



// issue 30: incalculable experience

FCJ-225 One Definite Note and the Anarchic Share of Listening

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Abstract: Alfred North Whitehead's brief discussion of the event of 'one definite note' emphasises that the note itself and the act of listening to this note are, while related, independent events. This article explores Whitehead's complex understanding of the singular act of listening utilizing a performance of composer Alvin Lucier's *SO YOU (Hermes, Orpheus, Eurydice)* at documenta 2017 to suggest that the *anarchival* qualities of listening are important. They create complexity and novelty in the world.

doi: [10.15307/fcj.30.225.2019](https://doi.org/10.15307/fcj.30.225.2019)

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What you listen to or what you're reading is still moving and still living. It's still forming.

(Harney and Moten, 2013: 107)

Music charms us, even though its beauty consists only in the harmonics of numbers and in a calculation that we are not aware of, but which the soul nevertheless carries out, a calculation concerned with the beats or vibrations of sounding bodies, which are encountered at certain intervals. (Leibniz, 1994: 212)

Every room has its own melody, hiding there until it is made audible. (Lucier & Simon, 2012: 31)

Introduction: A Sonic Can of Worms

Alfred North Whitehead's opus *Process and Reality* devotes slightly more than one page to the question of the audition of sound (1978: 233-5).^[1] Whitehead slyly defines this as a 'simple' example that avoids any 'unnecessary complexity'. In fact he opens a can of (vibratory) worms. Whitehead is, I think, well aware that he is opening this can of worms. The example hints at the fact that to attempt to follow all the threads of the events that go to make up a particular event of audition is to embark on an unending task. It is to confront the 'social effort' of the whole universe that has gone into the event's makeup (1978: 233). That is, the closer one begins to look at the audition of a particular note the more complex, vague and entangled it will become (the deeper the rabbit hole, to mix metaphors). One will become less sure about the existence of any stable entity or event that might be safely called a 'note'.

As Whitehead briefly examines this audition of 'one definite note', it becomes clear that any such audition is entirely singular ('a particular fact not to be torn away from any of its elements') (1978: 234). It is also endlessly complex. This 'subjective' complexity is, he argues, synthesised from three patterns of contrasts: those of the data; the 'emotional quality'; and 'the pattern of emotional intensity' (1978: 234).^[2] The listener composes one complex feeling from a series of feelings that in themselves are divisible into infinitely complex data (of which only those differentials between tone and overtones are defined by Whitehead). This complexity arises from their mediated relationship to all the spatial and sonic qualities of the environment in which the note sounds, and from personal 'qualities of joy and distaste, of aversion and aversion' (1978: 234). In the patterning and valuation of contrasting feelings to compose the note, the auditor grasps, though largely not in a conscious way, a whole world or ecology of relations in-composition. The event of audition is not that of a passive listening to the already resolved sound, but is entirely active. There is not a resolution of difference but a sustained resonant and productive difference across many registers whose intensity is held in the beauty, if not always the harmony, of the definite note.

In his example of audition, Whitehead emphasises the necessary intertwining of material and conceptual data. Each have their own sets of held contrasts but they are never really separable. Both are important elements of the becoming or concrescence of an entity (Whitehead, 1978: 233). As throughout *Process and Reality*, Whitehead also thinks through the way in which an

event can be both extensively relational and self motivated in its becoming. That is, an event is connected to that which has come before and on which it draws, and at the same time intensively autonomous. It has its own motivations or will to become. Although a musician might commonly think of the act of listening to a note as a secondary event dependent on the production of that note, Whitehead's philosophy suggests that we must find a way to think audition as a primary event unto itself.^[3]

I want to propose that the act of listening or audition is an *autonomous act of composition* not reception (and thus not inexorably linked to hermeneutics as Roland Barthes claims) (1991: 249). In this it does not preserve or archive the sound event, but instead anarchives the one simple note, resonating with the traces of previous events but freeing itself from their bonds. We might define the act of 'archiving' as one of collecting and preserving the already-formed, so that it might be represented or repeated. To 'anarchive' might instead be to take existing material or events and reinvigorate (rather than re-live) them – reinvigorate through acts of re-composition that take this data and incorporate them into new events. The anarchival might therefore exist or be activated within the archive, as an act of immediation that resonates with the event.

To think of the autonomy of audition from the sound in-the-world is not at all to imply a return to a system of primary and secondary qualities as per Descartes or Locke. In their thinking sounds are merely an effect produced by hearing, not an independent event, and this conception therefore triggers a return to an 'idealist [and] phenomenalist conception of sound' (Cox, 2011: 155-6). Nor is it to argue, as John Cage has, that the audition is a mere 'curation' (cited in Cox, 2011: 155), or that it is a symbolic representation shielding one from the 'real' of the cacophony of the asignifying world. With Aden Evens we might rather think of the relationship of the noise of the world to the sound perceived as a productive and necessary relationship (2002: 177-8). Thinking with Whitehead, we must argue that audition and sounding can be understood as two series or societies of resonating events.^[4] Within such a system there is no passive reception or mere interpretation. Rather, audition is an autonomous activity that draws on but is not defined by the independent sound event. This involves a resonance with a difference, indeed a resonance *defined* by difference, whose beauty lies in the intensity of this difference.^[5]

In this article I propose to break open the intensive and extensive differential relationships involved in the event of one definite note and examine them in greater depth. I will first examine more of the complexity of the definite note, and secondly propose that the audition or perception of definite notes might be considered an act of *anarchiving* in that it makes felt or values qualities of the experience and ecology that do not register individually and which might be considered an 'anarchic share' of the audition (Manning, 2016: 64). I will apply these concepts to the particular use of resonance in composer Alvin Lucier's *SO YOU (Hermes, Orpheus, Eurydice)* (2017), as performed at the Athens Conservatoire in June 2017 during documenta 14. This performance for voice, cello, clarinet, sine waves and nine amplified wine jars brought to attention the complex intertwining of aspects of the sound waves generated. In particular, through the additions of the jars' resonating with the other instruments, the work emphasised the ecological and differential aspects of sound that might often be subsumed by melodic and performative aspects of composition.^[6]

Pandora's Boombox

What is this 'one definite note'? There is no doubt that it is 'definite' in Whitehead's sense of the word, in that it is a distinct patterning of data, clearly cut from the greater potential field. However this 'thing' that appears to us as one note is by any definition no one thing, but a truly complex and *emergent* event that defies easy definition and crosses any arbitrary boundaries that we might try to impose. Although it is, I think, impossible to fully capture all the complex differentials involved in making the event of the note, here I want to begin, with some trepidation, to open 'Pandora's Boombox' and explore some of the ways that the note is let loose to actualise. In doing so I will also consider the audition in relation to Whitehead's concept of prehension.

