

# CONTRASTING APPROACHES: THE CONTINUED RELEVANCE OF PRE-RECORDED LIVE ELECTRONIC MUSIC

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## ABSTRACT

As new technology has taken effect over the decades since the earliest electronic music was created, ‘real-time’ rather than ‘pre-recorded’ technologies have largely come to dominate the medium known as ‘live electronics’, where one or more instruments are combined with an electronic part of some form. Yet despite the rapid developments of real-time and particularly ‘interactive’ technologies, many composers continue to use various forms of pre-recorded electronics. This paper offers some explanations as to why the pre-recorded medium is still relevant for many composers by discussing and contrasting its advantages and textural possibilities, including strict/free temporal space for performers, with real-time technology. These textural possibilities include a variety of musical dialogues where one or more performers may interact with the technology by initiating or responding to the electronic part or vice-versa, and will be discussed using a selection of Australian and international composers as examples.

## 1. INTRODUCTION

Despite largely focusing on instrumental and orchestral composition as a composer, I have long been interested in the combination of instruments and electronics, often referred to as ‘live electronics’, and the many possibilities this medium presents. My works in the live electronic domain have always combined one or more live instruments with what I will term ‘pre-recorded’ electronics, which includes a pre-composed electronic component re-produced in a format such as tape, CD, DVD etc. In 2014, while preparing to record my work ‘Amplitude’, performed at APMC this year, my composer-percussionist colleague at the Sydney Conservatorium of Music, Dr Brad Gill, raised the following question: why pre-recorded electronics? Considering the possibilities of modern technology, particularly ‘real-time’ and ‘interactive’ technologies where sounds from any performers can be processed almost instantaneously, pre-recorded electronics are often viewed as old-fashioned (Ding 2006). This prompted me to research this further, and perhaps surprisingly, pre-recorded forms of technology are still relevant for many composers of both older and younger generations.

## 2. DEFINITIONS OF LIVE ELECTRONICS

### 2.1. Pre-recorded Live Electronics

Emmerson (2007) discusses how the definitions of ‘live electronic’ compositional forms have become somewhat confused since the 1970s. The original definition of ‘live electronic’ however, is a work that combines one or more live instrumental performers with electronics.<sup>1</sup> This definition was developed when composers began to combine electronics, which were usually at the time recorded onto tape, with one or more live instruments. This led to terminologies often still used today such as ‘mixed’ and ‘instrument and tape’ music, despite such works now often realised with an audio file. Some early examples of such works include Karheinz Stockhausen’s work ‘Kontakte’ (1959) for piano, percussion and four-channel tape, and Luigi Nono’s work ‘La Fabbrica Illuminata’ (1964) for soprano and tape.

### 2.2. Real-time Live Electronics

‘Real-time’ electronics involve the use of technology where one or more instruments may be amplified and/or manipulated live during a performance with an effect such as delay for example. Originally these works required specific technological hardware to render such effects. Stockhausen’s monumental work ‘Mantra’ (1970) for two pianists and percussion is an early example of the ‘real-time’ category where the two piano parts are ring modulated in real time. According to the score of ‘Mantra’, the ring modulation was realised by two specially built MODUL 69B modulators. Such works are now generally realised using computer software programs. This category particularly emerged from the 1970s onwards, but examples do exist that pre-date this from as early as the 1930s.

### 2.1. Interactive Live Electronics

‘Interactive’ technology is a form of real-time electronics, which involves one or more performers reacting to and/or improvising with the technology during the performance in response to musical input

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<sup>1</sup> Many composers would dispute this definition, as in many countries works for instrument and tape were never categorised as ‘live electronic’. Many composers also do not consider using a pre-recorded component with instrument(s) as ‘live’, as the electronic component is fixed and therefore incapable of interaction.

from each other. This category particularly attracts composers and performers with an interest in improvisation (Rowe 1993), and increased radically from the 1990s onwards with the development of the computer software Max-MSP at IRCAM.

### 3. ENDURANCE OF THE PRE-RECORDED MEDIUM

#### 3.1. Why is the pre-recorded medium still relevant?

Putting aside the fact that experimenting with pre-recorded electronics is often the first foray for many composers and performers into electronic music, the medium remains relevant to a number of older and younger generation composers. With many real-time forms of technology, particularly interactive forms, authorial power is transferred largely to i: the computer system/software and ii: the performer. There is often: “no pre-ordained work, simply a process of creation, shared with the public during a performance” (Drummond 2009).<sup>2</sup> Therefore, composers for whom the preservation of authorial integrity is important still find pre-recorded electronics relevant to their compositional aesthetic. In this medium, the composer can preserve the original concept of the work, crafting and shaping both electronic and live components to consistently and predictably achieve desired results.

