press, 2009).

<sup>6</sup> Gilles Deleuze, *Difference and Repetition*, tr. Paul Patton (London: Continuum, 2004), pp. 26–27.

<sup>7</sup> Brian Hulse, 'Thinking Musical Difference: Music Theory as Minor Science', in *Sounding the Virtual: Gilles Deleuze and the Theory and Philosophy of Music*, eds Nick Nesbitt and Brian Hulse (London: Routledge, 2010), p. 24.

Christopher Hasty explains this as follows:

This multiplication of the Same is clearly paradoxical. Distinctions of unity and multiplicity, identity and difference, model and copy, knowledge and sensation (as flux), finite and infinite (discontinuity and continuity) emerge as caesurae that cut us off from direct encounters with the changing world.<sup>8</sup>

The notion of a 'changing world' is key here, since it posits the world as having spatial and temporal dimensions. It is a world of eternal return, but a return that is always in a state of becoming. As Deleuze puts it:

Returning is being, but only the being of becoming. The eternal return does not bring back 'the same' but returning constitutes the only Same of that which becomes. Returning is the becoming-identical of becoming itself. Returning is thus the only identity, but identity as a secondary power; the identity of difference, the identical which belongs to the different, or turns around the different.<sup>9</sup>

Deleuze's observation has parallels to the process philosophy of Alfred North Whitehead, which proposes an 'ontology of becoming'. From Whitehead's perspective real entities exist only as they are observed and transformed in relation to their spatio-temporal position and are therefore always in a state of change. Important to this is the concept of causality, which, from a process philosophy perspective, claims that each temporal moment is imbued with an immediate past that bears on its immediate future. When listening to music we might initially register a musical repetition as being 'the same' as something previously heard. When we hear a passage repeated, we recognise it for its similar attributes rather than for its differences. It is from these attributes that we can name it as a repetition. If that repetition continues over many occurrences, however, we may begin to observe a transformative process: pitches within certain registers may appear more prominent, or our attention may be drawn to a particular timbral quality, previously unnoticed.

Music psychologist Elisabeth Margulis, taking her lead from an experiment conducted by Dianna Deutch, writes about the 'speech to song illusion', in which a repeated speech pattern begins to take on melodic qualities through extensive repetition:

In this well-known example, a sentence of ordinary speech is presented, followed by the excessive and temporally regular repetition of a single clause from the utterance. Finally, the original sentence is played again. For the majority of listeners (approximately 85 percent in most students), a radical change in perception occurs; although the rest of the sentence sounds normal, the segment that had been repeated has shifted phenomenologically, such that it seems the speaker has suddenly burst into song.<sup>10</sup>

Key to this experiment is the replaying of the original sentence, from which difference can be observed. This connects to Deleuze's observation, quoted earlier: a repetition that 'unfolds as pure movement, creative of a dynamic space and time'.<sup>11</sup> As Marianne Kielian-Gilbert writes in her essay 'Music and the Difference in Becoming':

<sup>8</sup> Christopher Hasty, 'The Image of Thought and Ideas in Music', in *Sounding the Virtual: Gilles Deleuze and the Theory and Philosophy of Music*, eds Nick Nesbitt, and Brian Hulse (London: Routledge, 2010), p. 5.

<sup>9</sup> Deleuze, *Difference and Repetition*, pp. 50–51.

<sup>10</sup> Elisabeth Margulis, *On Repeat: How Music Plays the Mind* (Oxford: Oxford University Press, 2014), pp. 16–17.

<sup>11</sup> Deleuze, *Difference and Repetition*, p. 27.