I want to propose that an event of audition or listening is 'felt' or prehended in a Whiteheadian sense. Whitehead's use of the somewhat awkward term 'audition' rather than listening or hearing is pointed, I think, as it has much more of the sense of an event in its own right without the legacy of false conceptions of perception as a passive reception of data.^[7] In audition,

Whitehead argues, there is a process of subjective selection (prehension) of vibrational data from the field that occurs, rather than a straight transference of vibration, and therefore always the potential for creative divergence. Thus the hearing event is a creative event in itself, separate from, though influenced by, the sound event. There is never simply a passive ingression of data, but rather a co-constituted event, a novel use of some of the potential for audition that the sound waves provide (Whitehead, 1978: 232).

For Whitehead an entity or event is precisely and entirely its act of concrescence or becoming. It becomes through selecting certain aspects of the actualised world to incorporate (and this selection includes the active non-selection of negative prehension of all the other data): this is a physical prehension. This is modified through conceptual prehension: a valuation of the data in relation to various relevant eternal or pure potential qualities. Most importantly, this data is not then homogenised to produce the event, but rather held in patterns of contrast to create intensities whose complexity creates the richness or depth of the experience. The prehensions then create novelty in this new 'subjective form' – though the same data may have been incorporated into other acts of becoming (the audition of the note by the person in the next seat, for example) (Whitehead, 1978: 232). Once it has reached its 'satisfaction' or the end-point of this process it ceases to be as an event, although it can be utilised by other entities as data in their becomings. The process of prehension becomes clearer in actual example. Here the audition of sound provides an exemplary case to study, as any sound itself is so evidently composed of differentials, both internal to the sound itself, and in relation to its larger ecology.

The basis of all the components of sounds are events of vibrational difference (Roads, 2001: 55, 73). These in turn are a question of speed and interval of oscillation. Here rhythms of contrast both form and disrupt any continuum, and the definite note is itself then an expression of the modulating differences involved. Sound, as it can be perceived, is necessarily made of contrasts. This can be deduced from the fact that a single particle of sound (a 'pulsar') is in fact inaudible. We might surmise, from a Whiteheadian perspective, that this is because the pulsar lacks the requisite contrasts to provide sufficient intensity of experience to be understood as sound by the auditor.^[8] That is, sound is a series of waves of air pressure through space and time, and each wave has differentials that go to make up its character: pitch, timbre, volume, and so on. As Aden Evens outlines, sound vibrations (air waves) consist of variation in pressure

over time – frequency, amplitude, phase, shape (each 'a motion, change over time') each being an aspect of this wave that has its own set of contrasts (2002: 171).

The seemingly simple aspects of Whitehead's one definite note of pitch and volume turn out not to be qualities of the note itself, but qualities of the prehensive activities of the audition. The amplitude of the wave event (perceived as the volume), for example, consists of the differential relationship between the peak and trough of the wave. The absolute height of the wave is perceptively meaningless except in comparison with the depth. In Whiteheadian terms we might postulate that it is the 'valuation' and 'patterning' of this felt peak in relation to the felt trough that begins to give the auditor a complex feeling of sufficient depth to constitute an event of perception.^[9] Here, as Evens says, 'one does not hear the up and down, but a quality of a note, high or low' (2002: 171).^[10] I say 'begins' to indicate, as I will discuss below, that the patterning is much more complex than this, both in terms of the number of physical feelings that will necessarily be involved and in terms of the 'eternal qualities' that might also work to qualify the prehension of the physical data.^[11] This necessarily also involves temporal contrasts: the trough that is immediate in comparison to the peak that has just been or will be.^[12] Thus the volume/amplitude is an expression of the note over time, as the act of audition must also be a prehensive act, grasping data over real time. The note is also necessarily an expression through space, since the wave has an actual length that travels the room at the fixed speed of sound. Through all this, that which is consciously perceived is 'a variable uncertain element which flickers uncertainly on the surface of experience' (Whitehead, 1967: 253).^[13]

Similarly, the frequency of the wave is composed of the relationship between the one wave to the next (that is, the distance from one peak to the next or the number of cycles in a given time, expressed as Hertz). The prehension of these individual waves can only give the auditor the perception of pitch when the waves are held in relation to one another in the intensity of a contrast.^[14] Sufficient intensity of contrast is needed in order for the event of pitch to be perceived in all its richness. If insufficient data is grasped to create this then the note will be either imperceptible in relation to the field of noise, or at least vague and indistinct and therefore less integral to the event of audition of which it will still form some part. (As a proviso to this, the note might also be distinct in perception by the very fact of its *absence* or lack of ingression: for example, a note missed in a familiar melody will be all the more apparent to the

listener singing along, or a melody that fails to resolve to the tonic will make this absence keenly felt to the trained ear.)

So far I have considered this definite note as if it were a sine wave composed of only one frequency and therefore existing as one pure tone.^[15] Audio oscillators can generate such simple sounds (though this is clearly not what Whitehead has in mind in his example as he specifically mentions the presence of overtones).^[16] However, as I will argue below, regardless of the source of the sound, there can never be any *perception* of a pure tone due to the diffractions in space that will inevitably complicate the initial wave. Before considering these extensive complications of our note, I want to briefly examine further intensive differentials that help to make up what would, in music, be termed the 'timbre'. Whitehead refers to this also in his outline of subjective form (1978: 234). The timbre or 'colour' of a note emanating from an instrument is the set of harmonics and overtones that give it its particular quality. This allows the auditor to very easily distinguish, for example, between the same pitch played on a clarinet and a saxophone, despite the general similarity in their mechanics.^[17] The note consists of the fundamental tone and a 'selection of overtones' (Whitehead, 1978: 234) that distort the wave form and provide a more complex sound. For example, a common wave shape is a triangle wave.^[18] Unlike a pure sine wave a triangle wave is additive, in that it adds to the base note a series of higher notes that colour the primary tone. A triangle wave consists of the fundamental note or tonic, plus the odd harmonics: the integers of the 3rd, 5th, 7th intervals and so on (plus to a lesser degree various overtones that are not part of the harmonic range and might therefore be negatively prehended or edited out by the auditor). The various higher waves generally diminish in volume the further they sit from the tonic.^[19] The one note is therefore composed from its own intensive tonal contrasts. These contrasts are available as data to the auditor, prehended both individually (in the distinct overtones and harmonics that might be heard), and grasped collectively as the one note, so that the patterning of elements that constitute the note's concrescence can be incorporated into the experience of audition.