#### 3.2 Advantages and Possibilities

On a practical level, an advantage of pre-recorded forms of technology is the often simpler technological setup. Real-time technology is conversely often more complicated to setup. Examples may include computer sound file initiation, requiring very specific microphone setup, or even networked laptops to be properly coordinated, necessitating the assistance of a technician and the possibility of extra expenses. Any pre-recorded component of a work is also highly mobile. It can be emailed to a performer, who can study and rehearse the work in their own private space, negating the requirement for the composer to be present at a performance. An example of this is a work I will analyse later entitled ‘Vox Sum Vitae’ (2011) for vibraphone and pre-recorded electronics by Portuguese composer João Pedro Oliveira, which was performed by Australian percussionist Claire Edwardes in 2013, with their only contact being by email.

A variety of different textural possibilities exist when using pre-recorded live electronics.<sup>3</sup> Sound sources could be from the real world, synthesised by computer or a combination of both creating ambiguous sound worlds. The electronic component can be an accompaniment for the instrumentalist/ensemble, and therefore can be regarded as a support for the performer(s). This is an obvious role for any pre-recorded electronics particularly

useful for solo works, which can then mean the performer becomes the focus, without the need for an additional instrumental accompanist. These roles can also be reversed. The electronic component can also reinforce the live instrumental component, or vice versa. In such textures, the two components are very homogeneous, and work together to create a single sound entity. The two components can engage in a dialogue, with the performer reacting ‘live’ to the electronics. This of course would be pre-determined and ‘one-way’ interaction (Pestova 2008), but can be rendered in a way that is sophisticated, aurally effective and deceptive to the point that the audience may not even be aware of this fact unless informed by programme notes. The pre-recorded component can initiate a gesture in the instrumental component, or vice versa. This is known as ‘causality’ (Emmerson 1998), and can lead to extensive interplay between performer and electronics. Finally, the two components can even be an extension of each other, where the electronic component, for example, may gradually transform a sound event originally heard in the instrumental component.

Given that any performers during such moments as outlined above must make a decision how they should respond to the electronics, is this “not an indication of ‘live presence’” (Emmerson 1994)? My answer is that it certainly can be, with the compositional excerpts outlined in the next section providing some examples of such moments.

## 4. EXAMPLES

#### 4.1. ‘Amplitude’ (2013) – Peter McNamara

This work was composed in 2013 for vibraphone, tam tam (performed by solo percussionist) and pre-recorded electronics. Textures in ‘Amplitude’ are predominantly homogenous, using a number of bowed tam tam sounds re-synthesised in the electronic component, with their physical-acoustic properties reinforced in the live percussion part as its musical basis. This required a great deal of control to present these timbres at particular points in time, and for me necessitated the incorporation of pre-recorded electronics.

‘Amplitude’ is strictly coordinated between the instrumental and electronic components, requiring a click track for coordination, a necessity for many pre-recorded electronic works. This can be very restricting for the performer, and providing a degree of flexibility is an important consideration in such works. ‘Amplitude’ contains many sections where the performer is given a degree of latitude to interpret some of the musical phrases. I describe these moments of emancipation as ‘freedom within the prism’, where the performer can express certain gestures freely within a defined temporal space in response to stimuli from the electronics. This is similar one might imagine, to an object being free to move around inside a box.

<sup>2</sup> It should be noted that the more fluid approach that real-time forms of technology provide is equally as attractive for many composers.

<sup>3</sup> These are not necessarily limited only to pre-recorded forms of media.

Figure 1. ‘Amplitude’, time-codes 5:32 to 6:25. Copyright © Peter McNamara 2013.

An example of this technique occurs during section B, where the performer uses wire brushes on the vibraphone between time-codes 5:35 and 6:25 (refer to figure 1). The material is rapid and semi-improvised at this point, interrupted by a number of brief pauses that the performer must interpret individually and fit into a defined temporal space before the next event from the pre-recorded component initiates the next live response from the performer. This includes between time-codes 5:35-5:54, 5:54-6:09 and 6:09-6:25. An added dimension is the gradual reduction of temporal space between the pre-recorded stimuli, which the performer must also take into account when interpreting these passages.

