

Est.  
1841

YORK  
ST JOHN  
UNIVERSITY

McCaleb, J Murphy ORCID logoORCID:  
<https://orcid.org/0000-0002-9867-9909> (2016) 'Heart of Tones' and  
the Dilation of Time. In: RMA Study Day: Keeping Time? New  
Approaches to Temporality, 13 June 2016, University of York.  
(Unpublished)

Downloaded from: <https://ray.yorks.ac.uk/id/eprint/1663/>

Research at York St John (RaY) is an institutional repository. It supports the principles of open access by making the research outputs of the University available in digital form. Copyright of the items stored in RaY reside with the authors and/or other copyright owners. Users may access full text items free of charge, and may download a copy for private study or non-commercial research. For further reuse terms, see licence terms governing individual outputs. [Institutional Repository Policy Statement](#)

# RaY

Research at the University of York St John

For more information please contact RaY at [ray@yorks.ac.uk](mailto:ray@yorks.ac.uk)

## ***Heart of Tones and the Dilation of Time***

Dr J Murphy McCaleb, York St John University

### *Citation*

McCaleb, JM (2016) '*Heart of Tones and the Dilation of Time*'. Paper presented at the Royal Musical Association Study Day 'Keeping Time? New Approaches to Temporality', University of York, UK, 13 June.

### *Abstract*

Musicians' strong engagement in the Now of a performance can alter their perception of the passage of time, an area explored by studies on flow in musical performance (Wrigley and Emmerson, 2011; Lamont, 2012; Hart and Di Blasi, 2013). This alteration of the perception of time varies from performer to performer, piece to piece, and context to context, and may not necessarily be reflected in the audience's perception of time. The deeper the investment and engagement musicians have with their performance, the greater a possibility that they might become cognitively distanced from their interpretations, instead feeling that the music is playing itself (McCaleb, 2014). As a result, this may encourage a depersonalisation of the performer – a loss of self or, rather, an offering up of one's ego to the music. This phenomenon is explored and often encouraged in many compositions of Pauline Oliveros, most notably her *Sonic Meditations*.

*Heart of Tones* (1999), written for trombone and oscillators, exaggerates the power of music to alter the perception of time to an almost absurd degree. Once a drone is established, the trombone microscopically deviates from the pitch at a glacial pace. Through this process, one moment is magnified and stretched until the passage of time becomes variable for both the performer and the audience. Through live performance of this piece, I will explore how the cognitive and physical investment in the performance of this work results in the performer becoming engulfed in the sounds around them, ultimately removing themselves from a linear perception of time.

### *Introduction*

Our perception of time is malleable (New and Scholl, 2009). Although time can be objectively measured, subjective experience of its passage is dependent upon a range of factors. This paper examines how music—and in particular, a specific work by Pauline Oliveros—may manipulate those factors for both performers and those listening.

As Einstein is (potentially apocryphally) purported to have said, 'When you sit with a nice girl for two hours you think it's only a minute, but when you sit on a hot stove for a minute you think it's two hours' (O'Toole, 2014). Psychological research has demonstrated that individual's perception of time may speed up or slow down, particularly due to traumatic experiences like car accidents (Ulrich et al., 2006). However, human's ability to independently assess the duration of an event is also significantly impacted by their state of mind, including 'attentional, arousal and emotional levels, expectancy, and [prior] stimulus' (Wassenhove et al. 2008, p. 1). In addition, the nature of an event itself may predispose participants or observers towards interpreting its duration in different

ways. As Kanai et al. propose, 'time perception is based on the number of changes present during [an] event' (2006, p. 1421). Both of these considerations — the impact of contextual elements and the number of changes present — will be explored through musical performance at the end of this paper.

Musicians' strong and continued engagement in a performance can alter their perception of the passage of time. This is most commonly associated with experiencing flow, a subjective mental state where one becomes 'fully immersed in an activity and experiences feelings of energized focus, deep involvement, and success in the process of the activity' (Hart and Di Blasi, 2015, p. 276, paraphrasing Csikszentmihalyi, 1990). This alteration of the perception of time varies from performer to performer, piece to piece, and context to context, and may not necessarily be reflected in the audience's perception of time. On a fundamental level, as the performer is concerned with creating specific sounds (not to mention interpretations), their attentional and arousal levels will differ from those of their listeners. Considering this attention to detail leads to a greater understanding of the perceived number of changes within an event. The Now of a performer is not necessarily the Now of the audience; where a listener may hear a single note, the performer may consider the breath before the note, its attack, its timbral and dynamic trajectory over time, the decay of a note, and its release. This will potentially have an impact on how musicians experience time within their performances, particularly as their physiology will be acting to create each of those changes. This is not to say that a listener will not notice any (or all) of those elements, but that they may not be so intimately aware of the physical changes occurring to produce them as they are happening. These physical changes, in a sense, may be more 'eventful' for the performer than the audience.