We must also include in this the non-audible range of overtones – 'unsounds' – that will distort the wave shape further and affect the audition despite not being prehended individually via the ears. These unsounds may have further effect on the note through the play of diffractions in the space (Roads, 2001: 33).^[20] A vibration is of course only an unsound from a *subjective*

perspective – a frequency that is unheard by a particular ear in that the frequency does not cause sympathetic vibration in the eardrum. Thus a vibration that is an unsound for the assumed-to-be human ears of the auditor may be vividly present to her companion dog, as it is the auditor who cuts and defines sound from unsound.

Even with the consideration of all these complications in the emergent qualities of the note, we have only just begun to delve into the physical contrasts that make up the experience of the audition. For one thing, we must consider that the sound wave is prehended in differential relation to the surrounding air pressure. Of course we do not 'hear' the surrounding air as such, yet the act of audition would be impossible without this contrast. This is the simplest of the note's extensive differentials and additions. Another is that the note reflects off the various surfaces of the space. It reflects and forms diffractive patterns with the original waves. This diffraction creates new wave patterns (as waves on the surface of water reflect and intermingle^[21]). These wave patterns are themselves prehended, adding their contrasts – whether distinct or vague – to the final, complex prehension of the note in audition. Other bodies and objects add to this gathering cacophony as they resonate in sympathy with certain tones and harmonics, amplifying and relaying or dampening aspects of the timbre, again to become their own events (held and patterned contrasts). These events are felt both in themselves and in relation to the note through the new differentials they produce. These must be prehended and added to the patterning of the note by the auditor (at the very least as noise to be backgrounded). Thus the one note, even if it originates as a pure sine wave, is a distinctly different being in every space in which it is emitted, though it may begin its life as ostensibly the same pitch, volume and duration.^[22] In sum, there is no note that can be replayed or received in any passive sense. Each definite note must be remade anew in each act of audition in the concert hall, bedroom, headphones, computer and so on. With each act of audition the relation of the note to the universe is also reinvented.

If these aspects of the event seem inconsequential, we have only to think of the very distinct qualities of individual concert halls that amplify certain tones and muffle others, or the various accounts of the strangeness of sounds experienced in anechoic chambers.^[23] As John Cage writes on his formative experience in one such chamber, despite the design he heard two sounds, one being the high-pitched sound of his nervous system, the other being the low sound

of his blood circulating (1961: 115). We must therefore remember to include the very bodily presence of the auditor in our factoring of the audition. Rhythms of the pulse create syncopations with the frequency of the note, pitch intervals are created between the noise of the body and note, and the resonance chambers within the head and body not only amplify bodily sounds but vibrate subtly in sympathy with the external world, each body in its own particular manner.

Through this playing out of the resonances and diffractions, the whole space (including the presence of one's own body) is 'grasped systematically in this feeling' (Whitehead, 1978: 234). Included in this is an at least vague grasping of the spatial configurations, as the auditor's particular distance from any object or surface is an integral factor in the timing and order in which the various diffractions and resonances reach her. The particular orientation of the body creates contrasts between the timing of the sound waves reaching each ear and the tones that are more or less emphatic in prehension. As Isabelle Stengers warns though, this is not to say that the note establishes a simple relative relation between 'the "there" where it is emitted and the "here" of the percipient, a two term relation'. The sound has a 'sonorous quality' that cannot be fixed in such simple terms (2011: 85). The richness of the note, it must be emphasized, is not only in the actualized differentiations, but also lies qualitatively in the always-present *potential for further differentiation* across all these registers. It is this that keeps the event at the point of being other or more than what has already been actualised.

The complex patterning involved occurs firstly as the concrescent process of the initial production of the note, and secondly, as the independent process of patterning in the audition's grasp of elements from the former. The patterning that takes place during the event of audition is also able to distinguish the note from the surrounding noise and music, foregrounding the melodic note with clarity against the vagueness of the chord or triviality of the 'non-musical' sounds of the space and body – a subjective patterning of relevance (Jones, 1998: 38). Here perhaps the composer or trained musician is able to identify each tone and instrument clearly as well as the key (an eternal object or virtual quality) while the general audience is gripped more by the overall affective tone (though we all also involuntarily place importance on the accidental or bum note and the coughs and snores from the audience).

There are of course many other more abstract (though still real) qualities that come into play for the auditor: cultural, historical, instinctual, emotional, and so on. This is true even if we narrow our auditor down to a human body and therefore ignore the myriad, if unknowable, affectual qualities that a particular sound might evoke for a dog with its supersensitive range of pitch and volume perception and hunter's sensibility, or a snake hearing through its whole body resonating with the vibrations of the surface on which it lies, to take two examples. A particular note or key has potential abstract qualities associated with it for the auditor – the melancholy of E flat, or the brightness and joy of A major, for example. Such qualities of melancholy or joy are, for Whitehead, examples of 'eternal objects': conceptual qualities that further qualify the 'bare audition' of the prehension of the physical qualities of the note (1978: 234).

In the incorporation of abstract qualities we hear not only the notes themselves, but also the absurdity and distaste of national anthems, the nostalgic joy of television theme music from one's childhood, the disappointment with this particular performance of a favourite song, and so on. All these provide a higher or more complex and nuanced synthesis of feeling. In the integration of such conceptual factors 'the audition gains complexity of subjective form' (Whitehead, 1978: 234), further qualifying the subjectively prehended qualities from the physical data to create the final pattern of emotional intensity.^[24] In addition, as we may all have experienced, the pleasure in the musical event can be coloured not only by such abstract factors that are clearly related to the sounds themselves (our personal and cultural tastes and distastes, evolving as they may be and in themselves complex feelings with long histories), but also by incidental emotions and conceptual qualities: residual anxiety or happiness brought from the day's events; pleasure in the company of friends at the concert; expectations of the music and so on; and the feeling we have of these feelings affecting our mood and general reception of the sound. Each of these is in itself a complex feeling that is then felt through the audition to some degree. Thus again the experience of the ostensibly same note on several occasions must necessarily, by some degree, grasp different eternal qualities that colour and change the audition, whether this shift is subtle or vividly and consciously perceived.