Music actualizes in motion the temporal perception and experience of sonic events in ever-changing conditions, interactions, and connections. This flow embodies a perceptual openness to an as yet virtual future. Understanding the ways in which becoming configurations are or can be 'musical', is to enter a Deleuze-Guattarian philosophy of radical immanence and intensity.<sup>12</sup>

According to Deleuze virtuality is an ontological distinction that refers to those things that exist as real but not actual. This includes things that exist in the imagination but does not include anything that has physical reality within the world. The fact that the virtual lacks the actual is not seen as a negative or inferior attribute. As Echard states, 'For Deleuze, the formula *real but not actual* does not suggest a lack, but rather grants a positivity: it expands the concept of reality beyond that of actuality.'<sup>13</sup>

For me, one of the most interesting observations that Echard makes in relation to listening to recordings is that they are 'especially powerful tools of metaxis'.<sup>14</sup> For Echard metaxis denotes a state of in-betweenness where we inhabit, simultaneously, the perceptual, environmental world and the virtual, abstract world of imagination. Echard argues that listening to recordings involves an integrated synthesis of the real and the virtual. There are, first, those fixed qualities inherent in the process of capturing a performance in the studio and, second, 'those contingencies related to the interpretative practice of listeners'.<sup>15</sup> The simultaneity of pastness and presentness that is evoked from listening to recordings is important in the discussion of the two works that follows.

### Dead Time

*Dead Time* (2019), for the New York based ensemble Wet Ink, is scored for alto flute, tenor saxophone, violin, piano, percussion and live electronics. Digitally recorded sound is incorporated into the live performance of the piece in two ways: through the introduction of pre-recorded loops of short measures taken from the score (pre-recorded by the ensemble) and through the incorporation of very short samples (each no more than one second in length) that are captured in real time and played back spontaneously during the performance. The pre-recorded loops occur at specific points (bars 51, 99 and 146 respectively) and begin at synchronised moments when the ensemble is collectively silent. In the first instance (bar 51) the digital loop appears as a continuation of the same material from the previous bar. The 7/16 measure played 'live' by the ensemble 11 times is then looped 35 times digitally while the musicians remain silent (see [Example 1](#)).

The second time this occurs (bar 99), the 5/16 bar performed nine times in bar 98 is followed by a digital loop of the 9/16 material heard in bar 94, repeated 50 times. Unlike the previous occurrence, in which the repetitions are contingently placed, the return to material heard several bars previously creates a slight dislocation, like a longer-term sense of memory recall. In the third instance (bar 146) the digital material immediately echoes once more that which directly precedes

<sup>12</sup> Marianne Kielian-Gilbert, 'Music and the Difference in Becoming', in *Sounding the Virtual: Gilles Deleuze and the Theory and Philosophy of Music*, eds Nick Nesbitt, and Brian Hulse (London: Routledge, 2010), p. 201.

<sup>13</sup> Echard, 'Subjectivity to a Trace', p. 25.

<sup>14</sup> *Ibid.*, p. 32.

<sup>15</sup> *Ibid.*

Example 1: Bryn Harrison, *Dead Time* (2019), bars 49–52.

it: a 9/16 bar played nine times by the live musicians, but this time stretched out over 84 loops in the digitally played back version (see [Example 2](#)).

In contrast to the interleaving of live and pre-recorded material described above, the very short, interjected samples operate in a spontaneous and irregular manner. Sampled materials are integrated within the live material as quasi-improvisatory gestures and serve to complicate the textural surface. In the opening section of the piece, for example, the digital samples smear across the textural surface, disguising the entry points of instruments and obfuscating any sense of meter or rhythmic division. For me, these interjections, being also a form of real-time performance, disorientate the listener because it becomes difficult to separate what is recreated 'live' by the instrumentalists from what is interjected as a sample. The score specifies that the onset of these sounds should appear to occur at the end of each sample; this is achieved through a quick increase in volume in the final

Example 2: Bryn Harrison, *Dead Time* (2019), bars 145–48.

moments of a short crescendo. Sampled sounds may be placed close together (several interjections within a single measure) or further apart, thus offering the performer a certain amount of creative freedom and allowing for slight textural variance between one performance and the next.