▪ **Audio Example 1.** ‘Amplitude’ 5:32-6:25.  
<https://youtu.be/M99aBaSzKyo?t=335>

#### 4.2. ‘Vox Sum Vitae’ (The Voice of Life, 2011) - João Pedro Oliveira

‘Vox Sum Vitae’ was composed by Portuguese composer João Pedro Oliveira in 2011, and is scored for pre-recorded electronics and vibraphone. It was inspired after a trip to Germany, during which the composer was awoken one Sunday morning to the sound of a calamity of church bells announcing early morning services. ‘Vox Sum Vitae’ is also an

inscription on a church bell in Strasbourg, France (Oliviera, 2011). The texture of the work has a very stochastic feel, and alternates between explosions of sophisticated bell-like colours that are generally strictly coordinated between live and electronic components, and freer more static textures. The two components are very homogenous, with both live and electronic components often filling the same harmonic space.

Oliviera has a different approach to providing temporal space for the performer to that used in ‘Amplitude’. Sections that are strictly coordinated use varied time signatures, while freer sections are unmeasured. ‘Vox Sum Vitae’ uses a click track for performer coordination that stops during any unmeasured points, during which the performer must respond to the pre-recorded component in order to interpret the length of their notated material.

Examples of this unmeasured material can be found between bars 12-32 of the score. The vibraphone material is relatively free between bars 12-14, and incorporates gestures using feathered beaming during a relatively static section of the pre-recorded component. Bars 23-5 have a similar character, and are relatively free as long as the performer is coordinated with the accented pitch on the fourth beat of bar 25. Material

**Figure 2.** ‘Vox Sum Vitae’, bars 23-34. Copyright © João Pedro Oliveira 2011. Reproduced with permission.

between bars 30-2 is unmeasured, and is free for the performer to interpret as they choose, provided the beginning of bars 30 and 32 are coordinated with the electronics, which are both examples of a sound heard live undergoing timbre metamorphosis by the pre-recorded component (refer to figure 2).

▪ **Audio Example 3.** ‘Vox Sum Vitae’ 1:00-2:35.  
<https://soundcloud.com/jppo/vox-sum-vitae>

### 4.3. ‘Calliphora’ (2011) – Mark Oliviero

‘Calliphora’ (2011) for bass recorder and electronics, commissioned by Alicia Crossley, is a work that possesses a very different character. ‘Calliphora’ contains ten cycles based on the genus of the common blowfly and its life cycle (Oliviero, 2011). The order of these ten pre-recorded cycles must be pre-determined by the performer, with a software patch used to coordinate the sequence. The performer then activates each new cycle with a footswitch. This blurring of pre-recorded and real-time electronic realms continues with added amplification and effects applied to the live performer.

Textures in ‘Calliphora’ are often very aggressive, with harsh extended techniques in the bass recorder such as overblowing, matched with aggressive, often distorted pitchless electronic sounds. These are contrasted with very static textures where the bass recorder is the foreground focus.

Coordination between live performer and the fixed media of each cycle is generally very free, with the performer given a high degree of rhythmic flexibility. Once each cycle is triggered by the performer’s footswitch, coordination for the performer is often initiated by gestures heard in the fixed media, to which the performer responds. This occurs throughout cycle 9 of the work (refer to figure 3), which contains numerous short cluster sounds in the fixed media that initiate the next notated gesture in the bass recorder part.

▪ **Audio Example 3.** ‘Calliphora’ Cycle 9.  
<https://youtu.be/p2GoznjDSW8?t=90>

## 5. CONCLUSION

Using pre-recorded electronics combined with temporal freedom for the performer allows a composer the control of placing a certain timbre or combination of timbres at a specific point in time, but also a degree of flexibility for the instrumentalist(s) to add a human element to a performance. This is a fascinating and often sophisticated product of combining live instruments with pre-recorded electronics that is integral to the success of any composition in this medium and its rendition.

Although composers will continue to effectively use many forms of real-time and interactive technologies into the future, the aesthetic and practical concerns

**Figure 3.** ‘Calliphora’, Cycle 9. Copyright © Mark Oliviero 2011. Reproduced with permission.

associated with these technologies, combined with transferral of authorial integrity away from the composer, is a barrier for many. This combined with the medium’s sophisticated textural possibilities, will insure that pre-recorded electronics remain relevant to the live electronic music domain for some time to come.

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