Now on reflection we see that our note is *anarchic*. Its continued emergence through these complex inter- and extra-relationships that are not in themselves consciously registered are the very event itself. The one definite note, when examined, opens up to a whole universe of

relations felt by the auditor through prehension – whether directly, such as the resonance of a hard surface, or indirectly through prehension of the note’s own patterning of intensive and extensive contrasts. This is not a static field from which to grasp data, but a lively, immanent network or ecology, from which neither the note nor the auditor can be separated.

If to archive is to preserve, to attempt to hold or freeze an event, then this is to discard or detach its potential activity, its anarchic share, the unrealised potential or un-individuated remainder that tendentialises or lures the ‘now’ towards the novelty of the future (Manning, 2016: 64). To archive is to quiet difference in-the-making, the very basis, I have argued, of the audition of the note. The act of audition is not exactly the *preservation* of difference that contrasts with the archive’s collapsing of difference; rather it is the immanent construction of differentials (as an open set). That is, audition is the singular event through which the contrasts are patterned (or composed) as its becoming.

In positioning listening in this manner two things might become apparent. Firstly, the audition is actively composing from potential and actual data (a ‘self-realising’ act, as Whitehead states) (1978: 222). Secondly, this composition necessarily retains (and in fact builds on or reconstructs from its own subjective viewpoint) the differentials of the independent sound-event of the definite note. In this the act of audition draws on the ‘anarchic share’ of sound: that which cannot and need not be obviously perceived. Yet despite not necessarily rising to conscious perception, the anarchic share nevertheless provides the depth and richness of the experience to the audition of the note and is ‘effervescently felt’ through its traces (Manning, 2016: 64). This is qualitative and emergent – not to be categorised and contained. Its richness lies as much in the unactualized and the never-to-be actualised (at least at a perceptive level) potential differentiations that are necessarily part of the patterns of the data, and of the subjective form and emotional intensity that make up the experience.

Adventures down the Anarchival rabbit hole

It would be a mistake to think of a wine jar, whether a modern bottle or ancient Greek jar as in Alvin Lucier’s *SO YOU*, as an archive for the wine it holds, passively containing and preserving its contents. The jar or wine barrel is an active component in the fermentation process, as each container’s particular shape, volume, mineral composition, ecological microclimate and

position in the cellar differentiate it from its neighbouring containers. The wine maker is not an archivist who harbours a death drive, with a 'fear of the new' (Murphie, 2016: 54), but one whose mission is the bringing together of potentials of grape, terroir, yeasts (both introduced and those inevitably filling the air of the cellar) and barrel and jar or bottle. The act of winemaking is forward-looking, one of optimism for the potentials of all these elements to differentiate and produce a novel vintage. As such it is an adventure, an anarchival act that seeks to preserve vigour in the form of 'real contrast between what has been and what may be...beyond the safeties of the past' (Whitehead, 1967: 279). What is the archive if not this 'safety' of (and in) the past, a collection robbed of its adventure in that it is detached from its efficacy in the ongoing novelty of the world?

In *SO YOU*, a vocalist, cellist and clarinettist sustain 'long tones against descending and ascending electronically generated pure waves. As they do so audible beats are produced determined by the distances between the players' tones and those of the continually sweeping pure waves'.^[25] My discussion of this work is, for the most part, focussed on the nine large amplified wine jars that were placed in front of these musicians within the performance space, as it is these elements that make evident to the audience the acoustic phenomena that are always present in music but usually subsumed by other aspects. These jars, I will argue, act independently as instruments, transducing and resonating with the played notes to produce a slowly building, eerie composition.

Lucier's score for *SO YOU*, we might say, is propositional for vibrational interaction and sympathetic resonance between the various styles and resonant proclivities of the instruments and 'the variability of actual spaces' (Kahn, 2013: 105). Michael Roth argues that in Lucier's oeuvre 'the actions of the performer serve more to expose the sonic phenomenon that is the central focus of the piece than to enact an expressive gesture' (in Collins et al., 2011: 10). Thus what are foregrounded in *SO YOU* are the inherent *expressive capacities* of all the various components. These components are always present in music, but are usually subsumed to a large extent by the conscious *performance* of expression by the musicians and composer (as opposed to an 'expressivity rather than self-expression' as Lucier describes his work in general) (in Harder & Rusche, 2013). In performances of this work it is made evident to all in the room that the jars' role is never only as listener or echo chamber but is instead as much that of

composer-as-auditor. Here I want to propose – though perhaps it requires something of a leap of faith – that the jars might be thought of as decidedly non-human auditors as much as they are musicians, actively listening to and anarchiving the vibrations present in the room. The jars tell us that we should not suppose that audition is, in some senses at least, an activity reserved for human or even animal ears, even if that very small fraction of listening that is most literally conscious perception might be found only in the animal kingdom.^[26]

Nor should we suppose that the instrument in the musician's hand or mouth is a mere conduit for the notes on the manuscript paper, delivering a clear message from composer to audience. In *SO YOU* for example, as each long note is played across the sweeping sine wave pattern, it creates an 'acoustic peaking' as the frequency of the instrument's note approaches that of a sine wave, and an event of beating vibration occurs (slowing as the two frequencies approach each other).^[27] Perhaps we might think of this peaking as an example of the manner in which held contrasts, in Whitehead's sense, create a richness and depth to an event. These contrasts produce the tension between the frequencies of the waves – the *differentials* that were immanently produced – that could be prehended by the auditor. Through this holding of difference an event is composed independent from (though related to) the instrumental sounds.

These resonant vibrations create a third position, existing only as diffractive events or vibrational interference patterns in the duration of the performance. While the sine waves are pure notes without overtones (that is, they are sent into the world as such, though they of course bounce off surfaces and diffract, quickly losing such smoothness in the conversation with the spatial constraints), the same cannot be said of the notes from the clarinet, voice and cello (or of the notes emanating from the jars), which are rich in overtones. Thus we can suppose that, as each overtone goes on its own journey through space and time independent of the root note, it must also approach and retreat from the sweeping frequencies of the sine wave generator. Each overtone *anticipates* in its own, decidedly non-human manner, the creation of further beating vibrations. Here that complex timbre of the note that might be grasped as one by the auditor is again let loose, repotentialised in relation to new phenomena with which it may resonate. Such events of acoustic peaking are not mere echoes, but novel and anarchic: a 'tendency' perhaps within the composition on paper, but one that leaps beyond

the initial potentials and limit points of the notes and into a richness or depth of potential in conversation with the spatial elements of the actualisation. The 'integrity' of the note is not preserved (this preservation of integrity – origin-ality in its literal meaning – is what the archival urge would demand^[28]). Rather, such phenomena suggest an anarchiving that positions each event as novel while intertwined and relational.^[29]