The interleaving of materials performed live and the use of pre-recorded loops, together with the inclusion of live sampling of materials, offer novel ways of exploring repetition. Repetitions performed by musicians within a live musical context afford audience members a bodily sense of constant re-enactment: we witness the performers attempting to actualise the intricacies of the repeated measures in the score but know that this can never be done in quite the same way. Each iteration provides a certain 'carrying forwards' through time, a repetition of a previous repetition. Even when a repeat appears largely unchanged, slight variations will occur in the performers' stance and posture as they count through the repetitions, constantly recalibrating to perform together. As Marius Kozak makes clear, time is enacted *by* and *through* the bodies of musical performers, creating a ritual space in which we are invited to participate.

The pre-recorded digital loop, on the other hand, captures the enactment of that same passage of music but from the time and place it was recorded. What we experience sonically in these digitally performed materials are the unique acoustic properties of another recording environment, reproduced mechanically in the acoustic space of the live concert. Each repeat of the loop offers a magnification of sorts, the chance to scrutinise and re-examine the recorded sonic gesture within a different environment and a newer context.

Simon Zargorski-Thomas elaborates further on these differences:

Whenever a piece is performed, the tempo, the precise tuning, the rhythmic micro-tuning and the instrumental and vocal timbres will always be different and the combination unique. A recording affords an altogether different form of scrutiny: repeated listening to a particular representation of a particular performance or set of performances. A recording therefore allows the detailed examination of both the performance and the represented form.<sup>16</sup>

It is the contrast between these two modes of listening that interests me in *Dead Time*. The repetitions performed in real time during the live performance of the piece will always contain those slight incremental changes that are brought about through the ensemble's faithful attempt to repeat exactly the material encoded in the score, while the recorded loops allow for a detailed re-examination of a particular take captured in time by the same musicians. Such discrepancies between the performed, instrumental repetitions and those generated by digital means create a rift: the material itself remains largely 'unchanged' as it moves from a live rendition to a digitally captured version of itself, but its qualities are different. I am interested in the ways that the three junctures that occur between bars 51–52, 98–99 and 145–46 mark significant changes in our musical perception. When we hear the transition from bar 51, performed 'live', to the digital loop of the same material that takes over in bar 52, a change in the location of sound becomes evident: the wide, panoramic and multidimensional space that the players occupy is replaced by the more narrowly located, stereo space of the loudspeakers.

<sup>16</sup> Simon Zargorski-Thomas, *The Musicology of Record Production* (Cambridge: Cambridge University Press, 2014), p. 51.

Other changes become noticeable: in the YouTube video of the live performance from the 2019 Huddersfield Contemporary Music Festival, the digital loop heard at bar 51 features a cymbal crash at the end of the sample. The percussion part is improvised and the cymbal crash does not appear in the live rendition of bar 50. The relationships between instruments also change: the piano feels sublimated within the texture in the recorded version and the wind and strings become homogenised into the overall texture. There are also differences in resonance: in the 'live' repetitions, sounds are left to ring within the acoustic space, whereas each time the digital loop is repeated, there is a noticeable clipping at the end of the digital audio sample. The cymbal's decay, for instance, is cut short, so that a sense of continuity is subtly broken.

What these observations illustrate are the ways we, as listeners, move from the real-time continuity of a lived/performative environment, in which sounds continue to occupy a space during a repetition, to the once lived, imagined performative space of a past time, eternally replayed into that same performative space. It highlights the difference between a loop performed by a musician in real time and a mechanical loop which faithfully captures and continually repeats a frozen moment in time. Each version, real or virtual, is as much characterised by its difference as by its similarity.

If the mechanical loop represents a frozen moment in time, what then of this Deleuzian sense of *becoming* or of Ingold's 'singular locus of creative growth within continually unfolding fields of relations'? When we listen to the digital loop in the live performance space, are we not more likely to experience a state of *unbecoming*? Is the performance being reduced to what Baraitser has described as 'modes of waiting, staying, delaying, enduring, persisting'?<sup>17</sup> Undoubtedly, the listener will encounter elements of all these things, and I too have experienced the tensions that come from listening to these long, repetitive loops. Feelings of frustration are perhaps inevitable. Everything appears at first to be in a suspended state: the repeated loops hang in the air and, as Baraitser might say, time seems to pool. Even the title of the work suggests a certain halting or a deadening of activity.