Looking beyond the mechanics of making sound, the passage of time might also be impacted by musicians' cognitive and emotional investment in their performance. The deeper this investment and engagement is, the greater a possibility that they might become cognitively distanced from their interpretations, instead feeling that the music is playing itself (Lamont, 2012; McCaleb, 2014). As a result, this may encourage a depersonalisation of the performer — a loss of self or, rather, an offering up of one's ego to the music. Thus, the act of playing may become autotelic, inspiring 'a high level of intrinsic enjoyment' as a result of simply doing it (Wrigley and Emmerson, 2011, p. 293).

As I mentioned earlier, the alteration of the perception of time varies from performer to performer, piece to piece, and context to context. Many compositions challenge performers' and audiences' perceptions of time, including Morton Feldman's string quartets, La Monte Young's *The Well Tuned Piano* (1964), and John Cage's *As Slow As Possible* (1987), to name but a few. Today, I will be focusing on Pauline Oliveros's *Heart of Tones*, a piece which ostensibly reduces music to a

microscopic level. Through analysis and performance of this (admittedly exaggerated) example, I will explore how Oliveros encourages the performer to not only acquiesce their normal perception of time, but also their sense of self.

### *Background on Oliveros*

Pauline Oliveros is an American composer and accordionist who is best known for blending philosophy, meditation, and musical practice. She writes that her compositions are 'based on patterns of attention. In other words these pieces are ways of listening and responding' (Oliveros, 2005, p. xvii). Originally using the medium of taped electronic sound, Oliveros shifted towards writing compositions which would challenge performers to become somewhat more audience-like (or, alternatively, audiences to become more performative). She writes:

'I noticed that many musicians were not listening to what they were performing! There was good hand-eye coordination in reading music, but listening was not necessarily a part of the performance. The musician was of course hearing but listening all over or attention to the space/time continuum (global) was not happening. There was disconnection from the environment that included the audience as the music was played.' (Oliveros, 2005, p. xvii)

The resulting catalogue of compositions are sets of instructions which, when followed, may create what is commonly considered 'music' as a by-product; some use more traditionally musical syntax to describe what the performers have to do, whilst some are more broad.

Oliveros's approach towards experiencing sound became a musico-philosophical approach known as 'Deep Listening'. This state of mind involves

'learning to expand the perception of sounds to include the whole space/time continuum of sound — encountering the vastness and complexities as much as possible. Simultaneously one ought to be able to target a sound or sequence of sounds as a focus within the space/time continuum and to perceive the detail or trajectory of the sound or sequence of sounds. Such focus should always return to, or be within the whole of the space/time continuum (context). Such expansion means that one is connected to the whole of the environment and beyond' (Oliveros, 2005, p. xxiii).

Thus, the framework Oliveros's compositions take place within is one in which every sound is part of a much greater complexity existing in both space and time. In addition, to perform these compositions is to acknowledge one's place within this complexity and to willingly respond to what is perceived to be happening across the space/time continuum.

As a consequence, Oliveros's compositions draw on a range of activities which may or may not be traditionally considered 'musical'. On one end of the spectrum are compositions which carry elements of familiar musical syntax: specific instrumentation, melodic, harmonic or rhythmic content, duration, and so on. On the other end are activities which may be loosely based around listening and creating sound, a collection of pieces more aptly known as *Sonic Meditations*.

Given the number of references to the space/time continuum (more than normally appear in my conference papers, I assure you), it should be hardly surprising that Oliveros's works often force performers and audiences to engage with time in particular ways. Some pieces such as *Rhythms* (1996) directly ask the performer to consider how their body marks the passage of time through the number of times they blink, breathe, and so on. A greater number of pieces, however, do not specify a timeframe within which they exist. Some mention a negotiated duration with the other performers or the audience, some mention only a rough timeframe. This prompts musicians to consider what impact different durations may have upon the resulting performance, in terms of what kind of experience they and their audience (if there is such a distinction) may have. I propose that, in performing many of these pieces, musicians not only 'consider' time, but have to put themselves into a position where they willingly confront, manipulate, or even sacrifice their perception of time.

### *Heart of Tones*

In a sense, *Heart of Tones* for trombone and oscillators (1999) is a relatively 'traditional' composition. A number of musical elements are specified, including pitch, instrumentation, and rough duration. Importantly, what is also specified is the rate at which things change within the piece. The oscillators that accompany (if that is the most appropriate word) the trombone are indicated to 'use varied patterns of movement in space that shift slightly, gradually, and subtly'. Once the drone is established, the trombonist is instructed to 'slowly deviate individually from D4 in just perceptible differences', moving alternately a semitone above and below the starting pitch. Finally, Oliveros writes that 'the changes are slow — glacial'.