SO YOU explores and layers the particular tendential overtones of each resonating chamber (such as the clarinet barrel, cello neck and body, the body of the singer and chambers of the jars), all within the larger context of the tendencies of the room itself. The piece is a meditation on the active and differential relationship of these chambers to the emergent vibratory ecology.^[30] Thus any performance of the work is necessarily an improvisation. This is not meant in the commonly understood sense of the word in a genre such as jazz, where melodies are improvised in a relatively controlled manner over a set chord sequence and musicians seek to create interest through dynamics, melody and rhythm. Rather, the composer and musicians set loose a series of soundwaves into the space, inviting these to resonate productively into novel events well beyond the initial structure provided by the composer.^[31] In this, as Douglas Kahn writes of Lucier's general compositional aims, the motivation might be to 'let some air in' and to 'excite and experience whatever space [a] performance took place in' (2013: 101, 104).

In this respect, although the jars in this iteration of *SO YOU* are clearly *responsive* to or with sounds from the musicians, the sounds they generate are not a simple bouncing-off or passive return of a sound (an echo).^[32] Instead, they can be seen as a grasping of certain frequencies that are subjectively useful in the generation of their own expressions. The jars also reject (negativelyprehend) vibrations that are not useable.^[33] The jars then create their own subjective contrasts: high and low points of new frequencies; new or remodeled overtones; local micro-climates of air pressure (eddies); internal and external diffractions further complicating the sounding of the room; and new rhythms of acoustic beating and syncopation. Here each jar perhaps can be thought of as a non-human eardrum: with capacities to vibrate in sympathy with certain qualities of sound events whilst remaining unmoved by other vibrations (a negative prehension, in Whitehead's terms). That is, firstly, each jar subjectively selects which vibrations to respond to (to include reference to in its own corporeal becoming). Secondly, in Whitehead's schema we must insist that such responses are never simply the

incorporation of the original note. Rather, each jar composes its own complex performance within a relational field of potential.

Thus there is an audition of the data available to each jar as well. A positive and negative (but essentially *active*) selection, valuation and patterning remake the vibrational material of the original note into new events of sounding. Here the different auditions of the various jars in *SO YOU* depend of course on the complex physical prehensions relative to a jar's exact shape and thickness, spatial relationship to other instruments, position in relation to the length and amplitude of each sine wave as they traversed the space, and so on. Through such physical prehensions of vibratory material each jar not only grasps or auditions a subjective relation to the histories and complexities of its physical situation, but also *expresses* the differentials or contrasts of such grasping through its own subjectively orientated composition of relational vibration. Such expressions of final, definite patterns consist also of the mediation of the physical data through eternal qualities with which each jar engaged – qualities of shapes (roundness, tallness), pitch (harmony, disharmony, key), surface (smoothness, roughness) and so on. And, while the wine jars do not of courseprehend such factors in any sentient manner, the qualities of their making (shape, size, chemical composition, colours, textures and so on, plus the particular preferences and physical traits of the potter), are always present. Also present is the history of their journey through cultures (from utilitarian object to precious artefact). Their vibrations are therefore a nexus or point of relational connection for many cultural, historical and personal qualities that lead to their individuation in the room as resonators, their expressions loaded with an emotional intensity that provides a richness grasped in audition.

The jars therefore, while carrying traces or ghosts of their many material and cultural pasts, are active, lively participants in the events. They reach into the future and potentialise vibrations rather than archive the sounds through an echoing. Thus, while *SO YOU* is listed as being for three musicians, oscillating sine waves and nine jars, in reality the jars deserve to be recognised as decidedly non-human musicians in their own right: active makers of the piece as much as the clarinet, voice and cello. The sine waves too are integral to the immanent composing that occurs. While perhaps we might say that composer Alvin Lucier shows a particular courage in embracing the musicianship of the wine jars. Such courage might be present in any

composition or performance that embraces the anarchic acts of audition and follows them, rather than seeking to dampen them. In this *SO YOU* begins to make felt *qualitatively* – as a 'liveliness' (Lucier in Harder & Rusche) – some of the complexity of the event that necessarily reaches beyond conscious perception and charges the event with potential, along with the impossibility of archival preservation of any note.

Any conception of an archiving of a note assumes, firstly, that there is 'a' note that can be archived, that can be managed and reproduced. Secondly, it assumes that the character of the archivist is not integral to the distinction and collection of that note. By character I mean here not just the taste in collecting, though this must be a factor, but all the particularities of bodying, thought, spatiality, and expressive capacities. Thirdly, the concept of archiving ignores the fact that what is being archived has, in Whitehead's terms, ceased to be, having reached the termination of its concrescence or 'satisfaction'. The note must therefore always be re-created. If perhaps the note does continue to exist, it is in the form of its inclusion as data into other events, which grasp and pattern aspects of the note in order to achieve their own becoming. Thus the note 'lives on' in the world as a component of the immanent coming together of other perspectives. In this thinking the original note is a lure, seed or invitation for other events of diffraction, resonance and audition (though again these events are concurrent with the note's differentiations). The note's ungraspable-in-their-entirety excesses charge the air with anarchic potential. Each audition is a subjectively composed topology of some of those potentials in a particular pattern as required to realise the reinvention of the original note from another's perspective.

Where is the vividness and/or the subtlety in the preserved and fixed notion of the archived note? If it is not lost then surely it is muted – robbed of a richness that is not necessarily heard in the note itself but that saturates the field as potential for future differentiation: an unheard share for and of the future. As Cox states, music – as in the case of *SO YOU* – perhaps here begins to make 'audible the dynamic, differential, discordant flux of becoming that precedes and exceeds empirical individuals' (2011: 153). It is in this sense that music is not a series of messages or sound bytes that float in the ether waiting to be received, but the propositional potential for audition that is entwined with the potential of the auditor, as the two co-compose. Thus for audition to be an adventure into listening and, I would argue, to be an anarchival act,

the 'vigour' of potential in the immediate present must be maintained. This is the anarchic share in the form of 'real contrast between what has been and what may be...beyond the safeties of the past' (Whitehead, 1967: 279.^[34] What is the archive if not this 'safety' of (and in) the past, a collection robbed of its adventure in that it is detached from its efficacy in the ongoing novelty or differentiation of the world? The simple audition is an act of anarchiving in that it selects from a complex history and reactivates some of the data within new events. It is an adventure into the unknown, into novelty that cannot be contained within any concept of an archive.