Nearly five years since the first performance, I do find that I am aware of changing perspectives when listening to these long passages of recorded loops from *Dead Time*; I witness the ever widening gulf between those live, performed moments and the digital version that I hear now. Time seems to stretch out, to take on a changed condition. It prompts me to listen in different ways, to find difference *within my experience* rather than in the materials themselves. I become more aware of my body and my breath. Watching the video of the live performance, I am reminded of the performers' presence on stage. I witness them performing silence, counting, anticipating that moment when the tacet bars will end. I am reminded of that state of in-betweenness about which Echard speaks, the integration of the real and the virtual, a simultaneity between a past and present time.

My listening fluctuates between these different listening modes, sometimes with the knowledge that I am listening to a recording made in the past, sometimes encapsulated by its presence. I find that the fluid, temporal repetition of which Deleuze speaks is very much alive. Each iteration is a reminder that this is a repeat of a

<sup>17</sup> Lisa Baraitser, *Enduring Time* (London: Bloomsbury Academic, 2017), p. 2.

past event that will not occur again. Each repetition stretches out in a line that gets longer; time moves on, my expectations change and I realise that the pooling of time that I am experiencing now, towards the end of these repetitions, feels different from the pooling of time I experienced a few minutes ago. Each event feels *in time* not *out-of-time*. Time has not gone away but is a vital force that asserts its presence at every given moment. Things change, I change, and as the musicians take up their instruments to perform once more, the piece shifts gears to a different space.

### **Towards a slowing of the past**

*Towards a slowing of the past* (2023) is a 40-minute work for two pianos with digital playback and can be seen as an extension of some of the techniques in *Dead Time*. Like the earlier piece, the work includes recordings of the musicians responding to the score as sonic material that is integrated back into the live performance and, as the title suggests, it gradually reduces in speed, through a long trajectory that traces its own history, recycling previous materials in newer contexts. The material is presented sectionally at three related tempos. From an initial tempo of 112 bpm, ideas based on the original material are gradually introduced at half the speed (56 bpm). This process – halving the tempo of the same material – is then repeated until, in the latter half of the piece, all the material sounds at a quarter of the original speed (26 bpm). Each reduction in tempo is matched by a change of register; at each halving of the material's speed it drops by one octave, the piece gradually moving from the mid-to-high treble register of the pianos to the lower bass register by the end of the work.

Matching the register to the relative speed of the music is derived from the way audio playback operates in a reel-to-reel tape recorder: if playback occurs at the same speed at which it was recorded the pitch remains the same, but if the playback is reduced to half the recorded speed then the audio drops by one octave; if playback is at twice the speed then the recording is heard one octave higher. This principle is also adopted for the sampled materials indicated below; the piece includes 25 samples that are:

- (i) recorded at 112 bpm with no pitch adjustment;
- (ii) recorded at 112 bpm then slowed to half the speed (sounding one octave lower);
- (iii) recorded at 56 bpm with no pitch adjustment;
- (iv) recorded at 56 bpm one octave higher than written then slow to half speed (sounding one octave lower);
- (v) recorded two octaves higher than written (at 112) then slow to quarter speed (sounding two octaves lower).

These samples are taken from various pages of the score and differ in length between two and 36 beats. All the samples were recorded by Knoop and Chadwick before the performance and then manipulated by Knoop in ways specified by the composer. All but one of the samples are played back in reverse, so that the end of the audio sample is heard at the beginning, reversing the piano's sound envelope (characterised by a strong attack and slow decay) so that the onset of each sound is heard at the end of the sounding pitch. This results in a noticeable clipping to the final moment of each note, something that is particularly evident in passages that contain high degrees of attacks, adding an additional percussive element to the sound.

As might be expected, the manipulation of these samples produces much variance in terms of timbre: in the case of the more extreme examples, where the material is recorded two octaves higher then slowed to a quarter of the speed, the original sound envelope is almost entirely undetectable, the samples sounding as if they were generated purely through electronic means.