The indications in the score bear close resemblance to a Deep Listening exercise called an Extreme Slow Walk. In it, participants are instructed to move as slowly as possible, gradually shifting their weight so that they break down the process of walking into a sequence of miniscule events. As Oliveros points out, 'the challenge for this exercise is that no matter how slow you are walking, you can always go much slower' (2005, p. 20). Having performed this exercise many times (including

several times with students), I have found the most pressing issue to be finding the point where stillness becomes motion.

*Heart of Tones* is its own Extreme Slow Walk, in a way. For all of its traditional elements, this piece may be considered a performative meditation. The composer extols the musician to 'get to the heart of the matter!', encouraging me to consider the set of prescribed actions as a means by which thoughtful exploration may occur rather than as an end upon themselves. After performing this piece several times, what has struck me most is the efficiency this piece has in exposing my humanity. The tectonic motion of the trombone line is primarily punctuated by my need for breath. At times, I feel that in my futile attempts to keep producing sound against an unwavering electronic drone there is an almost Lovecraftian horror at being confronted with something that exists beyond my physiological rhythms. No matter how large a breath I take, the oscillators will never give in.

Like Billy Pilgrim in Vonnegut's *Slaughterhouse-Five*, this piece encourages us to become unstuck in time. Recalling our previous discussion about how humans perceive duration, the piece drastically limits 'the number of changes present', making it more difficult to keep track of time. As much as my breathing is a physical lifeline for me, it is one of a scant few landmarks that exist to allow me and the audience to establish temporal movement. This is further complicated through the physical and mental effort required by performing the piece. Considering that 'attentional, arousal and emotional levels, expectancy and stimulus context can all affect the experience of time' (van Wassenhove et al., 2008, p. 1), the continuous (if glacially slow) activity of this piece is markedly different than is found in my daily routine. By focusing on such microscopic changes, the series of significant events within my perception may be considered to be quite high. My concern about moving pitch a cent at a time does not provide much opportunity to rest, but instead inspires me to again find the point where stillness becomes motion. My level of perception and investment, however, will almost certainly not align with yours as audience members, and will therefore impact how we will experience the passage of time in different ways.

A few clarifications before I perform this piece. First of all, I should point out that I will be performing my own arrangement of the composition, as it was originally written for tenor trombone. As I play bass trombone, I will not be centring my performance around the pitch D4, but rather D3. Second, there are theatrical elements indicated which I will not be adhering to, partially because of the setup time required. The score requests the performer to be lit from the floor with multi-coloured lights... and to be covered in some sort of reflective garment. In place of this, I will project a variety of shifting coloured patterns behind me. Third, the practical execution of this performance has meant that I do have a loose kind of temporal landmark. I have prepared my oscillators using Logic and, in doing so, limited myself to a 5 minute tape part. Thus, having a set

duration might give me a vague sense of timescale. However, the lack of other readily apparent landmarks within those 5 minutes quickly unsticks me. Fourth, I am not guaranteeing that I am likely to achieve a flow state during this performance by any means. However, I do know that this is a rather exhausting piece to play (both mentally and physically), and past experience has taught me that performing it puts me in a different mental space than most other pieces do. I am interested in discussing everyone's experiences after the performance.

[Performance of *Heart of Tones*.]

## Bibliography

Csikszentmihalyi, M (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper & Row.

Hart, E and Di Blasi, Z (2015). Combined flow in musical jam sessions: A pilot qualitative study. *Psychology of Music*, 43(2), 275–290.

Kanai, R, Paffen, CLE, Hogendoorn, H, and Verstraten, FAJ (2006). Time dilation in dynamic visual display. *Journal of Vision*, 6, 1421–1430.

Lamont, A (2012). Emotion, engagement and meaning in strong experiences of music performance. *Psychology of Music*, 40(5), 574–594.

McCaleb, JM (2014). *Embodied knowledge in ensemble performance*. Aldershot: Ashgate Publishing.

New, JJ and Scholl, BJ (2009). Subjective time dilation: Spatially local, object-based, or a global visual experience? *Journal of Vision*, 9(2):4, 1–11.

O'Toole, G (2014). Relativity: A hot stove and a pretty girl. *Quote Investigator* [internet]. Available at: <http://quoteinvestigator.com/2014/11/24/hot-stove/> [Accessed 12/06/16].

Oliveros, P (1999). *Heart of Tones*. Lincoln, NE: Deep Listening Publications.

Oliveros, P (2005). *Deep Listening: A composer's sound practice*. Lincoln, NE: Deep Listening Publications.

Ulrich, R, Nitschke, J, & Rammsayer, T (2006). Perceived duration of expected and unexpected stimuli. *Psychological Research*, 70, 77–87.

van Wassenhove, V, Buonomano, DV, Shimojo, S, and Shams, L (2008). Distortions of subjective time perception within and across senses. *PLoS ONE*, 3(1), e1437.

Wrigley, WJ and Emmerson, SB (2011). The experience of the flow state in live music performance. *Psychology of Music*, 41(3), 292–305.