Inconclusion: Anarchic Beauty

And yet despite all this activity, difference and complexity that I have just begun to explore, audition comes to us as one, in an instant, as 'one complex feeling'. This is indeed, as Whitehead has said of the note in question, 'definite'. In *SO YOU* I hear distinctly and recognise the high reedy sound of the third register 'D' on the clarinet and then the same note on the cello, even as I also feel their difference. Like a thought, this note is not there one second and then luminously present the next, an event in and of itself, and this is its beauty. It is resonant not only within but in emergence *with* all of the field of its individuation, bringing forth a qualitative richness of the ghostly whispers of this noise-field as pure feeling of intensity. Here

the enjoyment of a composition (is) derived from the interconnectedness of its factors.

There is one whole arising from the interplay of many details. The importance arises from the vivid grasp of the interdependence of the one and the many. (Whitehead, 1968: 60)

This is a sense of 'beauty', but not merely beauty in a minor form – that is, 'the absence of painful clash, the absence of vulgarity' (Whitehead, 1967: 252). Instead this might subscribe to what Whitehead terms 'major beauty'. This involves new 'conformal intensities of feeling' – where the parts contribute to a vital whole and the whole contributes to the 'intensity of feeling of the parts'. Here beauty is the perfection of the subjective form in detail and the final synthesis (Whitehead, 1967: 252). In this definition of beauty, music is perhaps freed from its loaded cultural connotations of certain styles of composition, a freedom that becomes evident in the beats of the acoustic peaking and spatial resonance that complicate *SO YOU*. This beauty and freedom are potentially there as much in the crackle of a John Lomax field recording, the

fuzz of a Stooges song or the strain and discord of a Morton Feldman sound cloud as in a Beethoven string quartet. All these are resonant with the histories of instruments, recording technologies and ad-hoc studios and rich social and sonic histories, alongside the many layers of wave vibrations with their potential contrasts that deny there necessarily being any simplicity in a three-chord song. The perfection of 'harmony' of beauty that Whitehead writes of is in the potential complexity of the contrasts that can be sustained in an event and not in the erasure of novel and difficult frequencies and resonances that produces only the anodyne experience of the archival.

There is no beauty, in Whitehead's terms, in the archive, in the sorting and separating and *recognition* that remains resolutely at a conscious level – in the stilling of a thing's emergent relationship to its world. That is, the intensity – composed of these held contrasts – is lost or at least reduced in the archive, as it is in the simple sine wave whose frequency and amplitude is not (yet) coloured by its engagement with the complexity and variety of the world, but sits alien and lost on its own. How can we tune in to the anarchic share that is the beauty of the note, without, as Erin Manning says, capturing it in its entirety? (2016: 64). How do we allow these values to express and ingress without seeking to define them (for if we capture or over-define do we not archive)? This is the question that Lucier's compositional incursions insistently pose. It is a complex and unfolding question that finds its partial and subjective answer in the audition of his work, by both human and non-human auditor alike. It is perhaps a larger ethical question too, of how to live in a manner to maximise the expressivity of each event. The singular voice that, if it is not quietened too quickly, might reach beyond the habitual and historical to make a brave leap into novelty.

The definite note is resonant with the whole universe (with each sound a *contrast* within a universe of sound that carries with it the whole history of sound as 'cosmic vibration') (Evens, 2002: 177). Indeed, the sound waves of the big bang can still be identified reverberating throughout the universe in waves many kilometres in length. Thus audition is itself an ecological act, tapping into this web of relation in order to create: to individuate as a singular event. Here, as Whitehead points out, we must also consider that not only does the auditor compose the perceived sound; the act of listening also composes the auditor, who 'would not be the auditor he (sic) is apart from this feeling of his' (1978: 234). If we consider this listening as

an anarchiving, might we not then propose that as the anarchist reactivates the archival note through listening, the anarchival note reactivates the archivist? That is, what the audition might offer is a chance to reconnect with the anarchic share not only of the note, but of ourselves: a sense of our own continuing individuation that is self-motivated but entangled with these vibratory events. Here the ancient jars not only audition and compose, but are, from the subjective position of the vibrations in the air, remade through these acts (made to 'live in space' and time) (Lucier & Simon: 100). They become anew in a held tension with their long histories and myriad potentials as the two mutually or collectively individuate, creating new beauty through this increase in complexity and potential complexity that folds and layers in the 'lively behaviour' (Lucier in Harder & Rusche) of the anarchic.

Biographical Note

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Notes

[1] My purpose here is somewhat tangential to Whitehead's discussion. The example is used by Whitehead to illustrate the intertwined factors of the subjective form, that of the qualitative pattern and the pattern of intensive quality (1978: 233).

[2] 'Subjectivity' and 'contrast' are complex terms that are key to Whitehead's philosophy. In Whitehead's use of the terms their meanings sit somewhat outside of their more general use. Whitehead points out that in his process based philosophy 'the subject emerges from the world' rather than situating the world as that which 'emerges from a subject' (1978: 88). The 'subject' is simply the unity emergent from the entity or event's own processes of becoming (1978: 233) – a subjective perspective on data grasped from the actual and virtual planes. This unity is not, however, one of homogenization, but of a series of 'contrasts' productively held in differential tension. The term 'relations' might more commonly be used, but Whitehead explains that relations are a higher order and are 'abstractions from contrasts' (1978: 228). The depth of complexity of an entity is 'subjective' since it is *from the particular perspective* of the entity that contrasting elements are brought into relation. This is, Judith Jones says, 'intensity' that compresses differences into a subjective unity (1998: 157).

[3] In Whitehead's philosophy strictly speaking there are no 'secondary' events: every event is an act of the creation of novelty.

[4] A 'society' in Whitehead's terms is a series of closely related events. What we conventionally think of as a stable object would, for Whitehead, be better termed a society of micro events, with the seeming stability of the object over time due to the fact that the events share common conditions of becoming or feelings and therefore have a tendency to repeat similar patterns or concrescence.

[5] Nor should we mistake sounds for or conflate them with their sources. As Cox argues, sounds are not bound to their sources, but are distinct 'individuals', although in reality they are less individuals than emergent collectivities (2011: 156).

[6] Performed 23/6.17 at the Odion, Athens. See the documenta 14 website: <https://www.documenta14.de/en/calendar/17031/so-you-hermes-orpheus-eurydice->

[7] In a similar vein, see, for example, J.J. Gibson's work to correct this fallacy in regard to the perception of vision (Gibson, 1986).