The opening material features fast sixteenth-note passages derived from ascending and descending chromatic scales that are divided irregularly between the two pianists. The material is contained within a relatively narrow register with each part written on a single staff. The speed of these passages and the close integration of parts make it difficult to discern individual lines or to identify the directionality of the chromatic sequences. The textural surface is further complicated by slight alterations in rhythmic placement and through the inclusion of the accented grace notes. Certain pitches are repeated in succession or doubled between parts which serve to highlight certain aspects of the harmony or add weight to the texture (see [Example 3](#)).

Following this fleeting opening comes the first of the sampled passages: a reverse decay, lasting four beats, followed by a reprise of the last two systems of page one, sounding backwards. Although it is difficult to recognise the passage as a retrograde of what has just been played, it is evident from the harmony, rhythm and texture that the sequence is closely related to that of the opening. As well as raising questions of similarity and difference, I am interested in the strange sense of auditory perception that occurs when listening to these reversed audio samples. A reverse audio sample may sound 'backwards', but it is always experienced as a forward-moving event in real-time. The sensation, for me, is of an opening into a space as yet unheard that simultaneously traces a musical event's evolution back in time. Listening to a backwards sample suggests some kind of displaced teleology or backwards causation, as if one is being pulled both backwards and forward. There is, I would argue, a different sense of gravity to a sample played backwards, a feeling of being lifted and squeezed through a narrow space. Since we are simultaneously involved with its presence and its intrinsic link to its past, we might say that a backwards sample exhibits all the qualities of metaxis that Echard has described, an integrated synthesis between two different temporalities in which experiences of the past and present become mutually combined.

Much of *Towards a slowing of the past* focuses on the contrasts between the material performed live and the manipulated playback of pre-recorded events. As with *Dead Time*, the live and pre-recorded materials are rarely heard together. Instead, these distinct events are interleaved, offering different perspectives on the same material and carrying the listener through an ever unfolding sequence of events. The predictability that comes from the constant alternation between live and recorded events at the start of the work sets up a sense of anticipation for the listener, the expectation that a passage performed 'live' by the two pianists will be followed by sampled material. As the piece proceeds, this sense of expectation becomes complicated through (i) altering the duration of events, (ii) swapping around the types of materials deployed, (iii) changing tempo (accompanied by a corresponding alteration in pitch register) and (iv) including short, repeated fragments that momentarily arrest a sense of continuity.

There are additional changes in the ways that the sampled material follows the live material. The resonance that builds from the start of the reversed sample (the reversing of the tailing off from the original

The image displays a musical score for two piano staves. The tempo is marked as  $\text{♩} = 110$ . The score is written in a complex, rhythmic style with many sixteenth and thirty-second notes. Fingerings (1-5) and articulation marks (accents, slurs) are present throughout. Pedal markings include *ped. → fine* and *ped. → fine* with a double bar line. The music is organized into four systems, each with two staves.

Example 3:  
Bryn Harrison, *Towards a slowing of  
the past*, pages 1–2.

recorded sample) is sometimes omitted or, in other instances, only the crescendo from the reversed fade is heard. This further disrupts the predictability of events and thwarts expectation and is explored still further in the middle of the piece, when a single sampled piano chord appears, electronically manipulated by Mark Knoop so that it stretches out *ad infinitum*. The chord emerges from the resonant decay of the live material that has been left to ring and gradually swells to a volume which matches that of the previously performed passage. The chord is then sustained within an undifferentiated space for two minutes. Just as the backwards samples would be impossible to render live, this chord feels heavily manipulated, a synthetic texture reminiscent of a string pad stretched in time. The harmonic field at first seems devoid of movement and its stillness is in marked contrast to the previous contrapuntal passage. After about half a minute one begins to detect slight pulsations within the sustain-tone texture, a noticeable ebb and flow, small oscillations or slow beating patterns within the sound spectrum. I remember, during the premiere of the piece, being carried along with these slight changes, drawn to the circularity of its rhythm, this subtle pulsation that results from incremental beating patterns emerging from an acoustic field.

How does listening to this moment affect our sense of time passing? Does it evoke a sense of becoming or perhaps being? Does this not subscribe to what Jonathan Kramer referred to as a vertical

Example 3:  
(Continued).

time, diametrically opposed to the horizontal time of becoming? In *Dead Time* the long repetitive loops at least had some of the affordances of bodily motion, the sampled loops still retaining the recorded presence of musicians enacting an event in real time. There is a good analogy in what Mariusz Kozak has written on the differences between a vertical and horizontal time: 'vertical time reveals itself as faint, evanescent ripples across the horizon of possibilities, almost undetectable wrinkles which, like bubbles on the surface of a lake, merely hint at the murky depth below'.<sup>18</sup> The spatial analogy is useful here in drawing out the notion of what Kozak describes as 'time conceived not horizontally as duration, but as depth'. *Towards a slowing of the past*, perhaps more than any other piece I have written, challenges notions of being and becoming, exploring both spatial and temporal dimensions through live acoustic and digitally manipulated means.

From the long-held chord the piece enters a space dominated by material in the low register, events that feel recontextualised by the preceding chord, as if it has wiped away previous events so that we can reflect on the materials anew. The live material, performed at

<sup>18</sup> Mariusz Kozak, *Enacting Musical Time: The Bodily Experience of New Music* (Oxford: Oxford University Press, 2020), p. 241.

28 bpm, feels particularly slow and drawn out. The pitch profiles are muddled, saturated and bathed in resonance through the generous use of the sustain pedal. Although the texture lacks clarity, the slow speed allows for registral details to emerge. These become amplified through high levels of repetition. Melodies seem to emerge from the texture. Over time, the piece begins to take on a different form as the live parts drop out more frequently, allowing the sampled materials to assume more prominence. The final few minutes of the work feature only the digital samples, heavily transformed in timbre. The piece ends in a virtual space in which heavily manipulated sampled loops are repeated and the performers remain silent.

### Final Reflections

In this article I have reflected on my subjective position in relation to the ways in which time passes in two recent works, considering how each of them relates to an ongoing interest in musical time, memory and repetition and showing how the inclusion of pre-recorded materials has allowed me to explore these aspects in newer ways. A Deleuzian model of becoming has been used to illustrate how difference might be observed in the mind and body of the perceiver as much as in the object itself. As has been discussed, within the context of experiencing a live performance, recorded sound might represent ways of actualising these differences and promote alternative modes of listening. I have reflected on differences in perception between 'live' events and those pre-recorded versions of the same materials that have been incorporated back into these works as part of the real-time experience. I have illustrated how the incorporation of recorded elements has been taken further in the latter of these pieces by transforming the experience of listening from that primarily enacted by musicians on stage to a virtual space in which sampled sounds predominate. As has been discussed, the relationship between the virtual and the real is complicated; recordings are imbued with their own sense of pastness and take on an uncanny sense of presence when placed in the context of a live performance. Listening to pre-recorded material, as argued by Echard, might evoke a sense of metaxis in which we are simultaneously engaged with aspects of pastness and presentness.

An area for discussion that warrants further investigation, but lies beyond the scope of this article, concerns ways in which, as Kozak has argued, bodily experience acts upon musical time. In *Dead Time* the performers seem to embody and animate the passing of time, and further study might consider the affordances of bodily time within recordings, where the body is imagined by the listener, rather than seen. Such a study might question the role that bodily enactment plays in electronic music, where the performer is one step removed from the production of sound.

I am currently working on tentative sketches for a new work for Explore ensemble that will investigate ways in which recorded sound might be utilised further. Drawing on Husserl's model of passive synthesis, I am considering the effect of recorded sound that appears a microsecond before or after the sounds performed by the live musicians (almost as a protention or retention). I am also considering the ways in which backwards sounds might be emulated by live musicians, perhaps using audio samples as the basis for imitation. Whatever the outcomes of these experiments, combining live and pre-recorded sound offers further scope for considering how different temporal modes might be invoked and enacted within new works.