[8] See Roads on the pulsar (2001: 138). This is not to say that bodies cannot feel the pulsar affectively, as there is still a contrast between the pulsar event and the surrounding air pressure (Roads, 2001: 33) On unsounds, see also Goodman (2010).

[9] 'Valuation' determines how an eternal object ingresses into the physical feeling. That is, it is 'qualitative, determining how the eternal object is to be utilised'. It is 'also intensive, determining what importance that utilisation is to assume' (Whitehead, 1978: 241). 'Patterning' is the particular synthesis of contrasts performed by the entity in its act of becoming (ibid: 115).

[10] See also Bergson on the felt quality of pitch (1998: 46).

[11] Eternal qualities or 'eternal objects' are indefinite qualities that become specific in their actualization in an entity. Simple examples of this include colours and numbers, which are indefinite qualities (the number six, the colour blue), but become specific when applied to qualify objects (six blue notes).

[12] See Whitehead, 2014: II: 4.

[13] To understand this system or prehension as consistent with the seemingly constant modulation through space and time that is a soundwave, it is necessary to accept Whitehead's contention that each event is atomic. That is, the constant modulation is a series or 'society' of events that, in sharing similar conditions of emergence (relationships to key data and similar priorities in valuation of this data), obtain a consistency that might be mistaken for endurance.

In the complex feeling that is the audition, each aspect of this event is also able to maintain its own singularity, as the differences in these prehensions are not collapsed or resolved but remain as problematic and productive (of further difference or novelty in the world).

[14] This perception of pitch also involves, to some extent, the prehension of the amplitude of the waves. To be perceived as a distinct pitch the waves need to maintain a similar frequency. One might surmise that this must be maintained for enough time for sufficient data to be grasped to provide the necessary contrasts.

[15] In sound, a sine wave is the 'purest' sound – a single tone with a sinusoidal waveform. That is, it consists of one single frequency without added harmonics.

[16] Though it should be noted that such oscillators had in fact been invented in the Nineteenth Century.

[17] The clarinet owes at least part of its distinction in timbre from the saxophone to its cylindrical bore that reflects the waves generated so that they travel four times through the barrel. In the conical bore of the saxophone the wave is reflected only once and is therefore only doubled (Anon, n.d.). The clarinet has different overtones present to the saxophone, evident in that when the register key is used (eliminating the fundamental) the clarinet jumps an octave and a fifth due to its weak even overtones, whereas the saxophone with its dominant even overtones jumps an exact octave (Wolf, n.d.).

It is worth noting that not only is there a distinct difference between the timbre of different categories of instruments, but that there is a very distinct character to each clarinet, dependent on the qualities of the material used. The sound qualities will be affected by the density, age and patina of the wood, the age and thickness of the pads, and of the thickness and density of the reed chosen, for example. These qualities are also in conversation with the particular qualities of the musician, such as their embouchure (which is composed of the particular arrangement of muscles and their fitness to maintain pressure, the thickness of the lips and the air pressure that lungs and diaphragm exert). Similarly, the note sounded on the cello has a particular relationship to the singular gesture of the arm and shoulder of the cellist. Various instruments *and* musicians therefore develop a distinct sound – warmer, brighter or softer and so on than their colleagues.

[18] Other non-sinusoidal sound wave forms include square waves (also composed of harmonics of odd integers), and sawtooth waves (which are composed of both odd and even harmonic integers). The shapes that give these waves their names are related to the characteristic pulsation of the amplitude of the waveform that each type of wave has.

[19] These overtones do not necessarily last the same amount of time as the fundamental wave and they may fade or develop throughout the wave cycle. Again, this is part of the character of notes from a particular instrument.

[20] Which is not to say that such 'unsounds' are not prehended by the body. See Roads (2001); Goodman (2010).

[21] Diffraction is defined as the ways in which waves combine when they meet to create additional waves. For a clear discussion of diffraction see Barad (2007: 71-94).

[22] Although the note is in this sense a spatial event, it should not be thought of as a 'property' of the space (Whitehead, 1964: 149-50)

[23] The manner in which a space emphasizes certain tones while muffling others is the subject of Lucier's most famous work, *I Am Sitting in a Room* (1969), in which the repeated rerecording and replaying of the simple statement "I am sitting in a room" disintegrates, becoming less comprehensible as the words involved as, over time, certain tones disappear while others resonate more and more wildly.

[24] As with the division and layering of the physical prehensions of the note, these conceptual qualities are vastly complex and nuanced, though unlike the physical prehensions that must logically touch the whole history of the universe either positively or negatively through some degree of remove, only selected eternal objects need be incorporated into the experience.

[25] *documenta 14* website: <https://www.documenta14.de/en/calendar/17031/so-you-hermes-orpheus-eurydice->

[26] On the role of consciousness in feeling see Whitehead (1978, 241-243).

[27] Such beating is only audible when the two frequencies are close – usually less than a semi-tone. This is useful when attempting to tune two strings together: as the notes approach perfect tuning the beating slows audibly, disappearing as perfect tuning is achieved.

[28] That is, originality demands faithfulness to the original source untainted by further iteration or interaction.

[29] Here one might say that Edison's first momentous recording of a sneeze is not that sneeze but an event in its own right. The viewer of the film, though they experience the sneeze through the mediation of the filmic event's prehension of the soundwaves and light of the sneeze, does not catch the cold, though they may connect the event with past or future illness. It would be absurd to think that one could preserve this activity of the sneeze (though it may creatively ingress into the becoming of future events), yet we persist in thinking that more overtly 'concrete' objects can be kept alive in the archive. The film of the sneeze is momentous, not only as a moment of conrescence of a scientific inquiry that it satisfies and for the future history of film recording towards which it leaps, but that at each playing it remakes the event – an act of novelty and becoming that is subjectively momentous for the sneeze itself as an act of coming into being anew.

[30] As Lucier states, much of his work 'explores the resonate properties of ordinary everyday objects' (in Harder & Rusche, 2013).

As in most of Lucier's work, there is a deliberate avoidance of the 'tricks' of composition and conducting that are used to add interest (that is, shifts in speed or dynamics to create drama), so that the already occurring differentials produced through resonance, diffraction and phase differentiation can be brought into focus as they emerge.

[31] This rethinks 'experimental music as actions rather than acting, as sounding rather than shaping.' Kuivila, (in Collins et al: 17).

[32] In this philosophical context the concept of the echo is perhaps false, as it does not represent the complex act of audition and expression that occurs. Sounds do not simply 'bounce back' unchanged from a reflective surface – it is a new note that sounds in riposte, born of an act of resonance by that surface.

[33] Perhaps in this we can also say that each jar in *SO YOU* has its own subjective unsounds: those frequencies that do not cause its shell or contained air to resonate.

[34] The most obvious objection to this argument would be that it seems to suggest that all recordings of music fall into the category of archiving, with the implication that such recordings are necessarily deadening. Perhaps the simplest response to this would be to argue that the playing of any such recording into a space (whether a room, headphones or as radio waves) unleashes a new set of diffractive potentials, remaking the original recording on some levels at least. One might also argue that there are recordings that seem to pulse with vitality, while other recordings of the same piece of music may seem flat and drained of life. Speaking from experience as a musician, there are days when the recording studio seems to resonate with potential and other times when the same combination of musicians, equipment and compositions fail to spark. This is, I think, as true for the playing of a laptop or programming of a drum machine as it is for singing or saxophone playing. This is not then, simply a matter of the recording technology (although the meeting of this technology and sounds is an event unto itself), as many field recordings attest to the liveliness recorded by rudimentary equipment. Such arguments are valid but perhaps inadequate to fully think through recorded music in relation to the concept of the anarchic, and there is not the space here to follow this thread to any great depth.

References

- Anon. *The-clarinets.net* (n.d.), <http://www.the-clarinets.net/english/clarinet-sound.html>
- Barad, Karen. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham and London: Duke University Press, 2007).
- Barthes, Roland. *The Responsibility of Forms: Critical Essays on Music, Art, and Representation*, trans. Richard Howard (University of California Press, 1991).
- Bergson, Henri. *Creative Evolution*, trans. Arthur Mitchell (New York: Dover Publications, 1998).

Cage, John. 'Ninety Stories by John Cage, With Music', in Herbert Eimert and Karlheinz Stockhausen (eds). in *Die Reihe No. 5* (Theodore Presser Co, 1961).

Collins, Nicolas, Ronald Kuivila, Andrea Miller-Keller, Alvin Lucier and Michael Roth. *Alvin Lucier, A Celebration* (Connecticut: Wesleyan university Press, 2011).

Cox, Christoph. 'Beyond Representation and Signification: Toward a Sonic Materialism', *Journal of Visual Culture* 10.2, (2001): 145-161.

Cox, Christoph. 'Sonic Thought', in Bernd Herzogenrath (ed.) *Sonic Thinking* (New York: Bloomsbury Academic, 2017), 99-110.

Cox, Christoph and D. Warners (eds). *Audio Culture: Readings in Modern Music* (New York: Continuum, 2004).

Deleuze, Gilles. *Difference and Repetition*. Trans. Paul Patton (New York: Columbia University Press, 1994).

Deleuze, Gilles and Félix Guattari. *What Is Philosophy?* (New York: Columbia University press, 1994).

Evens, Aden. 'Sound Ideas', in Brian Massumi (ed.) *A Shock to Thought: Expression after Deleuze and Guattari* (London: Routledge, 2002), 171-187.

Gibson, James J. *The Ecological Approach to Visual Perception* (New Jersey: Lawrence Erlbaum Associates, 1986).

Goodman, Steve. *Sonic Warfare: Sound, Affect and the Ecology of Fear* (Cambridge and London: MIT Press, 2010).

Harder, Hauke and Viola Rusche. *No Ideas But in Things: the Composer Alvin Lucier*. DVD (Wergo. Mainz, Germany, 2013).

Harney, Stefano and Fred Moten. *The Undercommons: Fugitive Planning and Black Study* (New York: Minor Compositions, 2013).

Jones, Judith. *Intensity: An Essay in Whiteheadian Ontology* (Nashville: Vanderbilt University Press, 1998).

Kahn, Douglas. *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts* (Berkley: University of California Press, 2013).

Leibniz, G.W. 'Principles of Nature and Grace, Based on Reason', in R. Ariew and D. Garber (eds.) *Philosophical Essays* (Indianapolis: Hackett, [1714] 1994), 206-212.

Lucier, Alvin and Douglas Simon. *Chambers: Scores by Alvin Lucier* (Connecticut: Wesleyan university Press, 2012).

Lucier, Alvin and Robert Ashley. *Music 109: Notes on Experimental Music* (Connecticut: Wesleyan university Press, 2012).

Lucier, Alvin and Frank Oteri. 'Sitting in a Room with Alvin Lucier', *Newmusicbox*, (2005), <http://www.newmusicbox.org/articles/sitting-in-a-room-with-alvinlucier-alvin-lucier/>

Manning, Erin. 'The Anarchic Share', in Andrew Murphie (ed.) *The Go-To How To Book of Anarchiving* (The Senselab, 2016), 64.

Murphie, Andrew. 'To Have Done with the Judgement of (Learning) Outcomes', in Andrew Murphie (ed.) *The Go-To How To Book of Anarchiving* (The Senselab, 2016), 54-56.

Roads, Curtis. *Microsound* (Cambridge and London: MIT Press, 2001).

SO YOU (Hermes, Orpheus, Eurydice). documenta 14, <http://www.documenta14.de/en/calendar/17031/so-you-hermes-orpheus-eurydice->

Stengers, Isabelle. *Thinking with Whitehead: A Free and Wild Creation of Concepts* (Cambridge, Massachusetts and London: Harvard University Press, 2011).

Straebel, Volker, and Wilm Thoben. 'Alvin Lucier's Music for Solo Performer: Experimental music beyond sonification', <https://doi.org/10.1017/S135577181300037X>

Whitehead, Alfred North. *The Concept of Nature* (Cambridge: Cambridge University Press, 1964).

Whitehead, Alfred. *Adventures of Ideas* (New York: Free Press, 1967).
Whitehead, Alfred. *Modes of Thought* (New York: Free Press, 1968).
Whitehead, Alfred North. *Process and Reality* (New York: The Free Press, 1978).
Whitehead, Alfred North. *Symbolism, Its Meaning and Effect* (Business and Leadership Publishing. Kindle Edition, 2014).
Wolf, Daniel James. 'Alvin Lucifer, No Ideas But Things' *Filmforderung Hamburg Schleswig-Holstein* (2012), http://www.alvin-lucier-film.com/text_wolf.html
Wolf, Joe. 'Music Acoustics' *School of Physics, The University of New South Wales* (n.d.), <http://newt.phys.unsw.edu.au/jw/flutes.v.clarinets.html>